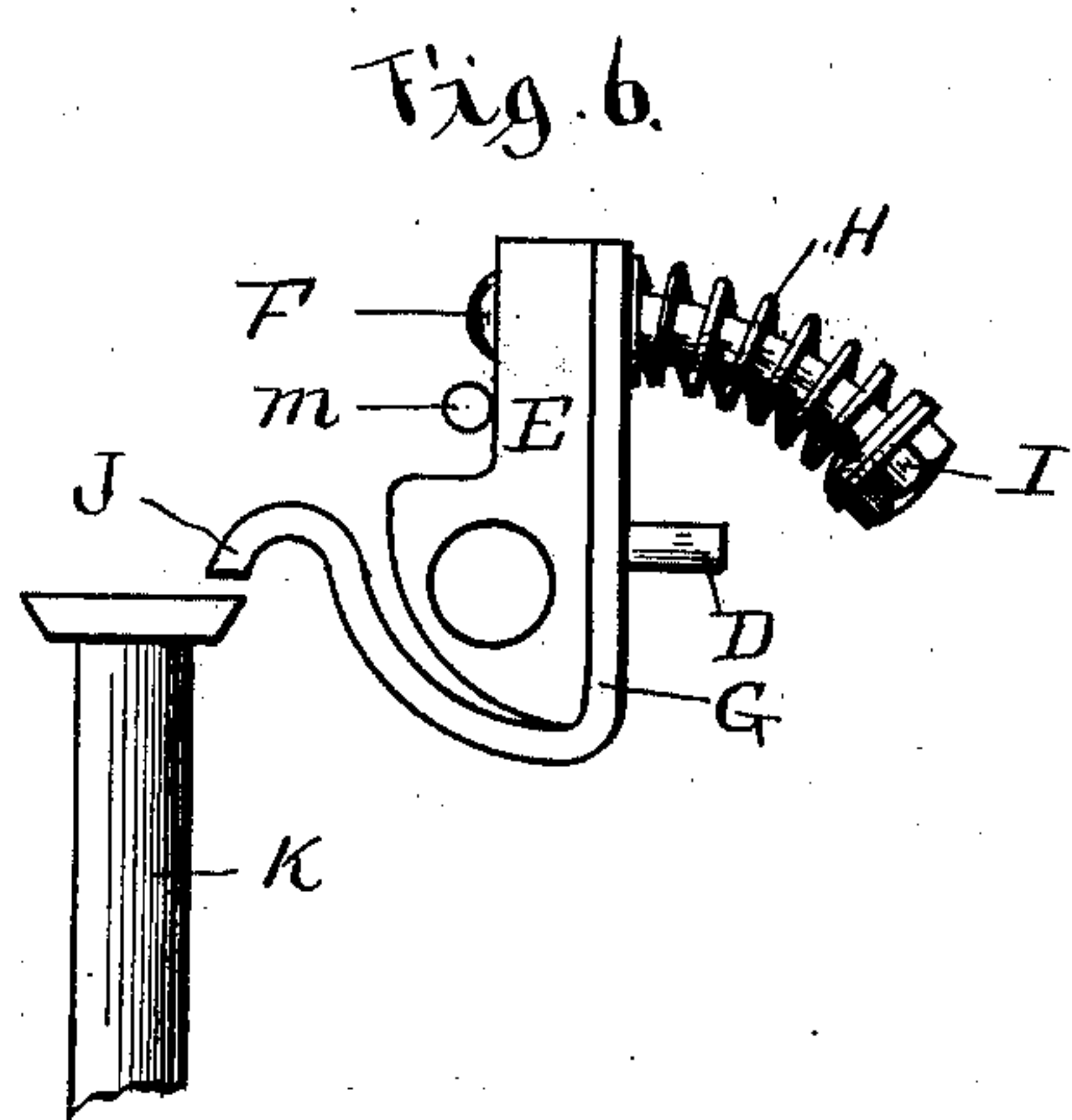
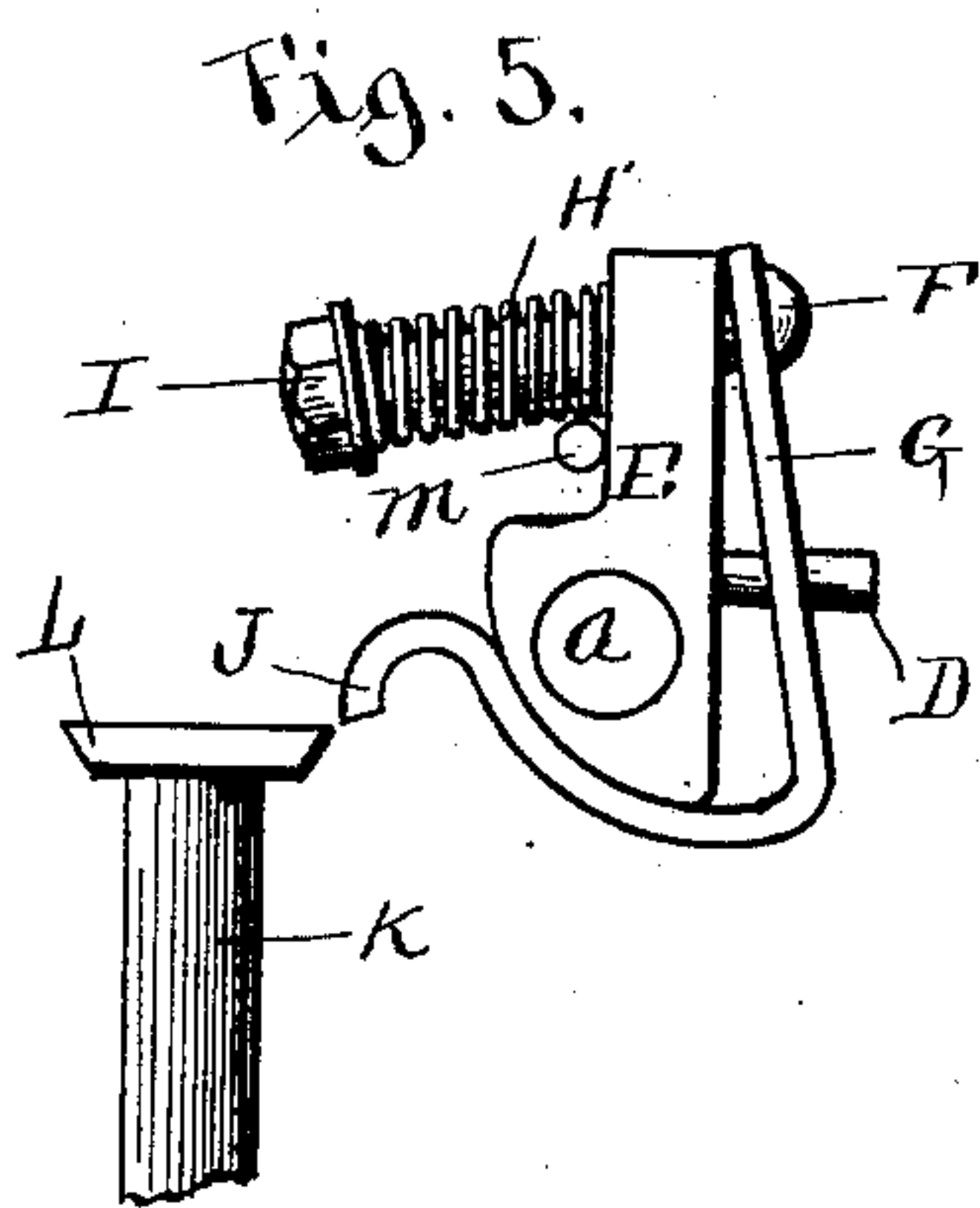
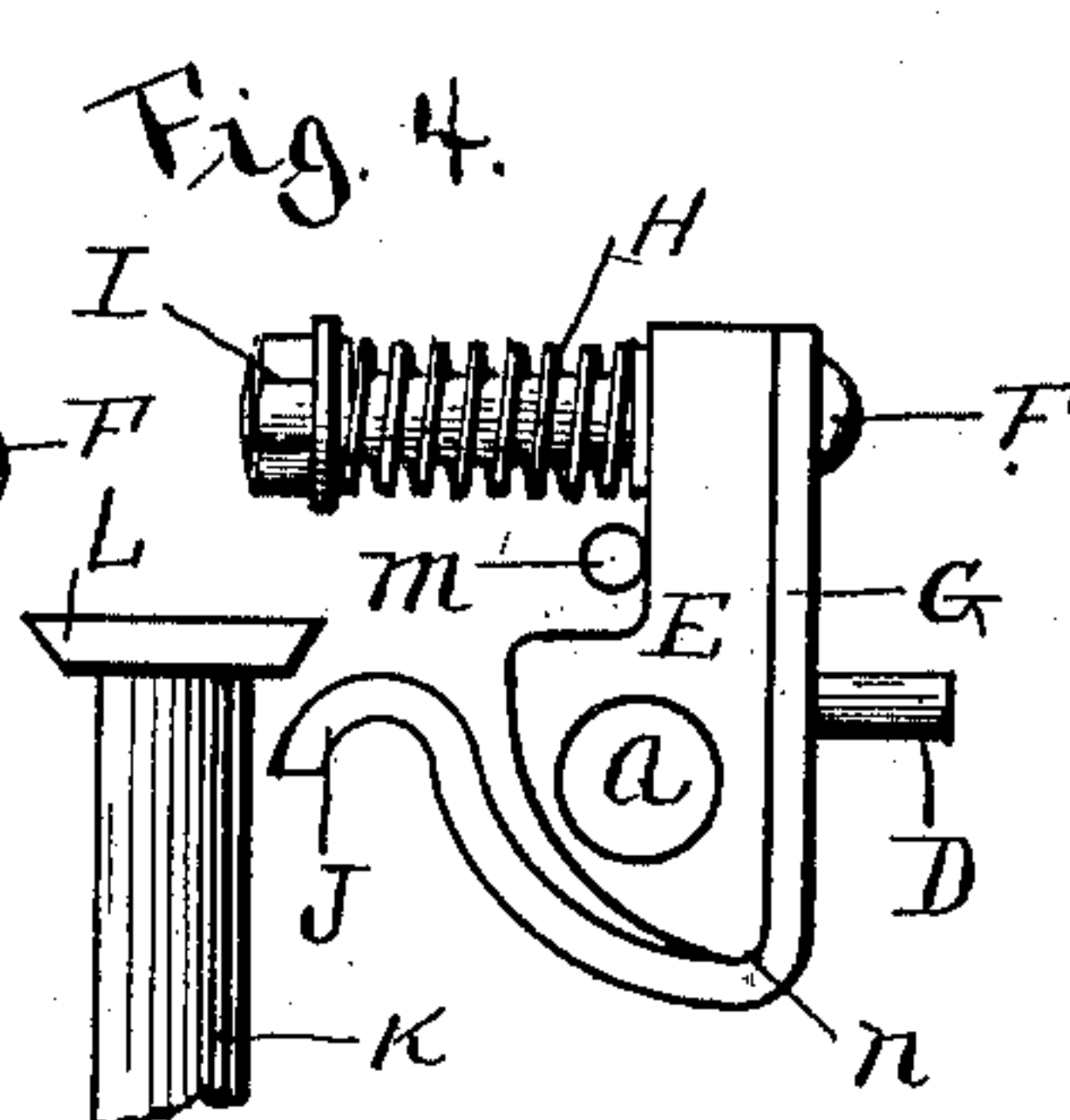
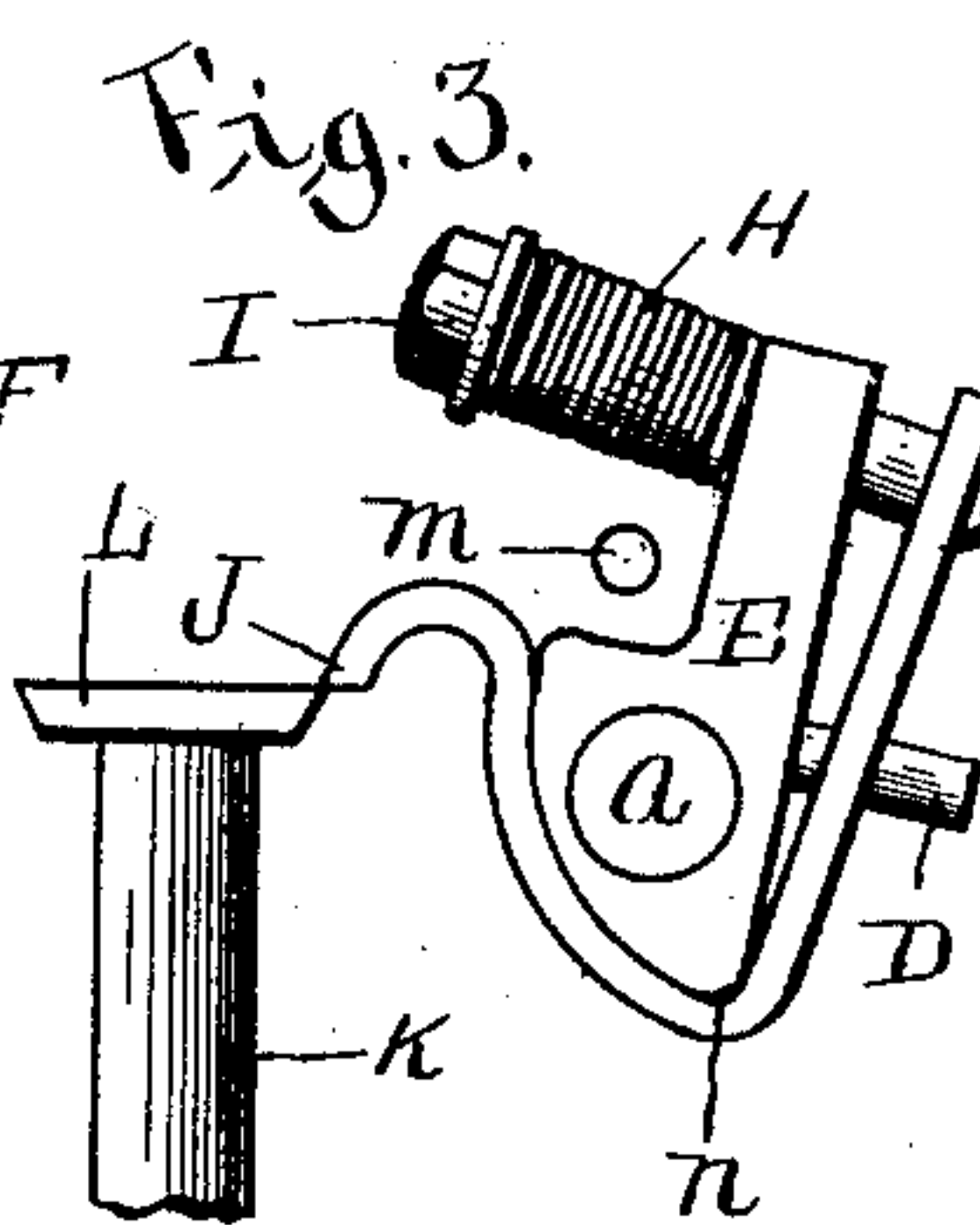
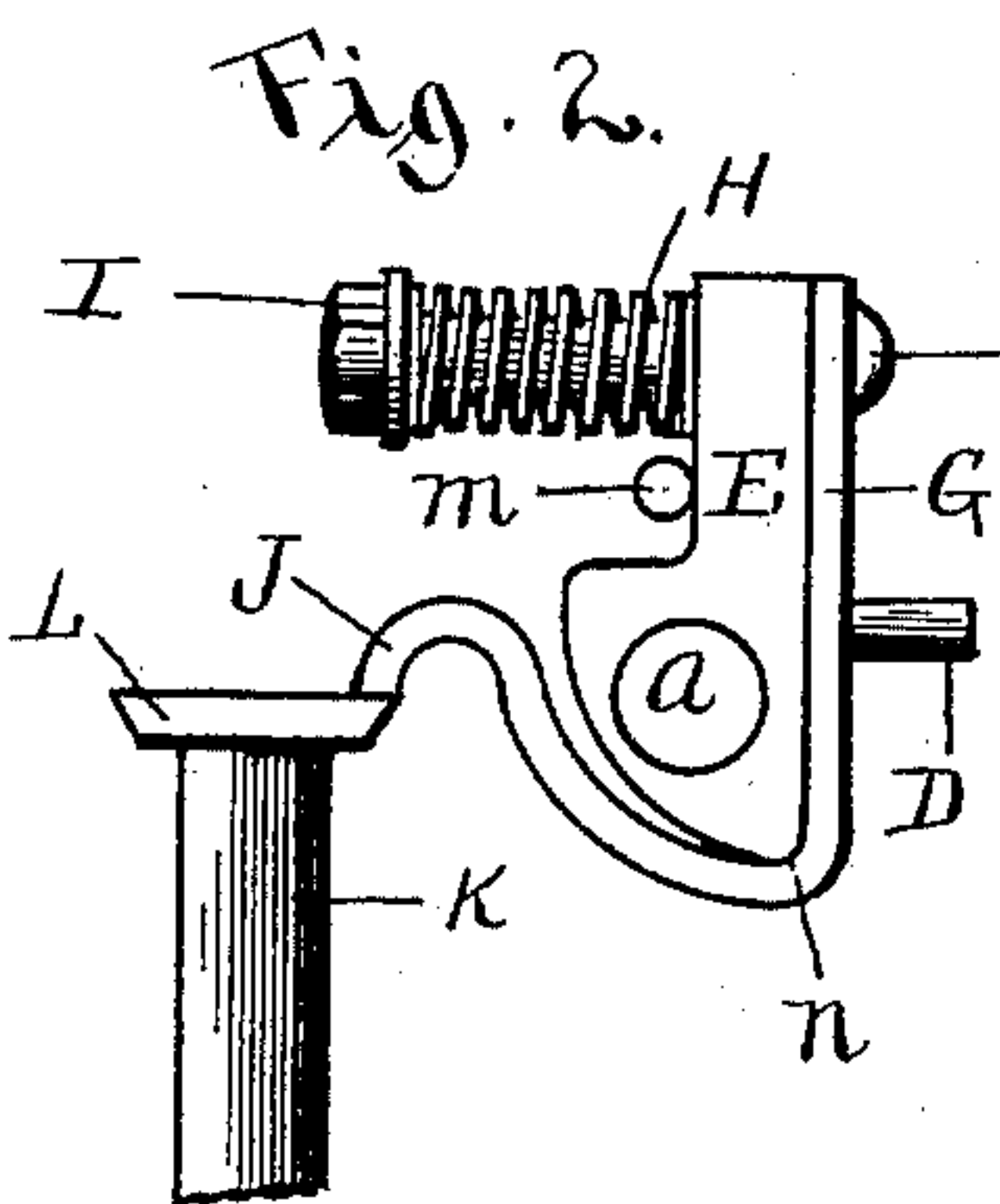
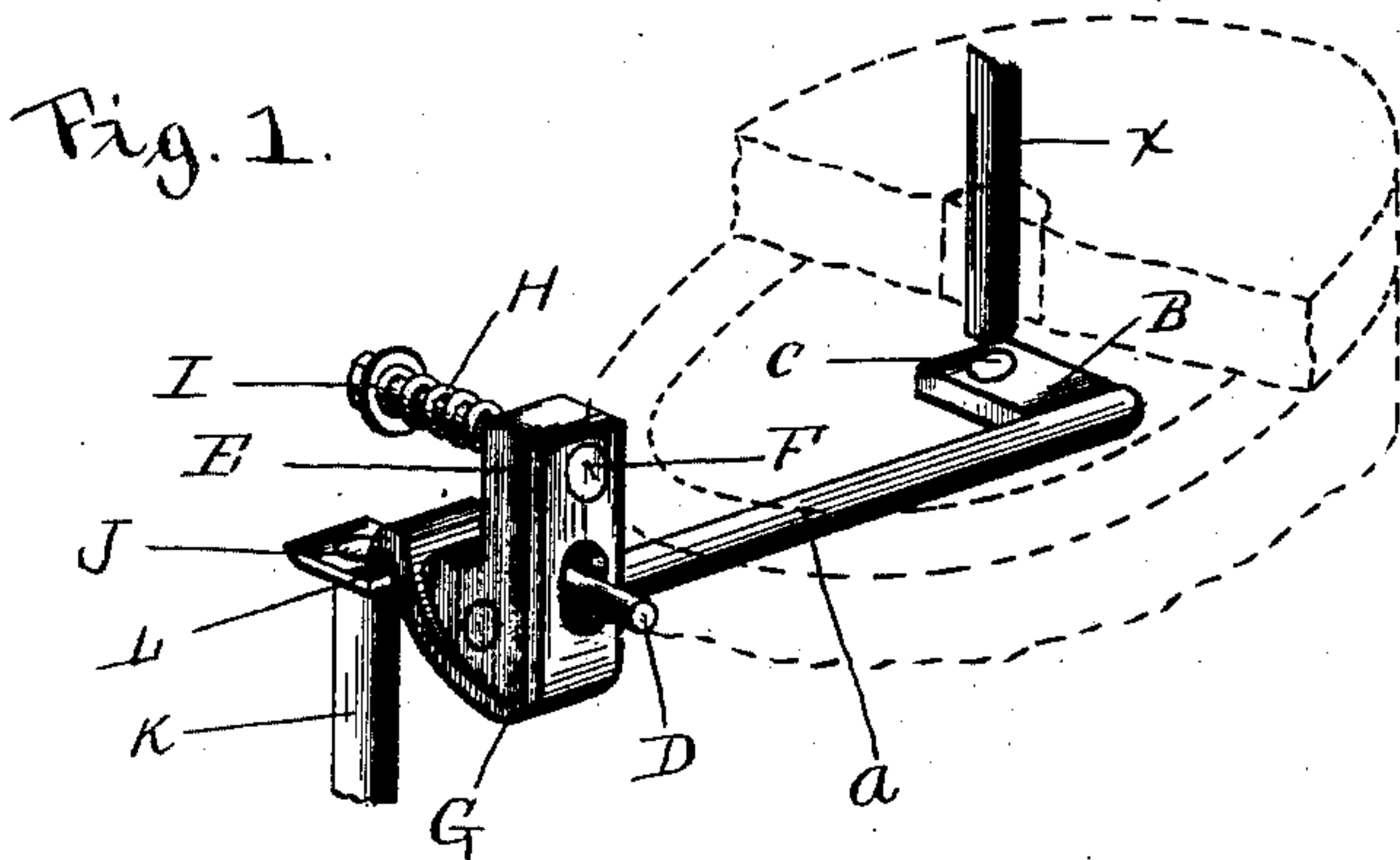


No. 737,923.

PATENTED SEPT. 1, 1903.

P. P. G. HALL, JR.
IGNITER FOR GAS ENGINES.
APPLICATION FILED DEC. 22, 1902.

NO MODEL.



Witnesses:
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UNITED STATES PATENT OFFICE.

PETER P. G. HALL, JR., OF PHILADELPHIA, PENNSYLVANIA.

IGNITER FOR GAS-ENGINES.

SPECIFICATION forming part of Letters Patent No. 737,923, dated September 1, 1903.

Application filed December 22, 1902. Serial No. 136,174. (No model.)

To all whom it may concern:

Be it known that I, PETER P. G. HALL, Jr., a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Igniters for Gas-Engines, of which the following is a specification.

My invention relates to an improvement in igniters for gas-engines; and it consists in means whereby a quick and positive action is produced.

It further consists in an igniter with a single spring for holding the parts and returning the same to normal position.

It further consists of novel details of construction, all as will be hereinafter fully set forth and described.

Figure 1 represents a perspective view of an igniter embodying my invention, showing a portion of the cylinder in dotted lines and the contact-pieces which are situated within said cylinder. Figs. 2, 3, 4, and 5 represent side elevations of the igniter, showing the same in different positions. Fig. 6 represents a side elevation of the igniter, showing the spring in a slightly-different position to that of the other figures.

Similar letters of reference indicate corresponding parts in the figures.

Referring to the drawings, X designates an insulated plug which projects within the cylinder, which latter is shown in dotted lines. Situated adjacent said plug and normally out of contact therewith is a leaf B, having a suitable contact-point C thereon, said leaf being connected or carried by a shaft *a*, which latter is suitably mounted in the walls of the cylinder and carries upon its end on the exterior of the cylinder an arm E, which is suitably connected with said shaft *a* in the drawings by means of the pin D, whereby it will be understood that the shaft *a* is operated by the action of the arm E.

F designates a pin or bolt which passes freely through an opening in a portion of the arm E and is secured at one end to a rocker-arm G, said rocker-arm fitting the arm E, and is provided with the nose J, which is preferably shaped as shown, it being seen that one face of the arm E is curved and that the rocker-arm G is also curved in substantially

the same manner, for purpose as will be hereinafter described.

H designates a spring which is carried upon the pin F, one end of said spring bearing against the arm E and the other end bearing against the nut or washer I, suitably connected with the pin F, it being understood that the tension of said spring H is adapted to hold the rocker-arm G substantially in the position seen in Fig. 2 or return the parts to this position for action.

K designates a rod which is reciprocated in any of the usual and well-known manners and is suitably mounted in connection with the engine, said rod being provided with a head L, which is beveled on the under side, as understood from the drawings.

The operation is as follows: As the rod K is reciprocated it operates the parts, and in its ascent the head L thereon engages with the nose J of the rocker-arm G, as best understood from Fig. 2. Continuing in its upper movement it causes the arm E by reason of the pressure of the rocker-arm G to operate the shaft *a*, so that the contact-piece C and leaf B contact with the pin X, and the circuit is established. The reciprocating rod J, however, continuing in its upper movement overcomes the tension of the spring H and causes the rocker-arm G to assume the position seen in Fig. 3, the parts meanwhile moving over sufficiently in order that the edge of the nose J is in engagement with the head L of the reciprocating rod K and finally is released therefrom, when immediately the spring H acts to force the parts back into their normal position. The parts will thus be in the position as best understood from Fig. 4, and in this manner a very quick breaking of the circuit occurs, as will be evident. Upon the return movement of the reciprocating rod K the beveled edge of the head L contacts with the nose J and forces over the rocker-arm G without effecting the position of the arm E, and consequently the shaft *a* and connecting parts, it being understood from this that the curved portion of the arm G will lie upon the curved side of the arm E and the parts will assume the position seen in Fig. 5, and it will be understood that the nose J moves upwardly and downwardly and

at the same time in an arc of a circle, the effect of which is evident.

m designates a pin or stop which is suitably secured to the cylinder of the engine and which acts to hold the arm E in the proper place after the spark has been made. It will be understood from the above that the arm G acts as a lever upon the arm E and that substantially the point *n* is the fulcrum of the coaction of the two arms.

In Fig. 6 I have shown a construction wherein the pin F is secured to the arm E and the spring H bears upon the outer side of the rocker-arm G, the operation of the parts, however, being similar to that already described.

It will be evident that various changes may be made by those skilled in the art which will come within the scope of my invention, and I do not, therefore, desire to be limited in every instance to the exact construction herein shown and described.

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

1. In a sparking igniter for engines, a fixed electrode, a movable electrode, a shaft connected therewith, a curved rocker-arm having movable connection with said shaft, an arm fixed to the shaft and received within the rocker-arm and having a portion conforming thereto to act as a fulcrum therefor, a spring suitably connected with the rocker-arm to normally hold the parts in proper position and permit movement of said arms relative to each other, and means for operating the rocker-arm.

2. In a sparking igniter for engines, a fixed electrode, a movable electrode, a shaft connected therewith, a curved rocker-arm having movable connection with said shaft, an arm fixed to the shaft and received within the rocker-arm and having a portion conforming thereto to act as a fulcrum therefor, a spring suitably connected with the rocker-arm to normally hold the parts in proper position and permit movement of said arms relative to each other, means for operating the rocker-arm, and a stop for engagement with the first-mentioned arm to hold it in position after the spark has been made.

3. In a sparking igniter for engines, a fixed electrode, a movable electrode, a shaft connected therewith, a rocker-arm having movable connection with said shaft, an arm fixed to the shaft and received within the rocker-arm and having a portion conforming thereto

to act as a fulcrum therefor, a spring suitably connected with the rocker-arm to normally hold the parts in proper position and permit movement of said arms relative to each other, and means for operating the rocker-arm.

4. In an igniter for engines, an electrode, a shaft carrying the same, an arm on said shaft, a rocker-arm, a pin connected with said rocker-arm and passing through said first-mentioned arm, a nose on said rocker-arm, and a head on the reciprocating rod of the engine, having a beveled lower face for cooperation with said nose.

5. In a sparking igniter for engines, a fixed electrode, a movable electrode, means for operating the same and comprising a shaft connected therewith, a rocker-arm movably connected with said shaft, an arm fixed to the shaft and movable within the rocker-arm and having its fulcrum thereon, means for operating the rocker-arm, and a single spring adapted to normally hold the parts in proper position and permitting suitable movement thereof and adapted to return the parts to their normal position after operation thereof, whereby the engine may run in either direction.

6. In an igniter, a fixed electrode, an electrode, a shaft carrying the same, an arm secured to said shaft and having a curved lower face, a rocker-arm having a curved portion embracing the curved portion of the first-mentioned arm, and a nose extended beyond said curved portion, a pin connected with the rocker-arm and movable through the first-mentioned arm, means for operating the said rocker-arm and a spring around said pin and serving to normally hold the parts in contact.

7. In an igniter, a fixed electrode, an electrode, a shaft carrying the same, an arm secured to said shaft and having a curved lower face, a rocker-arm having a curved portion embracing the curved portion of the first-mentioned arm, and a nose extended beyond said curved portion, a pin connected with the rocker-arm and movable through the first-mentioned arm, a spring around said pin and serving to normally hold the parts in contact, means for operating the rocker-arm and a stop for engagement with the first-mentioned arm to hold it in position after the spark has been made.

PETER P. G. HALL, JR.

Witnesses:

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