

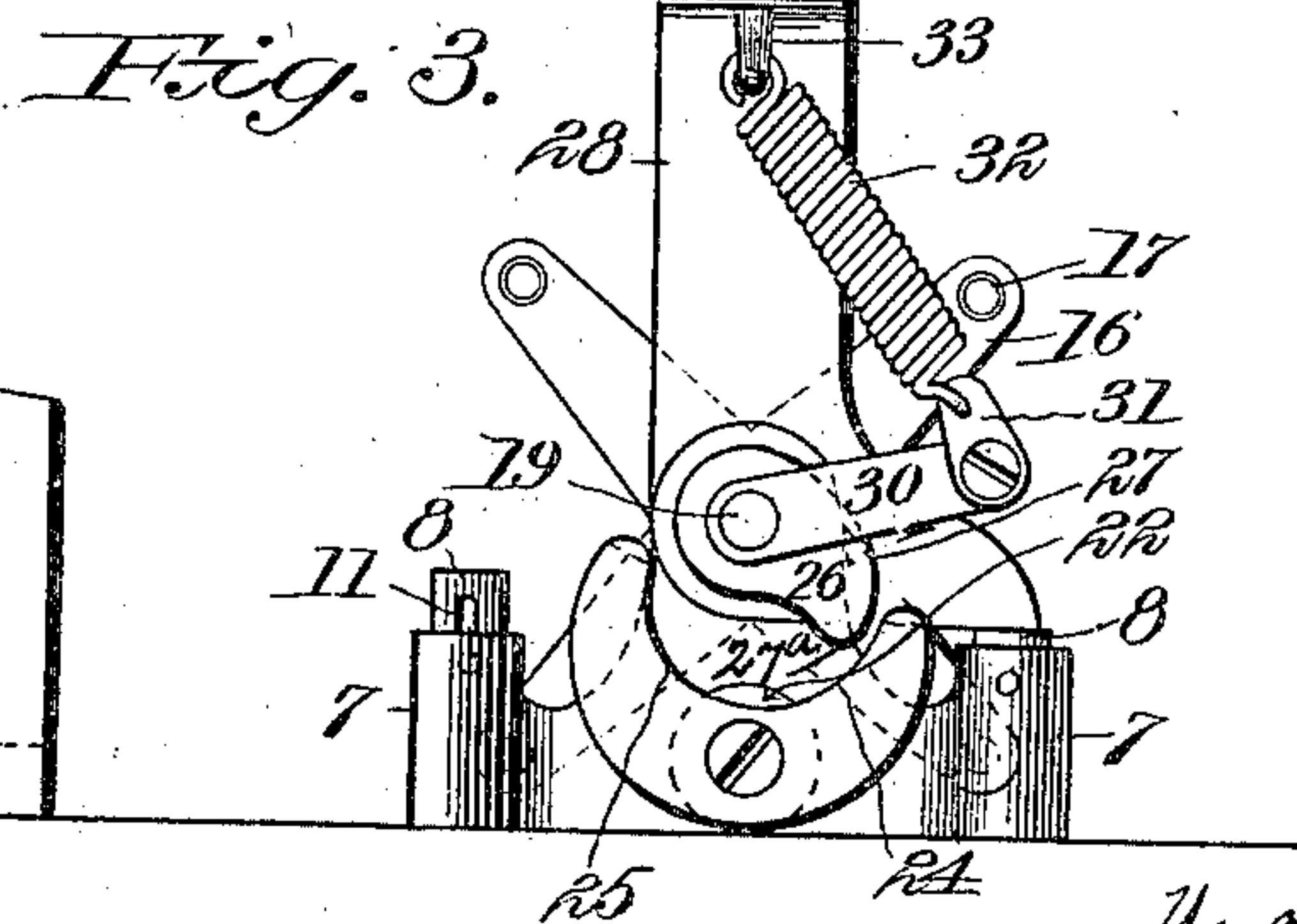
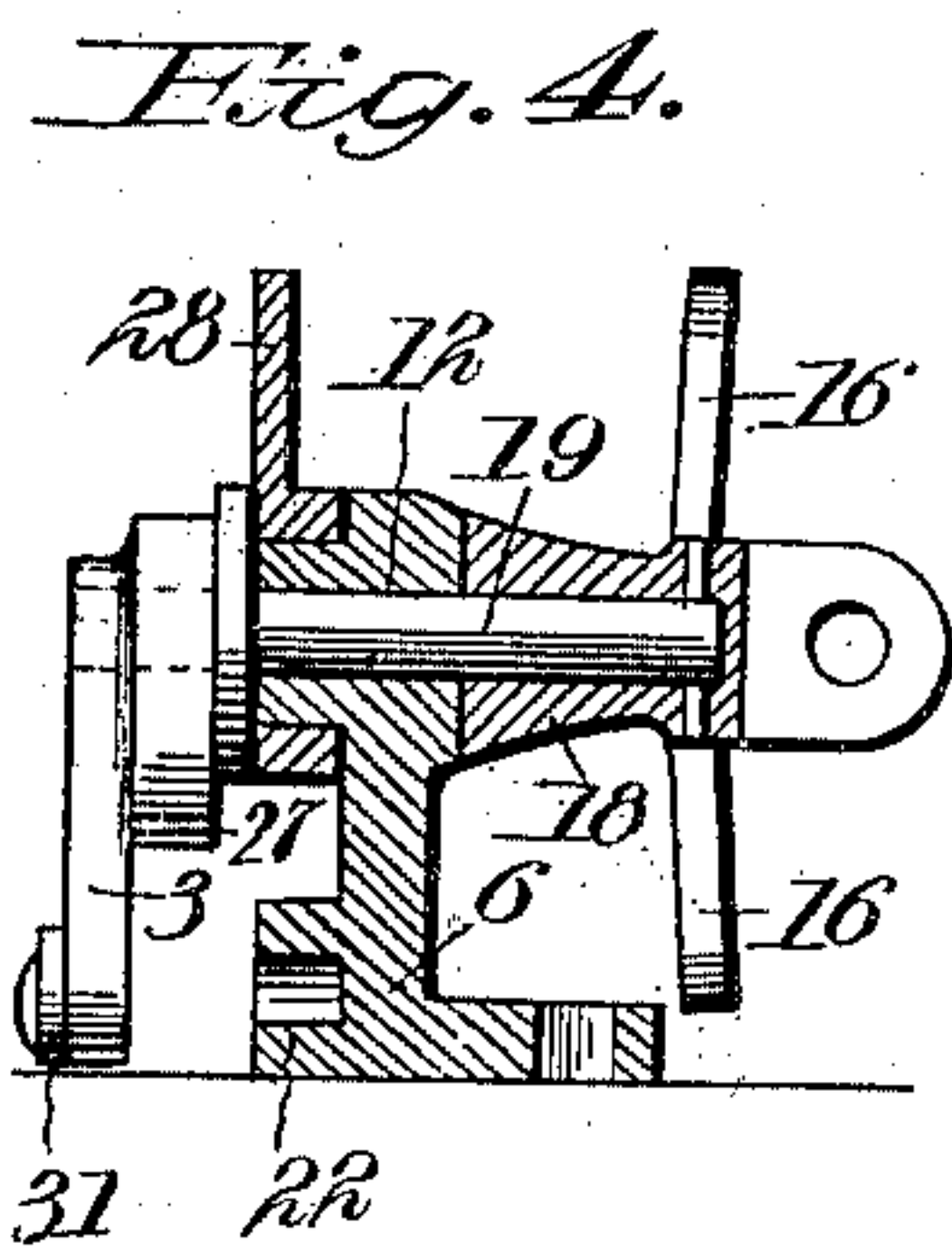
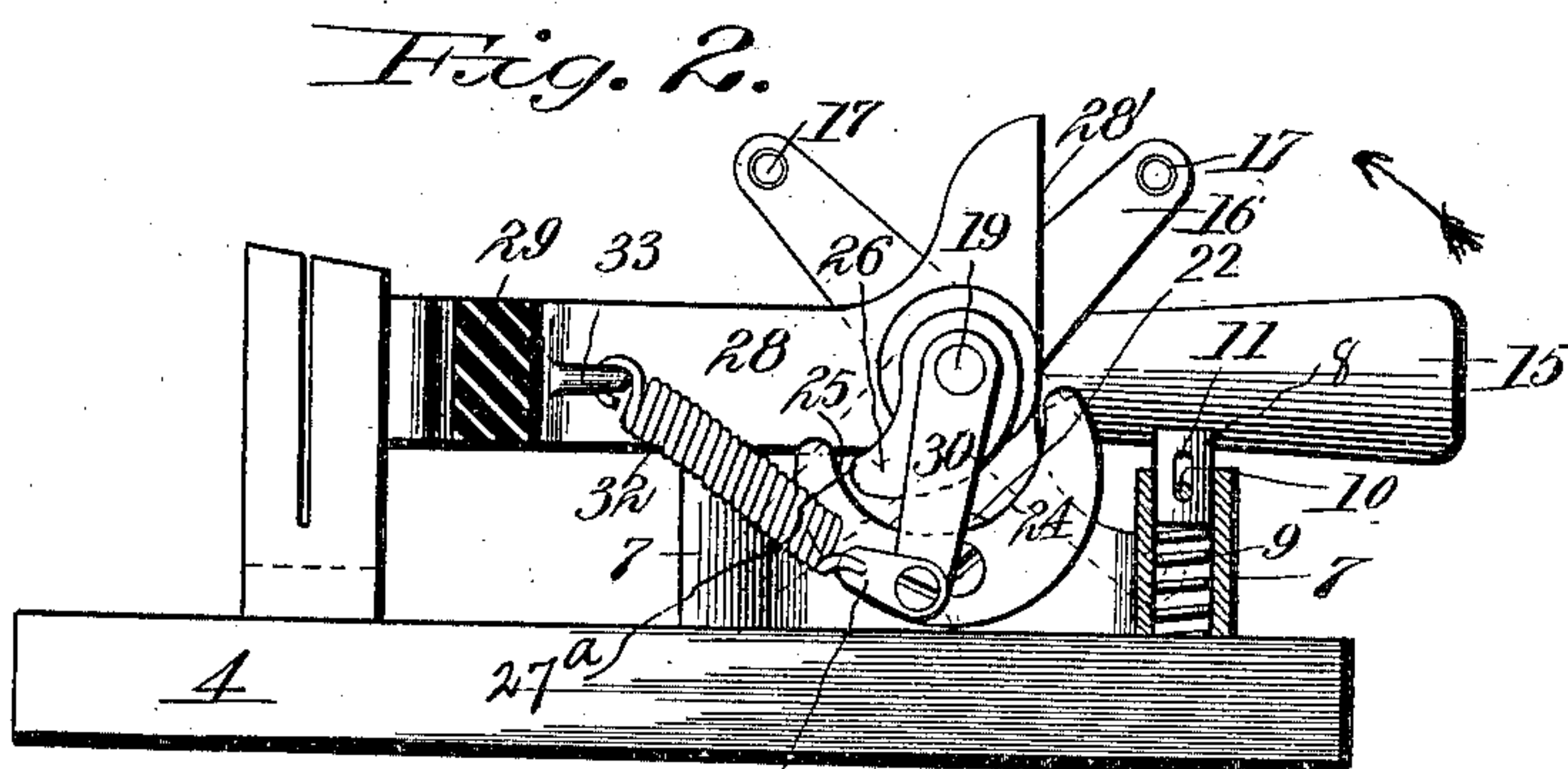
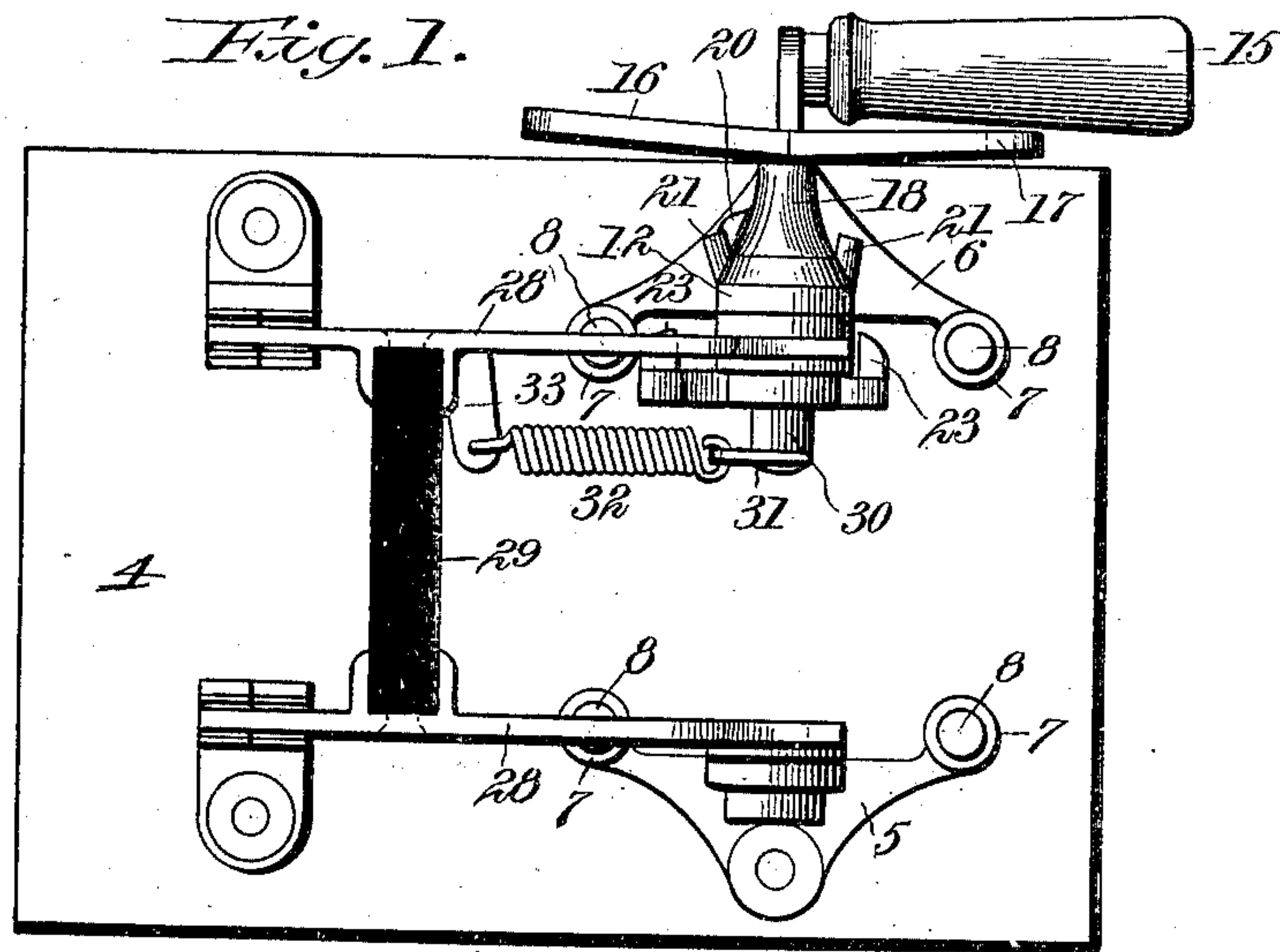
No. 741,268.

PATENTED OCT. 13, 1903.

W. C. O'BRIEN.
QUICK ACTION MAKE AND BREAK SWITCH.

APPLICATION FILED MAY 14, 1902.

NO MODEL.



Inventor

Witnesses

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WILLIAM C. O'BRIEN, OF BALTIMORE, MARYLAND.

QUICK-ACTION MAKE-AND-BREAK SWITCH.

SPECIFICATION forming part of Letters Patent No. 741,268, dated October 13, 1903.

Application filed May 14, 1902. Serial No. 107,364. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. O'BRIEN, a citizen of the United States of America, residing at Baltimore city, State of Maryland, have
5 invented certain new and useful Improvements in Quick-Action Make-and-Break Switches, of which the following is a specification.

This invention relates to quick-acting make-
10 or-break knife-switches for controlling either high or low voltage, to be used either for one, two, three wires or more either alternating or direct currents. The circuit is opened or closed by a spring crossing the center in
15 either direction acting on the contact-blades, the same spring being reinforced by a mechanical lever, thus making positive the moving in either direction for opening or closing the circuit.

20 The object of the invention is to produce novel means whereby a certain resistance is encountered by the blade-lifting mechanism until a considerable power is applied, when by reason of a sudden yielding of the resist-
25 ance the power exerted in overcoming the resistance is transferred to the blade-lifting lever and the blade is thrown from its contact with a quick positive movement.

Furthermore, the object of the invention is
30 to produce a novel arrangement of parts whereby a spring coacts with the operator in actuating the mechanism for moving the blade when the resistance is overcome.

Furthermore, the object of the invention is
35 to produce novel means whereby the blade is swung into engagement with the spring-jaws of the terminal with the same quick action as characterized its disengagement.

Furthermore, the object of the invention is
40 to produce a cut-out of the same type in which the power applied by the operator is positively communicated to the blade-actuating mechanism, this being a great advantage over cut-outs in which a spring alone is relied on to
45 actuate the parts.

Furthermore, the object of the invention is to produce a cut-out which will possess advantages in points of efficiency and durability, proving at the same time simple in con-

struction and comparatively inexpensive to 50 produce.

With the foregoing and other objects in view the invention consists in the details of construction and in the arrangement and combination of parts to be hereinafter more 55 fully set forth and claimed.

In describing the invention in detail reference will be had to the accompanying drawings, forming part of this specification, where-
in like characters denote corresponding parts 60 in the several views, and in which—

Figure 1 is a plan view of a cut-out embodying the invention. Fig. 2 is a sectional view in elevation, partly in section. Fig. 3 is a similar view with parts in a different posi- 65 tion. Fig. 4 is a sectional view through one of the brackets.

In the drawings, 4 indicates an insulation-base, on which are bolted the brackets 5 and 6, each of which have hollow posts 7 for the 70 reception of a buffer 8. A spring 9 forms a cushion for said buffer, and a pin 10, through a slot 11 in the buffer and through holes in the posts, serves to prevent the displacement of the buffer. The buffers serve to absorb 75 the shock incident to the rapid movement and sudden arrest of the blades, to be hereinafter described. The bracket 6 has on its upper end a bearing 12, in which a shaft 19
80 is rotatable, said shaft being provided with the arm 26, which has cam edges. An operating-handle 15 and cross-arms 16 are secured to the shaft 19, the said cross-arms having eyes 17 for the attachment of an operating connection. The object of the cross-arms is 85 to permit the shaft to be turned regardless of the location of the cut-out, which may be stationed on a wall or ceiling, and by means of connections the cross-arms may be moved. A
90 hub-like extension 18 is formed with the cross-arms and has an aperture to receive the shaft 19, said extension having a lug 20, which contacts with the lugs 21 of the bearing to limit the movement of the shaft in each direction.

An approximately U-shaped lever is piv- 95 oted on a boss 22 of the bracket 6, said lever having lugs 23 extending from its side at each end. The inner surface of the lever

has differential curvature, the curve of the end of the lever shown at 24 being sharper than the curve shown at 25 on the opposite end of said lever. An arm 26 has a cam-surface 27, which corresponds in contour to the curve 24, and when the cam-surface 27 of the arm engages the lever at the curve 24 a slight movement toward that end of the lever on which it rests results in the elevation of the opposite end of the lever. The nose 27^a of the arm is designed to contact with the lever on the opposite side of the pivot of the lever and serves to rock said lever in the opposite direction.

A knife-blade 28 is pivoted on each bracket, and the blades are connected by the insulator 29, so that both blades travel together. Of course it will be understood that this invention can be used with a single blade when desired. The blade has a base 28', the lower edge of which stands at right angles to the edges of the blades. When the blade is in position to close a circuit through the switch and the circuit is to be cut out, shaft 19 is partially rotated in the direction shown by the arrow, Fig. 2, which results in depressing the front end of the U-shaped lever and elevating its rear end. As the rear end is elevated its lug 23 engages the blade and throws it out of the contact-jaws. In accomplishing this result the arm 30 is being moved against the tension of the spring 32, and the tendency of the spring is to retain the blade in contact with the jaw, for the reason that the line of force exerted by the spring is toward the base. The line of force of the spring remains toward the base until the pivot of the link 31 passes the plane of the shaft 19 and lug 33, after which the line of force of the spring is away from the base.

An arm 30 on the shaft 19 has a link 31 pivotally connected to its end, and a spring 32 connects the link and a lug 33 of the arm 28.

The parts are in such relation that the cam-surface of the arm 26 engages the lever a short distance to one side of its pivot, so that the leverage is inconsiderable and the lever is not perceptibly tilted. The engagement of the arm and lever without movement of the lever continues during the time the spring is being extended, and as the power expended in overcoming the tension of the spring is considerable said power, together with the pull exerted by the spring after the pivot of the link has passed the plane of the shaft and lug, as stated, results in an instantaneous upward swing of the blade and the breaking of the circuit. A reverse movement of the parts just described results in the lug 23 engaging the edge of the base and swinging the blade into the jaws of the terminal.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a cut-out or switch, a shaft suitably

supported, an arm thereon having cam edges, a lever with which the arm coacts, a blade moved by the lever, a spring connected to the blade, and a second arm carried by the shaft to which the spring is connected substantially as described.

2. In an electric cut-out or switch, an arm having cam edges, a shaft carrying the arm, an approximately U-shaped lever rocked by the arm, a blade suitably pivoted and swung by the lever, a second arm carried by the shaft, and a spring connected with the blade and the last-named arm substantially as described.

3. In an electric cut-out or switch, an arm having cam edges, a shaft carrying the arm, an approximately U-shaped lever having differentially-curved surfaces on each side its pivot, with which the arm coacts, a second arm carried by the shaft, a blade swung by the lever, a spring connected with the blade and with the last-named arm substantially as described.

4. In an electric cut-out, an arm having cam edges, a shaft on which the arm is carried, an approximately U-shaped lever suitably pivoted and rocked by the arm, a blade engaged by the lever, a second arm on the shaft, a spring connected with the blade and second arm, said parts being so arranged that the spring and lever coact to make and break the contact of the switch-blades, as and for the purpose described.

5. In a cut-out, a base, brackets thereon, blades pivoted on the brackets, a shaft rotatable in a bearing of one of the brackets, cross-arms connected to the shaft at one end, an arm with cam edges, on the inner end of the shaft, an approximately U-shaped lever rocked by the arm with the cam edges, lugs on the end of the lever for engaging one of the blades, a second arm on the inner end of the shaft and a spring connected with the blade and last-named arm as and for the purpose described.

6. In a cut-out, a base, brackets thereon, blades pivoted to the brackets, a shaft rotatable in a bearing of one of the brackets, lugs for limiting the rotation of the shaft, means for rotating the shaft, an arm with cam edges, on the inner end of the shaft, an approximately U-shaped lever engaged and rocked by the arm, a second arm on the inner end of the shaft, a spring connected with the end of the second arm, and with the blade, means for causing a resistance to the movement of the cam-edged arm on the lever and means, whereby the resistance is abruptly overcome and the power exerted to accomplish the result is applied to actuate the blades as and for the purpose described.

7. In a cut-out or switch, suitable terminals, a cut-out or switch blade, a lever for actuating the blade, an arm for operating the lever, means for oscillating the arm, a spring connection between the blade and arm-oscillat-

ing means as and for the purpose described.

5 8. In an electric cut-out, an arm having cam edges, a shaft on which the arm is carried, an approximately U-shaped lever suitably pivoted and rocked by the arm, a blade engaged and moved by the lever, as and for the purpose described.

In testimony whereof I affix my signature, in the presence of two witnesses, this 9th day of May, 1902.

WILLIAM C. O'BRIEN.

Witnesses:

THOS. C. BAILEY,
JOHN J. CARROLL.