Sew'ing-ma-chine'. 1. Sewing-machines for fabric are of several classes : —

a. Those in which the needle is passed completely through the work, as in hand-sewing.

b. Those making the *chain - stitch*, which is wrought by the crochet-hook or by an eye-pointed needle and auxiliary hook.

c. Those making a fair stitch on one side, the up-

per thread being interwoven by another thread below.

d. Those making the *lock-stitch*, the same on both sides.

The last is the latest and best. See also *infra*, SEWING-MACHINE (for books), page 2119, and SHOE-SEWING MACHINE, Plate LIX.

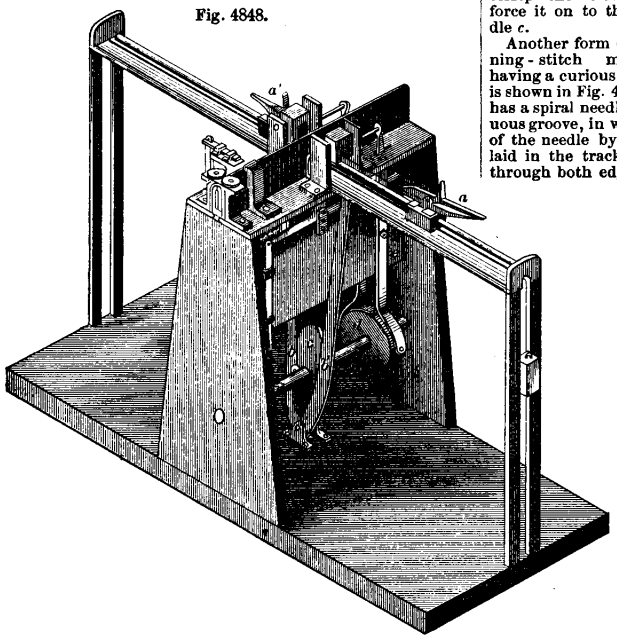
a. The stitch made by passing the needle completely through the goods, in the manner of hand-sewing, was the first performed by machinery. Such are classed as *short-thread machines.*

The needle with two points and an eye at midlength was patented in England in 1755. The embroidering-machine of Heilmann, patented (to Bock) in England, May 2, 1829, No. 5,788, for that purpose, was for a machine in which a large number of needles, each with an eye in the middle and a point at each end, or tambour-needles, are simultaneously actuated over a moving web of cloth, so as to repeat the patterns at various points from one "governing design" and on a more minute scale if desired. See also English patent, No. 6,931, of 1835.

Of Lye's sewing-machine, patented in the United States in 1826, no record exists. The fire of 1836 consumed all the records, and but few comparatively were restored, by means of recopying from the patents returned for that purpose.

J. J. Greenough's patent of February 21, 1842, had a similar needle, which was passed through and through the material by means of pinchers traveling on a track, and opened and closed automatically. The machine was specially designed for leather and other hard material, and the needle was preceded by an awl which pierced a hole. The material to be sewed was held between clamps provided with a rack, which was moved both ways, alternately, to produce a *back-stitch*, or continuously forward to make the shoemaker's stitch. The material was fed automatically at a determinate rate, according to the length of stitch required. The machine had a weight to draw out the thread, and a stop-motion to arrest the machinery when a thread broke or became too short. The needle was threaded with a length of thread, and required refilling. The feed was continuous to the length of the rack-bar, and then it had to be set back. The machine was not specifically useful, but possessed some valuable points. It holds a creditable place in the history.

Fig. 4848.



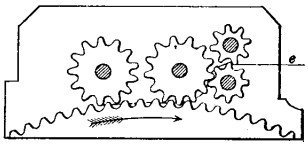
Greenough's Sewing-Machine (1842).

Fig. 4848 is a perspective view of the machine. One of the pincher-heads *a* is seen on the track, the other *a'* is nearly hidden by other portions of the machine. The levers *b b'* work the nipper-heads by means of cords, and are moved by cams *c c'* on the revolving shaft. A cam *d* on the shaft works the lever *e*, which reciprocates transversely and works the feed. The motions were all obtained from the revolution of a crank like the machine of Saint, 1790. That of Thimonnier, 1830, had a vertical needle worked by a treadle motion to depress the lever by a direct downward pull. Each of the machines mentioned was, however, much nearer to the type of the present machine than that of Greenough. The overhanging arm, vertically reciprocated needle, continuous thread, and automatic feed were patented in England fifty-two years before Greenough's, and sixty years before the Singer attained its excellence, as we shall have occasion to show presently.

The Corliss machine, patented in the United States December 27, 1843, No. 3,389, was of the same general mode of operation as the Greenough. It had eye-pointed needles reciprocated in horizontal paths through holes previously made by awls in the material fastened between clamps and fed in front of the needles. The feed was automatic, the length of the holding clamp. The motions were derived from peculiarly shaped cams on a revolving shaft. Many other details are worth enumerating would space permit.

An early form of sewing-machine, perhaps the earliest, was that employed for sewing lengths of calico together previous to the processes of bleaching, dyeing, and printing The edges of the pieces being laid together and passed between fluted rollers, were thereby doubled or crimped and pressed on to the needle, which was held stationary in a horizontal position. See English patents No. 10,134 of 1844; also running stitch machine, No. 11,025 of 1846; No. 12,752 of 1849. The same feature is also seen in the United States patents, Smith and Chadbourne, April 16, 1850, and in No. 3,672, July 22, 1844, and shown in Fig. 4849. The cloth is crimped and forced on to the needle *e*.

Fig. 4849.



Rodgers's Running-Stitch Machine.

Fig. 4850 is another form of the same kind of machine. The hand-crank works the feed-rollers and also the toothed rollers, which crimp the cloth and force it on to the needle *c*.

Another form of running-stitch machine having a curious analogy to the spiral needle for staphyloraphy is shown in Fig. 4851. This machine, patented November 3, 1874, has a spiral needle, shaped like a corkscrew, and with a continuous groove, in which the thread lies, being secured at the point of the needle by a spring. The edges to be sewed together are laid in the track of the needle, which is revolved, and passes through both edges once at each revolution. A bag is shown at *b*. See also Bean's patent, March 4, 1843, which used a common sewing-needle, and corrugated the cloth by means of gear-wheels, and forced it on to the needle.

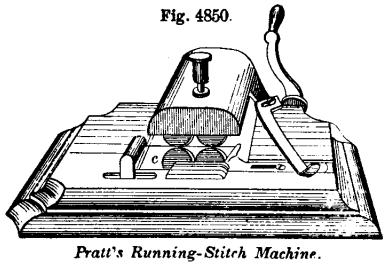
b. The *chain-stitch* or *tambour-stitch* is one consisting of a series, the bight of the thread being thrust through a former loop, and leaving a loop which in turn is enchained by the next-formed bight; and so on. There are several modes of making it, and while it was perhaps the first successful in a machine, it has been to a large extent superseded by other stitches. Several cheap forms of machines yet use it, and one kind, which has many friends, the "Willcox and Gibbs."

It may be made by a crochet-needle and looping-hook, or by an eye-pointed needle and detaining-hook. It was the first machine-stitch in which the thread was continuous, the previous attempts having all been in imitation of hand-sewing, with a certain length of thread, threaded in the needle.

The first sewing-machine to make the chain-stitch is described in the English patent of Thomas Saint, July 17, 1790, which will be referred to presently. It is not known that working machines were ever made on this plan, but it cannot be ignored in a history which deals with records. Explicit notice is deferred for reasons explained farther on. Fig. 4854.

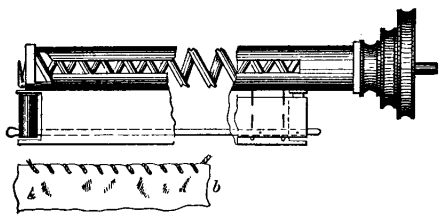
Next in order of date, making the *chain-stitch*, is Duncan's machine, English, No. 2,769, of 1804. It had a number of hooked needles, which passed through the

Fig. 4850.



Pratt's Running-Stitch Machine.

Fig. 4851.



Garland's Spiral Needle for Sewing Bags.

cloth, then each was supplied with thread by a feeding-needle, which passed the thread around the crochet-needle and under the barb. As the needles receded, each drew a loop through the loop previously drawn by it through the cloth. The cloth was stretched between two cylinders placed parallel to each other in an oblong frame, which slid horizontally in another frame. Thus, either a horizontal or a vertical motion might be given to the cloth, or, by a combination of motions, an oblique direction. See also English patent, No. 10,102 of 1844.

Of the same class as the last two cited was the machine of Thimonnier, patented in France in 1830, and used for years in making army clothing. A fuller description of this machine is deferred so as to bring it into more immediate contact with the really valuable machines, of which it was, in many important respects, the forerunner. It had a thread-carrier beneath the goods, a crochet-needle which descended through the goods from above and caught up a loop which enchained the previous loop. Here we first see the presser-foot. This feature of a lower thread-carrier and hook needle is to be seen in the most valuable shoe-sewing machines of the present day.

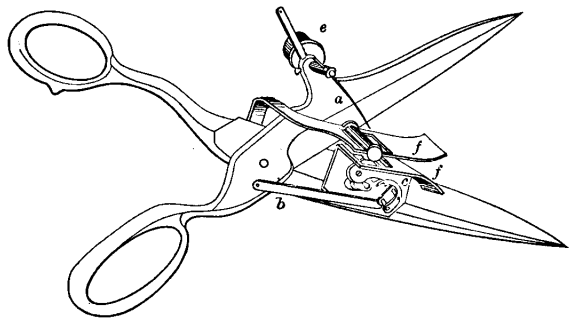
Sneath's machine was for producing *chain*-stitch ornaments on bobbinet in the process of making. It had a *curved needle with two eyes* for introducing a thread through the lace, and leaving a loop thereof; a pair of barbed points carried the loop over to the place where it was entered by the needle on its next stroke.

The eye-pointed needle is found in Newton and Archbold's English patent, No. 8,948 of 1841. This was some years after Walter Hunt's machine, and several years before Elias Howe applied himself to the task. We shall refer to this presently. In the English patent, No. 8,948, the eye-pointed needle carried a thread through the fabric and left a loop, which was caught by a hook and drawn lengthwise over the spot where the needle would pass through it on its next stroke. These features were afterward shown in the Johnson and Morey patent, February 6, 1849, and are yet extant in some machines of approved quality, though not of the highest class.

While considering this class of machines, it may be as well to adduce two rather amusing instances of the *chain*-stitch machines.

Fig. 4852 is a sewing-machine attached to a pair of scissors. The needle *a* is attached to the upper member of the scissors, as is also the bar *b* attached to the loop-check *c*, which is pivoted on the lower member of the scissors. *e* is the spool. The

Fig. 4852



Cutting and Sewing Machine.

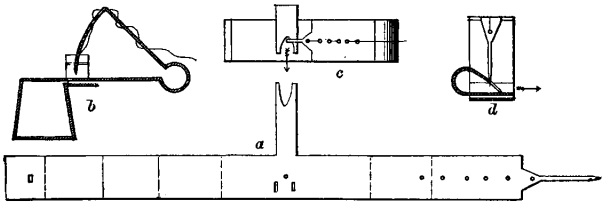
cloth passes between the plates *f f*, and the rate of sewing depends upon the length of the cut at each closing of the scissors, each stroke making a stitch. The eye-pointed needle carries the thread through the cloth, and leaves a loop on the hook; the next descent carries the thread through the former loop, making a chain-stitch.

Fig. 4853 is a sewing-machine made of a single slip of sheet-metal, and designed to make the chain-stitch.

a is the strip of metal, which is bent into the forms shown in the other figures, which are respectively, a side (*b*), top (*c*), and end (*d*) view. The thread is rove through the holes of the needle-holder and the eye of the needle, and, on being pressed through the cloth, pushes back the feeder. On rising, it leaves a loop on the under side, and, the feeder advancing, pushes the cloth along and the loop beneath it; the next time the needle comes down it passes through the former loop, and so on continuously.

c. The looping of one stitch by the loop of another is shown in Fisher and Gibbon's English patent, No. 10,424, of 1844. One thread is on a lower curved eye-pointed needle, which passes upward through the fabric, whereupon the upper eye-pointed needle enters between the former one and its thread; the curved needle, descending, leaves a loop upon the upper

Fig. 4853.



Sewing-Machine made of a Single Slip of Metal.

needle, the fabric being fed the length of a stitch; the curved needle again ascends, and, at the same time, the upper needle is moved in such a manner that it passes its thread around the curved needle and then retires through the loop of the needle thread previously upon its stem. After this, the upper needle, again advancing, enters between the curved needle and its thread, as before, and the movements are repeated. The enchaining of one thread by the loop of another thread is shown in several forms in Plate LVII. See also the Grover and Baker machine, Fig. 4863.

d. The last in order of date, and the best, is the simple lock-stitch, in which one thread is passed through a loop in the other one, and then both drawn so as to pull the bight of each into the middle of the fabric, making a fair line of stitches on each side.

In considering this section of the subject, we must refer to one or two inventions in which the lock-stitch was not made, but which possessed some features which have proved their right to live, and which seem to be indispensable in every well-ordered machine.

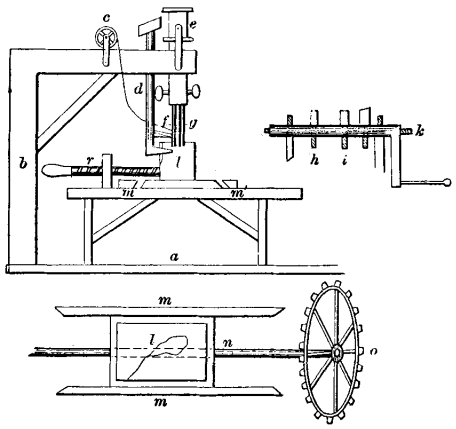
Ultimate success is attained by a multitude of efforts, and it is not fair, in our admiration of the perfected, to forget the weary, ill-appreciated, and unpaid efforts of those who have the earliest devoted themselves to the work. The growth of invention is in the direction of simplicity, but it is necessary, in the first place, to conceive the needs, and then follow a host of temporary expedients, — mere patchwork, as it afterward appears. In the course of time rises a reorganizer who proposes to devise means adequate to meet the changed conditions which supervene when a machine is called upon to take the place of the human operator. The earliest machine used the needle and needleful of thread in making a running-stitch. Then the eye was placed in the middle of the needle, which was sharpened at both ends to save turning it about when returning it, the needles being pushed and drawn by steel fingers on each side of the goods. The invention was as yet an implicit copying of the human manipulation, and the next change merely shifted the mode from the stitch of the *seamstress* to that of the *tambour-worker*. The needle was passed through the goods and returned, leaving a loop, which was detained, so as to be entered by the needle at its next descent, leaving another loop, and so on. A modification has been mentioned, consisting of a crochet-hook passed through the goods, bringing back with it a loop of thread from below, and enchaining it with the previous loop. This is all the small-beer of invention; the imitation of hands to use the familiar needle or the crochet-hook. There may be sedulous application and a certain merit in it, but there is no genius. The man of mark will find a new departure. He must devise new modes of procedure adapted to the needs of the new steel man, who is automatic but unskilful, and one of whose principal requirements is continuity of motion. If one must stop and thread his needle, he might as well return from the click and hum of the metal to the clatter of tongues which need no oiling.

The new elements were not invented all at once. One of the most important was overlooked for fifty years after it had been patented. Another was invented, made, and exhibited, and then slept a profound sleep of twelve years. Another was invented and patented, but was in a useless shape, and lay dormant until really valuable inventions were made, when it arose and claimed them as mere adaptations.

There is no important machine for sewing fabrics, now manufactured, that does not use all of the three elements mentioned, — the continuous thread, the eye-pointed needle, and the continuous feed, — but the former two of these had been in existence for sixty and twenty years respectively before they were united with the latter one, which, coming in the fruition of time, was more quickly recognized as a necessity.

Precedence in time is one of the governing elements in apportioning merit in invention. Some things may be perfectly invented, before assuming any concrete form in wood or metal. A man may be his own draftsman, or may call in his assistant to make the working drawings for a given kind of compound engine or a balanced valve. The workmen are the mere agents, and the engine or apparatus stands as the work of the designer. The ideas of a practiced engineer are concrete in the mind, as the attributes and accessories are all present in the conception of the thing; but with essayist and experimentalist the relations are different. With him the figure assumed in the mind is as yet untried, and unascertained conditions are yet to be provided for as they occur. With all allowance for the probable fact that no more than an experimental machine was actually made, yet the sewing-machine described in the English patent of Thomas Saint, No 1,764, and dated July 17, 1790, must still be regarded as a very remarkable link in the historical chain. It was intended for "quilting, stitching, and sewing, making shoes, and other articles by means of tools and machines." It possessed (1) a *horizontal cloth-plate;* (2) an *overhanging arm*, on the end of which was

Fig. 4854.



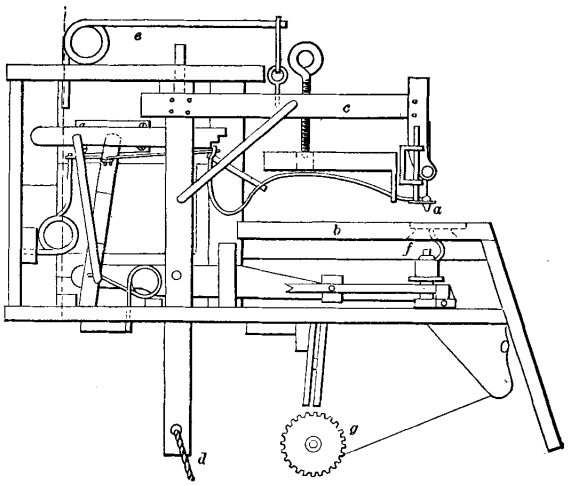
Saint's Sewing-Machine (1790).

(3) a *vertically reciprocating straight needle*, and on the top of which was (4) a *thread spool, giving out its thread continuously;* (5) an *intermittent automatic feed* between stitches; made the *chain-stitch;* and had thread tighteners above and below. This is marvelous. Its parallel is to be found in the sixteenth-century revolvers and repeating fire-arms in the European museums; weapons that were made before the voyage of Columbus.

The machine consisted of a bed-plate *a* with a post *b*, having a projecting arm on which was the thread-spool *c*; a shaft, rotated by a hand-crank and carrying cams by which all the motions of the machine were obtained; the same overhanging arm carried a spindle *d* for tightening the stitch, and a needle and awl-carrier *e*, into which a needle *f* and awl *g* were secured by set-screws, and moved by cams *h i* on the shaft *k*. The needle was notched at its lower end to push the thread through the hole made by the awl, and thus form a loop. The work was supported on a box *l* sliding between guides *m m* and advanced by a screw *n* turned by a toothed wheel *o*, which was engaged by a projection from an arm depending from the shaft *k*, at each revolution of the latter. A looper was operated by the bent point of the spindle *d* in a manner still employed in some of the chain-stitch machines. The screw *r* served to adjust the box *l* on the guide-plate, and provision was made for varying stitches for different kinds of work. The drawing has the peculiar features which should indicate that it was copied from a roughly made machine. The stiffening of certain parts of the frame was an incident of its making, and would not be necessary in a mere drawing. The overhanging arm would stand well enough, in a drawing, without the brace.

In 1830, Barthlemy Thimonnier patented a sewing-machine in France, which was so far successful that, in 1841, eighty of them, made of wood, were in use for sewing army clothing at a shop in Paris. They were destroyed by an ignorant and infuriated mob, just as the Jacquard loom and the Hargreaves spinning-jenny had been years before. Thimonnier escaped with his life, and again set to work. The Revolution of 1848 found him with another set of machines, capable of making 200 stitches per minute, and sewing and embroidering any material, from mus-

Fig. 4855.



Thimonnier's Sewing-Machine (1830).

lin to leather inclusive. Again the mob defeated his project and periled his person. He was in very straitened private circumstances, and the repeated destruction of the machines, built with money solicited from his friends, wearied at last even the admirers of his genius and energy.

His machine was, like that of Saint, just described, in the form which subsequent experience has justified; that is, it had a vertical needle descending from the end of an overhanging arm *c* and piercing the goods, which was fed beneath upon a flat table *b*. The feed was by hand. Contrary to the machine of Saint, whose motions were derived from a crank, the needle in the Thimonnier machine was depressed by a treadle and cord *d*, and returned by a spring *e*. The Saint machine had a *forked* needle to push an *upper thread* through a hole previously made in the goods, when it was caught by a loop-check and detained, so that the again descending thread was enchained in the former loop, making a *chain-stitch*, consisting of a *series of loops on the under side*. The Thimonnier machine had a *crochet* or barbed needle which plunged through the goods and caught a *lower thread* from a thread-carrier and looper *f* beneath, and brought up a loop, which it laid upon the upper surface; descending again, it brought up another loop and enchained it with the one last made, making a *chain-stitch*, consisting of a *series of loops on the upper side*. Their points of similarity were those in which they resemble the best modern machines, — the flat cloth-plate, vertical post, and overhang-arm, the vertically reciprocated needle, and the continuous thread *g*. A nipple *a* sleeved upon the stem of the needle rested upon the goods during the descent of the needle, and was lifted when the needle was clear of the goods; the latter was then moved a distance equal to the length of a stitch, the needle and presser-foot (as the nipple *a* may be called) descended again, in its ascent carried another loop of thread through the loop previously made, and so on. Thimonnier died in poverty in 1857.

The Thimonnier machine, patented in France, August 5, 1848, and in the United States September 3, 1850. No. 7,622, had some advantages over his French machine of 1830, but retained its main features. The needle-bar was still worked by treadle and spring. See for his French patents Brevets D'Invention, Tom. V. page 168, and Plate XXVIII.; Tom. XIV. page 71, and Plate XIV.

Between 1832 and 1834, Walter Hunt, of New York, made and sold sewing-machines which embraced a *curved eye-pointed needle* at the end of a vibrating arm, and a shuttle, making what is known as the *lock-stitch*. He neglected to pursue the business, which consequently attracted little attention at the time. His extreme versatility prevented success; his inventions absorbed his time, and he seemingly had none left for se-

curing the pecuniary results of his genius. He just missed, and by mere inattention, one of the grandest opportunities of the century. The main features of his machine had been patented, eight years previous to Hunt's application, to another inventor, — Elias Howe. When Hunt applied for a patent in 1854, it was refused him on the ground of abandonment.

The name of Elias Howe is indissolubly associated with the history of the sewing-machine. With inventive abilities inferior to those of Walter Hunt, he had an adaptedness to follow out a single object persistently, and he reaped the field. His patent was dated September 10, 1846, and was extended for seven years in 1860. In his petition to Congress, July 15, 1867, for a second extension of his patent, he acknowledged having received about $1,185,000, but considered that his invention was worth $150,000,000. If he had received the latter sum he would have been still more certain that it was worth $1,000,000,000, and so on.

The sewing-machine is no exception to the ordinary rule that an invention is a growth rather than an inspiration. The original machine, as we have seen, had a simple needle, and made a *running* stitch; next we see a machine which made a succession of loops, forming a *crochet* stitch; here the machine paused awhile. A score of years was passed in devising modes of feeding, continuous or intermitting, by various arrangements of parts. The greatest advance up to that time was the *lock*-stitch, invented by Hunt, and made by passing a shuttle containing a lower thread through the loop of an upper thread carried down through the cloth by an eye-pointed needle. This was also the feature of the Howe machine.

Howe was very properly declared the first inventor, technically, as the *laches* of Hunt had placed him outside of the protection of the law. This was framed (as determined by the decisions of the courts, which have so construed the law as to make distinct the point, which was, at best, indefinite) for the reward of inventors who make public their improvements. The legal point was with Howe, and bitterly Hunt rued his carelessness. He declared he would invent imitation stitched work more accurate than the original: the result was the paper collar with imitation stitching.

The original Howe machine had a curved eye-pointed needle attached to the end of a vibrating lever and carrying the upper thread. (See Fig. 4856.) The shuttle, carrying the lower thread between the needle and the upper thread, was driven in its race by means of two strikers carried on the ends of vibrating arms worked by two cams. The cloth was suspended by pins from the edge of a thin steel rib called a baster-plate, which had holes engaged by the teeth of a small intermittingly moving pinion. This was the feed, and clumsy enough. The invention soon fell into the hands of mechanicians of great ability, who timed the movements, proportioned and adjusted the parts, and added new features, without which the invention must have languished and failed of any remarkable success.

Elias Howe seems to have set himself to the problem in 1843; in 1844 he devised the curved needle and interlocking shuttle; in May, 1845, he had a machine at work. In 1846 it was patented. Thereafter the struggle in the United States and in England was to obtain funds for manufacture, and many weary, hungry days were passed by the indomitable inventor. He sold various shares of his invention from time to time, but when the tide turned in his favor he repurchased the rights, and soon made a compact property of it. It was not all smooth sailing even then, but the parties disposed to dispute his broad claims were induced to come under agreements of tribute or of neutrality. It was very well done. The original claims which concerned the eye-pointed needle and shuttle gave coherence to the confederate parties. The bond of union has since been the mode of feeding. A. B. Wilson's four-motion feed is so superior to all others, that but few first-class machines are made without it. This patent expired in 1873, and the dominant claim now is the Bachelder patent, which had no particular value in itself, but was, perhaps, really the first continuous feed, and so gained an utterly unexpected prominence and a lease of life for three terms, in all twenty-eight years, ending in 1877, although the device was but the substitution of a continuous spiked band for the plate of limited length. It is not true that Bachelder was the first to *horizontalize* the machine; that was done nearly sixty years previous. It had an endless band or cylinder studded with a row of points which carried the fabric to and past the needle. It was a decided improvement on Howe's baster-plate, which had to be run back for each length of sewing.

Without impugning the genius of the earlier inventors, it may fairly be said that the present proximate perfection of the machine is due to the men who took up the work where Howe left it, — to Singer, A. B. Wilson, and others.

Furthermore, the machine is much indebted to the skill and enterprise of the mechanics and tradesmen in whose hands it has grown to the wonderful proportions it now exhibits.

The Wilson shuttle, reciprocating in a curved race, was patented in 1850.

Lerow (1850), reciprocating eye-pointed needle and a shuttle traveling in an endless shuttle-race.

Robinson (1851) had two curved needles with notches or eyes and two thread-guides. Produced either the ordinary or the *back stitch*.

Singer's machine (1851) had a vertical needle-movement and a roughened feed-wheel extending through a slot in the table. A spring presser-foot alongside the needle held down the work. Motion was communicated to the needle-arm and the shuttle by gearing.

Grover and Baker (1851) used two needles and a shuttle carrying a filling-thread to form a double-loop stitch. The upper needle passed through the fabric and made a loop through which the lower needle passed horizontally, forming a second loop. See 13, Plate LVII.

The A. B. Wilson four-motion feed (1852) and the Wilson rotating hook (1851), which catches the loop of the upper thread and drops a bobbin through it, are features of the Wheeler and Wilson, — one of the most admired machines. As has been said, no substitute has been found for the four-motion feed. The shuttle has, however, more friends than the rotating hook.

Johnson's machine of 1853 made a double-loop stitch by two needles carrying continuous threads, and passing, by a horizontal thrust, through the cloth, which was suspended by clamps between them.

In Singer's chain-stitch machine (1854), the loop of the needle-thread was carried over a retaining pin by a hook and held until the next loop was formed, which was received by the looper and passed through the former one. Thus, a loop was passed through a loop, instead of, as in the tambour-stitch, passing the needle-thread and needle through the former loop. The feed in this machine was by the presser-foot, which had a rough under surface.

In Avery's machine (1854) (10, Plate LV.), the stitch is formed by interlooping threads from two needles, the lower one working at an angle of 45° with the upper one.

Noyes (1872), a lock-stitch with two commercial spools, the loop being made around the lower spool by a revolving hook.

Plates LV., LVI. show the principles of action of the sewing-machines. The numbers correspond with those on the Plates.

Description of Plates.

Single-Thread Chain-Stitch Machine.

1. The bearded needle pierces the cloth and draws up the loop from below; the cloth is then fed, the needle retaining the loop and descending through the cloth for a new loop, which enchains the thread.

2. The loop formed by the eye-pointed needle is seized and distended by a reciprocating loop-taker until penetrated by the needle at its second descent.

3. Similar to the above, excepting that the loop-taker vibrates.

4. The loop-taker *a* rotates. The Willcox and Gibbs pattern.

5. The looper is operated by the pressure of the needle, retreating before it and seizing the loop as the needle returns.

6. Needle-loop caught by a stationary hook that detains the loop as the cloth is fed, the next descent of the needle passing through the loop.

7. Latch-needle for enchaining or knitting the loop. See Stitch 6, Plate LVII.

Two Threads.

8. The loop of the needle-thread is caught by a thread carried by a reciprocating looper *a*. See Stitch 13, Plate LVII.

9. Similar to the above, but having a vibrating looper *a*.

10. Two needles penetrating fabric from opposite sides, and making Stitch 16, Plate LVII.

Lock-Stitch by Shuttles.

11. The loop of the needle-thread interlocked by the thread of the reciprocating shuttle *a*. Singer pattern, Stitch 19, Plate LVII. Florence, Howe, Wilson, Weed.

12. Similar as to the needle-thread; shuttle vibrates in an arc of a circle. "Domestic" pattern.

13. The loop of the needle-thread is taken by a rotating shuttle *a*.

14. The shuttle *a* is stationary, and the loop of the needle-thread is passed over it by a vibrating arm *b*.

Lock-Stitch by Revolving Hooks.

15. The rotating looper *a* enters the loop of the needle-thread and carries it around a loose disk-bobbin *b* on the face of the hook. Wheeler and Wilson pattern.

Leather-sewing Machine.

16. A waxed-thread machine. A hook-needle *a* below the cloth takes thread from a thread-carrier *b* above the cloth, draws down the thread, and enchains it below. An awl *c* perforates the leather for the passage of the needle; a cast-off *d* discharges the loop.

Sole-sewing Machines.

17. Machine for making "turned" shoes. The shoe and last are carried on a jack *a*. A chain-stitch is formed by a hooked needle, which passes through the sole and upper, and takes its thread from a thread-carrier. The awl *b* perforates the material for the passage of the needle. Dunham's patent, September 9, 1862.

18. The shoe is supported on a horn provided with a thread-carrier. A hooked needle penetrates the sole and upper, and takes the thread from the thread-carrier and forms the chain portion of the stitch in a channel cut in the outer face of the

(*Continued on page* 2116.)

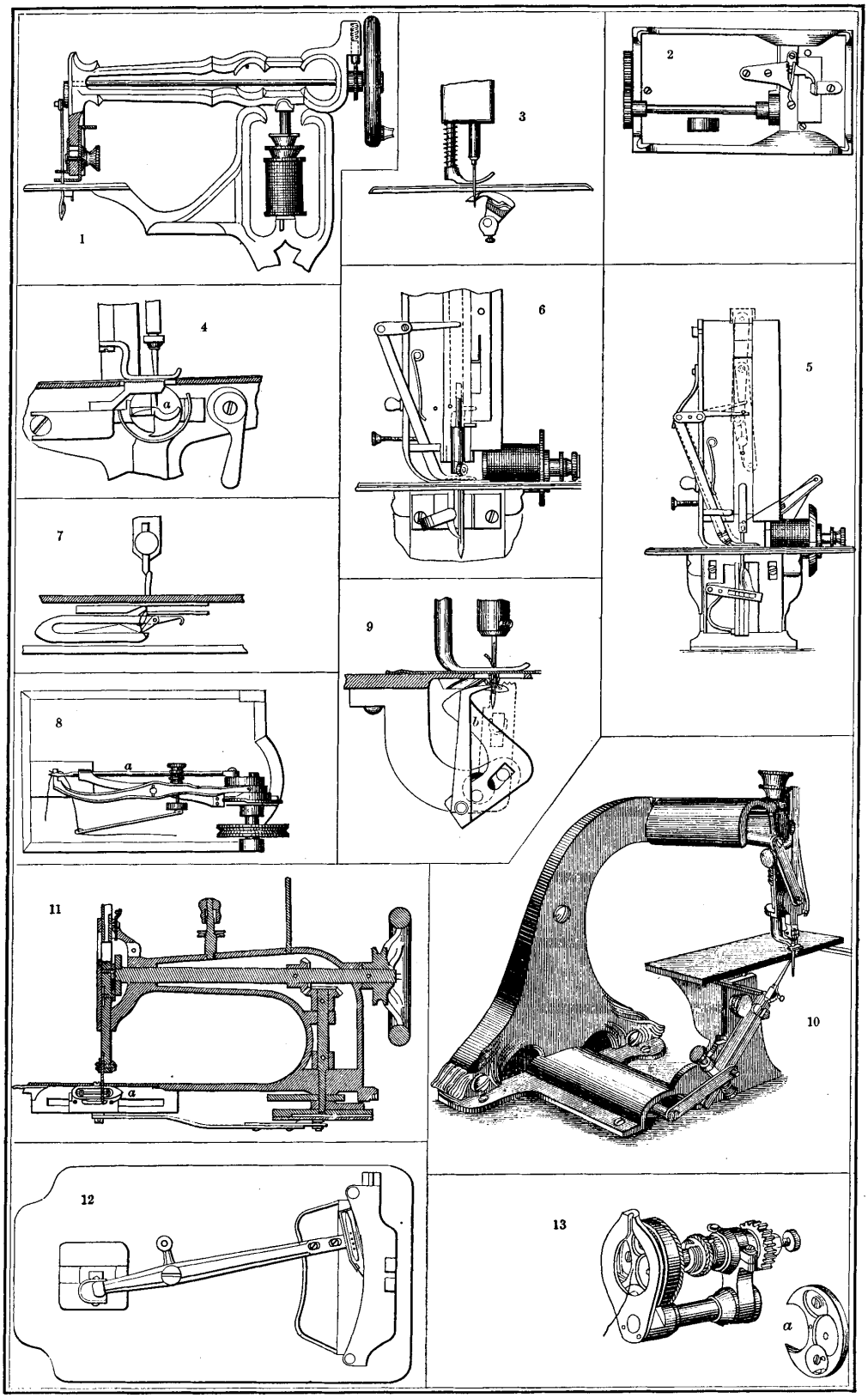


PLATE LV PRINCIPLES OF ACTION OF SEWING-MACHINES *See pages* 2102 - 2116.

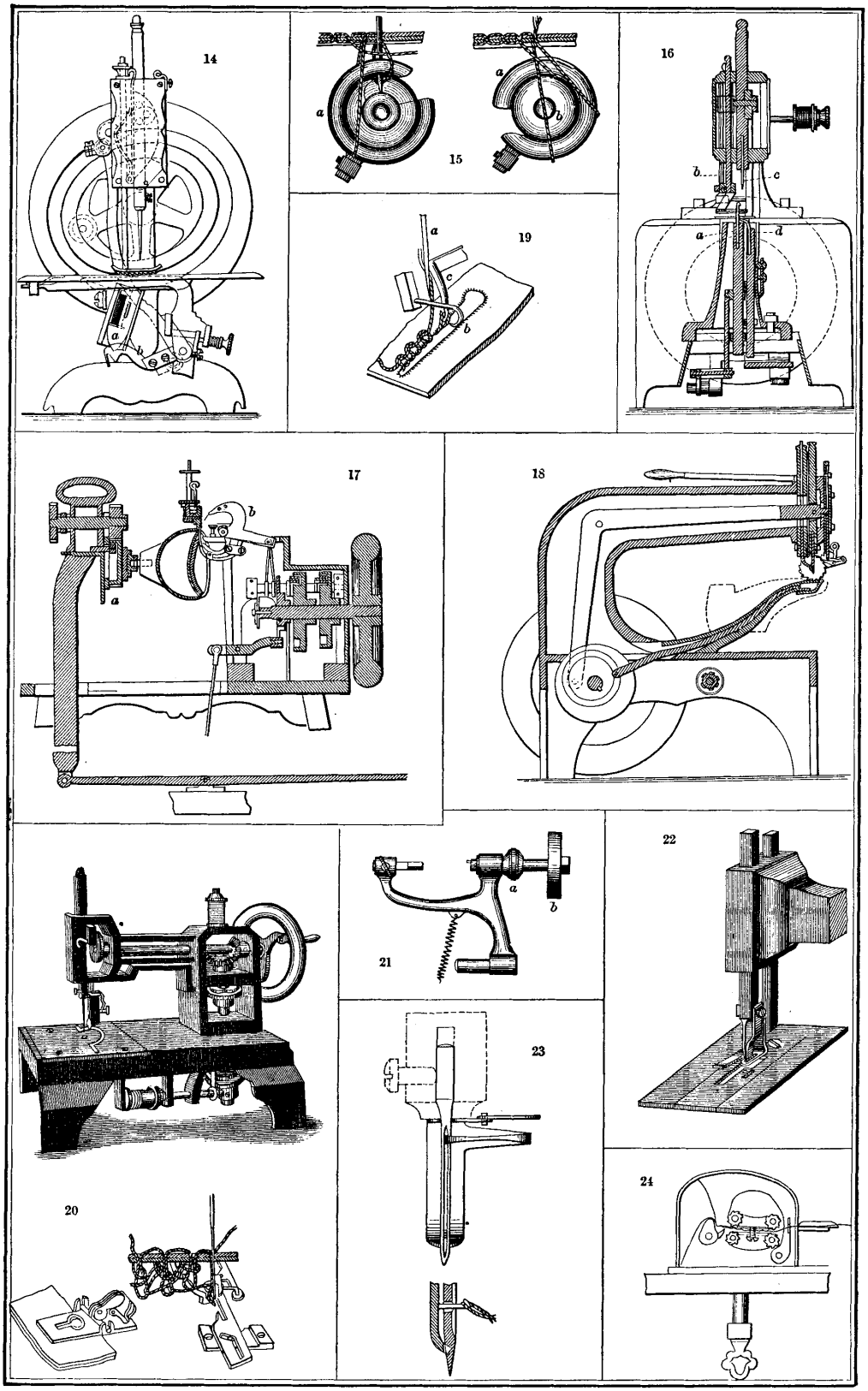


PLATE LVI. PRINCIPLES OF ACTION OF SEWING-MACHINES. *See pages* 2102 - 2116.

CLASSIFICATION OF SEWING-MACHINES

Patented in the United States.

The figures in parentheses refer to corresponding figures on Plates LV., LVI.

Class A. Making Chain-Stitch.

1. *One thread*.....
   - *a.* Bearded needle (1).
   - *b.* Reciprocating loop-taker (2).
   - *c.* Vibrating loop-taker (3).
   - *d.* Rotating loop-taker (4).
   - *e.* Loop-taker operated by needle (5).
   - *f.* Stationary hooks or guides for holding loop in path of needle (6).
   - *g.* Latch-needle for enchaining loop (7). See also C, 1, 3, and 4; also E, 1; also F, 14 and 20.

2. *Two threads*....
   - *a.* Reciprocating under-thread carrier (8).
   - *b.* Vibrating under-thread carrier (9).
   - *c.* Rotary under-thread carrier.
   - *d.* Two needles, each penetrating fabric (10). See also E, 2.
   - *e.* Two or more kinds of stitches.

Class B. Making Lock-Stitch.

1. *By shuttle*.....
   - *a.* Shuttles reciprocate (11).
   - *b.* Shuttles vibrate (12).
   - *c.* Shuttles rotate (13).
   - *d.* Stationary shuttles (14).
   - *e.* Shuttle carries commercial spool.

2. *By revolving hooks*.....
   - *a.* Wheeler & Wilson pattern (15).
   - *b.* Commercial spool for under-thread.
   - *c.* Hooks of various other patterns, making chain and lock stitch.

Class C. Sewing Leather.

1. *Machines* (16).
2. *Waxing devices.*
3. *Hose sewing.*
4. *Sole sewing*....
   - *a.* Curved needle (17).
   - *b.* Straight needle (18).

Class D. Feeding.

1. *Needle.*
2. *Wheel or band.*
3. *Reciprocating surface above cloth.*
4. *Reciprocating surface below cloth.*
5. *By movement of table.*
6. *By pressure against thread.*

Class E. Button-Hole.

1. *One thread* (19).
2. *Two threads* (20).
3. *Attachments for ordinary sewing-machines.*

Class F. Miscellaneous Parts.

1. *Bobbin-winders* (21).
2. *Cloth and slide plates.*
3. *Cutting and trimming fabrics on machine* (22).
4. *Lifting presser-foot.*
5. *Mounting machines on table.*
6. *Needles.*
7. *Needle-sharpener* (21).
8. *Needle setters and threaders* (23).
9. *Oil-can holder.*
10. *Oiling thread.*
11. *Presser-foot.*
12. *Quilting.*
13. *Regulating speed.*
14. *Running-stitch* (24).
15. *Sewing hats.*
16. *Sewing on buttons.*
17. *Sewing straw braid.*
18. *Sewing knitted goods.*
19. *Sewing umbrellas.*
20. *Short thread.*
21. *Shuttles.*
22. *Spools and bobbins.*
23. *Stitches.* See Plate LVII.
24. *Take-up.*
25. *Tension devices.*
26. *Thread-cutters.*
27. *Miscellaneous.*

Class G. Attachments.

1. *Binders.*
2. *Braiders.*
3. *Corders.*
4. *Embroidering.*
5. *Guides.*
6. *Hemmers.*
7. *Rufflers and gatherers.*
   - *a.* Tension-plates.
   - *b.* Reciprocat'g blades
8. *Tuck creasers and markers.*
9. *Tuckers and plaiters.*
10. *Welt-guides.*
11. *Variety of work.*

Class H. Tables and Stands.

1. *Tables.*
2. *Cases and cabinets.*
3. *Covers.*
4. *Trays.*
5. *Lamp-brackets.*
6. *Work-holders.*
7. *Aprons, guards,* etc.
8. *Chair.*
9. *Casters.*

Class I. Motors.

CLASSIFIED LIST OF SEWING-MACHINES AND ATTACHMENTS

Patented in the United States from Feb. 21, 1842, to March 9, 1875.

(* Reissue.)

Class A.—Making Chain-Stitch.

1. *One Thread.* (*a.*) *Bearded Needle.*

No.	Name.	Date.
7,622	Thimonnier	Sept. 3, 1850.
15,695	Gardner	Sept. 9, 1856.
18,904	Hubbard	Dec. 22, 1857.
21,234	Jackson	Aug. 17, 1858.
22,171	Hook	Nov. 30, 1858.
23,285	Boynton	Mar. 15, 1859.
24,027	Hook	May 17, 1859.
24,061	Spencer	May 17, 1859.
24,973	Jenks	Aug. 2, 1859.
25,013	Harrison	Aug. 9, 1859.
25,262	Harrison	Aug. 26, 1859.
30,854	Handie	Dec. 4, 1860.
*1,592	Hook	Dec. 15, 1863.
67,535	Hancock	Aug. 6, 1867.
79,579	Lamson	July 7, 1868.
79,901	Einhorn	July 14, 1868.
80,789	Weaver	Aug. 4, 1868.
80,861	Fox *et al.*	Aug. 11, 1868.
83,909	Bonnaz	Nov. 10, 1868.
83,910	Bonnaz	Nov. 10, 1868.
95,186	Berger	Sept. 28, 1869.
106,943	Lake	Aug. 30, 1870.
148,182	Cornely	Mar. 3, 1874.
159,673	Hill	Feb. 9, 1875.

1. (*b.*) *Reciprocating Loop-Taker.*

No.	Name.	Date.
6,437	Conant	May 8, 1849.
7,369	Reynolds	May 14, 1850.
*268	Morey *et al.*	June 27, 1854.
16,136	Watson	Nov. 25, 1856.
16,387	Johnson	Jan. 13, 1857.
16,566	Gray	Feb. 3, 1857.
17,508	Harris	June 9, 1857.
17,571	Harris	June 16, 1857.
17,717	Sage	June 30, 1857.
17,744	Lathbury	July 7, 1857.
18,971	Behn	Aug. 25, 1857.
18,823	Moore	Dec. 8, 1857.
19,015	Clark	Jan. 5, 1858.
19,072	Clark	Jan. 12, 1858.
19,128	Clark	Jan. 19, 1858.
19,135	Rixford *et al.*	Jan. 19, 1858.
19,285	Angell	Feb. 9, 1858.
19,409	Clark	Feb. 23, 1858.
19,660	Hendrick	Mar. 16, 1858.
19,532	Gray	Mar. 2, 1858.
19,665	Gray	Mar. 16, 1858.
20,413	Dimock	June 1, 1858.
20,742	Thomson	June 29, 1858.
21,015	Moore	July 27, 1858.

1. (*b.*) *Reciprocating Loop-Taker* (continued).

No.	Name.	Date.
21,230	Buell *et al.*	Aug. 17, 1858.
21,751	Gibbs	Oct. 12, 1858.
21,929	Sangster	Oct. 26, 1858.
22,226	Bishop	Dec. 7, 1858.
22,275	Boyd	Dec. 14, 1858.
24,003	Boyd	May 17, 1859.
25,084	Barnes	Aug. 16, 1859.
25,381	Buell	Sept. 13, 1859.
*829	Reynolds	Sept. 27, 1859.
28,097	McCurdy	May 1, 1860.
56,902	Cately	Aug. 7, 1866.

1. (*c.*) *Vibrating Loop-Taker.*

7,650	Batchelder	Sept. 24, 1850.
12,573	Stedman	Mar. 20, 1855.
12,708	Stedman	May 1, 1855.
16,554	Pratt	Feb. 3, 1857.
16,745	Pratt	Mar. 3, 1857.
17,930	Herron	Aug. 4, 1857.
18,000	Watson	*Aug. 11, 1857.

A. 1. (c.) *Vibrating Loop-Taker* (continued).

No.	Name.	Date.
18,371	Watson	Oct. 6, 1857.
18,630	Harrington	Nov. 17, 1857.
18,834	Watson	Dec. 8, 1857.
19,155	Sangster	Jan. 19, 1858.
19,612	Raymond	Mar. 9, 1858.
19,634	Coates	Mar. 23, 1858.
19,793	Reynolds	Mar. 30, 1858.
19,876	Savage	Apr. 6, 1858.
19,903	Atwood *et al.*	Apr. 13, 1858.
19,979	Bosworth	Apr. 20, 1858.
20,481	Clark	June 8, 1858.
20,753	West *et al.*	June 29, 1858.
20,763	Miller	June 29, 1858.
20,900	Carpenter	July 27, 1858.
21,04-	Hook	July 27, 1858.
21,256	Fitz *et al.*	Aug. 24, 1858.
21,322	Clark	Aug. 31, 1858.
21,436	Clinton	Sept. 7, 1858.
21,672	Harris	Oct. 5, 1858.
21,713	White	Oct. 5, 1858.
21,722	Hendrick	Oct. 5, 1858.
22,148	Perry	Nov. 23, 1858.
22,719	Fosket *et al.*	Jan. 25, 1859.
24,098	Carhart	May 24, 1859.
24,375	McCurdy	June 14, 1859.
26,201	Pearson	Nov. 22, 1859.
32,415	Cooper	May 28, 1861.
32,456	Stoakes	May 28, 1861.
32,732	Norton	July 9, 1861.
32,785	Raymond	July 9, 1861.
32,925	Raymond	July 30, 1861.
33,035	Hodgkins	Aug. 20, 1861.
34,932	Williams	Apr. 8, 1862.
38,450	Palmer	May 5, 1863.
45,236	Folsom	Nov. 29, 1864.
46,054	Bartlett	Jan. 31, 1865.
*2,210	Bartlett	Mar. 27, 1866.
54,816	Goodspeed	May 15, 1866.
56,970	Piper	Aug. 7, 1866.
60,662	Bartram	Jan. 1, 1867.
61,176	Driggs	Jan. 15, 1867.
*2,745	Hodgkins	Aug. 20, 1867.
*2,746	Hodgkins	Aug. 20, 1867.
68,196	Hills	Aug. 27, 1867.
69,666	Hodgkins	Oct. 8, 1867.
76,335	Bartlett	Apr. 7, 1868.
80,889	Willmarth	Aug. 11, 1868.
81,821	Rowley	Sept. 1, 1868.
83,432	Hancock	Oct. 27, 1868.
83,750	Willmarth *et al.*	Nov. 3, 1868.
84,95	Myers	Dec. 15, 1868.
86,057	Canfield	Jan. 19, 1869.
86,695	Russell	Feb. 9, 1869.
93,354	Foot	May 25, 1869.
96,160	Smith	Oct. 26, 1869.
99,431	Rudolph	Feb. 1, 1870.
99,704	Porter	Feb. 8, 1870.
103,050	Keable	May 17, 1870.
109,705	Young	Nov. 29, 1870.
117,101	Necker	July 18, 1871.
124,803	Goodes	Mar. 19, 1872.
125,301	Johnson	Apr. 2, 1872.
126,921	Beckwith	May 21, 1872.
133,351	Beckwith	Nov. 26, 1872.
137,618	O'Neil	Apr. 8, 1873.
138,996	Davis	May 20, 1873.
146,721	Taylor	Jan. 20, 1874.

1. (d.) *Rotating Loop-Taker.*

17,427	Gibbs	June 2, 1857.
18,915	Lazelle	Dec. 22, 1857.
20,686	Johnson	June 22, 1858.
*573	Gibbs	July 13, 1858.
21,089	Smith	Aug. 3, 1858.
21,100	Wheeler *et al.*	Aug. 3, 1858.
21,129	Gibbs	Aug. 10, 1858.
22,007	Avery	Nov. 9, 1858.
28,851	Gibbs	June 26, 1860.
29,268	Hicks	July 24, 1860.
33,430	Marble	Oct. 8, 1861.
38,931	McCurdy	June 16, 1863.
46,303	McCurdy	Feb. 7, 1865.
*2,655	Gibbs	June 18, 1867.
74,328	Fales	Feb. 11, 1868.
*3,247	Fales	Dec 29, 1868.
108,827	Rayer *et al.*	Nov. 1, 1870.
152,618	Dinsmore *et al.*	June 30, 1874.
154,827	Beck	Sept. 8, 1874.
160,512	Dinsmore	Mar. 9, 1875.

1. (e.) *Loop-Taker operated by Needle.*

12,923	Robertson	May 22, 1855.
18,285	Jenks *et al.*	Sept. 29, 1857.
18,350	Nettleton *et al.*	Oct. 6, 1857.
19,535	Sangster	Mar. 2, 1858.
19,723	Sangster	Mar. 23, 1858.
20,684	Snow	June 22, 1858.
20,688	Barnes	June 29, 1858.
21,295	Jackson	Aug. 24, 1858.
*599	Robertson	Sept. 14, 1858.
21,833	Hubbard	Oct. 19, 1858.

1. (f.) *Stationary Hooks or Guides for holding Loop in Path of Needle.*

12,064	Robertson	June 12, 1855.
14,324	Robertson	Feb. 26, 1856.
15,424	Gibbs	Jan. 20, 1857.
16,693	Robertson	Feb. 10, 1857.
17,186	Atwater	May 5, 1857.
*560	Robertson	May 18, 1858.
21,402	Atwater	Sept. 7, 1858.
21,537	Hubbard	Sept. 14, 1858.
40,622	Heyer	Nov. 17, 1863.

1. (g.) *Latch-Needle for enchaining Loop.*

10,974	Singer	May 30, 1854.
109,632	Lamb	Nov. 29, 1870.
127,145	Bouscay	May 28, 1872.

A. 2. *Two or more Threads.* (a.) *Reciprocating Under-Thread Carrier.*

6,439	Batchelder	May 8, 1849.
7,931	Grover *et al.*	Feb. 11, 1851.
10,577	Johnson	Mar. 7, 1854.
10,622	Hodgkins	Mar. 7, 1854.
10,842	Singer	May 2, 1854.
11,284	Leighton	July 11, 1854.
12,074	Stedman	Dec. 12, 1854.
12,146	Ward	Jan. 2, 1855.
*355	Johnson	Feb. 26, 1856.
16,237	Jennings	Dec. 16, 1856.
17,049	Nettleton *et al.*	Apr. 14, 1857.
18,793	Fetter	Dec. 1, 1857
19,732	Clark	Mar. 23, 1858.
20,471	Shaw *et al.*	June 1, 1858.
*568	Grover *et al.*	June 15, 1858.
*617	Batchelder	Nov. 2, 1858.
22,220	Raymond	Nov. 30, 1858.
*706	Stedman	Apr. 26, 1859.
24,022	Gray *et al.*	May 17, 1859.
24,629	Grout	July 5, 1859.
25,004	Farr	Aug. 9, 1859.
25,471	Silvey	Sept. 13, 1859.
25,735	Barrett	Oct. 11, 1859.
25,946	Budlong	Nov. 1, 1859.
26,336	Clark	Dec. 6, 1859.
26,346	Dickenson	Dec. 6, 1859.
26,633	Rowe	Dec. 27, 1859.
27,079	Smith	Feb. 7, 1860.
27,082	Thomson	Feb. 7, 1860.
27,260	Rowe	Feb. 21, 1860.
27,761	Newlove	Apr. 3, 1860.
28,176	Holly	May 3, 1860.
28,538	Ruddick	May 29, 1860.
28,785	Smith	June 19, 1860.
30,641	Payne	Nov. 13, 1860.
31,156	Earle	Jan. 22, 1861.
31,208	Bruen	Jan. 22, 1861.
31,334	Smith	Feb. 5, 1861.
31,429	Rice	Feb. 12, 1861.
31,601	Howlett	Mar. 5, 1861.
32,323	Wilder	May 14, 1861.
*1,244	Grover *et al.*	Dec. 3, 1861.
37,585	Madden	Feb. 3, 1863.
*1,543	Batchelder	Sept. 22, 1863.
40,296	Wagner	Oct. 13, 1863.
*2,125	Batchelder	Dec. 12, 1865.
55,029	Hayes	May 22, 1866.
61,102	Rehfuss	Jan. 8, 1867.

2. (a.) *Reciprocating Under-Thread Carrier* (continued).

No.	Name.	Date.
70,152	Baker	Oct. 29, 1867.
82,366	Wagner	Sept. 22, 1868.
88,499	McLean	Mar. 30, 1869.
95,581	Gray	Oct. 5, 1869.
102,586	Peabody	May 3, 1870.
105,961	McLean	Aug. 2, 1870.
122,131	Fanning *et al.*	Dec. 26, 1871.
129,013	Fanning	July 16, 1872.
145,287	Fanning *et al.*	Dec. 9, 1873.

2. (b.) *Vibrating Under-Thread Carrier.*

9,053	Grover *et al.*	June 22, 1852.
12,066	Lyon	Dec. 12, 1854.
14,556	Grover	May 27, 1856.
19,059	Fetter	Jan. 5, 1858.
*572	Grover *et al.*	July 6, 1858.
21,224	Uhlinger	Aug. 17, 1858.
21,670	Grover	Oct. 5, 1858.
21,752	Grover	Oct. 12, 1858.
22,143	Harkness	Nov. 23, 1858.
*646	Lyon	Jan. 4, 1859.
24,737	Hensel	July 12, 1859.
25,087	Booth	Aug. 10, 1859.
25,730	Grover *et al.*	Oct. 11, 1859.
25,876	Barnes	Oct. 25, 1859.
25,913	Robertson	Oct. 25, 1859.
25,963	Fosket *et al.*	Nov. 1, 1859.
28,659	Booth	July 3, 1860.
30,031	Washburn	Sept. 11, 1860.
31,829	Ross	Mar. 26, 1861.
31,897	Mallary	Apr. 2, 1861.
32,007	Shaw	Apr. 9, 1861.
32,456	Fuller	June 4, 1861.
33,414	Bollman	Oct. 1, 1861.
33,778	Grover	Nov. 26, 1861.
36,465	Crover	Sept. 9, 1862.
37,202	Shaw	Dec. 16, 1862.
37,502	Grover	Jan. 27, 1863.
39,207	Baldwin	July 14, 1863.
39,892	Day	Sept. 15, 1863.
43,146	Wickersham	June 14, 1864.
50,469	Hart	Oct. 17, 1865.
56,641	Tucker	July 24, 1866.
63,415	Cobb	Aug. 10, 1869.
100,139	Grover	Feb. 22, 1870.
114,573	Little	May 9, 1871.
152,813	Speirs	July 7, 1874.

2. (c.) *Rotary Under-Thread Carrier.*

30,478	Johnson	Oct. 23, 1860.

2. (d.) *Two Needles, each penetrating Fabric.*

9,338	Avery	Oct. 19, 1852.
9,365	Hodgkins	Nov. 2, 1852.
9,592	Johnson	Feb. 22, 1853.
9,665	Johnson	Apr. 12, 1853.
10,354	Blodgett	Dec. 20, 1853.
10,880	Avery	May 9, 1854.
12,233	Conant	Jan. 16, 1855.
13,616	Harrison	Oct. 2, 1855.
18,470	Robertson	Oct. 20, 1857.
*613	Blodgett	Oct. 12, 1858.
25,968	Hudson	Nov. 1, 1859.
57,500	Halsey *et al.*	Aug. 28, 1866.
*3,214	Conant	Nov. 24, 1868.
93,615	Hancock	Aug. 10, 1869.

2. (e.) *Two or more Kinds of Stitches.*

26,059	Scofield	Nov. 8, 1859.
77,889	Kerr	May 12, 1868.

CLASS B. — MAKING LOCK-STITCH.

1. *By Shuttle.* (*a.*) *Shuttles reciprocate.*

No.	Name.	Date.
4,750	Howe	Sept. 10, 1846.
5,942	Bradshaw	Nov. 28, 1848.
*188	Blodgett *et al.*	Jan. 14, 1851.
8,282	Atkins *et al.*	Aug. 5, 1851.
8,294	Singer	Aug. 12, 1851.
9,556	Palmer	Jan. 25, 1853.
9,641	Thompson	Mar. 29, 1853.
10,757	Parker	Apr. 11, 1854.
10,763	Harrison	Apr. 11, 1854.
10,875	Coon	May 9, 1854.
10,879	Hodgkins	May 9, 1854.
10,975	Singer	May 30, 1854.
10,994	Stevens *et al.*	May 30, 1854.
11,161	Hunt	June 27, 1854.
*278	Singer	Oct. 3, 1854.
11,884	Ambler	Nov. 7, 1854.
12,011	Weed	Nov. 28, 1854.
12,336	Wilder	Jan. 30, 1855.
12,389	Horn	Feb. 13, 1855.
12,902	Durgin	May 22, 1855.
12,969	Singer	May 29, 1855.
13,201	Stedman	July 3, 1855.
13,630	Cowperthwaite	Oct. 9, 1855.
13,687	Singer	Oct. 9, 1855.
13,763	Singer	Nov. 6, 1855.
13,966	Singer	Dec. 18, 1855.
14,433	Watson	Mar. 11, 1856.
16,030	Singer	Nov. 4, 1856.
*452	Bradshaw	Apr. 14, 1857.
*453	Bradshaw	Apr. 14, 1857.
17,679	Howe *et al.*	June 30, 1857.
18,880	Behn	Dec. 15, 1857.
19,439	Newton	Feb. 23, 1858.
19,823	Bartholf	Apr. 6, 1858.
*567	Durgin	June 15, 1858.
20,761	Dugdale	June 29, 1858.
21,258	Howe	Aug. 24, 1858.
*600	Harrison	Sept. 14, 1858.
22,160	Burnet *et al.*	Nov. 30, 1858.
22,517	Singer	Jan. 4, 1859.
23,577	Hicks	Apr. 12, 1859.
23,784	Shaw *et al.*	Apr. 26, 1859.
24,847	Planer	July 19, 1859.
24,870	Hall	July 26, 1859.
25,002	Emswiler	Aug. 9, 1859.
25,385	Crosby	Oct. 25, 1859.
25,918	Sawyer *et al.*	Oct. 25, 1859.
26,057	Rose	Nov. 8, 1859.
26,234	McCurdy	Nov. 22, 1859.
26,462	Miller	Dec. 13, 1859.
26,536	Thorne	Dec. 20, 1859.
27,132	Juengst	Feb. 14, 1860.
27,546	Jones	Mar. 20, 1860.
27,574	Langdon	Mar. 20, 1860.
28,287	Little	May 15, 1860.
28,371	Hoffman	May 22, 1860.
28,804	Yeutzer	June 19, 1860.
28,993	McCurdy	July 3, 1860.
28,996	Mueller	July 3, 1860.
28,999	Penny *et al.*	July 3, 1860.
29,202	Sutton	July 17, 1860.
30,012	Tracy	Sept. 11, 1860.
30,634	Leavitt	Nov. 13, 1860.
30,731	Heyer	Nov. 27, 1860.
31,171	Irwin	Jan. 22, 1861.
31,209	Johnson *et al.*	Jan. 22, 1861.
31,325	Nivelle	Feb. 5, 1861.
31,411	Smith	Feb. 12, 1861.
31,651	Juengst	Mar. 12, 1861.
*1,154	Howe	Mar. 19, 1861.
32,297	Jones *et al.*	May 14, 1861.
32,315	Sherwood	May 14, 1861.
32,385	Smith	May 21, 1861.
34,081	Welch	Jan. 7, 1862.
34,789	Stebbins	Mar. 25, 1862.
34,906	Singer	Apr. 8, 1862.
35,084	Hall	Aug. 5, 1862.
*1,388	Atkins *et al.*	Jan. 20, 1863.
37,913	Howe	Mar. 17, 1863.
37,985	Smith	Mar. 24, 1863.
38,740	Halligan	June 2, 1863.
39,256	Langdon	July 14, 1863.
41,916	Guinness	Mar. 15, 1864.
43,927	Planer	Aug. 23, 1864.
44,067	Atwater	Sept. 6, 1864.
44,312	Melone	Sept. 20, 1864.
45,278	Stackpole	Nov. 29, 1864.
45,972	Cadwell	Jan. 24, 1865.
*1,930	Atkins *et al.*	Apr. 11, 1865.
47,673	Winsley	May 9, 1865.
49,263	Halligan	Aug. 8, 1865.
53,353	Smith	Mar. 20, 1866.
54,743	McCurdy	Apr. 3, 1866.
54,145	Halligan	Apr. 24, 1866.
54,577	Melone	May 8, 1866.
55,182	Warth	May 29, 1866.
55,181	Tyler	Sept. 28, 1866.
60,241	Reed	Dec. 4, 1866.

1. (*a.*) *Shuttles reciprocate* (continued).

No.	Name.	Date.
62,287	Reed	Feb. 19, 1867.
62,999	Bennett	Mar. 19, 1867.
64,830	Barclay	May 21, 1867.
68,009	Stebbens	Aug. 20, 1867.
68,835	Bosworth	Sept. 17, 1867.
71,131	Cadwell	Nov. 19, 1867.
77,665	Slater	May 5, 1868.
78,729	Fairfield	June 9, 1868.
78,817	Parham	June 9, 1868.
78,818	Parham	June 9, 1868.
79,037	Waterbury	June 16, 1868.
80,345	French	July. 28, 1868.
81,191	Meyer	Aug. 18, 1868.
81,328	Barclay	Aug. 25, 1868.
83,406	Porter	Oct. 27, 1868.
85,633	Barnes	Jan. 5, 1869.
86,163	Jones	Jan. 26, 1869.
86,164	Jones	Jan. 26, 1869.
*3,281	Guinness	Feb. 2, 1869
87,559	Gird	Mar. 9, 1869.
88,039	Hawkins	Mar. 23, 1869.
88,603	Billings	Apr. 6, 1869.
88,936	Winter	Apr. 13, 1869.
89,040	Guinness	Apr. 20, 1869.
89,064	Muir	Apr. 20, 1869.
89,439	Lyon	Apr. 27, 1869.
89,987	Griswold	May 11, 1869.
90,552	Jones	May 25, 1869.
93,511	Andrews	Aug. 10, 1869.
93,921	Stoops *et al.*	Aug. 17, 1869.
93,881	Heckendorn	Aug. 17, 1869.
93,962	Butterworth	Aug. 24, 1869.
94,112	Hoffman	Aug. 24, 1869.
94,467	Bradish	Sept. 7, 1869.
95,499	Melone	Oct. 5, 1869.
94,700	Heery	Sept. 14, 1869.
96,064	Hurtu *et al.*	Dec. 21, 1869.
99,138	Bennor	Jan. 25, 1870.
99,743	Smith	Feb. 8, 1870.
99,783	Meyer	Feb. 15, 1870.
102,808	Gowen	May 10, 1870.
103,070	Moltz	May 17, 1870.
*3,994	Meyer	May 24, 1870.
103,444	Garaghty	May 24, 1870.
104,871	Melone	June 28, 1870.
109,443	Parham	Nov. 22, 1870.
109,816	Gird	Dec. 6, 1870.
110,735	Buker	Jan. 3, 1871.
111,129	Macaulay	Jan. 24, 1871.
112,189	Smith	Feb. 28, 1871.
112,678	Bennor	Mar. 14, 1871.
112,747	Stackpole	Mar. 14, 1871.
113,407	Dinsmore	Apr. 4, 1871.
114,424	Dulaney	May 2, 1871.
115,117	Sidenberg	May 23, 1871.
117,380	Buker	July 25, 1871.
117,640	Jones	Aug. 1, 1871.
117,747	Meyer	Aug. 8, 1871.
118,404	Tate	Aug. 22, 1871.
118,450	Grover	Aug. 29, 1871.
118,928	Hahn	Sept. 12, 1871.
121,965	Secor	Dec. 19, 1871.
122,747	Wagner	Jan. 16, 1872.
124,167	Shuttock	Feb. 27, 1872.
124,854	Price *et al.*	Mar. 19, 1872.
125,708	Waterbury	Apr. 16, 1872.
125,807	Gordon *et al.*	Apr. 16, 1872.
126,755	Stebbens	May 14, 1872.
126,911	Stocker	May 21, 1872.
129,818	Haund	July 23, 1872.
130,005	Baker	July 30, 1872.
130,357	Brown	Aug. 13, 1872.
130,775	Wagner	Aug. 20, 1872.
131,061	Hunter	Sept. 3, 1872.
131,062	Hunter	Sept. 3, 1872.
132,124	Wagner	Oct. 6, 1872.
134,101	Rice	Dec. 17, 1872.
134,119	Whitehill	Dec. 17, 1872.
134,154	Mooney	Dec. 24, 1872.
134,463	Coles	Dec. 31, 1872.
*5,305	Hicks	Mar. 4, 1873.
136,823	Eldredge	Mar. 18, 1873.
138,898	Koch *et al.*	May 13, 1873.
139,444	Webster	May 27, 1873.
143,766	Hunter	Oct. 21, 1873.
146,502	Applegate	Jan. 20, 1874.
146,679	Hunter	Jan. 20, 1874.
146,761	Griswold	Jan. 27, 1874.
*5,752	Muir	Feb. 3, 1874.
148,024	Bishop	Mar. 14, 1874.
151,896	King	June 9, 1874.
152,500	Manning	June 30, 1874.
152,708	Hall	July 7, 1874.
153,767	Happe	Aug. 4, 1874.
*6,003	Koch *et al.*	Aug. 11, 1874.
156,171	Morian	Oct. 20, 1874.
159,065	Bartlett *et al.*	Jan. 26, 1875.

1. (*b.*) *Shuttles vibrate.*

No.	Name.	Date.
7,776	Wilson	Nov. 12, 1850.
9,139	Miller	July 20, 1852.
11,934	Harris	Nov. 14, 1854.
11,971	Parham	Nov. 21, 1854.
13,155	Woodruff	July 3, 1855.
13,242	Woodruff	July 10, 1855.
*345	Wilson	Jan. 22, 1856.
15,635	Johnson	Aug. 26, 1856.
*414	Wilson	Dec. 9, 1856.
16,234	Gibbs	Dec. 16, 1856.
16,281	Landfear	Dec. 23, 1856.
16,321	Woodruff	Dec. 23, 1856.
18,068	Wickersham	Aug. 25, 1857.
18,069	Wickersham	Aug. 25, 1857.
20,175	Smith	May 4, 1858.
20,531	Sangster	June 8, 1858.
21,461	Woodruff	Sept. 7, 1858.
22,137	Spencer *et al.*	Nov. 23, 1858.
22,255	Mackenzie	Dec. 7, 1858.
23,157	Cooper	Mar. 8, 1859.
26,130	Singer	Nov. 15, 1859.
26,366	Mitchell	Dec. 6, 1859.
26,586	Harrison	Dec. 27, 1859.
27,208	Davis	Feb. 21, 1860.
28,610	Scofield *et al.*	June 5, 1860.
31,625	Richards	Mar. 5, 1861.
32,239	Comfort	May 7, 1861.
33,415	Bollman	Oct. 1, 1861.
33,540	Grover	Dec. 17, 1861.
37,617	Dulaney	Feb. 10, 1863.
37,624	Hollowell	Feb. 10, 1863.
38,592	Mack	May 19, 1863.
*1,562	Parham	Nov. 3, 1863.
42,284	Grover	Apr. 12, 1864.
42,285	Grover	Apr. 12, 1864.
42,576	Grover	May 3, 1864.
43,285	Brown	June 28, 1864.
44,982	Smith *et al.*	Nov. 8, 1864.
45,059	Mack	Nov. 15, 1864.
45,528	Smith	Dec. 20, 1864.
47,023	Zuckerman	July 25, 1865.
52,847	Harlow	Feb. 27, 1866.
56,865	Schwalbach	July 31, 1866.
58,366	Andrews	Oct. 2, 1866.
60,433	Singer	Dec. 11, 1866.
61,270	Singer	Jan. 15, 1867.
76,807	Pepper	Apr. 14, 1868.
76,850	Sherwood	Apr. 21, 1868.
77,715	Chabot	May 12, 1868.
80,107	Byrkit	Aug. 11, 1868.
86,848	Macaulay	Feb. 9, 1869.
89,417	McArthur	Apr. 27, 1869.
93,065	Davis	July 27, 1869.
96,713	Lyon	Nov. 9, 1869.
96,886	Clever	Nov. 16, 1869.
99,067	Davis	Jan. 25, 1870.
99,283	Black	Feb. 1, 1870.
*3,825	Dulaney	Feb. 8, 1870.
101,140	Lawyer *et al.*	Mar. 22, 1870.
101,887	Kendall	Apr. 12, 1870.
102,366	Brown	Apr. 26, 1870.
105,123	Pepper	July 5, 1870.
106,032	Coon	Aug. 2, 1870.
106,249	Bennor	Aug. 9, 1870.
106,307	Barnes	Aug. 16, 1870.
107,041	Harlow	Sept. 6, 1870.
108,020	Harper	Oct. 4, 1870.
109,828	Macaulay	Dec. 6, 1870.
111,359	Mack	Jan. 31, 1871.
111,452	Higgins	Jan. 31, 1871.
112,033	Hancock	Feb. 21, 1871.
114,197	Rehfuss	Apr. 25, 1871.
117,002	Sherwood	July 11, 1871.
117,262	Crane	July 25, 1871.
120,815	Harper	Nov. 14, 1871.
121,186	Meriam	Nov. 21, 1871.
121,896	Rehfuss	Dec. 12, 1871.
123,493	Mack	Feb. 6, 1872.
123,892	Hall	Feb. 20, 1872.
128,640	Lamb	July 2, 1872.
130,715	Hoppe *et al.*	Aug. 20, 1872.
131,735	Brown	Oct. 1, 1872.
*5,046	Brown	Sept. 3, 1872.
132,332	St. John	Oct. 15, 1872.
133,814	Venner	Dec. 10, 1872.
135,194	Bingham	Jan. 28, 1873.
136,057	Gullman	Feb. 18, 1873.
136,616	Pickersgill	Mar. 11, 1873.
137,028	Rehfuss	Mar. 18, 1873.
137,199	Hoppe *et al.*	Mar. 25, 1873.
138,902	Lewis *et al.*	May 13, 1873.
140,787	Melone	July 15, 1873.
141,791	Hirons *et al.*	Aug. 12 1873.
144,864	Porter	Nov. 25, 1873.
145,215	Koch *et al.*	Dec. 2, 1873.
146,466	Moltz	Jan. 13, 1874.
146,644	Black	Jan. 20, 1874.
148,336	True	Mar. 10, 1874.

1. (*b.*) *Shuttles vibrate* (continued).

No.	Name.	Date.
148,902	Smith	Mar. 24, 1874.
149,565	Blake	Apr. 14, 1874.
149,862	Horr	Apr. 25, 1874.
150,532	Crane	May 5, 1874.
151,272	Buhr	May 26, 1874.
153,210	Weber	July 21, 1874.
155,120	St. John	Sept. 15, 1874.
155,798	Hazard	Oct. 13, 1874.
*6,118	Mack	Nov. 3, 1874.
159,006	Williamson	Jan. 19, 1875.

1. (*c.*) *Shuttles rotate.*

6,766	Blodgett *et al.*	Oct. 2, 1849.
12,754	Smith	Apr. 17, 1855.
12,939	Bond	May 22, 1855.
13,727	Langdon	Oct. 30, 1855.
14,022	Slayton	Jan. 1, 1856.
15,469	Blodgett	Aug. 5, 1856.
15,470	Bond	Aug. 5, 1856.
16,914	Gibbs	Mar. 31, 1857.
18,359	Smith	Oct. 6, 1857.
18,605	Smith	Nov. 10, 1857.
20,731	Smith	June 29, 1858.
27,214	Gibbs	Feb. 21, 1860.
28,746	Giermann	June 19, 1860.
34,926	Thompson	Apr. 8, 1862.
36,253	McCurdy	Aug. 19, 1862.
42,687	Pickering	May 10, 1864.
49,421	Allen *et al.*	Aug. 15, 1865.
57,585	Shellenberger	Aug. 28, 1866.
58,925	Warth	Oct. 16, 1866.
60,021	Lenher	Nov. 27, 1866.
87,595	Rogan	Mar. 9, 1869.
92,063	Macpherson	June 29, 1869.
94,187	Davis	Aug. 31, 1869.
94,677	Warth	Sept. 7, 1869.
97,231	Rupertus *et al.*	Nov. 23, 1869.
104,247	Bartram	June 14, 1870.
114,294	House	May 2, 1871.
115,872	Lester	June 13, 1871.
127,430	Reece	June 4, 1872.
127,965	Heldenthal	June 11, 1872.
130,557	Bartram	Aug. 20, 1872.
135,536	Follett	Feb. 4, 1873.
137,321	Rogan	Apr. 1, 1873.
*5,388	Smith	Apr. 29, 1873.
139,245	Henderson *et al.*	May 27, 1873.
140,654	Smith	July 8, 1873.
159,183	Kappmeyer	Jan. 26, 1875.
159,956	O'Neil	Feb. 16, 1875.

1. (*d.*) *Stationary Shuttles.*

12,015	Robertson	Nov. 28, 1854.
17,366	Ellithorpe	May 26, 1857.
19,662	Parker	Mar. 16, 1858.

1. (*d.*) *Stationary Shuttles* (continued).

20,699	Comfort	June 29, 1858.
27,279	Dopp	Feb. 28, 1860.
34,988	Smith	Apr. 15, 1862.
56,020	Dulaney	July 3, 1866.
62,986	Willson	Mar. 19, 1867.
105,631	Bletcher	July 26, 1870.

2. *By revolving Hooks.* (*a.*) *Wheeler & Wilson Pattern.*

8,296	Wilson	Aug. 12, 1851.
9,041	Wilson	June 15, 1852.
10,878	Crosby	May 9, 1854.
16,710	Belcher	Mar. 3, 1857.
22,961	March	Feb. 15, 1859.
24,455	Goodwyn	June 21, 1859.
24,881	Morton	July 26, 1859.
24,937	Hayden	Aug. 2, 1859.
25,043	Pratt	Aug. 9, 1859.
25,059	Tapley	Aug. 9, 1859.
25,223	Stoddard	Aug. 23, 1859.
26,948	Johnson	Jan. 24, 1860.
*913	Wilson	Feb. 28, 1860.
*914	Wilson	Feb. 28, 1860.
30,615	Collins	Nov. 13, 1860.
33,341	Folger	Sept. 24, 1861.
36,591	Wilkins	Sept. 30, 1862.
38,076	Wilkins	Mar. 31, 1863.
40,000	Tracy *et al.*	Sept. 15, 1863.
40,589	Secor	Nov. 10, 1863.
41,527	Miller	Feb. 9, 1864.
41,572	Eames *et al.*	Feb. 16, 1864.
48,345	McCluskey	June 20, 1865.
56,224	House	July 10, 1866.
56,646	Warth	July 24, 1866.
63,615	Collier	Apr. 9, 1867.
88,808	Pollock *et al.*	Apr. 13, 1869.
*3,430	Wilson	May 11, 1869.
95,353	Husnik	Sept. 28, 1869.
112,745	Sidenberg	Mar. 14, 1871.
121,460	Kernaul	Dec. 5, 1871.
124,360	House	Mar. 5, 1872.
136,314	Farrar	Feb. 25, 1873.
136,635	Aird	Mar. 11, 1873.
138,163	Kernaul	Apr. 22, 1873.
145,570	House	Dec. 16, 1873.
158,214	Huntington	Dec. 29, 1874.

2. (*b.*) *Commercial Spool for Under-Thread.*

21,592	Hinkley	Sept. 21, 1858.
26,687	Leyden	Jan. 3, 1860.
27,577	Smalley	Mar. 20, 1860.
28,877	Leyden	June 26, 1860.
30,518	Fetter	Oct. 23, 1860.
31,644	Lathrop *et al.*	Mar. 5, 1861.

2. (*b.*) *Commercial Spool for Under-Thread* (continued).

38,276	Baldwin	Apr. 28, 1863.
40,446	Lathrop *et al.*	Oct. 27, 1863.
42,449	Thompson	Apr. 19, 1864.
*1,704	Fetter	June 21, 1864.
43,404	Hall	July 5, 1864.
44,003	Lathrop	Aug. 30, 1864.
57,157	Leyden	Aug. 14, 1866.
66,440	Abbott	July 9, 1867.
90,130	Sleppy	Mar. 18, 1869.
93,588	Bond	Aug. 10, 1869.
128,684	Wardwell	July 2, 1872.
129,981	Parks	July 30, 1872.
141,245	Wardwell	July 29, 1873.
143,027	Noyes	Sept. 23, 1873.
148,331	Wardwell	Mar. 10, 1874.
152,581	Abbott	June 30, 1874.

2. (*c.*) *Hooks of various other Patterns making Chain and Lock Stitch.*

21,465	Blodgett	Sept. 7, 1858.
21,592	Hinkley	Sept. 21, 1858.
21,800	Miller	Oct. 12, 1858.
24,081	Miller	May 17, 1859.
24,780	Parker	July 12, 1859.
25,231	Hinkley	Aug. 23, 1859.
25,331	Hardie	Sept. 6, 1859.
25,782	Woodward	Oct. 11, 1859.
25,885	Crosby	Oct. 25, 1859.
28,920	Toggenberger	Jan. 26, 1860.
29,867	Miller	Apr. 10, 1860.
35,191	Winchell	May 6, 1862.
38,447	Grote	May 5, 1863.
42,110	Redmond	Mar. 29, 1864.
42,117	Sibley	Mar. 29, 1864.
48,248	Sibley	June 13, 1864.
54,926	Leavens	May 22, 1866.
58,245	Fuller, H. W.	Sept. 25, 1866.
59,659	Rodier	Nov. 13, 1866.
60,692	Bruen	Jan. 1, 1867.
62,050	McCurdy	Feb. 12, 1867.
63,132	Armstrong	Mar. 26, 1867.
68,839	Bruen	Sept. 17, 1867.
89,653	Tittman	Apr. 20, 1869.
97,935	Lathrop	Dec. 14, 1869.
98,390	Lamb	Dec. 28, 1869.
101,137	Lamb	Mar. 22, 1870.
101,292	Mead	Mar. 29, 1870.
103,254	Stockwell	May 17, 1870.
110,250	Lathrop	Dec. 20, 1870.
112,308	Winter	Feb. 28, 1871.
118,728	Lamb	Sept. 5, 1871.
126,056	Howard	Apr. 23, 1872.
126,057	Howard	Apr. 23, 1872.
127,532	Weber	June 4, 1872.
133,939	House	Dec. 17, 1872.
134,961	Whitney	Jan. 14, 1873.
135,000	McLean *et al.*	Jan. 21, 1873.
139,067	Lathrop	May 20, 1873.
142,013	Gordes	Aug. 19, 1873.
145,823	Weber	Dec. 23, 1874.

Class C.— Sewing Leather.

1. *Machines.*

No.	Name.	Date.
9,679	Wickersham	Apr. 19, 1853.
10,615	Wickersham	Mar. 7, 1854.
11,240	Butterfield	July 4, 1854.
11,507	Swingle	Aug. 8, 1854.
11,571	Shaw	Aug. 22, 1854.
11,581	Shaw	Aug. 22, 1854.
11,588	Turner *et al.*	Aug. 22, 1854.
11,631	Turner	Aug. 29, 1854.
14,207	Swingle	Feb. 5, 1856.
*363	Turner	May 25, 1856.
15,396	Swingle	July 22, 1856.
*417	Swingle	Nov. 4, 1856.
28,144	Bean	May 8, 1860.
29,785	Haskell	Aug. 28, 1860.
34,915	Townsend	Apr. 8, 1862.
*1,600	Butterfield	Jan. 5, 1864.
42,292	Johnson	Apr. 12, 1864.
*1,962	Turner	May 16, 1865.
48,511	Bradford *et al.*	July 4, 1865.
50,117	Hale	Sept. 26, 1865.
50,642	Tewkesbury	Oct. 24, 1865.
50,917	Dawley *et al.*	Nov. 14, 1865.
50,995	Keats *et al.*	Nov. 14, 1865.
51,157	Dunham	Nov. 28, 1865.
51,383	Bean	Dec. 5, 1865.

1. *Machines* (continued).

No.	Name.	Date.
52,368	Reed	Jan. 30, 1866.
57,047	Reed	Aug. 7, 1866.
58,550	Langmaid	Oct. 2, 1866.
59,127	Halligan	Oct. 23, 1866.
67,906	Reed	Aug. 20, 1867.
67,965	Elmes	Aug. 20, 1867.
86,532	Reed	Feb. 2, 1869.
86,632	Bean	Feb. 9, 1869.
89,275	Bean	Apr. 27, 1869.
92,138	Adams	July 6, 1869.
97,330	Weeman	Nov. 30, 1869.
109,427	Landfear	Nov. 22, 1870.
109,655	Palmer	Nov. 29, 1870.
110,945	Woodward	Jan. 10, 1871.
*4,500	Woodward	Jan. 10, 1871.
111,752	Kimball	Feb. 14, 1871.
115,925	Baker	June 13, 1871.
116,813	Turner *et al.*	July 11, 1871.
*4,500	Woodward	Aug. 1, 1871.
*4,785	Wickersham	Mar. 5, 1872.
*4,786	Wickersham	Mar. 5, 1872.
125,374	Baker	Apr. 9, 1872.
128,172	Richardson	June 18, 1872.
128,313	Jordan	June 25, 1872.
128,919	Springer	July 9, 1872.

1. *Machines* (continued).

No.	Name.	Date.
130,555	Ashe	Aug. 20, 1872.
130,556	Ashe	Aug. 20, 1872.
132,326	Shaw	Oct. 15, 1872.
134,508	Bean	Jan. 7, 1873.
134,509	Bean	Jan. 7, 1873.
135,431	Johnson	Feb. 4, 1873.
136,792	Tittman	Mar. 11, 1873.
137,528	Bean	Apr. 8, 1873.
137,640	Walters	Apr. 8, 1873.
*5,423	Bean	May 27, 1873.
146,280	Reed	Jan. 6, 1874.
150,479	Page	May 5, 1874.
152,894	Brewer	July 14, 1874.
*5,965	Bean	July 14, 1874.
154,115	Bean	Aug. 18, 1874.
155,193	Landfear	Sept. 22, 1874.
159,144	Bean	Jan. 26, 1875.

2. *Waxing Devices.*

21,361	Peppers	Aug. 31, 1858.
23,752	Brigham	Apr. 26, 1859.

2. *Waxing Devices* (continued).

No.	Name.	Date.
39,092	Drew	June 30, 1863.
40,484	Hyde	Nov. 3, 1863.
41,050	Banister	Jan. 5, 1864.
43,077	McKay *et al.*	June 7, 1864.
43,209	Holbrook	June 21, 1864.
*1,831	Holbrook	Dec. 6, 1864.
47,911	Aldrich	May 30, 1865.
47,912	Aldrich	May 30, 1865.
*2,567	Drew	Apr. 16, 1867.
67,300	Hayden	July 30, 1867.
67,881	Kendall	Aug. 20, 1867.
69,056	Wiggin	Sept. 11, 1867.
113,962	Aldrich	Apr. 25, 1871.
128,008	Bean	June 18, 1872.
131,786	Sargent *et al.*	Oct. 1, 1872.
134,606	Lewis	Jan. 7, 1873.

3. *Sewing Hose.*

31,214	Rice	Jan. 22, 1861.
73,709	French	Jan. 28, 1868.
74,289	Blake	Feb. 11, 1868.
*5,045	Rice	Aug. 27, 1872.
146,948	Richardson	Jan. 27, 1874.

4. *Sole-Sewing.* (*a.*) *Curved Needle.*

34,413	Destory	Feb. 18, 1862.
36,396	Dunham	Sept. 9, 1862.
*1,363	Dunham	Dec. 16, 1862.
47,666	Stein	May 9, 1865.

4. (*a.*) *Curved Needle* (continued).

No.	Name.	Date.
56,729	Destory	July 31, 1866.
59,715	Duchemin	Nov. 13, 1866.
81,926	Stein	Sept. 8, 1868.
87,331	Eldredge	Mar. 2, 1869.
*3,386	Dunham	Apr. 20, 1869.
91,101	Duchemin	June 8, 1869.
92,912	Vetler	July 20, 1869.
93,731	Mills	Aug. 17, 1869.
94,389	Brown	Aug. 31, 1869.
*3,635	Destory	Sept. 7, 1869.
95,571	Destory	Oct. 5, 1869.
95,944	Mills	Nov. 16, 1869.
97,951	Mills	Dec. 14, 1869.
111,197	Goodyear	Jan. 24, 1871.
112,802	Goodyear	Mar. 21, 1871.
113,593	Stein	Apr. 11, 1871.
116,947	Goodyear	July 11, 1871.
121,237	Duchemin	Nov. 28, 1871.
124,393	Stein	Mar. 5, 1872.
127,423	Mills	June 4, 1872.
131,084	Destory	Sept. 3, 1872.
135,032	Duchemin	Jan. 21, 1873.
135,787	Duchemin	Feb. 11, 1873.
*6,081	Dunham	Oct. 13, 1874.
*6,295	Dunham	Feb. 16, 1875.

4. (*b.*) *Straight Needle.*

20,775	Blake, R.	July 6, 1858.
31,203	Ballou	Jan. 22, 1861.
33,677	Drew	Nov. 5, 1861.
36,163	McKay *et al.*	Aug. 12, 1862.
40,212	Holden	Oct. 6, 1863.
42,622	McKay *et al.*	May 3, 1864.

4. (*b.*) *Straight Needle* (continued).

No.	Name.	Date.
42,916	McKay *et al.*	May 24, 1864.
45,422	McKay *et al.*	Dec. 31, 1864.
59,265	Richardson	Oct. 30, 1866.
63,607	Brown	Apr. 8, 1867.
*2,578	Drew	Apr. 30, 1867.
*2,579	Drew	Apr. 30, 1867.
*2,580	Drew	Apr. 30, 1867.
*2,906	Ballou	Mar. 31, 1868.
89,357	Swartwout	Apr. 27, 1869.
90,507	Crosby	May 25, 1869.
94,134	Richardson	Aug. 24, 1869.
94,976	Reeve *et al.*	Sept. 21, 1869.
97,518	Keith	Dec. 7, 1869.
97,611	Cutlan	Dec. 7, 1869.
98,151	Crosby	Dec. 21, 1869.
106,012	Wickersham	Aug. 2, 1870.
107,155	Blake	Sept. 6, 1870.
108,132	Greely	Oct. 11, 1870.
114,862	Rosinskey	May 16, 1871.
117,207	Richardson	July 18, 1871.
117,596	Blake	Aug. 1, 1871.
117,709	Wickersham	Aug. 1, 1871.
124,293	Sheffield	Mar. 5, 1872.
124,337	Crosby	Mar. 5, 1872.
124,338	Crosby	Mar. 5, 1872.
126,238	Stein	Apr. 30, 1872.
127,662	Vrooman	July 4, 1872.
129,059	Rosinskey	July 16, 1872.
131,291	Mills	Sept. 10, 1872.
134,303	Mills	Dec. 24, 1872.
135,047	Sheffield	Jan. 21, 1873.
138,764	Ross *et al.*	May 13, 1873.
140,586	Miller	July 8, 1873.
145,687	Richardson	Dec. 16, 1873.
153,428	Duchemin	July 28, 1874.
155,932	Drake	Oct. 13, 1874.
158,883	Ballou	Jan. 19, 1875.

CLASS D. — FEEDING.

1. *Needle.*

No.	Name.	Date.
18,732	Chase	Dec. 1, 1857.
58,614	Davis	Oct. 9, 1866.
125,774	Weeks	Apr. 16, 1872.
146,505	Beckwith	Jan. 20, 1874.

2. *Wheel or Band.*

11,680	Shaw	Sept. 12, 1854.
12,856	Chilcott *et al.*	Jan. 12, 1855.
13,065	Singer	Mar. 15, 1855.
16,518	Alexander	Feb. 3, 1857.
17,825	Bartholf	July 21, 1857.
23,823	Clark	May 3, 1859.
26,816	Dick	Jan. 10, 1860.
27,412	Paine	Mar. 6, 1860.
31,805	Hicks	Mar. 26, 1861.
32,517	Howell	June 11, 1861.
43,514	Mack	July 12, 1864.
43,705	Phelps	Aug. 2, 1864.
43,890	Auger *et al.*	Aug. 23, 1864.
48,204	Planer	June 13, 1865.
48,206	Planer	June 13, 1865.
55,847	Galleth	June 26, 1866.
56,730	Dewey	July 31, 1866.
57,116	Galleth	Aug. 14, 1866.
57,287	Chicken	Aug. 21, 1866.
64,184	Stannard	Apr. 23, 1867.
68,420	Doll	Sept. 3, 1867.
89,501	Pratt	Apr. 27, 1869.
91,149	Miller	June 8, 1869.
101,779	Spoehr	Apr. 12, 1870.
112,016	Carpenter	Feb. 21, 1871.
116,618	McDonald *et al.*	July 4, 1871.
116,779	West	July 4, 1871.
119,246	Smyth	Sept. 26, 1871.
120,614	Barth	Nov. 7, 1871.
129,487	Miller	July 16, 1872.
130,264	Woodward	Aug. 6, 1872.
130,324	Smyth	Aug. 6, 1872.
146,483	Scribner	Jan. 13, 1874.
147,152	Muir	Feb. 3, 1874.
147,153	Muir	Feb. 3, 1874.
150,492	Smyth *et al.*	May 5, 1874.
152,721	Blanchard	July 7, 1874.

3. *Reciprocating Surface above Cloth.*

12,364	Singer	Feb. 6, 1855.

3. *Reciprocating Surface above Cloth* (continued).

No.	Name.	Date.
12,577	Robertson	Mar. 20, 1855.
*343	Robertson	Jan. 15, 1856.
16,850	Robertson	Mar. 17, 1857.
18,566	Andrews	Nov. 3, 1857.
19,171	Boyd	Jan. 19, 1858.
22,225	Berry	Dec. 7, 1858.
22,269	Tyler	Dec. 7, 1858.
*1,073	Tyler	Nov. 13, 1861.
48,007	Wittneben	May 30, 1865.
50,297	Ballou	Oct. 3, 1865.
83,398	Meyers	Oct. 27, 1868.
96,017	Lomax	Oct. 19, 1869.
107,677	Godown	Sept 27, 1870.
117,203	Pitt	July 18, 1871.
140,603	Westmoreland	July 8, 1873.
145,025	St. Armant	Nov. 25, 1873.
157,017	Mason	Nov. 17, 1874.
159,006	Williamson	Jan. 19, 1875.
159,975	Hirons *et al.*	Feb. 9, 1875.

4. *Reciprocating Surface below Cloth.*

12,116	Wilson	Dec. 19, 1854.
13,362	Singer	July 31, 1855.
14,141	O'Neil	Jan. 22, 1856.
*346	Wilson	Jan. 22, 1856.
20,557	Herron	June 15, 1858.
21,310	Andrus	Aug. 31, 1858.
22,273	Atwood	Dec. 14, 1858.
24,216	Irving	May 13, 1859.
41,164	McCurdy	Jan. 5, 1864.
41,444	Polluck *et al.*	Feb. 2, 1864.
42,036	Willcox	Mar. 22, 1864.
44,491	Willcox	Sept. 27, 1864.
45,628	Pepper *et al.*	Dec. 27, 1864.
48,205	Planer	June 13, 1865.
49,967	Bolton *et al.*	Sept. 19, 1865.
52,932	Rehfuss	Feb. 27, 1866.
53,514	Williams	Mar. 27, 1866.
60,769	Merriam	Jan. 1, 1867.
60,888	Hanlon	Jan. 1, 1867.
63,149	Fairfield	Mar. 25, 1867.
66,505	Littlefield	July 9, 1867.
67,652	House	Aug. 13, 1867.
67,752	Hadley	Aug. 13, 1867.
67,803	Robinson	Aug. 13, 1867.
67,815	Stanton	Aug. 13, 1867.
76,340	Minor	Apr. 7, 1868.
82,183	Vanduzer	Sept. 13, 1868.

4. *Reciprocating Surface below Cloth* (continued).

No.	Name.	Date.
83,133	Cole	Oct. 20, 1868.
83,596	Benedict	Nov. 3, 1868.
84,389	Smith	Nov. 24, 1868.
93,553	Plummer	Aug. 10, 1869.
98,452	Whitney	Dec. 28, 1869.
98,771	House	Jan. 11, 1870.
*3,795	Willcox	Jan. 11, 1870.
99,962	Smith	Feb. 15, 1870.
100,764	House	Mar. 15, 1870.
101,265	Hirschbuhl	Mar. 29, 1870.
101,926	Sawyer	Apr. 12, 1870.
102,226	Cooney	Apr. 26, 1870.
102,700	Rehfuss	May 3, 1870.
103,444	Garaghty	May 24, 1870.
106,228	Stocker	Aug. 9, 1870.
107,019	Fairfield	Sept. 6, 1870.
112,531	Berry	Mar. 14, 1871.
115,036	Diehl *et al.*	May 23, 1871.
115,151	Bates	May 23, 1871.
115,155	Bentel	May 23, 1871.
116,783	Willcox *et al.*	July 4, 1871.
117,459	Ramsey	July 25, 1871.
117,526	Eldridge	Aug. 1, 1871.
118,631	Moltz	Aug. 29, 1871.
119,690	Blees	Oct. 10, 1871.
122,401	Perkins	Jan. 2, 1872.
122,673	Smyth	Jan. 9, 1872.
123,114	Leavitt	Jan. 30, 1872.
126,844	Smyth	May 24, 1872.
126,845	Smyth	May 24, 1872.
127,867	Gullman	June 11, 1872.
130,325	Smyth	Aug. 6, 1872.
*5,177	Cole	Dec. 10, 1872.
135,579	Parham	Feb. 4, 1873.
135,930	Moore	Feb. 18, 1873.
139,040	Beebe	May 20, 1873.
141,088	Smyth	July 22, 1873.
151,320	Steinbach	May 26, 1874.
151,801	Smyth	June 9, 1874.
158,596	McCune	Jan. 12, 1875.

5. *By Movement of Table.*

61,101	Rehfuss	Jan. 8, 1867.

6. *By Pressure against Thread.*

13,850	Stedman	Nov. 27, 1855.

CLASS E. — BUTTON-HOLE.

1. *One Thread.*

No.	Name.	Date.
24,863	Goodes *et al.*	July 26, 1859.
31,628	Rose	Mar. 5, 1861.
32,023	Burr	Apr. 9, 1861.
33,029	Case	Aug. 13, 1861.
*1,616	Goodes *et al.*	Feb. 9, 1864.
41,923	Jackson	Mar. 15, 1864.
50,989	Emerson	Nov. 14, 1864.
79,393	Reynolds	June 30, 1868.
110,739	Cleminshaw	Jan. 3, 1871.
111,059	Helwig	Jan. 17, 1871.
128,363	Cleminshaw	June 25, 1872.
139,745	Tobey	June 10, 1873.
139,770	Cleminshaw	June 10, 1873.

2. *Two Thread.*

No.	Name.	Date.
10,609	Miller	Mar. 7, 1854.
13,353	Harrison	July 31, 1855.
25,692	Vogel	Oct. 4, 1859.
28,788	Steiner	June 19, 1860.
28,814	Rose	June 19, 1860.
33,619	Weitling	Oct. 29, 1861.
34,748	Deroquigny *et al.*	Mar. 25, 1862.
36,617	Humphrey	Oct. 7, 1862.
36,932	House	Nov. 11, 1862.
37,931	Weitling	Mar. 17, 1863.
39,442	House	Aug. 4, 1863.
39,443	House	Aug. 4, 1863.
39,444	House	Aug. 4, 1863.
39,445	House	Aug. 4, 1863.
40,311	Rehfuss	Oct. 13, 1863.
42,502	Parham	Apr. 26, 1864
43,742	Rehfuss	Aug. 2, 1864.
44,217	Parham	Sept. 13, 1864.
*1,805	Vogel	Nov. 1, 1864.
45,777	Weitling	Jan. 3, 1865.
47,905	Rehfuss	May 23, 1865.

2. *Two Thread* (continued).

No.	Name.	Date.
49,627	Humphrey	Aug. 29, 1865.
49,745	Frey	Sept. 5, 1865.
49,803	Tarbox	Sept. 5, 1865.
50,253	Humphrey	Oct. 3, 1865.
50,299	Cajar	Oct. 3, 1865.
50,870	Bartram	Nov. 7, 1865.
51,086	Rehfuss	Nov. 21, 1865.
54,671	Bartram	May 15, 1866.
*2,245	Bartram	May 15, 1866.
55,688	McCloskey	June 19, 1866.
55,863	House	June 26, 1866.
55,864	House	June 26, 1866.
55,865	House	June 26, 1866.
55,866	House	June 26, 1866.
57,451	Clements	Aug. 21, 1866.
61,533	Goodes *et al.*	Jan. 29, 1867.
61,711	Cajar	Feb. 5, 1867.
62,520	Bartram	Mar. 5, 1867.
76,323	Gritzner	Apr. 7, 1868.
78,821	Peabody	June 9, 1868.
80,520	Vogel	July 28, 1868.
87,338	House	Mar. 2, 1869.
87,409	Harrison	Mar. 2, 1869.
88,282	Dunbar	Mar. 30, 1869.
90,528	Gutman	May 25, 1869.
97,014	Woodruff *et al.*	Nov. 16, 1869.
104,590	Henrickson	June 21, 1870.
104,630	Nasch	June 21, 1870.
107,001	Chicken	Sept. 6, 1870.
110,669	Moreau	Jan. 3, 1871.
110,790	Robinson	Jan. 3, 1871.
111,447	Garrick	Jan. 31, 1871.
115,163	Chicken	May 23, 1871.
115,857	Humphrey	June 13, 1871.
120,855	Chicken *et al.*	Nov. 14, 1871.
123,348	Humphrey	Feb. 6, 1872.
124,252	Chicken	Mar. 5, 1872.
125,394	Humphrey	Apr. 9, 1872.
127,675	Braunbeck	June 11, 1872.

2. *Two Thread* (continued).

No.	Name.	Date.
132,968	Langmaid	Nov. 12, 1872.
134,558	Moreau	Jan. 7, 1873.
*5,260	Rehfuss	Jan. 28, 1873.
136,702	Chicken	Mar. 11, 1873.
136,718	Goodes	Mar. 11, 1873.
137,689	Kallmeyer	Apr. 8, 1873.
141,987	Blanchard	Apr. 19, 1873.
147,387	Goodes	Feb. 10, 1874.
151,380	Graff	May 26, 1874.
152,055	Wensley	June 16, 1874.
152,231	Humphrey	June 23, 1874.
159,740	Baird	Feb. 16, 1875.

3. *Attachments for ordinary Sewing-Machine.*

No.	Name.	Date.
69,671	Howard *et al.*	Oct. 8, 1867.
84,589	Sprague *et al.*	Dec. 1, 1868.
92,965	Harroun	July 27, 1869.
94,212	Howard *et al.*	Aug. 31, 1869.
95,320	Carpenter	Sept. 28, 1869.
97,856	Baird	Dec. 14, 1869.
103,745	Howard *et al.*	May 31, 1870.
117,364	Baird	July 25, 1871.
121,328	Burnam	Nov. 28, 1871.
121,477	Wilkins	Dec. 5, 1871.
122,742	Tait	Feb. 13, 1872.
*4,714	Baird	Mar. 12, 1872.
134,345	Baird	Dec. 31, 1872.
134,346	Baird	Dec. 31, 1872.
134,347	Baird	Dec. 31, 1872.
*5,306	Howard *et al.*	Mar. 4, 1873.
*5,336	Howard *et al.*	Mar. 25, 1873.
144,672	Hansen *et al.*	Nov. 18, 1873.
146,000	Haskins	Dec. 30, 1873.
*5,728	Howard *et al.*	Jan. 13, 1874.
156,048	Vogel	Oct. 20, 1874.

CLASS F.— MISCELLANEOUS PARTS.

1. *Bobbin-Winders.*

No.	Name.	Date.
36,899	Finkle	Nov. 11, 1862.
39,236	Lewis *et al.*	July 14, 1863.
80,908	Callen	Aug. 11, 1868.
110,267	Moffitt	Dec. 20, 1870.
114,442	Jenks	May 2, 1871.
115,124	Smith	May 23, 1871.
*4,571	Palmer	Oct. 3, 1871.
122,858	Shelden	Jan. 16, 1872.
123,625	Fish	Feb. 13, 1872.
123,852	Young	Feb. 20, 1872.
124,667	Day *et al.*	Mar. 19, 1872.
125,869	Wilder	Apr. 16, 1872.
126,829	Newton	May 14, 1872.
126,925	Brady	May 21, 1872.
127,155	Demarest	May 28, 1872.
128,518	Wilkins	July 2, 1872.
137,048	Bary	Mar. 25, 1873.
141,663	Pedden	Aug. 12, 1873.
148,110	Cook	Mar. 3, 1874.

2. *Cloth and Slide Plates.*

No.	Name.	Date.
44,889	Preis	Nov. 1, 1864.
62,186	Craig	Feb. 19, 1867.
67,635	Craig	Aug. 13, 1867.
91,484	Rehfuss	June 15, 1869.
131,907	Sahnders	Oct. 1, 1872.
133,733	West	Dec. 10, 1872.
134,209	Lawler	Dec. 24, 1872.
142,404	Leech	Sept. 2, 1873.
154,084	Rehfuss	Aug. 11, 1873.

3. *Cutting and Trimming Fabrics on Machine.*

No.	Name.	Date.
18,511	Marsh	Oct. 27, 1857.
*809	Marsh	Sept. 6, 1859.

3. *Cutting and Trimming Fabrics on Machine* (continued).

No.	Name.	Date.
42,976	Wales	May 31, 1864.
50,451	Chilcott	Oct. 17, 1865.
109,662	Ball *et al.*	Nov. 29, 1870.
113,498	Chase	Apr. 11, 1871.
123,242	Coles	Jan. 30, 1872.
139,350	Allen	May 27, 1873.
139,525	Wiggin	June 3, 1873.
140,159	Perrine	June 24, 1873.
142,290	Springer	Aug. 26, 1873.
144,480	Sample	Nov. 11, 1873.
147,441	Springer	Feb. 10, 1874.
148,765	Shorey	Mar. 17, 1874.
153,504	Tobey *et al.*	July 28, 1874.
155,334	Parsons	Sept. 22, 1874.
*6,088	Springer	Oct. 13, 1874.
156,267	Barber	Oct. 27, 1874.
*6,142	Springer	Nov. 17, 1874.
157,322	Graham	Dec. 1, 1874.
158,574	Craig	Jan. 12, 1875.
158,813	Springer	Jan. 19, 1875.

4. *Lifting Presser-Foot.*

No.	Name.	Date.
21,671	Grover	Oct. 5, 1858.
24,939	Kelsey	Aug. 2, 1859.
28,452	Chamberlin	May 29, 1860.
117,708	West	Aug. 1, 1871.
122,256	Kennedy	Dec. 26, 1871.
128,770	West	July 9, 1872.
129,974	Manning	July 30, 1872.
130,116	Fairfield *et al.*	Aug. 6, 1872.
130,674	West	Aug. 20, 1872.
130,675	West	Aug. 20, 1872.
133,757	Chandler	Dec. 10, 1872.
136,976	Dinsmore	Mar. 18, 1873.
139,368	Chandler	May 27, 1873.
141,332	Cushman	July 29, 1873.
142,442	Cushman	Sept. 2, 1873.
145,515	Manning	Dec. 16, 1873.
153,718	Manning	Aug. 4, 1874.

5. *Mounting Machines on Table.*

No.	Name.	Date.
27,926	Perkins	Apr. 17, 1860.
41,393	Pilbeam	Jan. 26, 1864.
47,560	Niederpruem	May 2, 1865.
97,481	Cowgill	Dec. 7, 1869.
105,548	Chase	July 19, 1870.
119,784	Farham	Oct. 10, 1871.
152,829	Coles	July 7, 1874.

6. *Needles.*

No.	Name.	Date.
17,272	Garvey	May 12, 1857.
24,892	Singer	July 26, 1859.
27,409	Horn	Mar. 6, 1860.
29,448	Willcox	July 31, 1860.
29,648	Drake	Aug. 14, 1860.
31,757	Willcox	Mar. 19, 1861.
34,571	Grover	Mar. 4, 1862.
37,996	Ambler	Mar. 24, 1863.
38,282	Brown	Apr. 28, 1863.
55,927	Stannard	June 26, 1866.
67,536	Harris	Aug. 6, 1867.
79,983	Isbell	July 14, 1868.
88,665	Parham *et al.*	Apr 16, 1869.
91,684	Stackpole	June 22, 1869.
93,460	Macaulay	Aug. 10, 1869.
94,384	Blanchard	Aug. 31, 1869.
94,924	Suplee	Sept. 14, 1869.
99,158	Carpenter	Jan. 25, 1870.
*3,818	Suplee	Feb. 1, 1870.
*3,819	Suplee	Feb. 1, 1870.
99,782	Moscheowitz	Feb. 15, 1870.
100,112	Boone	Feb. 22, 1870.
100,909	Macaulay	Mar. 15, 1870.
103,549	Blanchard	May 31, 1870.
*4,002	Carpenter	May 31, 1870.
104,660	Strain	June 21, 1870.
105,433	Curtis	July 19, 1870.
106,092	Strain	Aug. 2, 1870.
109,753	Palmer	Nov. 29, 1870.
110,480	Lloyd	Dec. 27, 1870.

6. *Needles* (continued).

No.	Name.	Date.
112,576	Frary	Mar. 14, 1871.
112,744	Sibley	Mar. 14, 1871.
112,980	Strain	Mar. 21, 1871.
113,010	Blanchard	Mar. 28, 1871.
*4,663	Willcox	Dec. 5, 1871.
121,967	Secor	Dec. 19, 1871.
123,576	Mathues	Feb. 13, 1872.
125,270	Casselberry	Apr. 2, 1872.
151,558	Blanchard	June 2, 1874.
156,603	Spalding	Nov. 3, 1874.

7. *Needle-Sharpener.*

114,265	Clark	May 2, 1871.

8. *Needle Threaders and Setters.*

27,762	Stevens	Apr. 3, 1860.
32,624	Hardie	June 25, 1861.
34,407	Conrad	Feb. 18, 1862.
34,807	Bartlett	Apr. 1, 1862.
60,353	Foote	Dec. 11, 1866.
69,463	Michener	Oct. 1, 1867.
88,699	Dopp	Apr. 6, 1869.
89,256	Thrilpape	Apr. 20, 1869.
89,618	Barber *et al.*	May 4, 1869.
92,446	Headley	July 13, 1869.
102,795	Field	May 10, 1870.
104,030	Hendricks	June 7, 1870.
104,260	Brown	June 14, 1870.
110,144	Karr	Dec. 13, 1870.
110,855	Karr	Jan. 10, 1871.
113,542	Martine	Apr. 11, 1871.
119,217	Boersche	Sept. 26, 1871.
122,490	Raenchle	Jan. 2, 1872.
127,646	Schlarbaum	June 4, 1872.
128,341	Vittum	June 25, 1872.
132,110	Stanley	Oct. 8, 1872.
135,479	Johnston	Feb. 4, 1873.
139,990	Albert	June 17, 1873.
140,262	Farmer	June 24, 1873.
140,983	Williams	July 15, 1873.
142,430	Beardsley	Sept. 2, 1873.
143,098	Schofield	Sept. 23, 1873.
144,974	Gaspary	Nov. 25, 1873.
148,192	Doolittle *et al.*	Mar. 3, 1874.
149,580	Elliott	Apr. 14, 1874.
149,764	Lilley	Apr. 14, 1874.
150,167	Lilley	Apr. 28, 1874.
150,542	Dixie	May 5, 1874.
154,291	Smith	Aug. 18, 1874.
156,604	Stamp	Nov. 3, 1874.
157,745	Ellis	Dec. 15, 1874.
158,167	Fairfield	Dec. 29, 1874.

9. *Oil-Can Holder.*

96,527	Wilmot	Nov. 2, 1869.
112,537	Brick	Mar. 14, 1871.
128,517	Wilkins	July 2, 1872.
136,327	Leslie	Feb. 25, 1873.

10. *Oiling Thread.*

10,975	Singer	May 30, 1854.
12,336	Wilder	Jan. 30, 1855.
21,361	Pepper	Aug. 31, 1858.
	See also Class C.	

11. *Presser-Foot.*

31,604	Hyde	Mar. 5, 1861.
31,646	Moulson	Mar. 5, 1861.
40,203	Bolton	Oct. 6, 1863.
57,010	Tewksbury	Aug. 7, 1866.
89,957	Tutton	May 11, 1869.
114,823	Hudson	May 16, 1871.
123,393	Goodrich	Feb. 6, 1872.
131,256	Decker	Sept. 10, 1872.
133,201	Chabot *et al.*	Nov. 19, 1872.
133,411	Coles	Nov. 26, 1872.
138,637	Goodrich	May 6, 1873.
139,700	Allerton *et al.*	June 10, 1873.
140,714	Brewster	Apr. 14, 1874.
150,668	Allerton *et al.*	May 12, 1874.
158,565	Barnes	Jan. 12, 1875.
158,744	Schneider	Jan. 12, 1875.

12. *Quilting.*

No.	Name.	Date.
130,701	Damron	Aug. 20, 1872.
131,443	Hoover *et al.*	Sept. 17, 1872.
138,399	Heffley	Apr. 29, 1873.
143,092	Null	Sept. 23, 1873.
150,003	Dewey	Apr. 21, 1874.
155,885	Null	Oct. 13, 1874.
155,886	Null	Oct. 13, 1874.
159,884	Beck	Feb. 16, 1875.

13. *Regulating Speed.*

13,661	Singer	Oct. 9, 1855.
44,909	Zuckerman	Nov. 1, 1864.
51,012	Buchanan	Nov. 21, 1865.

14. *Running Stitch.*

2,982	Bean	Mar. 4, 1843.
3,672	Rogers	July 22, 1844.
7,296	Smith	Apr. 16, 1850.
14,393	David	Mar. 11, 1856.
35,252	Palmer	May 13, 1862.
38,246	Shaw *et al.*	Apr. 21, 1863.
38,658	Dale	May 26, 1863.
38,837	Palmer	June 9, 1863.
38,927	Cook	June 16, 1863.
40,853	Pratt	Dec. 8, 1863.
44,686	Dale	Oct. 11, 1864.
127,579	Cussen	June 4, 1872.
157,598	Hahn	Dec. 8, 1874.

15. *Sewing Hats.*

24,183	Tyler	May 24, 1859.
25,078	Eickemeyer	Aug. 9, 1859.
34,330	Hendrickson	Feb. 4, 1862.
37,957	Eickemeyer	Mar. 24, 1863.
42,158	Blackham	Apr. 5, 1864.
52,698	Eickemeyer	Feb. 20, 1866.
53,927	Sanford *et al.*	Apr. 10, 1866.
54,844	Bodwell	May 22, 1866.
68,828	Judson	Sept. 10, 1867.
113,201	Parmenter	Mar. 28, 1871.
113,391	Bracher	Apr. 4, 1871.
117,867	Coles	Aug. 8, 1871.
*4,639	Judson	Nov. 21, 1871.
141,397	Stewart	July 29, 1873.
155,253	Morehouse	Sept. 22, 1874.
*6,311	Eickemeyer	Mar. 2, 1875.

16. *Sewing on Buttons.*

130,581	Keith	Aug. 20, 1872.

17. *Sewing Straw-Braid.*

79,856	Plummer	July 14, 1868.
94,746	Turner	Aug. 24, 1869.
122,555	Bosworth	Jan. 9, 1872.
*4,840	Plummer	Apr. 2, 1872.
131,739	Carpenter	Oct. 1, 1872.
133,553	Turner	Dec. 3, 1872.
138,806	Bosworth	June 9, 1873.
138,807	Bosworth	June 9, 1873.
141,303	Whiting, W. M.	July 29, 1873.
145,814	Palmer	Dec. 23, 1873.
146,970	Wright	Jan. 27, 1874.
151,351	Bosworth	May 26, 1874.
152,260	Turner	June 23, 1874.

18. *Sewing Knitted Goods.*

59,746	Kilburn	Nov. 20, 1866.
77,611	Haslam	May 5, 1868.
137,997	Bevan	Apr. 22, 1873.

19. *Sewing Umbrellas.*

105,862	Tate	July 26, 1870.

20. *Short Thread.*

No.	Name.	Date.
2,466	Greenough	Feb. 21, 1842.
3,389	Corliss	Dec. 27, 1843.
7,824	Robinson	Dec. 10, 1850.
9,380	Bradeen	Nov. 2, 1852.
12,247	Smith	Jan. 16, 1855.
12,402	Forbush	Feb. 20, 1855.
13,178	Molliere	July 3, 1855.
*352	Greenough	Feb. 12, 1856.
16,026	Roper	Nov. 4, 1856.
16,436	Howe	Jan. 20, 1857.
17,400	Wells	May 26, 1857.
18,522	Roper	Oct. 27, 1857.
21,745	Crosby	Oct. 12, 1858.
24,324	Moody	June 7, 1859.
*4,305	Crosby	Mar. 21, 1871.
156,418	Garland	Nov. 3, 1874.
159,317	Garland *et al.*	Feb. 2, 1875.
159,812	Garland	Feb. 16, 1875.

21. *Shuttles.*

10,728	Aikins	Apr. 4, 1854.
39,567	Halligan	Aug. 18, 1863.
57,514	Ingraham	Aug. 28, 1866.
65,052	Booth *et al.*	May 28, 1867.
111,678	Pratt	Feb. 7, 1871.
116,113	Strange	June 20, 1871.
120,277	Hervey	Oct. 24, 1871.
120,731	Fairfield	Nov. 7, 1871.
123,990	Goodrich	Feb. 27, 1872.
125,956	Hockensmith	Apr. 23, 1872.
128,017	Churchill	June 18, 1872.
129,004	Cook	July 16, 1872.
132,108	Roberts *et al.*	Oct. 8, 1872.
136,311	Edwards *et al.*	Feb. 25, 1873.
*5,342	Edwards *et al.*	Apr. 1, 1873.
137,665	Ells	Apr. 8, 1873.
138,134	Cooney	Apr. 28, 1873.
139,421	Rehfuss	May 27, 1873.
*5,436	Edwards *et al.*	June 3, 1873.
140,041	Hockensmith	June 17, 1873.
141,894	Secor	Aug. 19, 1873.
143,104	Thayer	Sept. 23, 1873.
143,303	Schofield	Sept. 30, 1873.
144,395	Knox	Nov. 11, 1873.
145,348	Hunter	Dec. 9, 1873
148,072	Knox	Mar. 3, 1874.
148,457	Hockensmith	Mar. 10, 1874.
150,533	Crane	May 5, 1874.
152,041	Loomis	June 16, 1874.
154,117	Blake	Aug. 18, 1874.
156,933	Mangus	Nov. 17, 1874.

22. *Spools and Bobbins.*

126,332	Reeve	Apr. 30, 1872.
135,125	Juengst	Jan. 21, 1873.
136,282	Thayer	Feb. 25, 1873.

23. *Stitches.*

16,120	Johnson	Nov. 25, 1856.
17,455	Bosworth	May 12, 1857.
23,984	McCurdy	May 10, 1859.
26,906	Johnson	Jan. 24, 1860.
27,620	Davis	Mar. 27, 1860.
27,999	McCurdy	Apr. 24, 1860.
34,454	Weitling	Feb. 18, 1862.
36,616	Humphrey	Oct. 7, 1862.
39,658	Jewett	Aug. 25, 1863.
46,133	Parham	Jan. 31, 1865.
49,837	Sibley	Sept. 5, 1865.
85,891	Reed	Jan. 12, 1869.
86,591	Reed	Feb. 2, 1869.
90,045	Harroun	May 11, 1869.

24. *Take-up.*

16,382	Finkle	Jan. 13, 1857.
18,102	Phelps	Sept. 1, 1857.
22,050	Comfort	Nov. 9, 1858.
26,035	Hicks	Nov. 8, 1859.
27,593	Couch	Mar. 20, 1860.
32,064	Hicks	Apr. 16, 1861.
39,454	Perry	Aug. 4, 1863.
41,790	Scofield *et al.*	Mar. 1, 1864.
63,483	Darling *et al.*	Apr. 2, 1867.
67,179	Fairfield	July 30, 1867.
82,397	Fanning	Sept. 22, 1868.
84,099	Eldredge	Nov. 17, 1868.

24. *Take up* (continued).

No.	Name.	Date.
95,019	Hawkins	Sept. 21, 1869.
102,170	Smith *et al.*	Apr. 19, 1870.
103,949	Wendell	June 7, 1870.
105,741	True	July 26, 1870.
118,067	Stebbins	Aug. 15, 1871.
121,966	Secor	Dec. 19, 1871.
129,406	Hall	Feb. 25, 1872.
136,324	Jones	July 16, 1872.
*6,087	Eldredge	Oct. 13, 1874.

25. *Tension Devices.*

*8,876	Singer	Apr. 13, 1852.
17,835	Hoagland	July 21, 1857.
18,072	Larkin	Aug. 25, 1857.
19,080	Douglass	Jan. 12, 1858.
19,141	Harris	Jan. 19, 1858.
21,398	Rogers	Aug. 31, 1858.
22,045	Wheeler	Nov. 9, 1858.
24,000	Bartholf	May 17, 1859.
26,537	Pratt	Dec. 20, 1859.
27,948	Cross	Apr. 7, 1860.
29,138	Churchill	July 17, 1860.
31,351	Hook	Feb. 5, 1861.
31,423	Williams	Feb. 12, 1861.
35,126	Pratt	Apr. 29, 1862.
35,542	Pryibil	June 10, 1862.
37,580	Jones	Feb. 3, 1863.
41,272	Bland	Jan. 19, 1864.
42,801	Sleppy	May 17, 1864.
43,819	Willcox	Aug. 9, 1864.
44,720	Gritzner	Oct. 18, 1864.
47,462	Schenkl	Apr. 25, 1865.
51,346	Otis	Dec. 5, 1865.
51,514	Bodwell	Dec. 19, 1865.
53,527	Evans	Mar. 27, 1866.
53,783	Goodrich *et al.*	Apr. 10, 1866.
54,715	Girandins	May 15, 1866.
55,417	Hawkins	June 3, 1866.
60,456	Zinck	Dec. 11, 1866.
64,051	Wheaton	Apr. 23, 1867.
67,524	Froelich	Aug. 6, 1867.
81,080	Goodrich	Aug. 18, 1868.
87,810	Wheelock	Mar. 16, 1869.
93,459	Macaulay	Aug. 10, 1869.
98,409	Pratt *et al.*	Dec. 28, 1869.
99,122	Warner	Jan. 25, 1870.
102,787	Dulaney	May 10, 1870.
103,609	Hawkins	May 31, 1870.

25. *Tension Devices* (continued).

No.	Name.	Date.
103,643	Mooney	May 31, 1870.
110,424	Bennett	Dec. 27, 1870.
113,027	Crumb	Mar. 28, 1871.
115,756	McCarthy	June 6, 1871.
117,644	Kimball	Aug. 1, 1871.
119,589	Estabrooke	Oct. 3, 1871.
123,038	Newcomb	Jan. 23, 1872.
123,054	Spear	Jan. 23, 1872.
125,535	Bromley	Apr. 9, 1872.
127,982	Merrick	June 18, 1872.
129,195	Williams	July 16, 1872.
129,761	Stackpole	July 23, 1872.
130,288	Fairfield	Aug. 6, 1872.
136,626	Tiffany	Mar. 11, 1873.
138,381	Coles	Apr. 29, 1873.
148,773	Stetson	Mar. 17, 1874.
149,566	Blake	Apr. 14, 1874.
*5,859	Evans	May 5, 1874.
154,084	Rehfuss	Aug. 11, 1874.

26. *Thread-Cutters.*

16,713	Burnham	Mar. 3, 1857.
52,398	Dennis *et al.*	Feb. 6, 1866.
67,591	Sawyer	Aug. 6, 1867.
90,954	Neale *et al.*	June 8, 1869.
104,561	Crowe	June 27, 1870.
106,526	Wood	Aug. 16, 1870.
†118,467	Lord	Aug. 29, 1871.
123,772	Dimond	Feb. 20, 1872.
126,860	Wolcott	May 14, 1872.
127,053	Harris	May 21, 1872.
134,518	Collins	Jan. 7, 1873.
134,669	Henry *et al.*	Jan. 7, 1873.
137,947	Oburg	Apr. 15, 1873.
138,153	Henry *et al.*	Apr. 22, 1873.
138,412	Leslie	Apr. 29, 1873.
142,042	Rayor *et al.*	Aug. 19, 1873.
143,046	Webber	Sept. 23, 1873.
143,726	Slack	Oct. 14, 1873.
144,326	Evinger	Nov. 4, 1873.
146,561	West	Jan. 20, 1874.

27. *Miscellaneous.*

12,984	Caperon	May 29, 1855.
16,315	Johnson *et al.*	Dec. 23, 1856.

27. *Miscellaneous* (continued).

No.	Name.	Date.
18,817	Lazelle	Dec. 8, 1857.
20,006	Steen	Apr. 20, 1858.
20,954	Donovan	July 27, 1858.
21,669	Grover	Oct. 5, 1858.
22,264	First	Dec. 7, 1858.
22,833	Wade	Feb. 1, 1859.
28,642	Alexander	June 12, 1860.
29,035	First	July 3, 1860.
31,263	Smith	Jan. 29, 1861.
31,477	Ruggles	Feb. 19, 1861.
31,642	Earle	Mar. 5, 1861.
37,925	Smith	Mar. 17, 1863.
42,149	Stain	Mar. 29, 1864.
42,318	Stoops	Apr. 12, 1864.
44,465	Smith	Sept. 27, 1864.
44,490	Willcox	Sept. 27, 1864.
48,840	Rodier	July 18, 1865.
51,890	Bean	Jan. 2, 1866.
67,544	Hobb	Aug. 6, 1867.
67,674	Preston	Aug. 13, 1867.
76,986	Brown	Apr. 21, 1868.
91,318	Ferren	June 15, 1869.
92,972	Huckans *et al.*	July 27, 1869.
97,892	Dewey	Dec. 14, 1869.
99,380	Welty	Feb. 1, 1870.
114,071	Whiteside	Apr. 25, 1871.
117,357	Wilder	July 25, 1871.
118,671	Aritrim	Sept. 5, 1871.
121,043	Demarest	Nov. 21, 1871.
126,199	Gibbs	Apr. 30, 1872.
126,488	Pratt	May 7, 1872.
127,114	Speirs	May 21, 1872.
128,850	Butterfield	July 9, 1872.
131,166	Hinds	Sept. 10, 1872.
131,324	Larton	Sept. 17, 1872.
132,081	Hopkins	Oct. 8, 1872.
135,445	Roggenburger	Feb. 4, 1873.
137,007	Lincoln *et al.*	Mar. 18, 1873.
139,962	Keith	June 17, 1873.
140,438	Smith	July 1, 1873.
140,584	Lincoln *et al.*	July 8, 1873.
146,628	Woodruff	Jan. 20, 1874.
150,787	Powell	May 12, 1874.
151,406	Lomax	May 26, 1874.
152,374	Henry	June 23, 1874.
152,829	Coles	July 7, 1874.
154,385	Frame	Aug. 25, 1874.
155,783	Wooster *et al.*	Oct. 6, 1874.
156,728	Groubman	Nov. 10, 1874.
156,863	Waterhouse	Nov. 17, 1874.
156,913	Cooley	Nov. 17, 1874.
157,059	Bean	Nov. 24, 1874.

CLASS G. — ATTACHMENTS.

1. *Binders.*

No.	Name.	Date.
10,344	Sweet	Dec. 20, 1853.
11,615	Nichols	Aug. 29, 1854.
12,322	Nichols	Jan. 30, 1855.
14,322	McCurdy	Feb. 26, 1856.
15,020	Singer	June 3, 1856.
21,659	Douglas	Oct. 5, 1858.
22,987	Snyder	Feb. 15, 1859.
28,774	Price	June 19, 1860.
32,037	Alford	Apr. 16, 1861.
40,127	Smith	Sept. 29, 1863.
42,615	Wissler *et al.*	May 3, 1864.
42,989	Cochran	May 31, 1864.
46,722	Steyner	Mar. 7, 1865.
49,036	Marsh	July 25, 1865.
52,387	Chaplin	Feb. 6, 1866.
59,879	Vincent	Nov. 20, 1866.
83,742	Stoddard	Nov. 3, 1868.
93,147	Wendell	July 27, 1869.
93,202	Hotchkiss	Aug. 3, 1869.
95,409	Angell	Oct. 5, 1869.
100,904	Kasson	Mar. 15, 1870.
102,273	Kellog	Apr. 26, 1870.
103,538	Anderson	May 31, 1870.
105,577	Kasson	July 19, 1870
106,730	Sawyer	Aug. 23, 1870.
109,366	Martin	Nov. 15, 1870.
110,740	Cole	Jan. 3, 1871.
110,810	White	Jan. 3, 1871.
112,019	Cole	Feb. 21, 1871.
112,223	Cole	Feb. 28, 1871.
114,387	Allebaugh *et al.*	May 2, 1871.
*4,376	Martin	May 9, 1871.
115,197	Harris	May 23, 1871.
116,195	Judd *et al.*	June 20, 1871.
116,570	Dalton	July 4, 1871.
116,761	Secor	July 4, 1871.

1. *Binders* (continued).

No.	Name.	Date.
119,555	Bartlett	Oct. 3, 1871.
120,513	Hall	Oct. 31, 1871.
120,969	Harris	Nov. 14, 1871.
121,014	Smith	Nov. 15, 1871.
121,356	Goldsmith	Nov. 28, 1871.
121,516	Harris	Dec. 5, 1871.
124,206	Goodrich *et al.*	Mar. 5, 1872.
124,968	Moschowitz	Mar. 26, 1872.
125,590	Martin	Apr. 9, 1872.
125,674	Grosfeld	Apr. 16, 1872.
127,158	Dalton	May 28, 1872.
128,216	Dulaney	June 25, 1872.
130,021	Comings	July 30, 1872.
130,914	Grosfeld	Aug. 27, 1872.
131,583	White	Sept. 24, 1872.
*5,180	Douglas	Dec. 10, 1872.
135,381	Stoll	Jan. 28, 1873.
138,306	Wood	Apr. 29, 1873.
138,772	West	May 13, 1873.
139,378	Earle	May 27, 1873.
140,233	Alexander	June 24, 1873.
144,706	Sexauer	Nov. 18, 1873.
147,970	Peacock	Feb. 24, 1874.
148,933	Comings	May 24, 1874.
156,624	Young	Nov. 3, 1874.

2. *Braiders.*

12,014	Boynton	Nov. 28, 1854.
26,205	Robertson	Nov 22, 1859.
36,847	Maddock	Nov. 4, 1862.
43,355	Wagener	June 28, 1864.
44,339	Ramsey	Sept. 20, 1864.

2. *Braiders* (continued).

No.	Name.	Date.
47,171	Planer	Apr. 4, 1865.
50,157	Planer	Sept. 26, 1865.
51,247	Warth	Nov. 28, 1865.
54,670	Bartram	May 15, 1866.
63,117	Thomas	Mar. 19, 1867.
81,138	Carpenter	Aug. 18, 1868.
89,915	Chester	May 11, 1869.
93,193	Gillam	Aug. 3, 1869.
94,812	Contessa	Sept. 14, 1869.
98,985	Lyon	Jan. 18, 1870.
99,054	Bouscay	Jan. 25, 1870.
100,796	Pettee	Mar. 15, 1870.
108,033	Komp	Oct. 4, 1870.
110,374	Komp	Dec. 20, 1870.
117,344	Spout	July 25, 1871.
123,167	Goodrich	Jan. 30, 1872.
125,488	Steward	Apr. 9, 1872.
125,986	Price	Apr. 23, 1872.
126,382	Ellicott *et al.*	May 7, 1872.
128,825	Thomas	July 9, 1872.
136,354	Alexander	Mar. 4, 1873.
136,355	Alexander	Mar. 4, 1873.
140,012	Chaffee	June 17, 1873.
150,059	Lapham	Apr. 21, 1874.
152,662	Manning	June 30, 1874.
154,173	Davis	Aug. 18, 1874.
156,154	Gullmann	Oct. 20, 1874.
156,892	Rickart *et al.*	Nov. 17, 1874.

3. *Corders.*

12,858	Dickinson	May 15, 1855.
25,255	Golay	Aug. 30, 1859.

3. *Corders* (continued).

No.	Name.	Date.
26,561	Brady	Dec. 27, 1859.
28,776	Rankin	June 19, 1860.
31,494	Taylor	Feb. 19, 1861.
39,336	Benedict	July 28, 1863.
42,657	Henry	May 10, 1864.
49,968	Brady	Sept. 19, 1865.
91,285	Sulgrove	June 15, 1869.
114,254	Barnum	May 2, 1871.
115,048	Fowler *et al.*	May 23, 1871.
121,775	Goodrich	Dec. 12, 1871.
123,991	Goodrich	Feb. 27, 1872.
126,050	Hall	Apr. 23, 1872.
127,103	Price *et al.*	May 21, 1872.
*4,909	Horn	May 21, 1872.
130,763	Sullivan	Aug. 20, 1872.
131,027	Rodier	Sept. 3, 1872.
143,589	Powell	Oct. 14, 1873.
146,736	Wilson	Jan. 20, 1874.

4. *Embroidering.*

13,662	Singer	Oct. 9, 1855.
31,864	Boyd	Apr. 2, 1861.
33,556	Mann	Oct. 22, 1861.
42,770	Horne	May 17, 1864.
43,289	Crittenden	June 28, 1864.
51,239	Stevens	Nov. 28, 1865.
52,374	Boyd	Jan. 30, 1866.
65,768	Rose	June 11, 1867.
87,633	Carpenter	Mar. 9, 1869.
89,446	Thomas	Apr. 27, 1869.
91,708	Boyd	June 22, 1869.
91,898	Bartram	June 29, 1869.
93,093	Johnson	July 27, 1869.
93,266	Young	Aug. 3, 1869.
93,480	Rose	Aug. 10, 1869.
103,578	Cubley	May 31, 1870.
103,664	Rose	May 31, 1870.
103,984	Cobb	June 7, 1870.
104,017	Goodrich	June 7, 1870.
105,087	Johnson	July 5, 1870.
108,150	Johnson	Oct. 11, 1870.
111,071	Mack	Jan. 17, 1871.
112,601	Johnson	Mar. 14, 1871.
130,317	Rose	Aug. 6, 1872.
133,901	Stewart	Dec. 10, 1872.
136,098	Rose	Feb. 18, 1873.
142,478	Johnson	Sept. 2, 1873.
148,761	Rose	Mar. 17, 1874.
152,248	Palmer	June 23, 1874.
153,116	Rose	July 14, 1874.
153,117	Rose	July 14, 1874.
153,542	Cornely	July 28, 1874.
154,088	Rose	Aug. 11, 1874.
*6,005	Rose	Aug. 11, 1874.
161,632	Palmer	Apr. 6, 1875.

5. *Guides.*

13,275	Robinson	July 17, 1855.
16,586	Hull	Feb. 10, 1857.
31,185	Munson	Jan. 22, 1861.
31,366	Barnum	Feb. 12, 1861.
38,705	Wagener	May 26, 1863.
40,464	Fish	Nov. 3, 1863.
42,184	Fowler	Apr. 5, 1864.
42,876	Robjohn	May 24, 1864.
42,877	Robjohn	May 24, 1864.
*1,760	Barnum	Sept. 13, 1864.
45,477	Conant	Dec. 20, 1864.
47,978	Peterson	May 30, 1865.
48,369	Clemons	June 27, 1865.
49,031	Huston	July 25, 1865.
49,558	Harrington	Aug. 22, 1865.
50,396	Smith	Oct. 10, 1865.
51,547	Brown	Dec. 19, 1865.
51,645	Zuchetti	Dec. 19, 1865.
*2,163	Barnum	Jan. 30, 1866.
52,870	McCurdy	Feb. 27, 1866.
54,367	Knight	May 1, 1866.
54,602	Robjohn	May 8, 1866.
56,527	Capewell	July 24, 1866.
56,714	Conant	July 31, 1866.
*2,323	Clemons	July 31, 1866.
59,997	Hall	Nov. 27, 1866.
60,360	Goodrich	Dec. 11, 1866.
61,103	Rehfuss	Jan. 8, 1867.
64,840	Clemons	May 21, 1867.
64,968	Garvie	May 21, 1867.
65,395	King	June 4, 1867.
67,590	Safford *et al.*	Aug. 6, 1867.
81,466	Benedict *et al.*	Aug. 25, 1868.
81,604	Cline	Sept. 1, 1868.
84,783	Wensley	Dec. 8, 1868.

5. *Guides* (continued).

No.	Name.	Date.
85,364	Carpenter	Dec. 29, 1868.
86,474	Van Vlean	Feb. 2, 1869.
86,594	Rodier	Feb. 2, 1869.
89,506	Rumpff	Apr. 27, 1869.
90,340	Clemons	May 25, 1869.
91,292	Wells	June 15, 1869.
91,922	Dinsmore	June 29, 1869.
93,010	Rogers	July 27, 1869.
93,540	Jones	Aug. 10, 1869.
94,175	Benster	Aug. 31, 1869.
95,362	Lewis	Sept. 28, 1869.
102,469	Alter	May 3, 1870.
103,159	Dodge	May 17, 1870.
103,318	Fisher	May 24, 1870.
109,612	Grimes	Nov. 29, 1870.
109,668	Rogers *et al.*	Nov. 29, 1870.
111,199	Grimes	Jan. 24, 1871.
112,245	Herterich	Feb. 28, 1871.
112,327	Dufour	Mar. 7, 1871.
113,669	Howard	Apr. 11, 1871.
116,056	Howard	June 20, 1871.
117,152	Colton *et al.*	July 18, 1871.
117,557	Moschcowitz	Aug. 1, 1871.
117,716	Alter	Aug. 8, 1871.
118,109	Cotton *et al.*	Aug. 15, 1871.
118,110	Cotton *et al.*	Aug. 15, 1871.
118,111	Cotton *et al.*	Aug. 15, 1871.
118,145	Palmer	Aug. 15, 1871.
118,412	Wells	Aug. 22, 1871.
118,913	Decker	Sept. 12, 1871.
119,102	Armstrong	Sept. 19, 1871.
*4,556	Alter	Sept. 19, 1871.
119,350	Hall	Sept. 26, 1871.
120,966	Halladay	Nov. 14, 1871.
121,293	Matterson	Nov. 28, 1871.
121,366	Hewitt	Nov. 28, 1871.
124,086	Roberts	Feb. 27, 1872.
124,493	Jensen	Mar. 12, 1872.
127,157	Dalton	May 28, 1872.
130,169	Willson	Aug. 6, 1872.
132,101	Perry	Oct. 8, 1872.
134,497	Vincent	Dec. 31, 1872.
134,826	Violet	Jan. 14, 1873.
136,859	Peaslee	Mar. 18, 1873.
140,406	Dupré	July 1, 1873.
142,812	Powell	Sept. 16, 1873.
142,819	Springer	Sept. 16, 1873.
143,955	Bond	Oct. 28, 1873.
143,969	De Waru	Oct. 28, 1873.
*5,689	Roberts	Dec. 16, 1873.
145,841	Buschmeier	Dec. 23, 1873.
148,047	Goodrich	Mar. 3, 1874.
148,048	Goodrich	Mar. 3, 1874.
150,787	Powell	May 12, 1874.
154,113	Baglin	Aug. 18, 1874.
154,485	Howard	Aug. 25, 1874.
158,231	Ballou	Dec. 29, 1874.
*6,306	Powell	Feb. 23, 1875.

6. *Hemmers.*

10,386	Blodget	Jan. 3, 1854.
12,826	Odlorne	May 8, 1855.
14,283	Chapin	Feb. 19, 1856.
15,402	Boyes	July 22, 1856.
17,224	Marston	May 5, 1857.
20,245	Serrell	May 11, 1858.
20,695	Boyd	June 29, 1858.
21,355	Odlorne	Aug. 31, 1858.
23,079	Clemons	Mar. 1, 1859.
24,088	Barnum *et al.*	May 24, 1859.
25,715	Blake *et al.*	Oct. 11, 1859.
26,207	Serrell	Nov. 22, 1859.
27,805	Howell	Apr. 10, 1860.
28,889	Mitchell	June 26, 1860.
31,602	Howell	Mar. 5, 1861.
31,645	Marsh	Mar. 5, 1861.
31,878	Downer	Apr. 2, 1861.
32,035	Whitcomb	Apr. 9, 1861.
32,519	Jenks	June 11, 1861.
32,710	Paddock	July 23, 1861.
35,972	Ensign	July 22, 1862.
37,505	Henry	Jan. 27, 1863.
38,662	Downes	May 26, 1863.
39,160	Morrison	July 7, 1863.
*1,569	Blake *et al.*	Nov. 10, 1863.
43,657	Willcox	July 26, 1864.
46,790	Gaskill	Mar. 14, 1865.
47,629	Gaskill	May 9, 1865.
47,630	Gaskill *et al.*	May 9, 1865.
47,632	Goebel	May 9, 1865.
52,646	Overhiser	Feb. 13, 1866.
52,749	Rose	Feb. 20, 1866.
58,210	Browning *et al.*	Sept. 25, 1866.
58,670	Ogburn	Oct. 9, 1866.
67,753	Haggerty	Aug. 13, 1867.
69,095	Holcomb	Sept. 24, 1867.
76,720	Davis	Apr. 14, 1868.

6. *Hemmers* (continued).

No.	Name.	Date.
80,090	Rehfuss	July 21, 1868.
80,558	Morrison	Aug. 4, 1868.
84,454	Welder *et al.*	Nov. 24, 1868.
*3,402	Blodgett	Apr. 27, 1869.
92,692	Bartleson	July 20, 1869.
96,180	Yeutzer	Oct. 26, 1869.
96,809	Howell	Nov. 16, 1869.
96,901	Enlass	Nov. 16, 1869.
101,147	Morehouse	Mar. 22, 1870.
101,988	Eldridge	Apr. 19, 1870.
102,082	Boomer *et al.*	Apr. 19, 1870.
103,611	Hawkins	May 31, 1870.
106,155	Harris	Aug. 9, 1870.
106,489	Karr	Aug. 16, 1870.
107,650	Bartlett	Sept. 27, 1870.
107,889	Eldridge	Oct. 4, 1870.
109,585	Carleton	Nov. 29, 1870.
110,737	Carleton	Jan. 3, 1871.
113,903	Martin	Apr. 18, 1871.
115,282	Darby	May 30, 1871.
117,604	Colby	Aug. 1, 1871.
117,669	Ober	Aug. 1, 1871.
119,814	Blakemore	Oct. 10, 1871.
119,921	Ellis	Oct. 17, 1871.
120,868	Forrest	Nov. 14, 1871.
121,046	Ellis	Nov. 21, 1871.
121,944	Johnson	Dec. 19, 1871.
122,180	Lawrence	Dec. 26, 1871.
*4,693	Eldridge	Jan. 2, 1872.
122,819	Eldridge	Jan. 16, 1872.
124,809	Goodrich	Mar. 19, 1872.
125,833	Morehouse	Apr. 16, 1872.
126,139	Ellis	Apr. 30, 1872.
127,043	Gage	May 21, 1872.
127,732	Barnum	June 11, 1872.
128,876	Hall	July 9, 1872.
132,062	Darby	Oct. 8, 1872.
132,172	Morey	Oct. 15, 1872.
133,201	Chabot *et al.*	Nov. 19, 1872.
136,495	Ellis	Mar. 4, 1873.
136,651	Griest	Mar. 11, 1873.
138,064	Yeutzer	Apr. 22, 1873.
138,371	Booth	Apr. 29, 1873.
138,638	Goodrich *et al.*	May 6, 1873.
*5,414	Howell	May 20, 1873.
141,576	McMillan	Aug. 5, 1873.
141,933	Caswell	Aug. 19, 1873.
142,519	Shultz	Sept. 2, 1873.
142,689	Eldridge	Sept. 9, 1873.
143,160	Johnson	Sept. 23, 1873.
143,433	Brown	Oct. 7, 1873.
144,333	Griest	Nov. 4, 1873.
144,649	Apthorpe	Nov. 18, 1873.
144,736	Bryant *et al.*	Nov. 18, 1873.
146,185	Jones	Jan. 6, 1874.
146,684	Johnson	Jan. 20, 1874.
151,202	Davis	May 26, 1874.
151,807	Terry *et al.*	June 9, 1874.
153,179	Price	July 21, 1874.
153,301	Bean	July 21, 1874.
156,624	Young	Nov. 3, 1874.
159,391	Colby	Feb. 2, 1875.

7. *Rufflers and Tuckers.* (*a.*) *Tension-Plates.*

14,475	Singer	Mar. 18, 1856.
28,139	Arnold	May 8, 1860.
30,112	Arnold	Sept 25, 1860.
42,043	Brown	Mar. 22, 1864.
50,164	Riggs	Sept. 26, 1865.
61,552	Miller	Jan. 29, 1867.
67,183	Fitch	July 30, 1867.
67,582	Reed	Aug. 6, 1867.
69,946	Stewart	Oct. 15, 1867.
80,371	Stewart	July 28, 1868.
83,592	Bartram	Nov. 3, 1868.
84,414	Crandell	Nov. 24, 1868.
84,676	Brooks *et al.*	Dec. 8, 1868.
89,415	Lowerree	Apr. 27, 1869.
94,299	Fairbairn	Aug. 31, 1869.
95,171	Vosburgh	Sept. 21, 1869.
95,469	Gunnerman	Oct. 5, 1869.
98,389	Kasson	Dec. 28, 1869.
100,161	Leslie	Feb. 22, 1870.
101,446	Eck	Apr. 5, 1870.
103,755	Leslie	May 31, 1870.
106,481	Hall	Aug. 16, 1870.
108,492	Leslie	Oct. 18, 1870.
108,787	Howard	Nov. 1, 1870.
116,715	Johnson	July 4, 1871.
123,168	Goodrich	Jan. 30, 1872.
124,853	Peterson	Mar. 19, 1872.
125,032	Dalton	Mar. 26, 1872.
125,608	Moore	Apr. 9, 1872.
126,467	Lawrence *et al.*	May 7, 1872.
129,352	Leslie	July 16, 1872.
131,857	Dalton	Oct. 1, 1872.
*6,159	Arnold	Dec. 1, 1874.

7. (b.) *Reciprocating Blades.*

No.	Name.	Date.
36,074	Crosby *et al.*	Aug. 5, 1862.
37,033	Crosby *et al.*	Dec. 2, 1862.
37,550	Pipo	Jan. 27, 1863.
46,424	Robjohn	Feb. 14, 1865.
50,225	Crosby	Oct. 3, 1865.
50,473	Hecht	Oct. 17, 1865.
58,376	Cary	Oct. 2, 1866.
89,085	Scharffe	Apr. 20, 1869.
93,063	Davis	July 27, 1869.
93,979	Everiss	Aug. 24, 1869.
106,788	Davis	Aug. 30, 1870.
108,486	Johnston	Oct. 1, 1870.
111,130	Mack	Jan. 24, 1871.
111,458	Johnston	Jan. 31, 1871.
112,882	Zay	Mar. 21, 1871.
118,759	Toof	Sept. 5, 1871.
120,173	Toof	Oct. 24, 1871.
120,722	Darby	Nov. 7, 1871.
120,817	Howard	Nov. 14, 1871.
122,268	Lyon	Dec. 26, 1871.
122,611	Johnston	Jan. 9, 1872.
123,115	Lyon	Jan. 30, 1872.
123,494	Mack	Feb. 6, 1872.
123,788	Moscheowitz	Feb. 20, 1872.
123,910	Johnston	Feb. 20, 1872.
123,995	Johnston	Feb. 27, 1872.
124,894	Gray *et al.*	Mar. 26, 1872.
125,230	Toof	Apr. 2, 1872.
125,231	Toof	Apr. 2, 1872.
125,424	Willcox *et al.*	Apr. 9, 1872.
126,139	Ellis	Apr. 30, 1872.
126,436	Barney *et al.*	May 7, 1872.
126,913	Toof	May 21, 1872.
*4,923	Scharffe	May 28, 1872.
129,087	Bishop	July 16, 1872.
129,351	Leslie	July 16, 1872.
130,189	Chamberlain	Aug. 6, 1872.
130,522	Moody	Aug. 13, 1872.
130,592	Perkins	Aug. 20, 1872.
131,012	Lyon	Sept. 3, 1872.
131,277	Johnston	Sept. 10, 1872.
131,300	Powell	Sept. 10, 1872.
*5,052	Johnston	Sept. 10, 1872.
*5,070	Johnston	Sept. 24, 1872.
*5,071	Johnston	Sept. 24, 1872.
*5,072	Johnston	Sept. 24, 1872.
134,744	Goodrich	Jan. 14, 1873.
135,122	Johnston	Jan. 21, 1873.
135,123	Johnston	Jan. 21, 1873.
135,359	Perkins	Jan. 28, 1873.
136,162	Hugg *et al.*	Feb. 25, 1873.
136,676	Stewart	Mar. 11, 1873.
137,002	Huntington	Mar. 18, 1873.
137,003	Huntington	Mar. 18, 1873.
137,342	Chamberlain	Apr. 1, 1873.
137,343	Chamberlain	Apr. 1, 1873.
137,698	Johnston	Apr. 8, 1873.
*5,368	Cary	Apr. 22, 1873.
139,064	Johnston	May 20, 1873.
139,089	Sievers	May 20, 1873.
139,657	Chamberlain	June 10, 1873.
139,883	Dalton	June 17, 1873.
*5,448	Crosby *et al.*	June 17, 1873.
140,285	Lewitt	June 24, 1873.
140,557	Stoll	July 1, 1873.
141,407	Walker	July 29, 1873.
141,610	Walker	Aug. 5, 1873.
142,543	Woolworth	Sept. 2, 1873.
143,049	Wise	Sept. 23, 1873.
143,259	Schullian	Sept. 30, 1873.
143,424	Rush	Oct. 7, 1873.
146,005	Johnston	Dec. 30, 1873.
146,482	Schultz	Jan. 13, 1874.
147,463	Woolworth	Feb. 10, 1874.
*5,793	Schultz	Mar. 17, 1874.
148,959	Johnston	Mar. 24, 1874.
149,110	Farmer	Mar. 31, 1874.
151,781	Irvine	June 9, 1874.
151,978	Hildebrand	June 16, 1874.
152,254	Sievers *et al.*	June 23, 1874.
154,497	Lewitt	Aug. 25, 1874.
156,119	Barney	Oct. 20, 1874.

7. (b.) *Reciprocating Blades* (continued).

No.	Name.	Date.
156,662	Darby	Nov. 10, 1874.
157,228	Schultz	Nov. 24, 1874.
157,462	Sievers	Dec. 8, 1874.
158,428	McCullough	Jan. 5, 1875.
158,834	Darby	Jan. 19, 1875.
159,020	Darby	Jan. 26, 1875.
159,261	Griest	Feb. 2, 1875.

8. *Tuck Creasers and Markers.*

27,179	Wheeler	Feb. 14, 1860.
28,633	Fuller	June 5, 1860.
31,379	Fish	Feb. 12, 1861.
34,357	Fish	Feb. 11, 1861.
40,084	Rose	Sept. 22, 1863.
46,871	Bolton	Mar. 21, 1865.
50,271	Perrett	Oct. 3, 1865.
52,918	West	Feb. 27, 1866.
60,111	Yale	Nov. 27, 1866.
61,618	Goodrich	Jan. 29, 1867.
63,033	Fuller	Mar. 19, 1867.
64,404	Bostock	May 7, 1867.
65,141	Weissenborn	May 28, 1867.
66,185	St. John	June 25, 1867.
67,407	Brown	Aug. 6, 1867.
67,653	House	Aug. 13, 1867.
67,870	Goodrich	Aug. 20, 1867.
69,289	White	Sept. 24, 1867.
77,972	Fuller	May 19, 1868.
80,269	Bostock	July 28, 1868.
80,270	Bostock	July 28, 1868.
80,961	Ingle	Aug. 11, 1868.
81,160	Goodrich	Aug. 18, 1868.
83,950	Fuller	Nov. 10, 1868.
*3,218	Rose	Dec. 1, 1868.
85,856	Rogers	Jan. 12, 1869.
88,780	Fuller	Apr. 13, 1869.
89,842	Barnum	May 11, 1869.
*3,491	Weissenborn	June 8, 1869.
93,084	Davis	July 27, 1869.
93,743	Preiss	Aug. 17, 1869.
96,343	Page	Nov. 2, 1869.
97,435	Page	Nov. 30, 1869.
97,544	Mooney	Dec. 7, 1869.
101,272	Kellogg	Mar. 29, 1870.
103,342	Kellogg	May 24, 1870.
104,612	Martin	June 21, 1870.
105,402	Jones	July 12, 1870.
105,852	Safford	July 26, 1870.
106,151	Goodrich	Aug. 9, 1870.
106,789	Davis	Aug. 30, 1870.
107,109	Sibley	Sept. 6, 1870.
110,045	Jenson	Dec. 13, 1870.
*4,196	Bolton	Dec. 13, 1870.
112,050	Kellogg	Feb. 21, 1871.
112,578	Fuller	Mar. 14, 1871.
113,610	Yeutzer	Apr. 11, 1871.
114,276	Dulaney	May 2, 1871.
114,604	Robinson	May 9, 1871.
119,284	Shattuck	Sept. 26, 1871.
120,887	Lewitt	Nov. 14, 1871.
122,352	Barnum	Jan. 2, 1872.
122,613	Kasson	Jan. 9, 1872.
122,626	McFadden	Jan. 9, 1872.
123,989	Goodrich	Feb. 21, 1872.
124,025	Wiggins	Feb. 27, 1872.
125,782	Babcock	Apr. 16, 1872.
126,684	Doran	May 14, 1872.
127,023	Bush	May 21, 1872.
127,287	Yeutzer	May 28, 1872.
127,349	Hugg	May 28, 1872.
128,255	Smith	June 25, 1872.
128,942	Barnum	July 16, 1872.
129,128	Graff	July 16, 1872.
129,778	Babcock	July 23, 1872.
130,132	Hugg	Aug. 6, 1872.
130,365	Fuller	Aug. 13, 1872.
130,891	Bishop	Aug. 27, 1872.
131,206	Armstrong	Sept. 10, 1872.
132,018	Moore	Oct. 8, 1872.
132,148	Doran	Oct. 15, 1872.

8. *Tuck Creasers and Markers* (continued).

No.	Name.	Date.
134,966	Babcock	Jan. 21, 1873.
135,065	Barnum	Jan. 21, 1873.
135,078	Carpenter	Jan. 21, 1873.
135,919	Johnston	Feb. 18, 1873.
137,108	Stewart	Mar. 25, 1873.
138,635	Goodrich	May 6, 1873.
138,636	Goodrich	May 6, 1873.
139,249	Kane	May 27, 1873.
141,095	Tilestone	July 22, 1873.
143,741	Babcock	Oct. 21, 1873.
143,975	Faulkner	Oct. 28, 1873.
146,094	Powell	Dec. 30, 1873.
152,948	Henry	July 14, 1874.
154,052	Jones	Aug. 11, 1874.
157,649	Stewart	Dec. 8, 1874.
157,933	Sampson *et al.*	Dec. 22, 1874.
158,576	Detweiler	Jan. 12, 1875.
*6,316	Goodrich	Mar. 2, 1875.

9. *Tuckers and Plaiters.*

16,429	Bishop	Jan. 20, 1857.
27,029	Allen	Feb. 7, 1860.
29,856	Brady	Sept. 4, 1860.
35,667	Blake	Jan. 24, 1862.
40,657	Bollman	Nov. 17, 1863.
57,374	Preiss	Aug. 21, 1866.
63,463	Brown	Apr. 2, 1867.
64,237	Mattison	Apr. 30, 1867.
69,461	McNeill	Oct. 1, 1867.
79,447	Cole	June 30, 1868.
80,243	Tucker	July 21, 1868.
80,653	Morehouse *et al.*	Aug. 4, 1868.
80,721	Gardner	Aug. 4, 1868.
83,219	St. John	Oct. 20, 1868.
94,628	Morehouse *et al.*	Sept. 7, 1869.
95,874	Bodwell	Oct. 19, 1869.
110,670	Morehouse	Jan. 3, 1871.
115,044	Farrand	May 23, 1871.
121,488	Bush	Dec. 5, 1871.
121,699	Woodbury	Dec. 5, 1871.
123,529	Wharton	Feb. 6, 1872.
127,080	Martin	May 21, 1872.
127,432	Russell	June 4, 1872.
128,181	Shepler	June 18, 1872.
128,229	Hunter	June 25, 1872.
128,475	Farrand	July 2, 1872.
128,476	Farrand	July 2, 1872.
129,987	Schmidt	July 30, 1872.
131,418	Bean	Sept. 17, 1872.
132,235	Bean	Oct. 15, 1872.
137,047	Barnum	Mar. 25, 1873.
137,232	Oakley	Mar. 25, 1873.
137,342	Chamberlain	Apr. 1, 1873.
138,730	Bouillon	May 13, 1873.
*5,427	Bean	May 27, 1873.
141,623	Bean	Aug. 12, 1873.
141,626	Brown	Aug. 12, 1873.
145,482	Bean	Dec. 16, 1873.
146,377	Brown	Jan. 13, 1874.
148,025	Bouillon	Mar. 3, 1874.
152,543	Bean	June 30, 1874.
154,646	Cleveland	Sept. 1, 1874.

10. *Welt-Guides.*

33,817	Tucker	Nov. 26, 1861.
39,474	Folsom	Aug. 11, 1863.
42,810	Walker	May 17, 1864.
42,846	Folsom	May 24, 1864.
105,715	Moscheowitz	July 26, 1864.

11. *Variety of Work.*

59,983	Duffy	Nov 27, 1866.
88,630	Hall	Apr. 6, 1869.
102,294	Mellen	Apr. 26, 1870.
118,145	Palmer	Aug. 15, 1871.
119,496	Bartlett	Oct. 3, 1871.
135,976	Robards	Oct. 13, 1874.

Class H. — Tables and Stands.

1. *Tables.*

No.	Name.	Date.
31,044	Ross *et al.*	Feb. 26, 1861.
41,393	Pilbeam	Jan. 26, 1864.
42,318	Stoops	Apr. 12, 1864.
88,121	Blake	Mar. 23, 1869.
*3,697	Blake	Nov. 2, 1869.
103,472	Kerigan	May 24, 1870.
106,109	Blake	Aug. 9, 1870.
106,110	Blake	Aug. 9, 1870.
108,000	Blake	Oct. 4, 1870.

1. *Tables* (continued).

No.	Name.	Date.
108,074	Wheat	Oct. 4, 1870.
108,812	Morgan	Nov. 1, 1870.
110,335	Bennor	Dec. 20, 1870.
113,741	Chesterman	Apr. 18, 1871.
116,809	Cochran	July 11, 1871.
118,655	Wagner	Aug. 29, 1871.
119,962	Breed	Oct. 17, 1871.
121,998	Dickinson	Dec. 19, 1871.
122,872	Wagner	Jan. 6, 1872.

1. *Tables* (continued).

No.	Name.	Date.
123,813	French	Feb. 20, 1872.
127,604	Hoyt	June 4, 1872.
132,027	Sargent	Oct. 8, 1872.
133,487	Rehfuss	Nov. 26, 1872.
134,904	Loth	Jan. 14, 1873.
135,392	Wilson	Jan. 28, 1873.
135,827	Loth	Feb. 11, 1873.
136,701	Cheney	Mar. 11, 1873.
136,798	Wheat	Mar. 11, 1873.

1. *Tables* (continued).

No.	Name.	Date.
136,903	Cuthbert	Mar. 18, 1873.
136,959	Bennor	Mar. 18, 1873.
137,983	Wauzer	Apr. 15, 1873.
139,805	Morrison	June 10, 1873.
140,874	Bennor	July 15, 1873.
140,927	Loth	July 15, 1873.
141,250	Wolfinger	July 29, 1873.
141,985	Bennor	Aug. 19, 1873.
142,024	Jeffery	Aug. 19, 1873.
143,742	Bennor	Oct. 21, 1873.
147,148	Marchand *et al.*	Feb. 3, 1874.
150,775	Murphy	May 12, 1874.
152,075	Clark	June 16, 1874.
153,438	Jones	July 28, 1874.
156,144	Draper	Oct. 20, 1874.
156,517	Whitworth	Nov. 3, 1874.
157,185	Adams	Nov. 24, 1874.

2. *Cases and Cabinets.*

20,664	Ross *et al.*	June 22, 1858.
22,464	Uhlinger	Dec. 28, 1858.
114,435	Grove	May 2, 1871.
127,136	Alrich	May 28, 1872.
128,568	Uhlinger	July 2, 1872.
133,075	Alrich	Nov. 19, 1872.
133,361	Egley	Nov. 26, 1872.
134,905	Loth	Jan. 14, 1873.
136,525	Kirchner	Mar. 4, 1873.
136,542	Pusey	Mar. 4, 1873.
136,435	Range	Mar. 29, 1873.
140,324	Vetter	June 24, 1873.
147,572	Range	Feb. 17, 1874.
149,115	Hale	Mar. 31, 1874.
149,546	Tracey	Apr. 7, 1874.
149,767	Loomis	Apr. 14, 1874.
154,167	Anderson *et al.*	Aug. 18, 1874.

3. *Covers.*

55,023	Thompson	May 22, 1866.
72,739	Johnson	Dec. 31, 1867.
93,444	Hunt	Aug. 10, 1869.
98,485	French	Jan. 4, 1870.
101,363	Hall	Mar. 29, 1870.
*3,961	Johnson	May 3, 1870.
103,863	French	June 7, 1870.
104,378	Uhlinger *et al.*	June 14, 1870.
107,398	Mooney	Sept. 3, 1870.
109,384	Chinn	Nov. 22, 1870.
110,507	Smith	Dec. 27, 1870.
110,711	Wolfinger	Jan. 3, 1871.
117,358	Wolfinger	July 25, 1871.

3. *Covers* (continued).

No.	Name.	Date.
*4,527	Wheat	Aug. 22, 1871.
120,085	Nauen	Oct. 17, 1871.
123,673	Browne	Feb. 13, 1872.
126,956	Heckel	May 21, 1872.
127,244	Junett	May 28, 1872.
128,833	Wheeler	July 9, 1872.
130,072	Reed	July 30, 1872.
131,101	Hughes	Sept. 3, 1872.
131,151	Cochran	Sept. 10, 1872.
133,846	Gardner	Dec. 10, 1872.
134,496	Better	Dec. 31, 1872.
134,756	McLure	Jan. 14, 1873.
135,121	Jeffery	Jan. 21, 1873.
136,506	Grover	Mar. 4, 1873.
136,762	Reed	Mar. 11, 1873.
138,324	French	Apr. 29, 1873.
140,875	Bennor	July 15, 1873.
140,876	Bennor	July 15, 1873.
140,877	Bennor	July 15, 1873.
141,169	Pusey	July 22, 1873.
141,561	Jensen	Aug. 5, 1873.
143,611	Boyer	Oct. 14, 1873.
*5,667	Bennor	Nov. 25, 1873.
145,612	Bennor	Dec. 16, 1873.
146,296	Wendell	Jan. 6, 1874.
147,469	Baird	Feb. 17, 1874.
149,155	Range	Mar. 31, 1874.
151,503	Morris	June 2, 1874.
154,311	Wolfinger	Aug. 18, 1874.
*6,056	Vetter	Sept. 22, 1874.
156,042	Salisbury	Oct. 20, 1874.

4. *Trays.*

114,435	Grove	May 2, 1871.
127,136	Alrich	May 28, 1872.
136,525	Kirchner	Mar. 4, 1873.
146,298	Wendell	Jan. 6, 1874.

5. *Lamp-Brackets.*

138,831	Wolf	May 13, 1873.

6. *Work-Holders.*

115,288	Eddy	May 30, 1871.
146,110	Turner	Dec. 30, 1873.

7. *Aprons and Guards.*

130,339	Tower	Aug. 6, 1872.
136,410	Browne	Mar. 4, 1873.

8. *Chairs.*

No.	Name.	Date.
140,362	Gray	July 1, 1873.

9. *Casters.*

42,754	Dodge	May 17, 1864.
48,852	Stoops	July 18, 1865.
50,402	Stoops	Oct. 10, 1865.
52,257	Bartram	Jan. 30, 1866.
55,567	Wilkins	June 12, 1866.
75,755	Hathaway	Mar. 24, 1868.
79,571	Hewitt *et al.*	July 7, 1868.
81,454	Allen	Aug. 25, 1868.
88,558	Elliott	Apr. 6, 1869.
101,328	Veasey	Mar. 29, 1870.
101,843	Elliott	Apr. 12, 1870.
101,844	Elliott	Apr. 12, 1870.
101,924	Ryder	Apr. 12, 1870.
103,782	Sargeant	May 31, 1870.
107,666	Courts	Sept. 27, 1870.
112,740	Ryder	Mar. 14, 1871.
113,135	Bishop *et al.*	Mar. 28, 1871.
115,060	Jones	May 23, 1871.
115,779	Stafford *et al.*	June 6, 1871.
116,040	Fontayne	June 20, 1871.
118,117	Duncan	Aug. 15, 1871.
119,606	Hatch	Oct. 3, 1871.
120,098	Proctor	Oct. 17, 1871.
120,783	Skinner	Nov. 7, 1871.
124,106	Wright	Feb. 27, 1872.
127,571	Clark	June 4, 1872.
128,113	Chumock	June 18, 1872.
129,354	McAfferty	July 16, 1872.
129,629	Veasey	July 16, 1872.
132,285	Hiestand	Oct. 15, 1872.
137,141	Lincoln	Mar. 25, 1873.
139,606	Plank	June 3, 1873.
139,608	Proctor	June 3, 1873.
141,236	Robertson	July 29, 1873.
142,615	Clark	Sept. 9, 1873.
143,387	Smith	Sept. 30, 1873.
145,011	Proctor	Nov. 25, 1873.
146,289	Stansbury	Jan. 6, 1874.
146,997	Eddy	Feb. 3, 1874.
147,377	Eddy	Feb. 10, 1874.
147,574	Robinson	Feb. 17, 1874.
147,981	Sargeant	Feb. 24, 1874.
150,264	Strong	Apr. 27, 1874.
151,018	Gaar	May 19, 1874.
151,841	Cass	June 9, 1874.
152,241	Morton	June 23, 1874.
153,728	Sloan *et al.*	Aug. 4, 1874.
158,436	Plank	Jan. 5, 1875.
161,624	McEwen	Apr. 6, 1875.

Class I. — Motors.

1. *Hydraulic Engines and Water-Wheels.*

No.	Name.	Date.
120,975	Jennings	Nov. 14, 1871.
121,441	Welch	Nov. 28, 1871.
128,615	Greenleaf	July 2, 1872.
131,616	Hyde	Sept. 24, 1872.
136,452	Palmer	Mar. 4, 1873.
142,551	Atwell	Sept. 9, 1873.
146,120	Backus	Jan. 6, 1874.

2. *Steam, Air, and Gas Engines.*

See Gas-engine, pp. 947-949; Air-engine, pp. 35-45.

114,429	Fontaine	May 2, 1871.
121,702	Buckman	Dec. 12, 1871.
121,891	Nicholson	Dec. 12, 1871.
121,626	Jeffrey	Dec. 5, 1871.
122,484	Nicholson	Jan. 2, 1872.
123,414	Nicholson	Feb. 6, 1872.
153,440	Laubereau	July 28, 1874.

3. *Springs in various Combinations.*

36,084	Hall	Aug. 5, 1862.
*39,827	Parrot	Sept. 8, 1863.
67,730	Curdts	Aug. 13, 1867.
73,303	Cuppers	Jan. 14, 1868.
75,667	Crary	Mar. 17, 1868.
79,289	Monce	June 23, 1868.
79,296	Allis	June 30, 1868.
80,815	Enholm	Aug. 11, 1868.
81,219	Shiver	Aug. 18, 1868.
82,655	Stackpole	Sept. 29, 1868.
91,327	Garcin *et al.*	June 15, 1869.
93,214	Manson	Aug. 3, 1869.
95,069	Ayer	Sept. 21, 1869.
97,586	Ayer	Dec. 7, 1869.

3. *Springs in various Combinations* (continued).

No.	Name.	Date.
104,610	Manson	June 21, 1870.
111,276	Thornton *et al.*	Jan. 24, 1871.
115,379	Stearns	May 30, 1871.
115,436	Constable *et al.*	May 30, 1871.
120,654	Manson	Nov. 7, 1871.
121,532	Macauley	Dec. 5, 1871.
121,638	Manson*	Dec. 5, 1871.
121,745	Barnes	Dec. 12, 1871.
124,812	Greer	Mar. 19, 1872.
126,421	Squier	May 7, 1872.
126,441	Bouchard	May 7, 1872.
127,129	Wilcox	May 21, 1872.
129,998	Warren *et al.*	July 30, 1872.
131,614	Howell	Sept. 24, 1872.
133,760	Cleveland *et al.*	Dec. 10, 1872.
134,526	Dunton	Jan. 7, 1873.
141,367	Manson	July 29, 1873.
148,225	Manson	Mar. 3, 1874.
150,141	Fay	Apr. 28, 1874.
152,633	Herrinton	June 30, 1874.
156,161	Huntoon	Oct. 20, 1874.
160,876	Chambers	Mar. 16, 1875.

4. *Spring with Fusee.*

72,607	Cuppers	Dec. 24, 1867.
*87,020	Tuckerman	Feb. 16, 1869.
140,607	Young	July 8, 1873.

5. *Spring with Governor or Fly.*

16,315	Johnson *et al.*	Dec. 23, 1856.
48,467	Wells	June 27, 1865.
100,934	Shiver	Mar. 16, 1870.
127,189	Sage	May 28, 1872.

6. *Spring with Cone-Pulleys.*

No.	Name.	Date.
13,661	Singer	Oct. 9, 1855.
51,012	Buchanan	Nov. 2, 1865.
70,803	Chapman *et al.*	Nov. 12, 1867.

7. *Spring wound by Stirrups.*

141,996	Chambers	Aug. 19, 1873.

8. *Weight.*

44,909	Tuckerman	Nov. 1, 1864.
115,864	Johnson	June 13, 1871.
148,311	Lockwood	Mar. 10, 1874.

9. *Rocking Motion or Weight of the Operator.*

75,666	Crary	Mar. 17, 1868.
85,504	Baird	Jan. 5, 1869.
85,505	Baird	Jan. 5, 1869.
104,608	Leyburn	June 21, 1870.
109,478	Whittemore	Nov. 22, 1870.
142,839	Cochran	Sept. 16, 1873.

10. *Pendulum.*

77,167	Carter	Apr. 28, 1868.

11. *Wheel driven by Shot.*

110,667	Mills	Jan. 3, 1871.

sole. A cast-off works in connection with the needle. The horn is so shaped as to allow the stitch to be formed near the shoe around the shoe. Blake's patent, July 6, 1858. McKay Association pattern. See SHOE-SEWING MACHINE, Plate LIX.

Button-hole Machines.

19. A single-thread machine. The needle *a* penetrates the fabric back from the edge. The hook *c* passes over the edge, takes the loop of needle-thread, draws it up over the edge, and then the loop is taken by the hook *b* and spread in the path of the perforating needle in its next descent. See Stitch 33, Plate LVII.

20. A two-thread machine. A hole is cut in the goods for the button-hole; the material is held in a clamp, which is moved under the needle, so that the latter makes a circuit of the button-hole a short distance from the edge. The needle descends alternately through the material back from the edge and then over the edge; the loop formed by the first descent is interlocked by the loop formed at the second descent, and this second loop is secured by a looper-thread. The Union button-hole machine of Boston.

Miscellaneous Parts.

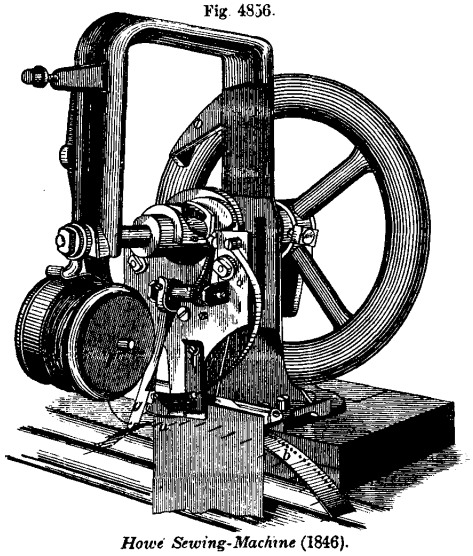
21. A winder for shuttle-bobbins, which are held between the two heads and rotated by the contact of the friction-wheel *a* with some rotating portion of the machine. *b* is an emery-wheel for sharpening needles.

22. A knife attached to the needle-bar to cut material parallel to the seam. In other instances a rotating cutter is attached to the cloth-plate.

23. A needle setter and threader. A device for placing the eye of the needle at the proper distance from the end of the needle-bar and for drawing the thread through the eye of the needle.

24. The material is raised and lowered in front of an ordinary sewing-needle, which is held between rollers that act to draw the material on to the point of the needle and off at the heel and on to the thread.

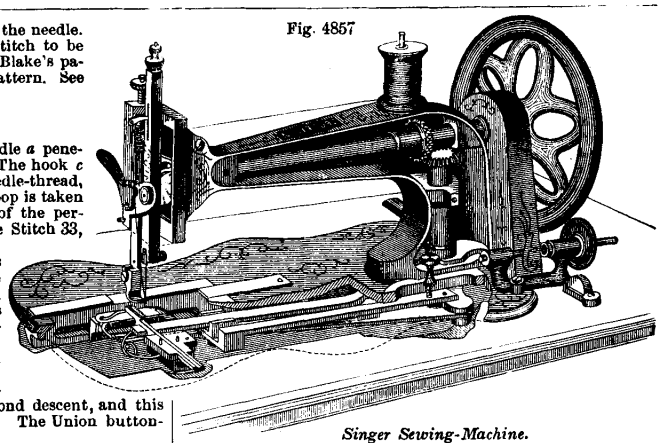
Fig. 4856.



Howe Sewing-Machine (1846).

Fig. 4856 is the Howe sewing-machine, patented in 1846. It used a grooved and curved eye-pointed needle *a* carried by a vibrating arm *g*, the needle being supplied with thread from a spool *f*. The loops of needle-thread were locked by a thread carried by a shuttle *i*, moved through the loop by means of reciprocating drivers. The cloth was suspended in a vertical position, impaled on pins projecting from a baster-plate *b* moved intermittingly under the needle by means of a toothed wheel. The length of the seam depended upon the length of the baster-plate, and the seams were necessarily straight. On reaching the end of the length, the machine was stopped, the baster-plate returned to its original position, and the cloth again attached.

Fig. 4857

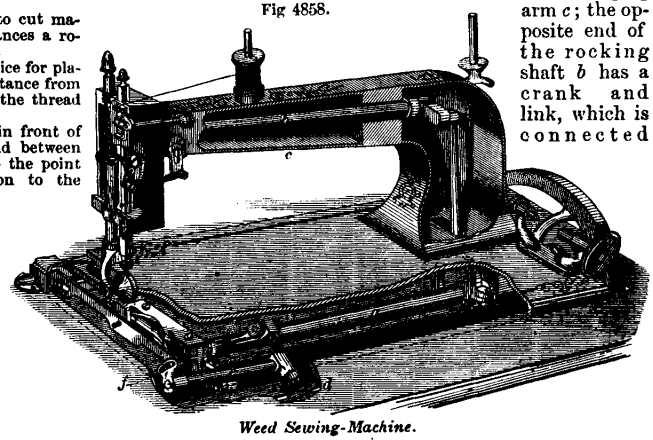


Singer Sewing-Machine.

The Singer machine was patented in 1851 and subsequent years. The machine makes a lock-stitch by means of a straight eye-pointed needle and a longitudinally reciprocating shuttle. The needle-bar derives its motion from a pin on the end of the rotating horizontal shaft, the pin entering a heart-shaped groove in a block attached to the needle-bar. A bevel-wheel on the main shaft engages a bevel-wheel on the vertical shaft, provided at its lower end with a crank, connected by link with the shuttle driver or carrier. The four-motion feeding-dog is operated through the horizontal lever actuated from the vertical shaft. The feed is adjusted through a movable fulcrum, controlled by a set-screw. A take-up lever controls the thread between the tension device and the eye of the needle.

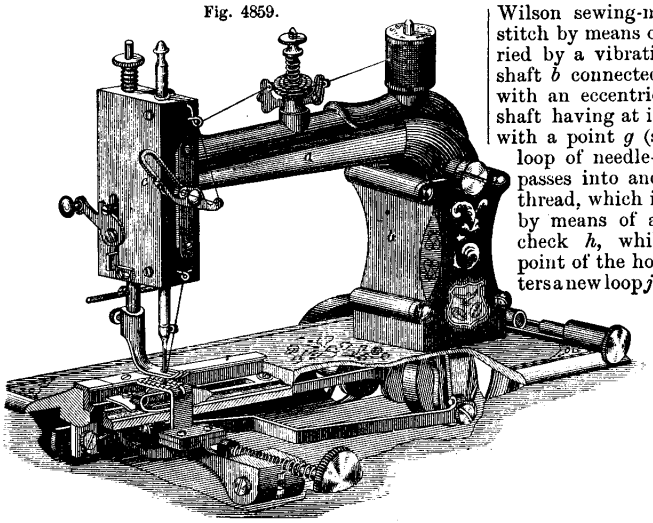
The Weed machine, as improved by G. A. Fairfield, and made under his patents, is shown in Fig. 4858. It makes a lock-stitch with a straight eye-pointed needle and reciprocating shuttle. The needle-bar is actuated from an eccentric on the main shaft *a*, which is connected by means of a link with a rocking shaft *b* in the goose-neck or overhanging arm *c*; the opposite end of the rocking shaft *b* has a crank and link, which is connected

Fig 4858.



Weed Sewing-Machine.

Fig. 4859.



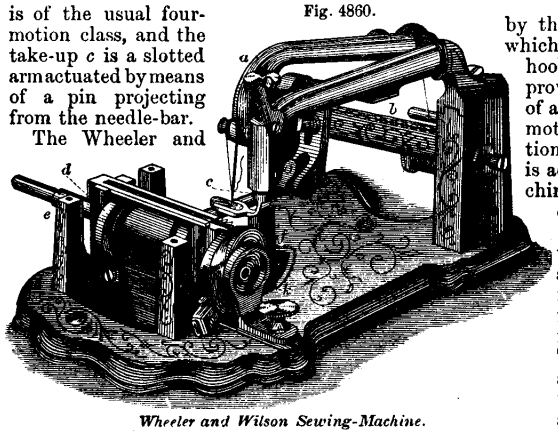
Wilson Sewing-Machine.

with the needle-bar. The needle descends through the cloth, rises sufficiently to form a loop to receive the point of the shuttle, then descends to slightly slacken the thread, and when the shuttle has passed completely through the loop, the needle rises to complete the stitch; a vibrating take-up, carried by the needle-bar and actuated through links, as shown, assists in tightening the stitch. A second eccentric on the main shaft is connected by means of a link with the shuttle-carrier, and another eccentric on the same shaft operates the feeding-device.

The length of the stitch is varied by means of the thumb-nut *d*, shaft *e*, and slotted cam *f*.

The W. G. Wilson sewing-machine (Fig. 4859) makes a stitch by a vertically reciprocating straight needle and a longitudinally reciprocating shuttle. The needle is moved by the action of a vibrating arm *a* pivoted to an upright *b* rising from the bed-plate. The lower end of the bent arm is slotted, and receives a pin projecting from a crank or disk on a short cross-shaft located directly under the upright *b*. The shuttle-driver is connected by link with the disk or crank that actuates the needle-arm. The feed is of the usual four-motion class, and the take-up *c* is a slotted arm actuated by means of a pin projecting from the needle-bar.

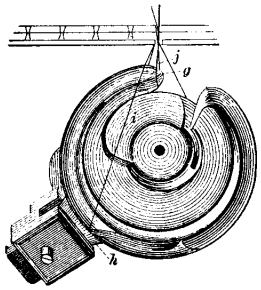
Fig. 4860.



Wheeler and Wilson Sewing-Machine.

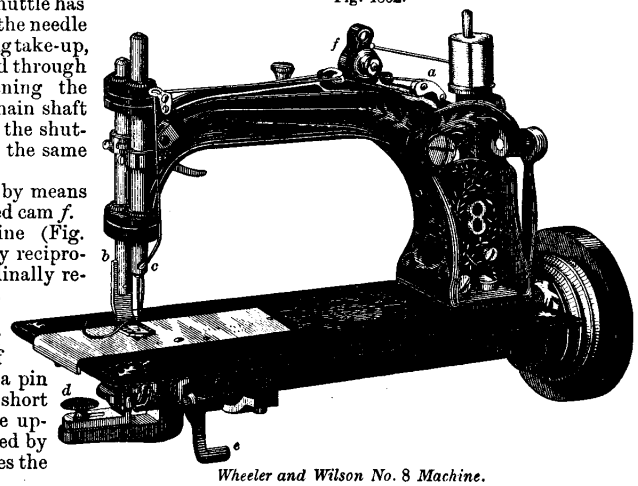
The Wheeler and Wilson sewing-machine (Fig. 4860) makes a lock-stitch by means of a curved eye-pointed needle carried by a vibrating arm *a* projecting from a rock-shaft *b* connected by link *c* and eccentric strap *d* with an eccentric on the rotating hook-shaft *e*, this shaft having at its outer end the hook *f*, provided with a point *g* (see Fig. 4861) adapted to enter the loop of needle-thread. As the hook *g* rotates, it passes into and draws down the loop *i* of needle-thread, which is held by means of a loop-check *h*, while the point of the hook enters a new loop *j*. Then the old loop *i* is cast off, the face of the hook being beveled for that purpose, and is then drawn upward by the action of the hook upon the loop through which it is then passing. During the rotation of the hook each loop is passed around a disk-bobbin *k* provided with a second thread and serving the part of a shuttle. The four-motion feed is the invention of A. B. Wilson, and is actuated in this machine by means of cams on the hook-shaft *e*.

Fig. 4861.



Wheeler and Wilson Hook.

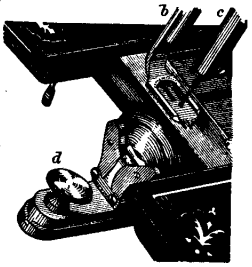
Fig. 4862.



Wheeler and Wilson No. 8 Machine.

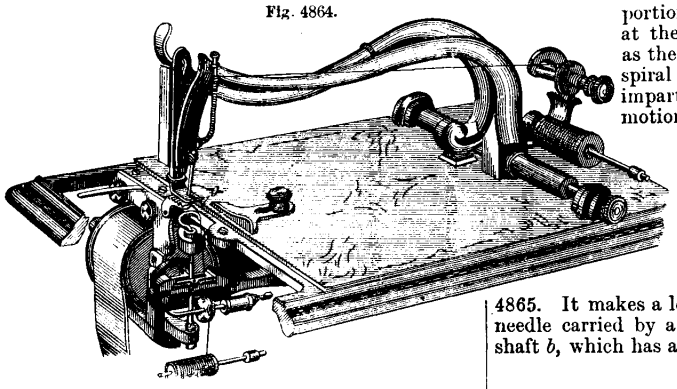
Figs. 4862, 4863, are views of the Wheeler and Wilson straight-needle and revolving-hook machine as improved by House. The machine represented is known as the No. 8, being a size smaller than

Fig. 4863.



W. and W. No. 8 Machine. (Partial Perspective View.)

Fig. 4864.



Grover and Baker Sewing-Machine.

that shown under TAILORING-MACHINE. The larger figure shows the general appearance of the machine when removed from the table; the smaller figure is a partial view, the machine being tipped up so as to show the bobbin-holder, bobbin, and hook in position.

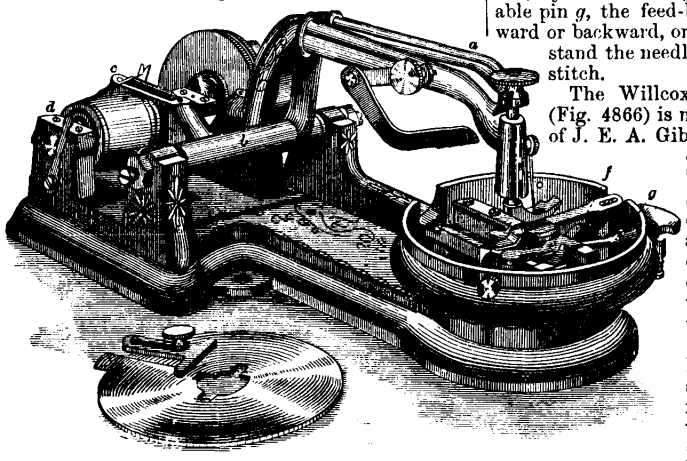
In the Wheeler and Wilson family machine, Figs. 4860, 4861, the loop of one stitch is drawn up through the agency of the rotary hook in expanding the loop for the next stitch. In Figs. 4862, 4863, by the introduction of an independent *take-up*, to facilitate the action of which a variable motion is given to the hook, each stitch is completed before another is begun. The stitch is drawn tight while the needle is out of the goods, the device for securing and regulating the under tension acting only while the take-up is drawing up the stitch.

The end of the *take-up* lever is shown at *a*; *b* is the presser-bar; *c* the needle-bar; *d* is the screw securing the bobbin-holder; *e* the bar by moving which the feed is regulated; *f* is the upper tension.

The Grover and Baker machine (shown at Fig. 4864) makes the double-loop stitch (see Plate LVII.). It uses a curved eye-pointed needle and a rotary reciprocating curved thread-carrying looper *g*. The needle is carried at the upper end of a ⊃-shaped arm, slotted at its lower forward end, to receive an actuating pin upon a disk connected with the main shaft. The vertical looper-shaft has a spiral portion embraced by a slotted plate at the end of the ⊃-shaped arm, and as the latter vibrates it acts upon the spiral portion of the looper-shaft, and imparts to it a reciprocating rotary motion. The feed is of the usual four-motion class. The threads are contained on ordinary spools, and the slack of the needle-thread is controlled by means of a spiral spring.

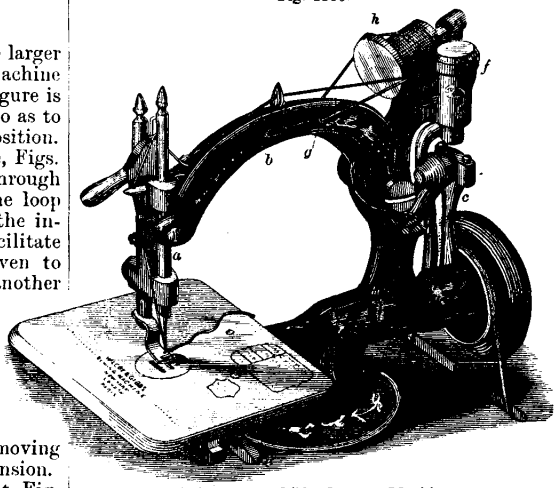
The Florence sewing-machine is made under L. W. Langdon's patents, and is shown at Fig. 4865. It makes a lock-stitch by means of a curved needle carried by a vibrating arm or lever *a*, on a shaft *b*, which has a backward extension-yoke *c* embracing an eccentric on the main shaft *d*. The shuttle-driver is actuated by the shaft *d* by means of a link. The needle and shuttle have constant motion, not having periods of rest, as in other machines. The slack of the shuttle-thread during the backward movement of the shuttle is taken up by means of a vibrating arm *e*. The feed is of the four-motion class, but, by means of a grooved block *f* and an adjustable pin *g*, the feed-bar may be made to move forward or backward, or brought to a stand. When at a stand the needle and shuttle produce a knotted stitch.

Fig. 4865.



Florence Sewing-Machine.

Fig. 4866.



Willcox and Gibbs Sewing-Machine.

The Willcox and Gibbs sewing-machine (Fig. 4866) is made under the original patent of J. E. A. Gibbs and the subsequent patents of C. H. Willcox and others. The machine makes a chain-stitch, uses a straight needle carried by a reciprocating-bar *a* actuated by a vibrating lever *b* connected by link *c* with an eccentric (hidden in the box) on the main shaft. At the forward end of this shaft is a hook, which, as it rotates, carries the loop of needle-thread, distends and holds it expanded while the feed moves the cloth, and until the needle at the next stroke descends through the loop so held. When the needle de-

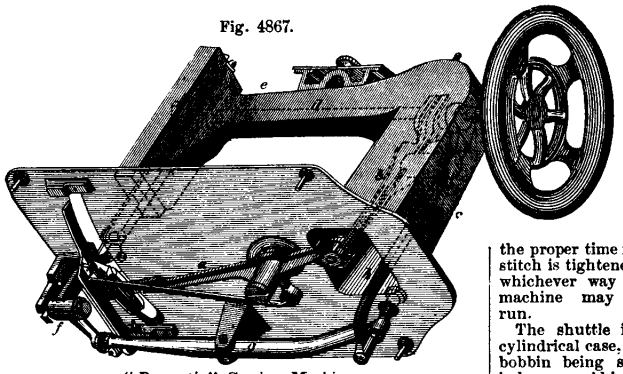
scends through the first loop, the point of the hook is again in position to catch the second loop, at which time the first loop is cast off and the second loop is drawn through it, the first loop being drawn up against the lower edge of the cloth, forming a chain.

An eccentric on the main shaft, back of the rotating-hook, enters a slot in the feeding-bar and gives it the usual four motions. The length of the stitch is governed by means of an eccentric lever *e*. A table on the cloth-plates gives the proper relation between the sizes of thread and needle and length of stitch. At an opening in the plate the numbers on the feed-regulating lever are shown. See STITCH-REGULATOR.

The automatic tension *f*, which lets off just so much thread as the stitch requires, at a determinate time, is described and figured under TENSION. The *pull-off g* is a device to keep a quantity of loose thread always ready to be pulled through the tension, so that the delivery of the thread required shall be unimpeded and its quantity be not affected by any dilatory unwinding or by the varying weight of spools. The spool *h* delivers the thread over its end, and does not revolve. The regular up and down and the variable backward and forward movements are produced from a single eccentric by the arrangements of rocker and link; the latter being adjustable to its position on the rocker to make the stitch indicated through the slot in the cloth-plate before referred to. The feed-surface with the teeth in the cloth-plate in advance of the presser-foot enables the machine to feed goods having seams or other inequalities without interfering with the regularity of the stitch. The needles have a slot to fit a fin in the holder, so as to insure their correct position, that the hook may not miss the loop. A screw collar closes the split needle-holder upon the shank of the needle.

The "Domestic" sewing-machine, made under Mack's patents, is shown in Fig. 4867. It makes a lock-stitch with a reciprocating straight needle and a shuttle supported at the end of a horizontally vibrating shuttle-lever *a*, forked at one end to receive the ball-like end of a vertical lever *b* pivoted to the standard *c*, and forked at its upper end, so as to embrace a cam or eccentric on the main horizontal rotating shaft *d*, supported in bearings in the overhanging arm *e*, the shaft *d* having at its outer end a crank-pin to enter a curved slot in a block attached to the needle-bar, the pin and block reciprocating the needle-bar. The feed is of the four-motion class, deriving its motion from a bell-crank *f*, actuated by a horizontal lever *g*, moved by a vertically reciprocating connecting-rod *h*, driven by an eccentric on the main shaft *d*.

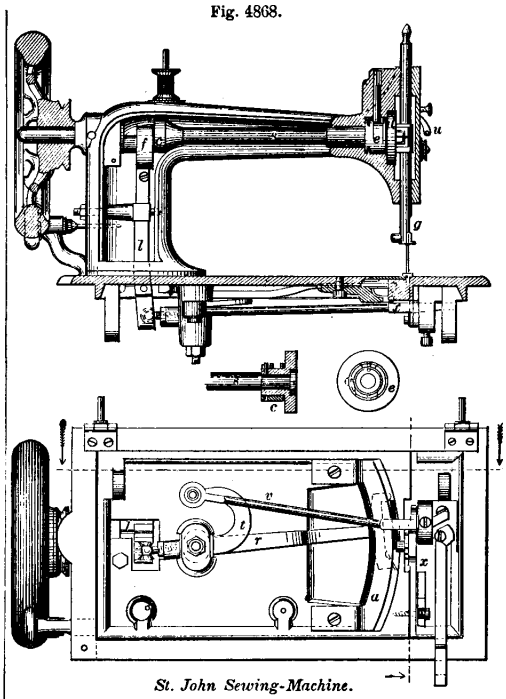
Fig. 4867.



"Domestic" Sewing-Machine.

The St. John lock-stitch sewing-machine (Fig. 4868) has a straight vertical needle, and a shuttle reciprocating in a curved path, the race being lined with raw-hide to absorb jar and avoid the need of oiling. The needle-bar is operated by a crank-disk *d* on the main shaft *s*, making but two regular motions. The shuttle-driving lever *r* is moved by a pivoted arm *l*, operated by a crank-wrist *c*, which moves in a fork *f* at the head of lever *l*. The feed-bar *x* is given its various movements by a lever *v* attached by an arm *t* to the shuttle-driver *r*, and without the intervention of cam, eccentric, or spring.

Fig. 4868.



St. John Sewing-Machine.

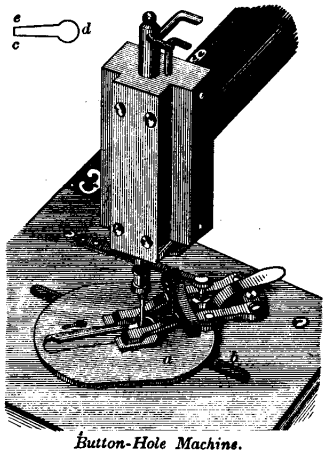
The machine may be run in either direction indifferently without breaking thread, loss or change of stitch, or interference with the direction of feed.

The pivoted take-up lever *u* is independent of the needle-bar *g*, and is attached to a gravitating pin resting on a cam-collar *e* on the main shaft. The collar *e* has a recess in it, by means of which, when the machine is run backward, the collar is given a rest till the proper time for operating the pin and take-up, so that the stitch is tightened and the slack taken up at the proper time, whichever way the machine may be run.

The shuttle is a cylindrical case, the bobbin being shut in by a round hinged cap at its base. The tension on the shuttle is obtained by winding it around projecting pins and confining it by a spring-latch. The only threading through holes is at the eye of the needle.

The bobbin can be wound without operating the needle or disturbing the upper thread or the work.

Fig. 4869.



Button-Hole Machine.

Fig. 4869 is the Singer button-hole sewing-machine, which has a pattern-plate moving above the

cloth, and having two kinds of motions, so as to present the cloth to the needle in the proper manner. The needle has also two proper motions: one, the usual up and down motions, to penetrate the cloth, carrying the upper thread and interlocking it with the lower one; the other motion is a horizontal one of the needle-holder and needle, so that the latter makes alternately a stitch in the cloth at a regulated distance from the edge of the button-hole, and then comes down alongside the edge of the cloth, so as to form a binding therefor. A gimp or cord is stitched in at the same time upon the edge of the button-hole, so as to strengthen it. The stitch gives a *purl* on the edge of the button-hole, like hand-work.

The cloth-plate *a*, as has been said, has two motions: one for the straight sides of the button-hole, and the other for the rounded part. These motions are automatic. The cloth, being clamped to the plate *a*, is so adjusted beneath that the needle is just above *c* (see diagram); the machine being put in motion, a stud under the plate *a* follows along the groove *b*, until the rounding portion *d* of the button-hole is reached. The plate *a* then automatically makes one half of a revolution, the engraving showing it when about one quarter of its half-revolution (45°) is accomplished. When 180° have been described, the plate resumes its rectilinear motion, sewing the other straight portion, up to the letter *d* in the diagram.

If required to name the three subjects of invention on which the most extraordinary versatility of invention has been expended, the answer should be without hesitation, "the *sewing-machine*, *reaping-machine*, and *breach-loading fire-arm*. Each of these has thousands of patents, and, while each of them is the growth of the last 40 years, it is only during the last 25 years that they have filled any notable place in the world. It was then only by a combination of talents that either of these three important inventions was enabled to achieve any remarkable success. The sewing-machine previous to 1851, made without the admirable division of labor which is a feature in all well-conducted factories, was hard to make, and comparatively hard to run. The system of *assembling* — first introduced in the artillery service of France by General Gribeauval in 1765, and brought to proximate perfection by Colonel Colt in the manufacture of his revolver at Hartford, Connecticut — has economized material and time, and improved the quality as well as cheapened the product. There is to-day, and in fact has been for some years, more actual invention in the special machines for making sewing-machines than in the machines themselves. The effect of this will be, when the adventitious aids of exclusive patents shall terminate, to give the larger and better equipped concerns a great advantage over smaller competitors.

What is true of one of the classes of invention named is true of the others, as well as of some not mentioned, — the American watch, for instance. The *assembling* system — that is, making the component parts of an article in distinct pieces to pattern, so as to be interchangeable, and then putting them together — is the only system of order. How else should the Providence Tool Company execute their order for 600,000 rifles for the Turkish government? How otherwise could the "Champion" Harvesting-Machine Companies of Springfield, Ohio, turn out an equipped machine every four minutes each working day of ten hours? Or, to draw the illustration from the subject in hand, how by any other than the nicest arrangement of detail can the Singer Sewing-Machine Company make 6,000 machines per week in their works at Elizabethport, New Jersey?

2. The sewing-machine for leather is similar to the ordinary straight-needle machine, but is stronger. In machines for sewing with wax a lamp warms the wax and thread. See also SHOE-SEWING MACHINE, and Plate LX.

The cylinder sewing-machine has a cylindrical work-holder for sewing seams on sleeves, trousers, water-hose, boot-legs, leathern buckets, and other tubular work.

3. The sewing-machine for books usually has a thread or set of threads, but Heyl's machine uses wire staples, which are clinched behind a back band.

The following patents on book-sewing machines may be consulted: —

Name.	Date.	Name.	Date.
Tanner	September 9, 1862	Palmer	March 19, 1872
Lincoln	October 30, 1866	Palmer	February 11, 1873
Sims	January 16, 1867	Thompson	May 5, 1874
Smyth	February 25, 1868	Parkhurst	June 2, 1874
Holbrook	June 23, 1868	Van Alstine	August 8, 1874
Holbrook	February 23, 1869	Averell	December 22, 1874
Smyth	June 8, 1869	*Armstrong	August 3, 1875
Howe	March 1, 1870	*Goddu	October 11, 1875
Hall	July 12, 1870	*Heyl	1875

* Use wire staples.

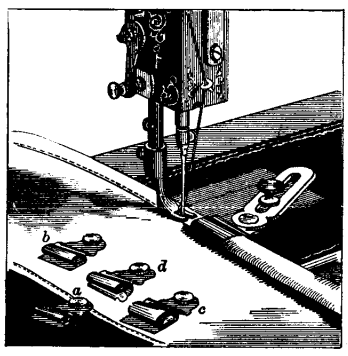
See also STABBING-MACHINES, No. 114,286, Glass, May 2, 1871; No. 116,757, Reynolds, July 4, 1871.

Sew'ing-ma-chine' At-tach'ment. The term is held to include those devices which are attached to a machine to enable it to do some special duty other than plain sewing. See "Sewing-machine Attachments," G. W. Gregory, Boston, Mass.

They are enumerated in the following list, and some of the principal ones are shown in Figs. 4870–4877, which show W. G. Wilson's attachments. It may be mentioned that the cuts are illustrative of the work, and but little variation is shown in the mode of attaching to the machine. There are, however, many modes of attaching the devices: to the table, to the head of the machine, making it a part of the presser-foot, attaching it to the needle-bar, etc. See the articles in the following list under their respective heads in the body of the work: —

Basting-machine.
Binder (Fig. 4871).
Bobbin.
Bobbin-winder.
Braider (Fig. 4873).
Button-hole marker.
Cloth-plate.
Corder (Fig. 4872).
Creaser.
Embroiderer.
Embroidering-machine.
Feeder (see page 2122).
Feller.
Gage (see page 2122).
Gatherer (Fig. 4877).
Guide.
Hemming-guide.
Hemmer (Fig. 4870).
Marker.
Needle.
Needle-setter.
Needle-sharpener.
Needle-threader.
Plaiter (Fig. 4876).
Presser-foot.
Quilter (Fig. 4874).
Ruffler (Fig. 4877).
Sewing-machine gage.
Sewing-machine needle.
Shuttle.
Spool-holder.
Stitch.
Stitching-machine.
Thread-cutter.
Threader.
Thread-guide.
Thread-waxer.
Tucker (Fig. 4876).
Tuck-marker (Fig. 4875).
Waxer.

Fig. 4870.



Hemmers and Binder.

Fig. 4870 shows a set of *hemmers a b c*, and a *binder d*. They are of different sizes for different width of hems, and are held in place by an adjustable clamp, which is secured by a set-screw to the cloth-plate. See also Fig. 2497.

Fig. 4871 is an adjustable *binder*, showing the binding-strip as being lapped over the edge and stitched to the cloth. See also Fig. 684.

The *feller* is but a form of hemmer in which two pieces previously sewn together are hemmed down on each other.

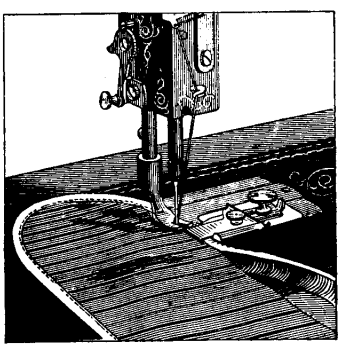
Fig. 4872 is a *corder*, in which the cord on a spool is led by a tongue between the two thicknesses of cloth, and thence into an opening parallel with the seam and under a groove in the presser-foot, where it is stitched in place, a little to the right of the needle.

Fig. 4873 is a *braider*. The braid is led from a spool through a guide in the presser-foot, and is stitched by the needle in any pattern according to the movement of the goods beneath it. See also Fig. 806.

The *embroiderer* generally employs two threads, and is an elaborate form of *braider*.

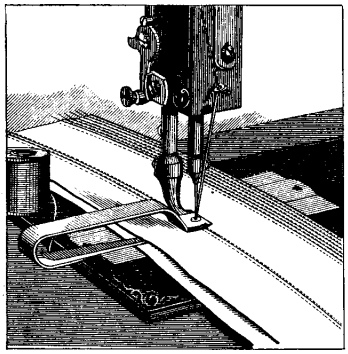
Fig. 4874 is a *quilter*. The spaces between the seams are regulated by the guide, which is adjustable to any width.

Fig. 4871.



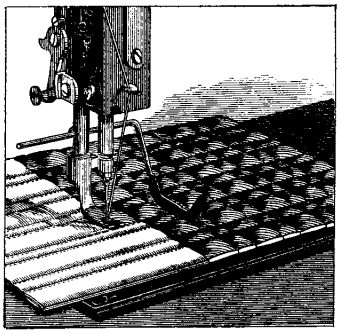
Adjustable Binder.

Fig. 4872.



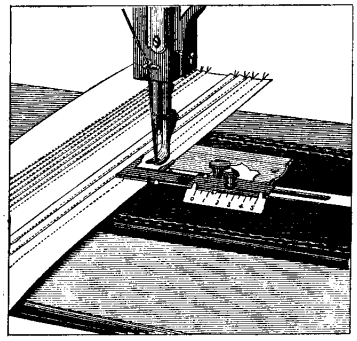
Corder.

Fig. 4874.



Quilter.

Fig. 4876.



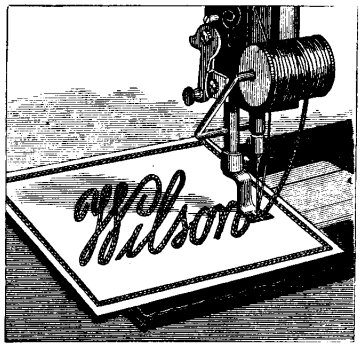
Plaiter or Tucker.

Fig. 4875 is a *tuck-marker*. To make a tuck of any given width, set the *gage* at the width desired, and the *marker* twice the distance on the other side of the needle. To leave a space between the tucks, move the marker still farther, the gage remaining as before. The needle-bar depresses the spring arm, which, coming in contact with the creaser, forces it down upon the fabric, which is raised in a ridge by the lip beneath See also TUCK-MARKER.

Fig. 4876 is a *plaiter* or *tucker*. The *gage* is set a proper distance from the needle, and the adjustments made similar to the *tuck-marker*. The cloth is folded and passed under the upper arm and stitched; completed plaits are passed to the left over the cloth. See also Fig. 3779.

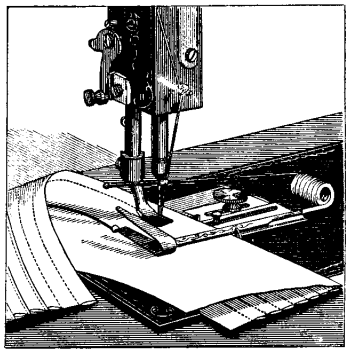
Fig. 4877 is a *gatherer* or *ruffler*. The engraving shows a ruffle being sewn on to a strip of cloth. The gathering-blade receives its motion from the elbow-lever attached to the needle-bar, and the length of movement of the blade is regulated by a set-screw. One edge of the cloth is pushed into a tuck at each motion, and is stitched down by the needle, leaving the other edge full. The gathering may be done in the middle of the strip, leaving both edges full. See also Figs. 2202, 4493.

Fig 4873.



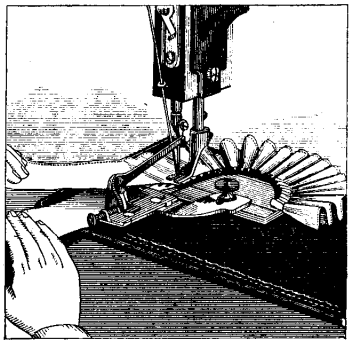
Braider.

Fig. 4875.



Tuck-Marker.

Fig. 4877.



Gatherer or Ruffler.