

No. 677,316.

Patented June 25, 1901.

J. A. LEHRRITTER.
MECHANICAL MOVEMENT.

(Application filed Oct. 15, 1900.)

(No Model.)

2 Sheets—Sheet 1.

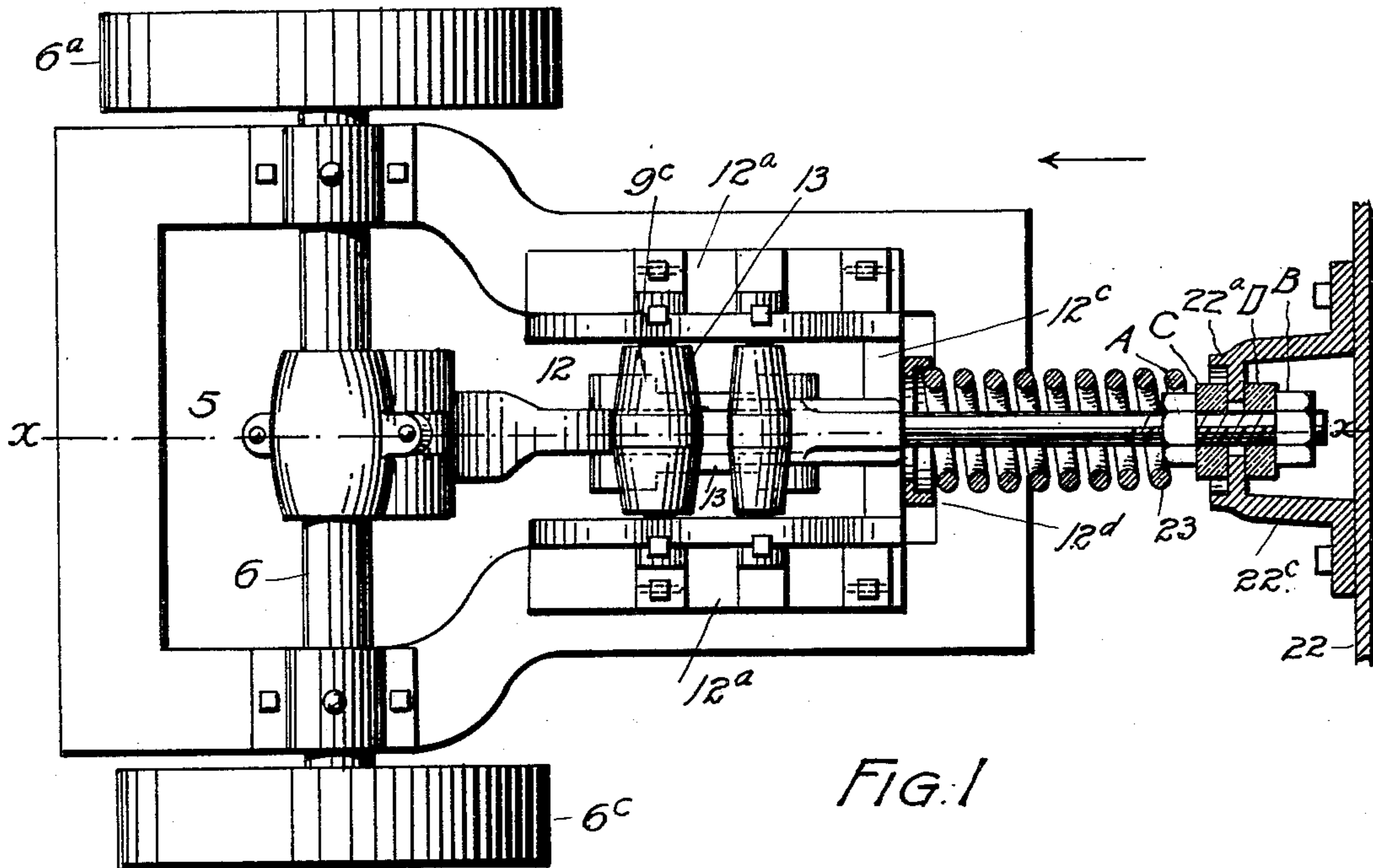


FIG. 1

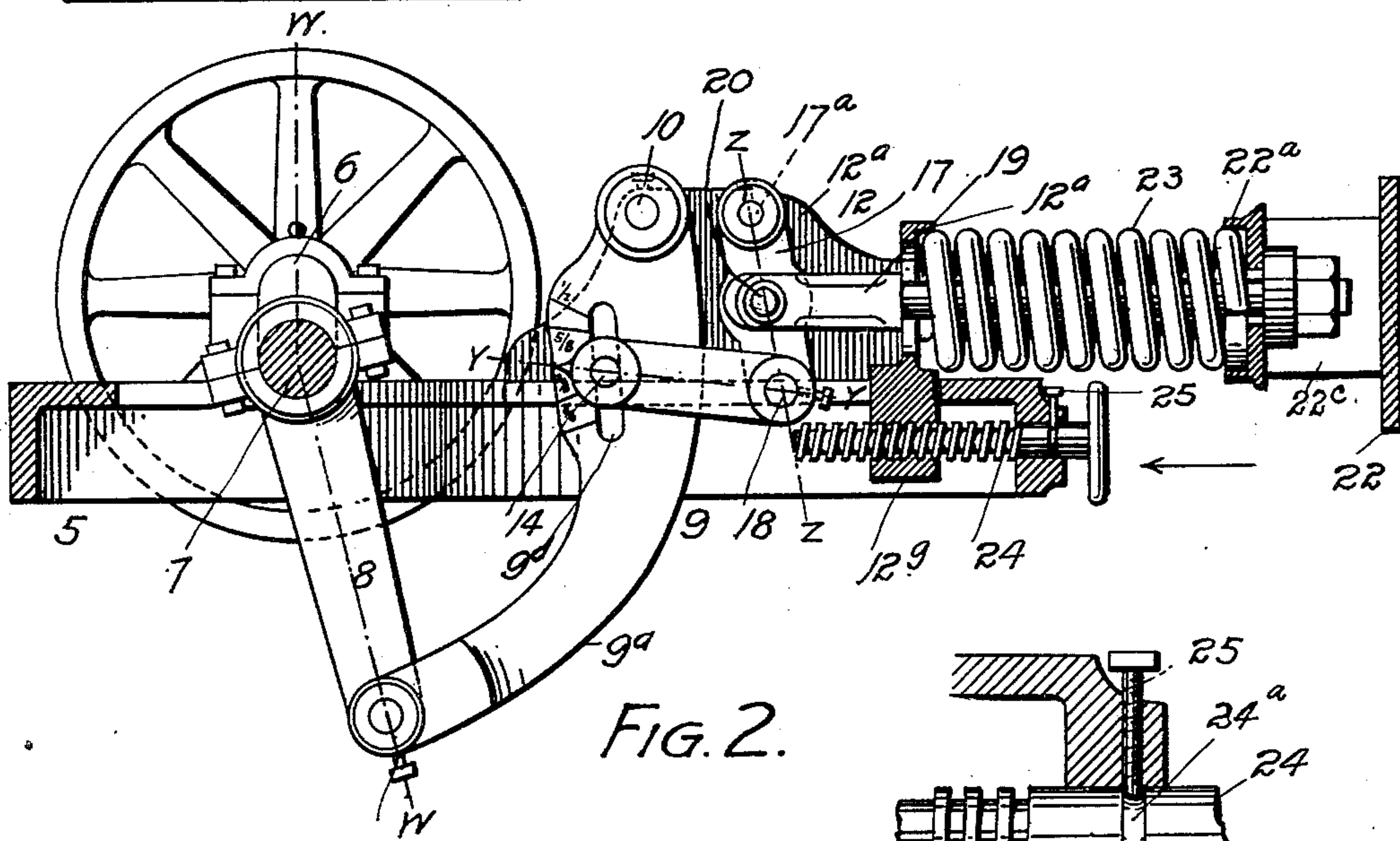


FIG. 2.

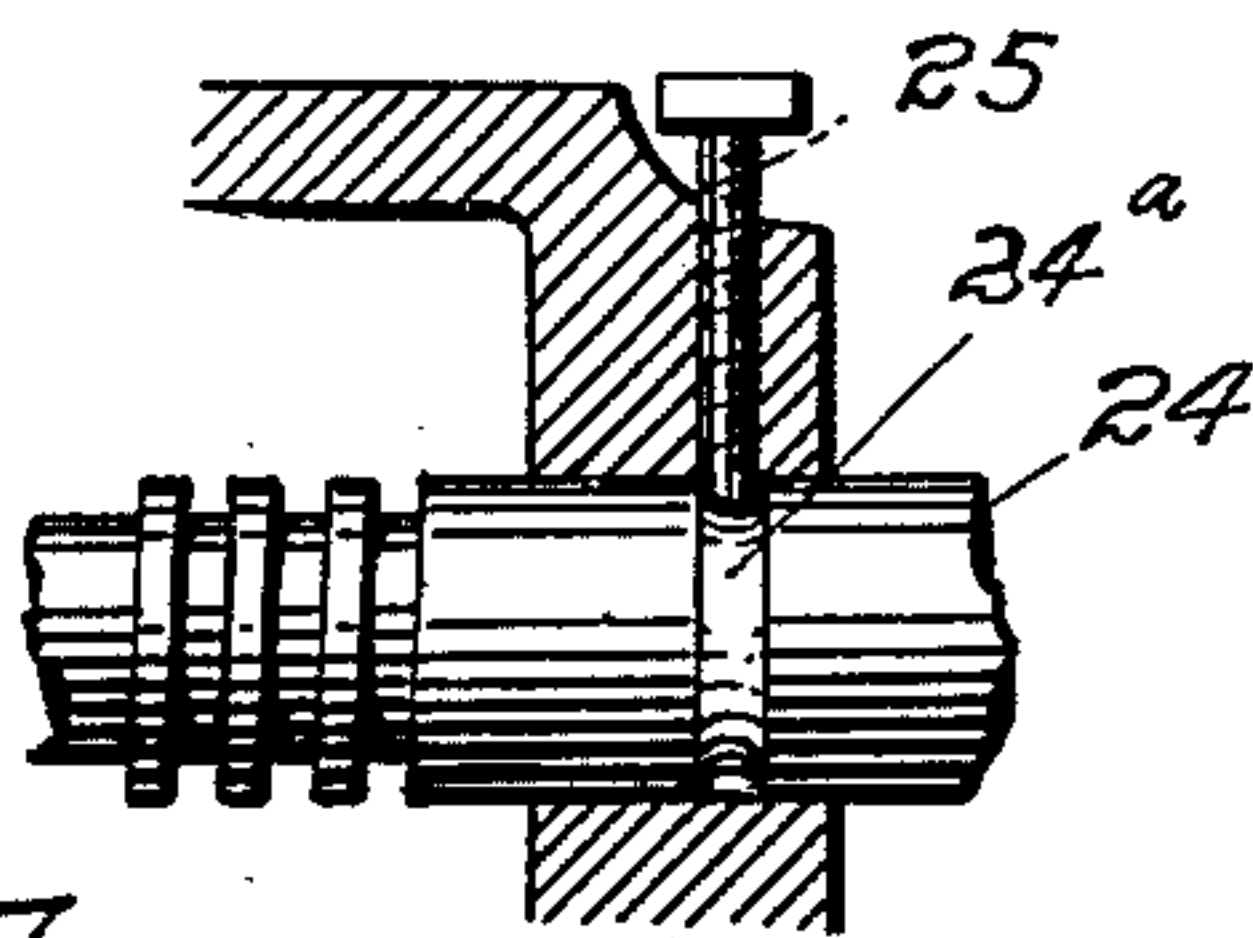


FIG. 7

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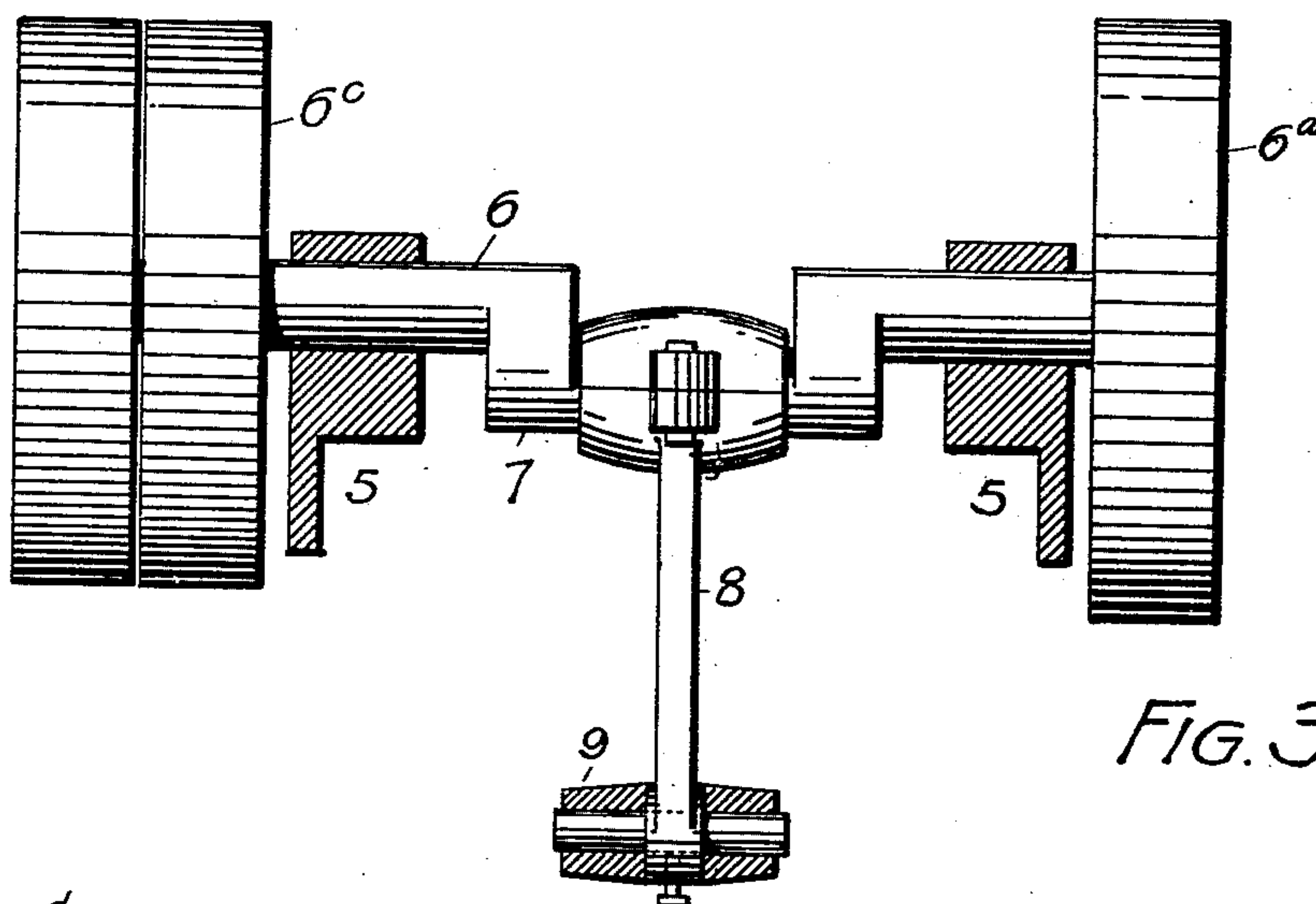


FIG. 3

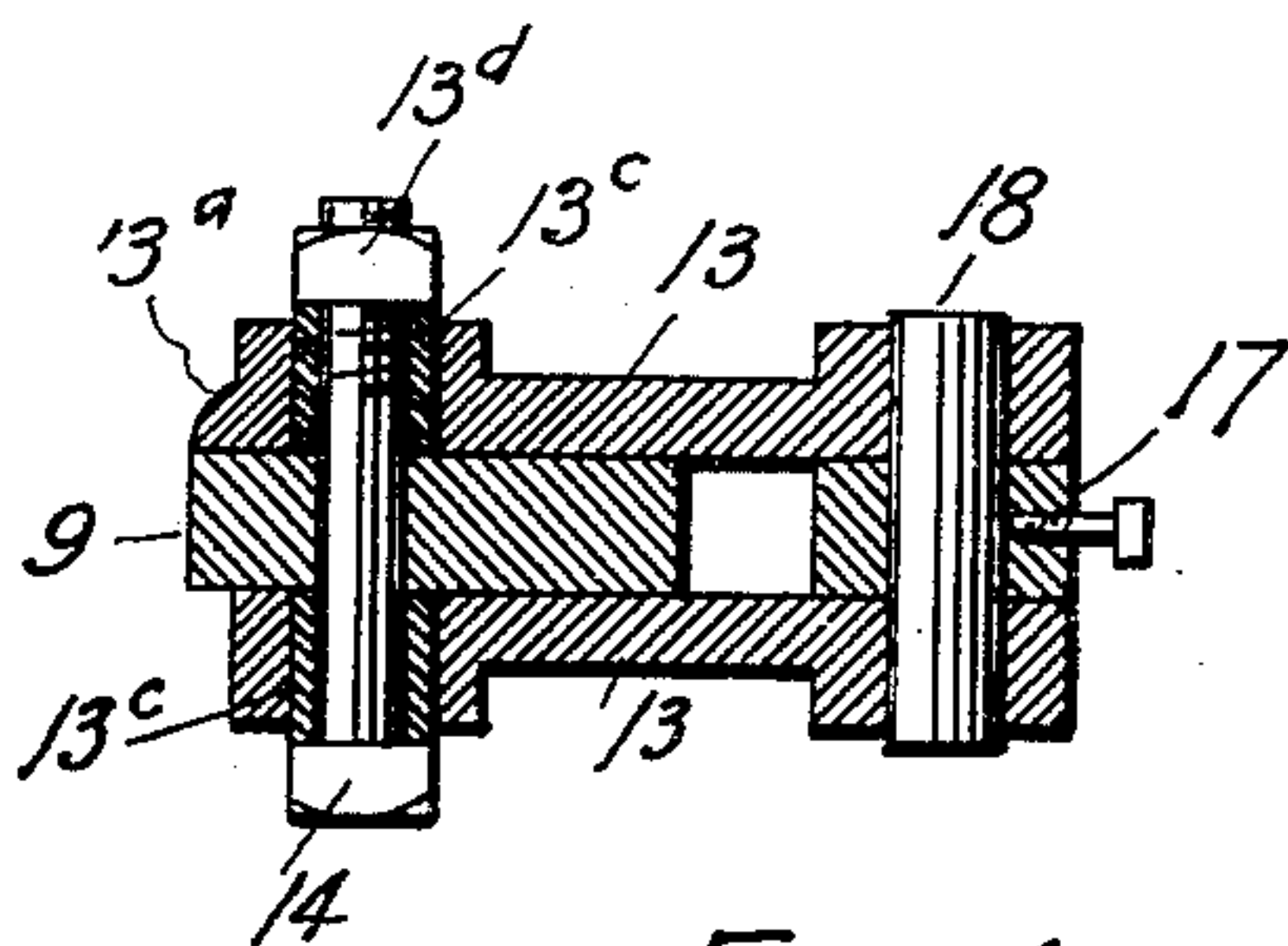


FIG. 4

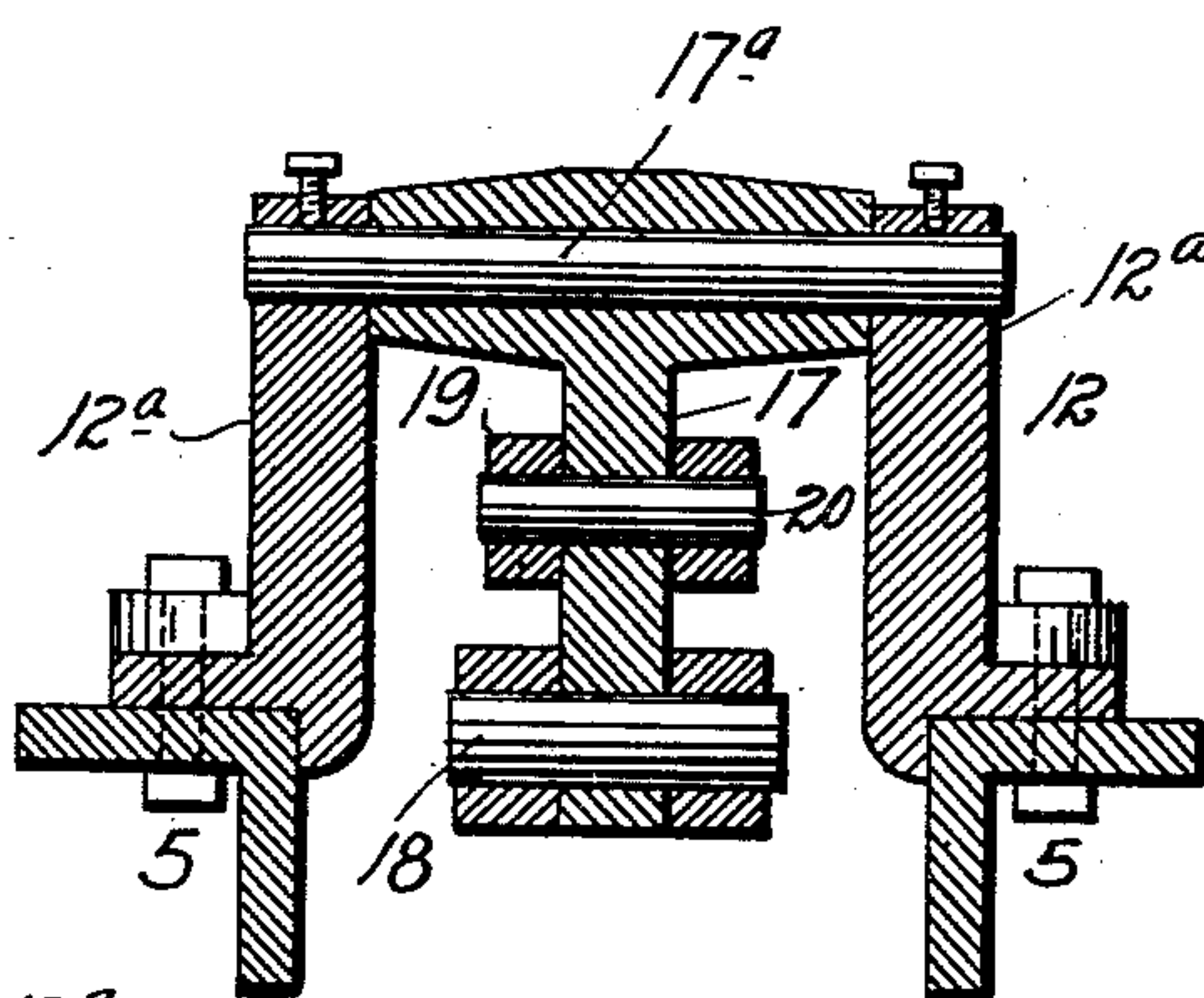


FIG. 5

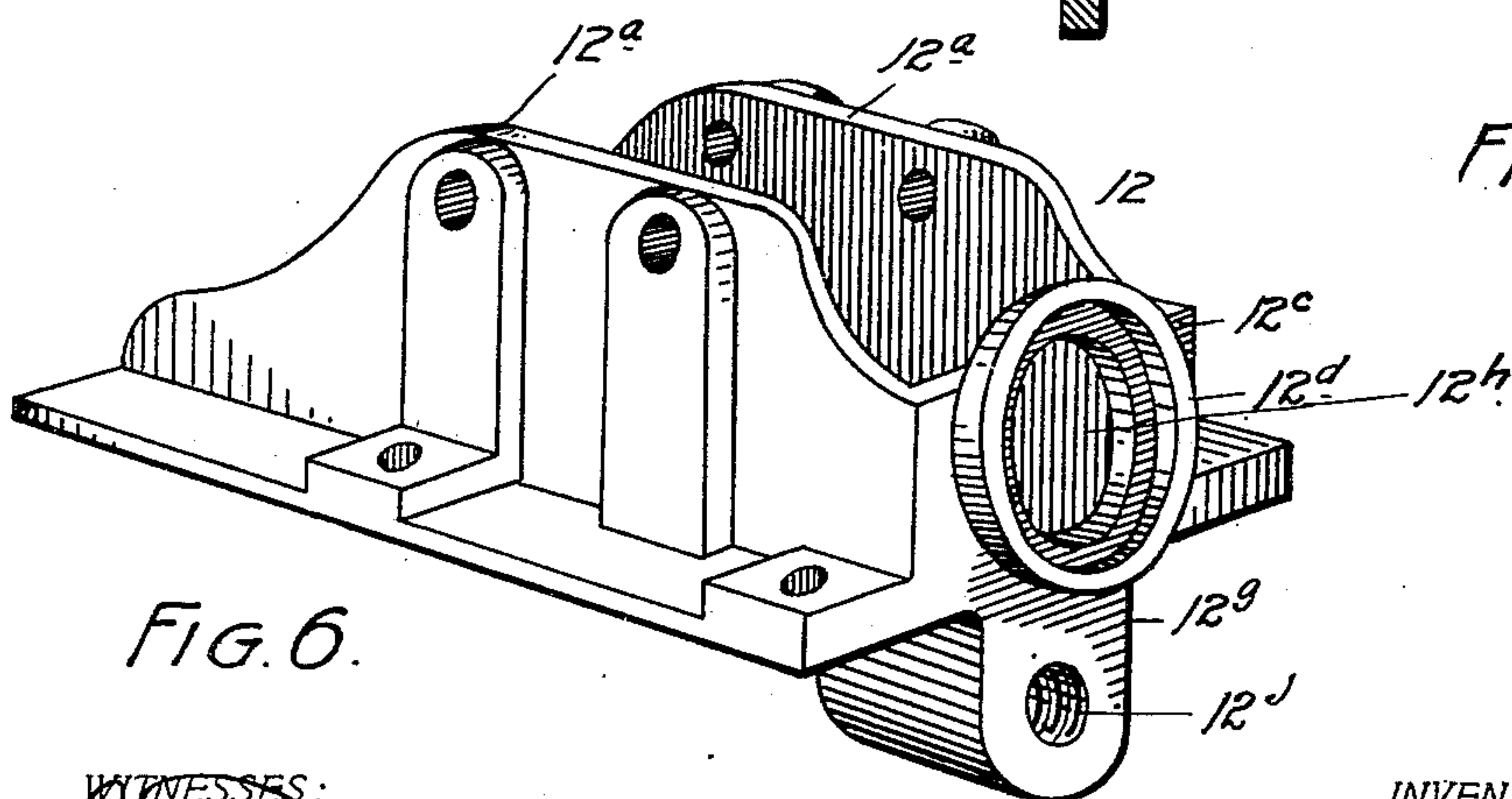


FIG. 6.

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MECHANICAL MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 677,316, dated June 25, 1901.

Application filed October 15, 1900. Serial No. 33,176. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. LEHRRITTER, a citizen of the United States of America, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Mechanical Movements; and I do 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 the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in mechanical movements adapted to produce reciprocating motion.

The invention is specially intended for use in operating concentrating-tables; but it is evident that it may be employed in other relations where a movement of this character is required.

The invention will now be described in detail, reference being made to the accompanying drawings, in which is illustrated an embodiment thereof.

In the drawings, Figure 1 is a top or plan view of my improved mechanism. Fig. 2 is a section taken on the line *xx*, Fig. 1. Fig. 3 is a section taken on the line *ww*, Fig. 2. Fig. 4 is a section taken on the line *yy*, Fig. 2, the parts being shown on a larger scale. Fig. 5 is a section taken on the line *zz*, Fig. 2. Fig. 6 is a perspective detail view of the carriage shown on a larger scale than in Figs. 1 and 2. Fig. 7 is a fragmentary view of the adjusting-screw shown on a larger scale than in Fig. 2.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate a suitable stationary frame, in the rear portion of which is journaled a shaft 6, provided with a crank 7. One extremity of a link 8 is connected with the crank 7, while the other extremity of this link is connected with the lower extremity of a lever 9, whose lower portion, as shown in the drawings, is curved rearwardly, as shown at 9^a, its lower extremity being forked to straddle the extremity of the link. This lever 9 is fulcrumed at its upper extremity, as shown at 10. This fulcrum 10 consists of a

pin whose extremities are supported by the sides 12^a of a U-shaped carriage 12. The upper portion of the lever 9 passes between the sides of the carriage. The upper extremity of the lever is provided with an elongated boss 9^c, forming a bearing through which the fulcrum-pin 10 passes. At a suitable point intermediate its extremities two links 13 are connected with the lever—one on each side—by a bolt 14, which is fitted into openings in the link extremities, and pass through a slot 9^d, formed in the lever. The lever is graduated adjacent this bolt, and by adjusting the bolt the length of the stroke imparted to the table or other apparatus may be regulated. A pointer or indicator 13^a, formed integral with one of the links 13, facilitates accurate adjustment. The two links 13 are provided with enlarged openings, in which are inserted bushings 13^c, which protrude from the openings to engagement with a nut 13^d on one side and the bolt-head on the other, whereby as the nut is tightened the bushings prevent the clamping of the links and at the same time tighten the bolt on the lever, whereby it is securely held in the desired position of adjustment. The stroke imparted by the lever is shorter or longer, according as the bolt is raised or lowered in the slot. The opposite extremities of the links are connected with the lower extremity of a lever 17 by a pin 18. The lever 17 is fulcrumed on the carriage at its upper extremity by a pin 17^a and is connected at a suitable point intermediate its extremities with a draw-bar 19 by a pin 20. The end of the draw-bar is forked to straddle the lever. The opposite extremity of this draw-bar is connected with a shoe 22^c, which is attached to a table 22 or other apparatus to be operated. The draw-bar extremity passes through an opening in the shoe and is connected therewith by two nuts A and B—one on each side. Rubber cushions C and D are interposed between the shoe and the said nuts. The shoe 22 is provided with a circular flange or collar 22^a. The draw-bar also passes through an opening 12^b, formed in the forward extremity of the carriage, this opening being surrounded by a circular flange or collar 12^d. Between the carriage and the shoe and surrounding

the draw-bar a coil-spring 23 is located, its extremities being maintained in place by collars 12^d and 22^a, respectively.

The carriage 12 is movably mounted on the frame 5 and is adjustable by means of a screw 24, which is swiveled in the front extremity of the frame 5 and engages a threaded opening 12^j, formed in a depending lug 12^g, formed on the front extremity of the carriage. The screw 24 is held in place in the frame by means of a set-screw 25, attached to the frame and engaging a circular groove 24^a, formed in the screw 24. It is evident that by turning the screw 24 the carriage may be moved back and forth on the frame. By virtue of this adjustment the character of the stroke imparted to the table 22 may be accurately regulated. By moving the carriage farther back or toward the left (see Figs. 1 and 2) the time of making the backward stroke or the movement of the table in the direction indicated by the arrow in Figs. 1 and 2 is increased, while the time of making the forward stroke is diminished. The result of moving the carriage in the opposite direction is of course the reverse. By virtue of the adjustment of the carriage the character of the reciprocation imparted to the table may be so regulated as to adapt the table to the treatment of various classes of ores. Under ordinary circumstances the table should move forward much more quickly than it moves backward, thus theoretically giving the mineral or concentrates an opportunity to settle during the backward stroke, while the quick forward stroke and sudden stop cause them to travel forwardly on the table a certain distance at each stroke.

The spring 23, while not indispensable, absorbs any concussion or jar that otherwise might be incident to the operation, and thus gives to the mechanism perfect smoothness of action. During the backward movement of the table or its movement toward the left (see Figs. 1 and 2) the spring 23 is compressed, while during its return or forward movement the recoil of the spring has a tendency to actuate the table.

By virtue of the use of the lever 17 it becomes practicable to move the bolt 14 upward or downward in the slot 9^d of the lever 9 without varying the draft plane of the draw-bar. In other words, by using the lever 17 the pull of the draw-bar is uniformly in a horizontal plane, while if the draw-bar were connected directly with the lever 9 the pull would be either upward or downward from a horizontal plane except when the draw-bar was connected at a single point of the slot. Hence the function of the lever 17.

Having thus described my invention, what I claim is—

1. The combination with a suitable frame and crank-shaft, of a lever fulcrumed on the frame, a link connecting the shaft-crank with the lever, a second lever also fulcrumed on the frame, a draw-bar having one extremity

connected with the last-named lever, and the other extremity with the apparatus to be operated, the draw-bar extremities lying substantially in a horizontal plane, and a connection between the levers, to permit adjustment to vary the length of the stroke imparted to the actuated apparatus.

2. In a mechanical movement, the combination with a suitable frame and crank-shaft, of a lever fulcrumed on the frame, a link connecting the shaft-crank with the lever, a second lever also fulcrumed on the frame, a link connecting the two levers, and adjustable to change the stroke, and a draw-bar connected with one of the levers and with the apparatus to be operated, the arrangement being such that the extremities of the draw-bar are maintained in a uniform plane regardless of the stroke-changing adjustment of the mechanism.

3. In a mechanical movement, the combination with a frame and a rotary shaft, of a lever fulcrumed on the frame, a connection between the shaft and the lever whereby the rotation of the shaft oscillates the lever, a second lever fulcrumed on the frame, a link connecting the two levers one of which is slotted to permit the adjustment of the link to change the stroke, and a draw-bar connecting the second lever with the table or other apparatus to be operated.

4. The combination with a frame and a rotary shaft, of a carriage movable on the frame, a lever fulcrumed on the carriage, a connection between the lever and the shaft whereby the rotation of the shaft operates the lever, a connection between the lever and the apparatus to be reciprocated, and means for adjusting the carriage to regulate the character of the stroke imparted by the lever.

5. The combination with a frame and a rotary shaft, of a carriage movable on the frame, a lever fulcrumed on the carriage and operated from the shaft, a draw-bar connected with the apparatus to be reciprocated, a connection between the draw-bar and lever whereby the movement of the lever operates the table, and means for adjusting the carriage to regulate the character of the stroke imparted to the table, so far as the relative time consumed in making the forward and backward movement is concerned.

6. The combination with a frame and an operating-shaft, of a carriage movable on the frame, a lever fulcrumed on the carriage, an operating connection between the shaft and the lever, a draw-bar connected with the apparatus to be reciprocated, a spring interposed between the draw-bar and carriage, a connection between the draw-bar and lever whereby the oscillation of the lever actuates the draw-bar, and means for adjusting the carriage, to regulate the character of the stroke imparted to the draw-bar with reference to the relative time consumed in making the forward and backward movements.

7. The combination with a frame and a ro-

tary shaft, of a carriage adjustable on the frame, a lever fulcrumed on the carriage, a link connected at one extremity to the lever, a connection between the link and the shaft, whereby the rotation of the shaft operates the lever, a second lever fulcrumed on the carriage, a link connection between the two levers, and a draw-bar connected with the second lever.

8. The combination with a frame and a crank-shaft, of a carriage movable on the frame, a lever fulcrumed on the carriage, a link connecting the lever with the shaft-crank, a connection between the lever and the apparatus to be operated, and a screw for adjusting the carriage on the frame, the said screw being swiveled on one part and engaging a threaded opening formed in the other part.

9. The combination with a frame and a

crank-shaft, of a carriage mounted on the frame, a lever fulcrumed on the carriage, a link connecting the shaft-crank with the lever, another lever fulcrumed on the carriage, a link connection between the two levers, a draw-bar connected with one lever, a shoe connected with the table to be operated, one extremity of the draw-bar being connected with the shoe, a spring surrounding draw-bar and interposed between the carriage and shoe, and a screw swiveled on the frame and engaging a threaded opening formed in a depending lug with which the carriage is provided.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN A. LEHRITTER.

Witnesses:

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MARY C. LAMB.