

Machinery and Appliances.

IMPROVED RING SPINNING FRAME.

MAKERS: MESSRS. JOHN HETHERINGTON AND SONS, VULCAN WORKS, POLLARD STREET, MANCHESTER.

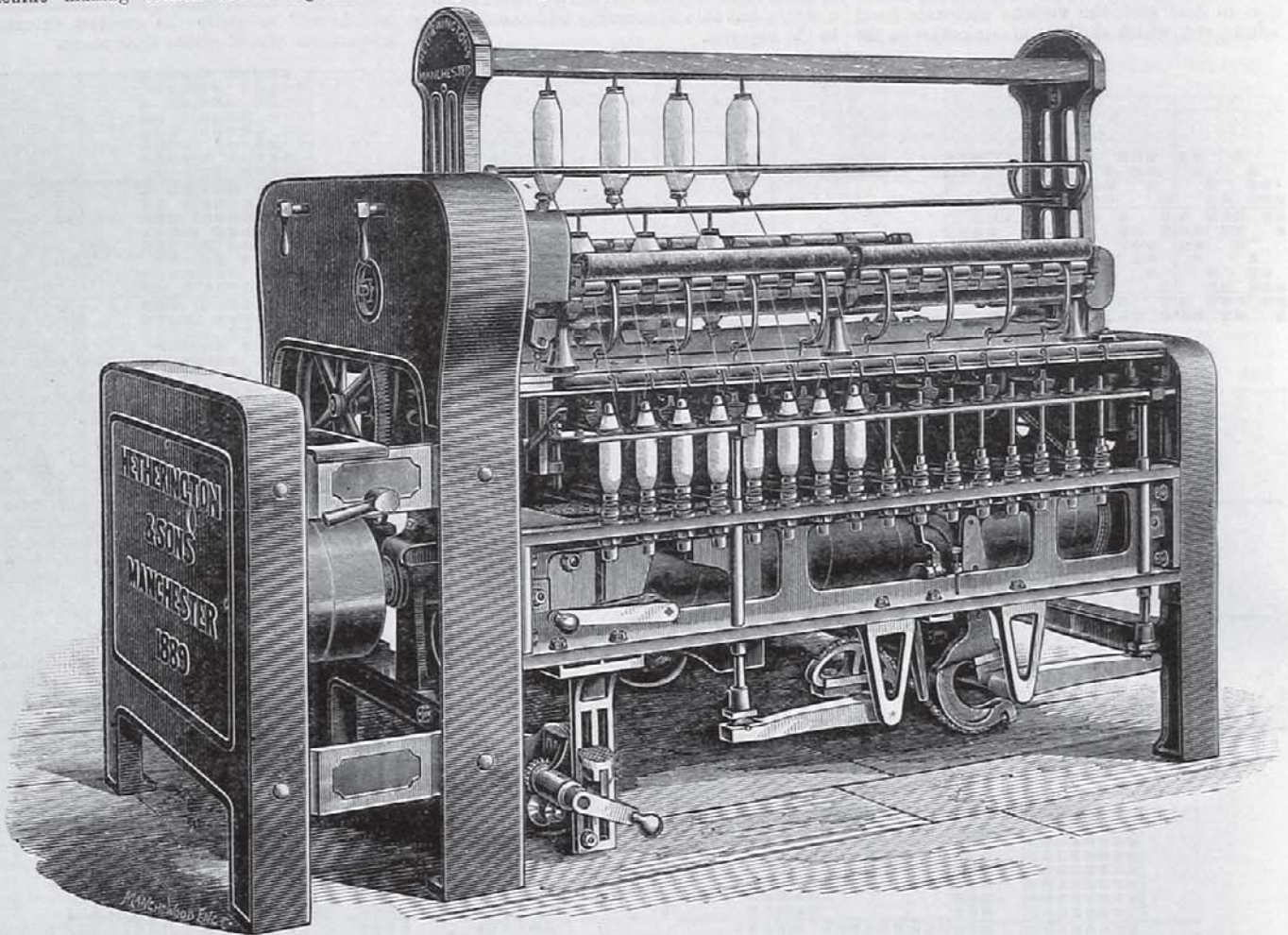
Between the years 1870-80, the ring frame, as a spinning machine, was introduced to public notice. At first it attracted comparatively little attention, but as time went on this began to increase. Before the close of the decade, the new machine had begun to make an impression upon the minds of at least a portion of the cotton spinning and machine making trades. Some regarded it

principle and general details are too well-known to need it.

Our present purpose is to draw the attention of our readers to the improved ring frame made by Messrs. John Hetherington and Sons, Vulcan Works, Pollard-street, Manchester. In all ring spinning frames the spindle is, of course, the principal feature, as, having regard to the work it has to do, it must be made as perfect as possible. But though the machine maker may be able to accomplish his share of the work, the spindle he has thus constructed has to do its work under conditions he cannot control. The bobbins in use for spinning are the great difficulty in the way of attaining the highest results. The different densities of the woods of which they are composed; their varying capacity of absorbing moisture; their being perfectly or imperfectly seasoned, and many

the ordinary holding-down arrangement, or on the Dobson-Marsh principle, with the lubricating cup on the bottom of the socket. The rings are stamped out of sheet steel and forged on a mandril, without seam or welding, and otherwise highly finished.

The spindle is fixed in a solid girder rail, all cast and planed together, which facilitates erection, and prevents risk of imperfect fitting. The ring plate is specially constructed, having a deep flange on the front, which effectually precludes all vibration at the highest speeds yet attained. The ring plates are lifted by cast iron rocking shafts placed about five feet apart, this being in many respects preferable to that of chains and pulleys. By an improved construction of the heart motion, the changes in the yarn traverse are effected without the dwell usual to the older form, and all its injurious effects.



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with hope, some with favour, but probably the greatest number looked upon it with undisguised contempt, as a machine for which far greater pretensions were made than could ever be realised. It went on, however, in the even tenour of its way, makers gradually and steadily improving its details so much that their competitors were eventually brought to regard its performances as something that demanded their earnest attention. It is certain that the investigation that resulted wrought conviction in the minds of the inquirers, as from about that time there was a rapid accession to the ranks of makers. Another ten years have since elapsed, and the views entertained regarding its promise of having a useful if not a brilliant future before it have been more than fulfilled. It would be quite superfluous to give any elaborate description of the machine, as its

other matters, which need not be referred to in detail, all tend to throw the bobbins out of equipoise. When these ill-balanced bobbins came upon the spindles they exercised a very injurious influence upon them, and at high speeds were very destructive of them. The best method yet discovered, and indeed what may be called a perfect remedy for obviating the ill effects mentioned, is the use of the flexible or self-balancing spindle. However irregular a bobbin may be, this ingenious spindle quickly adjusts itself to the conditions, finding its own centre of gravity every time it receives a fresh bobbin, whether good or bad. Messrs. Hetherington and Sons have therefore constructed and furnished this frame with a carefully constructed flexible spindle, composed of the best material and of the highest finish. It is exceedingly light in its running, and at 12,000 revolutions does the most excellent work. It is made with

Ballooning is a well-known evil incident to ring-spinning under ordinary conditions, and which, for a time, greatly impeded its adoption. To discover a remedy for this evil called into play for a time a good deal of inventive ingenuity. The difficulty has been overcome by several methods. In the case under notice, the firm have invented and patented an improved anti-ballooning arrangement which is very effective. It consists of a wire extended behind the spindles on each side of the frame, which are carried by swivel brackets and are coupled together by links, with a screw for tightening them. The wire on one side of the frame thus acts as a strain upon that on the other, and both are thus kept tight and straight. The wires are arranged in the best position for checking the ballooning of the threads when this tendency is at the greatest. As the bobbin fills, and the ring rail

risers, this tendency diminishes, and the service of the wire is no longer needed. The ring rail at this time comes into contact with and releases a catch, when a spring draws the wire out of the way of the ascending rail and out of action. It is very simple, efficient, and automatic. If desired, the firm supply the frames with the anti-ballooning arrangement, consisting of curved plates nearly surrounding the bobbins.

The thread boards are constructed in the usual manner, but with improvements in details. Their working position is determined by an adjustable stop, by which the distance from the thread wire to the top of the bobbin can be regulated to a nicety by a simple screw, in order to meet the differing requirements of various counts of yarn. For doffing they are lifted on both sides by a lever at the gearing end of the frame, one move of which turns them all up and another turns them all down.

In the position of the front roller, the firm have made a considerable change. The roller stands are made much higher than the average. The rollers are brought more forward and have an inclination 24 degrees for twist and 34 for weft. This alteration allows of the thread being spun right up into the nip of the rollers, and at the same time greatly increases the facilities for piecing up the broken threads, and for cleaning. The rollers are constructed to the option of the purchaser, so that all three top ones can be weighted by levers, or the front top rollers by dead weight, and the back and middle ones self weighted. Or alternatively, all the top rollers may be constructed for self-weighting, and used with the firm's improved capbars even on inclined stands. These improved capbars have their grooves cut with only a very slight inclination from the vertical, which ensures that the full weight of the top roller shall rest upon the bottom one. In the roving traverse arrangement the insertion of a diamond-pointed tooth in the gearing ensures a much quicker change, and so preserves the roller leather from the damage resulting from the usual dwell at the changing points. The creels are made as desired by the purchaser, either flat with steel pointed pegs and tin tubes, or in single or double height with wood skewers for the bobbins, and for single and double roving.

The doffing arrangement is an improved one. By half a turn of a handle it lowers the ring plate from top to bottom, allowing a sufficient number of coils of yarn to be wound upon the bobbin or the cup for the purpose of securing the thread for the next set. This saves a considerable amount of time compared to the slow winding-down plan. Whilst the doffers are performing their duty the attendant winds down the shaper, when the frame is again ready to commence. By this plan all risk of the chain locking is obviated, as it is always kept tight. By means of a foot lever the rail can be rapidly raised and lowered to take up the slack yarn.

Special care has been bestowed upon the construction of the frame and the gearing in order to provide the greatest facilities for effecting all necessary changes. All the draught wheels are machine cut. The bearings are specially constructed to facilitate perfect lubrication, and oil pipes are fixed to such as cannot be made readily accessible. The frame ends are closed in with panels which very effectually guard the gearing and pulleys. The frames are made in different dimensions, according to requirements, from 2 ft. 6 in. to 3 ft. 6 in., though mostly 3 ft., with 10 in. diameter double tin rollers, these being carefully made upon their own premises by the firm in short lengths, great care being taken to have them well balanced; they run in

brass bearings throughout and are connected by rope driving at the off end, by which loss of twist is prevented and spindle banding greatly economised.

For weft spinning, the makers apply an automatic stop motion, the use of which ensures the cops being made of one size.

It will thus be seen that this machine is constructed with the skill and care that distinguishes the work of its makers in all their other branches. After an inspection of the machine we are not surprised at the speed at which the spindles can be run, or at the great results that are now being achieved. Evidence appears to be accumulating upon every hand that the pre-eminence of the mule in the yarns generally termed Oldham counts is becoming every day a matter less and less assured. The makers will be pleased to afford any additional information that may be required, and to shew the frames at work on application as above.

We are informed that all the steam traps working in the Edinburgh Electrical Exhibition are the "Lancaster" patent high pressure, supplied by Messrs. Lancaster and Tonge, of Pendleton, near Manchester; and that all the pedestals carrying the line shafting are the "Lancaster" patent adjustable pedestals. These appliances are manufactured exclusively by the above-named firm.

Bleaching, Dyeing, Printing, etc.

NEW COLOURING MATTERS.

The Clayton Aniline Company of Manchester have lately placed on the market the following two new colouring matters for which they have obtained patents:—

AUROTINE.

This is a new yellow colouring matter derived from phenol-phthalein by the action of nitric acid, when tetranitrophenol phthalein is formed, and the sodium compound of this forms the dyestuff under consideration. This dyes wool a fine orange yellow, which is fast to light and acids, two very desirable properties. Alkalies darken the colour a little, and it bleeds a little on boiling with soap. One useful feature of aurotine is that it will dye on mordanted wool, so that it can be used in conjunction with colouring matters like alizarine, sumac, and logwood, to produce various mode and other compound shades. It is dyed on wool in an acetic acid bath at the boil, and it goes on evenly and well. It is an orange yellow powder, easily soluble in water and alcohol to a bright yellow solution. Acetic acid dissolves it to a faint yellow solution. Acids decolorise it, but alkalis restore the colour.

CLAYTON CLOTH RED.

This is dehydrothiolutidine azonaphthol, a body derived from primuline by separating it into its two constituents, dehydrothiolutidine and primuline base, the former of which is the most valuable, as it yields the brightest shades. The Clayton Aniline Company take advantage of this fact, and after diazotising it, combining it with naphthol and making it soluble, they send it out as Clayton Cloth Red. This is a dark red powder, soluble in water to a scarlet solution; acids precipitate the colouring matter as a scarlet precipitate; caustic soda has no action. It dyes wool in an acid bath a fine scarlet red, and the dye-wool is quite fast to light acids and alkalis. Soaping causes it to bleed slightly but not much; and it can be milled, as there is no tendency to stain the whites. Like aurotine, Clayton Cloth Red can be dyed on mordanted wool, so that it can be used in combination with logwood, sumac, alizarine, etc., and with these it can be made to yield useful browns, modes, etc. These two new dyestuffs are likely to prove useful to dyers.

RECIPES FOR DYERS.

The following are mostly translations from foreign sources. We do not guarantee the results from these recipes, but give them for the purpose of shewing our readers what their foreign competitors are doing.

CLARET BROWN ON WOOL.

For 100lb. wool, mordant by boiling in a bath containing

3lb. bichromate of potash,
2lb. sulphate of copper,
2lb. sulphuric acid,

for 1½ hour: wash, and dye in a fresh bath containing

2½lb. Clayton cloth red,
1lb. aurotine,
2½lb. logwood extract, 51° Tw.,
½lb. acetic acid.

Enter the wool cold, then heat slowly up to boil and dye for one hour; sadden with

5lb. sulphate of iron,

work half-an-hour longer, wash, and dry.

BROWN ON WOOL.

For 100lb. wool, prepare a bath with

1lb. Clayton cloth red,
3lb. aurotine,
3lb. sumac extract, 51° Tw.,
2lb. logwood extract, 51° Tw.,
1lb. acetic acid.

Dye at the boil for 1½ hours, then add

2 lb sulphate of copper,

boil ¼ hour longer, sadden with

5lb. copperas,

boil ¼ hour longer, wash and dry.

ALIZARINE RED ON SILK.

For 10lb. the silk is boiled off, washed well, and then for three hours mordanted in a bath of

100 parts alum,
40 parts hyposulphite of soda,
1,000 parts water.

The temperature is maintained at 40° C. for the first hour, at 60° C. for the second hour, and is raised to 80° C. during the third hour; it is then washed, dyed in a bath containing—

2½lb. alizarin red S X,
Boiled off liquor,
Acetic acid.

Work in the cold, turning the silk about five times, then raise to 95° C., and work for ¼ to ½ hour; cool, wash, soap, and brighten with tartaric acid.

DARK BROWN ON WOOL.

For 100lb. wool mordant by boiling for 1½ hours in a bath containing

3lb. bichromate of potash,
2lb. copperas,
5lb. sulphuric acid.

Lift and drain. Then enter cold in a dye bath containing

10lb. dioxine.

Work for ¼ to ½ hour in the cold; then gradually raise to the boil, and dye at the boil for 1 hour, lift, rinse well, and then dry.

ANILINE DYES IN JAPAN.—In spite of the fact that 1887 had already shown a great increase in the import of aniline dyes over the preceding year, the figures in 1888 show a still further enormous increase. The imports have been, in 1887, 306,884 cattie, and in 1888, 353,351 cattie, of which 249,443 cattie were imported directly from Germany. The most important aniline dyes for the Japanese market are the following:—Violet is still the most extensively used colour, although its sale is falling off, especially as far as concerns the commonest grade. Of blue, only best qualities are saleable, while the demand for magenta is very small compared with what it used to be; and only the best grades are still demanded. Green, in crystals, maintains its position, but powdered green has become almost obsolete. The demand for good reddish tints of phloxin and scarlet is increasing. Corallin is now bought in lumps in England, this grade having superseded the powdered German article. The demand for picrin, orange, and yellow, is also on the wane. As regards orange, only a few well-known brands which have an old reputation are still saleable, because they are the only ones that, mixed with phloxin, produce a certain colour, which is much liked by the natives. Alizarine dyes are gradually growing in importance, as the Japanese dyers are surmounting the difficulties they have hitherto experienced in using these dyes.