
**TEXTILE INDUSTRY AT THE VIENNA
EXHIBITION.—No. V.**

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WEAVING MACHINERY.

IN the previous articles we divided the machines noticed according to materials on which they operated; but this cannot be done, however, in the present section, because, notwithstanding that the weaving of silk differs considerably from other branches of weaving, the latter have nevertheless many preparatory machines in common. We shall take, therefore, at once the weaving of the silk, and the auxiliary apparatus for the preparation of the material for the process of weaving.

Caspar Honegger, of Rüti, Canton Zurich, has shown, no doubt, the most numerous exhibits for silk weaving at all previous exhibitions, and he does the same at Vienna. We find at first amongst his exhibits an interesting apparatus for the sorting of equal "counts" of raw silk, this apparatus consisting of a number of equal-armed levers arranged radially in a circle, the inner arms of the levers being loaded with a weight equal to the average weight of the unit skein for the number agreed upon. If, now, a skein of silk is placed upon the outside arm of one of the levers, the skein will lower that arm until equilibrium is attained. If the skein is of the normal weight, the lever will stand horizontally; while it is heavier or lighter than this weight, the arm carrying the skein will assume a position below or above the horizontal line respectively. The admissible differences of the weights of the skein are of course within limits, not too far distinct from each other, whence it becomes possible to adapt the apparatus to sort the skeins of silk according to their various weights. Let there be imagined, for instance, the series of levers, all of them loaded with a skein of silk; this series will certainly have a very irregular appearance on account of the various counts of the silk, and probably, in scarcely two cases, will the levers be found to be in a straight line. Suppose the skeins differ amongst each other in their weights by 1 gramme, and let the limits of the differences be 20 grammes above and 20 grammes below the normal count of the silk; further, let the gramme be taken as the difference of weight; then the levers might occupy 40 different positions, 20 above, and 20 below, the horizontal line of the normal weight. The levers being fastened in a frame moving round its own axis, as many pawls as there are levers are fixed in positions corresponding to the 40 different levels mentioned above as corresponding with the

differences of weight. The arms of the levers for the reception of the silk are each provided with a spring hook in the shape of a lever, which is disengaged, and turned over towards the outside through the weight of the silk, as soon as the arm of the lever comes in contact with one of the pawls. The silk is then thrown over the hook, and is caught by a vertical "accumulator." The height of the levers for any given over or under weight above or below the normal weight of the skeins of silk being the same, it is evident that all levers, which carry skeins of silk, say for instance, of 10 grammes above the count, must come in contact with one and the same pawl, which will disengage the spring hook, whence all the skeins which are 10 grammes too heavy fall upon one accumulator. The idea of this apparatus is very simple, and the correct action of it is beyond question as soon as it is once adjusted, and put into proper order. The troublesome sorting with the ordinary scale is thus prevented, and the work is done much more quickly. The machine is well designed and executed, and is very creditable to the exhibitor.

Mr. Honegger exhibits further a silk-warping mill, a beaming machine, and a warping frame for ribbons and borders. These machines are provided with easily adjusted disengaging contrivances, as well as with an arrangement for reducing the speed of the cloth beam in proportion as the layers of the material increase, so that the strain upon the threads remain always the same. The silk-warping machine is provided with a well-made sliding arrangement for the reed, and with an arrangement for adjusting the width of the cloth beam, according to the variable length and width of the warp. Mr. Honegger exhibits also three mechanical looms for the weaving of silk; one of them is for taffeta, one for satin and serge, and the third for marzelline. The mechanical loom for taffeta is very simple, and is provided with a simple heald motion, by means of balanced rollers; the second loom has on the side a mechanism for moving only one or two treadles, and which forms an *angular shred* by means of double levers and shafts with pegs or drivers; finally, the third loom has an apparatus for the changing of the shuttles, as required by the number of colours in the stuff.

Another Swiss house, that of Messrs. Scheller and Berchtold, of Thalweil, near Zurich, exhibits also a well-constructed loom for weaving silk, and a silk-warping machine of an highly interesting construction; the machine counts exactly the number of revolutions, and throws itself out of gear as soon as the required number of metres has been wound up by the beam. Besides these two houses no other Swiss manufacturers exhibit looms for the weaving of silk stuffs, although other exhibitors show looms for the weaving of silk ribbons. Amongst these latter we notice the loom for weaving silk ribbons with six shuttles, by Mr. F. Wahl, of Basle; and, further, a series of looms of one type for various purposes and materials, by M. Kuffmaul and Son, of Basle. Of these we may mention, first, the loom for taffeta ribbons, with revolver slay, and a new patented motion of the leafs, actuated by means of eccentrics. Another loom of this series weaves velvet ribbons, and is provided with a simple slay with star wheel, whilst a third loom, also for the weaving of velvet ribbons, has a crotchet slay, and a jacquard apparatus at the side. All these looms are well and carefully executed, and special attention has been paid to the regulation, not only of the beam for the unwinding of the yarn, but also of the cloth beam for winding up the finished stuff.

In the German department we find looms exhibited by Mr. Felix Tonnar, of Dülken; one of these looms is for weaving glazed silk stuff, and the other for weaving velvet ribbons. The works of Mr. F. Tonnar have been started for the purpose of making the Rhenish silk industry independent of foreign manufacturers, with respect to the supply of mechanical looms and weaving tools, and whether this end has been attained or not is perhaps best proved by the fact that from these works looms are already exported to foreign countries. The looms exhibited do not contain anything new, but they are built after the best patterns, and in the best manner.

In the Austrian department we find an ordinary warping frame exhibited by Mr. Willibald Schramm, of Vienna, a spooling machine, with an old mechanism for disengaging, by Mr. A. Röder, of Vienna, a loom for silk ribbon of the ordinary type by Mr. Anton Ehrlich, and another winding ma-

chine by Mr. F. Laubeck, of Vienna. Also, for this branch of industry, we have to repeat that the weaving of silk in Austria is still in every respect in a very primitive condition. Finally, we may simply direct attention to the fact that Japanese, Indian, and Chinese looms are exhibited at Vienna.