

No. 827,586.

PATENTED JULY 31, 1906.

A. E., A. & G. WALKER.
WEFT REPLENISHING LOOM.
APPLICATION FILED JULY 8, 1905.

4 SHEETS—SHEET 1.

Fig.1.

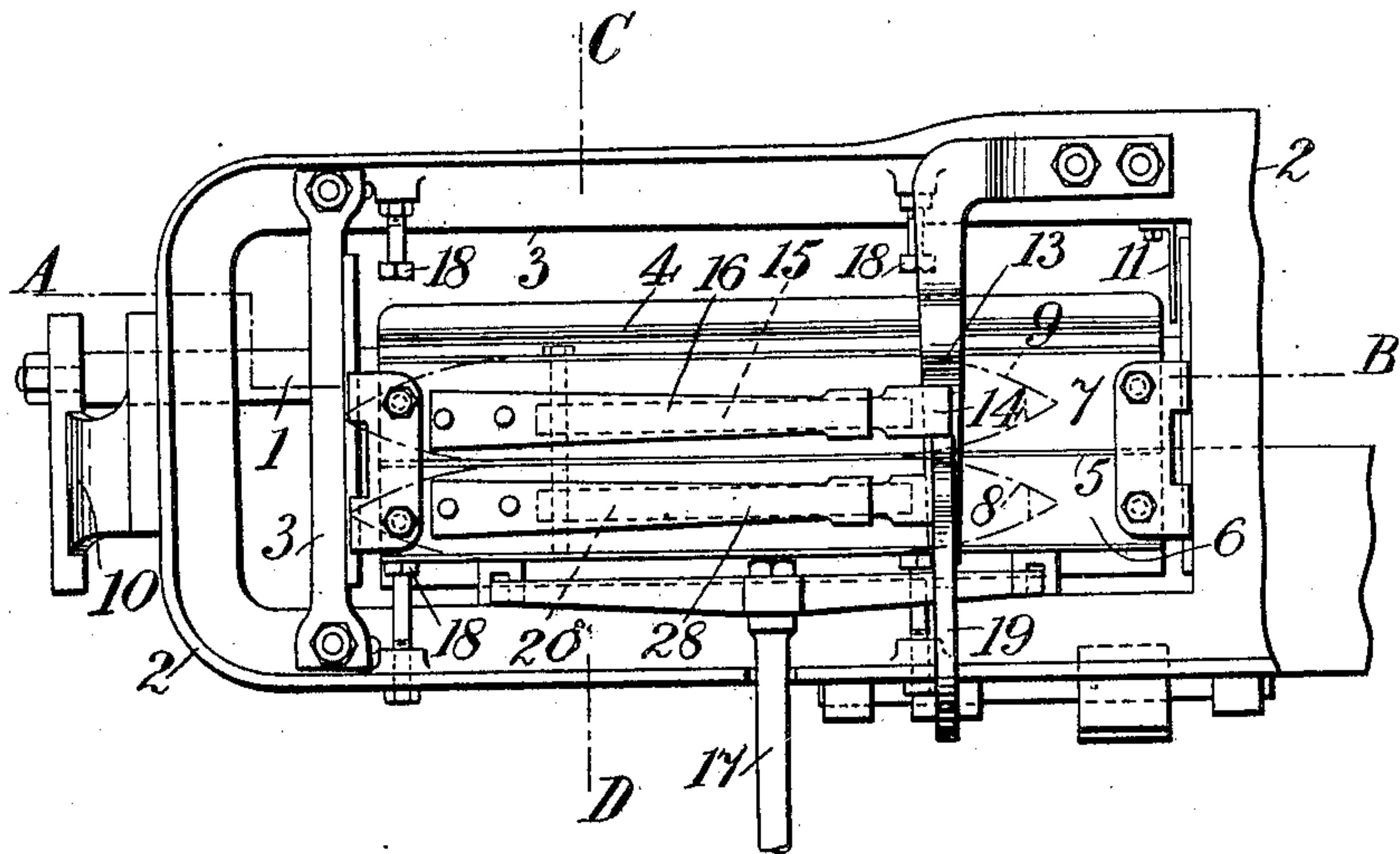
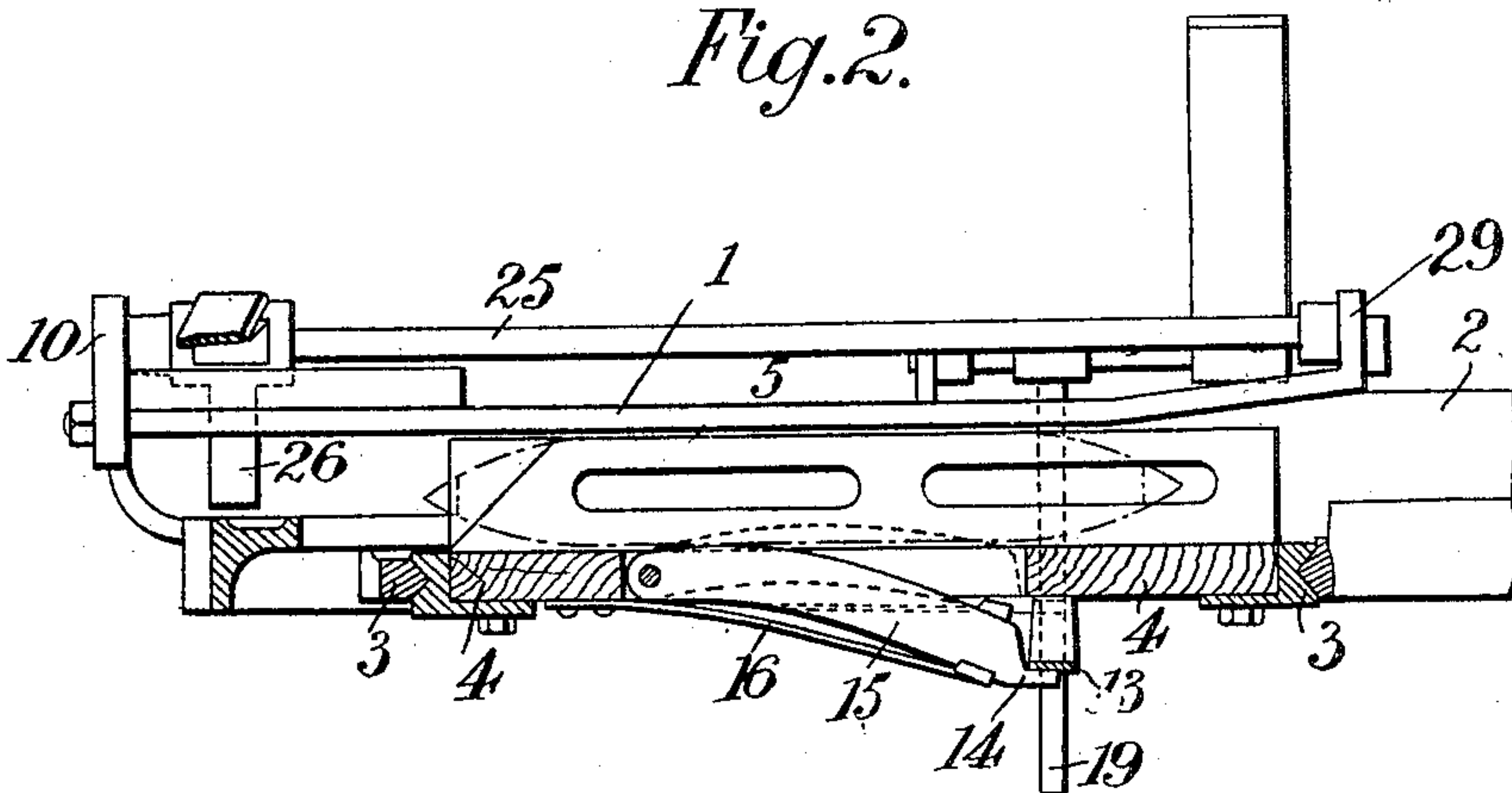


Fig.2.



Witnesses.
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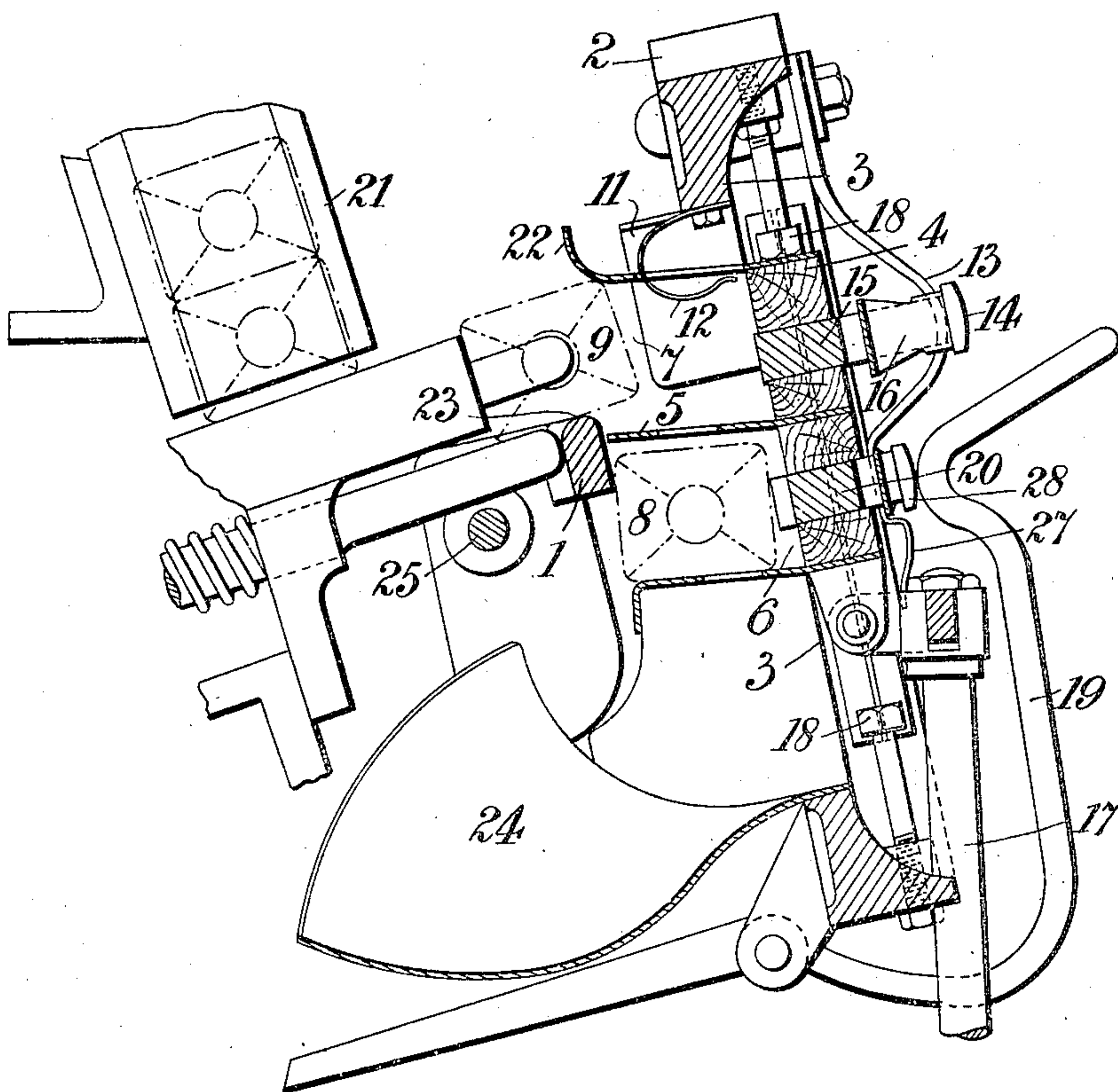
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4 SHEETS—SHEET 2.

Fig. 3.



Witnesses.
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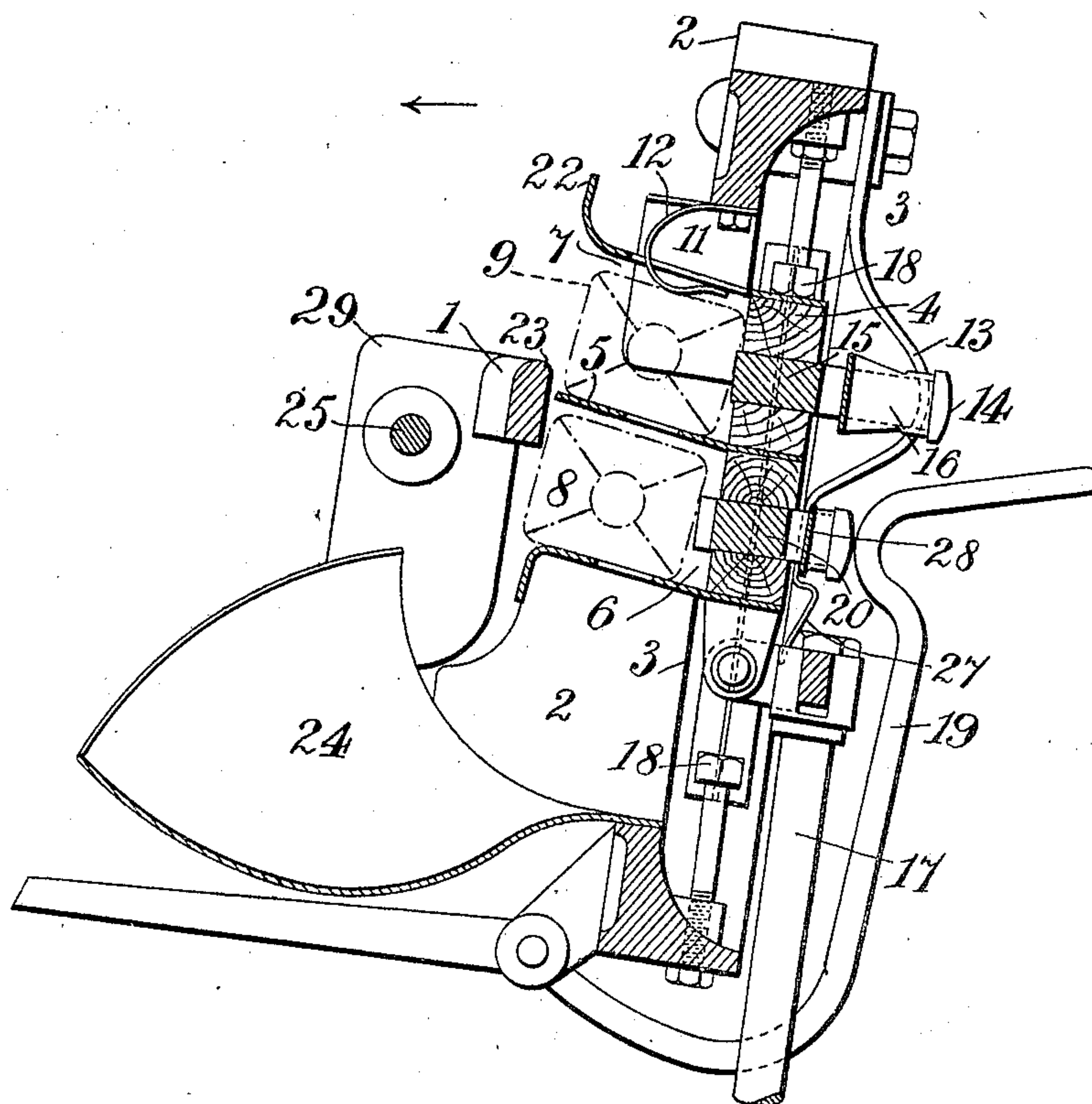
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4 SHEETS—SHEET 3.

Fig. 4.



Witnesses.
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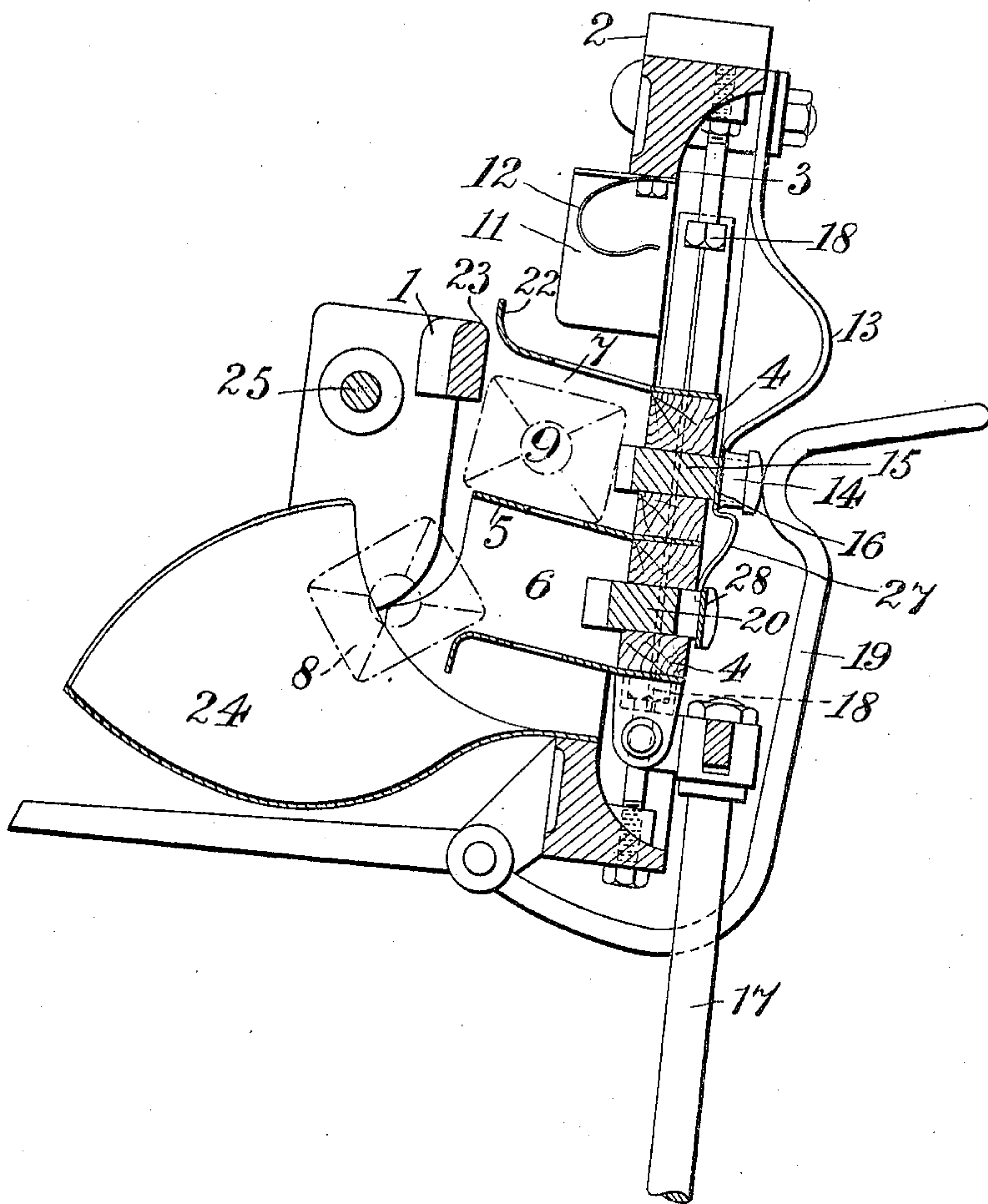
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4 SHEETS—SHEET 4.

Fig. 5.



Witnesses.

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UNITED STATES PATENT OFFICE.

ALBERT EDWARD WALKER, ARTHUR WALKER, AND GEORGE WALKER,
OF NORWOOD GREEN, NEAR HALIFAX, ENGLAND.

WEFT-REPLENISHING LOOM.

No. 827,586.

Specification of Letters Patent.

Patented July 31, 1906.

Application filed July 8, 1905. Serial No. 268,794.

To all whom it may concern:

Be it known that we, ALBERT EDWARD WALKER, ARTHUR WALKER, and GEORGE WALKER, subjects of His Majesty the King of Great Britain, residing at Norwood Green, near Halifax, England, have invented a certain new and useful Improvement in Weft-Replenishing Looms, of which the following is a specification.

The invention, while adhering to the principles of automatic weft-replenishing described in our United States Patent No. 738,644, consists in a modification adapted for use when the compartments of the shuttle-box are arranged vertically instead of around a common center, the object being to enable the feeding mechanism of our previous invention to be used with looms provided with shuttle-boxes having two (or more) vertically-arranged compartments, as at present used for two (or more) colors of weft, so that such looms can be run simply as weft-replenishing looms, if desired.

In the drawings, Figure 1 is an elevation looked at from the back of the shuttle-box and supporting parts according to our invention. Fig. 2 is a section on line A B of Fig. 1. Fig. 3 is a vertical section on line C D of Fig. 1, drawn to a larger scale, with the shuttle-box in its raised and forward position and in the act of receiving a new shuttle. Fig. 4 is a similar view to Fig. 3, but with the shuttle-box in its raised and backward position, the lower compartment being opposite the shuttle-race; and Fig. 5 is also a similar view, but with the shuttle-box in its lowered position in the act of discharging a used shuttle from the lower compartment.

According to the present invention a shuttle-retaining bar 1 is mounted between the end of the going part or lay 2 and the end of the box-supporting frame 3, opposite the shuttle-box 4, and in front of the division 5 between the working compartment 6 and the receiving-compartment 7 above it. The bar 1 may, as shown, be mounted in a bracket 10, carried by the going part 2 and attached at its inner end (which is bent, as shown, to avoid obstruction to the shuttle) to the bracket 29, supporting the guide-rod 25 of the picker 26. When the shuttle-box is in the working position shown in Fig. 4, the bar 1 covers the front of the working compartment 6 a sufficient distance to act as a screed or

guide-bar for the shuttle 8 when weaving, and it also covers the receiving-compartment 7 a sufficient distance to act as a retaining-ledge for the shuttle 9 when received from the automatic feeding apparatus.

A stop-piece 11 is preferably fixed to the box-frame 3 to prevent any endwise movement of the shuttle 9 in the compartment 7 when the box 4 is in its raised position. The shuttle in the compartment 7 is further steadied by the pressure of a flat spring 12, secured to the upper part of the box-frame and adapted to protrude through a slot in the top 22 of the compartment into contact with the shuttle when said compartment is in the position shown in Figs. 3 and 4.

An inclined piece 13, forming a cam-path, is fixed upon the box-frame 3, vertically between the back of the shuttle-box 4 and the free end 14 of the swell 15 of the upper shuttle-compartment 7, so that as the shuttle-box is reciprocated the inclined piece 13 acts upon the swell 15 and removes it from the compartment when the latter is in the positions shown in Figs. 3 and 4; but when the receiving-compartment 7 is in the working position and the lower or working compartment 6 is discharging the used shuttle 8 the swell 15 will have ridden down the lower side of the inclined piece 13 and have been pressed inward by its spring 16 into contact with the shuttle 9 to steady the latter (as shown in Fig. 5) before it is shot into the shuttle-race of the loom by the picker in the well-known manner. The swell 20 of the compartment 6 is not acted on by the cam-piece 13; but the latter is provided with an auxiliary inclined piece 27, the incline of which is less than that of the piece 13, being so proportioned that when the used shuttle in the working compartment is, with the latter, lowered from the position shown in Fig. 4 into the discharging position (shown in Fig. 5) the swell 20 (which has previously been pressed outwardly against its own spring-pressure by the used shuttle 8) as the compartment commences to lower, and thus remove the shuttle from the retaining pressure of the bar 1, is prevented from prematurely pushing the shuttle out of the compartment by the auxiliary cam-piece 27, over which the free end of said swell 20 must ride. When and immediately the compartment has reached its proper position for the discharge of the shuttle 8 said

swell 20 by the action of its spring 28 suddenly slides down the incline of the cam-piece 27, exerting a comparatively quick pressure on the shuttle and discharging the latter from the compartment at the proper time.

The shuttle-box 4, which is carried by the going part 2, is vertically reciprocated by means of the rod 17 and mechanism similar to that employed to revolve the rotary shuttle-box and described in our above-mentioned United States patent. Stops 18 are provided to limit the vertical movement of the shuttle-box, and the usual stop-rod finger 19 is provided, operated by the swell 20, for stopping the loom in the event of a shuttle not being properly received into the compartment of the shuttle-box.

To facilitate the feeding of the shuttles to the shuttle-box, the top 22 of the receiving-compartment 7 may be upwardly curved to pass freely over the shuttle, and the front edge 23 of the retaining-bar 1 may also be curved to pass readily under the shuttle on the forward movement of the going part 2, as shown in Fig. 3.

The operation of the invention is as follows: The full shuttle is fed from the hopper 21 into the upper or receiving compartment 7 of the shuttle-box by the automatic feeding mechanism, previously referred to, on the forward movement of the going part, (see Fig. 3,) the upwardly-curved top 22 of said compartment passing over the shuttle, the opening of the compartment 7 being greater than the depth of the shuttle, and simultaneously the curved edge 23 of the retaining-bar 1 passes under the shuttle. At the end of such forward movement the shuttle 9 falls below the retaining-bar 1 and is thereby retained in the compartment 7 as the going part retires into the position shown in Fig. 4. Afterward at the required time the downward movement of the shuttle-box takes place, and the compartment 7 is lowered into the temporary working position shown in Fig. 5, and the used shuttle in the lower or working compartment 6, being freed from the restraint of the retaining-bar and aided by the pressure of the swell 20, is discharged from its compartment by the action of the swell 20, as already described, assisted by the vibration of the going part, and falls into a chute 24, conveniently placed for the purpose. Immediately after the discharge of the used shuttle the full shuttle in the upper compartment, which is now in the lowered or working position, is shot by the picker 26 into the shuttle-race, and the shuttle-box is then returned to its former raised position in readiness both to receive a new shuttle in the compartment 7 from the feed-hopper 21, Fig. 3, and to bring the lower compartment 6, recently vacated by the used shuttle, in the working position to receive the full shuttle on its return from the shuttle-race, and in this position the shuttle-box remains until such

time as the full shuttle becomes used, when the reciprocating mechanism is again automatically actuated and the above-described operation repeated.

What we claim is—

1. In weft-replenishing looms the combination with a vertically-reciprocating shuttle-box, a shuttle-feeding device, and a going part, of a shuttle-retaining bar carried by said going part to act both as a screed or guide-bar for the shuttle when weaving and as a retaining-ledge for the shuttle when received from said shuttle-feeding device.

2. In weft-replenishing looms the combination with a vertically-reciprocating shuttle-box having several compartments and swells, a shuttle-feeding device and a going part, of a shuttle-retaining bar carried by said going part to act either as a screed only or both as a screed and a retaining-ledge for the shuttle according to the position of the shuttle-box, and means carried by said shuttle-box to operate said swells to control the admission, retention, and discharge of the full and used shuttles respectively to, in, and from said compartments.

3. In weft-replenishing looms the combination with a vertically-reciprocating shuttle-box having several compartments and swells, a frame for said shuttle-box a shuttle-feeding device and a going part, of a shuttle-retaining bar carried by said going part to act either as a screed only or both as a screed and a retaining-ledge for the shuttle according to the position of the shuttle-box, and an inclined piece carried by the shuttle-box frame to operate said swells to control the admission, retention, and discharge of the full and used shuttles respectively to, in, and from said compartments.

4. In weft-replenishing looms the combination with a vertically-reciprocating shuttle-box having upper and lower compartments, a frame for said shuttle-box a shuttle-feeding device and a going part, of a shuttle-retaining bar carried by said going part to act either as a screed only or both as a screed and a retaining-ledge for the shuttle according to the position of the shuttle-box, means carried by the shuttle-box frame for preventing endwise movement of the shuttle when in the upper compartment, and an inclined piece also carried by the shuttle-box frame to operate said swells to control the admission, retention, and discharge of the full and used shuttles respectively to, in, and from said compartment.

5. In weft-replenishing looms the combination with a vertically-reciprocating shuttle-box having several compartments, a shuttle-box frame, a shuttle-feeding device and a going part, of a shuttle-retaining bar carried by the going part to act either as a screed only or both as a screed and a retaining-ledge for the shuttle according to the position of

the shuttle-box, means carried by the shuttle-box frame and comprising a stop-piece and a flat spring for preventing endwise movement and for steadying the shuttle when
5 in the upper compartment, and means carried by the shuttle-box to operate the swell of the shuttle-box compartments to control the admission, retention, and discharge of the full and used shuttles respectively to, in, and
10 from said compartments.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

ALBERT EDWARD WALKER.
ARTHUR WALKER.
GEORGE WALKER.

Witnesses:

FREDK. HAMMOND.
W. H. KENNARD.