

R. ZAHN.
SHUTTLE EMBROIDERING MACHINE.
APPLICATION FILED MAR. 18, 1910.

1,020,674.

Patented Mar. 19, 1912.

FIG. 1_

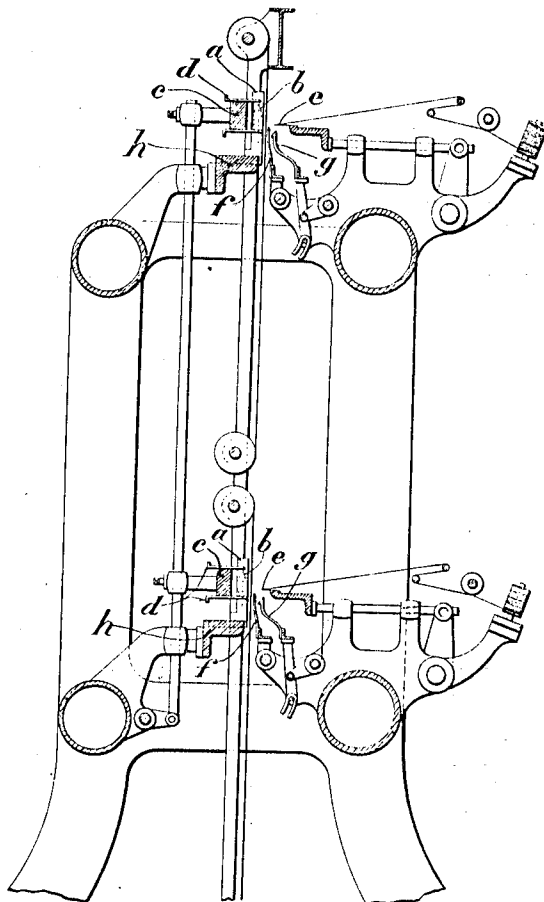


FIG. 2^a_

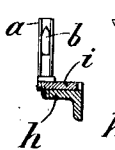


FIG. 2_

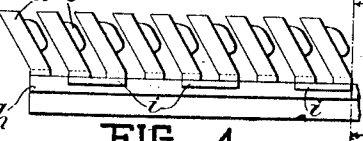


FIG. 3_



FIG. 4_

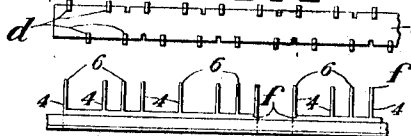


FIG. 5_



FIG. 6_

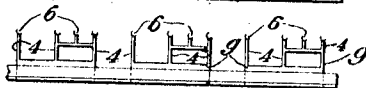


FIG. 7_



WITNESSES:

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UNITED STATES PATENT OFFICE.

ROBERT ZAHN, OF PLAUE, GERMANY.

SHUTTLE EMBROIDERING-MACHINE.

1,020,674.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ROBERT ZAHN, a subject of the King of Bavaria, and resident of Plauen, Germany, engineer, have invented new and useful Improvements in Shuttle Embroidering-Machines, of which the following is a full, clear, and exact specification.

It is well known, that some shuttle embroidering machines have a so called 4/4 pattern repeat, that is to say there are arranged four needles and four coöperating shuttles for each length of four inches of the whole available extent, while other embroidering machines are of the so called 6/4 pattern repeat, that is they comprise four needles and four coöperating shuttles for each length of six inches of the whole extent, so that in one case the embroidery patterns on the material are placed nearer together than in the other case.

The present invention relates to a shuttle embroidering machine which is so arranged that it allows for an alteration of the repeat of the embroidery pattern from 4/4 to 6/4 and vice versa. For this purpose the improved machine has in combination with a needle mechanism a shuttle arrangement having each second and third shuttle guides arranged together on an easily exchangeable piece of the shuttle board, and for each of these exchangeable pieces a substitute member with a dead part and one single shuttle guide, capable of being substituted for its corresponding shuttle guide piece, for the purpose of having the machine of 4/4 or 6/4 pattern repeat according as the double shuttle guide pieces or their substitute members are employed.

One method of construction of the improved embroidering machine is shown in the drawing in which the shuttle guides are arranged at an inclination to the vertical.

Figure 1 is a vertical section through the machine. Fig. 2 is a front view of one part of the shuttle guides in the case of a 4/4 pattern repeat. Fig. 2^a is a cross section of Fig. 2. Fig. 3 is a front view of a part of the shuttle guides in the case of a 6/4 pattern repeat. Figs. 4 and 5 show diagrammatically the arrangement of the shuttle drivers for 4/4 and 6/4 pattern repeat respectively. Fig. 6 shows the material pressing members arranged for a 4/4 and 6/4 pattern repeat, and Fig. 7 shows the scal-

loping members also arranged for a 4/4 and 6/4 pattern repeat.

In Fig. 1, which shows a shuttle embroidering machine with two rows of embroidering needles, *a* are the guides for the shuttles *b*. *c* is the driving bar for the shuttles of each row provided with the shuttle drivers *d*. *e* are the embroidering needles of each row, which, as is well known, are adjustable along the needle bar. *f* are the material pressing members and *g* the scalloping members.

The shuttle guides *a* are arranged at an inclination to the vertical, as may be seen from Fig. 2. According to this figure, which corresponds to a shuttle arrangement for the usual 4/4 pattern repeat, the guides *a* are secured to the shuttle board *h* in such a manner that each second and third shuttle guide is arranged on a removable piece *i* of the shuttle board which may be easily exchanged. The machine has further, as a substitute for each removable piece *i* carrying two shuttle guides, a substitute member *j* (Fig. 3) having a dead part and one single shuttle guide and which is so formed that it can be substituted for the corresponding piece *i* and gives thus together with the remaining fixed shuttle guides a shuttle arrangement for 6/4 pattern repeat. This pattern repeat alteration requires also an alteration in the shuttle drive. In the case of the 4/4 pattern repeat the shuttle drivers *d* are arranged on the driving bar *c* in the manner shown in Fig. 4; in the case of a 6/4 pattern repeat they are arranged in the manner shown in Fig. 5, for which purpose the driving bar *c* is provided with slots corresponding to these pattern repeats and into which the drivers are inserted according to the desired pattern repeat.

Fig. 6 shows the material pressing members *f* which also are adapted for 4/4 and 6/4 pattern repeat and in which the parts marked 4 are designed for the 4/4 pattern repeat and the parts marked 6 for the 6/4 pattern repeat.

Fig. 7 shows the scalloping members *g* also arranged for a 4/4 and 6/4 pattern repeat in which the parts 4 come into operation for the 4/4 pattern repeat and the parts 6 for the 6/4 pattern repeat.

What I claim is:

1. In shuttle embroidering machines, the combination with a needle mechanism, of a

shuttle board, a plurality of shuttle guides upon said board arranged according to a determined pattern repeat, each second and third shuttle guide being arranged together
 5 on a removable piece of said shuttle board, whereby for each of these removable pieces a substitute member with one single shuttle guide and a suitably arranged dead part may be substituted therefor so that the shuttle arrangement may be of another determined pattern repeat, substantially as and for the purpose described.

2. In shuttle embroidering machines, the combination with a needle mechanism, of a
 15 shuttle board, a plurality of shuttle guides upon said board arranged according to a determined pattern repeat, each second and third shuttle guide being arranged together on a removable piece of said shuttle board,
 20 whereby for each of these removable pieces a substitute member with one single shuttle guide and a suitably arranged dead part may be substituted therefor, so that the shuttle arrangement may be of another determined pattern repeat, shuttle drivers,
 25 and means whereby the position of said shuttle drivers may be changed according to the desired pattern repeat, substantially as and for the purpose described.

30 3. In shuttle embroidering machines, the combination with a needle mechanism, of a shuttle board, a plurality of shuttle guides upon said board arranged according to a determined pattern repeat, each second and
 35 third shuttle guide being arranged together

on a removable piece of said shuttle board, whereby for each of these removable pieces a substitute member with one single shuttle guide and a suitably arranged dead part may be substituted therefor, so that the shuttle arrangement may be of another determined pattern repeat, and material pressing members adapted for both said pattern repeat conditions, substantially as and for the purpose described.

4. In shuttle embroidering machines, the combination with a needle mechanism, of a shuttle board, a plurality of shuttle guides upon said board arranged according to a determined pattern repeat, each second and
 50 third shuttle guide being arranged together on a removable piece of said shuttle board, whereby for each of these removable pieces a substitute member with one single shuttle guide and a suitably arranged dead part
 55 may be substituted therefor, so that the shuttle arrangement may be of another determined pattern repeat, and scalloping members arranged for both said pattern repeat conditions, substantially as and for the
 60 purpose described.

In witness whereof I have hereunto signed my name this 21st day of February 1910, in the presence of two subscribing witnesses.

ROBERT ZAHN.

Witnesses:

ROBERT H. NIER,
 RICHARD B. WASHINGTON.