Nov. 18, 1924. 1,515,708

J. W. STOLLE

HAMMER

Filed June 10, 1924

Fig 1

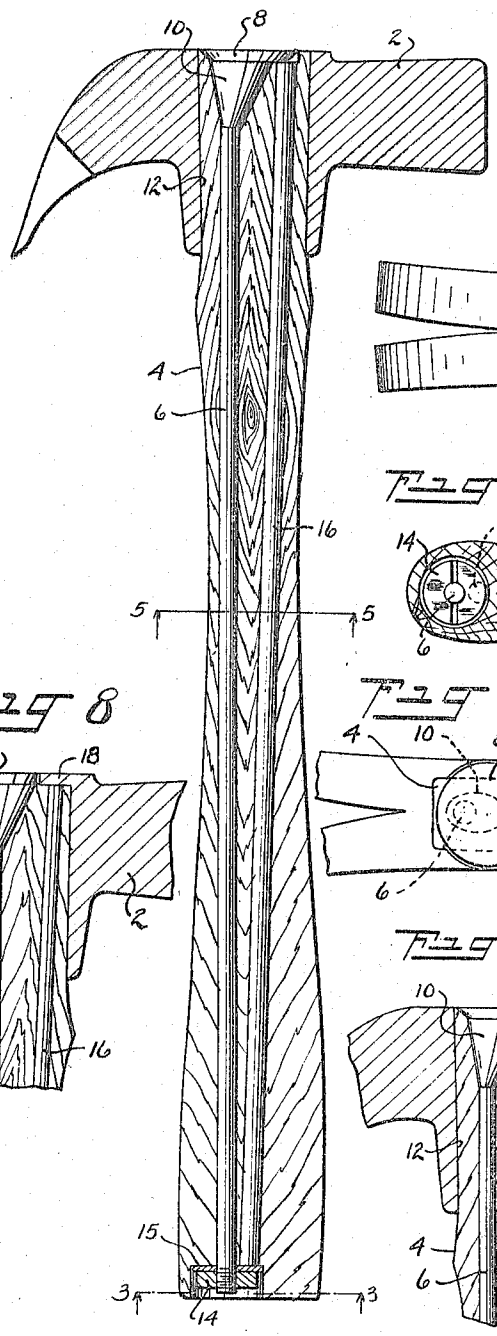


Fig 5

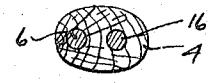


Fig 2

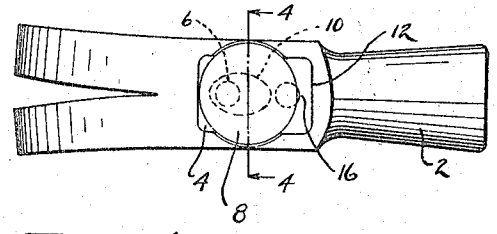


Fig 3

Fig 4

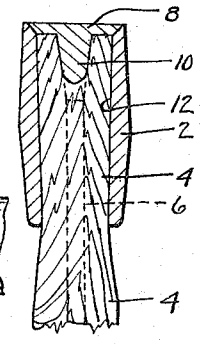
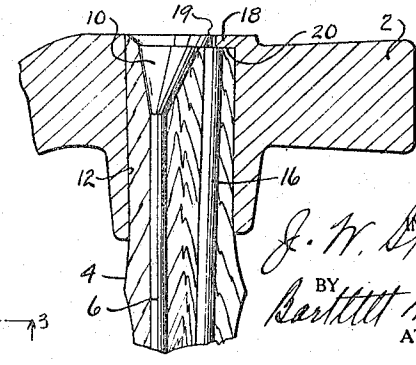


Fig 8

Fig 7

Fig 6



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Patented Nov. 18, 1924. 1,515,708

UNITED STATES PATENT OFFICE.

JOHN WILLIAM STOLLE, OF DANBURY, CONNECTICUT, ASSIGNOR TO THE DANBURY UNBREAKABLE TOOL CORPORATION, OF DANBURY, CONNECTICUT, A CORPORATION OF CONNECTICUT.

HAMMER.

Application filed June 10, 1924. Serial No. 719,024.

To all whom it may concern:

Be it known that I, JOHN WILLIAM STOLLE, a citizen of the United States, residing at Danbury, county of Fairfield, State of Connecticut, have invented a certain new and useful Improvement in Hammers, of which the following is a full, clear, and exact description.

My invention relates to hammers and other articles having wooden strain-resisting members, such as articles having wooden handles or members which are subject to abnormal strains in one direction, and has for its object to provide means for reinforcing such wooden members against such strains.

It further has for its object to provide a new and improved claw hammer in which the strain-resisting capacity of the handle is greatly increased so as to practically eliminate the danger of breaking the same.

The following is a description of my invention reference being had to the accompanying drawings, in which,

Figure 1 is a longitudinal section of a claw hammer embodying my invention;

Fig. 2 is a plan view of the same;

Fig. 3 is a bottom end view of the same;

Fig. 4 is a section on the line 4—4, Fig. 2;

Fig. 5 is a section on the line 5—5, Fig. 1;

Fig. 6 is a partial longitudinal section showing a modification;

Fig. 7 is a section on the line 7—7, Fig. 6; and

Fig. 8 shows another modification.

Referring more particularly to the drawings 2 is a claw hammer head of ordinary form and construction. 4 is a one piece wooden handle with the usual lengthwise grain, which when the hammer is used for pulling rusty nails and the like is thus subjected to great strain in the forward direction, i. e. in the direction away from the claw.

In order to reinforce the handle against such strain I form a longitudinal hole lengthwise through the handle and to the rearward or claw side of the axis thereof so as to be in the tension zone. In this hole I insert a metal rod 6. I provide this rod 6 at its upper end with an abutment 8 below which I preferably form a wedge 10 for expanding the corresponding end of the wooden portion of the handle. This abutment extends beyond the sides of the eye or socket 12 of the hammer head, the end of the hammer head being countersunk so as to permit the abutment to be flush to the upper surface thereof. The lower end of the handle is provided with a recess in which there is an abutment member on the rod 6, preferably comprising a nut 14 screwed upon the lower screw threaded end of the rod, the end of the rod being upset so that the member is riveted on. The nut 14 is screwed up, before the upsetting, so as to engage a washer 15 at the lower end of the handle and hold the upper end of the handle in close engagement with the under surface of the abutment 8. The wedge 10 expanding the wood, the handle is thus held firmly within the head. The rod 6 with its abutments thus constitutes a tension rod.

With this construction the offset tension rod 6 together with the abutment 8 and the abutment formed by the nut 14 and washer 15 so reinforces the handle as to greatly increase its strength, the portion of the wooden handle to the forward side of the axis acting as a compression member, which in conjunction with the tension rod 6 produces an improved result.

In order to still further increase the strain-resisting capacity I form through the forward part of the handle a second longitudinal hole in which I place a metallic compression rod 16, one end of which abuts against the under side of the abutment 8, while the other end abuts against the inner face of the abutment comprising the nut 14. This rod fits closely within the hole through which it passes so that the wooden portion of the handle prevents its buckling when placed under compression. Since the compression rod does not yield substantially, this second rod greatly increases the strain-resisting capacity. This rod 16 is located in the compression zone of the handle when the same is subjected to forward strain. I preferably form the two holes within the handle so that the hole containing the tension rod 6 is substantially parallel with the grain of the wood in the wooden portion,

being located in the tension zone of said wooden portion. I preferably form the hole containing the compression rod 16 at a slight angle with the hole containing the rod 6 so that the upper ends of the two rods are slightly farther apart than the lower ends, thus forming with the abutments an approximately triangular construction.

In order to increase the strain-resisting effect of the offset tension rod 6 I may form the hammer head with an internal abutment shoulder 18, shown in the modification illustrated in Fig. 6 with which the shoulder 20 on the end of the handle, when the handle is in place is in close engagement. These abutting portions co-act when the forward side of the handle is put under compression during the pulling of nails and the like and contribute to the desired end of increasing the strain-resisting capacity of the handle with its tension rod whether the compression rod 16 is present or absent.

When the shoulder 18 is present and the compression rod is used the upper end of the compression rod at least partially abuts the same, its lower end engaging the abutment on the lower end of the rod 6 as in Fig. 1. In this case the forward portion of the abutment in the upper end of the rod 6 is reduced as shown at 19 in Fig. 6. Where the shoulder 18 is used with the rod 16 in engagement therewith, the rod 16 preferably also engages the abutment 8, as shown in Fig. 6.

I make the wedge member 10 somewhat elongated from front to rear and preferably form it so that the cross-section will be somewhat oval. This elongation not only expands the wood of the handle properly but prevents the rod 16 from turning when the nut 14 is being turned. The nut 14 is preferably round and provided with a screwdriver or spanner-slot, and of such diameter and thickness that it fits the recess in the end of the handle. Under the nut 14 I preferably use a flat washer 15 to facilitate turning of the nut 14 and to prevent same from gouging the wood while it is being tightened.

The abutment 8 preferably has its edges somewhat beveled to facilitate the forging of the same and also to permit the use of a tapered countersunk recess in the upper end of the head, to receive said beveled abutment. The abutment 8 is somewhat eccentrically located upon the rod 6 so as to form an inner shoulder extending to the forward part thereof against which the compression rod 16 abuts. So long as there is a firm engagement between the rod 16 and the abutment 8 it is not necessary that the full end of the rod 16 should engage the shoulder formed by the abutment.

I have shown the shoulder 18 as located near the upper end of the eye of the handle, although its location is not necessarily confined to that point so long as it is at the forward part of the hammer head eye.

Fig. 8 shows a further modification in which the compression rod 16 engages the shoulder 18 without engaging the abutment on the upper end of the rod 6, the shoulder 18 forming an abutment which puts the compression rod under compression when the handle is subjected to strain in the forward direction.

The rods 6 and 16 may be made of steel, but for the sake of lightness I prefer to make them of duralumin or other light metal of sufficient strength.

My invention, broadly considered, can be embodied to advantage in wooden strain-resisting members other than hammer handles, although it is of particular advantage in supplying a much needed want in connection with hammers.

As will be evident to those skilled in the art, my invention permits of various modifications without departing from the spirit thereof or the scope of the appended claims.

What I claim is:

1. A reinforced strain-resisting member consisting of the combination of an extended wooden member having its grain lengthwise and having two longitudinally extending holes, one on the tension side and the other on the compression side of the axis of said member, a metallic tension rod in the hole on the tension side and a metallic compression rod in the hole on the compression side, and means for subjecting said rods to tension and compression respectively, when pressure is applied to said member in one direction.

2. The combination of a claw hammer head having a handle socket, a handle in said socket, a tension rod passing through said handle and located between the axis thereof and the rearward side of said hammer, and abutments upon the ends of said tension rod, and a compression rod passing through said handle and having its ends engaging said abutments, said compression rod being located in the compression zone of said handle when subjected to forward strain and said handle having longitudinally extending holes through which said rods pass.

3. The combination of a claw hammer head having a handle socket, a handle in said socket, a tension rod passing through said handle and located between the axis thereof and the rearward side of said hammer, and abutments upon the ends of said tension rod, said head having an internal shoulder located at the forward side of its eye and a compression rod passing through said handle and engaging the abutment on the lower end of said handle and said shoulder, said compression rod being located in

the compression zone of said handle when the same is subjected to forward strain.

4. The combination of a claw hammer head having a handle socket, a handle in said socket, a tension rod passing through said handle and located between the axis thereof and the rearward side of said hammer, and a compression rod passing through said handle and located in the compression zone thereof when said handle is subjected to forward strain, the upper ends of said rods within the hammer head being spaced apart more than their lower ends.

JOHN WILLIAM STOLLE.