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PATENTED DEC. 29, 1903.

J. SZCZEPANIK.

APPARATUS FOR SETTING THE HOOK NEEDLES IN JACQUARD MACHINES.

APPLICATION FILED AUG. 24, 1901.

NO MODEL.

3 SHEETS—SHEET 1.

Fig. 1.

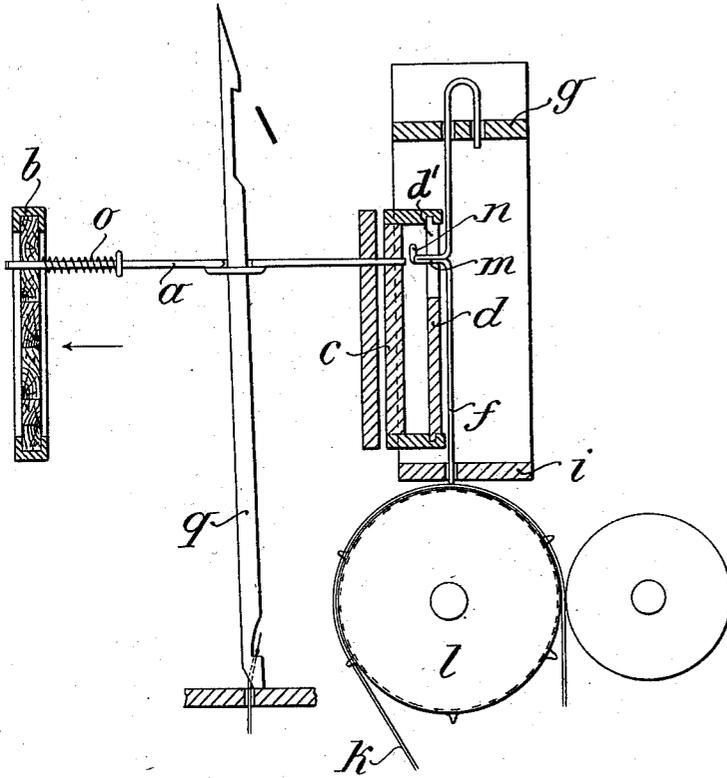


Fig. 3.

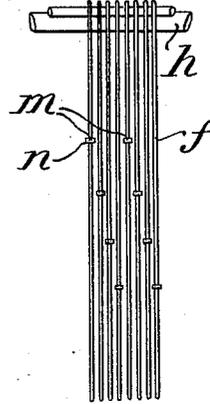
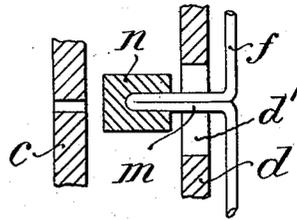


Fig. 4.



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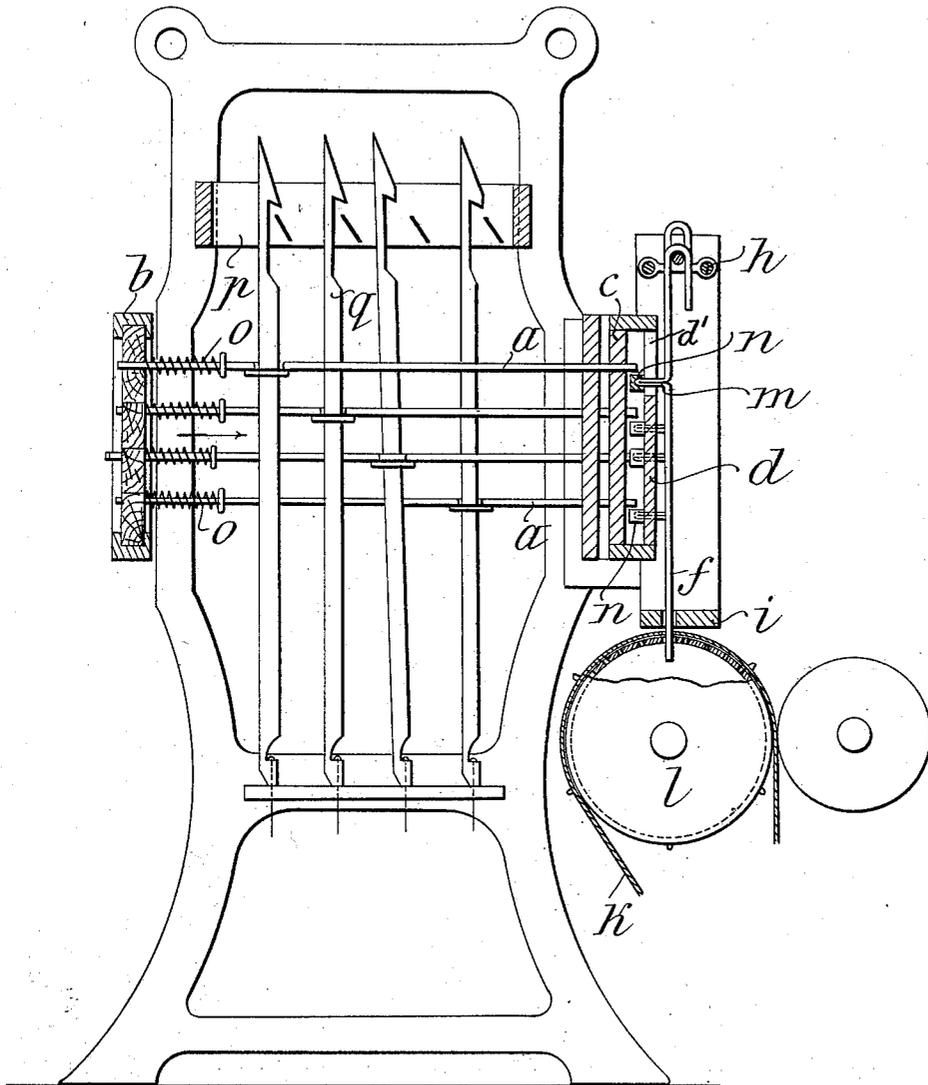
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NO MODEL.

3 SHEETS—SHEET 2.

Fig. 2.



Witnessed.
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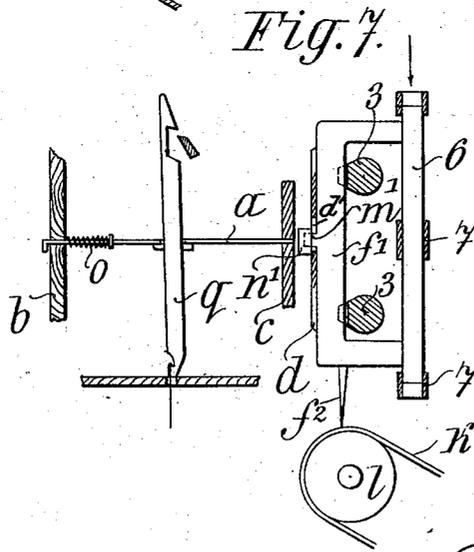
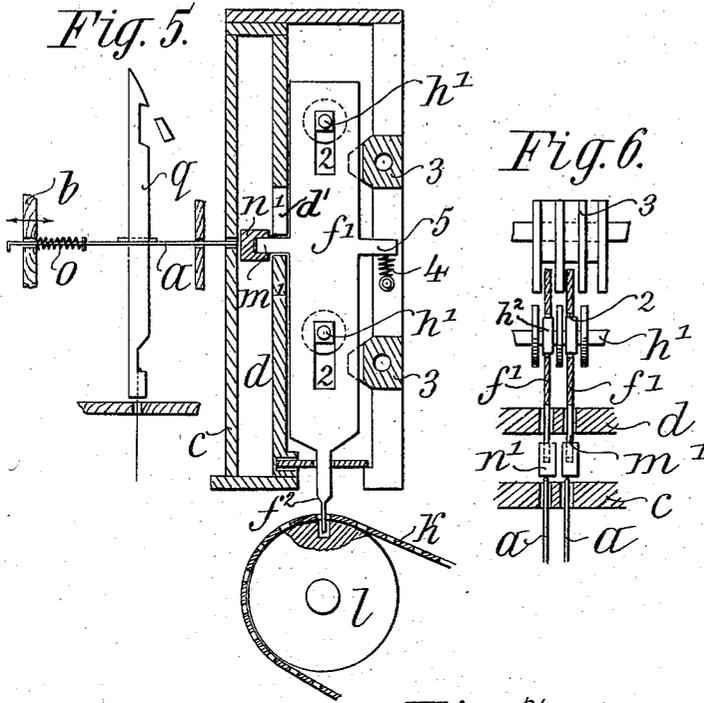
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APPLICATION FILED AUG. 24, 1901.

NO MODEL.

3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

JAN SZCZEPANIK, OF VIENNA, AUSTRIA-HUNGARY, ASSIGNOR TO SOCIÉTÉ DES INVENTIONS JAN SZCZEPANIK & CIE., OF VIENNA, AUSTRIA-HUNGARY, A FIRM.

APPARATUS FOR SETTING THE HOOK-NEEDLES IN JACQUARD-MACHINES.

SPECIFICATION forming part of Letters Patent No. 748,028, dated December 29, 1903.

Application filed August 24, 1901. Serial No. 73,175. (No model.)

To all whom it may concern:

Be it known that I, JAN SZCZEPANIK, a subject of the Emperor of Austria-Hungary, residing at Vienna, in the Province of Lower Austria, in the Empire of Austria-Hungary, have invented certain new and useful improvements in Apparatus for Setting the Hook-Needles in Jacquard-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to apparatus adapted to set the needles that position the hooks of jacquard-machines relatively to their lifting-knives.

Such apparatus comprises a row of thin or flat feeling-bars provided with lateral projections which pass through slots in a plate arranged in front of the ends of the needles and are formed with thickened portions which release or stop the needles according to the positions of the feeling-bars. When the before-mentioned thickened portions stop the needles, they transmit the pressure exerted by the springs of the needles to the slotted plate instead of to the feeling-bars. This enables the feeling-bars to be caused to enter the holes in the endless card or in the cylinder located underneath the same, either by their own weight only or with the assistance of springs or magnets.

Figure 1 of the accompanying drawings shows diagrammatically in vertical longitudinal section one example of apparatus according to this invention. Fig. 2 is a vertical longitudinal section of a complete jacquard-machine provided with such apparatus. Fig. 3 is a front elevation of the feeling-bars. Fig. 4 is a vertical section of a portion of the apparatus drawn to a larger scale. Fig. 5 is an elevation of apparatus provided with flat feeling-bars. Fig. 6 is a horizontal section, drawn to a larger scale, of a portion of the apparatus. Fig. 7 shows diagrammatically an example of

apparatus provided with an electromagnet acting on the feeling-bars.

As will be seen from Figs. 1 to 4, needles *a*, each of which is formed of a single piece of wire, pass on the one side through a horizontal spring-casing *b*, which moves to and fro in a manner similar to that of dobbies, and at the other side through a stationary needle-board *c*, in front of which there is fixed a plate *d*, provided with vertical slots *d'*.

Near the slotted plate *d* and parallel thereto is arranged a row of vertical feeling-bars *f*, of which the hook-shaped upper ends either pass through holes in a bar *g*, adapted to be raised and lowered, as shown in Fig. 1, or engage the middle bolt of a frame *h*, adapted to be moved in the same manner as shown in Fig. 2, so that the feeling-bars can be raised or lowered by means of the bar *g* or the frame *h*, but are prevented from turning.

The lower ends of the feeling-bars are guided in a perforated fixed plate *i*, underneath which is mounted a hollow cylinder *l*, adapted to support an endless card *k*, the hollow cylinder being provided with rows of holes arranged to correspond with the feeling-bars.

Each of the feeling-bars has a lateral projection *m*, which passes inwardly through the slot corresponding to it in the plate *d*. The inwardly-directed ends of these projections are either enlarged by bending, Fig. 1, or are provided with heads or other sufficiently-wide thickened portions *n*, Fig. 4, so that when a projection strikes against or arrives at the plate *d* it cannot pass through the corresponding slot thereof, but bears against the plate at one side or both sides of its slot. When the feeling-bars are lowered, these thickened portions release the needles by uncovering the holes corresponding to them in the needle-board *c*; but when the feeling-bars are raised the said thickened portions come in front of the before-mentioned holes and stop the needles. Now when the needles are moved toward the feeling-bars by means of the springs *o* and the movable spring-casing *b* each needle that does not correspond to a depressed feeling-bar strikes against the corresponding

head n , so that the head just mentioned is pressed by the compressed spring o against the slotted plate, which therefore takes the pressure. The feeling-bars, which are thus relieved of any appreciable bending strain, can therefore be made of thin wire and be arranged very close together, since there are no horizontal auxiliary needles or eyes.

The projections m of the feeling-bars can be arranged at different heights, as will be seen from Fig. 3, so that the needles can be arranged one over another in several rows to enable a row of feeling-bars to be distributed among several rows of needles.

A jacquard-machine provided with such apparatus operates in the following manner: Before the spring-casing b and a griffe p , both of which parts are operated by known transmission mechanism, have completed their movements the feeling-bars are lowered by the downward movement of the bar g or the frame h . The feeling-bars that pass through the holes in the card can then enter the card-cylinder and so completely descend, while the feeling-bars that strike against the solid portions of the card remain at a certain height, at which their heads n then hold the corresponding needles, Fig. 2. When the feeling-bars have been set, the spring-casing b is moved toward the lifting wires or hooks q , so as to move all the free needles by means of the springs o in the direction indicated by the arrow in Fig. 2 and to bring their lifting wires or hooks q into the paths of the blades in the griffe while the lifting wires or hooks corresponding to the stopped needles remain in their original positions. The griffe after having been raised falls, and at the same time the spring-casing b moves backward in the direction indicated by the arrow in Fig. 1, so as to draw back the needles. Shortly before the spring-casing b commences to return the bar g or the frame h lifts all the feeling-bars, so as to enable the card to move forward by a row of holes. The operation is then repeated in the manner hereinbefore described.

Instead of round feeling-bars flat bars f' , Fig. 5, can be used, the lower ends of which are provided with points f^2 , which on meeting holes in the card can pass through them. These bars are in a manner similar to that of the arrangement hereinbefore described, provided with lateral projections m' and thickened portions or heads n , which release the needles a when the bars f' are in one end position, but stop the needles when they are in the other end position, Fig. 5. The thickened portions or heads n' can be mounted loosely on the projections m' , since they are prevented from falling out by the two walls c and d .

The bars f' are provided with slots 2, through each of which there passes a rod h' , which is provided with thickened portions h^2 , and by means of which the depressed bars are lifted when their points f^2 have to be raised out of the holes in the card k .

The feeling-bars f' can be guided by combs 3, as shown, or in any other suitable manner.

In order to enable the ends of the feeling-bars f or the points f^2 to be accurately introduced into the holes in the card, the round or flat bars can be pressed down by springs.

In the arrangement shown in Fig. 5 springs 4 can act on projections 5 of the bars f' , as shown.

Instead of springs movable magnets can be used, which on moving draw the feeling-bars f or f' with them.

In the arrangement shown in Fig. 7 the bars f' are connected by cross-pieces with the armature 6 of an electromagnet (not shown in the drawings) which at a given time moves the armature, with its attached bars f' , in guides 7. The points f^2 are in this case made of non-magnetic material—for example, brass. The bars themselves may, however, be magnetized and attracted by a stationary armature.

I claim—

1. The combination with the hook-needles of jacquard-machines, of independent feeling-bars movable independently of and transversely to the direction of motion of the hook-needles into and out of the path of said hook-needles and means to move said feeling-bars independently of each other, substantially as described.

2. The combination with the hook-needles of jacquard-machines, of independent vertical feeling-bars movable independently of and transversely to the direction of the motion of the hook-needles into and out of the path of said hook-needles, and means to move said feeling-bars independently of each other, substantially as described.

3. The combination with the hook-needles of jacquard-machines, a feeling-bar for each needle independent of said hook-needles, a card to selectively position the feeling-bars, means to support the feeling-bars movable to and from the card and transversely to the direction of motion of said hook-needles, substantially as described.

4. The combination with hook-needles of jacquard-machines, of a feeling-bar for each needle, projections on the bars to contact with the hook-needles, and means to selectively move the feeling-bars into the path of the hook-needles, substantially as described.

5. The combination with hook-needles of jacquard-machines, of vertical feeling-bars independent of the hook-needles, projections thereon, heads on said projections, a card, means to support the feeling-bars and move them into and out of engagement with the card to selectively position the heads with respect to the ends of the hook-needles, substantially as described.

6. The combination with hook-needles of jacquard-machines, of vertical feeling-bars, projections thereon, a slotted plate, the projections on said bars passing through the slots

of the plate, a card, means to guide the bars and move them to and from the card to selectively position their projections with respect to the ends of the hook-needles, substantially as described.

7. The combination with hook-needles of jacquard-machines, of flat feeling-bars independent of the hook-needles, a lateral projection thereon, and needles at the ends of the bars, a card and means to move said feeling-bars into and out of engagement with the card, substantially as described.

8. The combination with hook-needles of jacquard-machines, of flat feeling-bars, lateral projections thereon, heads on the projec-

tions and needles at the ends of the bars, a card, a slotted guide-plate through which said projections pass, springs acting on said bars to hold them down and means to vertically move the feeling-bars into and out of engagement with the card to selectively position their projections with respect to the ends of the hook-needles, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

JAN SZCZEPANIK.

Witnesses:

JOSEF RUBARCH,
ALVESTO S. HOGUE.