Machinery and Appliances.

INDICATORS FOR MULES AND OTHER MACHINES.

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It was inevitable that in the development of the textile industries, after they ceased to be domestic occupations in which the people bought the wool and cotton, spun and wove it, and then sold it; when the middleman stepped in and provided the raw materials, paying an agreed sum for the labour that transformed them into yarn and cloth, thus deposing the domestic capitalist to the position of a workman, many systems of payment would spring up in each industry. These, for a long time, only differed from each other in crudeness, and it was not until the industries had been reduced to something approaching scientific order that a change towards accuracy took place. It might not have occurred even then, had it not been for the earnest efforts the workpeople began to make to obtain a better share of the profits of the several trades than they were receiving. In the spinning branch of the cotton trade this became comparatively easy, owing to the rapidly grow-

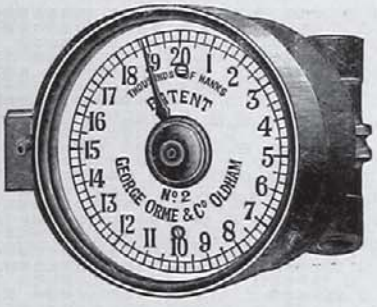

FIG 1. MULE INDICATOR IMPROVED.

ing demand for labour. In the first half of the century the payment was, we believe, mainly upon the amount of yarn turned off a pair of mules, but this plan soon shewed itself unsatisfactory, as yarns at that time were rarely more than approximately true to their nominal counts, seldom being nearer than within two hanks of that point. This gave an advantage to the operative spinner as long as it lasted; but as time went on he began to encounter greater difficulty in getting to know truly the hanks of the yarn he was spinning. The disputes thus arising ultimately led to the introduction of indicators, which measured and registered the length of yarn spun irrespective of its fineness. These instruments were at first crude in construction, not very accurate, and liable to be tampered with. As experience revealed these defects they were gradually obviated until at last these instruments are now made with such accuracy of detail and perfection of principle that both employers and employed place perfect confidence in their records.

As might naturally be expected, Oldham, being the largest spinning centre in the world, has led the van in the way of improvements of these appliances. Of the firms engaged in the manufacture of indicators, one of the most eminent is certainly that whose name heads this notice. The types for the mule indicators, to which we have referred, were constructed to be placed upon the cam shaft. There were, however, several objections to this

FIG 2. FRAME INDICATOR; FRONT VIEW.

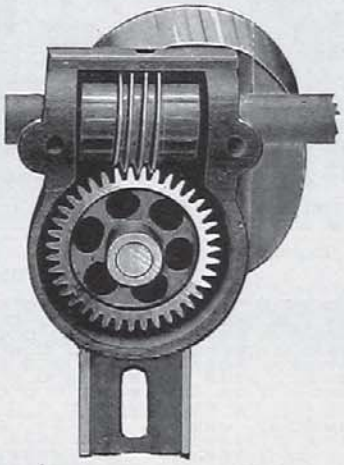

FIG 3. BACK VIEW DITTO.

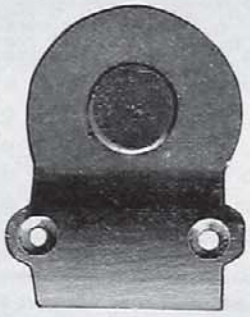

FIG. 4. COVER FOR DITTO.

FIG 5. PATENT INDICATOR FOR LOOMS.

disposition of them, resulting in very practical inconvenience, to obviate which Messrs. Orme and Co. devised an improved one, illustrated in Fig. 1, and adapted it for fixing on the back shaft, at one end of the mill. The mechanism of this indicator consists of a positive mechanical arrangement, actuated by the revolution of the back shaft. They are simple in construction, containing no springs or complicated mechanism, and therefore, they seldom or never get out of order with fair treatment. They are constructed to register either hanks or draws, according to the system of payment in vogue at the place where they are in use. To shew the capacity of the latter form it may be mentioned that it indicates each separate draw up to 100,000 draws. This type of indicator is in extensive use in the Oldham district, where it gives every satisfaction to both masters and men.

So satisfactory was the application of this new form of indicator found to be to the mule, that a desire was soon manifested for a similar one for the drawing and succeeding frames. The old type of indicators in use upon these machines were similar in form to those on the mule, and possessed all their defects. Messrs. Orme, therefore constructed one for the drawing, slubbing, intermediate, roving, and ring frames. It registers up to 1,000 hanks, and shews in plain figures both the number of hanks and the decimal parts that may have passed through the machines. If required, it is supplied to indicate metres or revolutions. As constructed in the first instance, with the ordinary guard, there was a liability of fly getting between the wheel and the guard, impeding its free movement and increasing the wear and tear. Fig. 2 is a front view of the indicator; it indicates hanks and decimal part of hanks, and registers up to 100 hanks. It is also made to shew metres and revolutions. Fig. 3 is a back view, with the cover removed to shew the method of guarding the driving wheel and worm. Fig. 4 is the cover with holes for the screws by which it is attached to the case. This indicator is fixed at the outer end of the frame, and is driven by a short ¼-in. shaft, fastened in the end of the front roller; this shaft carries the driving worm for working the indicator as illustrated. The advantages of having the indicator fixed in this position are, that it is easy to see, and also it is not liable to be damaged, being away from the driving mechanism.

There is still another indicator made by this firm which, we believe, is quite novel in its application, being for a loom. To ordinary looms with the positive take-up motions, an indicator would be perfectly superfluous. But in the manufacture of heavy fabrics where the endeavour is to put in a great number of picks, and where the fabric is sold more by weight than by the details of yarn in the pick and reed, and the negative take-up motion is in use, it may still be desirable to know what number of picks enter into the composition of the cloth, in order to be able to execute a repeat order if necessary. It is constructed on the same lines as the others, and is adapted for fixing upon the tappet shaft, and indicates up to 1,000,000 revolutions, equal to 2,000,000 picks. The advantages of this novelty, which is illustrated herewith (Fig. 5) will be obvious to our practical readers.

Any of these indicators will be submitted for examination and approval by the makers, who will give any further particulars that may be desired, on application to them as above.