

No. 644,014.

Patented Feb. 20, 1900.

M. C. JACKSON.  
POWER HAMMER.

(Application filed Jan. 24, 1899. Renewed Jan. 8, 1900.)

(No Model.)

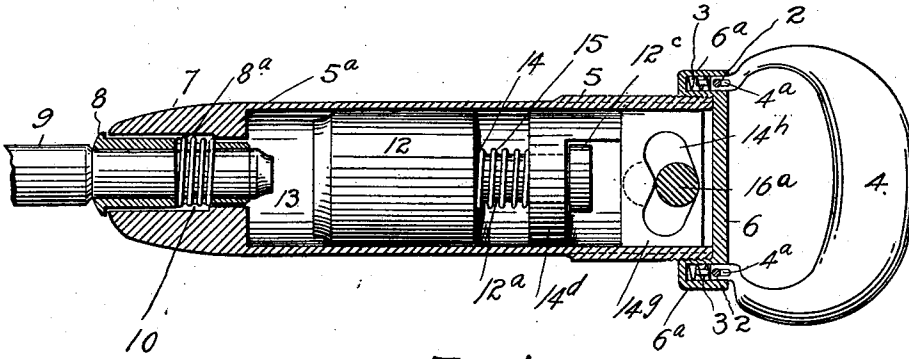


FIG. 1

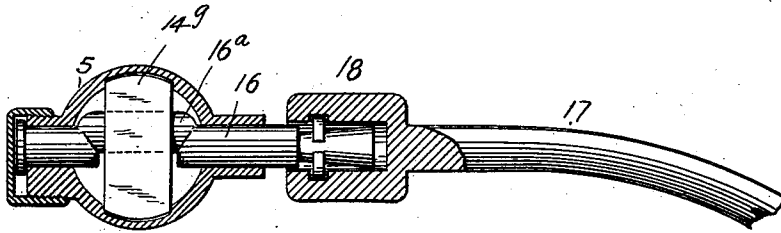


FIG. 2

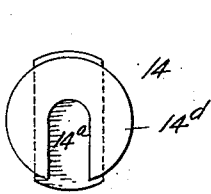


FIG. 4

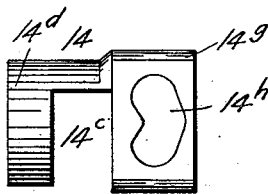


FIG. 3

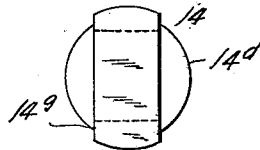


FIG. 5

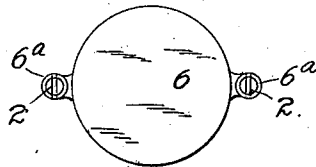


FIG. 6.

Witnesses  
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By this Attorney

Inventor  
M. C. Jackson  
*[Signature]*

# UNITED STATES PATENT OFFICE.

MANETHO C. JACKSON, OF DENVER, COLORADO.

## POWER-HAMMER.

SPECIFICATION forming part of Letters Patent No. 644,014, dated February 20, 1900.

Application filed January 24, 1899. Renewed January 8, 1900. Serial No. 778. (No model.)

*To all whom it may concern:*

Be it known that I, MANETHO C. JACKSON, a citizen of the United States of America, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Power-Hammers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in power-hammers adapted for use in chipping iron, beading, calking, stone-cutting, and carving and in all the varied relations where instruments of this class can be advantageously employed.

My object is to provide a device of this class which shall be simple in construction, economical in cost, reliable, durable, and efficient in use; and to these ends the invention consists of the features hereinafter described and claimed, all of which will be fully understood by reference to the accompanying drawings, in which is illustrated the embodiment thereof.

In the drawings, Figure 1 is a longitudinal section taken through my improved hammer. Fig. 2 is a cross-section taken through the same, showing its connection with the flexible shaft. Fig. 3 is a side elevation of the yoke provided with the cam-slot. Fig. 4 is a front elevation, and Fig. 5 is a rear end elevation, of the same. Fig. 6 is a detail view of the rear head.

Similar reference-figures indicating corresponding parts in the drawings, let the numeral 5 designate the casing, whose rear extremity is closed by a head 6, while its forward extremity 7 is adapted to receive a chuck 8, in which the cutting bit or tool 9 is loosely fitted. The inner portion of the chuck is reduced in size and provided with a shoulder 8<sup>a</sup>, against which one extremity of the coil-spring 10 rests, while its opposite extremity presses against a shoulder 5<sup>a</sup>, formed on the casing. The spring 10, as shown in the drawings, is compressed as in use by reason of the pressure of the bit against the material

operated upon, but not shown in the drawings. When this pressure ceases, the recoil of the spring will move the chuck and tool forward sufficiently to withdraw the inner extremity of the bit within the chuck-opening and out of the range of the hammer 12, located within the chamber 13 of the casing 5. The rear extremity of the hammer 12 is provided with a stem 12<sup>a</sup>, which engages a slot 14<sup>a</sup>, formed in the forward extremity 14<sup>d</sup> of a yoke 14. The stem 12<sup>a</sup> is provided with a head 12<sup>c</sup>, which is located within a recess 14<sup>c</sup>, formed in the yoke, and prevents the hammer-stem from slipping through the slot 14<sup>a</sup>. Surrounding the hammer-stem and interposed between the yoke and the forward extremity of the hammer is a coil-spring 15, which performs the function of a buffer and also of a power-spring to a limited extent. The recess 14<sup>c</sup> of the yoke is of sufficient width to allow the stem-head 12<sup>c</sup> to move rearward therein a certain distance. The rear portion 14<sup>e</sup> of the yoke engages guide-grooves in the casing and is provided with a double-inclined cam-slot 14<sup>b</sup>, in which operates a crank 16<sup>a</sup> of the shaft 16. The front faces of this slot extend rearwardly from the slot extremities. Hence as the shaft 16 is rotated its crank 16<sup>a</sup> engages one of the inclined faces of the cam-slot and imparts a relatively-rapid forward movement to the yoke and its attachments. If the shaft 16 is turned in one direction, the forward movement is imparted to the yoke by the engagement of its crank 16<sup>a</sup> with the upper front face of the yoke-slot, while if the shaft is turned in the opposite direction the corresponding movement is imparted to the yoke by the engagement of the crank with the lower face of the slot. When the hammer is at its forward limit of movement, the position of the crank 16<sup>a</sup> in the slot 14<sup>b</sup> is such that the hammer is allowed to rebound before the crank can act to impart the reverse movement. The double inclination of the slot permits this rebound or recoil action and prevents injury to the parts from concussion. During the initial action of the crank on the front face of the slot the yoke moves faster than the hammer, and consequently compresses the spring. However, as the reciprocating parts move forward the spring recoils and imparts to the

hammer an additional striking impetus. This spring moves bodily with the hammer and performs the double function of a buffer and a power-spring. As a buffer it contracts and prevents injury to the parts from the driving force of the crank applied in the forward direction and from the reaction of the hammer-stroke applied in the opposite direction. As a power-spring it expands during the forward movement of the hammer and augments the force of the blow. This expanding and contracting feature has been found by experience to be of vital importance.

In the operation of the device the shaft 16 is rotated rapidly, causing the hammer to deliver several thousand strokes per minute upon the bit extremity, which is made to protrude into the chamber 13 by pressing its opposite or cutting end against the material operated upon. Hence my improved instrument becomes an agent of the greatest possible efficiency in all kinds of work to which it is adapted.

To the rear extremity of the casing 5 is screwed the head 6, provided with two laterally-projecting lugs 6<sup>a</sup>, bored to receive the extremities of the handle 4. The handle extremities are shouldered to engage the extremities of coil-springs 3, located in the recesses of the lugs. The handle extremities are provided with elongated openings 4<sup>a</sup>, which are engaged by pins 2, fast in the lugs. The springs normally hold the handle at its outward limit of movement, causing the pins to engage the forward extremities of the slots 4<sup>a</sup>. This yielding connection between the handle and the casing relieves the hand of the user from the concussion incident to the rapid movement of the operating parts. The shaft 16 is connected with a flexible shaft 17

by means of a suitable coupling 18. The flexible shaft is operated from a motor, a line-shaft, or other suitable instrumentality and allows perfect freedom in the movement of the device when in operation.

It must be understood that my improved construction is not limited to use in power-hammers, but that it may also be employed in rock-drilling machines and other kindred instruments.

Having thus described my invention, what I claim is—

1. The combination with a casing, of a yoke located therein and provided with a slot 14<sup>a</sup> in its forward portion, a cam-slot 14<sup>b</sup> in its rear portion and a recess 14<sup>c</sup> intermediate said portions, a crank-shaft engaging the slot 14<sup>b</sup>, a reciprocating part having a stem engaging the slot 14<sup>a</sup> of the yoke and provided with a head located in the recess 14<sup>c</sup>, which is of sufficient width to allow the head longitudinal movement therein, and a spring surrounding the said stem and located between the yoke and the reciprocating part, the said spring moving bodily with the yoke and reciprocating part.

2. In combination, a casing, a tool, a sliding hammer, a crank with means for rotating the same, a yoke engaged by said crank and reciprocated by the rotation thereof, a connection between the yoke and the hammer adapted to yield longitudinally of said parts and a spring interposed between the hammer and said yoke.

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

MANETHO C. JACKSON.

Witnesses:

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NELLIE G. DANIELS.