

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

1,049,026.

Patented Dec. 31, 1912.

FIG. 1 -

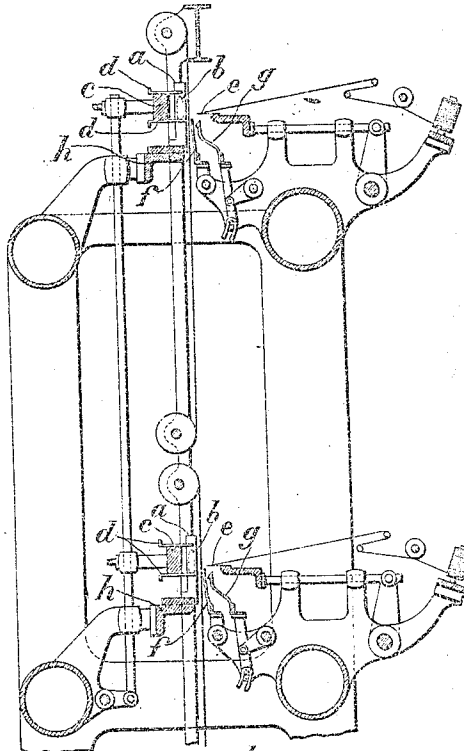


FIG. 2^a -

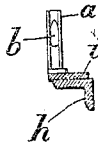


FIG. 2 -



FIG. 4 -

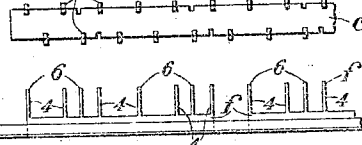


FIG. 5 -



FIG. 6 -

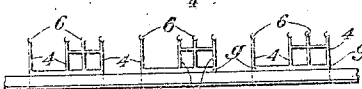
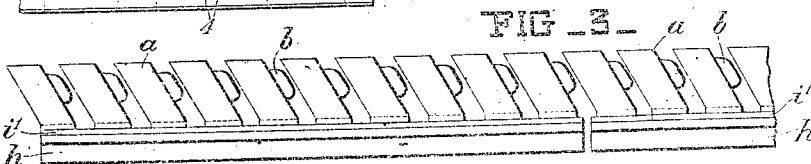


FIG. 7 -



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ROBERT ZAHN, OF PLAUE, GERMANY.

SHUTTLE EMBROIDERING-MACHINE.

1,049,026.

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 5 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 cooperating shuttles for each length of four inches of the whole available extent, while other 15 embroidering machines are of the so called 6/4 pattern repeat, that is they comprise four needles and four cooperating shuttles for each length of six inches of the whole extent, so that in one case the embroidery 20 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 25 having a plurality of groups of more than two shuttle guides, each arranged upon an easily removable or exchangeable bar on the shuttle board, and for each of said groups a substitute bar with shuttle guides arranged at another relative distance, so that 35 by interchanging said shuttle guide carrying bars the shuttle arrangement may be adapted for 4/4 or 6/4 pattern repeat conditions.

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 45 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 55 scalloping 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. 65

The shuttle guides *a* are, as shown in Fig. 2, arranged at an inclination to the vertical. They are shown in Fig. 2 in the 4/4 pattern repeat arrangement comprising several 70 groups of 15 shuttle guides, mounted on bars *i* on the shuttle board *h*, corresponding in number to said groups and which can be easily removed from said shuttle board for exchanging purposes. The machine has further, as substitute for these shuttle guide carrying bars *i*, a like number of substitute bars *i'*, (Fig. 3), having each a smaller number of shuttle guides *a* 75 than the bars *i*, capable of being substituted for said bars *i* and having their shuttle guides so arranged as to change, when being substituted for said bars *i*, the ordinary 4/4 pattern repeat arrangement to the 6/4 pattern repeat condition. 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. 85

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. 100

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. 105

What I claim is:—

1. In shuttle embroidering machines, the combination with a needle mechanism, of a shuttle board, removable bars adapted to be 110 mounted on the shuttle board, and groups

of more than two shuttle guides arranged upon each of said removable bars, whereby for each of these removable shuttle guide carrying bars a substitute bar with shuttle guides arranged at another relative distance may be substituted so that by interchanging said removable shuttle guide carrying bars the shuttle arrangement may be adapted for 4/4 or 6/4 pattern repeat conditions, substantially as described.

2. In shuttle embroidering machines, the combination with a needle mechanism, of a shuttle board, removable bars adapted to be mounted on the shuttle board, and groups of more than two shuttle guides arranged upon each of said removable bars, whereby for each of these removable shuttle guide carrying bars a substitute bar with shuttle guides arranged at another relative distance may be substituted, shuttle drivers, 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.

3. In shuttle embroidering machines, the combination with a needle mechanism, of a shuttle board, removable bars adapted to be mounted on the shuttle board, and groups of more than two shuttle guides arranged upon

each of said removable bars, whereby for each of these removable shuttle guide carrying bars a substitute bar with shuttle guides arranged at another relative distance may be substituted, and material pressing members adapted for 4/4 and 6/4 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, removable bars adapted to be mounted on the shuttle board, and groups of more than two shuttle guides arranged upon each of said removable bars, whereby for each of these removable shuttle guide carrying bars a substitute bar with shuttle guides arranged at another relative distance may be substituted, and scalloping members arranged for 4/4 and 6/4 pattern repeat conditions, substantially as and for the 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.