Aug. 17, 1937. S. S. VAUGHAN 2,090,164

HAMMER

Filed April 15, 1936

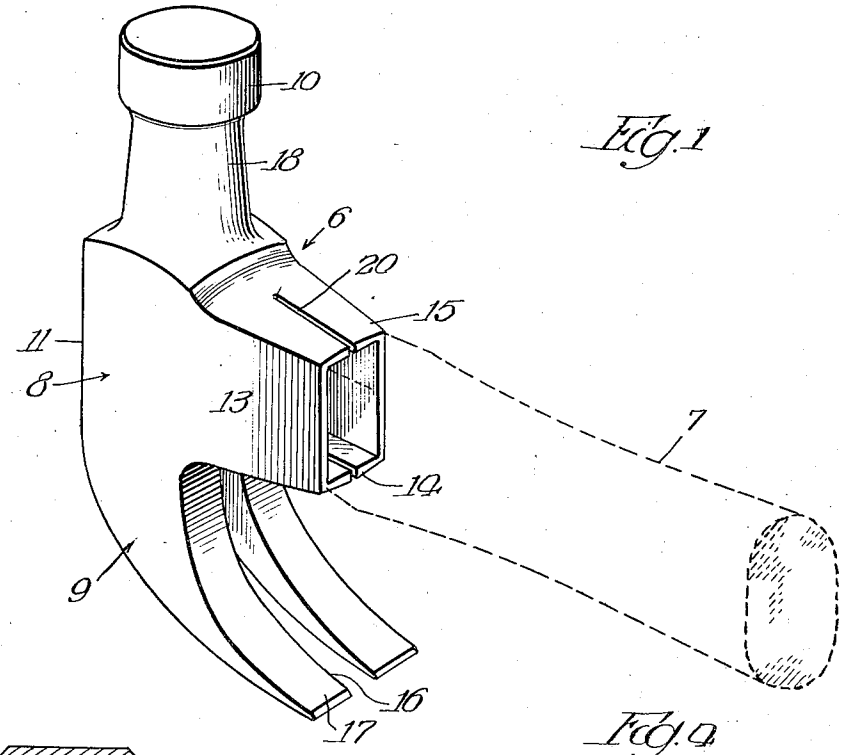


Fig. 1

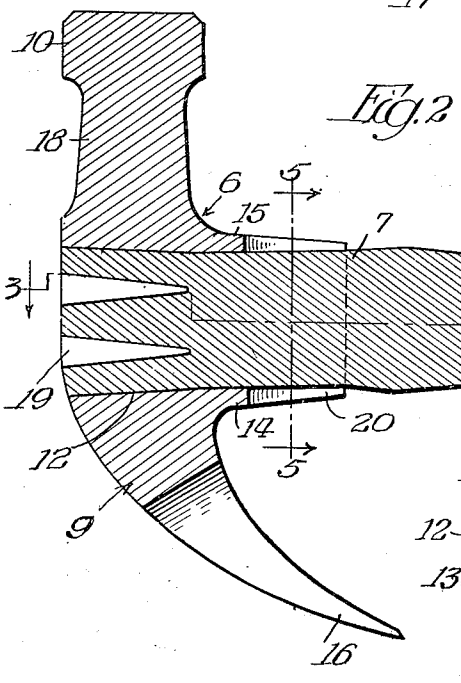


Fig. 2

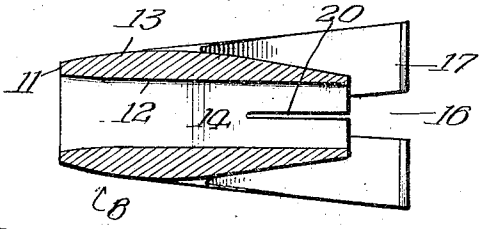


Fig. 4

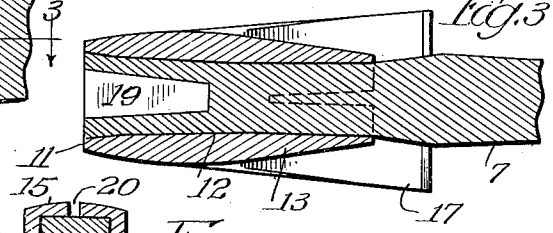


Fig. 3

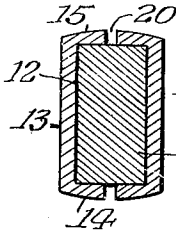


Fig. 5

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2,090,164

HAMMER

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Application April 15, 1936, Serial No. 74,423

1 Claim. (Cl. 306—21)

The present invention relates generally to hammers for use by carpenters and others in hammering or driving nails and other objects. More particularly the invention relates to that type of hammer which is known as a claw hammer and embodies in addition to a wooden handle with a tapered outer end a one-piece drop-forged head comprising an elongated central part having a longitudinal socket or eye therein for the tapered end of the handle, an arcuate or curved claw projecting upwardly and rearwardly from, and formed integrally with, the outer portion of the top wall of the central part, and a substantially cylindrical nail hammering or driving member disposed beneath the outer portion of the bottom wall of the central part and connected thereto by a reduced stem-like part.

As a general rule, in a hammer of this type the outer end of the socket or eye in the central part of the head is flared outwards to a small extent and the head or tapered end of the handle is connected to the head by first driving it through the socket or eye until the end face thereof is substantially flush with the outer end face of the central part of the head and then forcing or driving metal wedges into the extreme outer portion thereof so as to expand the latter into interlocking relation with the outwardly flared outer end of the socket. It has heretofore been found that during drive of the head or tapered end of the handle through the socket or eye the sharp inner edges at the inner ends of the top, bottom, and side walls of the central part of the hammer head dig into the handle and weaken the head end of the latter to such an extent that breakage of the handle is likely to occur during use of the hammer. It has also been found that when the head or tapered end of the handle shrinks or contracts as the result of drying out of the wood there is sometimes such looseness between the inner end of the central part of the head and the contiguous portion of the head or tapered end of the handle that the head is free to pivot relatively to the handle and as a result the head end of the handle is likely to break at a point near or in alignment with the inner end face of the central part of the head during use of the hammer.

One object of the invention is to provide a hammer of the type under consideration which is less likely to break than, and is generally an improvement upon, previously designed hammers of the same general character by reason of the fact that the inner portions of the top and bottom walls of the elongated central part of the head have centrally positioned, longitudinally extending slots, and as a result the inner portions of the side walls of the central part flex or spring outwards instead of digging or cutting into the tapered end of the handle during drive thereof into the socket or eye and after outward flexure press inwardly against the sides of the tapered end of the handle and take up any looseness resulting from shrinkage of the handle due to drying out of the wood.

Another object of the invention is to provide a hammer of the last mentioned character in which the slots in the inner portions of the top and bottom walls of the elongated central part of the head are of such character that the inner end of said central part is flexible or resilient to a small extent and will absorb shock during hammering or nail driving operations.

Other objects of the invention and the various advantages and characteristics of the present hammer construction will be apparent from a consideration of the following detailed description.

The invention consists in the several novel features which are hereinafter set forth and are more particularly defined by the claim at the conclusion hereof.

In the drawing which accompanies and forms a part of this specification or disclosure and in which like numerals of reference denote corresponding parts throughout the several views:

Figure 1 is a perspective showing in an inverted position the head of a hammer embodying the invention;

Figure 2 is a vertical longitudinal section of the hammer showing the manner in which the tapered end of the handle is secured within the socket or eye in the elongated central part of the head;

Figure 3 is a horizontal sectional view taken on the line 3—3 of Figure 2 and illustrating the manner in which the inner portions of the side walls of the central portion of the head press against or engage yieldingly the side faces of the head or tapered end of the handle;

Figure 4 is a similar horizontal sectional view showing the head without the handle and the relative position of the inner portions of the side walls of the central part of the head prior to outward flexure thereof as the result of drive of the tapered end of the handle therebetween; and

Figure 5 is a vertical transverse section on the line 5—5 of Figure 2.

The hammer which is shown in the drawing constitutes the preferred embodiment of the invention and is of the "claw" variety. It is primarily adapted for use in carpentry and consists of a head 6 and a wooden handle 7. The handle, as well understood in the art, is adapted for use in wielding the head 6 and has a tapered outer end.

The head 6 is formed of a one-piece drop-forging and comprises an elongated central part 8, a claw 9, and a hammering member 10. The central part 8 has a substantially flat outer end face 11 and a longitudinally extending rectangular socket or eye 12, and consists of a pair of side walls 13, a top wall 14, and a bottom wall 15. The claw 9 is curved and projects upwardly and rearwardly from, and is formed integrally with, the outer portion of the top wall 14 of the central part 8 of the head. It serves as an instrumentality for removing nails and embodies a V-shaped cleft 16, and a pair of laterally spaced claw-forming members 17. The outer or front face of the claw is in the form of a smooth substantially quadrantal curve and joins and forms a continuation of the outer end face 11 of the central part 8. The hammering member 10 is substantially cylindrical and is disposed beneath the outer portion of the bottom wall 15 of the central part 8 of the head and is connected to the latter by a reduced stem-like part 18. As shown in Figure 2 of the drawing, the base portion of the stem-like part 18 is substantially the same in width as the base portion of the claw 9.

The tapered end of the handle 7 fits in the socket 12 and the end face thereof is flush with the outer end face of the central part 8 of the head. The outer end of the socket 12 is flared outwards, as shown in Figure 2, and the extreme outer portion of the head or tapered end of the handle 7 is held in interlocked relation with the outwardly flared outer end of the socket by means of a pair of metal wedges 19. The handle is connected to the head 6 of the hammer by driving the tapered end thereof into the socket 12 until the end face is flush with the end face 11 of the central part 8 of the head. Thereafter the wedges 19 are driven into the extreme outer portion of the tapered end of the handle so as to expand the latter into wedged or interlocked relation with the outwardly flared outer end of the socket 12. The outer end of the socket 12 is flared outwardly from a point which substantially coincides with the mid-point of the elongated central part 8 of the head of the hammer. The inner faces of the inner portions of the top and bottom walls 14 and 15 of the central part 8 of the head 6 are outwardly divergent so as to conform to the taper of the top and bottom faces of the tapered or head end of the handle. The inner faces of the inner portions of the top and bottom walls 14 and 15 start to diverge outwardly from the mid-point of the central part 8 of the head of the hammer. Because of this and the fact that the outer end of the socket 11 is flared outwards from the mid-point of the central part 8 the socket 12 is of medium height at the mid-point of said central part. The outer faces of the inner portions of the top and bottom walls of the central part of the head of the hammer are outwardly convergent as shown in Figure 2 with the result that the inner portions of the top and bottom walls decrease in height or thickness from a point adjacent to the mid-point of the central part 8 to the inner end edges thereof.

The inner faces of the inner portions of the side walls 13 are flat and prior to insertion of the tapered end of the handle into the socket 12 are parallel (see Figure 4). The outer faces of the inner portions of the side walls 13 are outwardly convergent with the result that the inner portions of said side walls decrease in thickness from a point adjacent to the mid-point of the central part 8 of the head of the hammer to the inner end edges thereof.

In order to permit the inner portions of the side walls 13 of the elongated central part 8 of the hammer head to flex or bend outwards to a small extent during drive of the tapered end of the handle 7 into the socket 12 slots 20 are formed in the inner portions of the top and bottom walls 14 and 15 of said central part 8. These slots, as shown in the drawing, are centrally positioned with respect to, and extend longitudinally of, the top and bottom walls. They intersect the inner end edges of said top and bottom walls and extend inwardly from said edges to a point approximately three-quarters of the way to the mid-point of the central part 8 at the head of the hammer. As the result of the position and arrangement of the slots 20 the inner portions of the side walls 13 instead of being connected rigidly together through the medium of the top and bottom walls of the central part of the head 6 are yieldable to a limited extent. When the tapered end of the handle is driven into the socket 12 the inner portions of the side walls 13 due to their yieldableness or flexibility are wedged or sprung outwards, as shown in Figure 3, and grip yieldingly and with inward pressure the tapered side faces of the tapered end of the handle. In the event that the tapered end of the handle shrinks as the result of drying out of the wood the inner portions of the side walls of the socketed central part 8 of the head of the hammer move inwards and thus automatically prevent any looseness between the inner end of said central part 8 and the contiguous portion of the tapered end of the handle. Due to the yieldableness or flexibility of the inner portions of the side walls 13 the inner end edges of such portions are not likely to dig into the tapered end of the handle and thus weaken it during drive of the handle into the socket 12. By reason of the fact that the slots 20 are centrally positioned with respect to the top and bottom walls the inner portions of the latter are of split or sectional formation and are sufficiently yieldable so that they give to a certain extent and absorb shock during hammering or nail removing operations. In a hammer of normal size the slots 20 are made approximately three-quarters of an inch long. With slots of this length the inner portions of the side walls of the socketed central part of the hammer head can be sprung outwards five or six times the distance or amount of handle shrinkage without exceeding the elastic limit of the steel. By reason of the fact that the slots 20 extend but three-quarters of the way to the mid-point the inner portions of the side walls 13 of the central part of the head of the hammer are yieldable or flexible throughout three-quarters of their length only and the inner faces of the inner one-quarter portions thereof remain at all times in parallel relation, as shown in Figure 3.

The herein described hammer is exceptionally durable and well suited for its purpose and is not likely to break as far as the handle is concerned in that the tapered end thereof cannot become loose within the socket and the shocks imparted thereto during a hammering or nail withdrawal

operation are absorbed by the split inner portions of the top and bottom walls of the socketed central part 8 of the head.

The invention is not to be understood as restricted to the details set forth, since these may be modified within the scope of the appended claim, without departing from the spirit and scope of the invention.

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

A claw hammer comprising a wooden handle with a tapered end, and a one piece metallic head composed of a nail withdrawing claw at the top thereof, a hammering part at the bottom, and an elongated central part having a longitudinal rectangular open ended socket therethrough in which the tapered end of the handle is driven and fits, and consisting of a pair of side walls and top and bottom walls extending between the side walls and having the claw and hammering part connected respectively to the outer portions thereof and having in their inner portions narrow substantially centrally positioned slots extending inwardly from the inner edges thereof for a substantial distance and serving to permit the inner portions of the side walls to flex laterally to such an extent that during drive of the tapered end of the handle into the socket they are caused to be sprung outwardly into a position wherein they press inwardly against the sides of the tapered end of the handle and automatically take up any looseness resulting from shrinkage of said end of the handle.

SANFORD S. VAUGHAN.