

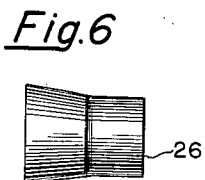
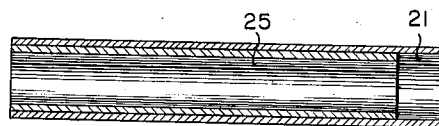
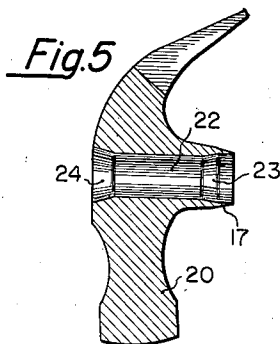
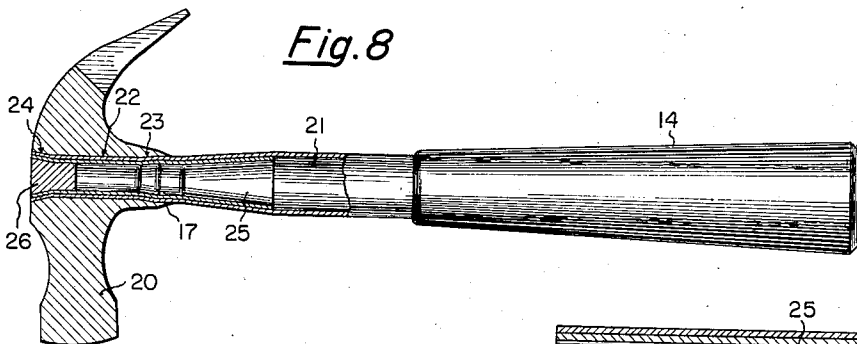
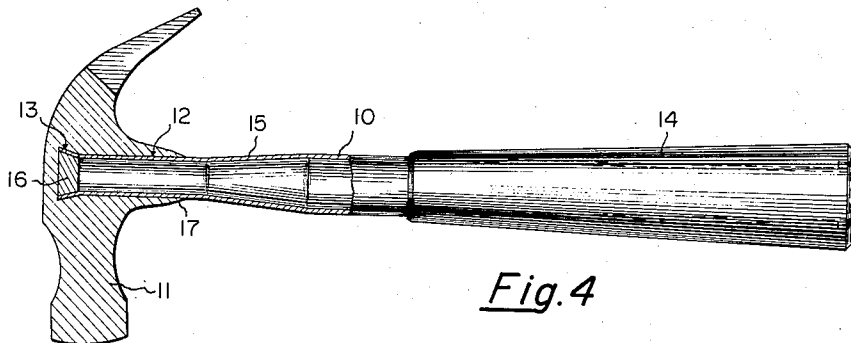
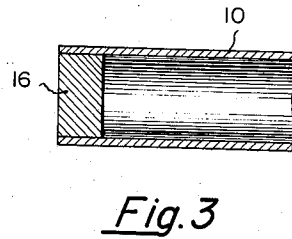
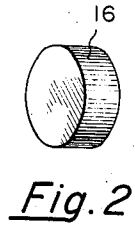
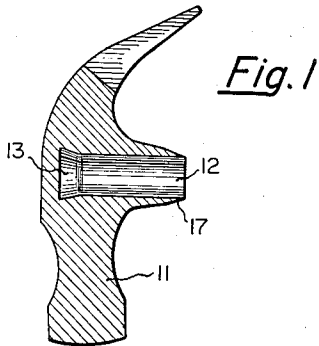
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HEAD AND HANDLE ASSEMBLY FOR STRIKING TOOLS

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1

2,846,277

HEAD AND HANDLE ASSEMBLY FOR STRIKING TOOLS

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3 Claims. (Cl. 306—29)

The present invention relates to hammers, hatchets or other striking implements, and more particularly to the handle and head assemblies of such tools.

More generally heretofore the handles of striking tools have been of wood which is shaped to enter a through bore of a tool head with a snug fit and be expanded by a wood or metal wedge as a retaining means. In use the succession of working impacts sooner or later renders the wedge ineffective so that it works loose at inopportune times and becomes a source of annoyance. This condition is further aggravated by the exposure of the wood to weather conditions which cause rot and handle breakage.

Attempts have been made to correct the foregoing disadvantages by replacing wood handles with metal handles forged as an integral part of a tool head or as a separate part riveted or bolted to the head. These substitute constructions have not solved the problem because the increased weight of the tool makes it difficult to handle for accurate continuous use and also introduces an unbalance factor objectionable to users.

An object of the present invention is to provide a handle and head assembly for a hammer, hatchet or other striking tool wherein the foregoing disadvantages have been overcome.

Another object is to provide a tool head and handle assembly wherein a metal handle, such as a steel tube, is attached to a head by a novel interlock resisting the usual detrimental effect of heavy impacts while in use.

Another object is to provide a tool head and handle assembly wherein a steel handle can be so associated with a striking head as to provide a well balanced tool giving untiring, unbreakable use and long life.

Other objects will appear hereinafter in the following description and accompanying drawings wherein like reference numerals are applied to like parts.

In the accompanying drawings:

Fig. 1 is a sectional elevation view of a hammer head ready for assembly according to the invention;

Fig. 2 is a perspective view of an anchoring slug;

Fig. 3 is a fragmentary section view of the head engaging end of the handle;

Fig. 4 is a medial section view of the assembled head and handle;

Fig. 5 is a sectional elevation view of a modified form of head;

Fig. 6 is a perspective view of the anchoring slug;

Fig. 7 is a fragmentary section of the modified form of entering end of the handle; and

Fig. 8 is a medial section view of the parts as assembled.

Referring to Figs. 1 to 5 of the drawings one form of the present invention is shown illustratively as an assembly of a tubular steel handle 10 and claw type hammer head 11. The head 11 is provided with a handle receiving socket in the form of a cylindrical bore 12 extending transversely of and substantially medially of the head body to terminate in relatively close proximity

2

to the outer face of the head in an undercut 13 having a peripheral taper diverging to the inner closed end of the bore 12. Illustratively the diameter of the bore 12 is of the order of five-eighths of an inch while the undercut is approximately one quarter of an inch in thickness and designed to a diameter of nine-sixteenths of an inch. These dimensions are not to be taken as limiting the invention.

The handle 10 is a steel tube having a gripping end portion 14 and a cylindrical end 15, having a diameter to enter the bore 12 with a driving fit. The gripping portion 14 may be cylindrical or oval as desired, but is housed in a grip 15 of resilient or other material having frictional characteristics.

In order to interlock the end 15 to the head 11, a cylindrical slug 16 of malleable material, preferably aluminum, is provided and dimensioned to enter the end of the tube end 15 for lateral expansion into the cylindrical wall of the bore 12. This intermediate length of the bore 12 has a diameter complementary to the outside diameter of the tube handle 10 for the purpose of a tight driving fit when the parts are assembled.

For the illustrative dimensions above recited the thickness of the slug 16 is of the order of one quarter of an inch.

In assembling the handle 10 with the head 11, the cylindrical end of the handle with its slug 16 in place is driven into the bore 12 to abut the bore end with the internally held slug 16 in register with the outwardly flared undercut. When so located a mandrel or other tool is inserted in the handle tube to seat against the internal face of the slug 16, and placed under such high pressure as to deform and spread the slug axially to thereby flare the handle end into conformity with the undercut. As so spread the handle is permanently anchored in place and interlocked by the wedge-like expanded slug 16.

As a finish to the assembly a collar 17 can be fastened circumferentially about the handle where it enters the head 11.

In the form of the invention shown in Figs. 6 and 7, the head 20, to which the tubular steel handle 21 is to be attached, is formed with a substantially medially disposed transverse through-bore 22 terminating at opposite ends respectively in outwardly diverging tapered portions 23 and 24, the inner or smaller diameter of both merging, such slug 26 being cylindrical in section but tapering complementally to the prepared tapered portion 23 of the bore 22. Therefore when driven home the wedge slug 26 expands the handle end to prevent removal or loose connection of the assembled handle.

As one means of anchoring the handle 21 to the head 20 a sleeve 25, preferably of steel, having a diameter to permit a snug fit within the handle 21, and having a length when inserted to form an internal reinforcement for that portion of the handle within the bore 22 and an interlock for that portion in the handle outside of the head 20. This interlock is formed while the sleeve is heated by introducing a mandrel or anvil within the sleeve 25 and by swage action simultaneously expanding the sleeve 25 while inwardly contracting the adjacent wall of the handle thereabout. When so swaged the handle is driven into the bore 22 under high pressure whereby the tapered joint formed by the handle and sleeve have a drive fit with the bore tapered portion 23 and the bore 22. In this assembled position the end of the handle terminates flush with the outer face of the head 20 ready for interlocking. A locking wedge in the form of a slug 26, preferably of aluminum is now driven into the open end of the handle under a heavy applied pressure.

The gripping end of the handle of either form may

be of cylindrical or oval section as desired, and as a means for effective, untiring use is preferably housed in a close fitting grip of rubber or other suitable material.

It will now be apparent that an all metal striking tool has been devised comprising a head and tubular handle interlocked against separation during a lifetime use, such interlock serving also to prevent the handle from working loose without actual separation. Furthermore the tubular construction provides an extremely light, readily handled tool giving untiring use particularly because of the planned balance of weight.

While in the drawings and specification the assembly is shown as a hammer head it is to be understood this is to be generally interpreted because the invention broadly is to be considered applicable to any striking-headed tool.

What is claimed is:

1. A head and handle assembly for striking tools comprising a head having a through bore with an outwardly tapered inlet at one end, a tubular handle having an end to snugly fit said bore and a swaged portion within said inlet, a tube in said handle expanded by pressure applied internally of said handle to expand said swaged part as an interlock between the parts, and means anchoring the inner end of said handle to said head.

2. A head and handle assembly according to claim 1 wherein the anchoring means includes a second outwardly tapered bore portion, encircling the handle end, and a slug complementally tapered to enter said bore portion and expand said handle end into said bore portion.

3. A head and handle assembly according to claim 2 wherein the slug is formed of aluminum.

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