Machinery and Appliances.

IMPROVED RING SPINNING FRAME.

MAKERS: MESSRS. JOHN HETHERINGTON AND SONS, VULCAN WORKS, POLLAID 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 machines 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

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

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

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

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.

Balooning 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-balooning 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 bow. 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
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—

ABORINE.

This is a new yellow colouring matter derived from phenol-thiazolinol by the action of nitre used, when tetranitrophenoquinoline is formed, and the sodium compound of this forms the dyestuff under consideration. This dyestuff wool a fine orange yellow, which is fast to light and acids, yet very brilliant. It is dyed in acid bath at the boil, and 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 a dehydrochlorinated prunolinol by separating it into its two constituents, dehydrochlorinated prunolinol and prunolinol base, of which is the most important. The Clayton Aniline Company take advantage of this fact and after diazotising it, combining it with napthol and making it soluble, they sell it as Clayton Cloth Red. This is a dark red powder, soluble in water at a scarlet solution: acids precipitate the colour matter as a scarlet, but alkalis have no action on it. It dyestuff wool in an acid bath a fine scarlet red, and the dye solution is quite fast to light acids and alkalis. Soluble in water and in alcohol; it is not milled, as there is no tendency to stain the white. Like aurine, Clayton Cloth Red can be dyed on mordanted wool, in which it can be made to yield useful browns, modes, etc. These two new dyestuffs are likely to prove useful to dyers.

RECIPIES 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 showing our readers what their foreign competitors are doing.

BLANCH BROWN ON WOOL.

For 100 lb. wool, mordant by boiling in a bath containing
3 lb. bichromate of potash,
3 lb. sulphate of copper,
2 lb. sulphuric acid,
for 1 hour: wash, and dye in a fresh bath containing
2 lb. clayton cloth red,
1 lb. auriéline,
0.5 lb. logwood extract, 51% Tw.
1 oz. acetic acid.

Enter the wool cold, then heat slowly up to boil and dye for one hour; with
3 lb. sulphate of iron,
work half-an-hour longer, wash, and dry.

BROWN ON WOOL.

For 100 lb. wool, prepare a bath with
2 lb. clayton cloth red,
3 lb. auriéline,
3 lb. gum extract, 61% Tw.,
2 lb. logwood extract, 51% Tw.,
1 lb. acetic acid.

Dye at the boil for 1 hour, then add
2 lb. sulphate of iron,
boil 1 hour longer, with
5 lb. copperas,
boil 1 hour longer, wash and dry.

BLUE ALUMINUM RED ON SILK.

For 10 lb. the silk is boiled off, washed well, and then for three hours mordanted in a bath of
100 parts alum, 40 parts sulphate of potash, 1,000 parts water.

The temperature is maintained at 60° C. for the first hour, at 75° C. for the second hour, and is raised to 80° C. during the third hour; it is then washed, dyed in a bath containing—
2 lb. alizarin red S X, 3 lb. coffee, 3 lb. copperas,
5 lb. sulphuric acid.

Work in the cold, turning the silk about five times, then raise to 95° C., and work for
4 to 1 hour; cool, wash, soap, and brighten with
3 lb. tartaric acid.

DARK BROWN ON WOOL.

For 100 lb. wool mordant by boiling for 1 hour in a bath containing
3 lb. bichromate of potash,
salt of ammonia,
5 lb. sulphuric acid.

Lift and drain. Then enter cold in a dye bath containing
2 lb. maganese,
1 lb. copperas.

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

DYES IN JAPAN.—In spite of the fact that 1887 had already shown a great increase in the importation of aniline dyes over the preceding year, the figures in 1888 show a still further enormous increase. The imports have been, in 1887, 368,501 catties, and in 1888, 333,301 catties, of which 241,431 catties were imported entirely from Germany. The most important aniline dyes for the Japanese market are the following—Violet is still the most extensively used, and although its sale on the commonest grade of blue, only best qualities are salable at a high price, but powdered green has become almost obsolete. The demand for good reds blends into yellow and scarlet is increasing. Corals, now bought in Europe in England, this grade having superseded the powdered German article. The demand for pleurine, orange, and yellow, these being the only ones used for the most expensive, a few well-known brands which have an old reputation are still salable, for they are the only ones sold in Japan, and the following certain colour, which is much liked by the natives. Alizarine dyes are gradually increasing in importance, as the Japanese dyers are surmounting the difficulties which they have hitherto experienced in using these dyes.