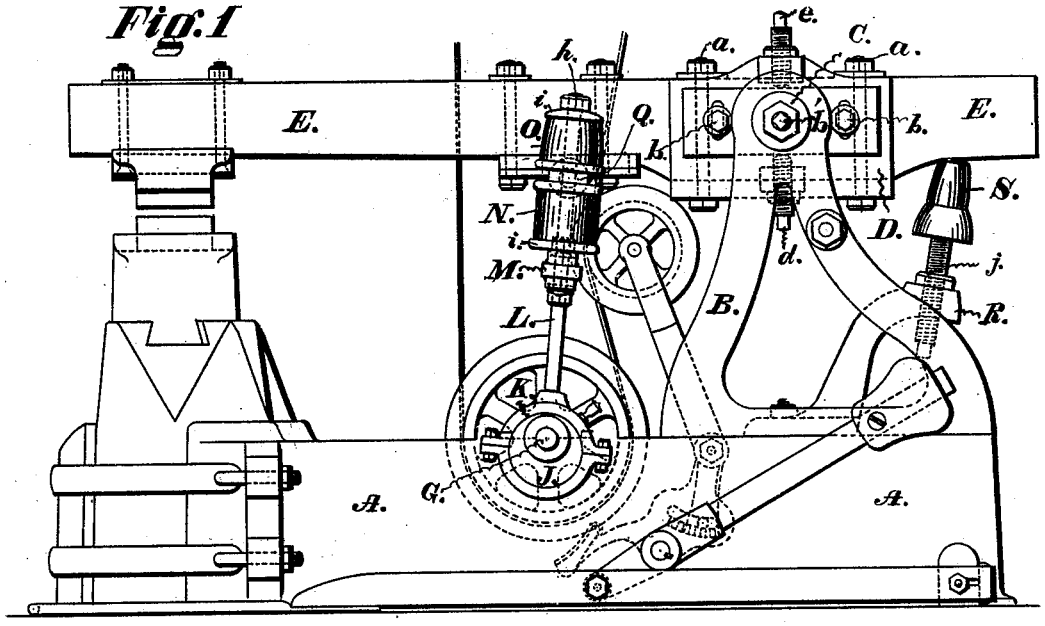
M. DEERING.

Power-Hammer.

No. 208,719. Patented Oct. 8, 1878.

Fig. 1



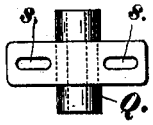


Fig. 2

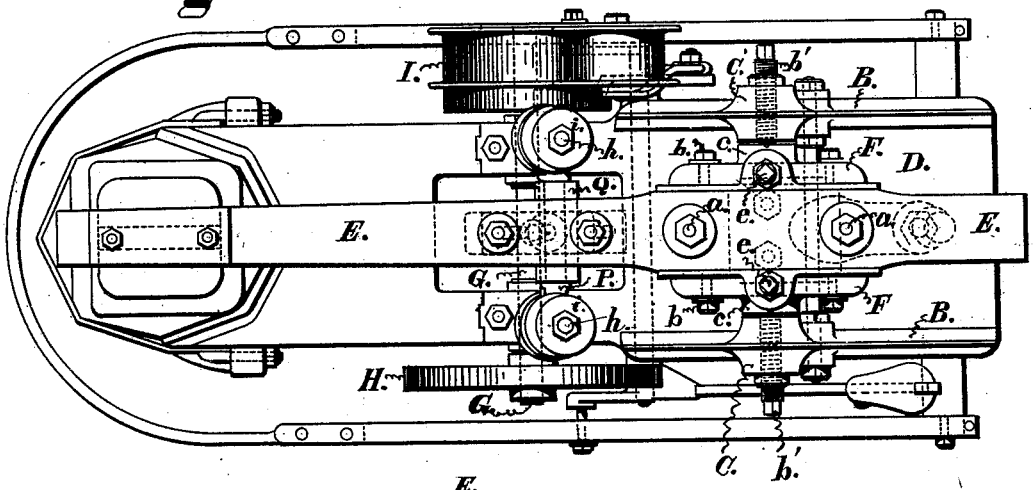
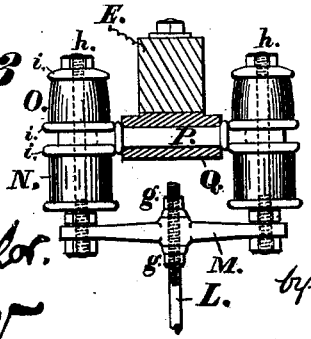


Fig. 3



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UNITED STATES PATENT OFFICE.

MICHAEL DEERING, OF SYRACUSE, N. Y., ASSIGNOR OF THREE-FOURTHS OF HIS RIGHT TO CHRISTOPHER C. BRADLEY, OF SAME PLACE.

IMPROVEMENT IN POWER-HAMMERS.

Specification forming part of Letters Patent No. **208,719**, dated October 8, 1878; application filed July 26, 1877.

To all whom it may concern:

Be it known that I, MICHAEL DEERING, of Syracuse, county of Onondaga, in the State of New York, have invented certain new and useful Improvements in Power-Hammers; and I do hereby declare the following to be a full, clear, and exact description of the same, sufficient to enable those skilled in the art to which my invention appertains to make and use it, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical side elevation, and Fig. 2 a horizontal plan view, of the same; and Fig. 3, a detail view.

My improvements consist in the construction and arrangement of the devices by which the helve of the hammer is operated; in the construction and arrangement of the parts which support the helve and about which it vibrates; and in providing an improved means for vertical adjustment of the helve.

In the drawings similar letters represent like parts wherever used.

Referring to the drawings, A is the main frame, upon which, at its rear extremity, is placed and secured by bolts or nuts or other suitable devices the housings or helve-standards B B, which are provided at their upper extremities with apertures or bearings to receive spindle-bearings C C.

D is a cross-head or helve-sleeve of such box form as to receive the helve E, which is secured within it by means of the bolts *a a*.

F F are plates, laterally secured to the side of the cross-head by means of headed bolts *b b*, the apertures through which said bolts pass being vertically extended, so as to allow of an upward or downward motion of the plate on the side of the cross-head. The side plates F F are provided with lugged projections *c c*, which have apertures for the reception of the trunnion-bolts *b' b'*, which support the box and helve, and about and upon which trunnions they oscillate.

d e are set-screws, passing vertically through lugs on the side of the cross-head and abutting against the upper and lower surfaces of the side plate F F, and securing the same against vertical displacement, the depth of the side plates being less than the vertical distance between said lugs, so as to allow of a vertical adjustment of the side plates and cross-head relatively to each other.

G is the driving-shaft, passing through bearings on the main frame, and carrying upon either end a fly-wheel, H, and pulley I, and being provided centrally with a circular eccentric-cam, J, mounted on the same, which eccentric is encircled by the divided strap K, to the upper surface of which is fixedly attached the eccentric-rod L.

M is the eccentric cross-head bar, carried upon and secured to the upper extremity of the eccentric-rod by means of screw-nuts *g g*, abutting against its upper and lower surface, and capable of vertically adjusting the same. Through the extremities of this cross-piece pass buffer-connecting rods *h h*, upon each of which are placed two rubber buffers, N O, which are properly secured to the same by means of screw-nuts or washers, and each buffer is provided at its upper and lower extremity with metallic washers or jackets *i i*, to protect the same.

P is a journal-shaft, provided with eyes at its extremities, through which eyes pass the buffer-rods *h h*. This journal-shaft is located on said rods between the buffers N O. Q is a journal-bearing plate, secured to the under side of the helve by means of bolts or nuts, or other suitable devices, which provides a bearing for the journal-shaft P. This plate Q is provided with slots *s s*, through which pass the bolts which secure the plate to the under surface of the helve. These slots are extended in the direction of the length of the helve. Thus it is readily understood that the journal-bearing plate Q, to which is connected the operating mechanism, can be adjusted backward or forward in the direction of the length of the helve, and the length of the stroke of the hammer be thereby regulated. R is a bracket or standard springing from the main frame A, and carrying, by means of a screw-shaft, *j*, the rubber buffer S, which abuts against the lower surface of the helve, and is vertically adjustable relatively to the same by means of

said screw-shaft. This stationary buffer S serves to arrest and control the upstroke of the hammer.

From the construction described it will be seen that I have dispensed with the ordinary yoke through which motion has been heretofore transmitted to the helve, and have directly connected the driving eccentric-cam with the helve, retaining, however, the elastic and controlling principle derived from the employment of rubber buffers to arrest the up-and-down stroke of the hammer by interposing such buffers between the eccentric-cam and the helve, as an element of the direct operating connection between said helve and cam; and by my improved mode of construction I am able to obtain a greater efficiency in the operation of the hammer by avoidance of loss of motion and power by reason of the direct application of the same.

Further, by the employment of a round eccentric-cam in connection with its fixedly-attached eccentric-rod, eccentric cross-head bar, buffer, connecting-rods, and journal-shaft, the whole vibrating about a point in close proximity to the helve, the driving devices and the helve more perfectly oscillate together.

By means of the set-screws *d d* and *e e* and side plates F F, I am enabled more efficiently to raise or lower the helve in respect to its housings or standards, and thus readily and accurately adjust the distance of the hammer from the anvil, as the character of the work to be done may require, the springs N, O, and S being likewise capable of vertical adjustment to conform to the requirements of the change of position of the helve.

It may here be remarked that the driving-shaft, with its cam, eccentric-rod, buffers, and other driving parts, may as readily be located and applied to the driving of the helve at a point in the rear of the helve standards or housings B B as in front of the same, without changing the character of my invention.

This form of construction may be desirable where the greatest amount of force of blow is desired to be obtained from the power employed in the operation of the hammer. Delicacy of the blow is, however, increased by the arrangement of parts as hereinbefore described, and in the drawing shown.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a power-hammer, the helve E, in combination with an elastic operating mechanism, which operating mechanism is directly connected and pivoted to the helve by means of the plate Q, which is attached to the helve, and is longitudinally adjustable relative thereto, substantially as shown and described, and for the purpose specified.

2. The cross-head D, provided with set-screws *d e*, in combination with the adjustable side plates F F, having bearings for the reception of trunnions, the whole forming a device for the support and adjustment of the helve, substantially as shown and described.

3. The journal-bearing plate Q, provided with elongated slots *s s*, for the reciprocation of bolts to secure said plate to the helve, and to allow the adjustment of the same on the helve, to regulate the length of stroke of the hammer, substantially as shown and described.

MICHAEL DEERING.

Witnesses:
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