CALENDERING MACHINE FOR WOOLLEN FABRICS.

CONSTRUCTED BY MR. A. KISSLER, ENGINEER, ZITTAU.

(For Description, see Page 452.)
TEXTILE INDUSTRY AT THE VIENNA EXHIBITION.—No. XV.

By Dr. H. Gruber

Finishing Machines.—(Concluded.)

We shall in this article conclude our report on finishing machines by describing the special machines adapted for the finishing of silk tissues and ribbons, which were exhibited at Vienna. We have already had occasion to mention the machines for washing silk, exhibited by Messrs. Scheller and Berchtold, of Thalwil, and by Messrs. Ammer and Co., of Basle, Switzerland. The latter firm also exhibited a finishing machine for silk, especially intended for silk threads and the material used for making silk cords (cordonets); this machine was arranged in the following manner: The threads were drawn off the bobbins fixed on a board, and were passed below glass rods in a water trough, from whence, after being carried over a perforated table which received the water dropping off, they passed over a second table, the surface of which was provided with an iron heating plate covered with woolen cloth. From this plate the threads passed to a second plate, the surface of which was ground smooth but not covered; after having passed both these plates the threads are reeled off on bobbins.
Another apparatus exhibited by Messrs. Aemmer and Co., of Basle, represented a machine for producing the so-called "moire," on silk ribbons. The ribbons, after being wound up, pass from the reels under a glass rod, next over a vertical iron rail, and from thence again underneath a second glass rod, while subsequently they traverse a calender consisting of three rollers, the central one of which is made of paper, whilst the two others, made of brass, are provided with finely cut longitudinal grooves; these two brass rollers, which are hollow, and which have also hollow axles, are heated by gas by means of perforated tubes passing through them. The upper roller is carried in bearings adjustable by screws, from which the paper roller is suspended, whilst the lower brass roller is fixed. Two ribbons are passed together, one on the top of the other, through the calender; but the central roller produces a perpetual
movement of the ribbons, which are thus pressed upon the given positions, and have the "moire," or watered, impression upon them.

During the process of drying, the main steam of the cylinder drips on the canvas and it has always been a difficult matter, on account of the porous nature of canvas, to keep in check this dripping water. In our description of drying machines given in a former article, we called attention to the stretching, which was done in the roller of the cotton machine, where the apparatus specially invented for this purpose by Messrs. J. D. Comman and Co. of Mulhouse; Messrs. J. and W. Creamer of Manchester; and Mr. William Birch, of Manchester. The machine by Messrs. J. D. Comman and Co., although highly successful, has not met with much acceptance, possibly from the application that might have been expected; but lately it has been provided with several improvements, which were shown by the manufacturer exhibited at Vienna, and of which we publish illustrations on page 450.

It will be evident from these engravings, the machine consists of fixed and solid frames carrying the main shaft I with the pulleys K and the spur wheel M, which transfers the motion by means of the wheel Z to the roller R, the latter being geared to the second roller a by the pinions C and B. These stretching rollers appear cylindrically in profile, as shown in the engravings, but they consist of an india-rubber tube drawn over a grooved core, as shown in the elevation. Then take the projections on the two stretching rollers are arranged in such a manner that the grooves of the one correspond in position with the grooves of the other; and as the grooves are shown through the india-rubber tube, the substance K is rolled over the roller and over the elliptical roller T; it is taken up either by the laying or distuting apparatus X, or by the roller V, in which latter case the substance of the table and stretched during winding up by the roller W. Even a superficial examination of the rollers a and W will show that the roller a must be stretched. The machine, which is well executed, and which deserves special attention, also effects the breaking up of the finishing matter, and makes even very strongly finished stuff soft to the hand.

The apparatus exhibited by Messrs. Rotherharts and Co., of Basel, is used for the printing of cotton, and is applied as an addition to the printing machine A, at any point of the same, but here is a point in our apparatus, as the chief stretching effect is produced near the edges, whilst the central parts of the stuff remains untouched.

Mr. Birch's machine mentioned above, is of original design, and we give illustrations of it on page 450. A superficial examination of this machine will be seen to pass to the main shaft I, supported by a light frame, and put in motion by the pulley K, carries the pulleys L, which together with the pulleys L, should be mentioned here that the illustration shows a combination of three such machines, which are fixed in front of a large drying machine for three widths of stuff. The stuff A running over the rollers B and C, passes into the machine, and touching the beating boards C, and the stretching chain D, is led through the regulator E, from whence it passes over the roller M to the crimper G and F; running from F over or under the guide roller R, the stuff is taken off by the first drying cylinder S, Fig. 2. By moving the regulator E up or down, the stretching effect can be adjusted on the cylinder and on the prop action of the adjustment the uniform action of the links upon the stuff depends. The stuff is led through the machine primarily upon the speed of the drying cylinder, which should correspond with that of the chain. The regulator comprises threeperfect action on the machine, provided with obliquely-divided grooves running from the centre to the end of the rolls. During the fitting up of the machine, care should be taken that the centre line of the roller M is fixed parallel to, and in the same plane as the centre of the first drying cylinder. The stuff may pass through the machine with the chain moved by the rollers F and N, the former of these being fixed on a frame which revolves on a vertical shaft L. Cotton, linen, and half-woollen stuffs are usually wound with a finishing fluid, in order to procure a certain stiffness, smoothness to the touch, and often lustre. In order to do this in a suitable and uniform manner, special machines are used, several of which were exhibited at Vienna. Starching machines, which may either be fixed to the machine, or be made as independent machines, belong to this class. Of the starching machines, or the comparatively few which we have to mention, one interesting machine was exhibited by Messrs. J. D. Comman and Company, of Mulhouse, Alceste. This machine is provided with wheels of different sizes, and of the solution of starch. In this there revolves a brass roller which works against a second roller, over which the starch is put, and which play passing rollers. The necessary rollers for the reception of the finished stuff being arranged in the usual manner and point of a more interesting construction, is the "cramping machine" exhibited by Mr. A. Kieslau, Zittauer maschinenfabrik und Eisenhauer. Cramping machines are generally used for effecting a continued washing, boiling, and rinsing of woollen or half-woollen stuffs, in an alkaline solution, for the purpose of finishing, or as a necessary preparation for the process of drying, or to provide the stuff, after the process of finishing, with a certain quality. This machine is one of the most important articles in the finishing process. We publish illustrations of this cramping machine on page 452. It is a machine that has been in use for about 14 ft. high, carrying at the bottom the cloth beam a, from which the stuff passes half folded, to the roller d and c, shown in the engraving. The stuff is pressed against the cylinder d by the roller f, whilst the laying down into the trolley e is effected by the lever y, worked from the shaft carrying the pulley t. This simple apparatus saves considerable time and labour as compared with the stuff system of folding each piece of stuff by hand.

The same firm also exhibited at Vienna a self-acting measuring machine, built after an English patent, but provided with several improvements. The Zittauer Maschinenfabrik exhibited a combined folding machine and measuring apparatus for textile fabrics, this consisting of a measuring and a pressure roller, the former of which was provided with a counter arranged for any dimensions. After passing the measuring roller, the stuff is tightly wound over small boards, the width of which may be varied, according to requirement. The stuff is stretched by suitably arranged rods, and the measuring and pressure cylinders are covered with woolen cloth.

The pressings and smoothing of textile fabrics is accomplished in various ways, but only one machine of this purpose was exhibited at Vienna, namely a calender by Mr. A. Kieslau, of Zittauer maschinenfabrik, an illustration of which we publish on page 447.

This calender is used for woollen or half-woollen fabrics, consists of three paper rollers, and the paper rollers are made of best flax paper under a hydraulic pressure of 500 atmospheres, and are provided with pressure and stops at each end. The hollow cylinder is made of chilled cast iron, and is heated by steam from 3 to 4 atmospheres, this steam is conducted to the hollow cylinder through the valve y and the brass cock c, whilst the water produced by condensation escapes through a port below the steam admission port e into the self-airing water-removing apparatus f, by means of which it is blown out without any loss of steam. The bracket for firmly connecting to the calender, and protecting it against any twisting that might be produced by the friction in the stuffing-box of the cylinder. The paper roller a is fixed, whilst the rollers b and c may be either lifted up or pressed against each other by means of the lever combination d and e, connected with the "movable parts g and h with the roller a and d and c, respectively." The front cylinder c is put in rotation by means of the wheels s and s, and pulley fixed on the same shaft as w, whilst the paper rollers b and d rotate by friction. The stuff to be finished passes from the cloth-beam a over the stretching apparatus g, the rods g, and the roller r, the upper paper roller a and the heated cylinder c, and after being led half round the latter, passes between it and the paper roller d, finally being taken off by the rollers e, and delivered into the box s. The simple, solid, and convenient arrangement of this machine deserves commendation.