

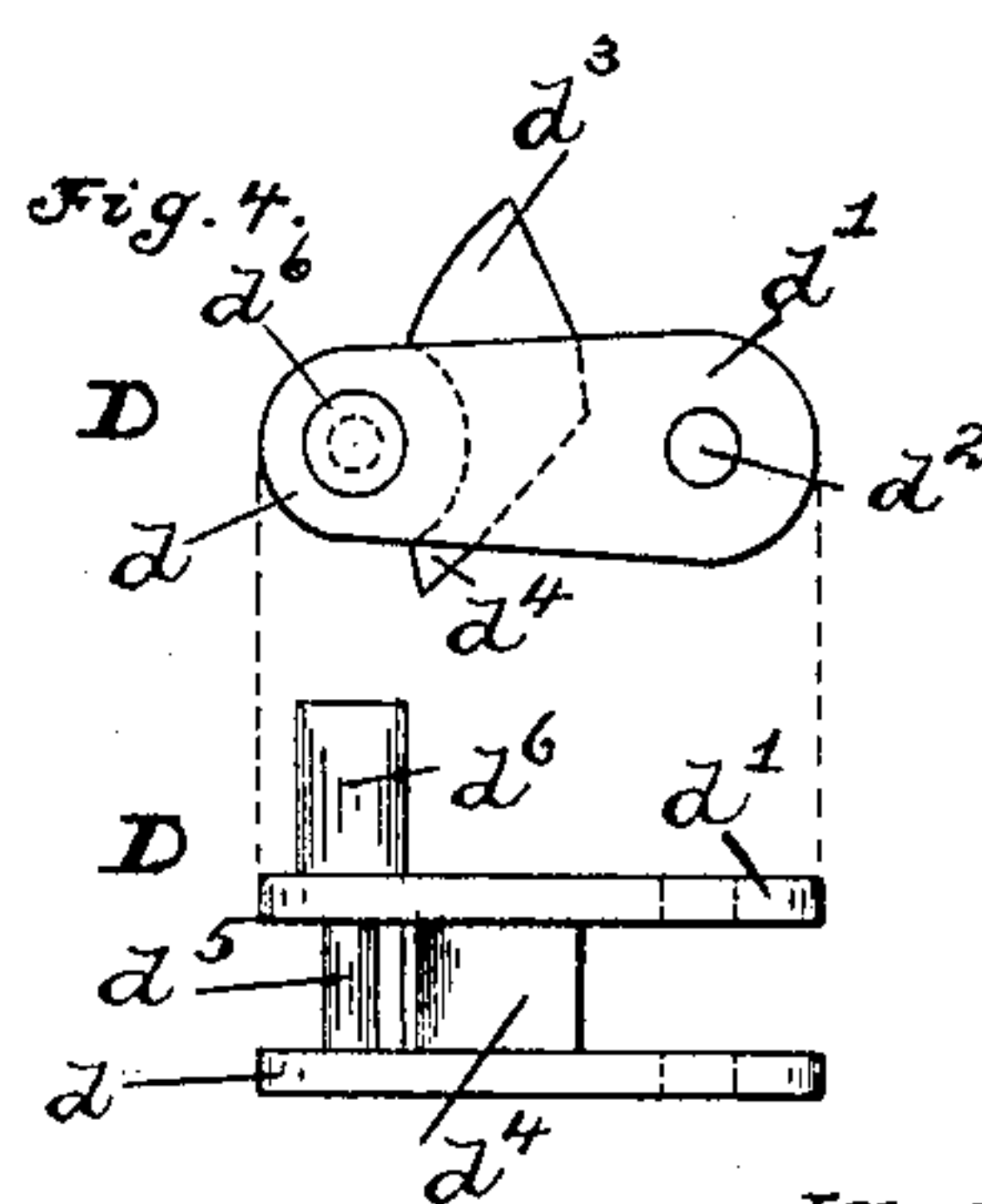
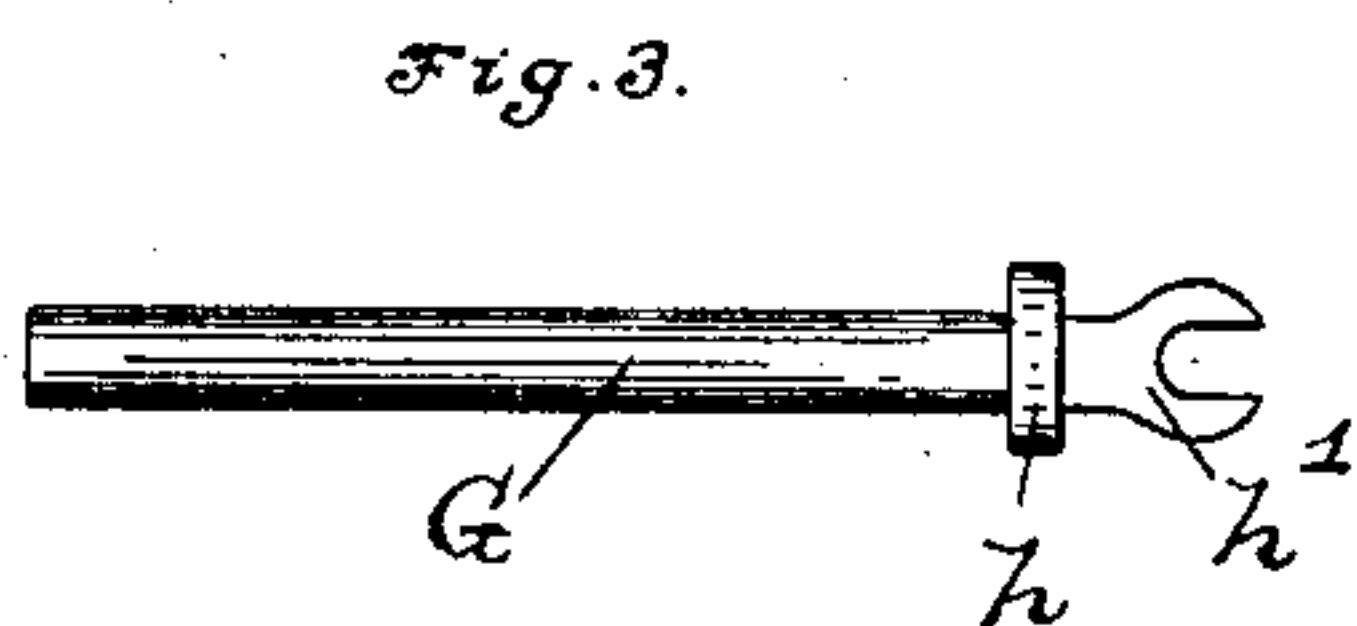
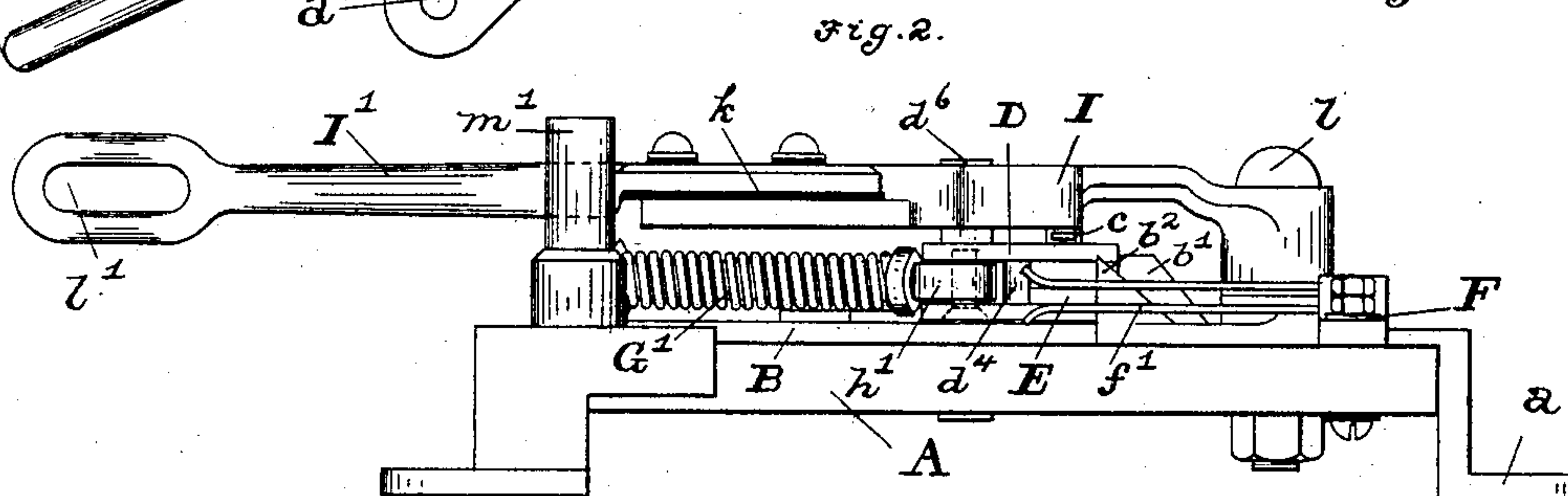
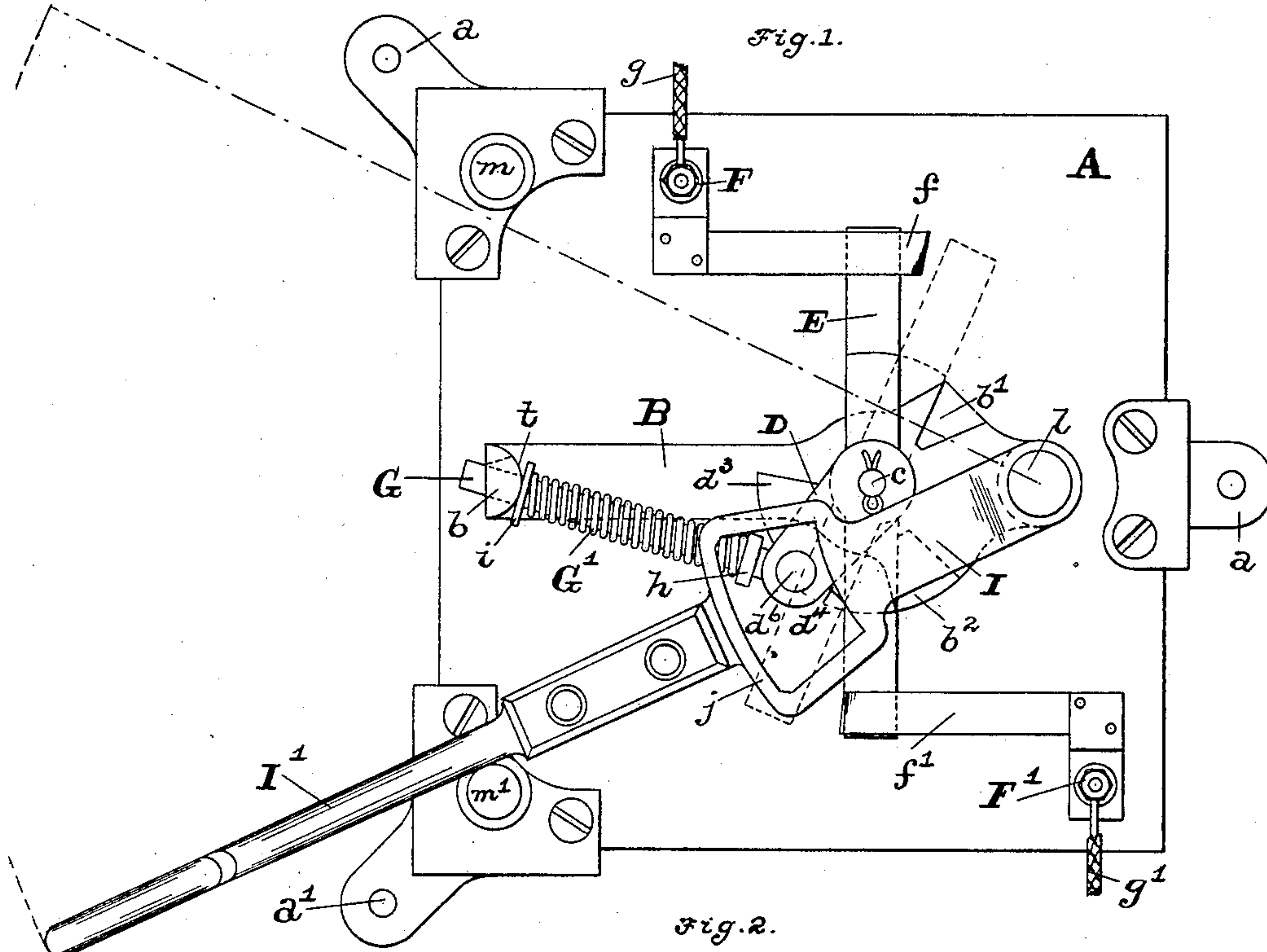
No. 659,946.

Patented Oct. 16, 1900.

G. H. WHITTINGHAM.
ELECTRIC SWITCH.

(Application filed Feb. 5, 1900.)

(No Model.)



Witnesses:—

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UNITED STATES PATENT OFFICE.

GEORGE H. WHITTINGHAM, OF BALTIMORE, MARYLAND.

ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 659,946, dated October 16, 1900.

Application filed February 5, 1900. Serial No. 3,961. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. WHITTINGHAM, a citizen of the United States, residing at Baltimore, in the State of Maryland, have
5 invented certain new and useful Improvements in Electric Switches, of which the following is a specification.

My invention relates to improvements in quick-acting electric switches that can be operated either manually or automatically and make an instantaneous electrical connection and break it in like manner.

One object of my device is to provide a switch that will when actuated by a float in
15 a tank supply current to a motor for operating the pumping mechanism when the water in the tank becomes low and also cut off the current when the tank has been filled.

Referring to the drawings, Figure 1 is a front elevation of the switch. Fig. 2 is a bottom end view of the same. Fig. 3 is a separate view of the spring-pressed bar of the switch. Fig. 4 shows two views of the oscillatory tappet.

25 In the drawings, A designates a base-plate made of fiber, slate, or other suitable non-conducting material and is provided with feet *a*, having screw-holes *a'* to secure the switch in position against a wall or partition. Secured on the plate A by suitable means is a stationary metal plate B, which supports part of the switching mechanism. This plate is provided at one end with an outwardly-projecting lug *b*, having its side facing the
30 plate B rounded and provided with an oval-shaped hole *t* to receive one end of an operating-bar G. In the present instance this plate is provided near the other end with two stop-blocks *b'* *b''*—one at each side—against which the switch-blade E strikes. A pivot-post *c* projects from the base-plate or from the metal plate B and receives an oscillatory
40 tappet D and also a switch-blade E. This tappet or switch-blade thrower D is constructed of one piece of metal and in the present instance is slotted at either end to form two sets of ears *d* *d'*. The two ears *d'* are the longest and are provided with holes *d''* to take over the pivot-post *c*, on which the
45 tappet oscillates. This tappet has two lugs *d'''* *d''''*, of unequal size, each projecting at an opposite side. Between the short ears of the

tappet is a pin or pivot *d'''*, and on the outer side of the tappet, directly over the said pin, is a projecting stud *d''''*. 55

A switch-blade E is loosely mounted on the pivot-post *c* and between the longer ears *d'* of the tappet, the pivot-hole being intermediate of the ends of the blade. Two binding-posts F F' are on the base-plate A, disposed
60 on opposite sides of the said metal plate B. Attached to these posts and projecting therefrom in opposite directions are contact-plates, with which the switch-blade connects. The contact-plates in the present instance consist of twin fingers *f* *f'*, which are of sufficient length to permit the ends of the pivoted
65 switch-blade E to pass between them, and thereby make a thorough contact when it is desired to close the circuit. Conducting-wires *g* *g'* are secured one to each binding-post. These wires are in circuit with the motor. 70

The letter G designates an oscillatory spring-pressed bar which has one end movable in the oval opening of the outwardly-projecting lug *b* on the stationary plate B. The other end of this bar is provided with a collar *h* and a bifurcated head *h'*, which latter engages the pin or pivot *d'''* on the tappet. Thus the oscillatory tappet D and the spring-pressed bar G together form, in effect, a double-jointed elbow. A spiral compression-spring G' is around the said bar and presses at one end against its collar *h* and at the other end
85 against a washer *i* on the said bar and which bears against the rounded side of the said lug *b*.

A switch-lever I is pivoted at one end to the base-plate A or to the plate B by a bolt
90 *l*. Suitable provision is made for engaging the lever I and tappet D, whereby a partial movement of the lever I will swing the oscillatory tappet from either one of its extreme positions to or a little past its center point, whereupon the reaction of the compression-spring G' will instantly throw the tappet to the opposite extreme position without any further movement of the lever. In the present instance this engaging means consists of
95 an open frame *j* on the lever, which surrounds the stud *d''''* on the outer side of the tappet. A handle end I' of the lever is electrically separated from the pivoted end by insulation 100

to prevent the current from distributing itself through the handle end I'. The handle end or free end of the lever has a loop or eye *l'* to receive a rope, chain, or cable attached to a float in a water-tank. (Not shown.) Two projecting stops *m m'* are provided on the base-plate A—one at each side—to prevent the lever and handle from moving too far.

The operation of this switch is as follows: When the switch-lever I is to be thrown from the upper to the down position, as shown in Fig. 1, the inner upper part of the open frame *j* will bear against the stud *d⁶* on the tappet or thrower, which will cause the tappet to swing from its extreme upper position and resist the pushing action of the spring *G'*, which tends to hold the said tappet and switch-blade E in one position or the other. The swinging of the tappet from one extreme position to the center point will compress the spring *G'*, while one end of the bar *G* will slide through the oval-shaped hole in the projecting lug *b*. As soon as the swinging tappet passes the center point the spring will react and throw the tappet quickly to the extreme lower position and one of its lugs *d⁴* will tap the pivoted switch-blade E and drive its ends between the twin contact-fingers *f* at one side and *f'* at the other side, and thereby complete the circuit. In this position the switch-blade will be held by the stationary stop-block *b²* and the tappet-lug *d⁴*, the latter pressed by the spring *G'*. When it is desired to open the circuit, the switch-lever I is to be thrown upward and the inner lower face of the open frame *j*, carried by said lever, will bear against the stud *d⁶* and cause the tappet to swing upward until it passes the center point, whereupon the lug *d³* on the tappet will be forced against the switch-blade and instantly throw it to the other position, (indicated by broken lines,) where contact is broken, and hold it in that position by the pushing force of the said spring.

It is to be especially noted that the switch-lever I is pivoted on the base-plate at such a point different from the point where the switch-blade and tappet are pivoted that the distance from the open frame *j* to the pivot-point of the lever is greater than the distance of said frame or the stud *d⁶* from the pivot-point of the switch-blade and tappet. By this arrangement it is evident the outer or free end of the lever will not have to describe so large an arc of a circle to throw the tappet past the center as it would were it pivoted at the same point as said tappet, and as my device is primarily intended for actuation by a float in a tank said float will actuate said device with a shorter range of movement than it would otherwise have.

It is obvious that the mechanical elements

here shown and combined may be varied in the details of their construction and in the particular arrangement each may have and yet the desired operation as here described be preserved.

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

1. In an electric switch, the combination with the base-plate and its terminals, of a switch-blade pivoted loosely between said terminals; a tappet pivotally mounted on the pivot-pin of said blade and movable independently of said blade, said tappet being provided with a pin and a stud projecting above said pin; a spring-pressed rod pivotally and slidably mounted at one end on said base-plate and having a bifurcated head engaging said pin; and a lever pivotally mounted on said base-plate and formed with an open frame in which the said stud is located and has movement, as and for the purpose set forth.

2. In an electric switch, the combination with a base-plate and its terminals, of a switch-blade pivoted between said terminals; a tappet having spaced-apart ears loosely embracing said switch-blade and pivotally mounted on the pivot-pin of said blade, said tappet being also formed at its free end with oppositely-extending lugs adapted to strike against said blade, a pin, and a stud projecting above said pin; a spring-pressed rod pivotally and slidably mounted at one end on said base-plate and having a bifurcated head engaging the said pin on the free end of said tappet; and a lever pivoted independent of the switch-blade and tappet and arranged for loose engagement with the stud on said tappet, whereby to move the tappet in either direction, as and for the purpose set forth.

3. A quick-acting electric switch, having in combination a base-plate; two terminals on said base-plate; a switch-blade pivoted between and adapted to engage both of said terminals; a pivoted tappet having two oppositely-extending striking-lugs adapted to strike against the switch-blade to throw the latter either way; a spring-pressed bar operating directly against said tappet; and a lever having provision for loosely engaging said tappet and pivoted on said base-plate at such a point different from said tappet that said loose engagement will be farther from the pivot of the lever than from the pivot of the tappet, as set forth.

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

GEORGE H. WHITTINGHAM.

Witnesses:

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