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JACQUARD MECHANISM FOR EMBROIDERING MACHINES.

APPLICATION FILED MAR. 18, 1910.

1,010,475. Patented Dec. 5, 1911.

FIG. 1.

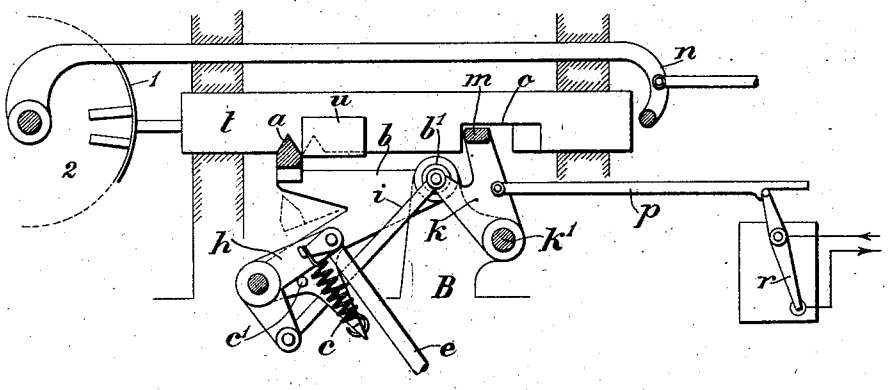
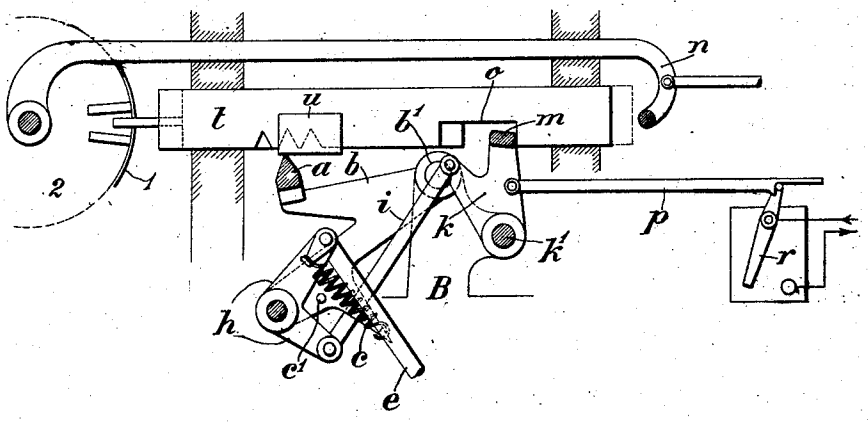


FIG. 2.
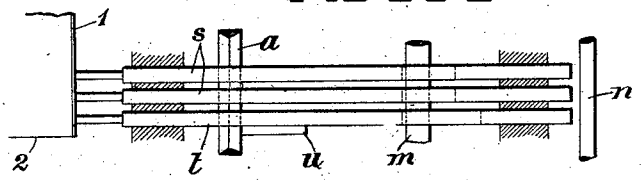


FIG. 3.



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JACQUARD MECHANISM FOR EMBROIDERING-MACHINES.

1,010,475. Specification of Letters Patent. Patented Dec. 5, 1911.

Application filed March 18, 1910. Serial No. 550,184.

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, have invented new and useful Improvements in Jacquard Mechanism for Embroidering-Machines, of which the following is a full, clear, and exact specification.

The present invention relates to a protective and stop motion arrangement in jacquard mechanism for embroidering machines of the kind described in my application for Letters Patent of the United States, Serial No. 542,305, filed February 5, 1910, having besides the usual working jacquard needles, stop jacquard needles at the edges of the jacquard card for the purpose of stopping the machine, when it should happen through whatsoever cause that the said jacquard needles are not displaced from their normal position whether it be, for instance, either owing to the presence of a predetermined stop hole in the card or by the complete running out of the card, or also when there is a tear in the longitudinal edges of the card. Jacquard mechanisms with such protective means are well known.

The present improvement consists substantially of a particular elastic drive mechanism for the usual locking bar for the working jacquard needles and the simultaneous transmission of the drive to a setting out of action bar for the working jacquard needles and to a stop motion device when one or both of the aforesaid stop jacquard needles are operative.

One method of carrying out the present invention is shown in the accompanying drawing in which—

Figure 1 is a vertical section and Fig. 2 is a partial plan view of the arrangement with the machine in normal running condition, while Fig. 3 is a vertical section of the arrangement when the machine is set out of action.

s (Fig. 2) are the usual working jacquard needles of the jacquard mechanism of an embroidering machine for the purpose of determining the movement of the embroidery frame and which are controlled by a perforated jacquard card which is led over a roller 2 which is free to swing, so that when the roller 2 is swung against the jacquard needles each working needle which happens to lie opposite a hole in the card remains in its normal position, but all the other jacquard needles are displaced out of their normal position into an idle position. The working jacquard needles displaced in this manner are brought back into their normal position in the known way by a returning rod *n* connected to the roller 2.

The working jacquard needles *s* are locked in their end positions in the usual way by means of a locking bar *a* which can catch into lower notches in the needles. The locking bar *a* is carried by a rocking lever *b* which is pivoted at b^1 to the frame B and which is connected by means of a spring *c* to an auxiliary bent lever *h* pivoted to the lever *b* and which rests against a projection c^1 on said lever *b*. At one end the bent lever *h* is attached to a reciprocating driving rod *e* and at the other end the bent lever *h* is connected by means of a rod *i* with a lever *k* pivoted at k^1 which carries a controlling bar *m* lying in a notch *o* of the jacquard needles and which is connected by a rod *p* to a switch lever *r* controlling an electro-motor driving the machine. The bar *m* does not hinder the normal movement of the working jacquard needles *s*, the notch *o* of the latter being sufficiently large to this end; it is only designed to set the working jacquard needles in inoperative position, simultaneously with the shifting of the stop-motion lever *r*.

On either side of the set of working jacquard needles *s* a stop needle *t* is arranged which lies opposite the corresponding edge portion of the jacquard card 1 and is constructed similar to the working jacquard needles *s* except that it is provided with a stop plate *u*, while its notch *o* is enlarged, for the purposes set forth below. (One only of these two stop needles is illustrated in the drawing.)

The mode of operation of the arrangement is as follows: Before each stroke of the card roller the locking bar *a* is disengaged. When this has taken place and the card roller 2 has been moved one step forward, then the roller is moved against the jacquard needles in order to displace the working needles *s* from their normal position or to allow them to remain in this position according to the perforation pattern of the card, producing thus the usual selection of the jacquard needles *s*. Normally the stop needles *t* are also displaced from their normal position and in the new position of the needles the locking bar *a* may be brought into engagement with cor-

responding notches in the needles *s* and *t* to secure them in position, Fig. 1. If, however, when needles *s* are being selected one or the other of the stop needles *t* remains in the normal position, Fig. 3, owing to one or other of the reasons given above, then the stop plate *u* of this stop needle will lie in locking position over the locking bar *a*, Fig. 3. This is then unable to enter the notches in the jacquard needles *s*; the driving rod *e*, however, continues to make its normal stroke and it results that the rod *e* by tensioning the spring *c* turns the bent lever *h* pivoted to the lever *b* relative to the latter so that the lever *h* displaces by means of the rod *i* the lever *k* which thus thrusts all the needles *s* to the right by means of its bar *m* so as to set them out of action. Only the stop needles *t* will remain in the left hand position as their notch *o* in which the bar *m* works is larger than the notches *o* of the jacquard needles *s*. At the same time the rod *p* pivoted to the lever *k* thrusts the stop lever *r* over so as to switch off the drive of the machine.

What I claim is:

1. In jacquard mechanism for embroidering machines, the combination of a jacquard card, working jacquard needles, a locking bar to lock the working jacquard needles in their respective positions, a drive mechanism for controlling the locking bar, elastic connections between said drive mechanism and the locking bar, a stop motion device for stopping the machine, movable stop needles opposite the jacquard card and adapted to stop said locking bar in its locking movement when being in their operative position, a controlling bar for the working jacquard needles to set them in inoperative position, and connection means for connecting said drive mechanism with said controlling bar and said stop motion device to transfer the drive motion to them when said locking bar is stopped and to thus cause simultaneously the stopping of the machine and the setting of the jacquard needles in their inoperative position.

2. In jacquard mechanism for embroidering machines, the combination of a jacquard card, working jacquard needles, a locking bar to lock the working jacquard needles in their respective positions, a rocking lever carrying said locking bar, an auxiliary lever pivoted on said rocking lever, a driving rod connected to said auxiliary lever, a spring connection betwen said driving rod and said rocking lever, a stop motion device for stopping the machine, movable stop needles opposite the jacquard card and adapted to stop said locking bar in its locking movement when being in their operative position, a controlling bar for the working jacquard needles to set them in inoperative position, a lever carrying the said controlling bar, means connecting said controlling bar lever to said auxiliary lever, and means connecting said controlling bar lever to the stop motion device, 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.