

## Machinery and Appliances.

### IMPROVED DROPBOX LOOM.

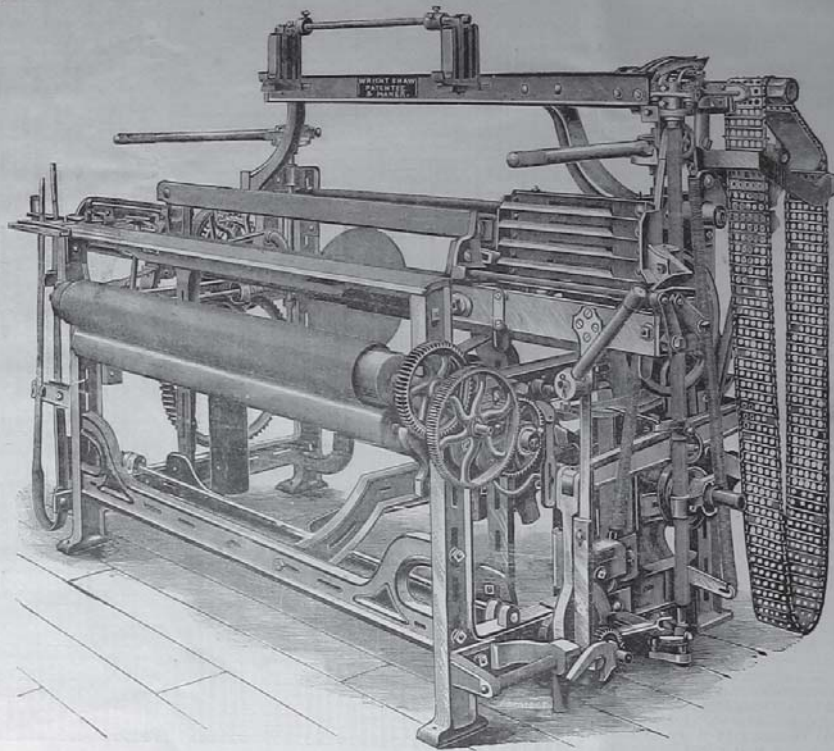
MR. WRIGHT SHAW, BREDBURY, NE. STOCKPORT.

Mr. Wright Shaw, as many of our readers may be aware, has long held a distinguished place amongst textile inventors. His speciality is the check or dropbox loom, and his inventions mainly relate to the methods and mechanism of operating the boxes. In the order of his inventions he was the successor of the great "Diggle," whose chain motion at one time held the field against all comers. It is given to few

tent with the remains they have left buried in the sands of the deserts, or graven upon the rocks, and which we of to-day are so assiduously disintombing. Existing European nations have fairly abundant evidence that their remote ancestors were skilled in the art of weaving, and knew how to check their fabrics. Indeed, they were more expert at this than at other methods of ornamentation, if such a conclusion may be safely drawn from the balance of evidence. The art, however, only underwent slow development. The textile gems which have been handed down to the present day were the achievements of a marvellous degree of manual skill and enduring patience. The primitive method of checking

laggard schoolboy said to his master, and by claiming to be by implication free from castigation because of the necessity of the case. Perhaps our friends over the Cymric border if pressed hard might put in the same plea, so for fear they should do so we will pass on to our immediate subject.

Mr. Wright-Shaw has been engaged upon the improvement of the checking loom for a period of over thirty years, and its present perfection is very largely due to his labours. He is the well-known maker of dropbox looms, for making handkerchiefs, scarves, and all manner of checked goods. His first inventions were made fully the above length of time ago, and to shew their excellence we need only remark that there are



IMPROVED DROPBOX LOOM.—MR. WRIGHT SHAW, BREDBURY, NEAR STOCKPORT.

men, however, to maintain a perpetuity of fame in the realms of politics, science, or invention. Were it possible, it would indicate that the world had got to the end of its progressive march; therefore, "Diggle" is passing away into the shades of oblivion. The chain motion did good service in its day, and has a strong claim to be remembered as a distinct step forward from anything that had existed up to the date of its invention.

The textile art is one of the oldest in the world, and there are strong reasons to suppose that checking woven fabrics is almost as old as the art itself. The records of Assyria and Egypt, and the remains of fabrics found in the tombs of the people of the latter country, go far to demonstrate this. Practically these people have left no descendants of whom we could inquire, so we are perforce compelled to be con-

woven fabrics came down through the long centuries almost to our own day without material change. It was reserved for a Lancashire man—the son of a great inventor, indeed, of the man who may be called the father of inventors—the younger Kay, the son of John Kay, of Bury, to effect a change. Weaving in their day was performed by the weaver throwing his shuttle from hand to hand through the open warp in the loom: a slow and tedious process, but which survives in this England of ours in out-of-the-way nooks in Wales, where the curious visitor may find the descendants of King Edward's Flemings pursuing their gentle craft in the manner of their forefathers as if such persons as the Kays, Cartwright, Bullough, and Diggle—and may we not add the inventor whose manifestation of skill is at present under our notice—had never lived? "Somebody must be last, sir!" as the

loom makers who are still making these type though the patents have now been expired for many years. It is very remarkable that a man should thus be compelled to compete against himself after such a long lapse of time. Mr. Shaw exhibited a loom at the recent Manchester Exhibition, which was greatly admired for its simplicity and efficiency. Of this the writer can personally testify, as he both then and previously thoroughly examined it for a special purpose. It perfectly justified the challenge its inventor and maker threw down to the loom making fraternity when he named it "The Champion Scarf, Handkerchief, and Check Loom." Of this loom as it then stood Mr. Shaw will supply to interested parties a full and clear illustrated description. But unfortunately mechanical genius is not a very quiet hobby to ride; it must be pressing forward even though

no competitor be within sight. And so it was in this case. Mr. Shaw, not being content with having the best loom, must make it better still. Wonderfully simple, considering what the box motion of this loom was invented to do, the object of the inventor in making his latest improvements has been to make it simpler still by discarding every possible superfluous part of the mechanism that he could by the closest study discover. By this means he also achieves another very important object, namely, making all the parts more easily accessible to both weaver and tacker, and especially in leaving the loom frame free for other attachments such as the jacquard, dobbie, &c.

The improvements now introduced consist in the first place of a new pattern arrangement. The front spring lever handle, as shown in our illustration, is the pattern rod lever, which has an attachment extending across the frame of the loom in front of the swing rail. On the end of this rod is a projection, the thickness of which is increased at its extremity in order to bring closer to its work. When the loom is working this projection is held out of action by the pattern rod handle mentioned above. When the weft breaks or is exhausted the weft fork lever pushes both the spring handles shown out of their detents, and the change of position of the pattern handle instantly carries the projection at the end of its rod to a position which immediately stops the revolution of the pattern chain. Though the loom may run a pick or two further, the pattern chain remains in the right position for the immediate resumption of work at the point where the weft broke. This improvement obviates all the trouble the weaver has had in finding the position of the pattern chain when the weft supply ceased, a troublesome task taking time and requiring skill. If not done carefully the pattern is spoiled and the value of the cloth depreciated. Thus better work and a greater production are the direct outcome.

Another useful change is the introduction of a single lift cam, which is placed upon the end of the picking shaft. This cam has an eccentric cast upon the end of its boss. The change does away with one setting point, the eccentric having previously had to be set separately, and in perfect harmony of movement with the cam, a task not easy of accomplishment. The combination of these two parts, leaves the interior of the loom quite free from every encumbrance, and available for tappets, twill motions, jacquard cords or any appliance that it may be desired to introduce. The tacker has no longer to get under the loom to do any work, as all the mechanism is now placed outside convenient of access.

The eccentric previously mentioned has a groove cut in its periphery, into which a connecting rod descends, its end thus acting as a retainer of the clip in its position. A small hole is drilled in the clip to provide for lubrication. The upper extremity of the connecting rod is attached to a sliding and rocking bracket which is grooved in its upper part. By this groove it is attached to a bell-crank lever, upon the extremity of which are cast two studs, and upon these the bracket is placed. The bell-crank lever carries a fixed bolt to which is attached through a connecting rod the pattern rod and the mechanism it governs.

Such are the latest improvements made by Mr. Shaw, and which, from his already great reputation in the construction of this class of loom, are assured of a good reception as soon as made known. Communications addressed as above will receive prompt attention.

## Foreign Correspondence.

### INDUSTRIAL LABOUR IN INDIAN PRISONS.

(FROM OUR OWN CORRESPONDENT.)

BOMBAY, 6TH DEC, 1889.

In connection with home prisons there is a general idea among the public that the labour in which long-term convicts are forced to engage, consists chiefly of oakum picking and stone breaking. This, although a somewhat narrowed view, is comparatively correct when the contrast between convict labour in India and that in England is shewn. In England it is drudgery to even the lowest of criminals, and debasing to many, but in India some sections of the convict duty is an art of the highest character, calculated to improve the intellectual faculties and develop the mind. Each convict prison in our great Eastern Empire contains within itself a technical institute, where arts and manufactures are developed, and where novices are raised to the standard of trained students. Basket-making, brick-making, carpentry, furniture and carriage building, rope-making, embroidery, weaving, &c., &c., are all branches of the convict labour, but it is of the latter section—weaving in the Thana prison, that this short paper will be devoted. Thana is a small Hindoo village, about 21 miles south from Bombay, where a large convict prison is situated. After inspecting the usual arrangement of wards, the convicts with their clanking irons, the condemned cell with one miserable inmate, and the gallows, we were shewn the textile sections of the building. They consist of four or five stone-built departments (entered by the usual iron-barred doors), the length being about 100ft., and the breadth about 30ft. In these departments are two rows of looms of the oldest Hindoo tanty style. The warps are spread out at full length and are sized by a hand brush. The heddle bars are made from rough pieces of wood or bamboos, and are worked by strings underneath. The convict sits on the ground with his feet hanging in a hole dug out of the floor underneath the heddles. He places his toes in the coops of the heddle cords, and while working them up and down, he beats up the yarn or weft, which he puts in by hand. Calicoes, table cloths, napkins, and similar goods are produced in this laborious manner, and are really marvels of uniformity and excellence. The chief branch of this industry, however, is the manufacture of Persian carpets, some varieties from this prison being amongst the best and most artistic of that class of production. In England, many of us have seen specimens of these famous carpets, and have greatly appreciated the excellence of the work, the artistic blending of the colours, and the beauty of the designs, but it is only in an examination of the methods of manufacture that one is lost in wonder and surprise. Just let our imagination picture the arrangement of two horizontal bamboo beams—one fixed near the ceiling, and the other near the floor. Between these the necessary number of unbleached warp cords are stretched. On the floor are lying hand-wound balls of various coloured, soft, twisted threads, while in front there sits an almost unclothed Hindoo, with the sample pattern at his side. Choosing out a ball of the colour shewn at the bottom of the pattern, he begins to entwine it with the warp threads, slowly and carefully, changing his balls with each change on the pattern. In this way, the work gradually proceeds day by day, the advance being almost imperceptible, but the snail pace tells in the end, and in this primitive way "a thing of beauty and a joy for ever" is produced. The carpets are of various sizes, but each one is complete in itself, with a border suited to the pattern. The finer specimens are generally only made to European order, and although many of them take fine workmen a period of six months to complete, yet they are sold for about 35 Rs. per yard. A carpet, therefore, of four yards square, would cost about 560 Rs., or say £38, but sells in England, the Continent, and America, for sometimes twice or

triple that sum. Considering the enormous amount of labour, time, and material, expended in the process, the prices must be admitted to be insignificant, and as the stock phrase goes, "within the reach of all." The work reflects great credit upon the institution, and proves how, with care and consideration, the native population can be trained to the most delicate and intricate forms of labour.

### THE WOOL AND TEXTILE TRADES ON THE CONTINENT.

(FROM OUR OWN CORRESPONDENTS.)

BERLIN.

In the woollen trade there is again a falling off during the week, and business has been devoid of animation. This is especially the case in the yarn trade. Some houses are inquiring for yarns in the grey and mixtures, but at prices which, compared with values of raw material, only show a loss. Some low offers have been made by French buyers for combed single yarns. The wool trade is dull. Tops are also in small request, except at the very lowest rates.

FOURMIES.

The piece trade is not so active as might be desired, and buyers, as a rule, are standing aloof. Quietness prevails in most departments, and transactions remain merely confined to pressing wants. The French Association of Woollen Manufacturers have forwarded to the Minister of Commerce a petition protesting in an energetic manner against the taxation of Colonial wool, demanded by the Agricultural Society of France. In the first instance the attention of the Minister of Commerce is called to the fact that the woollen industry represents one-eighth of the entire French trade, and, without any classification, contributes one-sixth towards the country's exports, and one-tenth towards its imports. It is further pointed out that the remedy sought by home wool growers would not be effectually found in the manner proposed, as the quality of the home produce is considered as unfit, with some exceptions, for the country's manufactures. The annual clip averages 55,000,000 kilos, whereas the quantity of Colonial wool imported is reckoned to be 140,000,000 kilos. It is thought that protection would not be efficient in improving the situation, and, under the circumstances, it would be wholly unreasonable to impose it on a flourishing industry in search of a result which, as far as can be seen, is very problematical.

LILLE.

Business in Bergues and Douai flax has been active at fair prices. At the various Flemish markets, where stocks are now more important, values also remain unchanged. In Rotterdam 1,300 bales arrived, and although these only sold slowly, very little flax remained unsold. In Russian flax there is an average business doing in all sorts, although there is a slight falling off in the aggregate as compared with the previous week. Prices are firm in hemp, Italian and home scaris are mostly in demand. Stocks of Manilla and Sisal flax are very low here. In the linen yarn market business has been very active, and prices tend upward. The piece goods branch is showing more life, and buyers from some of the wholesale houses have been looking round. Jute is in good demand at late rates.

LYONS.

The raw silk market still shows a favourable tone. Prices tend upward, and the qualities which had been somewhat neglected since the beginning of the rise now meet a better demand. Following Italian silks, Chinese raw silk is in improved inquiry. The piece market has been visited by Parisian buyers, and, notwithstanding the holidays and stocktakings, a few transactions have resulted, mostly in piece-dyed goods, Batavias and Pongees. Surats, all silks are selling in large quantities, and piece-dyed satins find a good outlet to foreign countries. In figured goods a few repeat orders have come to hand in damas, brochés, and Pekins damas. Low broché makes are also selling in small assortments. Manufacturers are well employed generally, and the year has ended satisfactorily in the silk branch. The velvet and crape trades have been rather dull this week. All silk velvets and plushes meet with little inquiry. Crapes have been more favoured. Buyers are anxious to place orders, and give some repeats in the hope of a continued demand. Velvet ribbons remain dull, and prices offered by English buyers are unsatisfactory.

REIMS.

In the local piece market manufacturers continue well engaged on old orders for cashmere and marine cloths. There is little new business to report, as