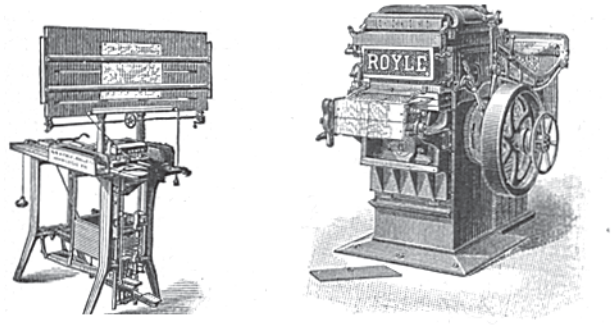
alized pepper berry vine after the crow-foot twill arrangement, or what is the same, the 6 change irregular satin setting.

In addition to the six changes of the pepper berry design, in order to fill up open spaces in the repeat of the design, four additional pieces of vines have been used, one large and three small ones.

Fig. *G*, Plate IV shows us a conventionalized floral design distributed after the 8 change regular satin setting, and which is a setting more conveniently used, not only on account of the even distribution of the figures by means of this satin setting, but also on account of the handy way in which the design can be reproduced, a feature which will be readily seen by examining fabric sketch *G* more in detail, showing that if the repeat be bisected in both directions, the figure in opposite corners will correspond, *i. e.*, be exactly the same, consequently the other figures in the repeat of the pattern will correspond in the same manner, the design thus resolving itself to nothing more but the same figure set in four different positions in connection with the regular 8-leaf satin plan of setting.

Another advantage of this 8-leaf satin setting, is that the boundary lines of the repeat can be drawn in such positions that the figure is cut in the same way at the top and bottom and at the sides, and for which reason the design can be made to appear uniform, no matter from which side seen, whether viewed from top or bottom. This feature, in connection with 8-leaf satin setting, is frequently made use of by the designer in order to shorten his work by half, or only having to produce half of the complete repeat, the other half being then obtained from it on the *Royle Card Stamping Machine*, either by cutting the design in two, and reversing the parts, or by turning the design around; the first method referred to is used when the figure is turned in two or four directions, the latter system being resorted to when one figure is turned in four directions. Another advantage in connection with the latter method is, that in case of full-up patterns, or when needles are cast



"ROYLE" CARD STAMPER "ROYLE" REPEATER
Built by John Royle & Sons, Paterson, N. J.

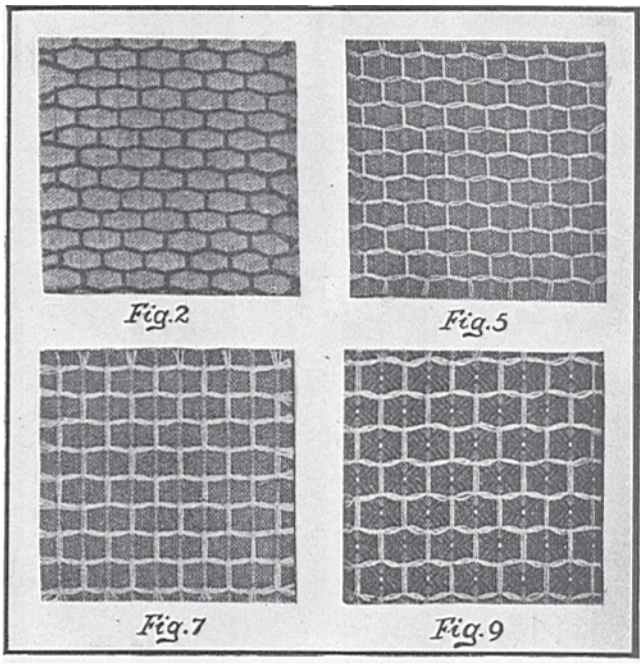
out equally on either end of the machine, then the second half of the set of cards can be produced direct on the *Royle Repeater* from the first half.

Fig. *H*, Plate IV shows a geometrical design, a circle, distributed after the 10 change irregular satin setting which presents one of the best arrangements for distributing a figure.

SPIDER WEAVES.

The object in designing these weaves is to have floating warp and filling threads in the fabric form a sort of net work on top of an otherwise regularly interlaced fabric.

The rule for constructing these weaves is: Have at certain intervals two or more warp-threads float on the face of the fabric for two or more picks more than half the repeat of the design. These floating threads are arranged in two sets, one set to float on the face while the other set floats on the back of the fabric structure, the difference in length of the two sizes of floats to be balanced, *i. e.*, one set of face floats to overlap its mate set of face floats. Where these face floats overlap, two or more picks of filling are permitted to float on the face of the fabric, being bound down by the floating sets of warp-



threads, *i. e.*, where the latter change from interlacing from face to back or vice versa. The balance of the repeat of the weave is, as a rule, filled up with plain weave; in some instances, in connection with fancy effects, broken twills may be used.

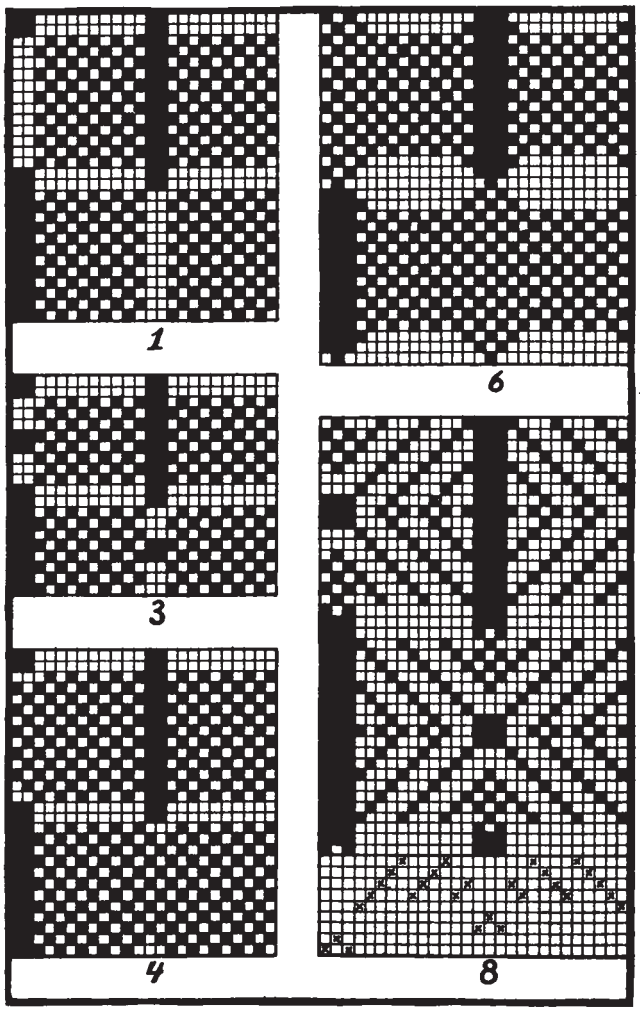
Interlacing the two or more floating filling threads as thus explained, will in turn deflect these threads on the face of the fabric, from a straight line, giving them a wavy direction, in turn producing the honeycomb spider effect as shown in fabric samples accompanying article.

Weave Fig. 1 shows us two floating warp-threads in a set to alternate with 10 warp-threads interlacing with the plain weave; using two changes of the sets of floating threads for one repeat of the weave, gives us 24 warp-threads for the same. Filling ways, 12 picks interlacing with the plain weave alternate with two picks floating, and which combination on account of the distribution of the change of interlacing the two sets of warp floating threads brings repeat of the weave filling ways to be 28 picks; repeat of complete weave 24 x 28. As will be readily understood, the

floating warp-threads on account of the difference of interlacing have to come from a separate beam.

Fig. 2 illustrates a fabric sketch woven with weave Fig. 1, clearly showing the spider effect, *i. e.,* the object of these weaves.

Fig. 3 illustrates a modification of weave Fig. 1. The same arrangement for warp is used, the arrangement of the filling however being shortened, the floating threads at the same time being made to produce on picks 4, and 5, and picks 14 and 15, small spots to be seen in the centre of the hexagon spider effect. Repeat of weave 24 x 20.



Weave Fig. 4 shows again the same arrangement in its repeat of 24 warp-threads as was used in weave Fig. 1. In this instance, the floating warp-threads, after resting on the face of the fabric for 16 picks, interlace then on 12 picks, or with remainder of the weave, on plain weave, giving in this instance, the fabric a more solid structure. Fig. 5 illustrates the companion fabric structure to weave Fig. 4.

Weave Fig. 6 shows us 3 floating warp-threads used in each set, 5 picks floating having been used in the filling, the complete weave repeating on 28 x 32. Warp and filling floats have in this instance been somewhat modified compared to the previously given weaves. The 3 floating warp-threads must in this instance be drawn in one dent in order to produce a perfect effect in the fabric as is shown in connection with fabric sketch Fig. 7.

Weave Fig. 8 shows us the $\frac{1}{3}$ 4-harness broken twill, broken warp and filling ways, used for interlacing the body portion of the fabric. 3 warp-threads and 3 picks are used for floating ends in each set, the floating warp being arranged to show a spot in the centre of the hexagon spider effect, as clearly seen in fabric sketch Fig. 9. Repeat of weave, 28 warp-threads and 40 picks.

Below the weave, its drawing-in draft for 9-harness is given, showing that the fabric is within compass of any dobby in use.

FAULTS IN COTTON FABRICS.

(*Continued from page 95.*)

Reedy Cloth.

This is an imperfection to cloth very frequently met with, showing lines lengthwise in fabric, caused by the warp-threads running in twos, threes or fours, according to number of warp-threads drawn in the dents of the reed. The cause for it, as a rule, rests with the loomfixer, *i. e.,* the setting of those parts of the loom that control the let-off and take-up, as well as the shedding of the warp. In some cases the loosening of the top shed may stop the trouble, again it may be found necessary to change the reed, *i. e.,* use more dents per inch and put less threads in each dent. It is a fault to the face of the cloth, the opposite of which is known as *well covered* and where the threads are most equally distributed from each other, all over the width of the fabric, and this throughout its entire length.

Floats.

The same are common occurrences in weaving, caused for various reasons; they should not be permitted by the weaver to pass into woven cloth. The woven portion, whether one or any number of picks, should be picked back until the line of perfect cloth is reached. In their formation, as a rule, floats refer to any number of successively taken warp-threads and picks not interlacing in proper order with each other, in some instances, for a considerable number of threads or picks not at all, producing what would amount equal to a hole in the cloth.

Floats are caused in various manners; a broken end not at once seen by the weaver will entangle itself with any number of joining ends, in turn preventing them from forming the proper shed. If not soon detected the shuttle may be thrown out, by its coming in contact with the entanglement and thus being guided out of the plane of the shed. A smash-up or break-out of any number of warp-threads may any time accompany the flight of the shuttle.

Another cause for floats is the breaking of a heddle, which, as it falls among the warp-threads, becomes entangled with them and produces the same effect as a broken thread. This trouble is a frequent occurrence when dealing either with common wire, or with twine heddles, for which reason it will be found of advantage to use the *Duplex Heddle,* and where breakage of a heddle is next to an impossibility.