

Machinery and Appliances.

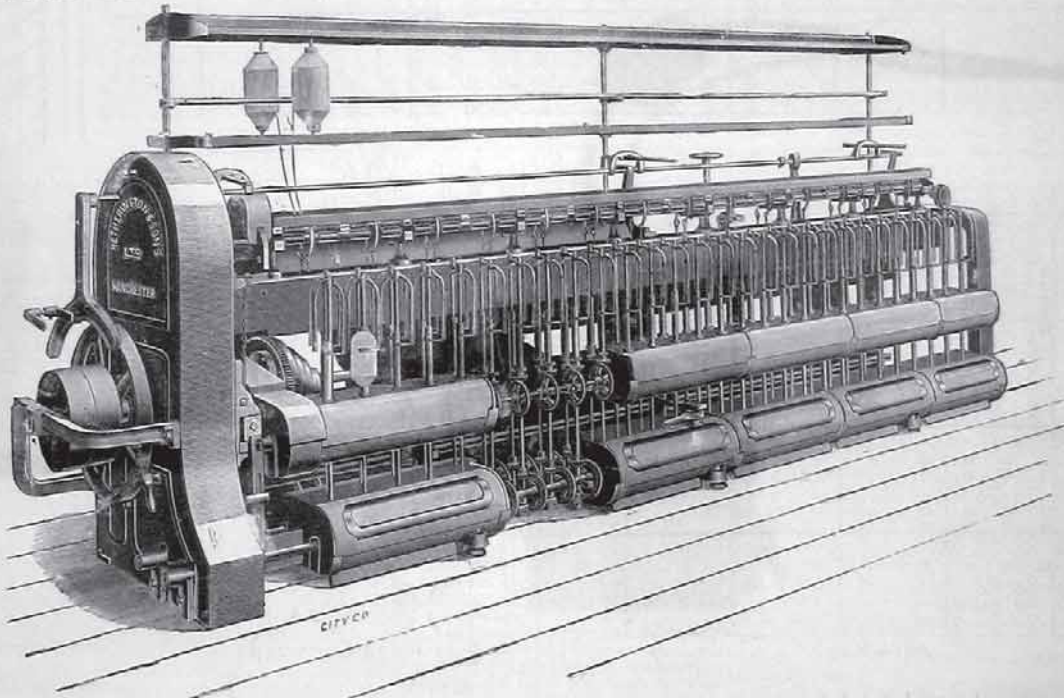
IMPROVED PATENTED SLUBBING, INTERMEDIATE AND ROVING FRAMES.

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Mechanical science possesses only a poor vocabulary. This is forcibly enough brought home to its students in their examinations of its productions in the shape of machines and their component parts. Many illustrations could be given of this truth, some of which would be amusing, but it will serve our present purpose to bring forward as a sufficient one the series of machines grouped together in the title of this paper. Here are three machines

attempt is made to group them and give them a distinctive name the result exhibits no improvement. They are then termed "frames" or "speeds," both of which are lamentable failures to meet the requirements of the case. The preceding machine of the preparatory series has been rather more fortunate in its baptismal experience, being called, as we have stated, the "drawing frame;" but this is not accurate, or at least is only superficially so, its function being to arrange the fibres in parallel order, and also to render the sliver more perfectly even. It might at least with equal justice be called the sliver evener. It however "draws" the material, and therefore the name is really to some extent significant of its function. As the function of the machines under notice is to successively attenuate or reduce the strand of cotton as they receive it to a finer hank, we submit that a better name for them would be "Reducing Machines," or more briefly "Reducers." This would serve for them both

and of greater length than usual, and their distance apart has been increased, so as to admit of the use of a longer cone strap, the advantage of which will be obvious. They can also be furnished with their new patent self-adjusting cone driving strap, which bears as uniformly upon the smaller as upon the larger diameter of the cones, and hence ensures more perfect driving, with a greatly reduced wear and tear of strapping. The makers have also introduced a new and improved method of raising the bottom cone bodily, and preserving its parallel position, thus admitting of the more speedy re-adjustment of the driving strap at the commencement of every new set of bobbins. Another new arrangement permits of the bottom cone being lowered, by which any slack in the strap can easily be taken up instead of cutting it away and re-piecing it. Fully 7 in. of strap can be taken up in this manner. The old method of balancing the top-rail by the customary weights and chains, which threw the



ROVING FRAME. FRONT VIEW.—MESSRS. JOHN HETHERINGTON AND SONS, LIMITED, MANCHESTER.

whose principles, functions, and construction are exactly alike in every detail save that of the dimensions of their parts. Their function is to attenuate the sliver which has come from the carding-engine, and has subsequently passed through the drawing frames. The first "slubber" attenuates the sliver as it comes from the last head of the drawing frame, when it is usually of the same count of hank as delivered by the card; the "intermediate" is the next machine, which, if we gave it its full name, would be the "intermediate slubber" or "slubbing frame," but which for the sake of brevity has been reduced to the single word we have given, and even this bids fair in process of time to be curtailed to the insignificant and meaningless form of "inter." The "intermediate" is so called from no better reason than the fact that it stands between two other machines. The "roving frame," which is the next, takes the reduced strand of cotton from the intermediate, and still further attenuates it. The performances of this machine afford no better clue to the origin or meaning of its name than do the others. The names are all unsatisfactory. When an

separately and collectively, thus: 1st, 2nd, 3rd, and where the "Jack" frame, another nonsensical appellation, comes in, the 4th Reducer. We have no expectation that the suggestion offered here will be immediately adopted, but as the "Devil" has disappeared from the list of our cotton machines, it is not unreasonable to hope that progress of education and taste may send some of the other absurd names after this into oblivion.

We have much pleasure in drawing the attention of our readers to the accompanying illustrations, which represent the new and improved type of Slubbing, Intermediate, and Roving frames just produced by Messrs. John Hetherington and Sons, Limited, Vulcan Works, Pollard-street, Manchester. The whole series are made from new patterns, the frames are strong, and the machines throughout well built and highly finished, the most careful attention having been bestowed upon them in every point in order to render them capable of running with a minimum of wear and tear and derangement at the very highest modern speeds. The draught gearing of the rollers is all machine-cut. The cones are made considerably larger in diameter

rail forward and caused it to bind in the slides, has been discarded for an improved arrangement, in which a lever is introduced, one end of which passes under the centre of the rail, while the other end carries the balance weight. The centre of the lever is carried by the spring piece, and a perfectly vertical lift is thus obtained without friction in the slides. This improvement admits of the lifter shaft being placed behind the rails instead of between the spindles, greatly increasing the facilities for cleaning and keeping the frame free from fly. The top-rail has been furnished with a circular sheet-steel front casing, so constructed and arranged that empty bobbins can be placed upon it without risk of their being shaken off by any vibration. This admits of their being placed more readily to the hand of the worker, and thus saves time. The space between the iron casings is filled in with polished baywood. In the differential motion several improvements in details have been made, considerably obviating risks of breakage, by the removal of the screws and loose parts from inside the box, the coming loose of which ordinarily entails considerable mischief in breakages. The arrangement for

lubrication is improved, by which the wear and noise in working is reduced. The whole is well and securely covered in, whereby it is preserved free from dirt and accidental risks of damage from extraneous causes. The driving shaft end is projected forward and carried on a stand or outside bearing, which also forms a guard or fender, protecting the workers from risk of having their clothes caught in this portion of the machine. Having regard to the requirements of the factory inspectors and their method of construing the Factory Acts, this is of considerable importance. The driving shafts are made of steel, and stronger lifting shafts have been introduced; the bearings are brass bushed and the gearing is constructed of unusual strength. Great improvements have been made in rendering all the changing places more easily accessible and convenient for making required changes. It will be obvious from this enumeration of details that the new type of

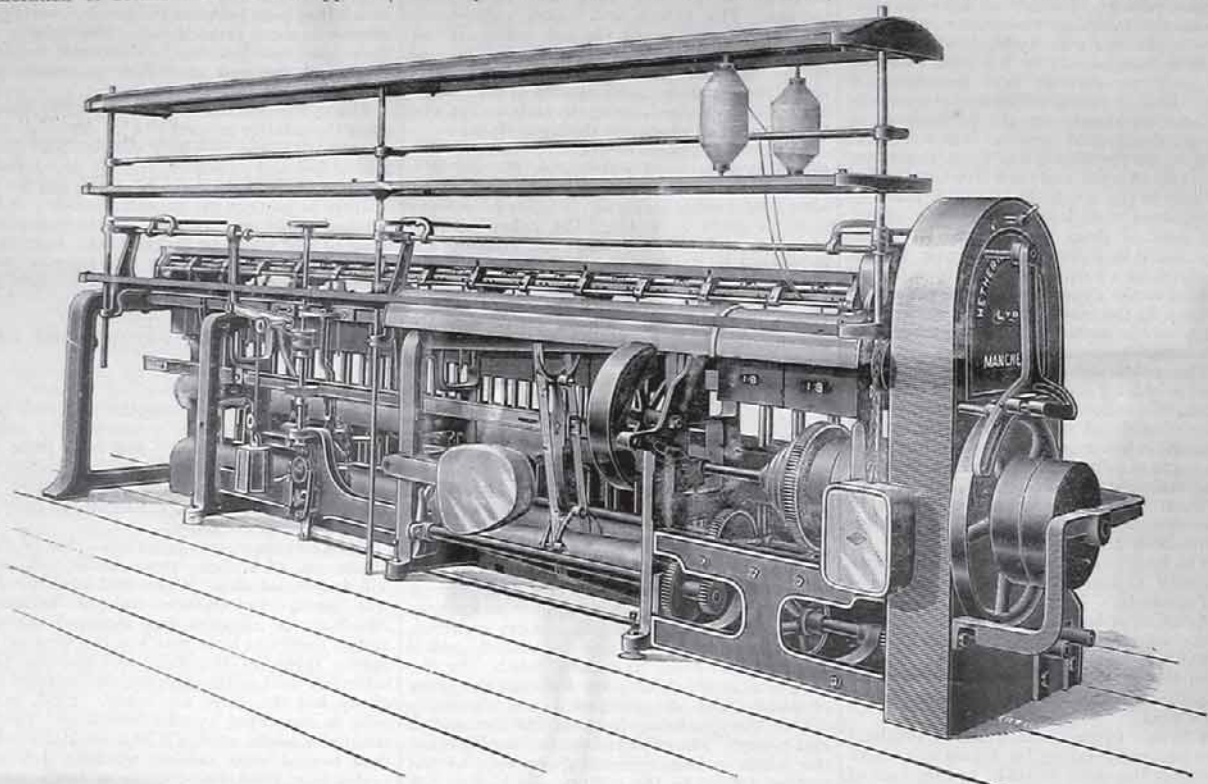
in their working with considerably more steadiness. The parts with which the detents engage being further removed from the axis of the reversing lever, the detaining strain is reduced and correspondingly the wear and tear of the parts, while also the margin for error in time of action is contracted. These changes admit of another important one—namely, the use of a larger ratchet wheel, by which a more extensive range of regulation is obtained with a greatly reduced number of change wheels. With a ratchet wheel of about 24 teeth, two or three change wheels a few teeth above and below that number will suffice for every requirement. The ratchet wheel is connected by spur wheels with the rack pinion shaft. On the ordinary system the range of change wheels is required to run from 7 to 60 teeth. It will be obvious that a considerable advantage will accrue from this source.

It only remains for us to add that these

EMBROIDERY BY STEAM POWER.

The firm of Saurer, in Arbon, one of the largest makers of embroidery machines in Switzerland, is reported to have invented a machine to be driven by steam power. Many specialists are of opinion that its introduction will mean an important crisis in the embroidery industry.

In reference to this our German contemporary, *Rome's Journal*, remarks: "If it be true that four of the new machines will need no more attention than one of the old machines the use of the former is likely to deprive many thousands of those who at present get their living out of the embroidery trade of their means of subsistence. There are said to be 22,000 machines in the district included within the embroidery union, so that the practical consequences of the introduction of such an invention as that under discussion must needs be very serious, at any rate for a time. There seems, however, to be some probability that the



ROVING FRAME. BACK VIEW.—MESSRS. JOHN HETHERINGTON AND SONS, LIMITED, MANCHESTER.

these machines is as perfect as mechanical science and high-class workmanship can make it, and the conviction thus arising will be increased in strength by a close inspection of our illustrations, which are engraved from photographs.

We now come to notice the introduction of an important patented improvement in the shortening and reversing motion governing the traverse of the builder rail. The ordinary construction of this motion is well known and need not be described, beyond stating that in it two rocking levers are employed to disengage detents and permit the reversal of the traverse of the builder rail. These rocking levers are mounted upon one centre, but in the improved arrangement the second or reversing lever is mounted upon a centre arranged below the axis of the first-named or detent-releasing lever, the second lever being constructed with a head shaped to admit of its clearing the boss of the first lever, or the bearing of the rack pinion shaft which passes through it. This permits of the use of longer bearings for the two levers, which results

machines are made in all the gauges usually required in the various departments of the trade and for the various lifts and diameters of bobbins. Of the quality of the work turned out from the establishment in which these machines are made it is not necessary to speak; it requires no eulogy from us, having been tested, tried, and approved a sufficient length of time to inspire perfect confidence in it all over the world. The makers will be pleased to afford any other information that may be desired in addition to the above.

EXHIBITION AT PALERMO.—In the National Exhibition to be held in Palermo from November, 1891, to May, 1892, there will be an international section for engines and machinery relating to small industries such as are carried on in small workshops or dwellings. The demand for engines and machines that can be introduced into such places with safety is very great and increasing in Italy, and it is reasonably expected that manufacturers of this class of goods will receive material advantage by taking part in the exhibition. The executive committee has already succeeded in obtaining a considerable reduction in the freights for exhibits, and further negotiations are still going on in this direction. The Italian Chamber of Commerce in London, 4, St. Mary's Axe, E.C., will give every information and supply prospectuses and regulations upon application.

steam-power machine will not cover satisfactorily the whole ground covered by the old one. It is rumoured that the former is better adapted for finer articles than for those which constitute the great staple of the trade. The fear has been expressed in St. Gall that the new machine may cause that district to fall from its present high position as a centre of the manufacture of embroidery, but these apprehensions are probably baseless. The embroidery industry is so exceedingly complicated and demands so much commercial and artistic capacity, that the mere possession of improved machines is not sufficient to ensure preponderance in this department of manufacture.

Besides this extremely important invention several other improvements have been made recently in this branch which deserve notice. The Swiss inventor Hausmann has successfully solved the problem of applying black silk and silk of different colours to embroidery without any loss of colour or brilliancy. By the same method threads of brocade can be used without any diminution of their gold and silver lustre, and cotton can be embroidered and etched on cotton. Another interesting invention is the embroidery of quilts as a whole on the shuttle machine."