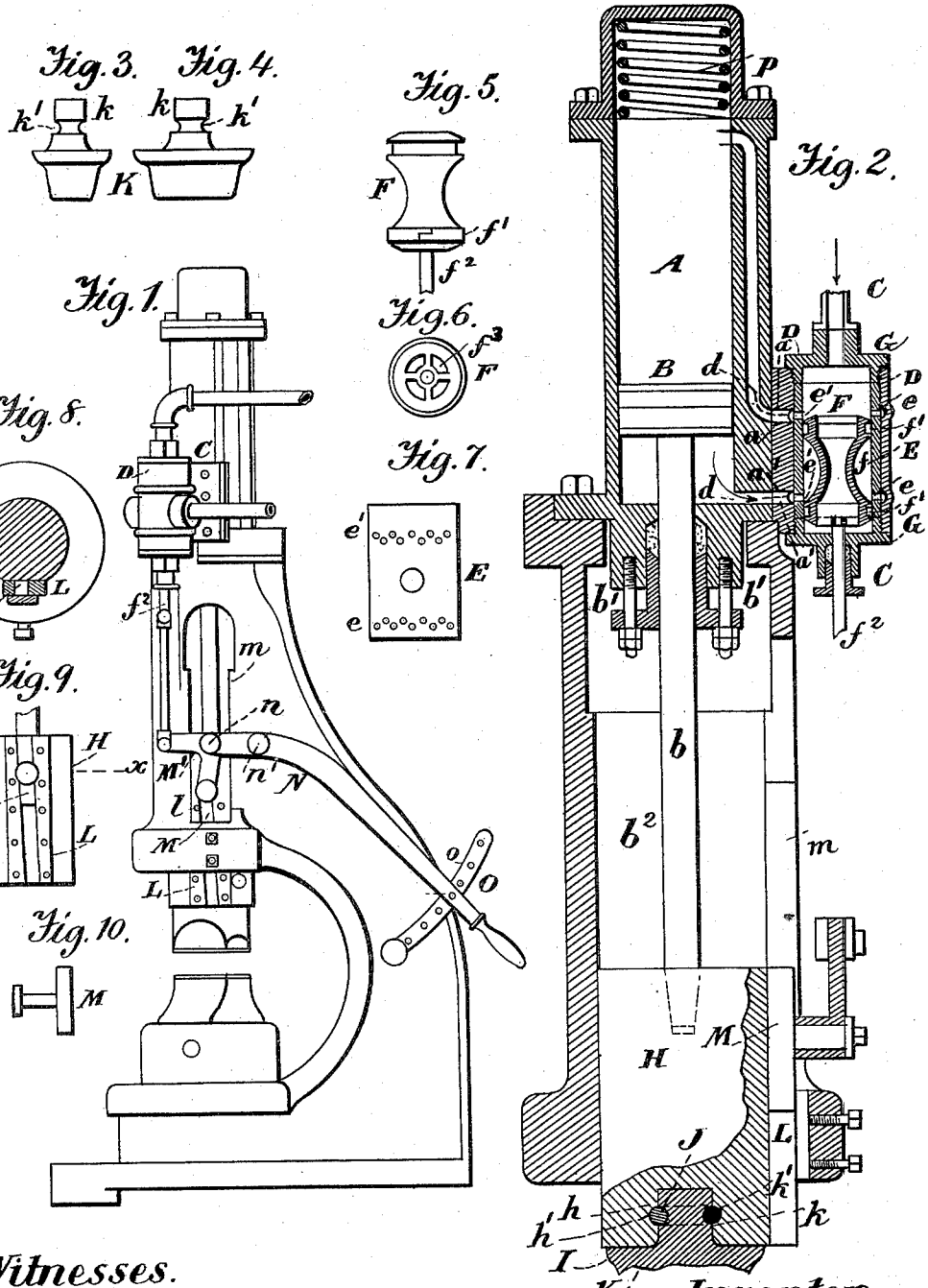
(No Model.)

G. GUILD.

STEAM HAMMER.

No. 456,988. Patented Aug. 4, 1891.



Witnesses.
A. Ruppert.
G. B. Towles.

Inventor.
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Per
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

GEORGE GUILD, OF KNOXVILLE, TENNESSEE, ASSIGNOR TO THE KNOXVILLE CAR WHEEL COMPANY, OF SAME PLACE.

STEAM-HAMMER.

SPECIFICATION forming part of Letters Patent No. 456,988, dated August 4, 1891.

Application filed January 9, 1891. Serial No. 377,241. (No model.)

To all whom it may concern:

Be it known that I, GEORGE GUILD, a citizen of the United States, residing at Knoxville, in the county of Knox and State of Tennessee, have invented certain new and useful Improvements in Steam-Hammers; and I do hereby 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.

The invention relates to steam-hammers; and it consist in certain improvements, which will first be described in connection with the drawings, and then pointed out in the claims.

The special object of the invention is to prevent the ram from lateral play in any direction and to regulate the blow of the hammer, as hereinafter described.

Figure 1 of the drawings is a side elevation of a steam-hammer provided with my improvements; Fig. 2, a vertical section thereof; Figs. 3 and 4, detail views of the hammer-dies; Figs. 5 and 6, detail views of the steam-chest valve; Fig. 7, a detail view of the steam-chest bushing; Fig. 8, a horizontal section on dotted line $x\ x$; Fig. 9, a detail view of the sliding block, and Fig. 10 a detail view of the slide which works in a groove of the ram to regulate the length of stroke and weight of blow of the hammer.

In the drawings, A represents the cylinder, in which works the piston B, the steam being introduced on the upper and lower side thereof alternately through the passages $a\ a'$ from the steam-chest C. The latter consists of the cylinder D, with interior steam-grooves $d\ d$, the interior bushing E, having the steam outlet holes e and inlet holes e', the valve F, having the annular steam-space f and the packing-rings $f'\ f'$ in grooves thereof, and the heads G G, which screw into the ends of the cylinder D. As the steam-space f alternately registers with the passages $a\ a'$, the live steam enters the cylinder A and reciprocates the piston B. The stem b extends down through the packing b' into the chamber b^2, in which is arranged the ram H, carrying the upper hammer-die I. This ram H is fastened to the stem b, and thereby carried when the piston moves. It is also constructed at the lower end with a hole and semicircular groove. The hole h receives the shank k of the die K, the said shank being provided with a corresponding annular semicircular groove k' to the one h' in the ram. The two grooves $h'\ k'$ form a round hole, in which is fitted the pin J, so as to fasten the die to the ram.

The ram H is made flat at h^2 and provided with the guide-piece. The guide L has a groove l, in which is moved up and down the slide M, which is connected by an elbow-lever M′ with the lever N and valve-rod f^2, while the lever N is pivoted at n to the vertex of the elbow-lever M′, so as to allow the up and down adjustment of the slide M in the slot l. The lever N is also adjustable vertically in the guide O by the use of the pin J in its series of holes, so as to regulate the force of the blow of the hammer.

The live steam enters the valve-chest through pipe C and passes down through the central opening of the valve F, so as to occupy the space above and below the valve, as well as the central opening therethrough, while the exhaust-steam passes into the space f around the valve, and thence out into the open air.

The lever N is pivoted at n and fulcrumed at n', but fastened at no other point, while its outer end moves between guides O and has its motion limited by pins placed in the holes o.

What I claim as new is—

1. In a steam-hammer, the combination of the cylindrical ram H, flattened at h^2 on one side, and a frame of corresponding construction, whereby the said ram may be guided without lateral play in any direction.

2. The combination, with the ram H, having the flat side h^2, of the guide L, having the vertical groove l, the slide M, adjustable

in said groove, the elbow-lever M′, and the lever N, the latter being adjustable in guide O, as and for the purpose set forth.

3. The ram H, flattened at h^2 and having a socket h, with semicircular groove h', in combination with a die K, having a shank k, which fits said socket and has a corresponding groove k', the two grooves h' k' receiving a pin J, as and for the purpose specified.

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

GEORGE GUILD.

Witnesses:
J. A. ROBERTS,
M. O. FRENCH.