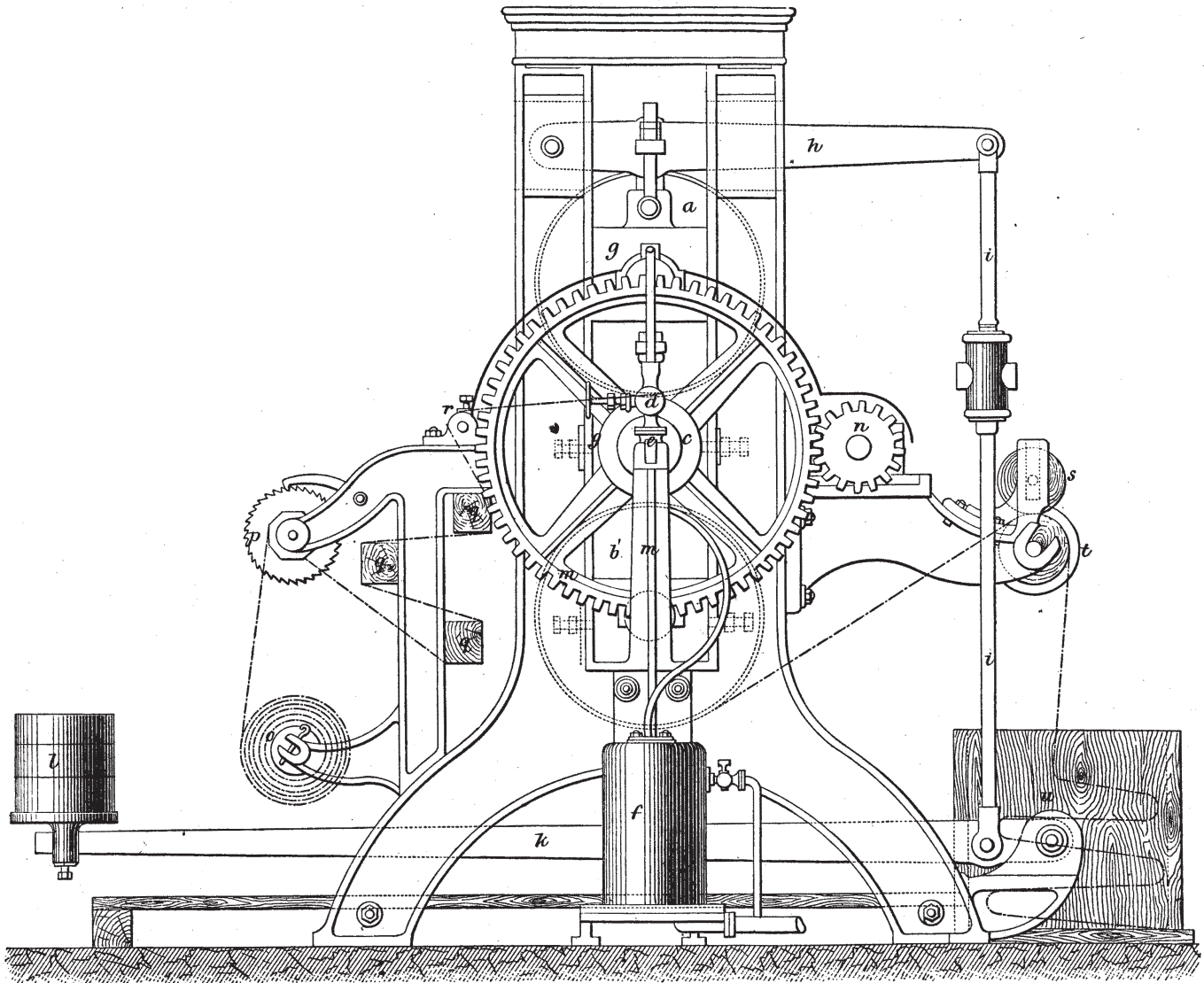


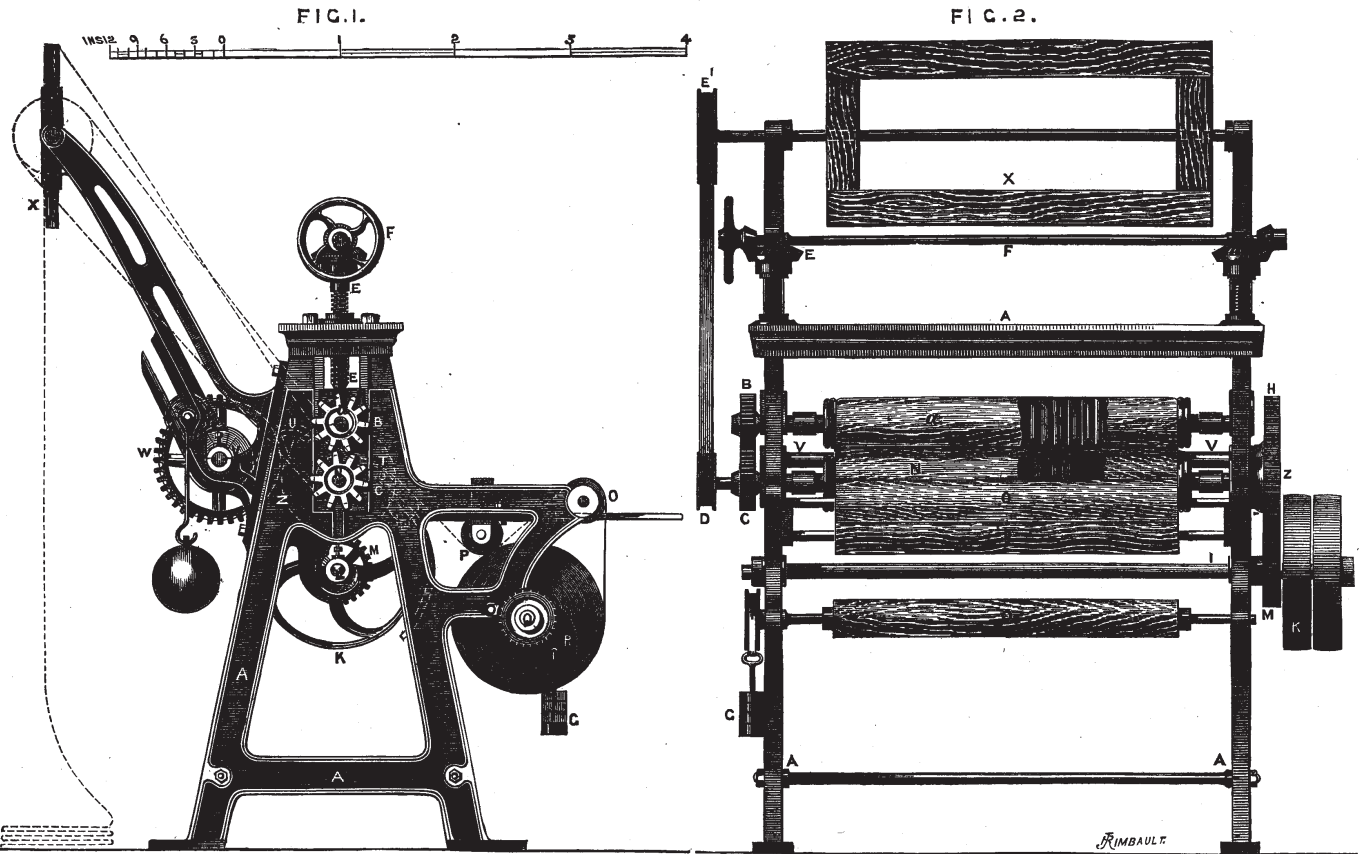
CALENDERING MACHINE FOR WOOLLEN FABRICS.

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

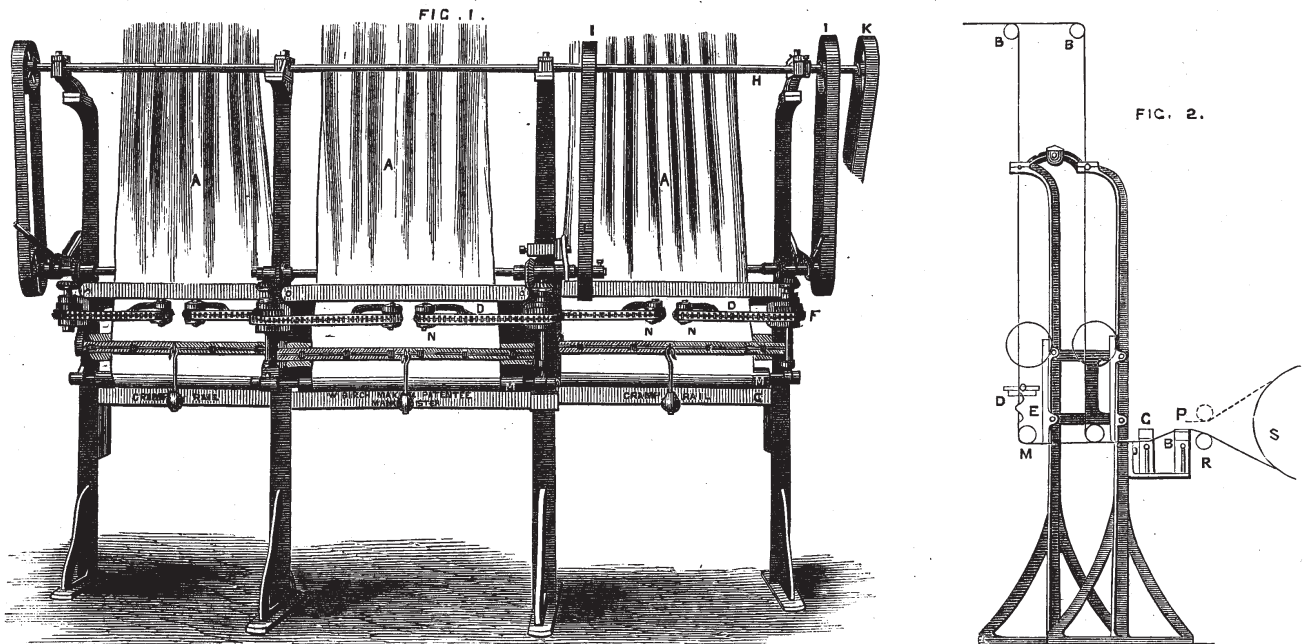
(For Description, see Page 452.)



STRETCHING MACHINES FOR TEXTILE FABRICS.



STRETCHING MACHINE BY MESSRS. J. DUCOMMUN AND CO., ENGINEERS, MULHOUSE.



STRETCHING MACHINE BY MR. WILLIAM BIRCH, ENGINEER, MANCHESTER.

TEXTILE INDUSTRY AT THE VIENNA EXHIBITION.—No. XV.

By DR. H. GROTHE.

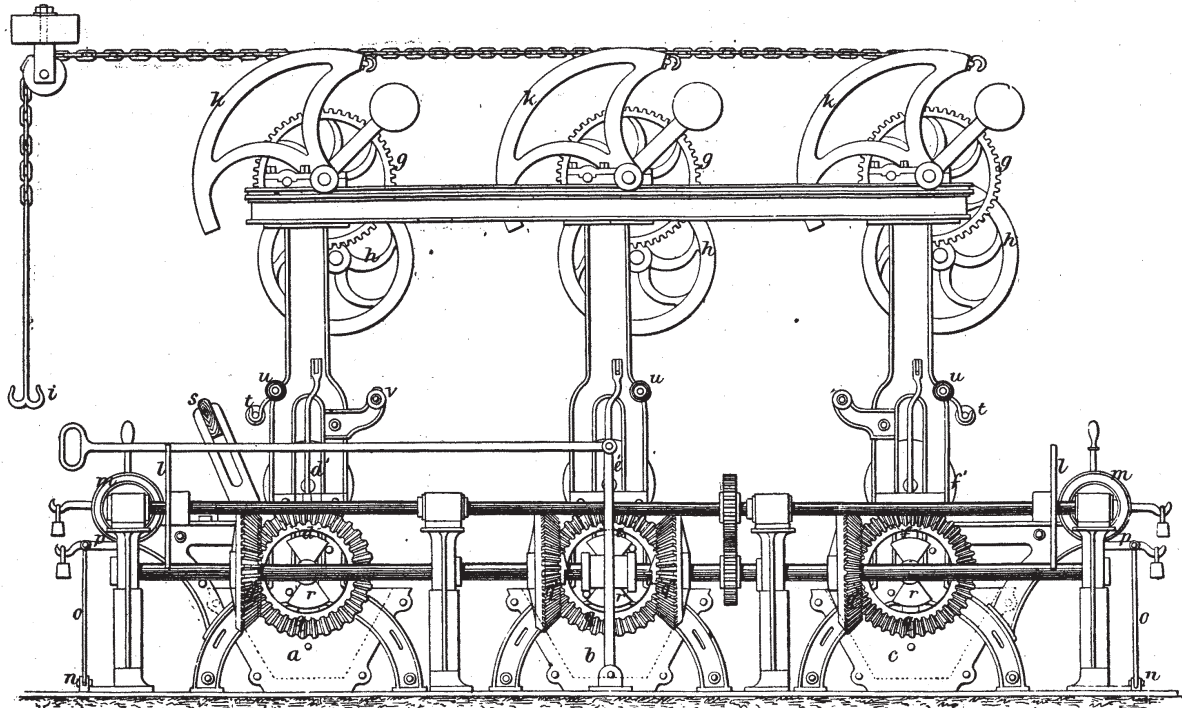
FINISHING MACHINES.—(Concluded).

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

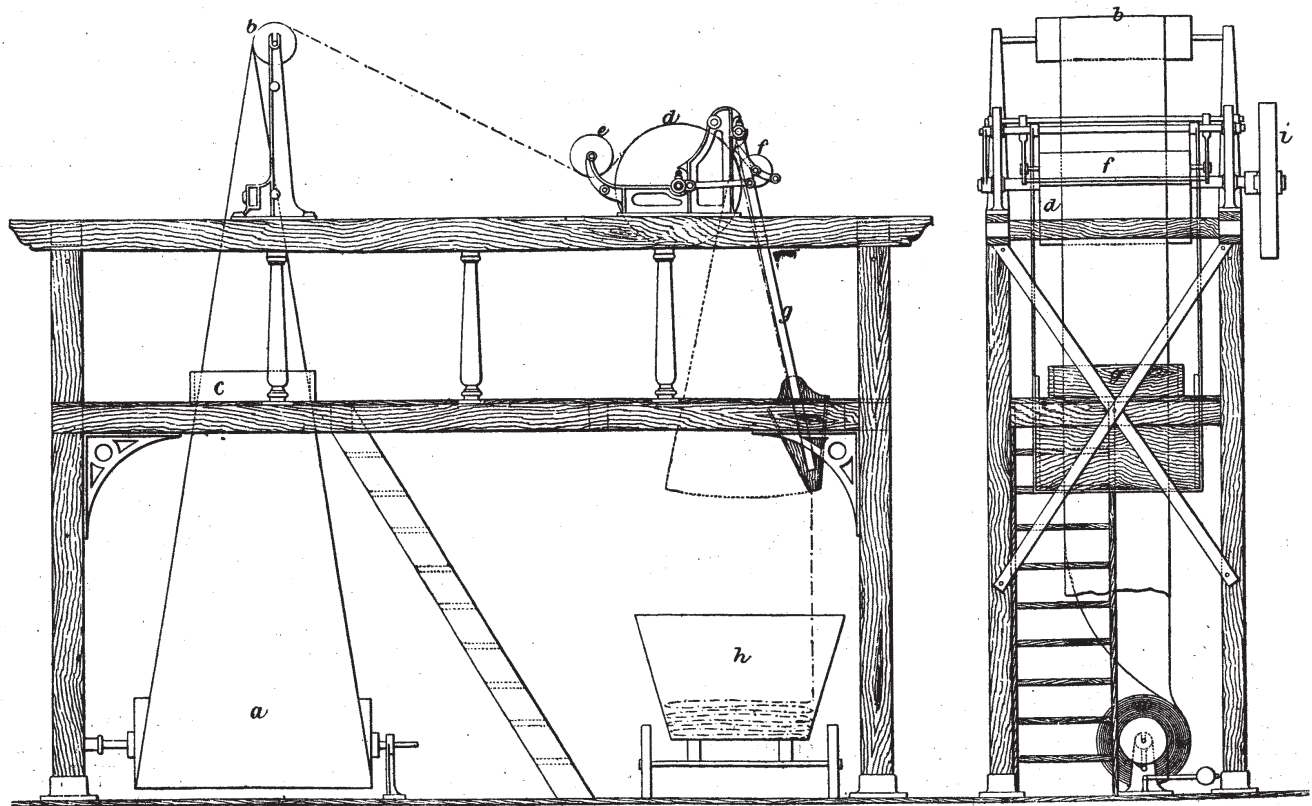
machines for washing silk, exhibited by Messrs. Scheller and Berchtold, of Thalweil, and by Messrs. Aemmer and Co., of Basle, Switzerland. The latter firm also exhibited a finishing machine for silk, especially intended for silk threads and the material used for making silk cords (cordonets); this machine 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 woollen 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.

CRAPING AND FOLDING MACHINES FOR TEXTILE FABRICS.



CRAPING MACHINE BY MR. A. KIESSLER, ENGINEER, ZITTAU.



FOLDING MACHINE BY THE CHARLOTTENBURG ACTIEN-GESELLSCHAFT FÜR STÜCKFARBEREI UND MASCHINENBAU.

Another apparatus exhibited by Messrs. Aemmer and Co., of Basle, represented a machine for producing the so-called "moiré," 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 axes, are heated by gas by means of per-

forated 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 each other in varying positions, and have the "moiré," or watering, impressed upon them.

During the process of drying, the maintenance of the stuff at its correct width is of great importance, and it has always been a difficult matter, on account of the shrinkage which takes place. Already in our description of drying machines given in a former article, we called attention to the stretching apparatus, but we must describe here the apparatus specially invented for this purpose by Messrs. J. Ducommun and Co., of Mulhouse; Messrs. Rosshardt and Co., of Naefels; and of Mr. William Birch, of Manchester. The machine by Messrs. J. Ducommun and Co., although known since 1868, has not met with the general application that might have been expected; but lately it has been provided with several improvements, which were shown by the machine exhibited at Vienna, and of which we publish illustrations on page 450.

As will be seen from these engravings, the machine consists of fixed and solid frames A 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 N, the latter being geared to the second roller a by the pinions C and B. These stretching rollers appear cylindrically externally, as shown in the engravings, but they consist of an india-rubber tube drawn over a grooved core, as shown at Y in the front elevation. These cores of the two stretching rollers are arranged in such a manner that the grooves of the one correspond in position and shape with the projections of the other roller; this cannot be seen, however, unless the two rollers are pressed together by means of the screws E, worked by the shaft F, when the grooves are shown through the india-rubber tube. The stuff R is unrolled from the roller Q, and passes over O, under P, and over the elliptical roller T; it is taken up either by the laying or distributing apparatus X, or by the roller V, in which latter case it has to pass the table U, and is stretched during winding up by the roller W. Even a superficial examination of the rollers a and N will show that the stuff passing between them 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. Rosshardt and Co., of Basle, is used for the printing of cotton, and is applied as an addition to the printing machine. All we need state here is that we cannot say anything in praise of this apparatus, as the chief stretching effect is produced near the edges, whilst the central part of the stuff remains untouched.

Mr. Birch's machine mentioned above, is of original design, and we give illustrations of it on page 450. From these views it will be seen that the main shaft H, supported by a light frame, and put in motion by the pulley K, carries the pulleys I, which transfer motion to the pulleys L; we should mention 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 B, Fig. 2, passes into the machine, and touching the feathering boards C, and the stretching chain D, is led through the regulator E, from whence it passes over the roller M to the crimp rails G and P; running from here 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 chain D is more or less opened or closed up, and on the proper arrangement of this adjustment the uniform action of the links upon the stuff depends. The working speed of the machine depends upon the speed of the drying cylinder, which should correspond with that of the chain. The regulator consists of a combination of three crimp rails, each provided with obliquely-cut grooves running from the centre to the end of the rails. 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, so that the stuff may pass uniformly through the machine. The chain is moved by the rollers F and N, the former of these being fixed on a vertical shaft which receives its motion from the shaft L.

Cotton, linen, and half-woollen stuffs are usually soaked 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 cylinder drying machines, or may be used as independent machines, belong to this class. Of the starching machine, as a part of the cylinder drying machine, we have already spoken when reporting on the latter class of machines, whilst we have to mention here an independent starching machine exhibited by Messrs. J. Ducommun and Company, of Mulhouse, Alsace. This machine is provided with a trough for the reception of the solution of starch. In this trough there revolves a brass roller which works against a second roller, over which the stuff passes from the feeding rollers, the necessary rollers for the reception of the finished stuff being arranged in the usual manner and position. Another machine of this class, but of a more interesting construction, is the "craping machine" exhibited by Mr. A. Kiessler, Zittauer Maschinenfabrik und Eisengiesserei. Craping 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 stuffs, after being cleaned, with finishing matter. This machine is an important element in the finishing process. We publish illustrations of this craping machine on page 451, and we may state here that it has been built after the best English pattern, although a few original additions have been made to it.

As will be seen from the engravings the machine is provided with three boxes a b and c, which contain the different fluids to be used for the finishing of the stuff or for the removal of impurities, such as fat or grease, from it. Three rollers d e f, carried in strong frames, and running against the pressing or squeezing rollers d' e' f', project partly into these three boxes a b c. These rollers and boxes may be used in various ways, according to the quality of the stuff; thus the latter is either wound round the rollers d e f, which are fixed in such a manner that the stuff is saturated by the fluid, whilst the rollers rotate and the squeezers partly press the fluid into the material, and partly squeeze it out of it, or the stuff is placed in the fluid, and is simply passed through the squeezers. By means of the wheel gear g h at the top of the frames, the upper rollers or squeezers d' e' f' can be lifted, in order to afford space for the winding of the stuff around the lower rollers d e f. The shafts g g g are provided with sectors k k k, over which a chain is passed carry in at its end the rod and hook i, from which weights of various sizes, according to the requirements of the case, are suspended in order to press the rollers d' e' f' firmly against the rollers d e f. The material, which may be passed in or out of the machine from either side, is, after coming from the squeezing rollers, wound upon copper steam rollers by means of the friction gear l m, which allows the speed of the steam rollers to be exactly regulated as required, by moving the disc to the necessary distance from the centre of the disc l. By means of the foot-boards n, the rods o, and the levers p, the workman at the machine can instantaneously stop the winding up of the stuff by throwing the friction discs out of gear. Motion is transferred to the rollers by the bevel wheels q q' q'', and each pair of rollers can be worked or put out of gear independently of the other rollers by means of suitably arranged couplings r. By means of the wooden rails s the stuff is guided into the machine without any folds; t t are guide rollers and v v and u u are stretching rods for the different boxes.

The pressing and smoothing of textile fabrics is accomplished in various ways, but only one machine for this purpose was exhibited at Vienna, namely a calender by Mr. A. Kiessler, of Zittauer Maschinenfabrik, an illustration of which we publish on page 447. This calender, which is used for woollen or half-woollen stuffs, consists of two large paper rollers a and b placed above and below a hollow cylinder c, which is arranged for being heated. The paper rollers are made of best flax paper under a hydraulic pressure of 500 atmospheres, and are provided with a strong wrought-iron shaft and hoops at each end. The hollow cylinder is made of chilled cast iron, and is heated by steam of from 2 to 4 atmospheres, this steam passing through the admission valve d and the brass cock e, whilst the water produced by condensation escapes through a port below the steam admission port in e into the self-acting water-removing apparatus f, by means of which it is

blown out without any loss of steam. The bracket m firmly connects e with the frame, and protects it against any twisting that might be produced by the friction in the stuffing-box of the cylinder. The paper roller b is fixed, whilst the rollers a and c may be either lifted up or pressed against each other by means of the lever combination h i and k, connected with the movable bearings g. The steam cylinder c is put in rotation by means of the wheels m and n, and pulleys fixed on the same shaft as n, whilst the paper rollers a and b rotate by friction. The stuff to be finished passes from the cloth-beam o over the stretching apparatus p, the rods q, and the roller r, between 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 b, finally being taken off by the rollers s t, and delivered into the box u. The simple, solid, and convenient arrangement of this machine deserves commendation.

After the finishing of the fabrics it becomes of great importance that they should be folded in a proper and saleable manner. For this purpose the Charlottenburg Actiengesellschaft für Stückfärberei und Maschinenbau has constructed a folding and doubling apparatus, which was exhibited at Vienna, and which had been exhibited previously at Moscow in 1872, but in a very imperfect state. This apparatus, which must be welcomed as a very suitable arrangement, and of which we give an illustration on page 451, consists of a frame about 14 ft. high, carrying at the bottom the cloth beam a, from which the stuff passes half folded, to the roller b, and thence to the rollers c and d. The stuff is pressed against the cylinder d by the roller f, whilst the laying down into the trolley h is effected by the lever g worked from the shaft carrying the pulley i. This simple apparatus saves considerable time and labour as compared with the 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 woollen cloth.