O. F. BLEDSOE, JR.

HAMMER FOR ROTARY MILLS.

APPLICATION FILED DEC. 8, 1915.

1,186,071. Patented June 6, 1916.

Fig. 1

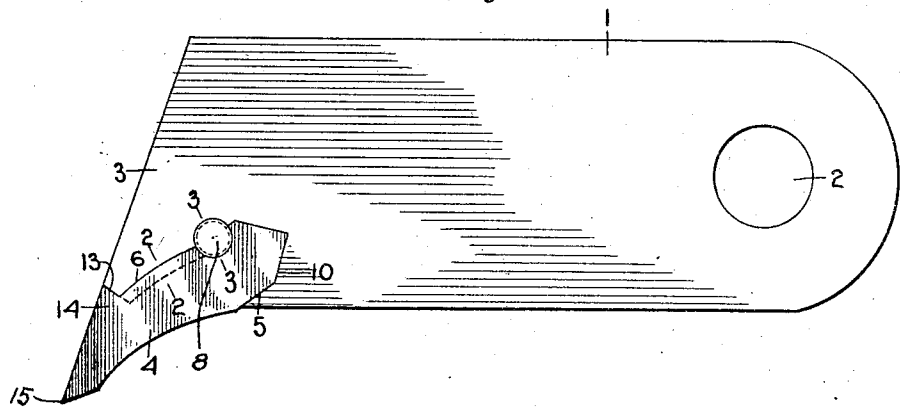


Fig. 2

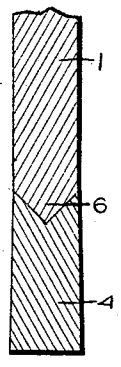


Fig. 3

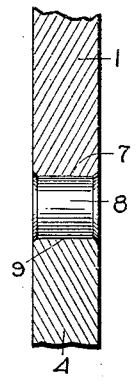


Fig. 4

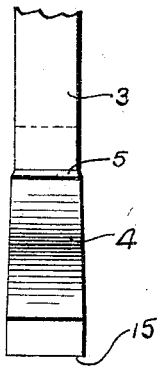


Fig. 5

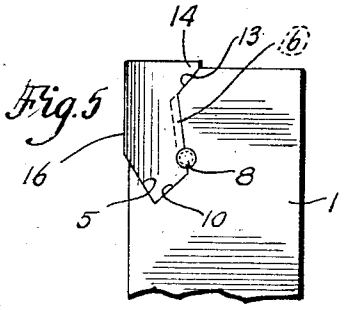
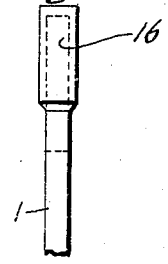


Fig. 6



INVENTOR

Oscar F. Bledsoe Jr.

BY F. R. Conwall ATTORNEY

THE COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

OSCAR F. BLEDSOE, JR., OF SHELLMOUND, MISSISSIPPI.

HAMMER FOR ROTARY MILLS.

1,186,071. Specification of Letters Patent. Patented June 6, 1916.

Application filed December 8, 1915. Serial No. 65,711.

To all whom it may concern:

Be it known that I, OSCAR F. BLEDSOE, Jr., a citizen of the United States, residing at the city of Shellmound, county of Leflore, and State of Mississippi, have invented a certain new and useful Improvement in Hammers for Rotary Mills, of which the following is a full, clear, and exact description, 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, forming part of this specification.

This invention relates to improvements in hammers or beaters for rotary mills of a type commonly employed for crushing, cutting, shredding, pulverizing or otherwise reducing or comminuting materials of different sorts. Mills of this nature are characterized by the employment of a concave or grinding surface or cage disposed to form a portion of the wall of a grinding cylinder, through which cylinder passes a shaft, and upon which shaft are carried pivotally mounted beaters or hammers so disposed so that their free ends will coöperate with the concave when the shaft is rotated and the beaters thereby extended radially by centrifugal force. In mills of this nature, the hammers wear down at their outer ends, shortening them to some extent, or rounding off or dulling their operating edges.

The purpose of my present invention is to provide a new hammer of a certain type which is more durable than the types heretofore employed, and which is constructed so that worn parts thereof may be readily repaired, whereby the hammer may be kept sharp and efficient.

In the accompanying drawings, I have shown certain constructions embodying my invention in different forms.

Figure 1 represents a side view of one form of hammer containing my invention; Fig. 2 is a detail being a cross section on line 2—2 of Fig. 1; Fig. 3 is a detail being a cross section on line 3—3 of Fig. 1; Fig. 4 is a detail being a partial elevational view of the front edge of the hammer shown in Fig. 1; Fig. 5 is a fragmentary view of the outer end of another hammer embodying my invention; Fig. 6 is an elevational view of the front edge thereof.

Referring to the drawings in detail, let numeral 1 indicate a shank member which is in the nature of a strip of metal relatively thin in comparison to its width, and preferably of mild steel or other tough metal. At one end, which for the purpose of distinction, will be called the inner end, this shank member is provided with an aperture 2 extending therethrough in the direction of its minimum dimension, which aperture is designed to receive a bolt or pin whereby the hammer may be operably connected with the shaft of the machine, the mounting being such that the hammer will swing in the direction of its greatest width, and present one of its narrow edges to the work, and its outer end 3 toward the concave or grinding cage. At the forward corner of its outer end, the shank portion is provided with a slot or aperture in which is removably seated a point portion 4. This point member is disposed at that portion of the hammer which is subjected to the greatest wear, and is made of some very hard and wear-resisting metal such as manganese steel. It is removably seated in the shank portion, as hereinafter described, so that it may be replaced when worn down, and the hammers thereby kept sharp and efficient. I am aware that heretofore the entire hammers have been made of hard metal, or that their outer ends have been highly tempered or hardened. Experience has shown, however, that wherever the entire hammer or the outer end thereof is made of a metal which has a high resistance to wear, the hammer is brittle, and moreover is extremely difficult to sharpen when it becomes worn. The use of this insertible point member at the point of greatest wear on a hammer of this form permits my constructing the shank member of a mild steel, which is extremely tough in comparison to the hard wear-resisting steel, and which, therefore, forms an excellent carrier and backing for the hard work engaging point member. This point member, as will be observed particularly in Figs. 2, 4 and 6, is thicker at its front or forward face than is the shank member 1, and tapers more or less gradually back from its front edge to its rear edge, which rear edge is substantially parallel to its front edge. The point member also extends out forwardly in front of the front edge of the shank member, and terminates in a working corner or edge.

The form of hammer illustrated in the first four figures is designed for a cutting or shredding operation, such as the cutting

of fibrous materials, and the point member has a forward chisel edge 15 which is intended to coöperate with the cutter bar or concave of the mill.

In the form illustrated in Figs. 5 and 6, the hammer is designed for use in crushing or pulverizing, such as the reduction of cement clinker, grain, coal, etc., and the point member is, therefore, formed with a forwardly presented beating or breaking face 16.

As will be seen in both forms, the point member extends back from the operating corner a substantial distance at the outer end of the shank member, ending in an overhanging portion 14, and it also extends an appreciable distance from the operating corner toward the inner end of the shank member along the forward edge thereof. Thus the hard metal is presented at the portions of the operating end of the hammer where it encounters the material which is presented to its action. The outer end of the shank member extending the length of the rear wall of the point member, provides a firm shock-resisting abutment therefor.

It will be observed that the notch or slot in which the point member is seated, has a reëntrant wall 5, a back wall 6, which is substantially parallel to the front face of the point member but inclined somewhat in the direction of the outer corner of the point member, a bottom wall 10, and a shoulder 13. At 7 and 9 the shank member and the point member are transversely apertured to form a seat for the rivet or fastening means 8 whereby the point member is secured in position. This rivet seat is located opposite the reëntrant front wall 5, so that such compression as is exerted against the point member in the seating of the rivet will be exerted against the reentrant front wall of the notch, and the point member thereby retained against displacement forwardly. The disposal of the rivet, of course, is such as to prevent longitudinal displacement of the point member from the notch. Lateral displacement of the point member is prevented by the form of the rear faces of the former and the rear wall 6 of the latter which, as illustrated in Fig. 2, are so shaped that they have portions registering within one another in such fashion as to prevent relative lateral movement. The disposal of the front wall opposite the rear wall and in position to engage the forward edge of the point member as it is slipped into the notch, operates to retain the registering portions of the rear wall and point member in interengagement. The overhanging portion 14 of the point member rests upon the shoulder portion 13, which forms a supporting abutment.

As is well known in machines of the type wherein hammers of this sort are to be used, the effectiveness of the machine is largely dependent upon the momentum of the pivotally mounted hammers, and for this reason a hammer which has its greatest width at the operating end extending in the direction in which the hammer travels, instead of across the direction in which the hammer travels, is the most efficient, particularly in the crushing and pulverizing operations.

As is obvious from the foregoing, my invention constitutes an improvement in this particular form of hammer, and effects great economy in the use of that form, inasmuch as the point members may be easily removed when worn and replaced with new ones, it not being necessary to resharpen the hammers, while the cost of point members is much less than the resharpening of hard hammers or the cost of new hard hammers. The hard point members being somewhat thicker than the shanks at their forward edges, they will tend to protect the soft shanks as they will deflect material away from the latter. It will be observed, furthermore, that my invention permits the use of a variety of forms of point members on a single form of shank, thus enabling the equipment of the mill for use on materials of different natures.

I am aware that various minor changes in form and arrangement of the device may be made without departing from the scope of the invention indicated in the following claims.

What I claim is:

1. A hammer for a rotary mill comprising a shank portion in the form of a flat strip having a recess in the forward corner of its outer end, said recess having a reëntrant front wall extending inwardly from the forward edge of the shank portion, a point member seated in said recess in engagement with the walls thereof, and a removable fastening for retaining said point member in position; said point member extending beyond the shank portion and having a front face wider than the thickness of the strip.

2. A hammer for a rotary mill comprising a shank portion in the form of a flat strip provided at the forward corner of its outer end with a recess formed with oppositely disposed front and rear walls extending diagonally from the margin of the shank, a point member seated in said recess and extending the entire thickness of the shank, one of the aforementioned walls being arranged to coöperate with the point member to hold the latter against lateral displacement from the recess and the other of said walls being disposed to retain the point member in engagement with the wall last mentioned, and a removable fastening coöperating with the shank and with an

edge of the point member to retain the latter against longitudinal displacement from the recess.

3. A hammer for a rotary mill comprising a strip of metal having a recess in the forward corner of its outer end, said recess having a reëntrant front wall extending inwardly from the forward edge of the strip, a point member seated in said recess in engagement with the wall thereof and extending beyond the forward edge of the strip, a wall of said recess and an edge of said point member being formed for interengagement whereby relative lateral displacement is prevented, the reëntrant wall being disposed to hold said portions in interengagement, and a fastening coöperating with an edge of the point member to retain it in the recess.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this 4th day of December, 1915.

OSCAR F. BLEDSOE, JR.

Witnesses:
R. C. KING,
HARRY HULEN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."