Machinery and Appliances.

ROSSKOTHEN'S PATENT QUICK TRAVERSE SINGLE-THREAD WINDER.

MAKER: MR. JOSEPH STUBBS, MILL-STREET WORKS, MANCHESTER.

Mr. Joseph Stubbs, the well-known maker of winding machinery, is just introducing to the English trade a novelty in this class of machines, known as Rosskothen's Patent Quick Traverse Single-Thread Winder. It is the invention of a foreign mechanic, and has met with a very favourable reception on the Continent. As yet it is scarcely known in this country, and we have therefore all the more pleasure in drawing the attention of our readers to its merits.

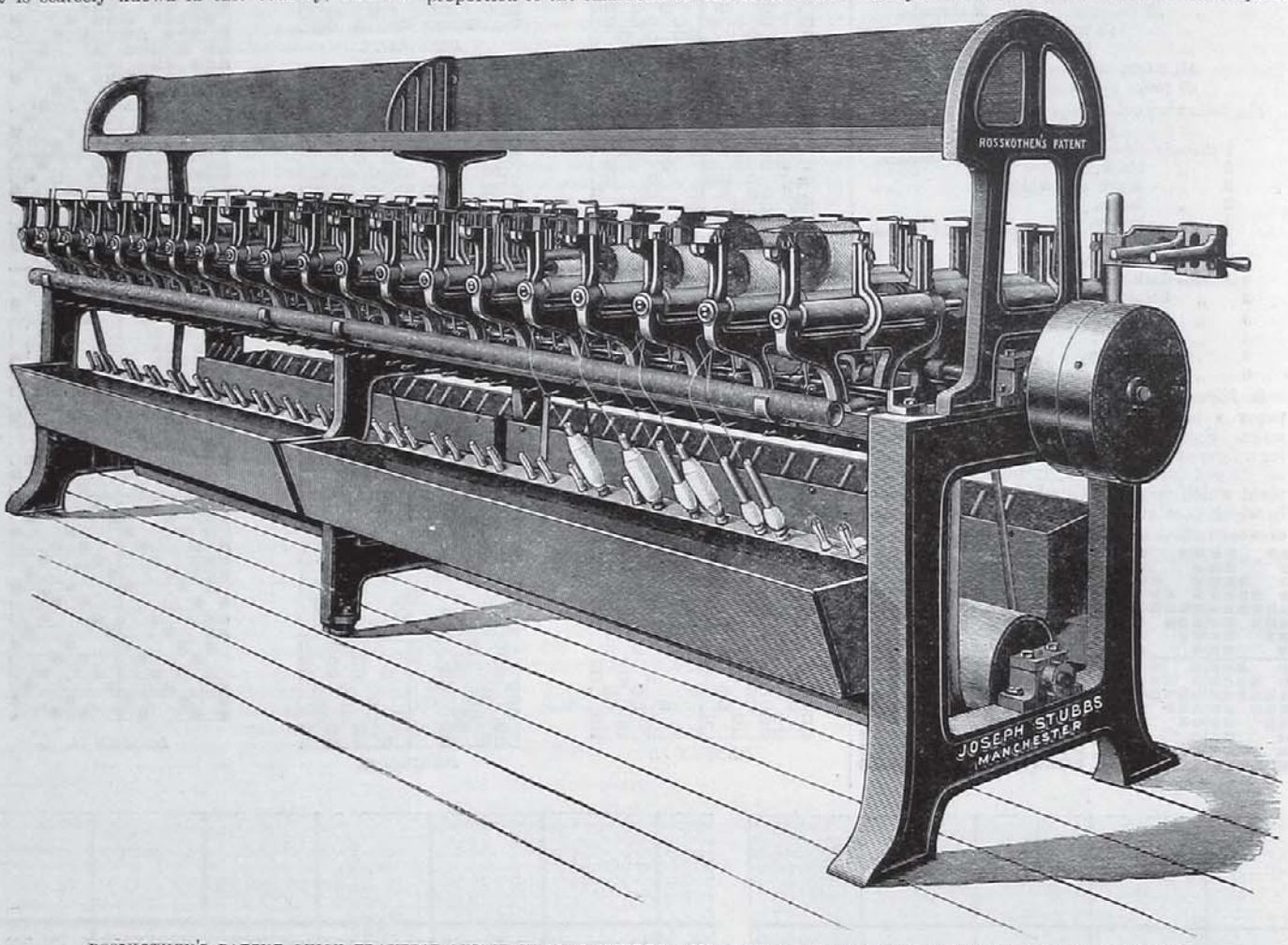
Its general appearance is well shewn in the accompanying illustration. It belongs to the type of winding machines that have their spindles arranged horizontally instead of vertically. The novelty in this case, however, is that the spindles are very long ones, extending across the frame, have their wharve in the middle, and drive four bobbins, two on each side of the machine. By this arrangement all the length of the spindle is effectively utilised, instead of, as in the ordinary winding machine, only the upper half. A great saving of space is also effected, as the width of the machine over all when fitted with these spindles, each to wind four 5 inch bobbins, is only 3 feet 4 inches. They are driven from a tin cylinder, extending the length of the frame. Each has four friction rollers, one for each bobbin. The bobbins being driven by frictional contact, take up the yarn at a uniform speed, thus differing from the ordinary winding machine with vertical spindles in which the rate of winding begins at the minimum on the barrel of the bobbin, and is being constantly accelerated until the bobbin is filled.

The traverse arrangement is quite novel in principle. Each bobbin is supplied with a very light steel thread guide, a little over five inches in length, and pivoted about 1¼ inch from its bottom end. The guide thus really forms a double lever, the short end of which, being attached to, and actuated by, a cam arrangement, has a movement of about an inch, which of course causes the long end to make a movement of about five inches, corresponding to its proportion to the small end of the lever which actuates it. The thread guide cams do their work with comparatively little noise. The range of movement of the guide can easily be changed from 5 inches to 3¼ inches, and the different traverses can be in use at one and the same time.

Our illustration shews bobbins in various stages of formation. The farthest on the left hand has been just commenced; it is placed upon the spindle horizontally, with its ends in the grooves of the vertical holders, with the metallic friction roller placed upon it. It is only necessary to use this roller until the bobbin has become heavy enough of itself to prevent any slip taking place, when it may be taken off and placed in the brackets at the ends of the spindles. The remainder of the bobbins are shewn without roller. When a thread breaks or a spool has been emptied and it is required to renew the connection with the end of the thread upon the bobbin, the latter is lifted out and placed in the bracket, when the end having been found and pieced it is replaced. The bobbins, as will be seen, being placed closely together enables one girl to tend a considerable number.

In its construction the machine is both novel and simple; the parts are few and interchangeable, and it is not liable to get out of order. Its various portions are machined and finished by special tools, the material and workmanship being of the highest class, such, indeed, as the maker has long had the reputation for putting into all his work.

The advantages of the machine will be obvious to our practical readers, and hardly need enumerating. Wood bobbins and the heavy cost of renewals involved in their frequent breakage are dispensed with. Yarn bobbins made upon this machine are firm, well compacted, and not liable to get entangled; they have good firm edges, and may, therefore, be taken and used in any warping or beaming machine. To the spinner making ring frame yarns, its usefulness and value will be at once apparent, as by it he can supply manufacturers who prefer to make their own warps, with his yarn in such a form as to need one process less than when it is delivered in the cop or hank. It also saves the cost of transmission of bobbins forward and backward, and the loss which usually results from this practice. In fact, the yarn can be packed and exported the same as mule cops now are. It thus emoves almost the only difficulty there is of ring yarn competing freely and upon even terms with mule yarn. In the form of these bobbins the yarn can, if required, be



ROSSKOTHEN'S PATENT QUICK TRAVERSE SINGLE THREAD WINDER.—MR. JOSEPH STUBBS, MILL-STREET WORKS, MANCHESTER.

easily bleached or dyed, as the cross winding will readily admit of the necessary liquids penetrating to the centre. Owing to its simplicity it can be sold at a price considerably less than any machine of the kind now being made.

The maker will be glad to shew it at any time in operation to intending purchasers, and give them every facility to examine and test it for themselves. For this purpose application may be made to him at the above address.

BLEZARD'S PATENT "TRUE" TEMPLE.

In our article upon this subject last week, the following paragraph was inadvertently omitted :—

There is another improvement in this temple to which we may call the attention of the reader. This relates to the means of preventing any lateral movement of the rollers. With the inward drag upon them, arising from the tendency of the cloth to contract, there is a great wear and tear upon the roller ends and their bearings. As usually constructed, the rollers bear against their shoulders, and not against the ends of the pivots, and no provision is made for taking up the wear. This wear, when it has occurred, permits and induces a lateral movement of the rollers inward and outward at every stroke of the slay, which is much to the detriment of the warp. In order to prevent this Messrs. Blezard devised and patented an adjustable bearing for the rollers, which is applied at the inner pivots as shewn in the illustration. It can be moved endways, and fixed as required. This simple yet ingenious improvement greatly assists in preventing the breakage of the selvage threads and damage to the reed. They also cover the roller pivots as shewn, and so effectually prevent oil stains.

Bleaching, Dyeing, Printing, etc.

DYEING OF HEAVY WOOLLEN PIECE GOODS.

A writer in a German contemporary discusses in the following terms certain defects occasionally met with in the dyeing of heavy woollen piece goods, and the cause of and remedy for these defects :—

In the dyeing of indigo blue by the hydrosulphite vat defects are often noticed. These are not due to the vat, but to the dyer, who does not keep it sufficiently alkaline. If it become noticeable in a new vat, it is best to add soda or ammonia at once. The reason is that the reduced indigo is not perfectly soluble in water, but is more freely soluble in weak alkaline solutions. When the vat is not sufficiently alkaline the indigo white is in a state of more or less suspension in the water, and, in consequence, does not penetrate into the cloth, the latter acting as a filter and keeping the pigment on the surface. On the other hand, when the bath is sufficiently alkaline, the reduced indigo white is dissolved, and the vat liquor penetrates the fabric, and the indigo is deposited equally in the centre as on the surface of the cloth.

The dyestuffs that penetrate with difficulty are the alizarines and some of the diazo-colouring matters. The affinity of the latter for the animal fibre is, under certain conditions, very great. The most important of these is thas there must be an excess of acid ; the next it heat. An excess of acid alone is sufficient to fix the dyestuff on the fibre from a cold aqueous solution. Heat, alone, is not sufficient to do this. These conditions furnish us with means for solving the problem how to cause the dyestuffs to penetrate the cloth thoroughly. These dyestuffs come chiefly into commerce as sodium salts of various acid-colour bodies. When dyeing with them it is necessary to liberate this colour acid, and so much excess of sulphuric acid must be added, so as to dull certain amido combinations contained in the wool fibre, which hinder the dyeing. Dyeing can only take place when this has been done. If wool is boiled in neutral aqueous solutions of these azo-dyes, no dyeing takes place, even if the boiling is continued for hours ; the wool is simply coloured in proportion to the quantity of the coloured solution it absorbs. When an excess of sulphuric acid is added, the wool rapidly absorbs the colour and becomes dyed ; the dye bath becomes exhausted and almost colourless. If, however, heavy pieces are treated in this way, they are not evenly dyed through. By adding the acid in small quantities at a time the dyeing is rendered more uniform, and the colour acid more fully penetrates into the body of the cloth.

Wherever it is possible the dyer should work with concentrated baths when employing these azo dyestuffs. The exact quantities of sulphuric acid to be added, however, differ for every make of dyestuff, and are best determined by experiment. The concentrated baths cause the dyestuff to penetrate at once into the body of the cloth ; enter at the boiling temperature and keep at this temperature for thirty minutes ; the bath may then be diluted and acidulated gradually. It is true that the use of sulphuric acid has this disadvantage—that an excess of it may be added, especially if the dyer is not conversant with its strength. It may be better to use bisulphate of soda. Too rapid a fixation of the dyestuff is, however, not wanted, as then the colouring matter does not penetrate the cloth sufficiently well. By using acetic acid and Glauber's salt this can be done. Fill the bath three-quarters full, boil, and add the dyestuffs, and also 20 per cent. of Glauber's salt. Turn the goods in this for fifteen minutes, and then gradually pour in at very short intervals 4 per cent. of acetic acid. By continuing the boiling the colour develops on the fibre in about an hour. The bath is thus exhausted gradually, which is very desirable. When the bath appears almost colourless an addition of one per cent. of sulphuric acid is sufficient to fix the dyestuffs upon the fibre and to exhaust the bath completely.

The alizarine dyes, which at the present time occupy so important a place in the dye-house, offer great difficulties when used for dyeing heavy woollen fabrics, especially the alizarine blue. This, however, is overcome if the dyeing be done carefully. Alizarine blue S (the bisulphite compound) gives satisfactory results. Clean the piece very carefully, and then mordant at once with 3 per cent. bichromate of potash, and 2½ per cent. of tartar ; let the latter be as free from lime as possible. Boil in the mordant 1½ hours, never less than 1 hour ; afterwards wash thoroughly and dye.

The dye bath is made with the alizarine blue which has been previously dissolved in water and strained ; acetic acid is also added. The temperature of the bath may be 122° F. In this run the pieces 45 minutes, during which time the bath may be raised to 150° F., but this temperature should not be exceeded, as then the alizarine blue would be deposited from its solution upon the cloth in a loose form. After 45 minutes more water can be added to the bath, the temperature raised to the boil, and the dyeing continued for 1 hour. This fixes the colour on the fibre, and properly develops the beauty of the blue.

Mr. C. T. Kingzett has been making some experiments on the preserving of hydrogen peroxide solutions, a substance very prone to decomposition. A solution that will yield at first 10 volumes of oxygen, will, in the space of three months, lose 28 per cent. of its strength, while in one month it will lose about 15 per cent. As this body is of great use for bleaching purposes, a preservative that would enable it to be kept indefinitely would, therefore, be of great value. It has been found that 0·5 per cent. of ether will do this effectually much better than any other agent.

THE MIXED INDIGO AND INDOPHENOL VAT.

M. Galland, the chemist at the great dyeworks at Loerach, has contributed to the Mulhouse Industrial Society the following note on the mixed indigo-indophenol vat, which we take from the *Moniteur de la Teinture* : This note deals with the mixed indigo and indophenol vat introduced by Messrs. Durand and Huguenin, of Basle. The reducing agent best adapted for use with the mixture of the two colours is sodium hyposulphite, which was discovered by M. Schutzenberger, and applied by him and M. de Lalande to the reduction of indigo. The vat is made up as follows :—Into a cask of 500 litres capacity are placed 10 kilos. of indigo (ground) ; 3·5 kilos. indophenol ; 30 litres of water and 2 litres of caustic soda at 35° Be. These are allowed to remain in contact for 12 hours, and then ground together for six hours. To this mixture is added 48 litres sodium bisulphite solution at 40° Be., and then slowly, so as to avoid too great a rise in temperature, 9 kilos. of zinc dust, suspended in 10 litres of water.

The whole is well stirred for half-an-hour, and 30 litres of caustic soda at 38° Be. added. This done, it is made up with water to 500 litres and allowed to stand for two or three days. The dyeing vat has a capacity of 5,000 litres. To make it up the contents of two casks of the above mixture are poured into 4,000 litres of water, to which sufficient hyposulphite has previously been added to absorb the dissolved oxygen. The amounts required by our vats are 2 kilos. zinc dust, 12½ litres bisulphite of soda at 40° Be., 25 litres water, and 8 litres caustic soda at 38° Be.

A vat thus made up imparts the dark shade (corresponding to 450—500 grms. of indigo by the old process) to 30 pieces of cotton passed through three times, at such a rate that the fabric remains two minutes in the liquid ; the pieces are subsequently chromed by passing the cloth through a cold solution of 2 grms. of bichromate of potash in a litre of water.

To restore the vat, 123 litres of the mother liquid are added after every 30 pieces that have gone through the vat ; these 123 litres correspond to 2·5 kilos. of indigo. Working in this manner, each piece requires for the shade mentioned above only 250 grammes indigo. We have never exceeded this amount since we commenced to work with a mixed vat reduced by hyposulphite.

When a vat has been worked it is well to ascertain, by a dyeing test on a small scale, its state of reduction, and to add the amount of hyposulphite requisite to reduce it to its former condition.

This method of procedure is very simple and easy of application ; the bath is much clearer than in the other process, does not so soon become muddy, and gives much more uniform shades. The treatment with chromate is quite as satisfactory as when indigo alone is used. In proof of the statement that both the colours are taken up by the fibre at the same time, it may be mentioned that when a portion of the fabric is treated with alcohol, the indophenol dissolves, even in the cold, leaving the insoluble indigo on the fibre. If the above instructions be rigidly adhered to, no difficulties will be experienced in the working of the mixed vat, the economy of which is obvious.

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.

DARK SLATE ON WORSTED YARN.

For 100 lb. Yarn, prepare a bath containing

10 lb. Glauber's salt,
6 oz. indigotine,
2 oz. orange Y,
3 lb. sulphuric acid.

Enter yarn at 160° F., give three turns, raise temperature slowly to boil and turn to shade, lift and wash.

STEEL GREEN ON WOOL.

Fast to milling. For 40 lb. wool. Mordant by boiling for 2 hours in a bath containing

¾ lb. potassium bichromate,
½ lb. tartar,
1 lb alum.

Lift, rinse, and dye in a fresh bath containing

15 lb. logwood,
6 lb. fustic,

at the boil for 2 hours. Lift, rinse, and dry.