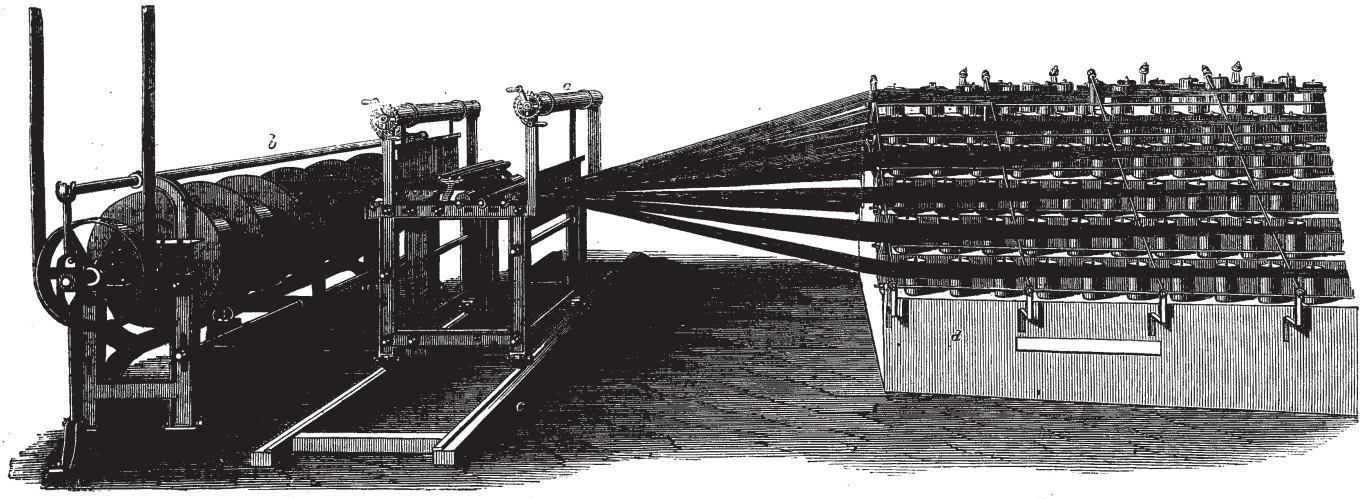
TEXTILE INDUSTRY AT THE VIENNA EXHIBITION.—No. VII.

By Dr. H. Grothe.

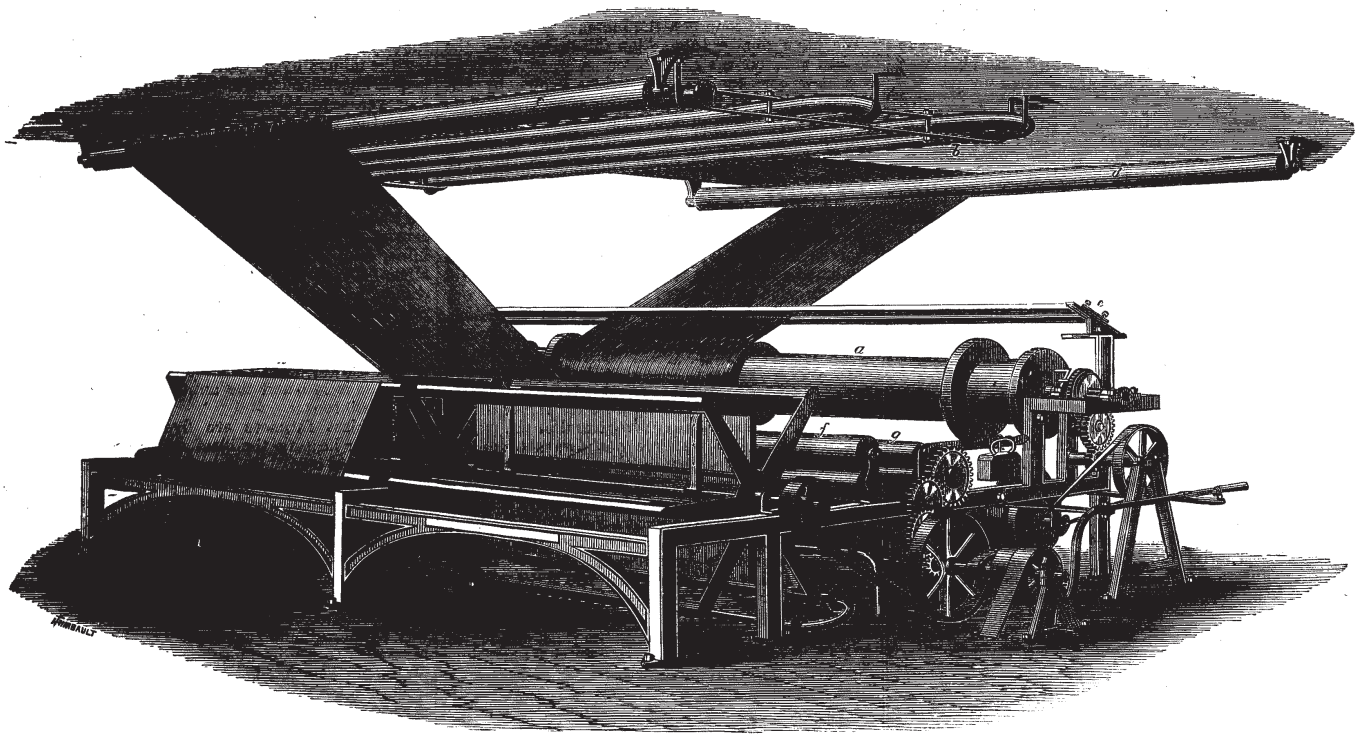
We have now to examine the apparatus, machines, and tools, which are employed for the further manipulation of the spun threads, or which partly assist and carry out the preparatory manipulations with the aid of the weaving process. Many yarns are doubled after the spinning, and are used in that state as finished products (such as sewing thread, &c.), or they are further prepared for weaving and knitting. For manipulation in the throstle, single or double throstle frames or water frames are used, and two, three, or more threads have at first to be wound from a large pirn, and after having been led on under a uniform tension, have to be submitted to the twisting action of the spindle and its flyers. The twist will be the tighter and more compact the quicker the spindle runs, and the slower the thread is led on. The machines for this purpose are very simple, but still there are many varieties in the construction. For instance, Messrs. Franke Brothers, of Chemnitz, known for their excellent twisting frames, exhibit at Vienna four different machines of this kind, namely, one for knitting yarn, one for sewing thread, one for fine woollen yarn, and one for cotton yarn. The characteristic of all these machines consists in the use of friction gear with a separate disengaging contrivance for each spindle; the latter are provided with flyers, and the threads to be doubled are guided by wire hooks at the ring round the spindle. In the twisting frame for cotton yarn the threads pass from the friction roller round a glass rod in the water trough, and then over a second roller, and passing back again underneath the glass rod are led over a third roller to the spindles. The design and workmanship of these machines are excellent. We can say the same of the twisting frame exhibited by Mr. G. Stein (formerly Fr. Haack), of Berlin, which is well designed and carried out. Messrs. Platt Brothers, of Oldham, also exhibit throstle frames, and show them at work on vigogna yarn, the uniform twisting of which is, as is known, difficult, however excellent the machines may be. The difficulties are chiefly a correct fixing of the speed of the spindle, a uniform supply of yarn, and the proper distance of the point where the threads are kept together from the entrance into the hollow flyers and the point of the spindle. These conditions are well fulfilled in Messrs. Platt Brothers' machine, whence its excellent working.

The machines for the purpose of winding the yarn from a roller in the reel on smaller rollers, spools, cop tubes for further use, or from cops on reels, are represented by a large number, to which belong the reeling machines, the spooling machines for warp, and those for weft. Reeling machines are exhibited by Messrs. Wegmann and Co. of Baden (Aargau), one a mechanical reeling machine with ordinary self-acting stop motion, brought into action by the breaking of the thread, and another with an electric stop motion, intended for fine yarns above the number of 100. Another reeling machine, exhibited by Mr. Leop. Phil. Hemmer, of Aix-la-Chapelle, shows a new self-acting "taking-off" contrivance (invented by Stephan Omast), by means of which, at the proper moment, the yarn, wound up until then, is surrounded or made tight by a thread. We shall have to say more about this machine on a future occasion. We now simply mention here the Austrian machines, by Mr. Carl Arzt, of Vienna, and of the Erste Brünner Maschinen-Fabrik, of Brünn, and further those exhibited by Mr. H. F. Kirchenmeister and Mr. Rudolph Voigt, of Chemnitz.

We also meet with well arranged and executed spooling apparatus, exhibited by Messrs. Mohring and Co., of Berlin, and the Sächsische Webstuhlfabrik (Saxon engineering works for the manufacture of mechanical looms), of Chemnitz. The spooling machines of Mr. H. Livesey, of Blackburn, of Messrs. Kurmaul and Son, and of Mr. Honegger



WARPING FRAME, CONSTRUCTED BY THE ERSTE BRÜNNER MASCHINEN-FABRIKS GESELLSCHAFT BRÜNN.



WARP-DRESSING MACHINE, CONSTRUCTED BY THE ERSTE BRÜNNER MASCHINEN-FABRIKS GESELLSCHAFT, BRÜNN.

have already been mentioned in a preceding article. There remain then the spooling machines by Messrs. Platt Brothers, and by Messrs. Combe and Barbour, of Belfast, of which we shall have to say more on a future occasion, but may state here that the latter of these machines possesses especially many and interesting new details. In order to arrange the threads for the warp next to each other, various apparatus are applied for different materials; those for silk we have already examined in a former article; and for other materials few machines only are to be found at the Exhibition.

The Erste Brünner Maschinen-Fabriks Gesellschaft exhibits a warping frame of good construction, in which especially the inclined bank or frame for the bobbins is of special interest. This bank is practically arranged in the form of steps, and has the advantage of requiring less space than the ordinary arrangement. The application of supporting rods for the threads prevents the falling off of broken threads. As will be seen from the illustration on the preceding page, the threads pass united through the reed, the position of which can be altered by means of the roller *a*, and finding their way between rollers and guide rods, pass through the second reed, and are wound up on the beam divided into sections by means of discs. In case of the breaking of threads or other irregularities, the machine can be stopped by the disengaging gear *b*, and the correct winding up of the threads is secured by a movable brake, consisting of a double-armed rectangular lever, one side of which is provided with a guide board pressing against the mass of threads already wound up, whilst the other side carries an adjustable weight. The whole arrangement of the reeds and rollers is placed in a movable frame which can be shifted to any section of the beam.

In connexion with this machine we also illustrate the machine for the dressing and for the beaming of the warp, that is to say, for coating the threads with a gummy substance and for uniformly winding the threads on a roller warp beam which is placed on the loom. After passing through the dressing material, the threads are pressed between the two rollers *f* and *g*, and are carried underneath and round the reels *h*, where they are exposed to the heat from the system of steam pipes on the flooring. These reels are provided within with a fan with four wings, which, rotating very quickly, drives the air through the threads, carries off the moisture from the surface of the yarn, and introduces a fresh supply of air. The yarn is carried next over a roller towards the ceiling, where it passes from the roller *c* to the roller *d* over the heating pipes *b*, whence it returns in a dried state, is divided in the reed *e*, and at last wound on the beam *a*. The design and workmanship of this machine leaves nothing to be desired.

For the purpose of winding sewing thread on rollers, on cards, or in balls, balling machines are used, and specimens of these are exhibited by Messrs. Kerr, Price, and Co., of Paisley, by Messrs. Clark and Co., of the same place, and by Mr. G. Stein, of Berlin. The first-named of these machines, which is Weild's patent, has a self-acting arrangement for throwing off the finished pirn and putting in a new one, so that attendance would be entirely unnecessary if the yarn were without defects and uniformly strong. The chief action of this machine is in a mechanism with clock-like details fixed on one side. The two other machines are of less importance; they are only partly self-acting, and for one ball only.

We have now to examine the auxiliary machines for weaving, which have been invented and executed for the producing of the pattern. In this special branch of industry, the Exhibition at Vienna is decidedly behind all former Exhibitions. Of course, many of the mechanical looms mentioned in former articles are provided with positive taking-up motion, but amongst them all is only one which is of a new construction, namely, the revolving shaft machine by Messrs. Gminder Brothers, of Reutlingen. We further find the known constructions of Schönherr, Crompton-Hartmann, Crompton-Strakosch, Möhring and Co., and Hodgson. A shaft machine of a new construction is found on the loom exhibited by Messrs. Platt Brothers, and another in the Austrian department belonging to Mr. Melitzko, of Herrmannstadt, which contains good details, and of which we shall give illustrations on a future occasion.

We have next to mention the shaft machine of Mr. Felix Tonnar's loom. Jacquard machines are exhibited only by Mr. Willbald Schramm, of Vienna, who is fond of jacquards with wood platines. One of the machines exhibited is of excellent workmanship, and has 2640 platines, another one 1640, and a third one 408. The double jacquards with revolving knives contain 1320 and 880 platines.

The exhibition of reeds, the manufacture of which is now carried out by machines, specimens of which are also to be found at the Exhibition as mentioned previously, is very numerous, and in general connected with other mill furnishings. Austria is represented by Mr. F. Gegendorfer of Vienna, Mr. Carl Winter, Mr. Andreas Kronberger, and Mr. J. F. Surber, of the same place, and M. Jeb. Schulz, of Asch, in Bohemia. In Germany we find the rich and beautiful collection of weaving tools by Messrs. Gaggstödter and Son, of Chemnitz, in which every thing is to be found that is necessary. We next find "maillons" exhibited by Mr. August Bauch, of Lichtenstein, paper tubes for pirns by Mr. F. Riesler, of Freiburg, in Baden, reeds and other weaving tools by Messrs. L. Thun, of Annaberg, E. Egelhaaf, of Bezingen, J. Wabzacker, of Bierbronnen, and H. Blüttchen, of Cottbus. A rich collection of "maillons" and reeds is that by Mr. H. Pfenninger, of Pfefficon (Zurich). Mill furnishings and weaving tools are exhibited in the English department, besides those mentioned already previously (H. Livesey), by Mr. Barraclough, of Manchester, Messrs. J. Ingham and Sons, of Thornton, near Bradford (shuttles and pickers for weaving and belting), and by Messrs. Irvin and Sellers, of Preston.

In the French department we find the exhibits of M. F. Orelle, of Lyon, Ferlat, of Lyon, and M. Durand and Souton of the same place. Italy is only represented in this branch by a collection of reeds exhibited by the first manufacturers of that country, Messrs. Mosé Sanrome and Fratello, of Milan. Regulators for looms are shown by Messrs. Liebau and Böttcher, of Chemnitz, and Mr. Carl Arzt, of Vienna, whilst a number of regulators are, of course, to be found on the looms exhibited.

We have finally to mention the temples for the finished stuff on the cloth beam, a good specimen of a new construction of which is shown by Mr. Joseph Mathis, of Dornbach; this apparatus has on both sides of the stuff a cylinder covered with fine points, by the motion of which the newly woven portion is brought to equal width with the stuff already finished to the cloth beam.