

(No Model.)

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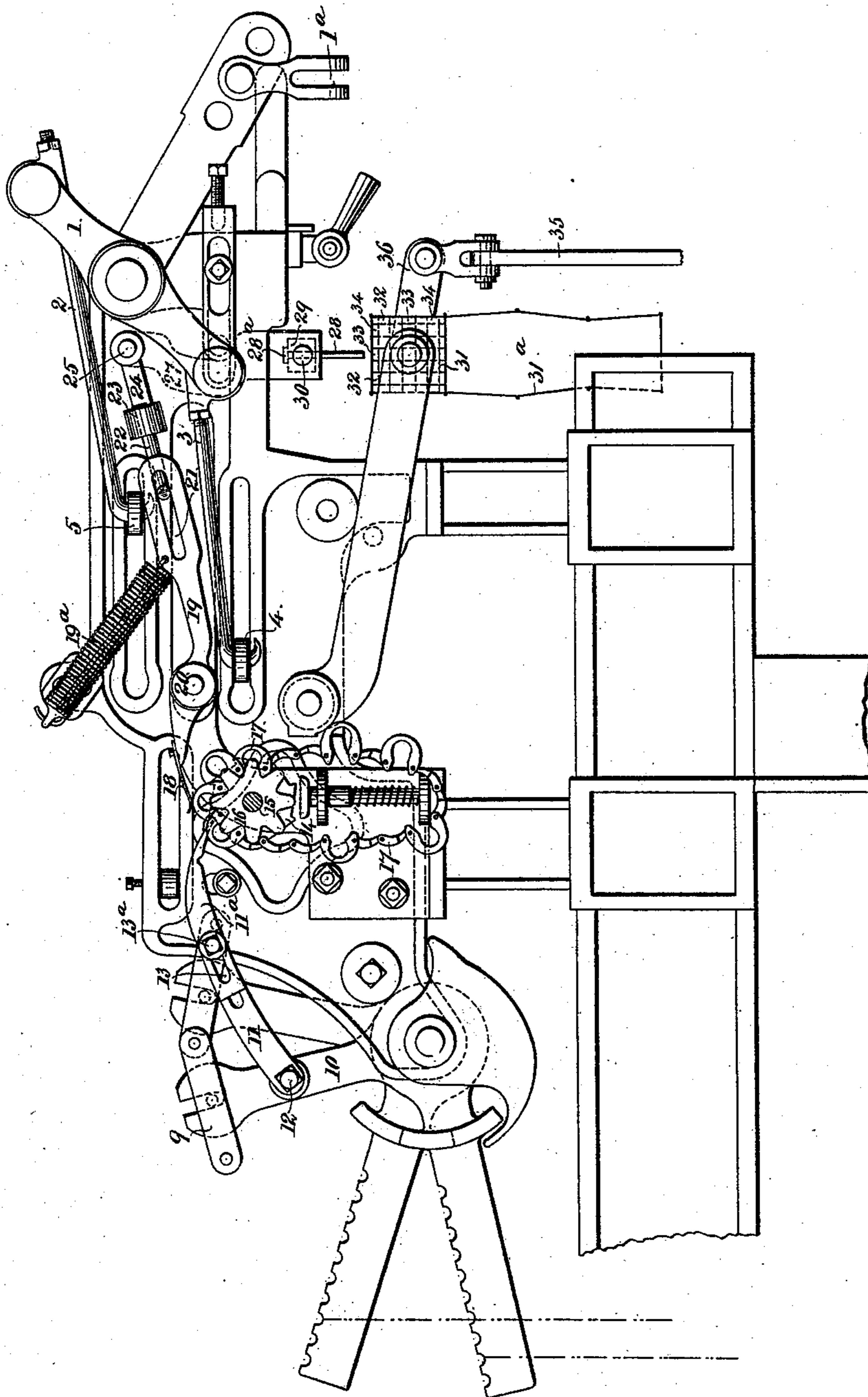
C. HAHLO, C. E. LIEBREICH & T. HANSON.

SHEDDING MECHANISM FOR LOOMS.

No. 401,947.

Patented Apr. 23, 1889.

Fig. 1.



Witnesses.
Walter Brierley
Walter Holmes

Inventors.
Charles Hahlo
Charles E. Liebreich
Theophilus Hanson

(No Model.)

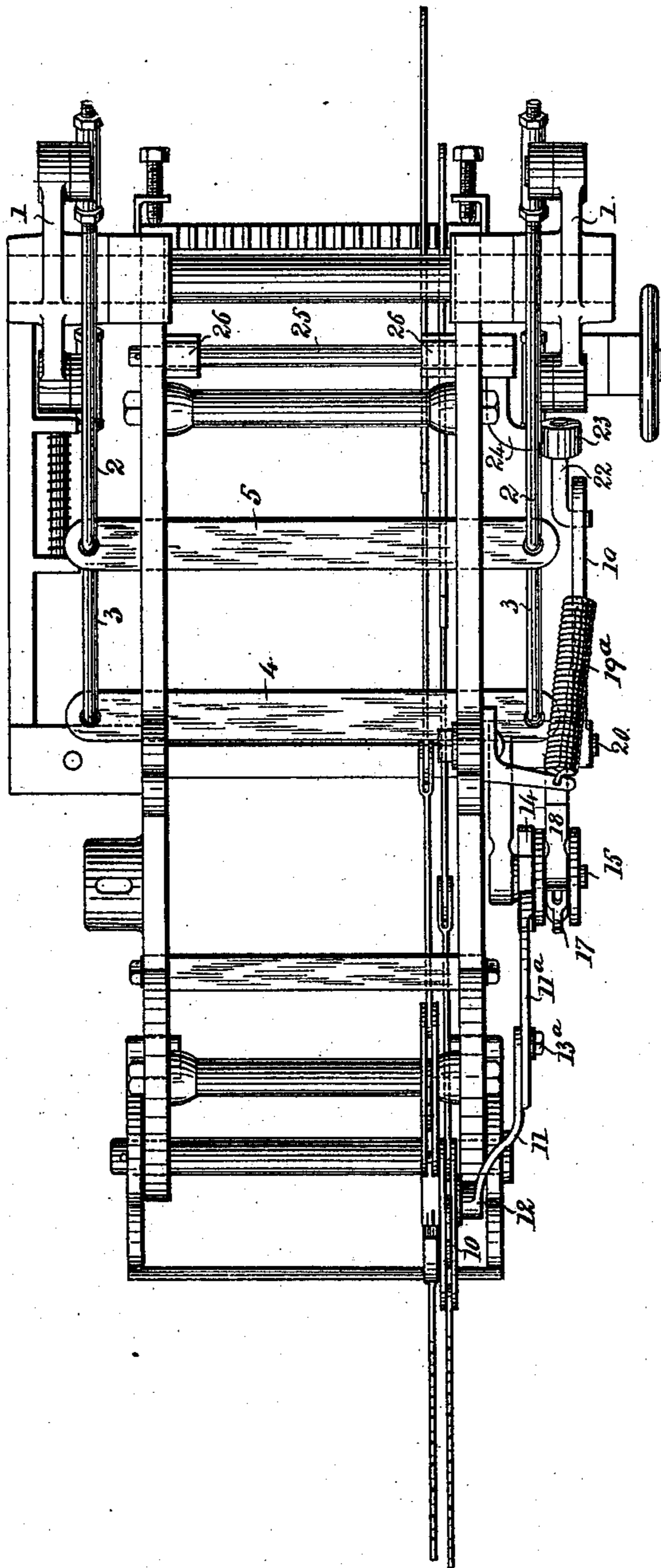
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Fig. 2.



Witnesses.
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Walter Holmes

Inventors
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Charles Ernest Liebreich
Theophilus Hanson

(No Model.)

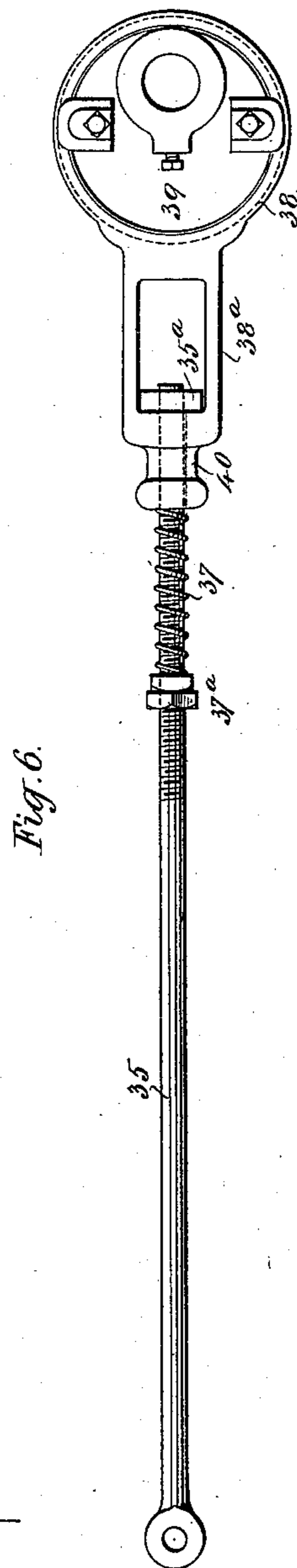
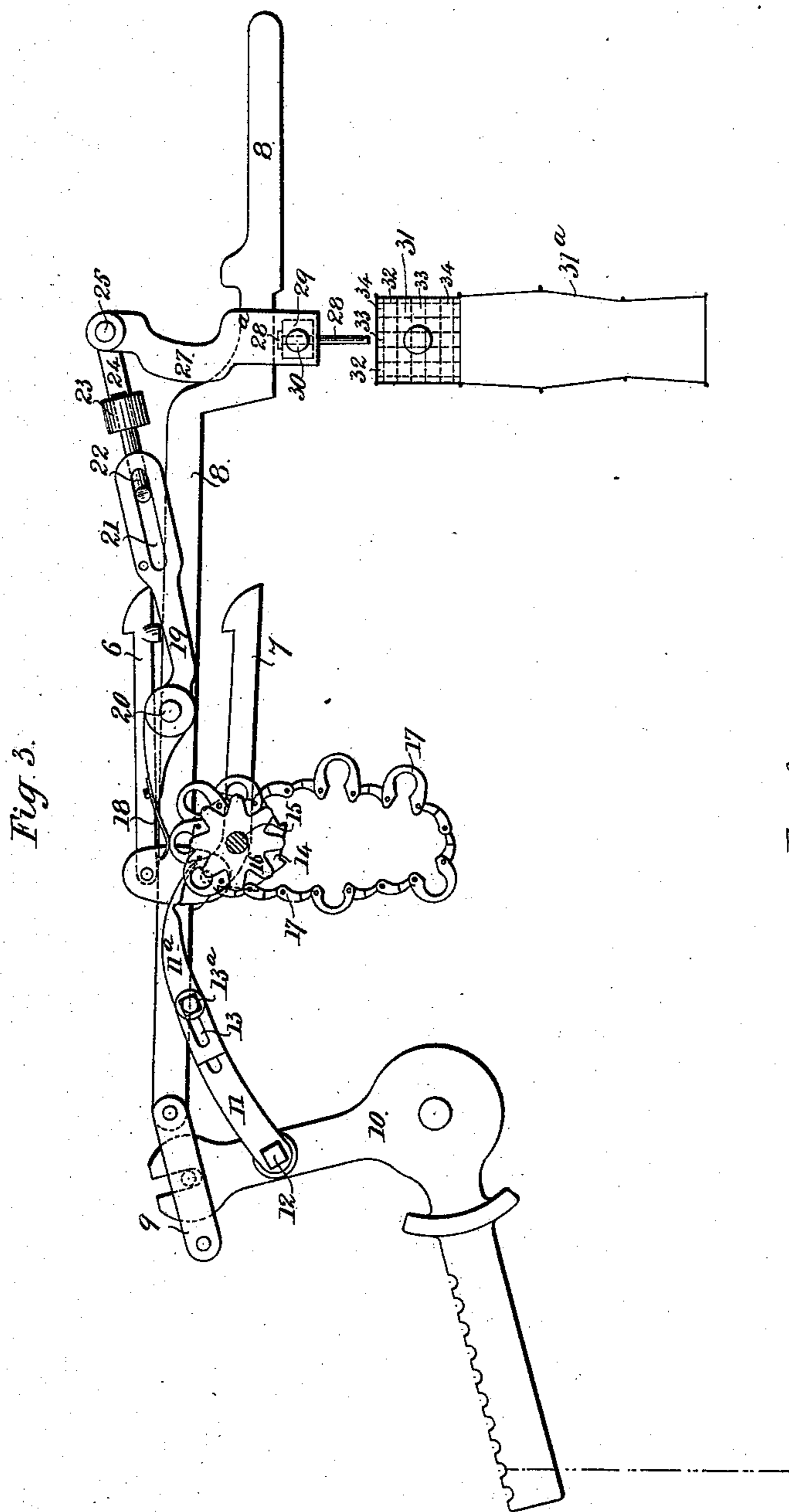
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Fig. 5.

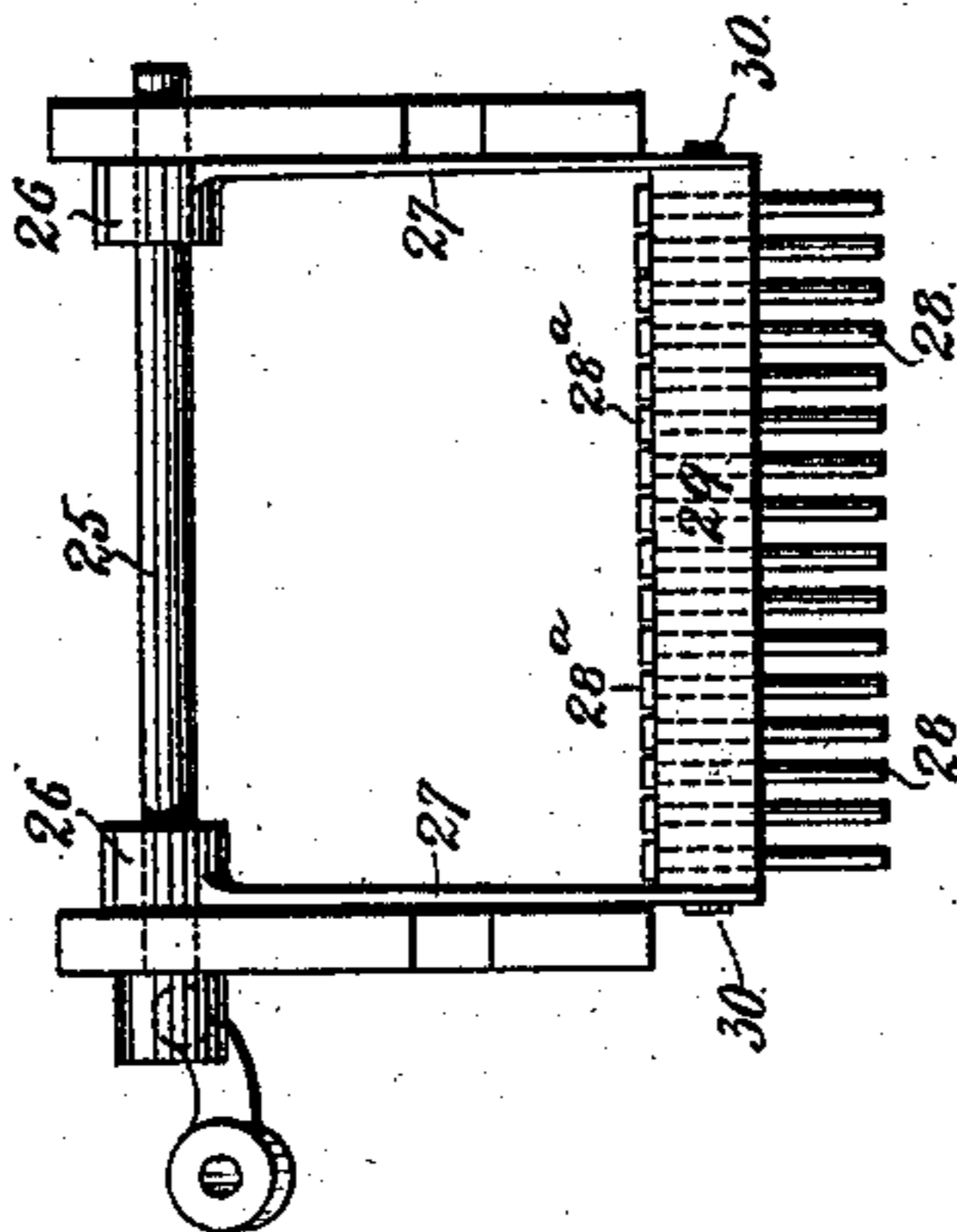
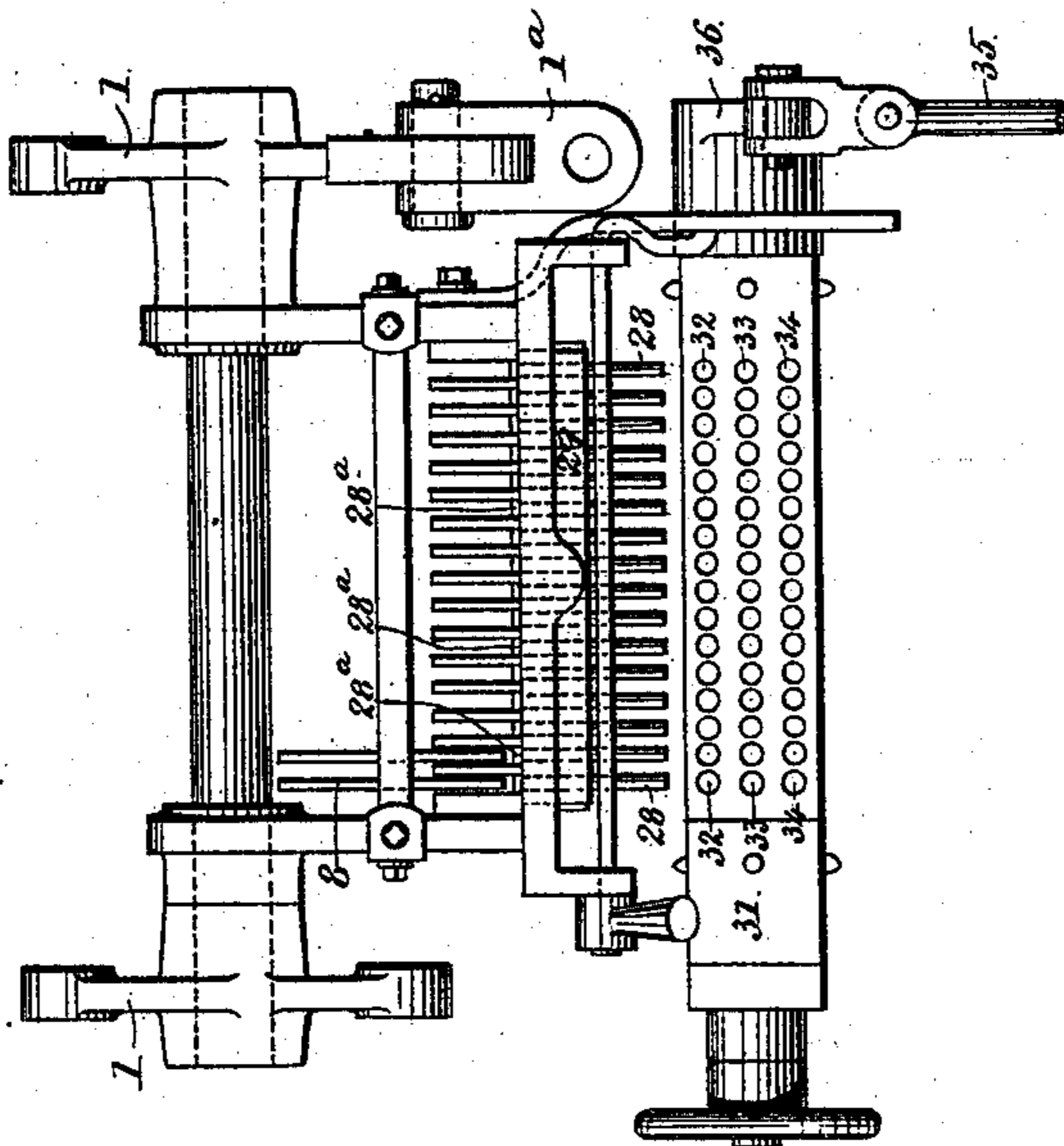


Fig. 4.



Witnesses.

Walter R. Brierley
Walter Holmes.

Inventors.

Charles Hahlo
Charles E. Liebreich
Theophilus Hanson

UNITED STATES PATENT OFFICE.

CHARLES HAHLO, CHARLES EDWARD LIEBREICH, AND THEOPHILUS HANSON,
OF BRADFORD, COUNTY OF YORK, ENGLAND.

SHEDDING MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 401,947, dated April 23, 1889.

Application filed May 8, 1888. Serial No. 273,242. (No model.) Patented in England June 1, 1887, No. 7,917.

To all whom it may concern:

Be it known that we, CHARLES HAHLO, CHARLES EDWARD LIEBREICH, and THEOPHILUS HANSON, subjects of Her Majesty the Queen of Great Britain, residing at Bradford, in the county of York, England, have invented new and useful Improvements in Shedding Mechanism for Looms, of which the following is a specification.

10 This invention has been patented to us in Great Britain by Letters Patent No. 7,917, of June 1, 1887.

This invention comprises an improved loom "dobby," whereby the number of cards required in weaving any pattern on the loom may be largely reduced, and also whereby during the operation of the loom the pattern-cards are prevented from being damaged when the loom is reversed or moved back on its crank-centers.

According to our invention we employ three or more rows of holes in each card and on each side of the card-barrel, while the pattern-pins above are carried by a frame on 25 two swinging arms pendent from a shaft crossing the frame of the pattern mechanism or dobbie. A crank-lever having one of its arms slotted and connected to a rod or arm connected with the shaft of the pendent arms is mounted on a stud on the outside of the dobbie. At the end of the other arm of the crank-lever is a small blade-spring, which rests upon a pattern-chain, said pattern-chain receiving motion through the agency of a 30 ratchet-wheel and a catch, an arm connected to the latter being attached to the outer one of the heald-levers. This dummy heald-lever is operated by the draw-bars employed for operating the other heald-levers and pattern-chain, and as the latter brings a smaller or a larger tappet under the blade-spring of the before-mentioned crank-lever, so will said lever move more or less on its stud, thus causing the pendent arms to move the pattern-pins from one line of holes on the cards to another or to skip from the first to the third line, as desired. This arrangement effects a very large reduction in the number of pattern-cards, or "lags" required. For instance,

ten cards used in combination with these 50 movable pattern-pins will produce patterns requiring under the old system several hundreds of cards. It frequently happens in the present arrangement that when the attendant permits the going part to move back on 55 its cranks the cards are pierced by the pattern-pins, so making a hole in the card where a blank should be, which, if not detected, produces faults in the weaving in addition to spoiling the card. To prevent this we employ 60 on the eccentric-rod for working the rocking arm, which operates the card-barrel, a spiral spring, the strap of the eccentric being connected with the rod and spring, so that if the pattern-pins come on the blanks 65 of the cards or lags when the motion of the loom is reversed the spring will give way, and so ease off the pressure of the pins on the cards and prevent the latter from being punctured.

To clearly and fully explain the nature of 70 our invention, reference is made to the accompanying drawings, in which—

Figure 1 is a side elevation of our improved pattern mechanism or dobbie. Fig. 2 is a plan of Fig. 1, some parts, however, being 75 omitted. Fig. 3 is a side elevation of the parts of our invention (excepting the eccentric-rod) detached from the other parts of the dobbie, in order to illustrate clearly the connections and relative parts thereof. Fig. 4 is 80 a front elevation of a portion of the dobbie for the purpose of showing clearly the card-barrel and pattern-pin-operating mechanism. Fig. 5 is an end elevation of the pattern-pins in their swinging frame. Fig. 6 is a view of 85 the improved eccentric-rod.

Referring first to Figs. 1 and 2, at 1 is the T-shaped rocking lever, which is operated by means of an eccentric-rod from the ordinary tappet-shaft, which is not shown, the connection with this rod being made at the link 1^a. The usual hooked rods, 2 2 and 3 3, connect the knives 4 and 5 with said lever, which reciprocates them in their grooves in the usual manner, the parts being duplicated on each 95 side of the machine, as usual.

In Fig. 3 are shown, at 6 and 7, the hooks of the draw-bar 8, by means of which and the

link 9 the heald-lever 10 receives its motion, and thereby effects the requisite movement of the healds.

All of the above are the ordinary parts of a pattern mechanism, and are introduced only as explanatory of our invention, the parts and combination of which latter are as follows, particular reference being had to Fig. 3.

At 11 is an arm, loosely pivoted at the point 12 to the heald-lever 10. To this arm is secured a catch or pawl, 11^a, adjustable on the arm 11 by means of the slot 13 and bolt 13^a, its operating end engaging with a star-wheel, 14, which it moves, one tooth at each movement of the heald-lever 10. Mounted on the pin or stud 15 of this wheel 14 is a cog-wheel, 16, over which passes the chain 17, consisting of various-sized tappets, upon which bears the end of a blade-spring, 18, secured to the end of a lever, 19, which is free to rock on the pivot 20. At the other end of the lever 19 is a slot, 21, with which engages the hooked end of a rod, 22, secured in a boss, 23, of the elbow-arm 24, which is fast upon the shaft 25, crossing the frame of the dobby. This shaft is shown in front elevation in Fig. 5, and upon it are placed the bosses 26 of the pendent arms 27, the lower ends of which carry a bar, 29, pivoted on the pins 30, in which bar are loosely placed the pattern-pins 28. The lever 19 may be held to its work by the spring 19^a. (Shown in Figs. 1 and 2.)

On reference to the pattern-chain it will be seen that it is composed of tappets of varying lifts, and that as a higher or lower tappet is brought under the spring 18, so will the lever 19 be more or less moved on its pivot 20. Consequently the effect produced on the elbow-arm 24 will be greater or less, and so will the shaft 25 be more or less rocked, thus moving the pendent arms 27 and pattern-pins 28 from the holes 32 to the holes 33 in the pattern-card barrel 31; or where a still higher tappet comes in contact with the spring 18, so will the pins be caused to skip from the holes 32 to the holes 34. In this way, just as the tappet-chain is composed of varied and mixed lifts of tappets, so will this skipping or ringing of changes on the pattern-cards 31^a and barrel 31 take place, and thus a limited number of cards will serve for the weaving of patterns heretofore requiring a very much larger number.

There are, of course, as many draw-bars as required, according to the number of heald-shafts to be operated, the outer bar, 8, of the series being specially employed for imparting a constant rocking motion to the lever 10; hence the hooks 6 7, or one of them, always are or is engaged with the outgoing draw bar or knife 4 or 5, so as to render continuous the motion and action of pawl or catch 11^a, star-wheel 14, and chain 17.

So long as a blank in the cards 31^a presents itself to one of the pins 28 the head 28^a of the latter is forced against the under side

of the draw-bar 8, which is just over it, as shown in Fig. 4, and the latter is lifted, whereupon the hooks 6 7, or one of them, becomes engaged with the knives 4 5, or one of them, thus operating the heald-levers 10, and through their cord-connections the healds, in the usual manner. When a similar tappet on the chain 17 follows the one before it, there will be no change in the position of the healds.

For the purpose of preventing the cards 31^a being damaged or punctured by the pattern-pins 28 when the going parts are moved back, we provide on the eccentric-rod 35, Figs. 1, 4, and 6, employed for rocking the arm 36, which operates the card-barrel 31, a spiral spring, 37. The strap 38 of the eccentric 39 is connected by means of the slotted part 38^a with the rod which passes through a hole in the neck 40 of the same and terminates in a nut, 35^a, which the spring 37, by its expansion and pressure upon the nut 37^a on the screwed shank of the rod, keeps up against the under side of the neck 40. In this way, if the pattern-pins are brought down forcibly on a blank portion of the cards through the reverse motion of the loom, the spring 37 will be compressed, allowing the rod to play in the slot 38^a and ease off the pressure of the pins on the cards.

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

1. In a pattern mechanism for looms, the combination, with a heald-lever, 10, of a pawl, 11^a, operated thereby, shaft 15, star-wheel 14, cog-wheel 16, a pattern-chain, 17, a spring, 18, bearing on said chain, a pivoted lever, 19, supporting the spring 18, pattern-pins, a rock-shaft, 25, connections therefrom to the pattern-pins, and connections from the said rock-shaft to the pivoted lever 19, substantially as described.

2. In combination with a heald-lever and arm, 11, a pawl, 11^a, adjustably secured to said arm, means for effecting said adjustment, a star-wheel and its shaft 15, a cog-wheel, 16, a pattern-chain, pattern-pins, and connections between the pattern chain and pins, consisting of a pivoted lever, 19, in connection with the pattern-chain at one end, and a rock-shaft, 25, in connection with the pivoted lever 19, and a connection between the shaft 25 and the pattern-pins, consisting of the arms 27 and bar 29, substantially as described.

3. The combination, with the card-barrel, of the pattern-pins 28, a swinging frame carrying said pins, a pattern-chain, and connections therefrom to the pins, consisting of the spring 18, operated by the pattern-chain, and a shaft, 25, rocked by the movement of the spring 18 and intermediate connections, substantially as described, between said spring and shaft, the swinging frame carrying the pins being mounted on the shaft 25, substantially as described.

4. The combination, with a heald-lever, of

the arm 11 and its attached adjustable pawl
11^a, star-wheel 14, cog-wheel 16, tappet-chain
17, blade-spring 18, pivoted and slotted lever
19, rod 22, arm 24, shaft 25, pendent arms 27,
5 pivoted bar 29, pattern-pins 28, and barrel
31, substantially as described, and for the
purposes set forth.

In testimony whereof we have hereunto set

our hands in the presence of two subscribing
witnesses.

CHARLES HAHLO.

CHARLES EDWARD LIEBREICH.

THEOPHILUS HANSON.

Witnesses:

WALTER BRIERLEY,

WALTER HOLMES.