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

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FINISHING MACHINES.

About half a century ago the term "finishing machine" could be applied to perhaps half a dozen machines only, and but small accommodation was required for the trade of a finisher. With the exception of a fulling mill there was at that time no machine which was worked by other than hand power. To-day this state of affairs is entirely changed, and immense buildings are filled by "finishing" machines; while manual labour being dispensed with, steam gives motion to thousands of machines of all kinds necessary for the finishing process. There is scarcely a branch of industry that has been so thoroughly created by mechanical engineering as that of finishing and stuff-printing, while at the same time there is probably no branch in which the inventive genius of
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man has gained a greater success for an equal amount of labor, as is scarcely to be met with throughout the whole of the departments of textile industry. In proof of this, we may mention the weaving machine, the spinning machine, the weaving machine, the spinning machines (textiles), the magnificent printing machines and penographers, the mammoth watch machines, the railroad rolling machines, and so on. It would be to deal with the woven stuffs, and have to prepare them so as to deceive the hand, and then to work with the same ease and facility on the woollen stuffs and cloth, all other materials of less value are provided with a surface lustre which covers the inelasticity of the material, and which generally improves its appearance. What becomes, for instance, of the simple cotton stuffs under the action of this Cotkholm's printing machine? This is a question that this branch of mechanical engineering offers means for increasing considerably the market value of his products, has been the number of interesting machines to be designed and constructed, and this was shown in a striking manner by the Exhibition of machinery, which exhibits a fine collection of finishing machines of various types.

In giving a review of this collection, we shall follow, as much as possible, the course of the finishing processes.

Nearly all stuffs contain, when taken from the loom, certain imperfections and dispositions, such as gluts, &c., which must be kept to the very unesthetic, and which are of a sticky nature. To remove these matters, washing machines are used, which were only developed during the last century. A washing machine exhibited at Vienna was certainly that by Mr. Leopold Pf. Hamer, of Aix-la-Chapelle, which is worthy of notice. This washing machine exhibited at Vienna was certainly that by Mr. Leopold Pf. Hamer, of Aix-la-Chapelle, which is worthy of notice. This washing machine is a "universal" fulling machine, so called, because by the arrangement of the various parts it may be used for the fulling of stuffs of various qualities. An ingenious improvement of the feeding apparatus causes fulling to take place simultaneously at several places in the machine, whilst the stuff is not pulled out by the cylinder, in the ordinary construction. The feed argent, or tub, which is also provided with a cloth measurer, which saves the inconvenient and time-consuming measuring of the stuff by hand. Further improvement is the lining of the sliding surfaces with glass. The fulling is assisted by beaters and by a movable fulling apparatus, with adjustable glass admission rollers. Such a perfect arrangement must necessarily work well.

Böttchle Schramm and Dill of Hersfeld, exhibited an ordinary fulling machine, with two fixed rollers and a large fulling disc; the machine is of a cylindrical form and consists of a single cylinder, as construction. We may further mention the fulling machine with hammers, exhibited by Mr. Gressner, of Augsburg, consisting of single and double fulling apparatuses, containing machines; none of which, however, show any particular improvement in their construction.

A new head on a needle mill, a double-acting mill of this kind, but of the ordinary well-known construction, although of good workmanship, is exhibited by Mr. Gessner, of Augsburg, whilst the Belgian gig mills, belonging to Messrs. Bede and Co. (Houget and Teston), and Messrs. Neubarth and Longatin, both of Verviers, contain some new and interesting details. Messrs. Bede and Co.'s gig mill contains two teasing cylinders, and works with four so-called "counter-rollers." The one of the teasing cylinders moves always in one direction, whilst the other cylinder may rotate in the opposite direction, thus giving the power of teasing with or without counter-touch. A suitable contrivance effects a perpetual flattening of the Yellowstone through the mill, whilst an auxiliary cloth prevails the extreme stretchings of the stuff in the direction of its length. We refer to the "Cottrell," published in 1807, to publish a special description and illustration of this machine in an early number. The gig mill of Messrs. Neubarth and Longatin contains two teasing cylinders, and a roller passing up and down produces the desired approach of the stuff towards the card. A disperser moves uniformly all folds that may be produced. Two rollers, which draw the stuff from the box, compress the whole weight of the former, whence this weight cannot exercise an influence on the action of the machine. The weight of the machine is 9 ft. 10 in., the depth 3 ft. 12 in., and the weight 2000 kilogrammes; the machine makes from 100 to 120 revolutions, and requires about two horse power.

In the French department we find one gig mill only, exhibited by Messrs. Bergeron, Bron, and Messrs. Nimes. We should mention also an Italian gig mill, by M. Giacomini, of Treviso; this machine is provided with a revolving star, "quaritra metalloic vegetale," and which consists of alternately arranged series of wire rods and of breaking-straw, and the material indicated to count this machine in the category of the brushing machines, because, if covered entirely with breaking-straw, it is a "true" gig mill.

We may here mention especially the metal cards of Mr. W. Firth, of Strakowia, which are proposed for the finishing of the stuff as a single set, and the plant illustrated with the title "the Angels of Nimes." We may the metal cards of Mr. W. Firth, of Strakowia, which are proposed for the finishing of the stuff as a single set, and the plant illustrated with the title "the Angels of Nimes." Messrs. Firls frites, of Osen, the successors of the firm named above, exhibited at Vienna a machine, which is provided with a series of single, double, and triple brushing rollers, and an additional arrangement for stuffs requiring a small amount of singeing only. The machine is provided with friction gear for a fan, and with feeding rollers.

The other singeing machines which are exhibited by Messrs. Venets's Eidosin and Messrs. Zittauhaus-Maschinenfabrik and Eisengenosseni (formerly Albert Kiseler and Co.), of Zittau, are built on the cylinder system. The machine of the last-mentioned manufacturer is exceedingly well arranged for continuous working with two separate steam engines; this machine is represented by our engravings on page 372.

This machine consists, as will be seen from the engravings, of the hearth A (above the tile plate i is placed in a cast-iron frame), of the brushing and winding apparatus D, E, and driven by the two steam cylinders F and G. This arrangement, which is new and very convenient, follows the general principle now adopted in the construction of fulling and glazing machines, according to which each machine is divided with a separate motor. The perfection of the products and of the fabrics of the present time could not be obtained with the former system, in which all machines were driven by means of shafting from one common motor; the influence on the speed, and the speed of the shafting effected by the cutting part of gear of one or the other of the machines, the transfer was altered to the motor. With the system thus adopted, all these inconveniences are avoided, and each machine is independent of the other, whilst it is evident that power and time are saved, and more uniform products are obtained of inestimable quantities. By means of the clutches e, the singeing apparatus may be put out of work without stopping the entire machine. The cloths are placed on a flat beam f over the rollers g, against the brush i, and going over the adjustable knife k, passes over the heated plate 1, from whence it is led as way over the corresponding parts of the other machine. If a further singeing is required, the machine is reversed, and the manipulations are repeated, but in the opposite direction. The brush k serves to raise the fibres of the stuff before arriving at the singeing plate, so that they may be singed and dried, and then passed by the heated surface. The cover s is placed over the plate i, as soon as the machine is stopped; this is done in order to prevent the air coming into contact with the heated plate 1. The speed with which the stuff passes over the plate varies according to the thickness and condition of the stuff and the temperature in the room.