

R. ZAHN.
JACQUARD MECHANISM FOR EMBROIDERING MACHINES.
APPLICATION FILED MAR. 18, 1910.

1,013,261.

Patented Jan. 2, 1912.
2 SHEETS—SHEET 1.

Fig. 4.

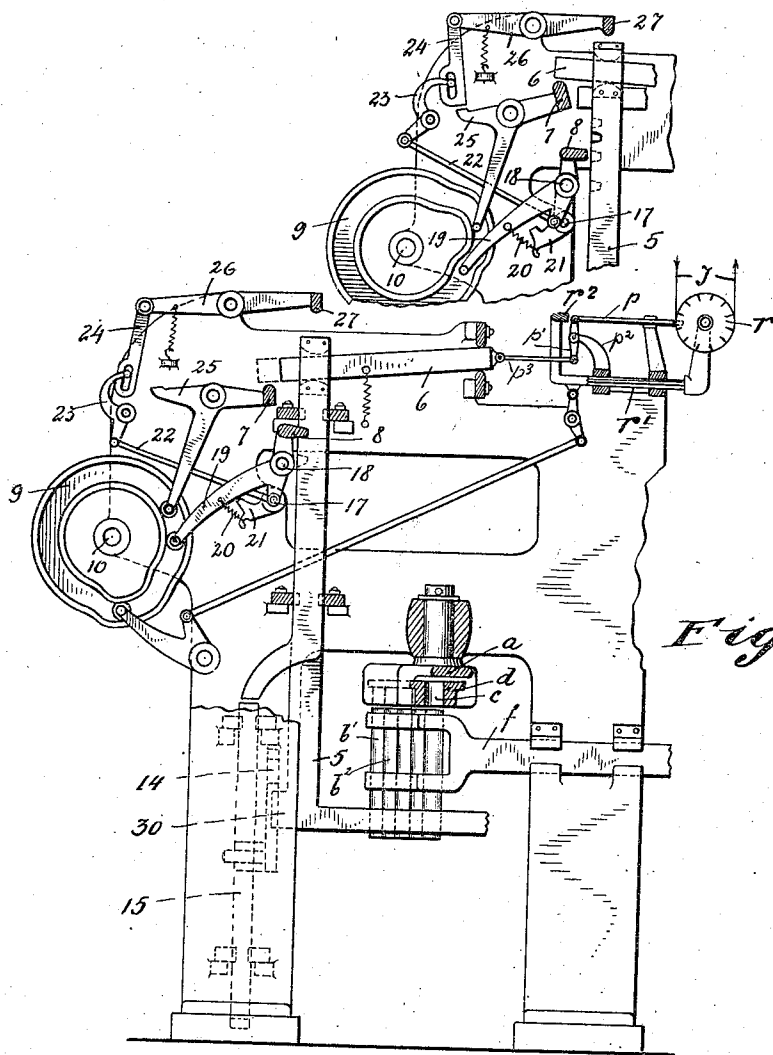


Fig. 1.

Witnesses:
Heinrich Hebig
H. Bruckman

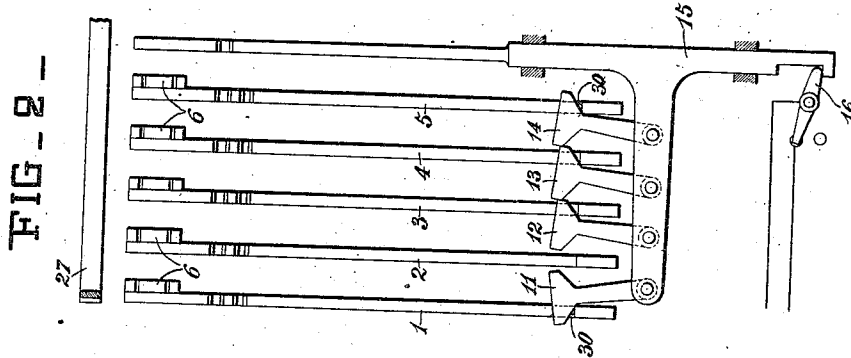
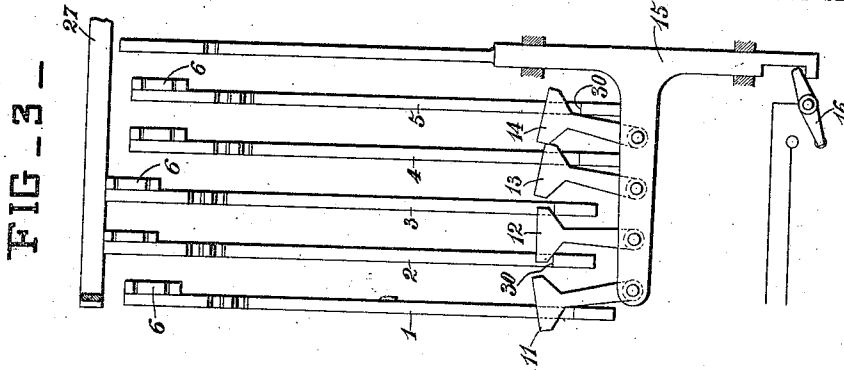
Inventor
Robert Zahn
By his Attorney
Max Ordemann

R. ZAHN.
JACQUARD MECHANISM FOR EMBROIDERING MACHINES.
APPLICATION FILED MAR. 18, 1910.

1,013,261.

Patented Jan. 2, 1912.

2 SHEETS-SHEET 2.



WITNESSES

Rene Muine
William F. Martinez

INVENTOR:

Robert Zahn
By Attorneys,

Arthur C. Kraut Usua

UNITED STATES PATENT OFFICE.

ROBERT ZAHN, OF PLAUE, GERMANY.

JACQUARD MECHANISM FOR EMBROIDERING-MACHINES.

Patented Jan. 2, 1912.

1,013,261.

Specification of Letters Patent.

Application filed March 18, 1910. Serial No. 550,183.

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 Mechanisms for Embroidering-Machines, of which the following is a full, clear, and exact specification.

The present invention relates to jacquard mechanisms for embroidering machines, having a plurality of lifting bars for controlling the movements of the embroidery frame in such a way that the displacement of one or other of the lifting bars causes a variable degree of motion to be imparted to the embroidery frame. A jacquard mechanism of this kind is described for example in my U. S. application for Letters Patent, Serial No. 542,305, filed February 5, 1910. In jacquard mechanisms of this kind, care must be taken in order to avoid derangement or damage to the mechanism, that not more than one lifting bar is in operation at any one time.

The subject of the invention is a protective device for jacquard mechanisms of this kind, which is so arranged that it prevents the simultaneous operation of more than one lifting bar. For this purpose the lifting bars are combined on the one hand with a returning mechanism through the medium of controlling means, and on the other hand with a jacquard mechanism stop motion by means of coupling locks, so that should more than one lifting bar be actuated in error the stop motion is brought into action by means of at least one of the coupling locks to stop the jacquard mechanism, while on the other hand said controlling means cause the operation of the returning mechanism so as to immediately bring back the lifting bars, which have been erroneously actuated, into their position of rest.

The accompanying drawing shows one method of carrying out the invention.

Figure 1 is a side view, partly in section, and Fig. 2 a front view, partly in section, of the protective device shown in the position of rest of the lifting bars. Fig. 3 is a similar view to Fig. 2, but illustrating the case in which two lifting bars are together in the working position and Fig. 4 is a side view similar to that of Fig. 1 and of which

some parts are broken away, illustrating the machine in operation.

1, 2, 3, 4, 5 are the lifting bars of the jacquard mechanism for moving the embroidery frame of an embroidering machine which operate the coupling bolts b^1 , b^2 (Fig. 1), so that when either of the bolts is raised by means of a respective lifting angle bar, the said bolt enters the corresponding hole c of the sliding piece d and the coupling of the graduated lever a with the reciprocating slide f is thereby effected at the hole corresponding to the length of the lever arm chosen.

The connection of the slide f with the embroidery frame is fully described in my application 542,305, filed February 5, 1910, and the mechanism for transmitting the motion of the graduated lever a to the rectilinearly guided slide f is described in my United States Patent 961,830.

The lifting bars are vertically adjustable and are lifted into the working position when a slide 6 on the lifting bars is in the range of movement of a lifting bar 7 carried by a lever as shown in Figs. 1 and 4. The jacquard card J operates pins p which in any suitable manner are connected to slides 6. In the example shown, a double armed lever p' is fulcrumed to a stationary piece p^2 one arm of which is pivotally connected to the pin p and the other arm of which by a connecting rod p^3 is connected to the slide 6. The operation of the pins p by the jacquard card J takes place in well known manner, as for instance, in the manner shown in Fig. 1. Here the roller r over which the jacquard card is guided is carried by a reciprocating frame r' which has a member r^2 coinciding with that arm of the double armed lever p' to which the pin p is connected. The reciprocating movement of the frame r' is effected from the cam groove in any suitable or well known manner. Normally all slides occupy the position shown in dotted outline in Fig. 1. When the card cylinder r is moved to the left by means of the frame r' , a slide 6, the corresponding pin p of which has its free end located opposite a perforated part of the card J will remain stationary, i. e., in the initial or working position shown in dotted outline in Fig. 1, while those slides, the pins of

which register with unperforated parts of the jacquard card will be shifted by the latter owing to the double armed lever p' to the right, *i. e.* out of the path of the lifting bar 7.

The lifting bars can only be brought into the raised position after a movable member 8 locking the lifting bars has been disengaged therefrom, the lifting bars being provided with notches for the purpose of engaging the locking member 8 (Fig. 4). The lifting bar 7 and the locking member 8 are controlled by a grooved cam disk 9 mounted on the shaft 10 (Figs. 1 and 4).

11, 12, 13, and 14 are four coupling locks which consist of movable anchors lying between projections 30 of the lifting bars 1, 2, 3, 4, 5, and which are pivotally connected to a vertically movable slide 15 (Figs. 1, 2 and 3). This latter is locked in its lowest position, as are also the lifting bars, by means of the locking member 8. On the other hand in the upper position of the slide 15, no notch on the slide lies opposite the locking member 8 so that the locking member cannot enter its locking position; but this is not the case with the lifting bars which may also be locked in the upper position. The slide 15 controls an electric switch 16 for stopping the electromotor driving the jacquard mechanism.

The locking member 8 is movable about the pivot 17 and is controlled by the cam disk 9 by means of a bent lever 19 pivoted at 18 to the said locking member 8. The bent lever 19 is held against a stop 21 of the locking member 8, by the tension of a spring 20. This lever 19 is connected by means of a rod 22 to a controlling lever 23, which is designed to bring at proper time a controlling rod 24 into the range of an arm 25 of the lever carrying the lifting bar 7 (Fig. 4). The controlling rod 24 is pivotally connected to a lever 26 which is adapted to restore the lifting bars into their position of rest, and which carries a return bar 27 which lies over the lifting bars and the slide 15 and which controls the returning of these parts (Fig. 4).

The arrangement described works as follows: If one of the slides 6 of the lifting bars be thrust to the left, as shown in Fig. 1 by dotted lines, take for instance that of the lifting bar 2, then the bar 7 will engage it as it rises, and raise it together with the lifting bar 2, which is possible as the locking member 8 has been disengaged at the same time. The coupling locks 11, 12, 13 and 14 which lie between the projections 30 of the lifting bars 1, 2, 3, 4, 5, may hereby so position themselves that the lifting bar 2 with its projection 30 can be raised between the coupling locks 11 and 12 (Fig. 2). Should, however, by error two lifting bars

the lifting bars 2 and 3, be raised at the same time, as shown in Fig. 3, then the projections 30 of the lifting bars 2 and 3 engage the coupling lock 12 on both sides and thereby lift the slide 15. The same result is obtained when two lifting bars not necessarily lying next to one another are lifted at the same time, as then the coupling locks lying between these two bars, so position themselves that they act in the same manner as a single larger coupling lock. By raising the slide 15, the switch lever 16 is put over and the drive of the jacquard mechanism is stopped. Owing to the momentum of the parts of the machine, the jacquard mechanism will, however, continue to run on. In the raised position of the slide 15 the member 8, as stated above, cannot take up its locking position. During the continuation of the rotation of the cam disk 9 the lever 19 is now turned about 18 in such a manner that it pushes the rod 22 to the left. The controlling lever 23 thereby moves the rod 24 to the right and as the lifting bar 7 is raised at this moment, that is to say, as the arm 25 has fallen, then the control rod 24 may be over the arm 25 so that the latter pushes the control rod 24 upward, when it again rises, and thereby swings the returning lever 26 in such a manner that the bar 27 is lowered and thrusts both the lifting bars 2 and 3 as well as the slide 15 downward. These lifting bars are thereby brought back into their position of rest and the locking member 8 and the parts controlled by it, take up their initial position and the slide 15 allows the drive of the machine to be again set in action by means of the lever 16.

What I claim is:

1. In jacquard mechanisms for embroidering machines, the combination with jacquard lifting bars of means for lifting said jacquard bars, an automatic device for positively returning said bars to their initial position, a stop motion device for stopping the jacquard mechanism, coupling locks between the jacquard bars connected to said stop motion device to cause stopping of the jacquard mechanism when more than one jacquard bar should have been lifted, and controlling means for said returning device, dependent on the operation of said coupling locks and adapted to set in action the jacquard bar returning device when said coupling locks have been operated.

2. In jacquard mechanisms for embroidering machines, the combination with jacquard lifting bars of automatic means for lifting said jacquard bars, an automatic device for positively returning said bars to their initial position, a stop motion device for stopping the jacquard mechanism, a movable member controlling said stop motion device, locks connected to said movable member and ar-

5 ranged between the jacquard lifting bars to form movable connectors between the latter and said movable member, and controlling means for said returning device, dependent on said movable member so as to be operated when the latter is in position for stop motion.

10 3. In jacquard mechanisms for embroidering machines, the combination with jacquard lifting bars of an operating member for lifting said jacquard bars, driving means for intermittently actuating this operating member, a movable operating member for positively returning said jacquard bars to their initial position, a stop motion device for stopping the jacquard mechanism, a movable slide controlling said stop motion device, locks pivotally connected to the movable slide and arranged between parts of the jacquard lifting bars to form movable connectors between the latter and the movable slide, controlling means for the said jacquard returning member, controlled by said movable slide and capable of forming connection between said returning member and said driving means.

4. In jacquard mechanisms for embroidering machines, the combination with jacquard lifting bars of an operating member for lifting said jacquard bars, driving means for intermittently actuating this operating member, a movable operating member for positively returning said jacquard bars to their initial position, a stop motion device for stopping the jacquard mechanism, a movable slide controlling said stop motion device, anchor like locks pivotally connected to the movable slide and arranged between projections of the jacquard lifting bars to form movable connectors between the latter and the movable slide, controlling means for the said jacquard returning member, controlled by said movable slide and capable of forming connection between said returning member and said driving means.

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.