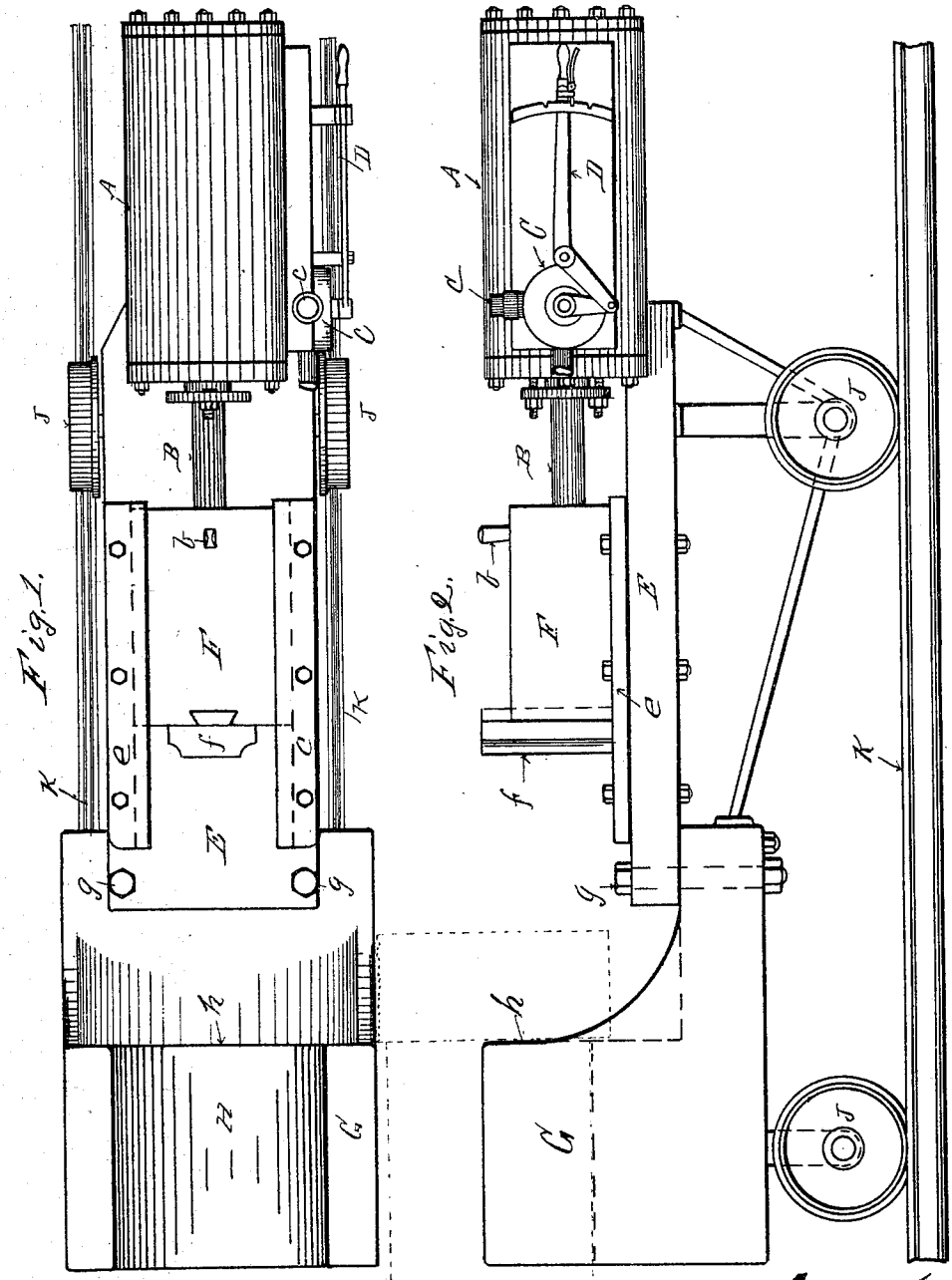
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J. P. HARRINGTON.

SHAFT UPSETTING HAMMER.

(Application filed Dec. 21, 1900.)

(No Model.) 2 Sheets—Sheet 1.



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Fig. 3.

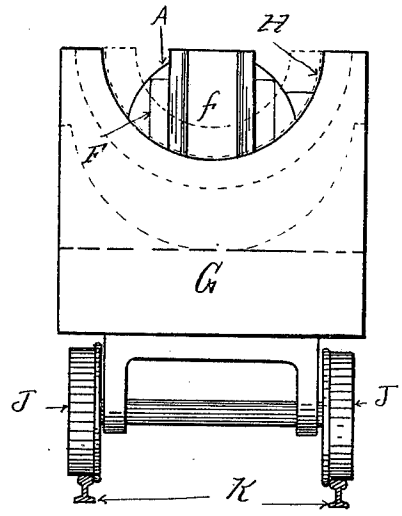


Fig. 4.

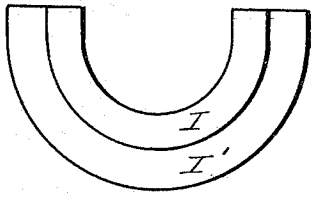
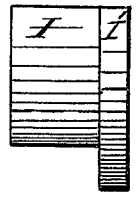


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN P. HARRINGTON, OF PHILADELPHIA, PENNSYLVANIA.

SHAFT-UPSETTING HAMMER.

SPECIFICATION forming part of Letters Patent No. 672,552, dated April 23, 1901.

Application filed December 21, 1900. Serial No. 40,626. (No model.)

To all whom it may concern:

Be it known that I, JOHN P. HARRINGTON, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Shaft-Upsetting 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, forming part of this specification.

My invention relates to improvements in shaft-upsetting hammers which are designed to operate upon the ends of shafts, so as to upset them and form collars thereon, as in forging shafts it is frequently necessary to do. To accomplish this end, I construct a horizontally-operating hammer, preferably operated by steam, which I attach to an anvil provided with a semicircular recess in the top thereof and in line with the travel of the hammer, so that the hammer-die will operate on the end of a shaft placed in said recess. I further provide this semicircular recess in the anvil with semicircular bushings, which may be inserted therein to adapt it to different-sized shafts. The anvil of this machine may be made stationary, if desired; but I prefer a construction in which the hammer and anvil are so constructed and mounted upon wheels that it can be moved to any point where a shaft is being forged and operated to upset the end of such shaft expeditiously when desired.

The construction and operation of my invention are hereinafter set forth and described, and illustrated in the accompanying drawings, in which—

Figure 1 is a top or plan view of a shaft-upsetting hammer embodying my invention. Fig. 2 is a side view in elevation of the same. Fig. 3 is a rear end view in elevation of the same. Fig. 4 is a rear end elevation of one of the anvil-bushings used in my invention. Fig. 5 is a side view in elevation of the same.

In the drawings thus illustrating my invention, A is a hammer-cylinder provided with the usual piston secured to a piston-rod B and also provided with valve mechanism C and an operating-lever D, all of which are of the usual construction.

The cylinder A is secured to the rear end of a horizontal bed E, which is provided with guides *e e*, in which a hammer F, secured to the piston-rod B by means of a key *b*, operates, so that when the machine is operated the hammer F travels horizontally forward and back in the guides *e e*, and on the forward end of the hammer F there is a removable die *f*, which operates as the striking-surface of the hammer F.

To the forward end of the bed E, I secure the anvil G by means of bolts *g*. The anvil is provided in its upper surface with a semicircular depression H, adapted to receive the largest-sized shaft to be upset on the machine, as illustrated by dotted lines in Fig. 2, or to receive a bushing I, Figs. 4 and 5, as illustrated in dotted lines in Fig. 3, so that a smaller shaft can be upset, the bushings I being made of different thicknesses and with flanges I′ on the end thereof, which rest against the face *h* of the anvil, so as to receive shafts of different sizes to be upset.

In operation the hammer-die *f* contacts with the end of the shaft being upset from the center downward, and the enlarged end of the shaft, (shown in dotted lines,) from which the collar is to be formed, contacts with the vertical face *h* of the anvil G around the semicircular depression H, in which the shaft lies, and as the blows of the hammer are all struck below the center of the shaft the blow of the hammer is in direct line with the vertical face *h* on the anvil G, and the enlarged portion of the end of the shaft contacting therewith prevents longitudinal movement of the shaft. The object of thus striking the end of the shaft below the center thereof is that the enlargement on the end of the shaft in contact with the shoulder *h* of the anvil G sustains the impact of the hammer-blow and as the shaft is turned in the anvil operates to square up the inner surface of the collar being formed on the shaft and also operates during the formation of the collar to bring all parts of the collar at right angles with the shaft and the two sides thereof parallel to each other, and as the shaft is turned in the depression H in the anvil G or in the bushings I the hammer-die *f* operates on the entire end of

the shaft, gradually upsetting it until a collar is formed thereon as desired.

This machine is preferably mounted upon flanged wheels J J, which rest upon a track K, so that the machine can be moved along the track to any point where a shaft is being forged and moved away again when desired, steam connection being made with the valve-inlet *c* by means of a steam-hose. (Not shown.) A further advantage of this arrangement is that the machine and shaft both being supported upon wheels during the operation of the hammer prevents undue shocks upon the parts of the mechanism from the blows of the hammer.

I have thus shown and described a shaft-upsetting hammer mechanism embodying my invention, which will enable others to utilize my invention; but I do not desire to confine myself to the exact construction and arrangement of parts shown, as they can be considerably modified without departing from the spirit of my invention.

Therefore what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination in a shaft-upsetting hammer, of a horizontal bed, horizontal guides on said bed, a cylinder secured to one end of said bed, a hammer connected with the piston-rod of said cylinder and traveling in the guides on said bed, an anvil having a semicircular depression in the top thereof secured to said bed so that the lower half of the depression in the anvil is in line with the travel of the hammer, substantially as and for the purpose set forth.

2. The combination in a shaft-upsetting hammer, of a cylinder secured to one end of a horizontal bed, guides on said bed, a hammer operating horizontally in said guides, and actuated by a piston in said cylinder, an anvil having a semicircular depression therein secured to the opposite end of said bed, a die on the face of the hammer adapted to strike the end of a shaft placed in the anvil below the center thereof, and bushings adapted to be placed in said semicircular depression in the anvil, substantially as and for the purpose set forth.

3. The combination in a shaft-upsetting hammer of a horizontal bed-frame, a cylinder and a hammer operated in horizontal guides thereby, an anvil having a semicircular depression in the upper part thereof the lower half of which is in line with the traverse of the hammer, semicircular bushings having collars thereon adapted to fit the semicircular depression in the anvil, and wheels under the bed-frame and anvil, substantially as and for the purpose set forth.

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

JOHN P. HARRINGTON.

Witnesses:
E. S. ROCKAFELLAR,
JOHN S. RILLING.