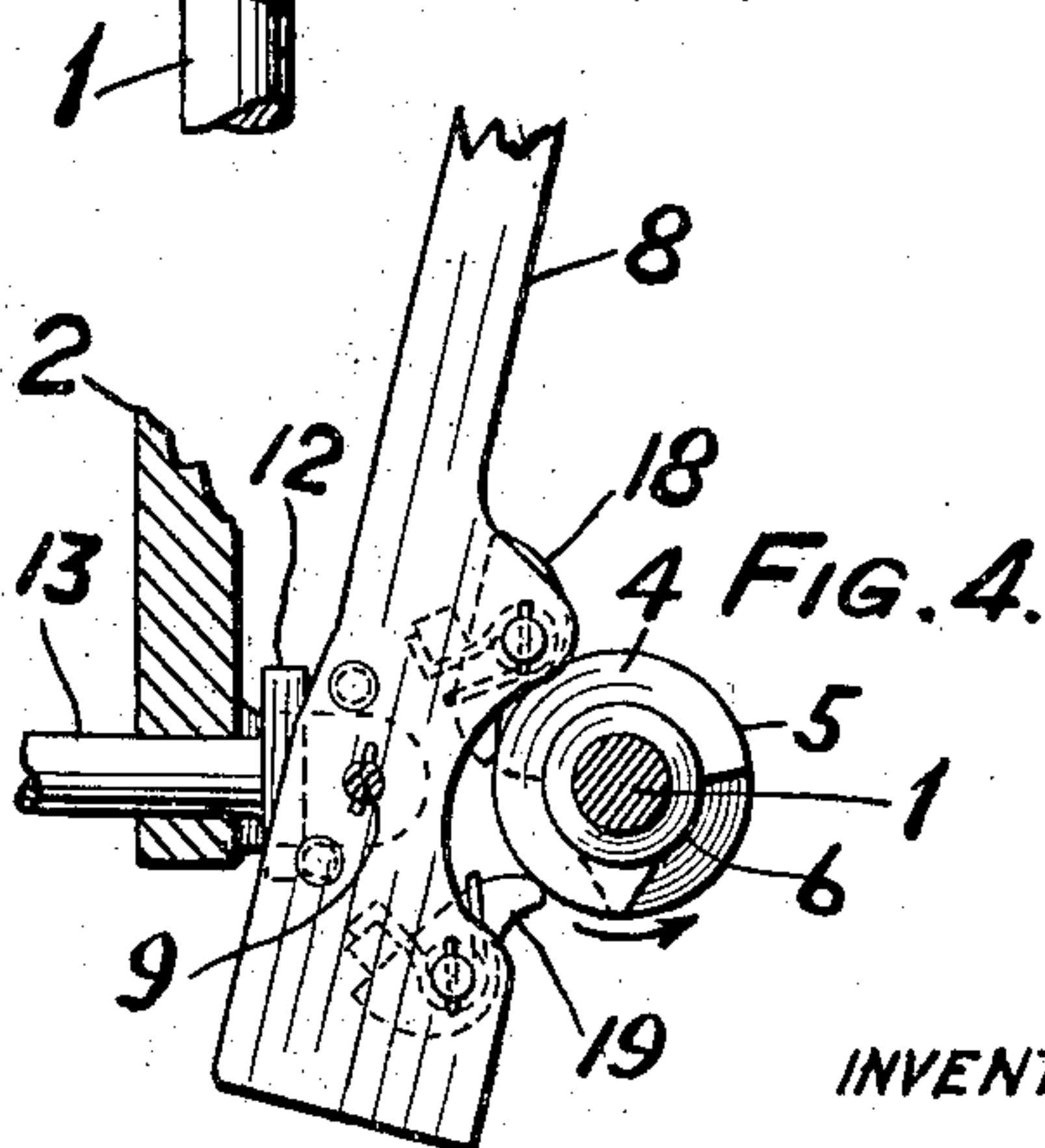
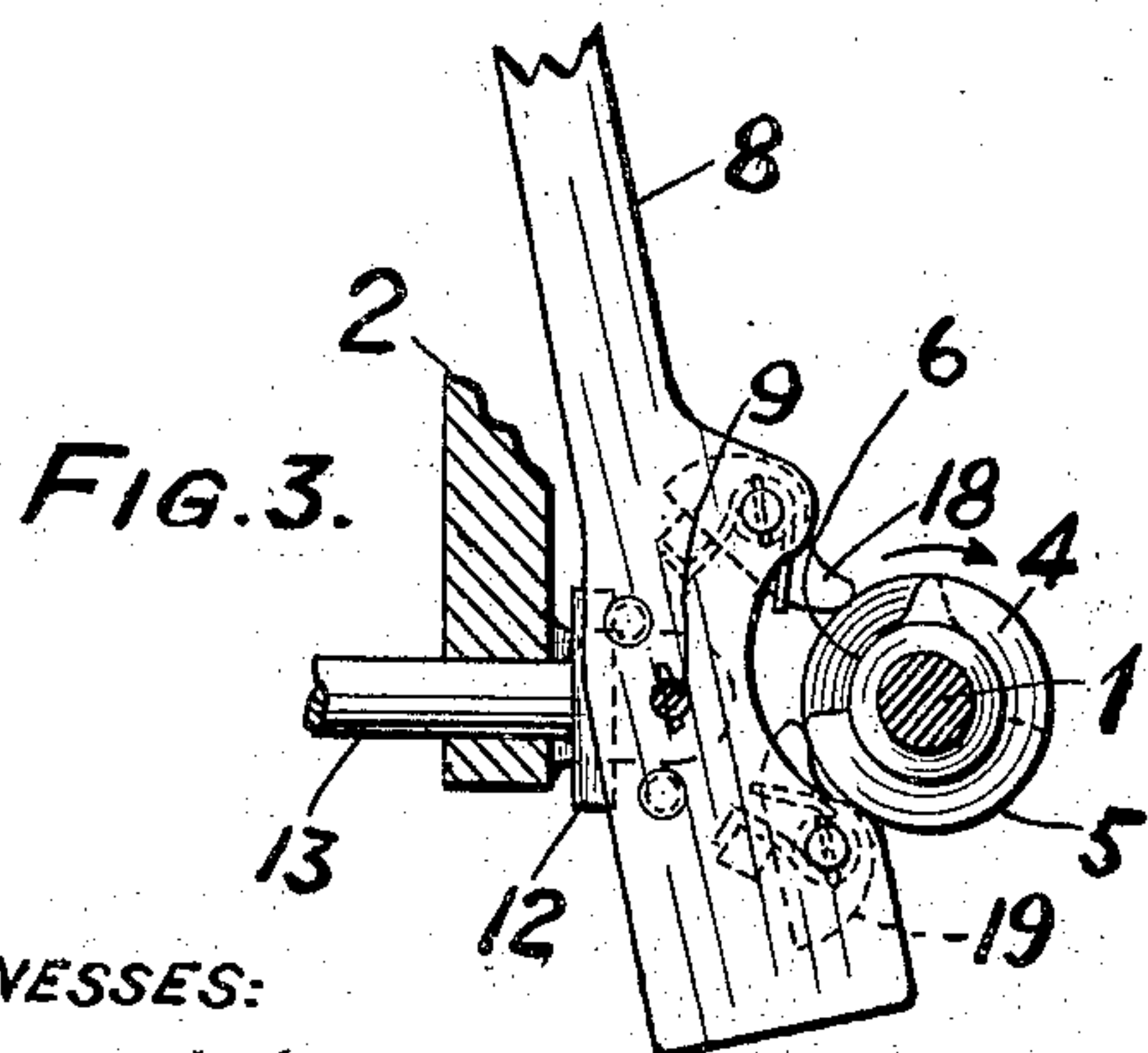
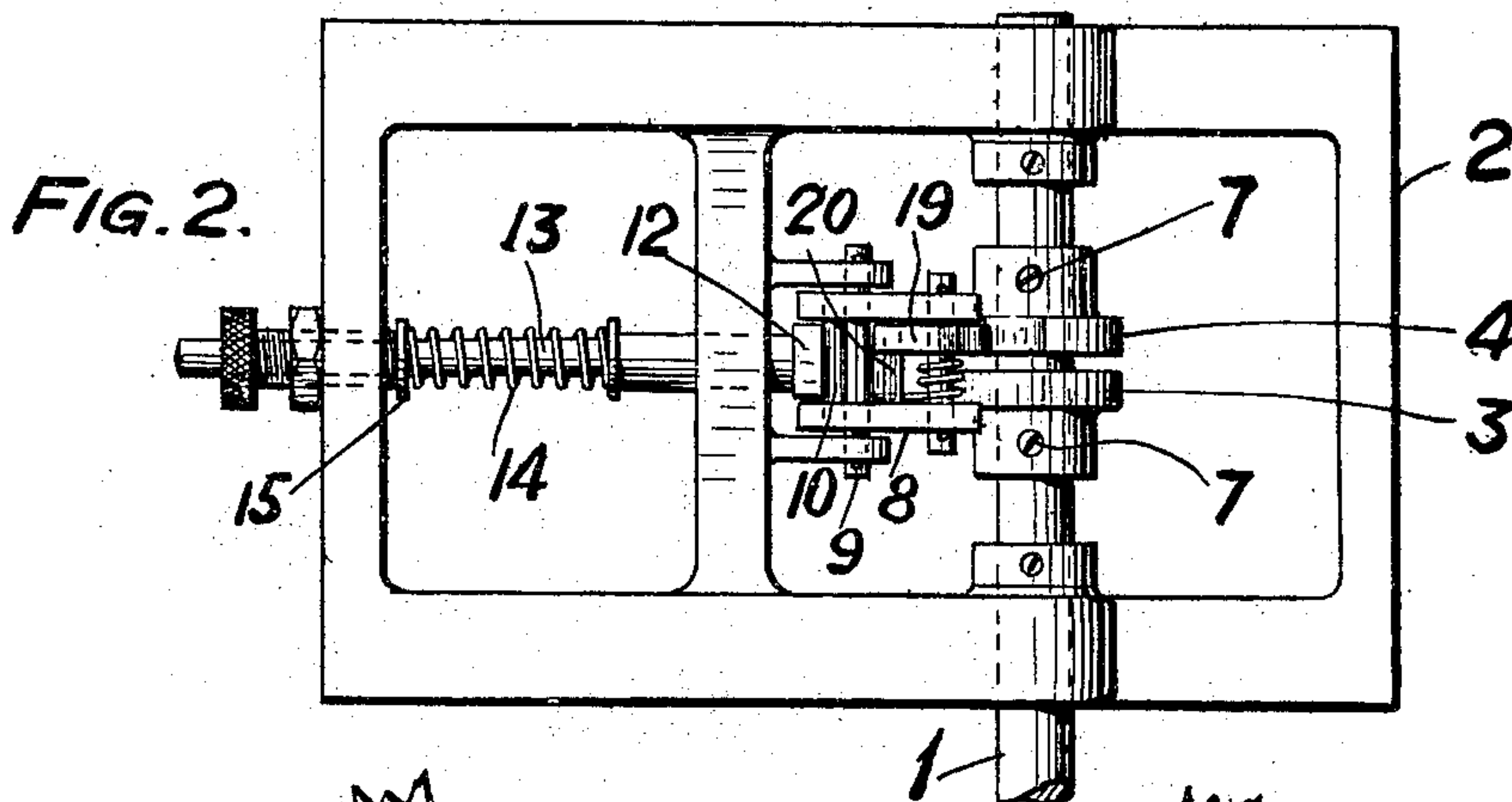
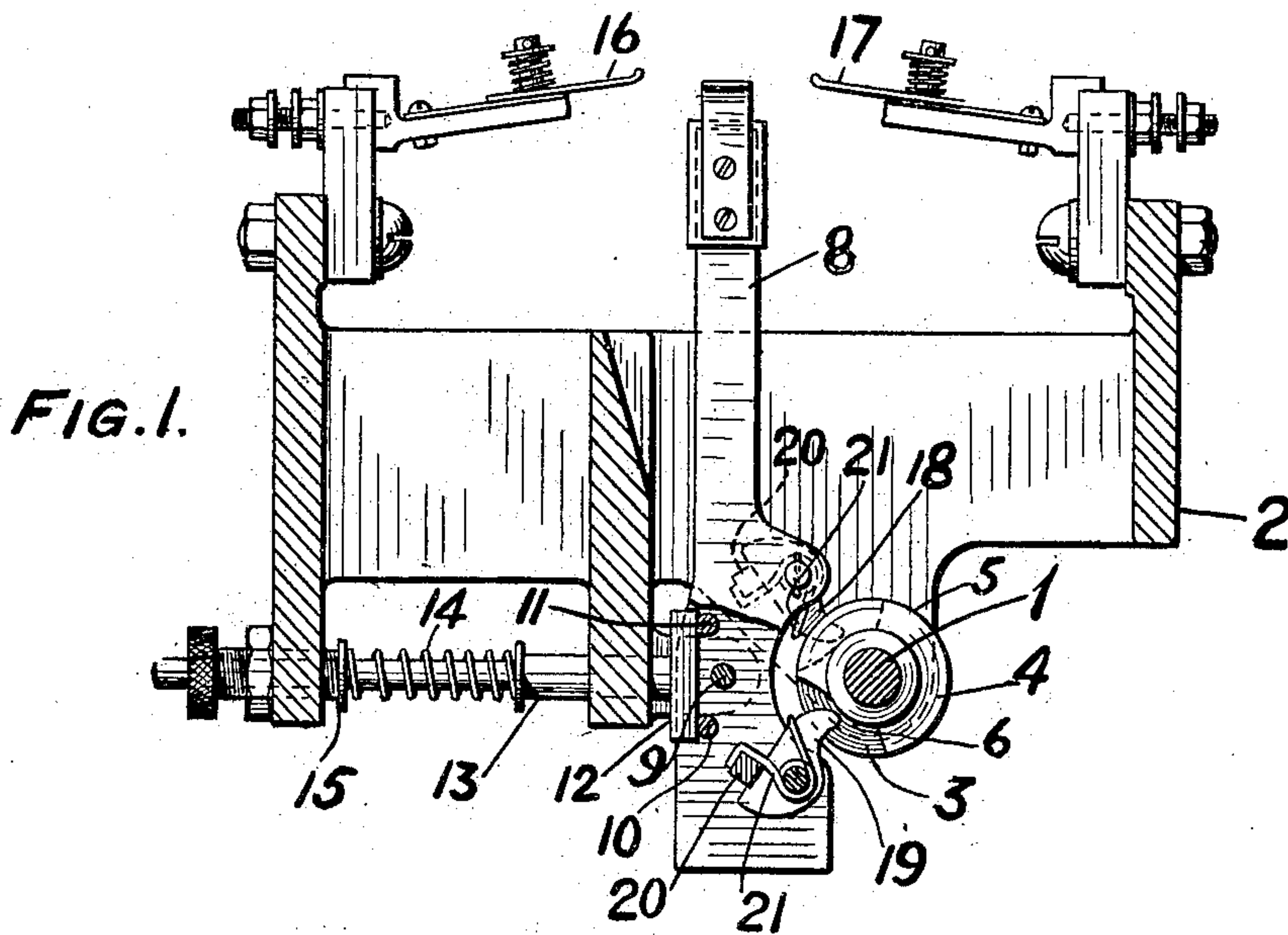


J. W. ACHARD.
MECHANICAL MOVEMENT FOR END CELL SWITCHES.
APPLICATION FILED JUNE 21, 1910.

988,534.

Patented Apr. 4, 1911.



WITNESSES:

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JOHN W. ACHARD, OF PHILADELPHIA, PENNSYLVANIA.

MECHANICAL MOVEMENT FOR END-CELL SWITCHES.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN W. ACHARD, a citizen of the United States, and resident of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Mechanical Movement for End-Cell Switches, of which the following is a specification.

The principal objects of the present invention are to provide an efficient mechanical movement which can be readily timed for operation so as to make electrical contact only when certain other parts of the switch are in position appropriate for this operation, and to provide for the convenient adjustment of the parts of the mechanism so as to change its time of operation.

The invention will be claimed at the end hereof, but will first be described in connection with the particular, but not the only, embodiment of it chosen for illustration in the accompanying drawings, in which—

Figure 1, is a sectional view of so much of such parts of an end cell switch as are necessary for illustrating, in application thereto, the mechanical movement of the invention, showing the parts in normal position. Fig. 2, is a bottom view of the mechanism shown in Fig. 1, with certain of the upper parts removed for the sake of clearness, and Figs. 3 and 4, are detail elevational views showing different positions of the parts.

In the drawings 1 is a shaft which turns first in one direction and then in the other. It is shown as mounted in bearings in the frame 2. This shaft 1 may be the driving screw of an end cell switch, or it may be a shaft controlled by the movement thereof. So far as the present invention is concerned all that need be said is that when the shaft 1 begins to turn in one direction or the other, an electrical contact is to be made and when it has turned a certain amount, the contact is to be broken. Those skilled in the art will understand that the breaking of this electrical contact serves to arrest the brush of the switch on the center of, or at any rate, in proper position with respect to the contact with which it coöperates.

Mounted on the shaft 1 are a pair of cams 3 and 4, each having a high part 5 and a low part 6. These cams being interconnected are rotated in both directions just as is the shaft 1. The cams are shown as independently connected to the shaft 1 as by means of set screws 7 so that the cams can be in-

dependently adjusted or set. This is a matter of considerable advantage, but of course the cams can be permanently connected and then applied to the shaft, if desired.

8, is a normally positioned follower. It is shown to be pivoted at 9 to a portion of the frame 2 or to some other fixed support and it is provided with stops 10 and 11 which coöperate with a buffer 12, mounted on an end-wise movable rod 13 that is pressed by a spring 14 toward the right in the drawings. The purpose of this is to normally position the follower as shown in Fig. 1. The spring 14 abuts upon a collar formed on the rod 13 and upon a sleeve 15, through which the rod works and which is adjustably connected as by means of a screw, thread and nut, to a portion of the frame 2. In this way the tension of the spring can be adjusted. At its upper end the follower coöperates with the contacts 16 and 17, that is to say, its upper end touches one or the other of the contacts according as the cams are turned in one direction or the other and this it does at and for appropriate intervals of time.

18 and 19, are a pair of movable pawls, each operative in one direction, that is to say, there is a stop 20 upon which the tail of the pivoted pawl abuts when the pawl is turned in one direction and from which the tail of the pawl may freely move when the pawl is turned in the other direction.

21, are springs for normally holding the tails of the pawls up against the stops 20.

As shown the pawls are arranged one above and one below the point 9 of pivotal support of the follower and they are arranged in different planes so as to coöperate respectively with the cams. In the particular embodiment of the invention chosen for illustration the lower portion of the follower is forked or bifurcated and the pawls, pivot 9 and parts 10 and 11 are arranged in such forked or bifurcated portion.

In normal position each of the pawls occupies a low part of the cams and the shaft 1 and the cams are at rest. This condition of affairs is shown in Fig. 1. If the shaft 1 and cams are rotated in a clock-wise direction the pawl 18 rides out of the low part of the cam 3 onto the high part thereof and in so doing its tail continues to abut on the stop 20 and thus the follower 8 is swung toward the left into engagement with the contact 16, and the buffer 12 yields for this purpose. The pawl 19 rides inoperatively

upon the high part of the cam 4 and the tail of this pawl 19 is turned clear of its stop 20. This is shown in Fig. 3. If the cams and shaft 1 be turned in a counter-
 5 clockwise direction the pawl 19 is operative and the pawl 18 is inoperative, as shown in Fig. 4, and the follower 8 is swung toward the right into engagement with the contact
 10 17. The mode of operation of the various parts is as described in connection with Fig. 3, except that the parts are reversed.

What I claim is:

1. In a mechanical movement for end cell
 15 switches the combination of a pair of inter-connected cams each having a high and a low part and adapted for rotation in both directions, and a normally positioned piv-
 20 otal follower provided with a pair of pawls each operative in one direction and inopera-
 25 tive in the other direction, said pawls occupying the low parts of the cams when the follower is in normal position and one pawl in operative position engaging a high part
 30 of one cam and the other pawl in inopera-
 25 tive position riding idly over the high part of the other cam, whereby the follower is swung to one side or the other according as the cams are turned in one direction or the other.
2. In a mechanical movement for end cell
 30 switches the combination of a pair of inter-connected separately adjustable cams each having a high and a low part and adapted
 35 for rotation in both directions, and a nor-
 40 mally positioned pivotal follower provided with a pair of movable pawls coöperating respectively with said cams and each opera-
 35 tive in one direction and inoperative in the other direction, substantially as described.
3. In a mechanical movement for end cell

switches the combination of a pair of inter-
 connected cams having high and low parts
 and provided for rotation in both directions,
 a pivotal follower provided with a pair of
 pawls adapted to coöperate with said cams
 45 and each operative in one direction and in-
 operative in the other direction, a spring
 pressed buffer, and a pair of stops on the
 follower with which said buffer coöperates,
 50 substantially as described.

4. In a mechanical movement for end cell
 switches the combination of a pair of inter-
 connected cams having high and low parts
 and provided for rotation in both direc-
 55 tions, a pivotal follower provided with a
 pair of pawls adapted to coöperate with said
 cams and each operative in one direction and
 inoperative in the other direction, a buffer
 and a pair of stops on the follower with
 which said buffer coöperates, a spring for
 60 pressing the buffer, and means for adjusting
 the tension of the spring.

5. In a mechanical movement for end cell
 switches the combination of a pair of inter-
 connected cams having high and low parts
 65 and adapted for rotation in both directions,
 a pair of contacts spaced apart, a normally
 positioned follower adapted to swing into
 contact with each of said contacts and pro-
 70 vided with a pair of pawls coöperating re-
 spectively with said cams and each opera-
 tive in one direction and inoperative in the
 other direction, substantially as described.

In testimony whereof I have hereunto
 signed my name.

JOHN W. ACHARD.

Witnesses:

J. LESTER WOODLUDGE,
 T. L. HAMMERSLEY.