P. W. Gates.

Stamping Heads

No 52,641. Patented Feb. 13. 1866.

Fig. 1.

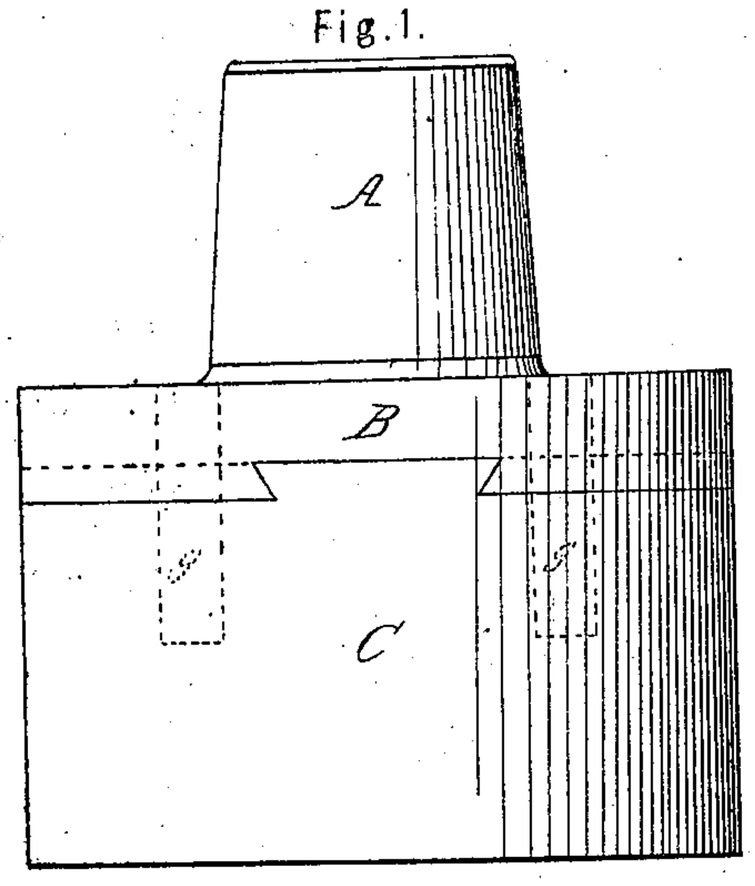

Fig. 2.

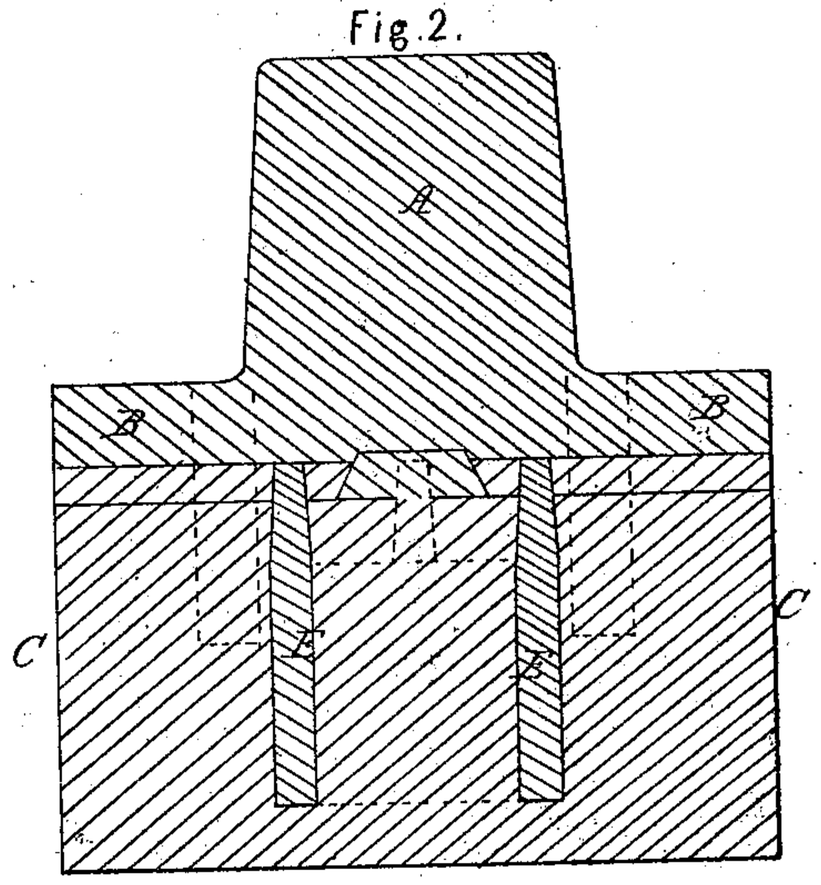

Fig. 3.

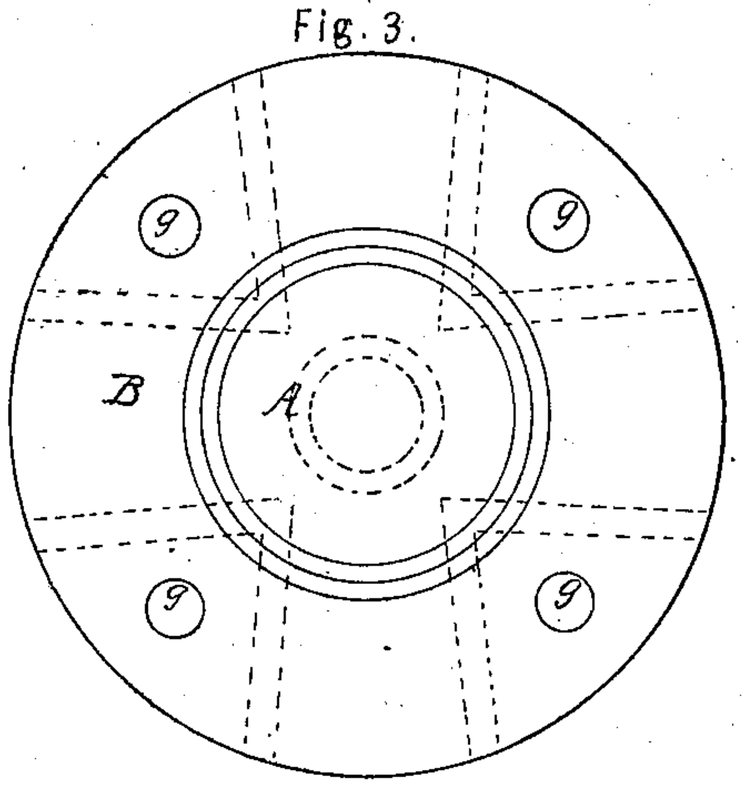

Fig. 4.

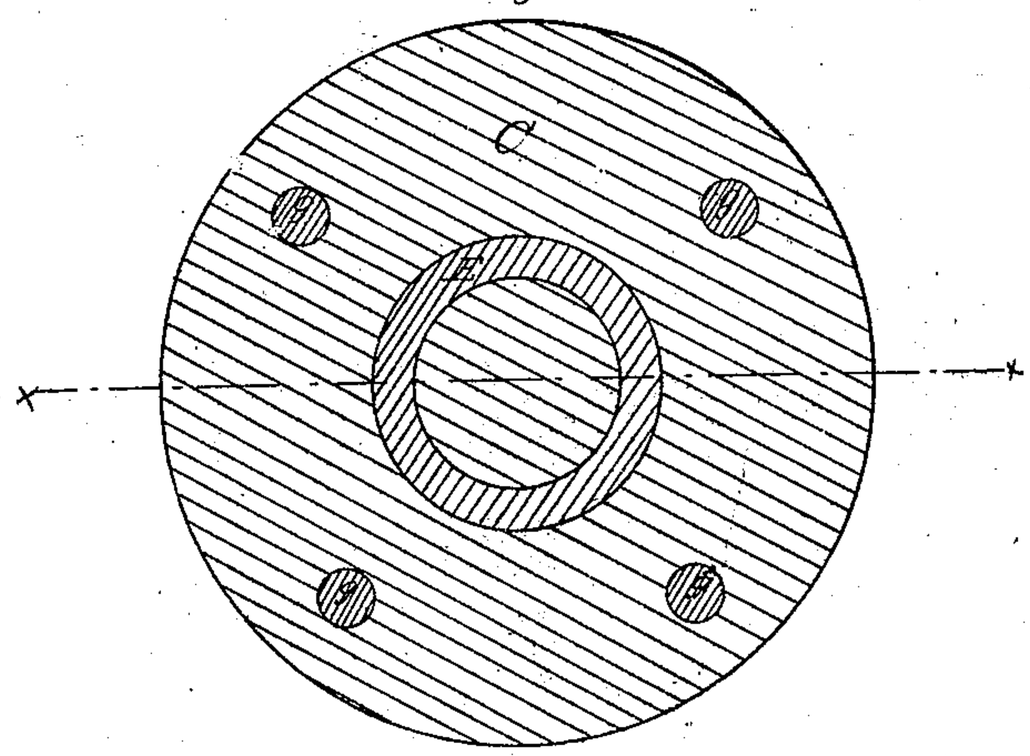

Fig. 6.

Fig. 5.

Witnesses:
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UNITED STATES PATENT OFFICE.

P. W. GATES, OF CHICAGO, ILLINOIS, ASSIGNOR TO HIMSELF AND D. R. FRASER, OF SAME PLACE.

IMPROVEMENT IN STAMPING-HEADS.

Specification forming part of Letters Patent No. **52,641**, dated February 13, 1866.

To all whom it may concern:

Be it known that I, P. W. GATES, of Chicago, Cook county, State of Illinois, have invented a new and Improved Shoe for the Stamping-Heads of Quartz-Crushers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side elevation of the improved shoe. Fig. 2 is a diametrical section through the same. Fig. 3 is a top view. Fig. 4 is a horizontal section through the shoe. Figs. 5 and 6 show a chilled core-ring which is used in casting the lower ends of the shoes.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to an improvement in shoes for the stamping-heads of quartz-crushing machinery; and it consists in the new and improved mode herein described of constructing such shoes with their lower ends chilled, and uniting the chilled part to a cap and center stem of a softer metal, or a metal which is not chilled, my object being to afford strength and toughness where the shoe is subjected to the greatest strain, and to afford hardness where the shoe is subjected to wear, as will be hereinafter described.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

The form of my shoe will be understood by reference to Figs. 1 and 3. Its body is cylindrical, having a central tapering stem projecting from its upper end.

The stem A is cast with a circular flange, B, on its lower end, the diameter of which is equal to that of the body of the shoe when finished. The bottom surface of this flange is cast with dovetail grooves in it radiating from the center of the flange, as indicated by the dotted lines, Fig. 3, for the purpose of receiving the metal which forms the cylindrical body C.

Pins or screws or hooks are cast into and project from the bottom surface of the flange B, as represented in the drawings. The flange thus formed is adjusted in a metal flask in an inverted position, and upon it a hollow ring of chilled metal (shown in Figs. 5 and 6) is put, after which the molten metal is poured into the flask, so as to form the body of the shoe, as shown in Figs. 1, 2, and 4. As the metal is poured into the flask it runs into the dovetail grooves in the flange B, and when this metal is cool a perfect union of the flange with the body of the shoe is the result. This union of the two metals may be made without the use of the pins shown at *g g*, Figs. 2 and 4, or it can be effected by means of the pins alone, the grooves in the flange B being dispensed with.

I prefer to use the grooves, as indicated by dotted lines, Fig. 3, which taper from the circumference of the flange B toward its center, for the purpose of causing the metal of the body C to draw tight into the grooves as this metal cools and shrinks.

The hollow core or center piece, F, is of chilled metal, and is intended for chilling the metal which is poured around it from the center toward the circumference, while the flask chills the metal from the circumference toward the center, thus hardening the portion C throughout.

The shoe when completed will consist of a hardened or chilled portion, C, united firmly to a flanged center pin, A, of soft metal, which is tougher and much less liable to break than it would be if hardened by the chilling process.

The object of forming the flange B upon the center pin, A, is to make a firm attachment of the hard-metal portion of the shoe to it, and also to form a sufficient body of metal upon the pin A to prevent it from breaking off.

The stem or pin A is made tapering or wedge form for the purpose of allowing it to be driven tightly into the opening into the lower end of the stamping-head, and thus keeping the shoe in place without the necessity of employing other fastenings.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The compound hard and soft metal shoe A B C, constructed and produced substantially in the manner described.

2. Constructing the stem A with a flange, B, which has intersecting dovetail grooves in its lower face, so that the metal which forms the part C of the shoe shall be united to it by the act of casting said part C, substantially as described.

3. The intersecting dovetail grooves formed in the under side of the soft-metal stem A of a compound hard and soft metal shoe, substantially as described.

P. W. GATES.

Witnesses:
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W. L. CHASE.