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PATENTED JAN. 10, 1905.

J. & A. MANN.
SHUTTLE MOTION FOR LOOMS.

APPLICATION FILED FEB. 11, 1903.

2 SHEETS—SHEET 1.

Fig. 1,

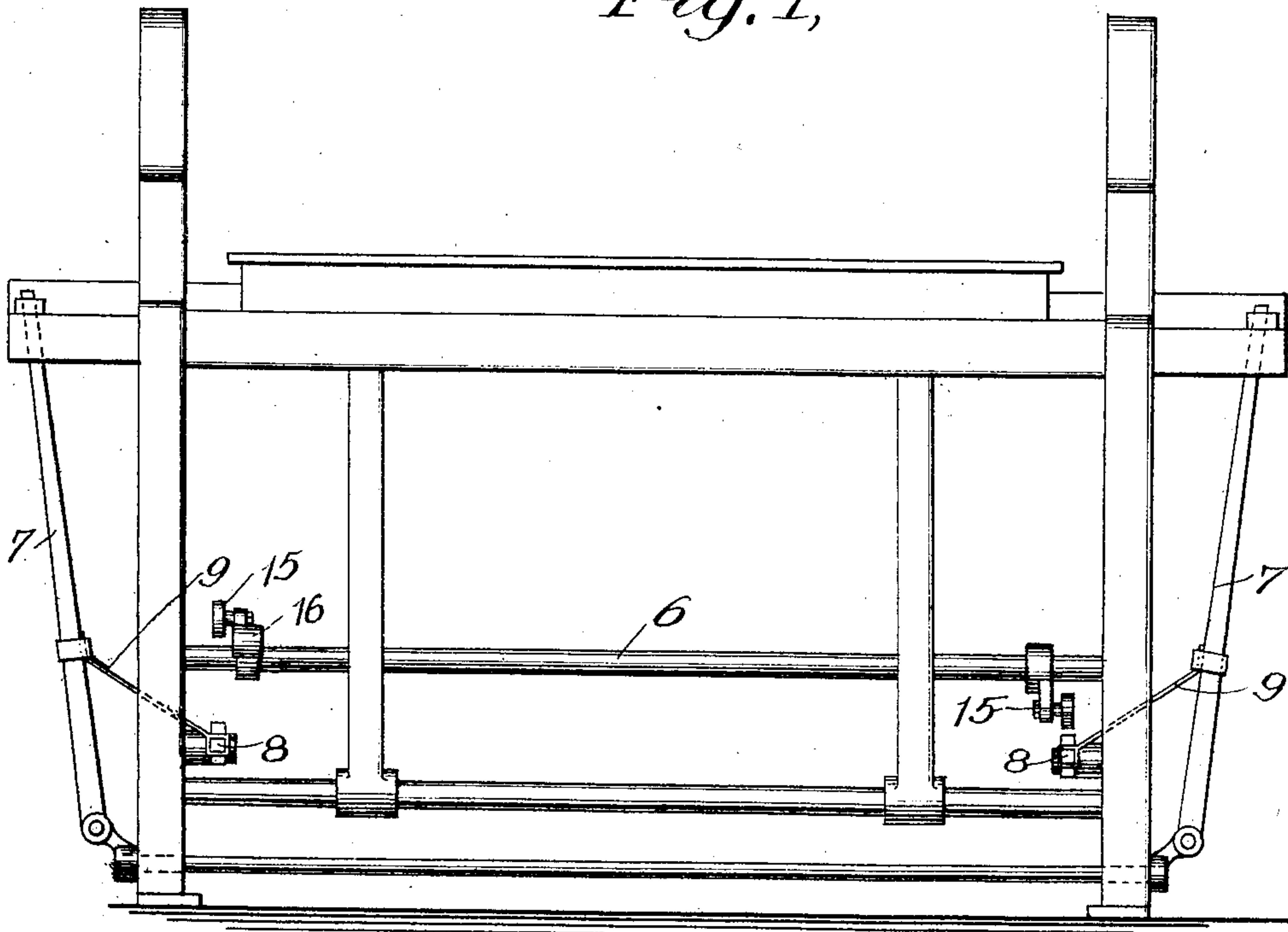
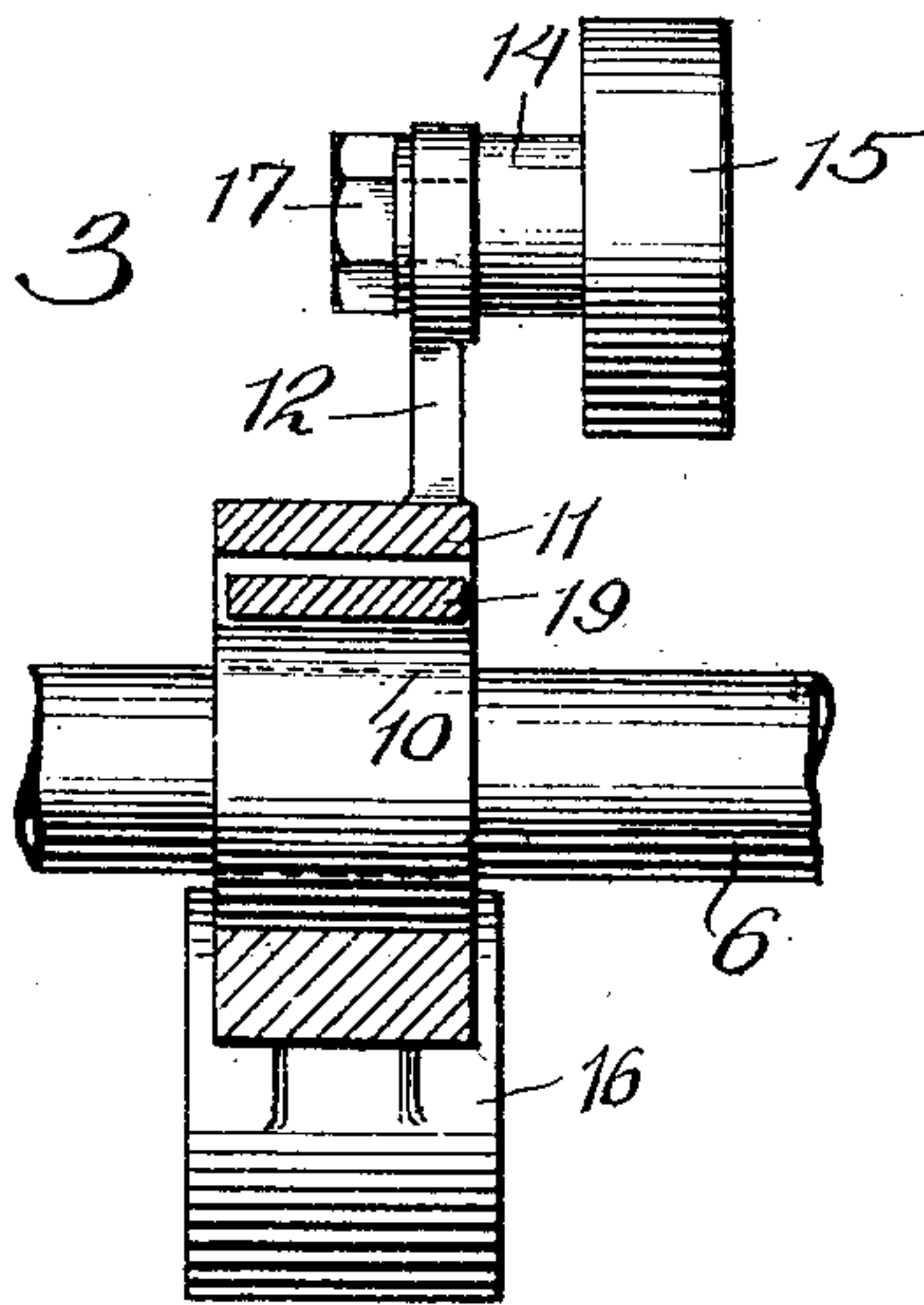


Fig. 3



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2 SHEETS—SHEET 2.

Fig. 2,

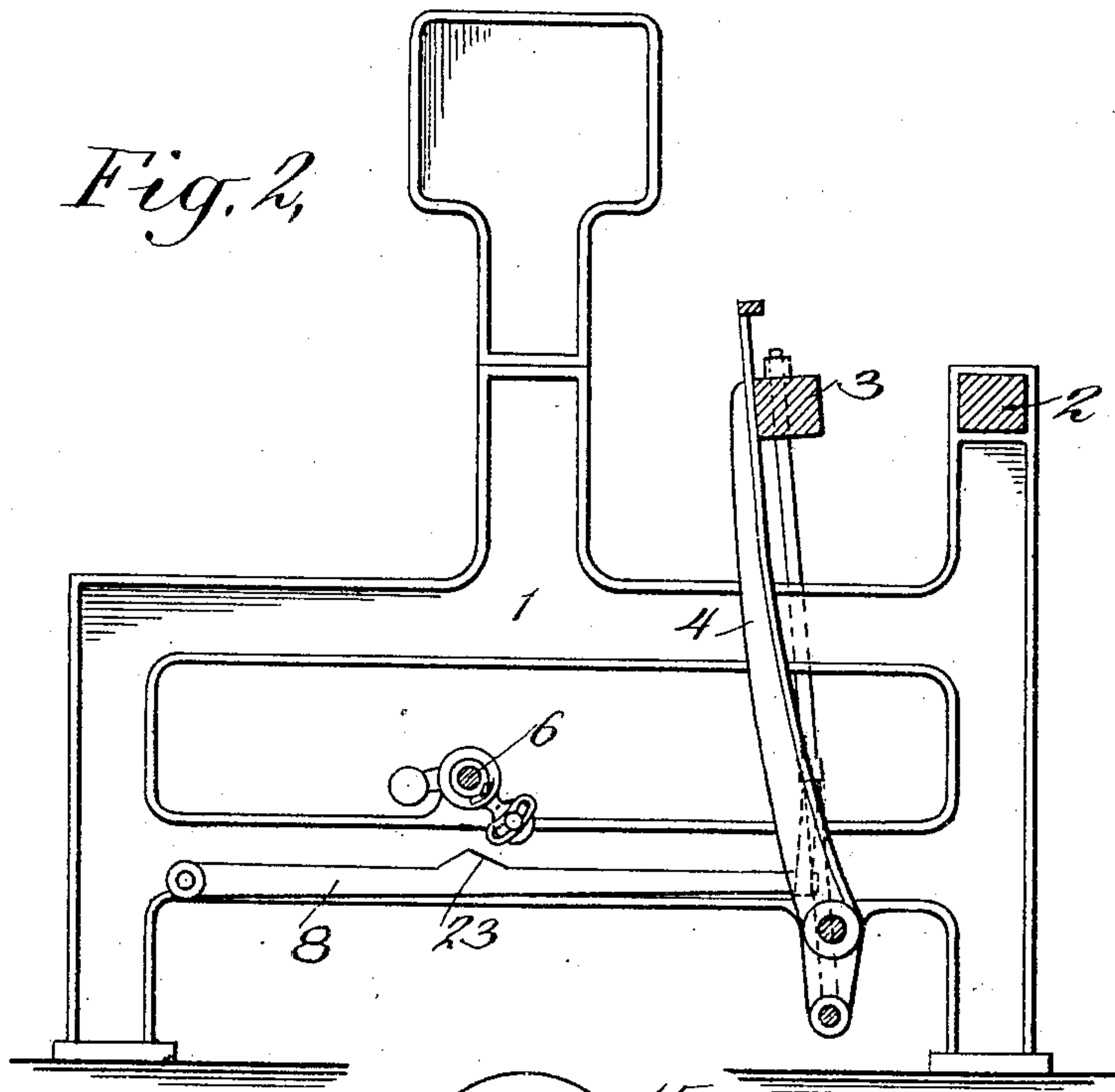


Fig. 5,

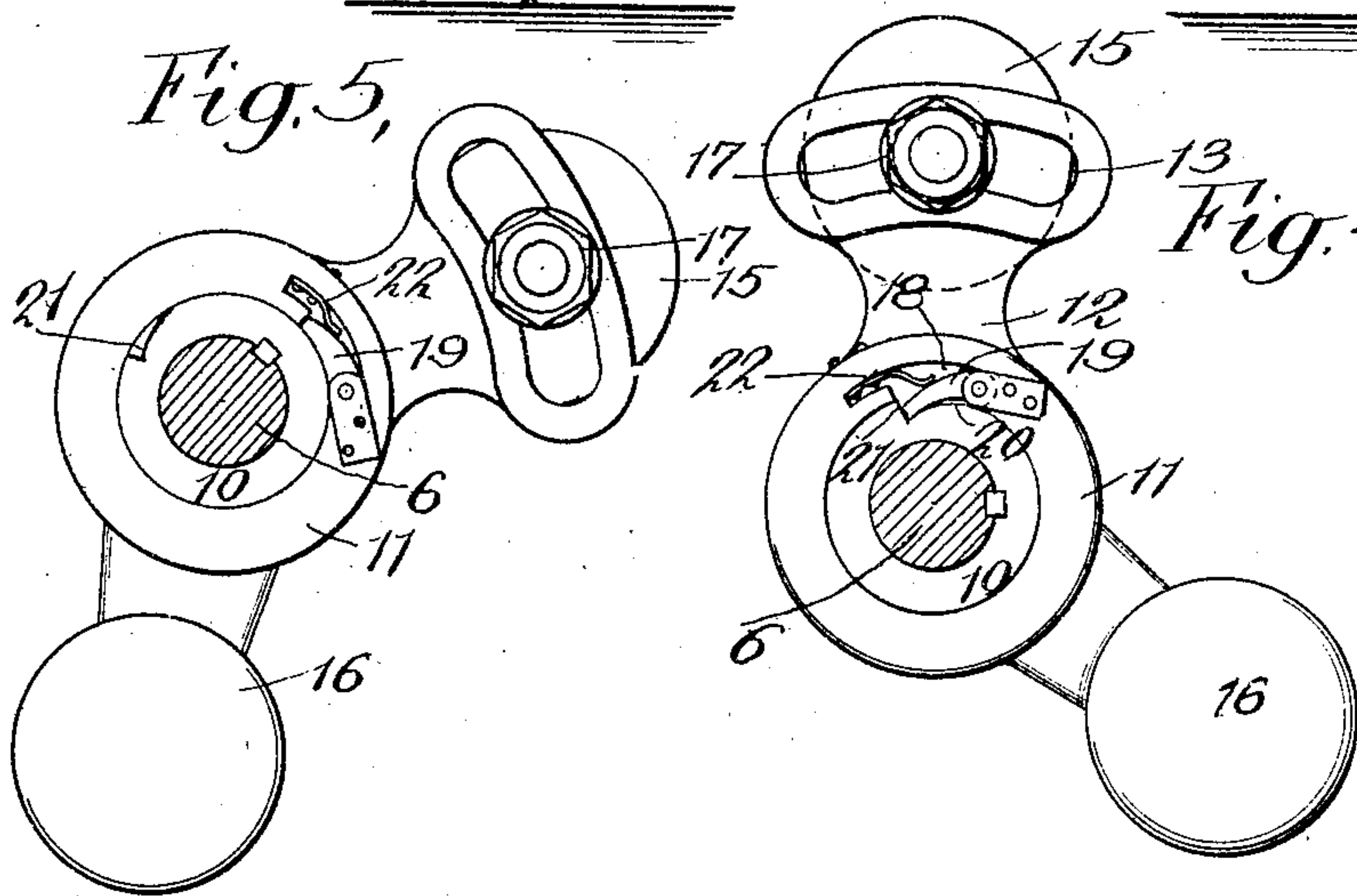


Fig. 4,

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UNITED STATES PATENT OFFICE.

JOSEPH MANN AND ALBERT MANN, OF BRIDGEPORT, CONNECTICUT, ASSIGNORS TO THE SALTS TEXTILE MANUFACTURING COMPANY, OF NEW YORK, N. Y., A CORPORATION OF CONNECTICUT.

SHUTTLE-MOTION FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 779,484, dated January 10, 1905.

Application filed February 11, 1903. Serial No. 142,879.

To all whom it may concern:

Be it known that we, JOSEPH MANN and ALBERT MANN, citizens of the United States, residing at Bridgeport, county of Fairfield, State of Connecticut, have invented a new and useful Improvement in Shuttle-Motions for Looms, of which the following is a specification.

Our invention relates to looms, and has particular reference to means which automatically render the picking mechanism inoperative when the loom is reversed, so as to prevent the throw of the shuttle at such time.

Heretofore certain classes of looms have been equipped with a treadle connection to the picking-lever, so that the latter may be moved to one side out of the path of the picking-ball upon the reversal of the loom. Unless provided with some such means for rendering the picking-sticks inactive the weaver when an emergency occurs which necessitates the reversal of the loom—such as breaking or exhaustion of the filling, or picking out for defects in the cloth, or floats, or breaking of the warps, or any other cause—must first remove the shuttle and with one hand hold back the protector to prevent the latter striking and thus stopping the loom, and with the other hand operate the reversing-lever. In double-shuttle looms the weaver must take out both shuttles and hold back both protectors. Such operations, however, occupy the time and attention of the weaver, especially in double-shuttle looms, when, for example, the cause of the stoppage of the loom is due to the breaking or exhaustion of the filling, the weaver must remove the full shuttle as well as the one having the broken or depleted filling. By rendering the picking mechanism inactive, and thus permitting the shuttle to remain boxed in order to act in its usual way upon the protector, considerable of the weaver's time is saved. By making such means automatic the weaver can immediately give his attention to the cause of the stoppage and need not concern himself about the picking mechanism.

Our invention has for its object to provide automatic means to render the picking mechanism inactive upon the reversal of the loom, and in the accompanying specification we have described one way by which that result may be accomplished.

Our invention will be readily understood by reference to the accompanying drawings, in which—

Figure 1 is a front view, and Fig. 2 a side view, of a loom having our invention applied thereto. Fig. 3 is a side view, partly in section, of the picking-ball. Fig. 4 is a rear view of the picking-ball, and Fig. 5 is a view of the same in another position.

Referring to the drawings, the numeral 1 designates the frame of the loom; 2, the breast-beam; 3, the lay; 4, the lay-sword; 6, the picking-shaft, geared to the driving-shaft in the usual manner; 7, the picking-sticks; 8, the picking-levers, and 9 the connection between the picking-lever and the picking-stick. These are all well-known parts of a loom and require no detailed description.

The embodiment of our invention herein illustrated comprises a clutch between the picking-ball and the picking-shaft by which the latter may be turned in a reverse direction without imparting any movement to the picking-ball. To accomplish this, we key or otherwise secure to the shaft 6 a collar 10, so that said collar will rotate with the picking-shaft in whichever direction the latter may be turned. Surrounding and bearing loosely upon the collar 10 is a ring 11, having an outwardly-extending portion 12, which is slotted at 13 to receive a stud 14, upon which stud is secured a picking-ball 15. The extension 12 is slotted to permit of the adjustment of the picking-ball by means of a set screw or nut 17. Depending from the ring 11 is a weight 16, slightly heavier than the picking-ball, so that when the picking-ball is at rest the parts will assume substantially the position shown in Fig. 5.

The ring 11 is recessed, as shown at 18, and in said recess is pivoted a pawl 19. The col-

lar 10 is recessed at its outer periphery, as shown at 20, to provide a shoulder 21, against which the pawl 19 is held in engagement by means of a spring 22 during the normal operation of the loom. Preferably the ring 11, extension 12, and weight 16 will be made of a single casting.

The parts above described constitute, in effect, a clutch. When the shaft 6 is rotated in its normal direction during the operation of the loom, as indicated by the arrow in Fig. 4, the shoulder 21 abuts against the pawl 19, thus causing the ring 11 to rotate with the shaft 6 and causing the picking-ball to strike the picking-shoe 23 on the lever 8 and actuating the picking-stick 7 in the usual and well-known manner. When the shaft 6 is reversed—that is, turned in a direction contrary to that indicated by the arrow when that operation is necessary in order to turn the loom back to where the defect occurs in the cloth—the pawl 19 is released from operative engagement with the shoulder 21, riding freely over the periphery of the collar 10. As soon as the pawl 19 is thus released the weight 16 causes the picking-ball to assume the position indicated in Fig. 5. As no motion is imparted to the ring 11 during the reverse movement of the shaft 6, it is obvious that the picking-ball will remain at rest.

As is well known, a loom makes two picks to each revolution of the picking-shaft and that the picking-shaft is geared to the driving-shaft in such manner that the former makes one revolution to two revolutions of the latter. As the picking-ball must strike when the lay is back, preferably the weight 16 should be in such relation to the picking-ball as to cause the pawl 19 and the shoulder 21 to keep within one hundred and eighty degrees of each other in order that upon resumption of the normal working of the loom the pawl 19 will be caused to engage the shoulder 21 on the first half-revolution of the shaft 6. In other words, upon the resumption of the normal working of the loom the position of the picking-shaft 6 should preferably be with the lay in its back or picking position. By thus automatically rendering the picking-stick inactive the weaver may immediately devote his attention to the cause of the stoppage of the loom and may reverse the loom without removing the shuttle or in the case of double-shuttle looms without removing either one of the shuttles. If the cause of the stoppage is due to the breaking or exhaustion of the filling, the weaver may attend to this emergency before or after reversing—that is, the weaver by means of the present invention, which permits the shuttle to remain in its box, may immediately devote his attention to the emergency which stopped the loom, and particu-

larly the weaver is saved the work of holding back the protector-bar.

Generally speaking, shuttles are changed on the driving side of the loom, and hence but one picking-ball may be provided with the present invention. Both picking-balls, however, may, if desired, be equipped so as to operate in the manner above described.

We do not wish to be understood as limiting ourselves to the particular mechanism herein described and illustrated, as it is obvious that any mechanism which permits a reversal of the picking-shaft without affecting the picking-ball upon such reversal is within the broad terms of our invention.

What we claim, and desire to secure by Letters Patent, is—

1. In a loom the combination with driving mechanism, of means for normally picking the shuttle including a picking-ball, and means to cause the picking-ball to remain at rest when the loom is reversed.

2. In a loom the combination with driving mechanism, of picking mechanism including a picking-ball, means to actuate said picking mechanism during the normal operation of the loom, and means to automatically cause the said ball to remain at rest when the loom is reversed.

3. In a loom the combination of a picking-shaft, a picking-lever and picking-stick actuated thereby, a picking-ball loosely mounted on said shaft and means for throwing said ball into and out of operative engagement with said shaft.

4. In a loom the combination of a picking-shaft, a picking-ball mounted thereon, a picking-lever and a picking-stick actuated thereby, and means to cause the said ball to remain at rest when the loom is reversed.

5. In a loom the combination of a picking-shaft, a picking-lever and a picking-stick actuated thereby, a picking-ball and a clutch intermediate said ball and said shaft whereby the said ball is caused to remain at rest upon the reverse movement of the shaft.

6. In a loom the combination of a picking-shaft, a picking-lever, a picking-stick actuated thereby, a collar secured to said shaft, a ring loosely seated on said collar, a picking-ball secured to said ring and means interposed between said ring and collar whereby said ring and collar may be thrown into and out of engagement with each other.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JOSEPH MANN.
ALBERT MANN.

Witnesses:

N. S. PLUMB,
A. G. MEDCALF.