

(No Model.)

C. DEYHERLE.
STEAM HAMMER.

No. 498,896.

Patented June 6, 1893.

Fig. 1.

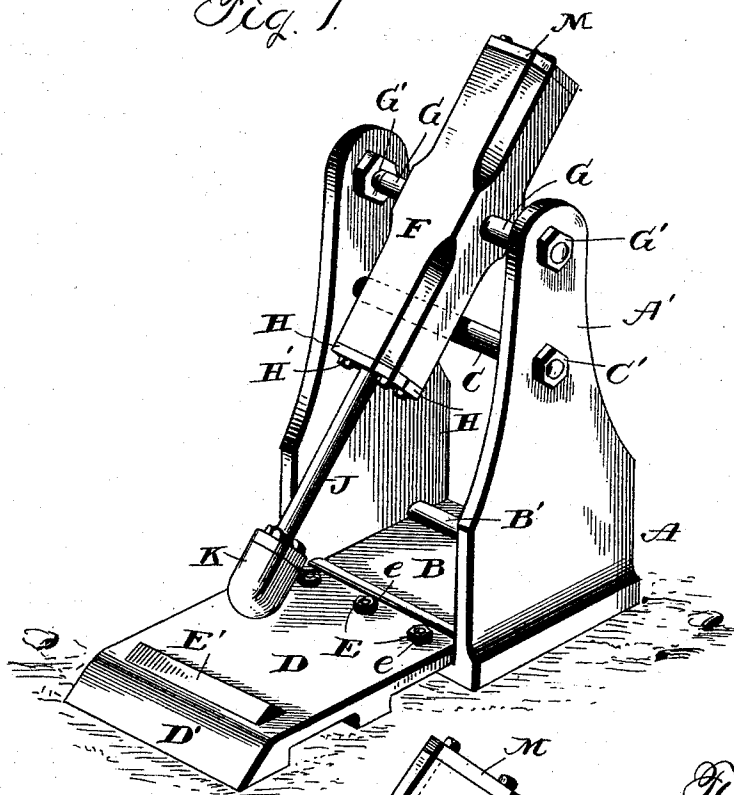


Fig. 2.

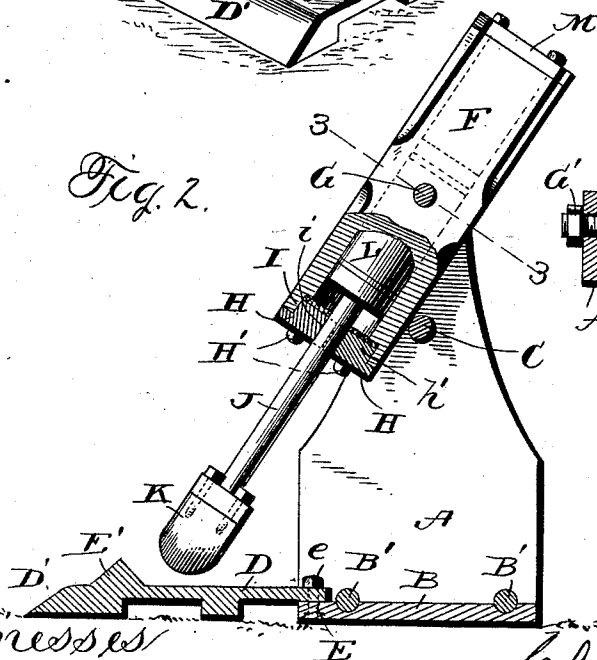
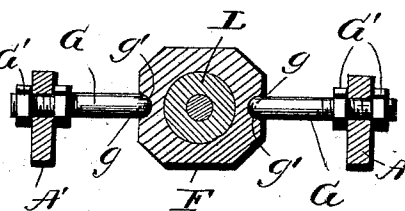


Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

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STEAM-HAMMER.

SPECIFICATION forming part of Letters Patent No. 498,896, dated June 6, 1893.

Application filed February 11, 1893. Serial No. 461,854. (No model.)

To all whom it may concern:

Be it known that I, CHARLES DEYHERLE, a citizen of the United States, residing at Iron Mountain, in the county of St. François and State of Missouri, have invented certain new and useful Improvements in Steam-Hammers for Breaking Stone; 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 letters of reference marked thereon, which form a part of this specification.

15 This invention relates to certain new and useful improvements in steam hammers and it has for its objects among others to provide an improved device of this character which shall be more efficient and durable and by which the stone may be more easily broken. I provide a suitable frame or support braced by cross rods to give it rigidity and one of the rods serving also as a means for limiting the movement of the cylinder which is hung upon pivots so as to swing with ease and the pivots connected to or mounted on the cylinder by ball and socket connections so that the position of the cylinder may be varied. Within the cylinder works a piston which carries a shank or stem to which the hammer is detachably secured in a convenient manner so that it may be quickly removed when necessary to replace it should it become broken, or to exchange it for another of different size or shape if desired. A suitable base or support is provided for the rock to rest upon while being acted upon by the hammer and this base or support is detachably mounted on the main frame so as to be easily taken off for another one to be substituted therefor, or for packing in case of shipment. The cylinder can be raised or lowered according to the size of the rock or ore to be operated upon.

Other objects and advantages of the invention will hereinafter appear and the novel features thereof will be specifically defined by the appended claim.

The invention in the present instance resides in the peculiar combinations, and the construction, arrangement and adaptation of parts whereby the desired ends are accomplished, all as more fully hereinafter de-

scribed, shown in the drawings and then particularly pointed out in the claim.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification and in which—

Figure 1 is a perspective view of my improved steam hammer. Fig. 2 is a vertical section through the same. Fig. 3 is a transverse section through the axis of the cylinder, on the line 3, 3 of Fig. 2.

Like letters of reference indicate like parts throughout the several views.

Referring now to the details of the drawings by letter, A designates the main frame or support which consists of the uprights or standards A' united at their lower ends by the base piece B and further by the cross rods B' which may be seated partly in grooves in the base piece as shown. The uprights are narrowed toward their upper ends as shown and at a point somewhat below their upper ends they are connected and braced by the cross rod C which is screwed into the uprights and provided upon their outer ends with the nuts C' by which the parts may be tightened when desired.

D is a support for the rock or ore to be operated upon. It is removably supported upon and connected to the base piece of the main frame or support as by the bolts and nuts E and e respectively, and at its front end it is provided with a tapered cross-piece D' up which the ore or rock may be more easily conveyed, and upon its upper face near the front end the ore-support is provided with a cross cleat or projecting rib E' which serves to hold the ore against displacement as it is being operated upon by the hammer and which serves to take the thrust of the same.

F is the cylinder; it is mounted to be swung into the desired position. I have shown what I at present consider the preferable way of mounting the same; it consists of the two oppositely disposed screw rods G which are screwed into the uprights and provided with the nuts G' upon opposite sides of the said uprights whereby the rods may be adjusted as occasion may require. The other ends of the rods are mounted in or connected by a ball and socket joint or connection with the cylinder upon opposite sides thereof. This

may be formed by forming upon the ends of the rods a ball as seen at *g* and forming the sockets upon the cylinder as shown at *g'*. By this means the cylinder can not only turn
 5 upon the rods as upon a pivot but the cylinder may be turned on its ball and socket unions so as to bring the hammer at the desired angle to act upon the rock or ore. When it is desired to hold the cylinder so it will be
 10 firmly held in a direct straight line the nuts on the rods may be turned so as to bind the balls in the sockets.

The cylinder has at its lower end a detachable plate *H* formed in two like parts and held
 15 in position by suitable means as the bolts *H'*. The plates have a flange *h'* which fits in the annular socket *I* in the end of the cylinder to form a stuffing box and prevent escape of steam or air. Each of the halves of this plate is provided with a semi-circular hole *i* for the passage of the stem or shank of the hammer. This stem or shank *J* is of such a diameter as to move easily yet snugly through the said hole and at its lower end carries the hammer
 25 *K* which may be of any suitable form and construction. The hammer itself may be detachably secured to the stem or shank, or the hammer may have a detachable face secured thereto by removable means so it may be
 30 easily removed and replaced by a new one when necessary or desired.

To the shank or stem is affixed rigidly, or

integral therewith the piston *L* which is fitted to reciprocate easily within the cylinder and suitable bushings or washers may be provided if necessary. The upper end of the cylinder may be provided with a detachable cap *M* as shown. 35

Suitable means should be provided for admitting air or steam for operating the piston within the cylinder but as this forms no part of the present invention I have not chosen to show it. It should comprise a suitable inlet for the steam or compressed air, and valves for controlling the supply and for reversing
 45 the same so as to operate alternately upon opposite sides of the piston.

The operation will be readily understood from the foregoing description when taken in connection with the annexed drawings, and
 50 a further detailed description thereof is not deemed necessary.

What I claim as new is—

The combination with the frame and the base piece, of the cross rods, the cylinder
 55 with its piston and hammer, and the pivots of the cylinder having ball and socket connection therewith, substantially as specified.

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

CHARLES DEYHERLE.

Witnesses:

FRED OEHLER,
 JOHN STOAKEL.