

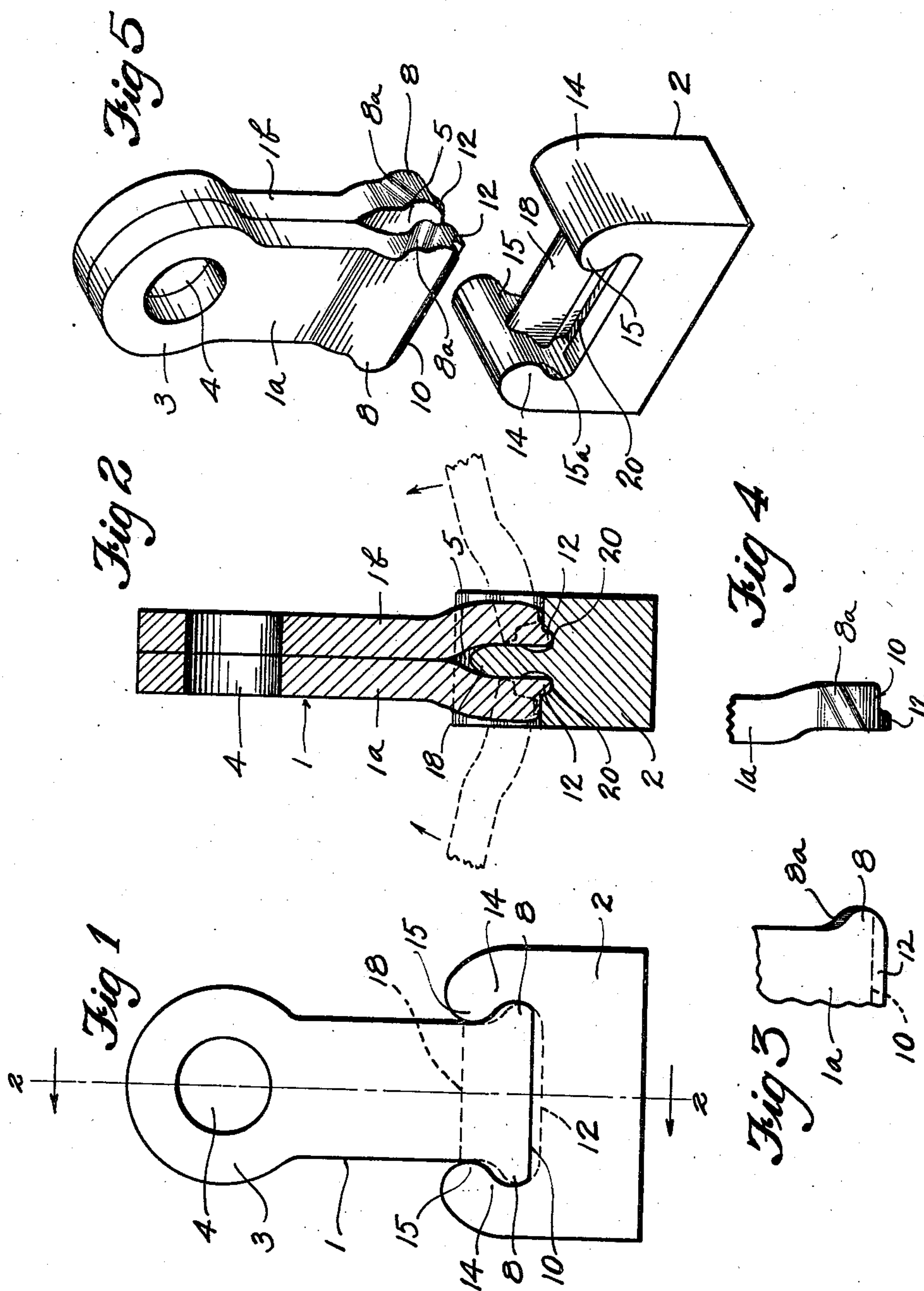
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ROTARY HAMMER

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# UNITED STATES PATENT OFFICE

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## ROTARY HAMMER

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2 Claims. (Cl. 83—11)

This invention relates to improvements in what are known as rotary hammers and more particularly to hammers of that character used in rock crushers, cement manufacturing mills and the like, and which, in use, are subjected to considerable pounding and wear; the invention herein disclosed being an improvement in the hammer structure disclosed and claimed in United States Patent No. 1,940,116 issued to me on December 19, 1933, which patent features a hammer having a head portion that may be removed from its mounting shank for reversal thereon or for replacement by a new head.

In the hammer of the patent above mentioned, the head is provided across the top with a transverse recess which has its opposite side walls formed with inwardly projecting or what may be termed "overhanging" shoulders, and between these side walls, the base of the recess is downwardly rounded. The shank portion on which the hammer head is mounted has a rounded lower end surface adapted to seat against the rounded base of the head recess and has laterally projecting ears at its opposite edges adapted to be disposed beneath the overhanging shoulders of the recess to form an interlock between the head and the shank. Furthermore, in the patent, the shank portion of the hammer comprises two opposite side sections or plates, adapted to engage flatly together and against opposite faces of a web that extends across the recess, and to be held in place by a rivet extended through the two sections and through the web.

The hammer of the above mentioned patent, while having many advantages, also has a few undesirable features; for instance, the rounded base of the recess does not provide as solid or as substantial an abutment surface for the shank end as is desired, and also, by reason of its being downwardly rounded, the depth of the body is materially reduced and thus does not provide as much extra depth to be taken up in wear as would be available if it were not so rounded; it being understood that use of the hammer causes an uneven wear and it must be periodically reversed in order to even it up. Another disadvantage is that the rivet which is used to hold the sections of the shank together has been found to be very difficult to remove when replacement or reversal of the hammer head was desired.

In view of the above remarks, relative to the hammer of the patent, it has been one of the objects of the present invention to provide certain improvements therein whereby to give the

hammer a longer life, as well as more rigidity while in use.

It is also an object of the invention to provide a construction which makes possible the elimination of the objectionable rivet and thereby to provide for easier and quicker assembling and disassembling of the head from the shank.

More specifically stated, the objects of the invention reside in the provision of a hammer having a head similar to that of the hammer of the patent except that the base of the recess is perfectly flat between its opposite side walls, and by reason of not being downwardly rounded, provides greater depth of body and affords a more solid abutment between the lower end of the shank and the hammer head.

Still further objects of the invention reside in the details of construction and in the combination of parts embodied in the device as will be hereinafter fully described.

In accomplishing these and other objects of the invention, I have provided the improved details of construction the preferred forms of which are illustrated in the accompanying drawing wherein—

Fig. 1 is a side elevation of a rotary hammer constructed in accordance with the present invention.

Fig. 2 is a vertical cross section, as seen on the line 2—2 in Fig. 1.

Fig. 3 is a view of the inner side of one of the retaining ears on the shank portion, particularly illustrating the beveled edge of the ear portion thereof.

Fig. 4 is an edge view of the same part.

Fig. 5 is a perspective view of the hammer showing the head portion disconnected from the shank portion to more clearly illustrate their construction.

To give a better understanding of the present invention, it will be here stated that such hammers are used in connection with off-center, or crank shaft mountings, and are so mounted thereon that when the shaft is rotated, the hammers swing outwardly to full length, and upon striking or impinging upon the rock or other objects, are free to swing rearwardly, thereby to allow their heads to pass the objects and the hammers then to swing out to full length for delivering another blow. In the present drawing, the hammer mounting is not shown.

Referring more in detail to the drawing—

1 designates, in its entirety, the shank portion of the hammer, and 2 designates the head portion thereof. The shank portion is provided at



its upper end with an enlarged portion 3 having a hole or bore 4 for mounting it on the throw of a crankshaft. It will be noted that the shank portion comprises two opposite side sections, or plates, 1a and 1b, and that these are disposed flatly together. Also, it will be noted that the lower end portion of each plate, that being the end to which the hammer head is applied, is outwardly offset, so that when the two plates are assembled together in the intended manner, there will be a space between them; this space being designated at 5 in Figs. 2 and 5.

At the lower end of the mounting shank 1, both plates 1a and 1b are provided at opposite edges with rounded, outwardly extending ears 8, the top or upper surfaces of which are beveled inwardly as at 8a. At their lower edges, both shank plates 1a and 1b present long, flat abutment surfaces 10 which extend substantially the full width of the plate and ears thereon, and from the inner edges of which tongues or flanges 12 project, each as a continuation of its plate.

The head 2 comprises one solid piece in block form, provided in its top portion with a transverse recess, bounded at opposite ends by the walls 14—14 formed with inwardly extended, or overhanging shoulders 15. The base of the recess is flat to receive the lower end of the shank flatly thereagainst, and there is a thin vertical web 18 extending transversely between the shoulders and end walls at the sides of the head recess. Adjacent to the web 18 at each side thereof is a downwardly directed channel or groove 20 formed in the flat base of the recess.

Considering the parts of the hammer to be so constructed, its assembly will be as follows:

To assemble the shank plates 1a and 1b with the head block 2, their lower end portions are applied to the recess at opposite sides of the web 18, by holding the plates at somewhat of an angle, as designated in dotted lines in Fig. 2, then by swinging them in the direction of the arrow, to move them to vertical positions and against the sides of the web 18. The beveling of the edges 8a of the shank ears 8 allows these ears to clear the lower edge of the overhanging shoulders 15 and seat therebeneath in a substantially tight joint. The lower surfaces 15a of the shoulders 15 are also beveled to insure ease of assembly and a more perfect fitting in this connection.

By reason of design of these interlocking complementary, beveled ears, and the flat end surfaces 10 of the shank plates coming flatly against the base of the recess at opposite sides of the web 18, and by reason of the tongues 12 seating in the channels 20, a perfect, solid and substantial connection is insured. Also, by reason of the extended, flat surface 10 in solid abutment with the flat base of the recess, any transverse or lateral rocking of the head is entirely eliminated, thereby reducing the wear on the shank portion of the hammer. By such a construction of the interlocking ears and shoulders and greater length of tongue and channel, all pins or rivets which have heretofore been necessary to hold the shank plates together may be eliminated, and a stronger and more stable hammer results.

With the hammer constructed in accordance with the foregoing, it is obvious that quick assembling of its parts into a unit is greatly facilitated, its life is lengthened, and the time necessary for reversing, repairing or replacements is thereby reduced by the elimination of any pins or units with which to hold the shank plates together. Cost of replacement is reduced because of elimination of the pins and the machinery necessary to install same.

Another advantage is that by the provision of the flat bottomed recess, greater depth of hammer body is possible and this gives longer life.

It is not intended that the invention be limited to the disclosures herein made, but that it be given an interpretation commensurate to the spirit and scope of the invention.

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

1. A hammer of the character described, comprising a head block having a transverse, flat bottomed recess across its top face, with overhanging shoulders at its opposite sides, a web extended between the said shoulders and dividing the recess; said bottom surface of the recess having channels thereacross at opposite sides of the web, and a shank comprising two complementary face plates, with ends applied to the recess at opposite sides of the web and having flat end surfaces in abutment with the flat base of the recess and having tongues extending therefrom into said channels and having ears at their opposite edges in holding contact beneath the overhanging shoulders; said ears being outwardly extended from the side edges of the shank and having the upper surfaces thereof beveled downwardly and inwardly, and the lower surfaces of the overhanging shoulders being downwardly and inwardly beveled to conform to the bevel of the coating surfaces of the shank ears, thereby to effect a wedging action in the interlocking of the said parts to hold the end surfaces of the shank against the flat bottomed recess.

2. A hammer of the character described, comprising a head block having a transverse flat bottomed recess across its top face with overhanging shoulders at its opposite sides; said bottom surface of the recess having channels thereacross, and a shank comprising two complementary face plates with ends applied to the recess and having flat end surfaces in abutment with the flat base of the recess, and having tongues extending from said surfaces into said recess channels and having ears at their opposite edges in holding contact beneath the overhanging shoulders; said ears being outwardly extended from the side edges of the shank and having the upper surfaces thereof beveled downwardly and inwardly and the lower surfaces of the shoulders being beveled to conform to the bevel of the coating surfaces of the shank ears whereby to effect a wedging action in the assembling of said parts that will hold the end surfaces of the shank against the flat bottomed recess.

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