

## BRUSSELS AND WILTON CARPETS.

From the Textile World Record. Continued from February.)

Fig. 4 shows such a wire, which, after having been placed in the shed of the loom, as if it were a filling thread, is thus covered by the two hundred and fifty-six (or whatever number the texture (pitch) of the fabric may be) warp threads, and then a comparatively thin hempen, jute, or cotton pick (ground filling) is passed across; thus a series of loops are formed over and around the wire, and it is woven into the fabric as though it were a thick filling thread, and intended to form a coarse corded or rep-like fabric. Wire after wire is thus covered by the pile threads and woven into the fabric, till



twenty or more rows of loops have been formed around the wires, when the wire which was first covered by loops, is automatically withdrawn by a hook which catches in its looped end. Another set of loops is formed in front, and another wire is withdrawn behind, and the affair thus continued; but during the process of weaving, a sufficient number of wires are always kept in the last-formed portion of the fabric in order to keep the loops intact; i.e., prevent them from being pulled out.

Thus it is now clear that when a thread of pile yarn is not active in the formation of the figure, it is covered or concealed by the wire and ground picks of filling.

Each class of pile threads interweave with the ground pick on the same system, producing a carpet of uniform strength, and one in which every species of pile is equally permanent.

Brussels carpets are woven upon the double shed principle, the wire forming the loops being inserted at the same revolution of the crank shaft of the loom as when the shuttle is thrown for inserting the ground or body (henip, cotton or jute) filling. There are three different warps found in the Brussels carpet, viz.: the pile warp c, the body or ground warp k, and the stuffer warp g (see Fig. 3). The first mentioned warp, of course, is operated by the Jacquard harness, the second by means of two common harnesses n, n', and the third either by 1 or 2 common harnesses j, or from spare needles of the Jacquard. Warps number 2 and 3 are carried upon two common beams, l and h respectively, placed at the back of the loom. The face warp, only, consists of worsted yarn, the ground or body and the stuffing warps being of cotton, linen or similar material, as is also the filling.

The pile warp c as forming the face of the carpet is wound upon small bobbins b, placed upon the frames of the creel a, as is clearly shown at the back of the loom in our illustration, Fig. 3. The frames in the creel vary in number according to the quality of the carpet. For what is known as a "five-frame carpet" five frames in the creel are necessary; for a "four-frame carpet" four frames in the creel are required, and for a "three-frame carpet" three frames in the creel. Some times, however, a variation in the pattern causes the use of a sixth frame in the creel for the making of a five-frame fabric, a similar increase in the number of frames in the creel being sometimes necessary in the case of a three or four-frame fabric; the reason for it being that some Brussels carpets are "planted."

For instance, the nature of the design may be such that only very small quantities of one or more colors are visible in some portions of the design, and which should be "stopped out" by substituting some of the other colors. There would,

therefore, be a certain number of ends vacant; that is, a certain number of bobbins of yarn of one or more colors would be saved. The same number of bobbins might be placed upon the sixth creel, and thus an extra effect of color would be obtained in the design. This "dodging" of color is, however, oftener resorted to in three and four-frame carpets, four or five creels thus being used. It is by no means an uncommon occurrence in a three, four or five-frame fabric to "stop out" portions of color in any one frame and to abstain from introducing a corresponding amount of color in another place. The result of this is that a certain quantity of yarn is saved, and the general effect of the design is little, if any, the worse for the saving.

In the best grades of five-frame Brussels carpets in the market as a rule the standard pitch is 256 ends, this number of ends (loops) showing upon the face in the width (27 inches) of the fabric, but, in reality, this number (256) of ends must be multiplied by five, in connection with a five-frame carpet = 1,280 ends, the latter number representing the full number of ends of pile warp threads employed in the construction of this fabric, plus the necessary body or ground and stuffer warp threads. There are, therefore, with reference to the pile warp, 256 bobbins of yarn upon each of the five creels. In connection with a four-frame, the affair would equal  $256 \times 4 = 1,024$  ends = full number of pile warp threads to be used in such a carpet, etc.

Through each dent in the reed o, one end of each color of the frame is drawn plus two ground or body warp threads and the stuffer warp, thus with reference to a five-frame carpet there are no fewer than eight ends in each dent of the reed.

## THE JACQUARD MACHINE

employed in connection with weaving Brussels carpets varies from those regular or common wire hook machines as used for weaving upholstery goods, table covers, dress goods, etc., in that in the Jacquard machine as used for weaving Brussels carpets, in most instances, there are no wire uprights or hooks in this machine, their places being taken by cords, yet the result is the same, the necessary warp threads being raised as required. However, machines have been also made in which wire uprights were employed, but those mostly used have cords, in place of the uprights, worked by needles, precisely as in the common Jacquard. The card cylinder is of hexagonal (six sided) shape. There is a "lifter board," situated towards the top of the Jacquard, perforated with holes corresponding with the number of needles employed, which raises the tail cords to which the cords of the Jacquard harness are attached. The "lifter board" is placed so as to impart a tilting movement to the Jacquard harness, and in turn to the warp threads, in order to produce a clear top shed. The comb board rises and falls by the aid of a lever and a cam as fixed to the main driving shaft of the loom. The object of this is that in weaving a five-frame carpet, four frames, according to the exigencies of the pattern, may be lifted out of the way, so that the shuttle may pass for the purpose of binding the fabric. There is no spring box used in connection with this string Jacquard, the needles being pushed back at every pick of the pattern by means of a back board, actuated by gravity, the same as used in connection with an Ingrain carpet Jacquard.

Three sets of Jacquard cards are required for a three-quarters (27 inches) wide carpet. When a greater width is required, an extra set of cards is used for each quarter of a yard in the width of the fabric, for which reason a yard wide carpet will require four sets of cards, etc. The more sets of cards to be used, the larger the Jacquard must be, the more needles, tail cords and harness cords are required. One harness cord, heddle, mail and lingo is required for each pile warp thread.