

Machinery and Appliances.

IMPROVED JACQUARD-CARD REPEATING MACHINE, AND PEG AND LACE HOLE CUTTING-MACHINE.

MR. JAMES Mc MURDO, NEW STREET, MILES PLATTING, MANCHESTER.

Our previous descriptions and illustrations of Mr. McMurdo's machinery have been those of a

600s single lift and a 400s double lift Jacquard, and very fine specimens of this class of machine they were on every hand admitted to be. The Jacquard machine, as we have previously remarked, is an important adjunct of the loom in every establishment making the more elaborate descriptions of fancy woven goods in all the textile industries. It was the invention of Joseph Marie Jacquard, in 1801, and was his chief work. It has been modified and improved in many ways by succeeding inventors, and has been adapted to numerous pur-

poses never conceived of by its inventor. The finest silk fabrics and the heaviest carpets owe the quickest and most perfect embodiment of the artists' designs in their texture to this ingenious machine. That wonderful textile machine, the lace loom, would be as nothing without the aid of this ingenious invention. But it not only deals with the warp of textile fabrics, it is equally potent in manipulating the weft, controlling the insertion of the different colours through its government of both rising and revolving shuttle boxes. It goes

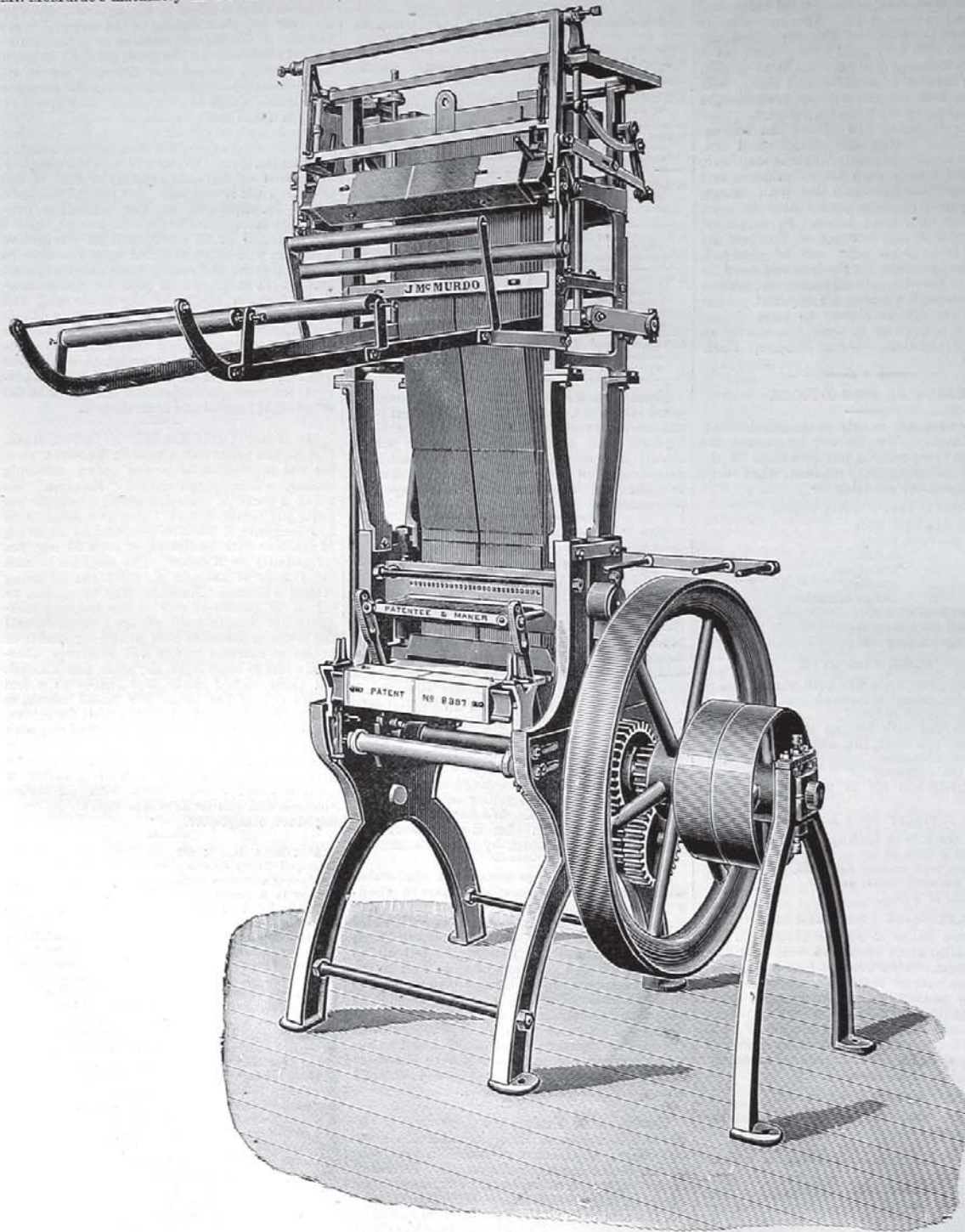


FIG. 1.—IMPROVED JACQUARD REPEATING MACHINE.—MR. J. Mc MURDO, MILES PLATTING, MANCHESTER.

even further than this, and makes its own cards in the card repeating machine. As is well known in elaborate patterns in jacquard weaving a large number of cards are required, and the provision of these is one of the greatest items of expenditure there is upon the production of fancy fabrics. In order to keep down this element of cost various methods of making cards repeat their action have been devised with good results. Beyond these, however, something more was wanted to secure a diminution

respect induced Mr. McMurdo to investigate the problem, with the result that it was speedily solved in the most satisfactory manner by the invention of the fine machine illustrated herewith which consists of a combination of an improved punching machine and the jacquard, the latter being used to operate the punches automatically.

Of its general appearance our illustration (Fig. 1), gives an excellent view. Its principal parts consist of a stationary punch plate above

cylinders, being operated in a manner similar to those of the jacquard attachment itself, and so readily change the cards after being punched.

The jacquard machine is mounted immediately above the punches, to one of which each hook is connected by what we may term a compound connecting wire. These are formed of a pair of wires, each having an eyelet at one end. The end of each wire is put through the eyelet of the other whilst a spiral spring being placed upon them between the two eyelets keeps these apart and

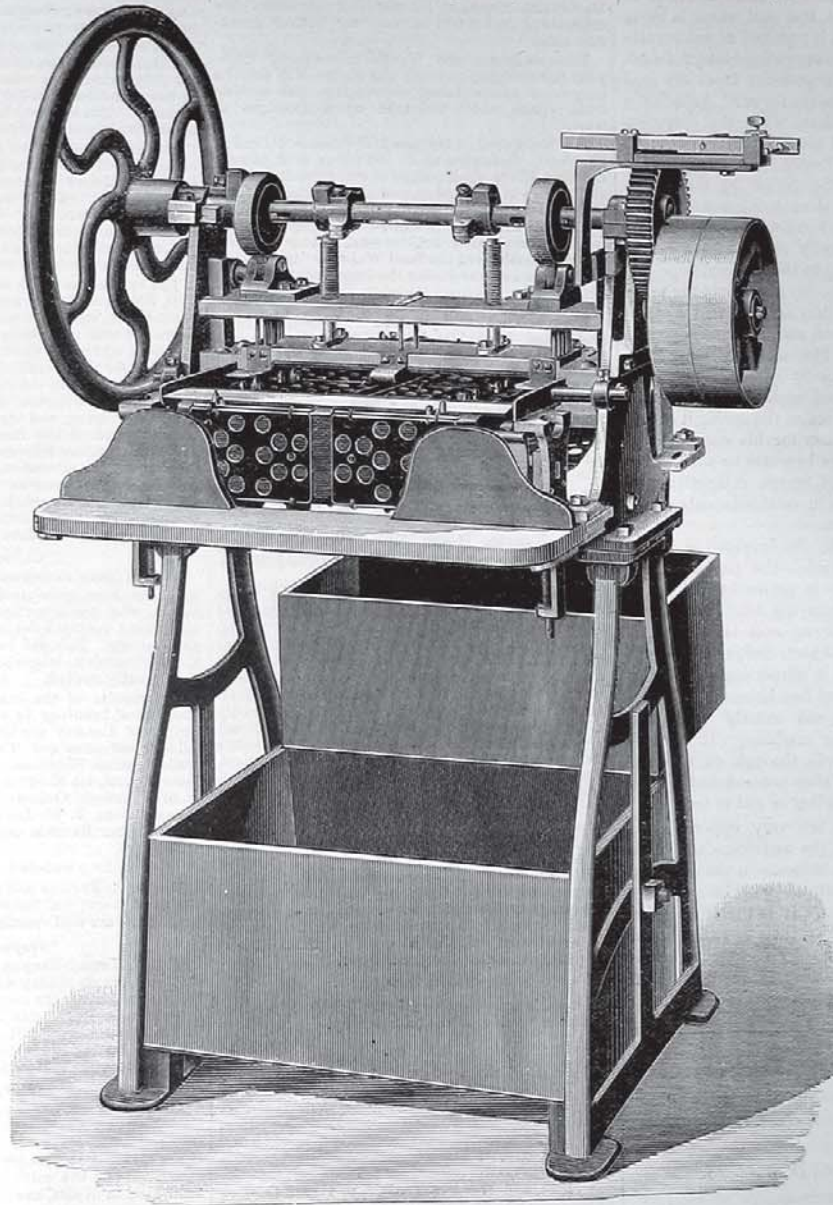


FIG. 2.—PEG AND LACE HOLE CUTTING MACHINE.—MR. J. M^CMURDO, MILES PLATTING, MANCHESTER.

of the cost when duplicate sets of cards of one pattern were required in order to provide a number of looms with the same design. In this case there was for a long time only the original plan to resort to by which the first sets were produced. Repeating machines were next designed, but the originals were of a very crude type, and only very inadequately answered the purpose for which they were designed. Familiarity with the wants of the trade in this

which is mounted a sliding frame carrying the punches. A comb locks these up or down as may be required. This sliding frame is lowered by means of eccentrics upon one of the shafts when the punches are required to cut the card, and is raised again to its former position when the operation has been performed, where it waits ready for the next card to be brought upon the plate. The cards pass over the cylinders of the punching machine on their passage through the

thus forms a spring connection between the jacquard hook and the punch which does not become slack. The locking comb is constructed in the usual manner, but the rods upon which it slides are held in position by spiral springs and are actuated by oscillating levers, which are provided with slots to permit the vertical movement of the frame which carries the punches. These levers are ball-cranked and are operated from the cams on the shaft before mentioned.

In working the jacquard hooks are lifted by the "griffe" and raise their corresponding punches, which are then, along with the other punches left down, locked in their respective positions by the comb. The revolution of the shaft carrying the eccentrics then draws down the punches to the card which is already upon the fixed punch-plate. The raised punches make no impression upon the card, but the others punch holes into them; and as there are as many rows of punches as there are rows of holes to be punched in the card which is being repeated, a whole card is punched at one revolution of the shaft. The operation being finished, the eccentrics raise the punches from the card which automatically moves forward, bringing a fresh card upon the plate, when the operation proceeds as before. Of course, it will be obvious that the first set of cards must be cut in the ordinary way from the design by the piano-machine. These are then laced together, and are used in the jacquard to actuate the repeater, which then automatically reproduces a set of cards exactly according to the pattern.

Practical men will readily appreciate the value of this machine when they are told that it easily cuts 40 cards per minute, and, if required, could be made to do more. The economy in a large establishment, it will easily be seen, is very considerable. As compared with the old plan of cutting, which it supersedes, the saving it effects very soon recoups the user for his outlay upon it, while all that follows becomes an addition to profit. In these days of severe competition it is in fact indispensable in establishments using jacquards to any extent.

A companion machine also invented and constructed by Mr. McMurdo—the peg and lace hole cutting machine—is represented for the first time in the accompanying illustration. Fig. 2. Its purpose is to cut peg and lace holes in the blank cards. It has been designed to secure a very important point in connection with cards, namely, that the peg and lace holes shall be cut correctly, and correspond exactly with the punches in the repeating machine. It is self-acting and takes the cards through on a chain of plates, during which they are punched. This machine only requires a boy or girl to feed it.

These two machines are very important adjuncts of the jacquard, the usefulness of which they very considerably enhance in the accuracy and economy they effect, as will be perfectly obvious to practical men. It is therefore quite unnecessary to dilate upon their merits. Should any of our readers require any further information the maker will be pleased to afford it on application to him as above.

News in Brief,

FROM LOCAL CORRESPONDENTS AND
CONTEMPORARIES.

ENGLAND AND WALES.

Ashton.

The directors of Harper Twist are having the mules squared up one pair at a time with a view of keeping pace with the times. Messrs. Schofield, of Park Street, are carrying out the improvements under the direction of Mr. George W. Hulme, who has the management of the concern.

Thomas Mellor and Son are having a goodly number of their looms fitted up with the Blackburn type of dobbies, which are being supplied by the Water-side Ironworks Company (Eli Cryer and Sons, Dukinfield.) We hope to hear of other persons adapting their looms to a wider range of goods, and the Messrs. Mellor may be complimented on the alterations they are carrying out at the Whitelands sheds.

Bacup.

It is reported that a new weaving shed is about to be erected by Messrs. Hoyle, of the Olive Mill.

The employes of the Albion Mill re-commenced work on Friday morning last week, after having been stopped a fortnight, owing to repairs to the engine.

Mr. Henry Maden's mills, the Throstle, and Spring Holme, have commenced running three days a week, which will be continued until further notice.

The Bacup Co-operative Society, who own Grove Mill, have sold it during the past week to Mr. Molesworth-Hepworth for the sum of £600. We understand that it will be used for cotton manufacturing.

The new Bacup and Wardle Commercial Company have stopped running Far Holme Mill for the purpose of compounding the engines and making other repairs, which will take up a fortnight at least.

The No. 4 shed of Holmes Mill (Messrs. G. and J. Shepherd) containing about 200 looms, is at present standing idle in consequence of extensive alterations and repairs to the roofing, and also for the purpose of coupling the main driving shaft. It is to be feared that the stoppage will be a lengthy one, extending over three or four weeks. Those weavers who are members of the local Weavers' Association will receive support during the stoppage.

Blackburn.

The machinery and plant in and upon the Nova Scotia and Rockcliffe Mills, Blackburn, are announced for sale by auction by Messrs. E. Rushton and Son on Wednesday, Thursday, Friday next, and on Monday week. The disappearance from the ranks of cotton spinners and manufacturers of the firm recently owning these mills have been the cause of much regret in the town.

A meeting of donors and subscribers of the Blackburn Technical School was held on Monday, at the Town Hall, when the following gentlemen were elected representative members of the Council: Messrs. W. Taylor, John Thompson, J. H. Stocks, James Kenyon, Henry Lewis, William Thorn, Henry Livesey, James Kay, T. E. Thompson, E. Hannen, P. A. Apuden, and John Walsh.

The depression in the cotton trade was made further manifest on Monday, when another series of stoppages of spindles and looms, even more numerous than those recorded a week ago, took place at Blackburn. Messrs. Thomas Dugdale Brothers' two mills (one at Witton and the other at Livesey) and the Primrose and Waterfall mills, run by Messrs. John Fish, Limited, all suspended work temporarily in consequence of the depression. The first-named firm have altogether 86,000 spindles and 1,600 looms idle, while Messrs. John Fish, Limited, have 74,968 spindles and 1,760 looms stopped, making a total at these four mills alone of 150,968 spindles and 3,360 looms. In addition to these many other firms have looms and spindles stopped, though to a much smaller degree, and in Blackburn alone there are at the present time no fewer than 8,000 looms standing inactive, and in the weaving branch of the cotton trade, without reckoning the spinning, there is the large number of 2,500 weavers out of employment. As regards the spinning branch of the trade, the number of spindles stopped in Blackburn is computed at not far short of 200,000.

Barnoldswick.

Messrs. Brooks Brothers, Long Ing shed, received a number of new looms on Saturday.

Burnley.

A strike of the weavers employed by the Sandy Gate Mill Company occurred on Monday the 19th inst., it is alleged through bad work. The company thought fit not to pay wages on the following Saturday, as the weavers were considered to have left without notice. Negotiations for a settlement were entered into by the operatives' officials, but without any effect, and the weavers had to return to work unconditionally on Tuesday last, thus sustaining a loss of 8 days' work without accomplishing any object.

The results of the examinations held here in spinning and weaving, by the City and Guilds' Institute, are to hand. Out of 25 presented in spinning 22 passed, 4 of them gaining a 1st pass in the honours grade. In weaving the results are anything but satisfactory; 68 were presented, and only 16 passed. This is about the same proportion as some other large centres—Manchester, Blackburn, Preston, &c. It is felt that some representation should be made to the City Guilds on the matter, and probably this will be done.

Bury.

It is rumoured that a new spinning mill is to be started in this district.

Darwen.

The hands engaged by the Cotton Hall Spinning and Manufacturing Company have been stopped for a week owing to the depression in trade.

At the quarterly meeting of the Darwen Weavers' Association just held it was shown that the Union was now worth £6,032. The report was passed, three new directors were nominated, and it was resolved to discontinue relief payments in times of depression of trade.

In consequence of stoppages through the depression in the cotton trade, the Spinners' Association has paid £60 during the past month to members employed by the India Mill Spinning Company, Darwen Spinning Company, Albert Spinning Company, and the Moss Bridge Mill.

The erection of the new mill at Hoddlesden, by the Hoddlesden Manufacturing Company, now that the delay which was occasioned by some alteration in the plans has been got over, is proceeding satisfactorily. The contract for the ironwork has been let to Messrs. Ashton, Frost and Co., of Blackburn.

The new weaving shed at Hollins Grove, which is being erected by Mr. Joseph Eccles, and which will be run by Messrs. Harwood Brothers, of New Bridge Mills, is now nearly completed, and the chimney has been constructed. Weaving operations, however, will not be commenced for about three months yet, as the machinery, &c., has to be fixed. There will be accommodation for about 700 looms.

The extensions which are taking place at Radford Mill, Bolton-road, Darwen, are being rapidly proceeded with, and are expected to be completed and furnished with machinery in about a month. The premises, which are three storeys high in front, are intended for the preparing department. The ground floor will be used as the storeroom, the middle room as the cloth warehouse, and the top room as the winding, warping, and tapping department. The old weaving shed at the back of the premises, which has been standing idle since Darwen Fair, in consequence of the extension, has been fitted up with new looms. The engine and all the gearing have also undergone thorough repair. The mill, which belongs to Mr. Yates Duxbury, of Bolton, will be run by Councillor Catlow.

Guiseley.

We are given to understand that the Springfield mill has been purchased by Messrs. Blakey, of Leeds, who are advertising for tenders for the alterations required for adapting it for a boot and shoe factory. This will be the second factory of the kind in Guiseley, where a variety of industries has been greatly needed.

The results of the examinations held at the Mechanics' Institute in connection with the City Guilds of London are just to hand, and are as follows:—*Woolen and Worsted Spinning*: Honours grade, Samuel Robinson, 1st class; Ordinary grade, Jesse Barrett, 1st class; and J. R. Peate, 2nd class. *Cloth Weaving*: Ordinary grade, Jesse Barrett, Francis Core, J. W. Langley, and J. R. Peate, 1st class; Arthur Baldwin and Ernest Winterburn, 2nd class.

Hebden Bridge.

Messrs. R. Thomas and Sons stopped their fustian and mule looms on Saturday for a week. Their twill looms are still running.

Heywood.

Messrs. James Kenyon and Sons, Crimble Mill, stopped work on Friday week and re-commenced on Tuesday morning, the stoppage being on account of the wakes at Bury. Mr. Robert Lord, mule overlooker at the above mill, is about to vacate that position, having accepted a similar position at Messrs. Radcliffe's, Rochdale.

Holywell.

All the weavers employed by the Welsh Flannel Co. at their mills at Holywell have struck work owing to a dispute as to wages. The stoppage of the weaving has brought other departments to a standstill, and the mills, which are the largest of their kind in Wales, are practically closed.

Huddersfield.

The following are the results of the City and Guilds Examiners in *Cloth Weaving* held at the Huddersfield Technical School (Teacher, Mr. E. Armitage):—Honours Grade, First Class: Wm. Ed. Calverley, John Dyson, Albert Goldthorpe, Alfred Waddington, Wm. Wilkinson. Second Class: Benj. Armitage, Harry D. Beanland, Francis I. Beardsell, Roy Brier, Elliott Brook, Joseph S. Brooke, Chas. E. Butterworth, Tom Cotton, John L. Firth, John Owen, Ernest Quarumby, Henry Quarumby, Frank Ramsden, John Wm. Tate, Geo. Whowell, E. H. M. Wolstenholme. Ordinary Grade, First Class: Harry Kaye (4th prize, Bronze Medal), Eli S. Bray, Wm. Henry Crowther, Beaumont Crowther, Hedley Dalton, Joe W. Haigh, Chas. W. Hey, Geo. F. Lockwood, Fredk. L. Moorhouse, John W. Pilling