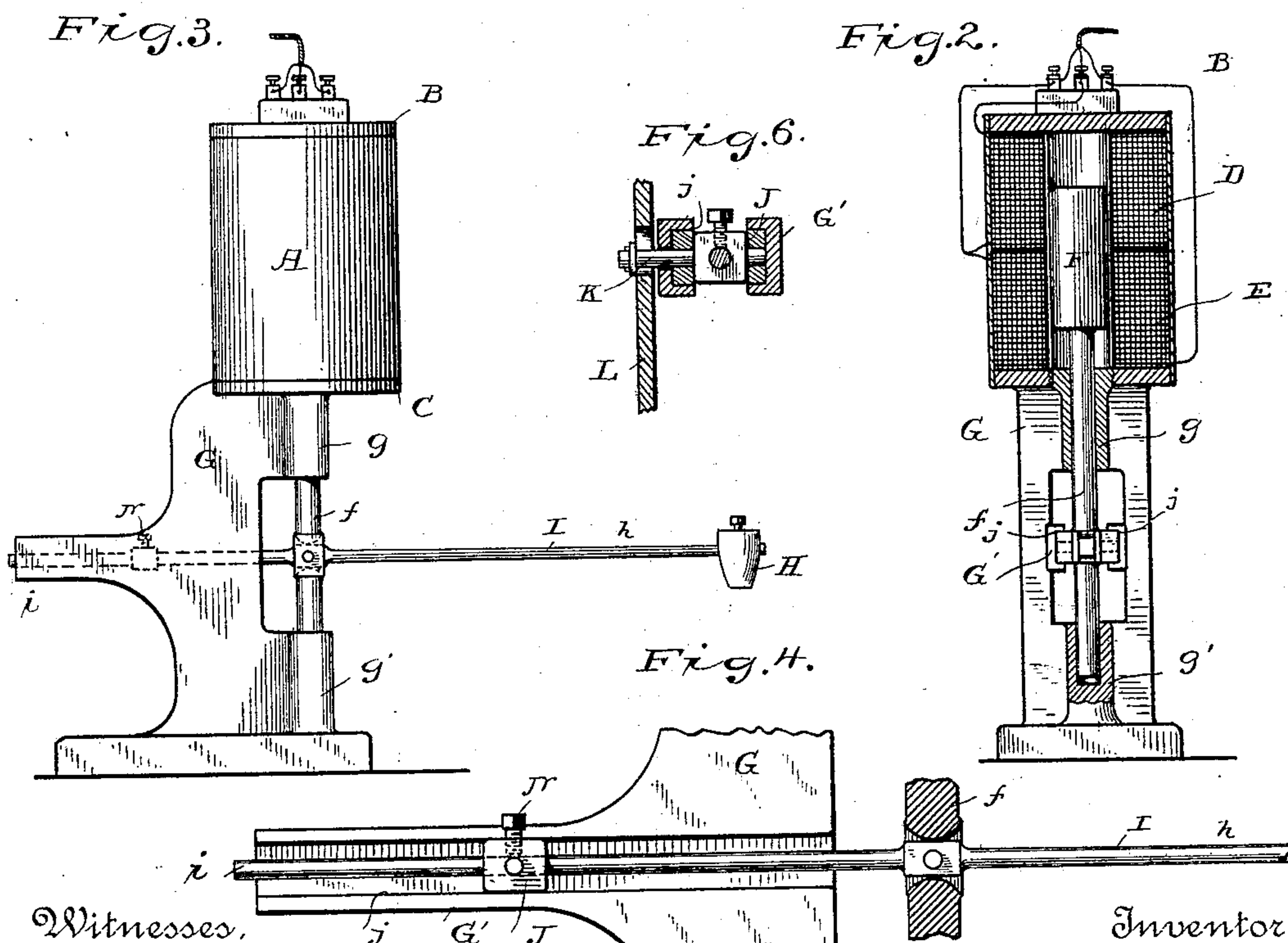
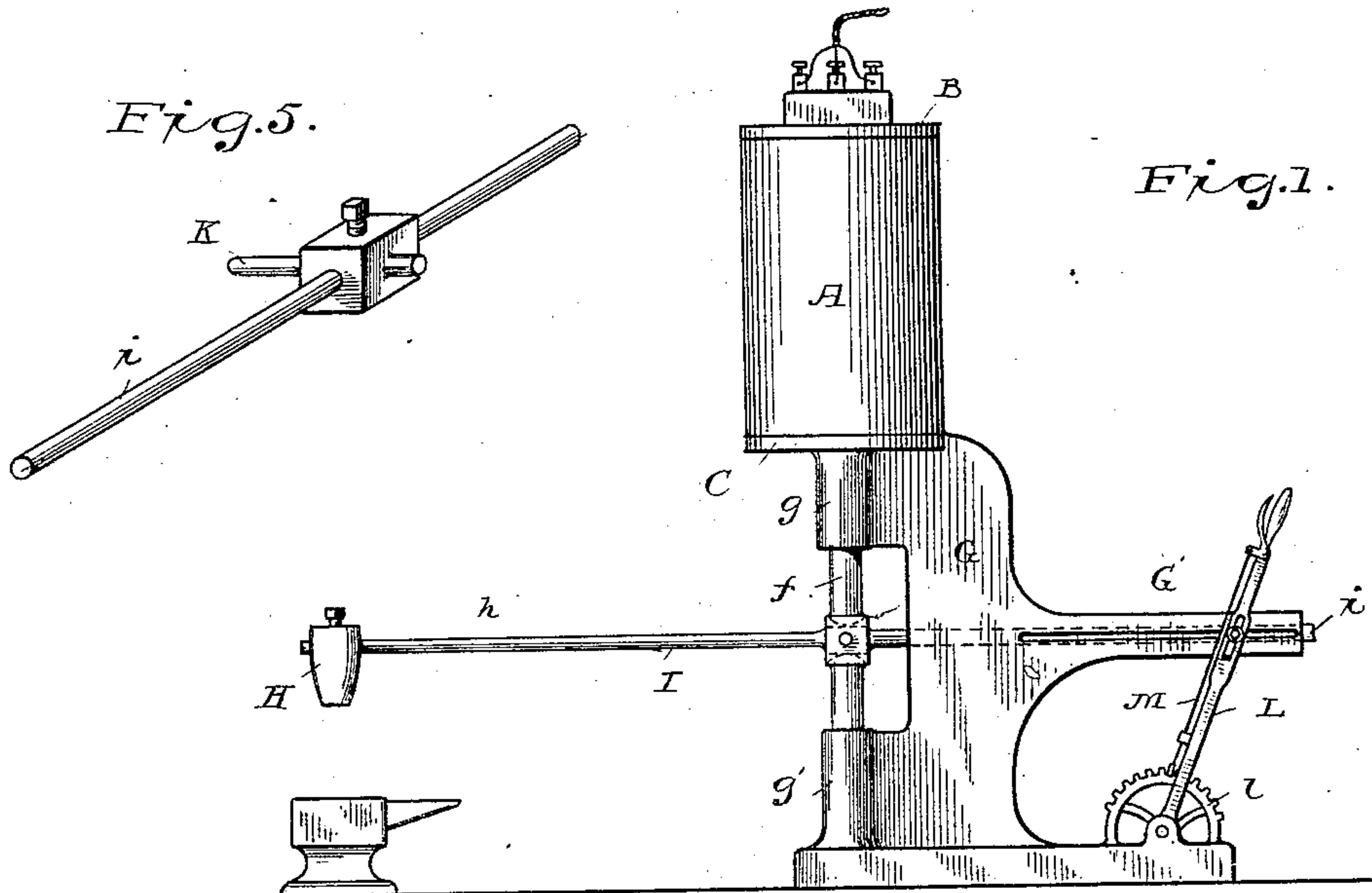


(No Model.)

C. J. VAN DEPOELE.
RECIPROCATING ELECTRIC HAMMER.

No. 435,264.

Patented Aug. 26, 1890.



Witnesses,

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CHARLES J. VAN DEPOELE, OF LYNN, MASSACHUSETTS.

RECIPROCATING ELECTRIC HAMMER.

SPECIFICATION forming part of Letters Patent No. 435,264, dated August 26, 1890.

Application filed May 23, 1890. Serial No. 352,843. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. VAN DEPOELE, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Reciprocating Electric Hammers, of which the following is a description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention relates to improvements in power-hammers, and more particularly to a hammer actuated by a constant source of power, but the stroke of which may have greater or less force, as desired.

The invention is shown in connection with an electrically-actuated reciprocating engine—such, for example, as is shown in my patent, No. 401,231, dated April 9, 1889.

The improved result, comprising the invention hereinafter claimed, is secured by increasing or decreasing the extent of the power-stroke of the hammer without affecting the operation of the source from which the power is derived.

An apparatus embodying the invention will be hereinafter described, and is illustrated in the accompanying drawings, in which—

Figure 1 is a view in elevation showing a reciprocating hammer embodying the invention. Fig. 2 is an end view thereof, parts of the apparatus being in section. Fig. 3 is also a view in elevation showing a completely-organized apparatus differing from Fig. 1 in the means for adjusting the stroke of the hammer. Fig. 4 is an enlarged detail view of parts of the mechanism of the apparatus shown in Fig. 3. Fig. 5 is a detail view, in perspective, showing the adjusting-slide of Fig. 1. Fig. 6 is a detail view showing part of the adjusting mechanism of Fig. 1.

In Figs. 1 and 3, A is the outer casing, and B C are the heads fitting the ends thereof, within which are inclosed motor-coils D E. As set forth in my said patent, the motor-coils are solenoids provided with an interior lining, within which a magnetic piston F is reciprocated under the influence of the field of force of said motor-coils, which is moved from coil to coil as rapidly as desired to produce corresponding reciprocal movement of the piston F and connected parts.

The magnetic engine is mounted vertically upon a strong metal frame G, which frame is formed or provided with bearings *g g'*, within which is mounted the piston-rod *f*, the whole being so arranged that the piston-rod is most thoroughly supported from all sides and in line with the line of travel of the piston within the motor-coils.

The hammer H is adjustably secured at the extremity of a hammer-shaft I, which is arranged at right angles to the vertically-moving piston-rod *f*, and is articulated to said piston-rod about midway of its length. The hammer-shaft is thus divided into two parts, the forward part *h* and the rearward part *i*. The part *i* is provided with an adjustable fulcrum J, by which it is pivotally attached to an extension G' of the main frame G. The extension G' is at right angles to the bearings of the piston-rod, and is formed with grooved ways *j j*, within which the fulcrum J may be moved horizontally toward and away from the point of connection between the hammer-shaft and the piston-rod *f*. The fulcrum J is connected by an arm K with a hand-lever L, and said hand-lever is desirably provided with a notched quadrant *l* and a latch M, so that it may be set in any desired position. I have referred to the fulcrum J as a whole; but obviously the central portion of the said movable part J must be movable upon a transverse axis in order to permit free movement of the hammer-shaft.

To adjust the power of the blow the fulcrum J is moved along the rearward extension *i* of the hammer-shaft the length of the stroke of the hammer H, the resultant force thereof being determined by the position of the fulcrum with respect to the connection between the hammer-shaft and the piston-rod *f* by which it is actuated. Obviously the hand-lever L might be replaced by a foot mechanism of the same nature to be actuated by the workman standing at the anvil.

The adjusting mechanism described admits the stroke of the hammer being adjusted while in operation; but for many uses this would not be required, and therefore the latch-lever may be omitted and the fulcrum J be provided with a set-screw N, by which it can be locked in the desired position.

Many changes and modifications may be made in the hereinbefore-described structure without departing from the spirit or nature of the invention, which is therefore not limited to the precise details set forth.

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

1. A reciprocating hammer having a variable stroke and means for increasing and decreasing the length and power thereof.

2. A reciprocating power-hammer comprising a vertically-moving part, a hammer-shaft jointed thereto, and a movable pivotal support for the hammer-shaft, whereby the travel of the hammer and the force of the blow may be varied as desired.

3. A reciprocating hammer comprising a vertically-moving source of power, a hammer-shaft jointed to the vertically-moving part and carrying a hammer at its outer end, said shaft having a rearward extension, a movable pivotal support for the rearward extension,

and a lever and detent devices for adjustably sustaining the pivotal support and for increasing or decreasing the stroke of the hammer.

4. A reciprocating hammer comprising a reciprocating engine, a frame sustaining said engine and guiding the piston-rod thereof and having a guide-arm extending at right angles to said piston-rod, a hammer-shaft jointed to the piston-rod and carrying a hammer at its outer extremity, said rod having a rearward extension, and a movable fulcrum carried and adjusted in the guide-arm of the frame, said fulcrum supporting the rearward extension of the hammer-shaft and adjustable thereon.

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

CHARLES J. VAN DEPOELE.

Witnesses:

HENRY A. LAMB,
WM. D. POOL.