XXXVII. Description of a patent Machine for combing Wool; communicated by the Patentee, the Rev. Edmund Cartwright, of Doncaster, Yorkshire.

WITH A PLATE.

This machine is, I believe, the first of the kind; at least, all former attempts (if there have been any) must have proved abortive; as, previous to my invention, no wool was ever known to have been combed any other way than by the slow and expensive process of hand-labour.

The magnitude of this invention, in respect of its object, and its importance to the woollen manufactures, may, in some degree, be estimated by the quantity of combing wool annually grown in this island, which, according to the most approved calculations, cannot be less than 3 or 400,000 packs; the average expense of combing which by hand may reasonably be laid at £800,000, or a million. That this calculation is not far from the truth, we need only recollect that the body of wool-
wool-combers is supposed to be nearly 50,000, amongst whom the alarm which the introduction of this machine has occasioned is well known. Upwards of forty petitions, from various parts of the kingdom, were presented to parliament, during the course of the present sessions, for its suppression; and, for this purpose, a bill was brought into the House of Commons by the friends of the petitioners. It was, however, rejected by a great majority; indeed, had the principle of the bill been admitted, there had been an end to all manufacturing improvements. But, setting even this consideration aside, on other principles of policy it would have been inadmissible; even on the principle of humanity to the petitioners, the only ground on which it could be defended, there is reason to believe it would not have been necessary. The introduction of new inventions or improvements, whatever may be their value, being in general so gradual as to affect those, whose occupations they interfere with, almost imperceptibly.

I obtained my first patent, for this important invention, on the 27th of April, 1790. In consequence
quence of some additional improvements, I obtained a second patent on the 11th of December, in the same year. But it was not till nearly two years afterwards, that my machine was brought to its present state of simplicity and perfection, when I took out a third patent, dated May 15, 1792.

The wool, if for particular nice work, goes through three operations, otherwise two are sufficient: the first operation opens the wool, and makes it connect together into a rough fliver, but does not clear it. The clearing is performed by the second, and, if necessary, a third operation. A set of machinery, consisting of three machines, will require the attendance of an overlooker and ten children, and will comb a pack, or 240 lb. in twelve hours. As neither fire nor oil is necessary for machine-combing, the saving of those articles, even the fire alone, will, in general, pay the wages of the overlooker and children; so that the actual saving to the manufacturer is the whole of what the combing costs, by the old imperfect mode of hand-combing. Machine-combed wool is better, especially for machine-spinning, by at least 12 per cent.
being all equally mixed, and the slivers uniform, and of any required length. On the first introduction of this machinery, it was found, when not carefully attended, to produce a greater proportion of noil or pinion than good hand-combing; but, in its present improved state, it makes much less than any hand-combing whatever.

The advantages of machine-combing arise not merely from the saving of expense; yarn spun from it has a decided superiority, especially for curious purposes, such as superfine hosiery, &c. At Messrs. Davison and Hawkesfly's mill, in the neighbourhood of Nottingham, where this machinery is made use of, yarn is spun of a quality which it was thought no mill-spinning could ever have arrived at. In justice, however, to the spirit and ingenuity of those gentlemen, it must be added, that their spinning machinery is supposed to be upon a very superior construction. Besides the above mill, my invention is already introduced into many others, and, in all probability, as trade revive on the restoration of peace, will be universally adopted.

What
What follows is the specification of this invention, in its improved state, taken from the different patents; rejecting such particulars as, by the substitution of improvements since the date of the first patent, have been superceded and laid aside.

Fig. I. (Plate XIV.) The crank lasher.

A. A tube through which the material, being formed into a sliver, and slightly twisted, is drawn forward by the delivering rollers. B. A wheel fast upon the cross-bar of the crank. C. A wheel, on the opposite end of whose axis is a pinion working in a wheel upon the axis of one of the delivering rollers.

Note. When two or more slivers are required, the cans or baskets, in which they are contained, are placed upon a table under the lasher, (as represented at D,) which, by having a slow motion, twirls them together as they go up.

Fig. II. The circular clearing comb, for giving work in the head, carried in a frame by two cranks.

Fig.
Fig. III. The comb-table, having the teeth pointing towards the centre, moved by cogs upon the rim, and carried round upon trucks, like the head of a windmill.

a, b. The drawing rollers. c, d. Callender, or conducting rollers.

Note. Underneath the table is another pair of rollers, for drawing out the backings.

It is to be observed, that the machine which first operates upon the wool differs in some points from the preceding, but not so materially as to require a particular description of it, and, as this description would require an engraving to accompany it, it is omitted.

In the above specification we have omitted the frame in which the machine stands, the wheels, shafts, &c. Had these been introduced, the drawing would have been crowded and confused; besides, as matters of information, they would have been unnecessary, every mechanic, when he knows the principles of a machine, being competent to apply the movements to it.