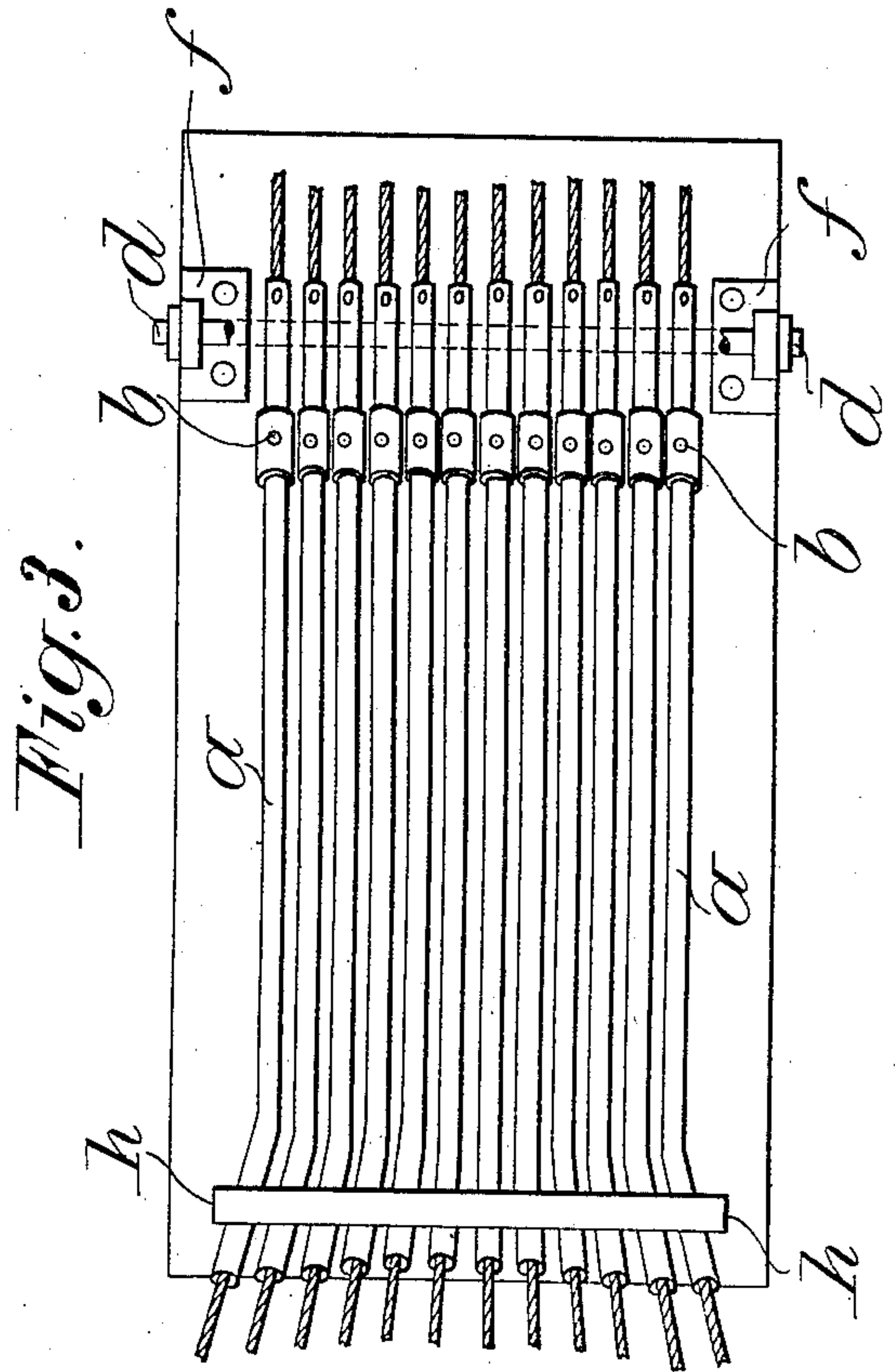
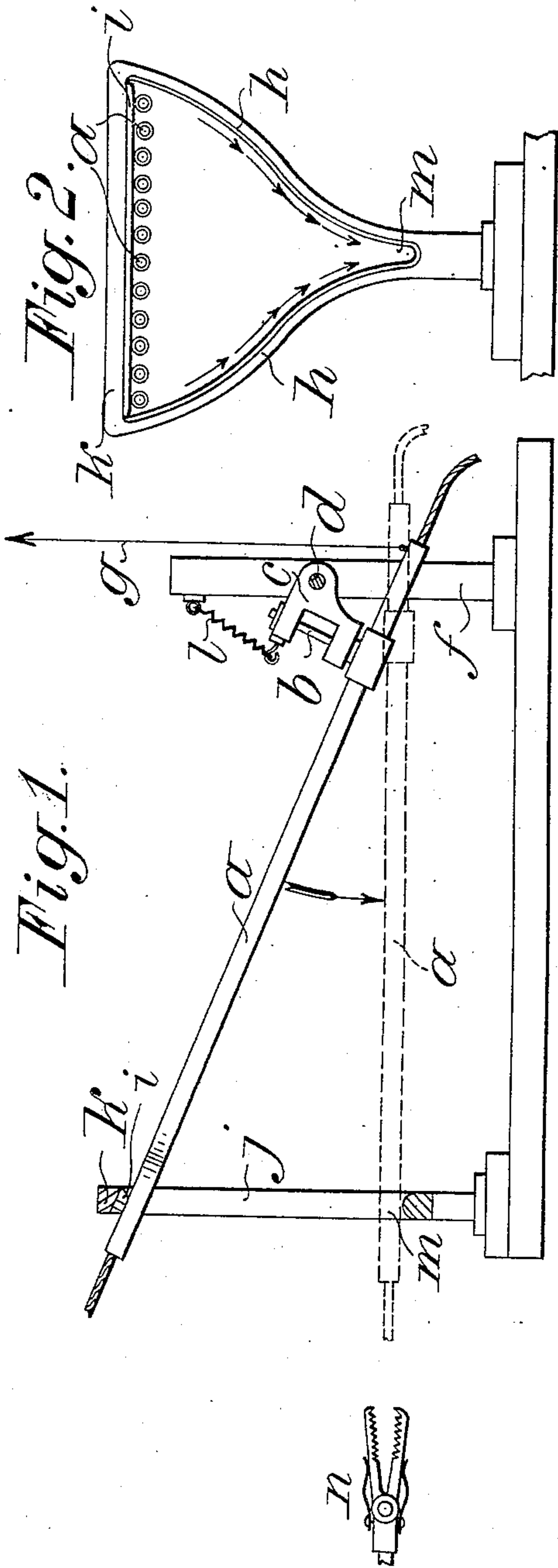


L. JORRAND.
 THREAD CHANGING APPARATUS FOR LOOMS.
 APPLICATION FILED FEB. 18, 1908.

936,324.

Patented Oct. 12, 1909.
 2 SHEETS—SHEET 1.



Witnesses.

Jesse N. Lutton
 B. Rommers

Inventor.

Louis Jorrand
 by *[Signature]* atty-

L. JORRAND.
 THREAD CHANGING APPARATUS FOR LOOMS.
 APPLICATION FILED FEB. 18, 1908.

936,324.

Patented Oct. 12, 1909.

2 SHEETS—SHEET 2.

Fig. 4.

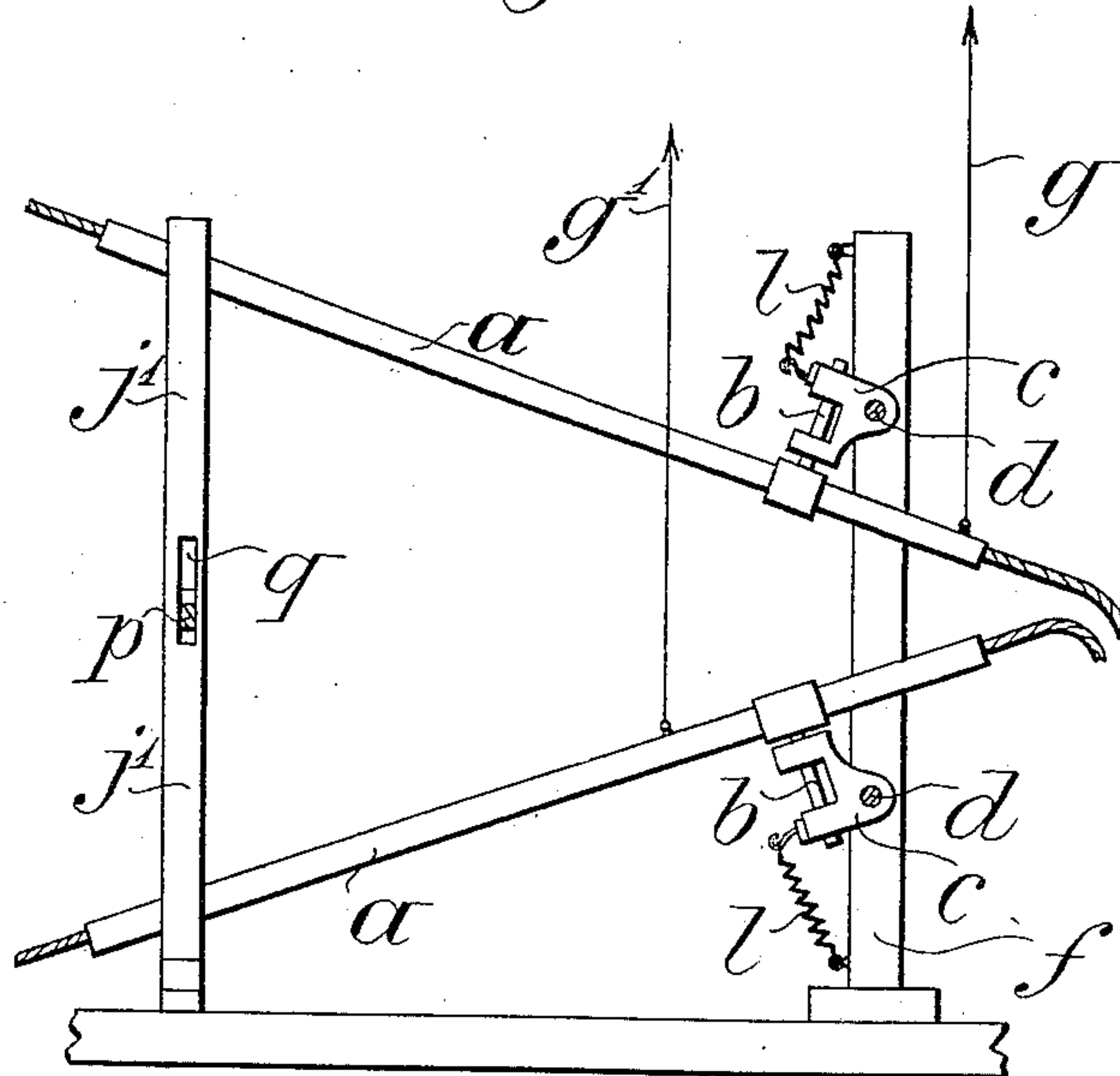
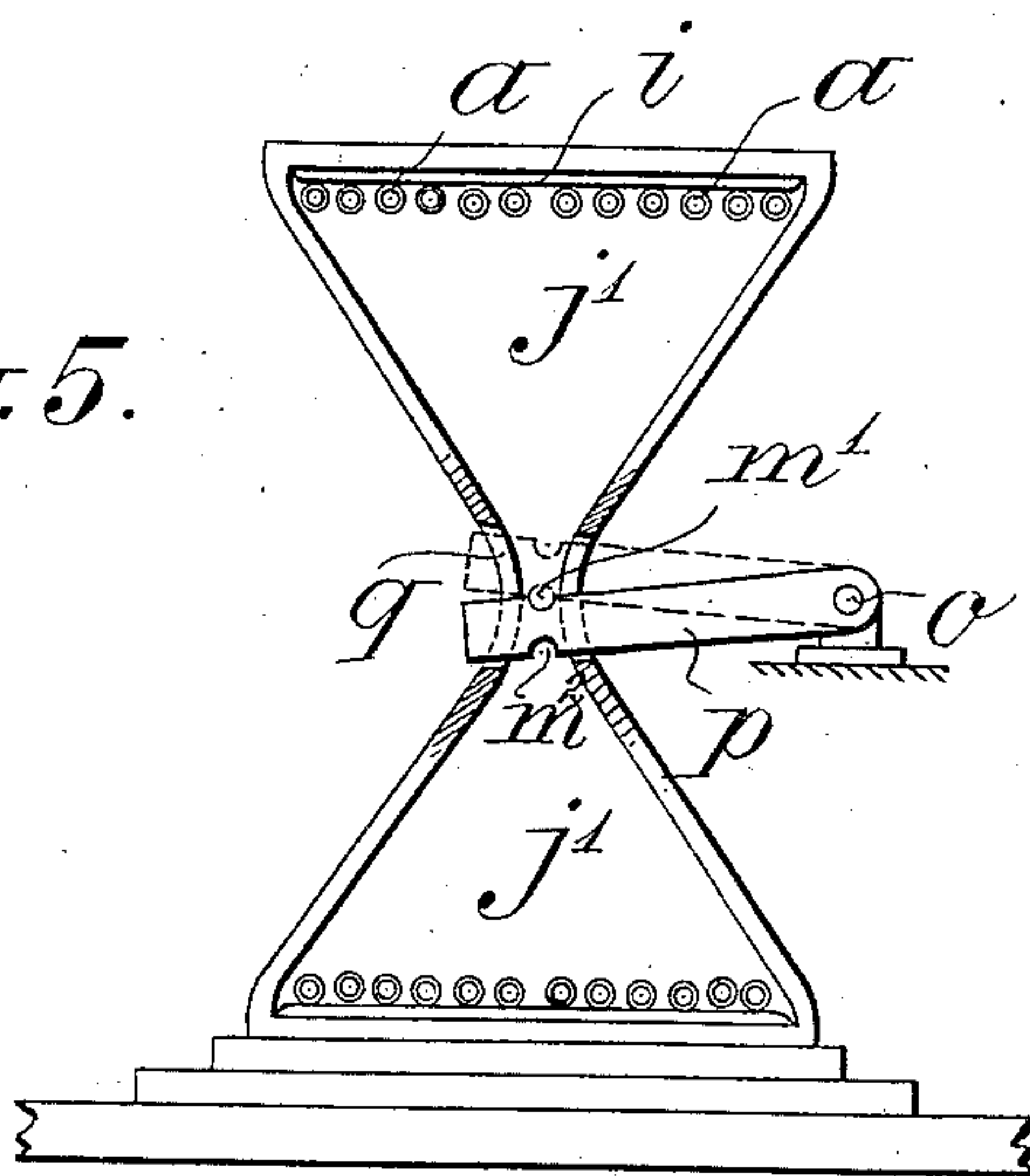


Fig. 5.



Witnesses.

Jesse N. Lutton.

B. Rommers

Inventor.

Louis Jorrand
 by *Henry Orth* Atty

UNITED STATES PATENT OFFICE.

LOUIS JORRAND, OF AUBUSSON, FRANCE, ASSIGNOR TO THE FIRM OF BRÜDER HANSEL,
OF VIENNA, AUSTRIA-HUNGARY.

THREAD-CHANGING APPARATUS FOR LOOMS.

936,324.

Specification of Letters Patent.

Patented Oct. 12, 1909.

Application filed February 18, 1908. Serial No. 416,623.

To all whom it may concern:

Be it known that I, LOUIS JORRAND, a citizen of the Republic of France, residing at Aubusson, Department of Creuse, Republic of France, have invented certain new and useful Improvements in Thread-Changing Apparatus for Looms; 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 or figures of reference marked thereon, which form a part of this specification.

This invention has reference to thread changing apparatus for looms of the type which are provided with a number of thread guides adjustable independently of each other.

The object of the invention is to enable a comparatively large number of thread guides to be operated directly by a jacquard apparatus, and also to materially simplify the construction of the entire thread changing apparatus notwithstanding the large number of thread guides. For this purpose the thread guides, which are held in their inoperative position by the action of springs and are connected to the lifting wires of a jacquard apparatus, are attached by double or universal joints to a carrying portion, which may, if desired, be common to all the guides, and the ends of the guides from which the threads emerge preferably project through a guiding yoke provided with curved or inclined side portions.

On the operation of any one of the thread guides, it is guided during the oscillation caused by the jacquard apparatus by the respective side portions of the yoke piece in such wise that the exit end of the thread guide at the end of its stroke, is located opposite to the extracting device, (pincers, gripper or mouth shuttle) so that the latter can seize the end of the thread protruding from the adjusted thread guide.

When the thread guides are arranged in two separate rows a double yoke is employed with a movable stop piece at the point of connection of the two separate yokes, such stop piece insuring the correct adjustment of the thread guides of both rows in the positions required for the withdrawal of the threads.

Figure 1 of the accompanying drawing shows in vertical section a thread changing device with a single row of thread guides,— embodying this invention; Figs. 2 and 3 show the thread changing apparatus in end elevation and plan respectively. Figs. 4 and 5 show in side and end elevation, respectively, a thread changing apparatus with thread guides arranged in two rows.

In the arrangement shown in Figs. 1 to 3, each of the thread guides *a*, which are tubular and arranged in a single row, is provided with a pin *b* extending at right angles to the longitudinal direction of the guide and which is pivotally mounted in a knuckle piece *c* corresponding thereto and preferably forked as shown. All the knuckle pieces *c* are pivotally mounted upon a common transverse shaft *d* situated at right angles to the frame *f* of the apparatus. Each thread guide is therefore connected to the transverse shaft *d* forming the common carrying portion by a double or universal joint which enables each of the thread guides to rock simultaneously and sidewise about its own pin *b* during its rotation about the shaft *d*. The universal joint may obviously be replaced by a ball and socket joint or the like. The entrance ends of the thread guides *a* are connected by cords *g* with the respective lifting wires of a jacquard apparatus, not shown, so that by pulling upon one of the cords the thread guide belonging to it will be rocked about the shaft *d*. The outlet ends of the thread guides pass through a yoke piece *j* provided with inclined or, as shown, with curved side members *h*, *h*, and the upper transverse portion *k* of which may with advantage be provided with a pad of leather *i* against which the thread guides *a* are normally kept pressed by the action of spring *l*. The lower end of the hollow of the yoke forms a trough *m* which is located opposite to the extracting device *n* for the withdrawal of the threads from the thread guides. Immediately one of the thread guides *a* is operated by the jacquard apparatus and therefore rocked downwardly about the shaft *d* against the action of the spring *l*, it strikes, according as it is farther from or nearer to the center of the apparatus, sooner or later against the respective side portion *h* of the yoke, whereby during its further descent it is simultaneously rocked sidewise and inwardly about the pin

6 until the end of the thread guide finally enters the trough *m* and the end of the thread protruding therefrom is so situated that it can be seized by the extracting device *n*, see Fig. 1. The ends of the thread guides are, as shown in Fig. 3, bent in such a way that they all assume the same position with regard to the extracting device *n* in the final position of the thread guides.

10 In the arrangement of the thread guides in two rows lying one on top of the other, as shown in Figs 4 and 5, the cords *g*, *g*¹ leading to the lifting wires of the jacquard apparatus, see Fig. 4, are so connected to the thread guides *a* that, when the thread guides corresponding to the upper row are moved downwardly as in the first described arrangement, the thread guides corresponding to the lower row are rocked upwardly. The cords *g*¹ connected to the lower row pass freely between the upper thread guides. In place of the single yoke piece there is provided a double yoke piece *j*¹, *j*², which, at the point of connection is provided with a movable stop piece *p*, which in the example illustrated can turn about a fixed bolt *o*. The stop piece *p* is formed with two notches *m*¹ and *m*² which correspond to the trough *m* in the arrangement hereinbefore described. The movement of this stop piece is limited by the stops on the end portions of the guide *g* provided in the yoke piece. The stop piece *p* is normally in its lower position which it retains by gravity, the upper notch *m*¹ being located opposite the thread extracting device. In this position the stop piece remains so long as thread guides of the upper row are in operation. When however any thread guide of the lower row is operated, during the latter portion of its upward movement the thread guide raises the stop piece *p* in such a way that the lower notch *m*² is brought opposite the thread extracting device in position for the latter to seize the thread of such lower thread guide.

Claims.

1. In a thread changing apparatus for looms, a support, a plurality of universally pivoted thread guides connected to the support, means to adjust the guides independently of each other, and converging members common to all of said guides to direct one end of each guide to a fixed point.

55 2. A thread changing apparatus for looms, comprising a support, a yoke, and a plurality of thread guides pivotally connected to the support and movable in said yoke.

60 3. A thread changing apparatus for looms, comprising a support, a plurality of thread guides, means connecting the latter with the support adapted to permit independent movement of the guides, means to

actuate the guides and converging members 65 to direct one end of each guide to a fixed point.

4. A thread changing apparatus for looms, comprising a support, a plurality of thread guides, means connecting the latter with the support adapted to permit independent movement of the guides, and a yoke having converging sides adapted to be engaged by the guides, for the purpose specified.

5. A thread changing apparatus for looms, comprising a supporting member, a plurality of universally pivoted thread guides supported thereby, means to independently move each guide, and converging members common to all of said guides to direct the exit ends of the guides to the same point.

6. A thread changing apparatus for looms, comprising a supporting member, a plurality of universally pivoted thread guides supported thereby, means to independently move each guide, and a member having converging curved sides common to all of said guides to direct their exit ends to the same point.

7. A thread changing apparatus for looms, comprising a supporting member, a plurality of independently universally pivoted thread guides supported thereby, means to resiliently hold the exit ends of the guides in a fixed position, means to move said ends from said position, and means to guide all of said ends to a fixed point.

8. A thread changing apparatus for looms, comprising a supporting member, a plurality of universally pivoted jacquard controlled thread guides supported by said member, and means common to all of said guides to control their operative position.

9. A thread changing apparatus for looms, comprising oppositely positioned supporting members, a plurality of independent universally pivoted thread guides supported thereby, means to normally hold the exit ends of said guides in a fixed position, and a stationary guide having converging sides adapted to direct one end of each thread guide to a fixed point, and means common to all of said guides to control their operative position.

10. A thread changing apparatus for looms comprising a plurality of independent universally pivoted thread guides arranged in different groups and means common to all of said guides to control their operative position.

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

LOUIS JORRAND.

Witnesses:

A. JAUHANNAUD,
J. BOURINAUD.