E. B. CAMPBELL.

ROTARY PIVOTED HAMMER FOR CRUSHERS.

APPLICATION FILED JUNE 6, 1921.

1,410,455. Patented Mar. 21, 1922.

Fig. 2.



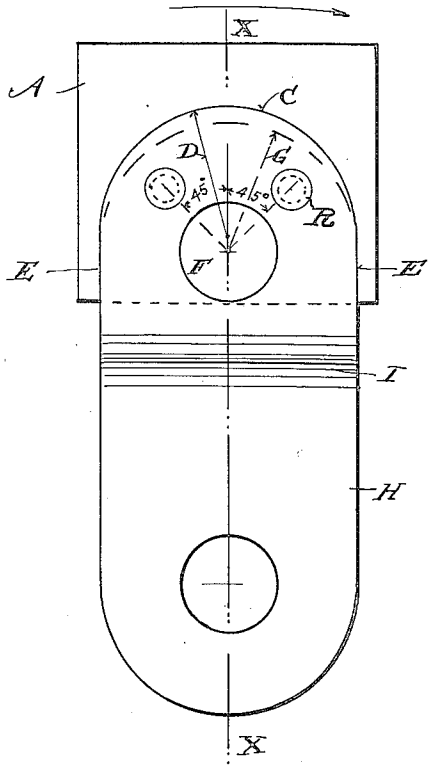


Fig. 1.

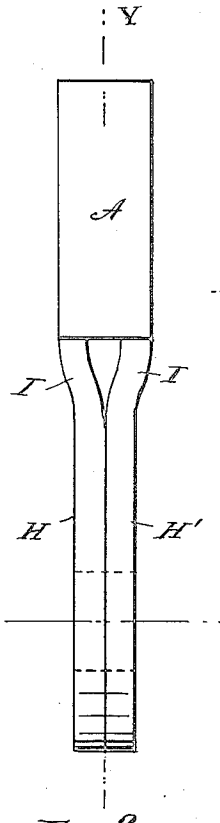


Fig. 3.

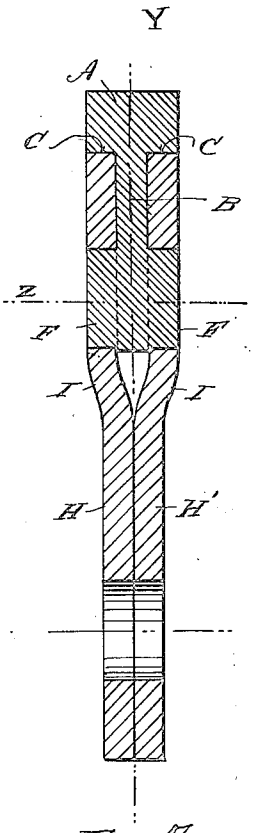


Fig. 4.

Inventor

Edward B. Campbell

By A. M. Plaisted.

Attorney.

UNITED STATES PATENT OFFICE.

EDWARD B. CAMPBELL, OF ST. LOUIS, MISSOURI, ASSIGNOR TO WILLIAMS PATENT CRUSHER & PULVERIZER COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

ROTARY PIVOTED HAMMER FOR CRUSHERS.

1,410,455. Specification of Letters Patent. Patented Mar. 21, 1922.

Application filed June 6, 1921. Serial No. 475,480.

To all whom it may concern:

Be it known that I, EDWARD B. CAMPBELL, a citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Rotary Pivoted Hammers for Crushers, of which the following is a specification.

This invention relates to certain new and useful improvements in rotary pivoted hammers for crushers, the peculiarities of which will be hereinafter described and claimed.

The main object of my invention is to provide a simple and effective connection between a hard steel—such as cast manganese—head and a shank of soft steel making up a pivoted rotary hammer for use in crushers and pulverizers:

Secondly, to provide, such a connection that the hammer head under any loosening of the connection, will tend to wedge itself upon the shank:

Thirdly, to provide a shank narrower than the head and adapted to said head.

In other forms of built-up hammers the head is liable to work loose under heavy usage and depart from the firm connection first secured. In my hammer, any loosening that may occur will be corrected by the wedging action between the parts that will follow such loosening due to the eccentricity of my disc pin F with regard to the outer curved end of the hammers in their socket walls and thus automatically regain a firm engagement.

In the accompanying drawing on which like reference letters indicate corresponding parts, Fig. 1 represents a side view of a hammer embodying my invention; Fig. 2, a plan view of the head; Fig. 3, an edge view of said hammer; and Fig. 4 a vertical sectional view on the line *x—x* of Fig. 1. The letter A designates a head preferably rectangular and much thinner than it is wide, as indicated in the figures; this head is of hard steel, preferably cast manganese steel, which is adapted for the operating ends of such pivoted hammers on the account of its hardness. In each side of said head is a semi-circular socket open at the bottom edge and leaving a central rib B in the plane of rotation Y indicated by the arrow Fig. 1. The upper wall of each socket is semi-circular and indicated by the letter C, being struck from a point in the central line X with a radius D. The side walls of the sockets are straight at E to the open bottom edge. Projecting laterally from the central rib is a disc pin F in each socket, each pin alined with the opposite pin, and the transverse axis of said pins located eccentric to the upper semi-circular wall C of each socket. This is to say, the center line Z of the disc pins passes through the center line X—X at a point below the point from which the semi-circular walls C are struck by the radius D. The amount of this eccentricity is indicated in Fig. 1 by the dashed semi-circle on the radius G from the axis of the disc pins F. A lune is formed by this eccentric location of the disc pins so that any loosening of connection between the double shank formed by the two pieces H and H′ fitting in said sockets, will cause a wedging action between the semi-circular walls and the matching semi-circular ends of said shank parts. The upper ends of the two-part shank have holes matching the said disc pins, and the lower ends are also provided with matching holes for pivotal mounting. These two parts are symmetrical and the lower portions lie close together, while the upper ends are divided a distance equal to the thickness of the rib B by means of curved or bent portions I just below the head when mounted in the sockets. The thickness of the parts forming the shank is such that the double shank is narrower than the head as shown in Fig. 3.

A suitable means for securing the upper ends of the shank parts in said sockets may be employed, but I prefer rivets R passing through the shank parts transversely and countersunk at the ends, and preferably located in the upper ends of the double shank at a point about 45° each side of the center line X as shown in Fig. 1. These rivets assist, when located as shown, the wedging action of the head and shank in maintaining a firm connection.

Thus it is evident that a suitable head of hard steel can be formed, and soft steel shanks bent and stamped and punched to fit said head may be secured in a firm connection, which connection under usage will

tend to maintain itself by wedging action in spite of any loosening that may occur between the connected parts.

I claim:

1. A rotary pivoted hammer comprising a head having a lateral socket on each side of a central rib in the plane of rotation,—each socket having a semi-circular outer wall and a disc pin laterally projecting from said rib,—the radius of curvature of said wall being struck from a point further out on the shank than the center of said disc pin,—a double shank having a hole at the lower end for pivotal mounting, and having semi-circular outer ends and holes eccentric to said ends matching said outer wall of the sockets and said disc pins respectively and capable of wedging action between the curved outer end of the shanks and the curved wall eccentric to the holes in the shanks, and means to hold said upper ends in said lateral sockets.

2. A rotary pivoted hammer comprising a head having a lateral socket on each side of a central rib in the plane of rotation,—each socket having a semi-circular upper wall and an integral disc pin laterally projecting from the said rib and eccentric to said upper wall, a double shank consisting of two parts fitting closely together and adapted for pivotal mounting at their lower ends and having semi-circular upper ends and holes matching said socket walls and disc pins respectively, and bent outward at their upper ends dividing them a distance equal to the thickness of said rib and adapted to fit snugly into said sockets, and means to hold said upper ends in said sockets.

3. A rotary pivoted hammer comprising a flat rectangular manganese steel head having lateral sockets with semi-circular upper walls on opposite sides of a central rib in the plane of rotation,—each socket having an integral lateral disc pin alined with the other pin and eccentric to said upper cylindrical walls, and a soft steel shank having divided semi-circular ends and alined holes fitting said socket walls and alined disc pins respectively, and adapted for pivotal mounting at the other end, and rivets passing through said double shank and maintaining the divided ends in said sockets.

In testimony whereof I have affixed my signature.

EDWARD B. CAMPBELL.