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SOFT-HEADED HAMMER

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Fig. 1.

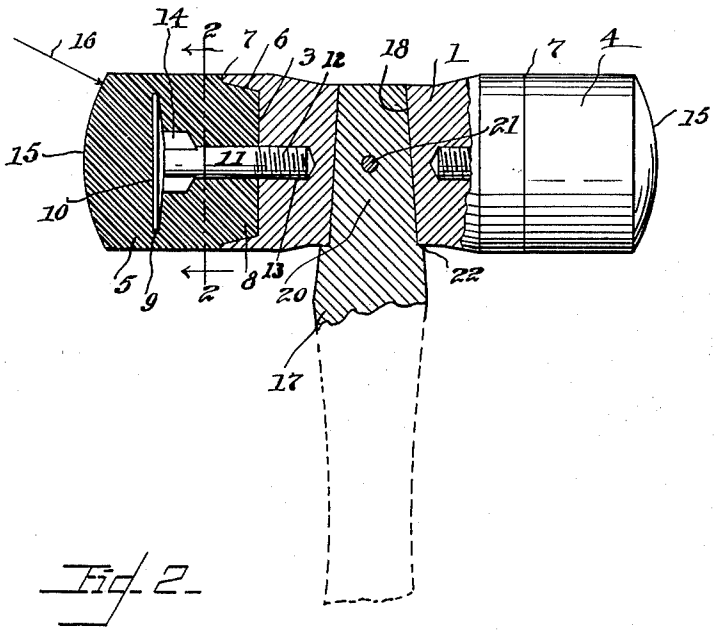
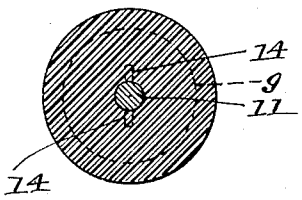


Fig. 2.



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SOFT-HEADED HAMMER

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4 Claims. (Cl. 145—36)

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This invention relates to hammers, and particularly a type of hammer that includes a relatively soft head that impinges upon a body when struck by the hammer. Hammers of this type are used very largely for delivering a blow to a part without any danger of marring the surface struck. They perform a function that was formerly performed largely by a "lead maul," that is, a mallet or hammer in which the head was formed of soft lead, and which could strike a harder metal part without defacing it.

One of the objects of this invention is to provide a hammer or mallet for performing this function, having a percussion head of relatively soft material for imparting a blow, particularly adapted to be formed of a plastic material in which the inner end of the percussion head is seated against the end of the hammer head, and to provide a construction enabling the percussion head to be detachably mounted on the hammer body, and at the same time, functioning so as to substantially protect the seated end of the plastic percussion head from distortion occurring in the percussion head when the blow is struck.

In its preferred form, the invention includes a hammer body with a tapered socket to receive a relatively soft or yielding percussion head, and one of the objects of this invention is to provide a correlated form for the socket and the percussion head, that will operate to prevent dislodgement of the head from its socket when in use.

In its preferred embodiment, the invention includes a hammer body of rigid material having an end face at which a socket is formed to receive the inner end of a relatively soft percussion head; and one of the objects of the invention is to provide an improved construction for this percussion head, and for effecting its removable attachment to the hammer body.

Further objects of the invention will appear hereinafter.

The invention consists in the novel parts and combination of parts to be described hereinafter, all of which contribute to produce an efficient plastic headed hammer.

A preferred embodiment of the invention is described in the following specification, while the broad scope of the invention is pointed out in the appended claims.

In the drawings:

Fig. 1 is a side view showing a hammer embodying the invention, partially in elevation, and partially in section on its longitudinal axis. This view also shows a portion of the handle

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and shank in cross-section, and shows the lower end of the handle broken away.

Fig. 2 is a cross-section taken on the line 2—2 of Fig. 1, particularly illustrating the location and the relatively large area of a baffle head that is employed to protect the socketed end of the percussion head from distortion when a blow is struck with this hammer.

Before proceeding to a more detailed description of this invention, it should be stated that in accordance with this improvement a relatively soft percussion head is provided with means for detachably securing it to the end of the hammer body. This percussion head is adapted to be formed as a molding in a plastic mold, of plastic material under high pressure. In accordance with this invention, a baffle head is provided in the percussion head disposed in a plane transverse to the longitudinal axis of the hammer body, and this baffle head is located at a considerable distance back of the percussion face of the percussion head. It also has considerable area, so that compression and distortion of the material between the percussion face and this baffle, is substantially confined to the area of this baffle head. In other words, although there is an annular zone of material of the percussion head located beyond the margin of the baffle head, the percussion developed by striking a blow with the hammer, is substantially prevented from forming any considerable compression in this peripheral zone. In this way the baffle head shields the inner portion of the percussion head so that the distortion effects developed in the inner portion or socketed portion of the percussion head, are reduced to a minimum. A secondary and desirable effect is that by this same means the original shape of the percussion head is substantially maintained throughout the life of the percussion head, after which the percussion head may be removed and replaced by a new and unworn percussion head, it being understood, of course, that in due time these percussion heads tend to lose their shape and effectiveness.

Referring more particularly to the embodiment of this invention illustrated, 1 indicates a body which, in the present instance, is of substantially cylindrical form. Its end walls have outer faces 3 against which the percussion heads 4 and 5 seat, and at these end faces it is preferable to provide sockets 6, respectively, in which the inner ends of the percussion heads 4 and 5 are received. For this purpose the sockets 6 are preferably of substantially conical form, but in

forming the same an annular shoulder 7 is formed at each end of the hammer head, assuming that the hammer is to be of double or duplex type as illustrated.

The percussion heads 4 and 5 are composed of yielding material, preferably a plastic. In practicing this invention, each of the plastic heads 4 and 5 is formed so that it can be detachably secured to its corresponding end face 3, and in the present instance, each percussion head is provided with a tapered abutment 8.

In order to secure each percussion head in position, and at the same time to provide means for protecting the socketed end of the same from too great a degree of distortion when a blow is struck with the hammer, it is preferable to employ a baffle head 9 which is in the form of a disc with a forward flat face 10 that is disposed in a plane substantially at right angles to the longitudinal axis of the hammer body 1. This baffle is preferably formed with a stem or stud 11 that has a threaded end 12 that projects from the head and is received in a threaded opening 13 formed in the corresponding end face of the hammer body.

In order to prevent relative rotation between the stem 11 and the percussion heads, it is preferable to provide substantially radially disposed fins or wings 14 that project out from the stem. These wings may be made as long as necessary to enable them to prevent relative rotation of the stem and the percussion head. Their length will depend largely upon the character of the material out of which the percussion heads are formed; the softer this material, the longer these fins should be.

The baffle head 9 as illustrated in Fig. 2, is preferably of considerable diameter as compared with that of the percussion head. This is indicated in Fig. 2 as well as in Fig. 1. From an inspection of Fig. 2, it will be evident that a narrow peripheral annular zone is formed in the material of the percussion head 5, through which it might be possible to impart compression arising in the percussion head when the blow is struck, but in order to reduce this compression to a minimum, it is preferable to form the percussion head 5 with a crowned or rounded percussion face 15. This face is struck with a radius having a center located so that a line such as the line 16 drawn normal to this crown face would, if extended, impinge upon the forward surface of the disc 9. Hence, although nearly all blows struck with this hammer would be necessarily located quite near the longitudinal axis of the percussion head, even if a blow were struck with a hammer near the edge of the face 15, no direct compression would occur in the extreme periphery or the superficial surface of the percussion head; and furthermore, such an eccentrically located impingement would result in effecting a compression of the material of the percussion head between the point struck and the forward face of the baffle head 9, which would result in a tendency to cause an outward movement of this material in a general radial direction, which of course would counteract or disperse compressive forces in the peripheral zone referred to.

In practice, it is preferable to mold the stem or stud 11 and its integral baffle head 9 directly in the molded plastic. The threads of the threaded extension 12 would, of course, be chased on the stem before setting this metal part in the mold preparatory to the molding operation. The

taper on the abutment 8 is formed on a different degree from that of the socket. It is preferably blunter, that is, less acute than the degree of taper of the conical surface 6. In other words, the conical surface on the side of the abutment 8 is preferably constructed so that the elements of this conical surface subtend a greater angle than the elements of the conical surface 6. This will cause the development of considerable pressure between these two conical surfaces in the vicinity of the shoulder 7, and this concentration of pressure at this point, will increase the effectiveness of the forces developed in this way, to resist tendencies of the percussion heads to work loose when in use.

The hammer's weight may be controlled by making its body of different metals having different specific gravities. Any metal or hard plastic material that is adapted to be molded can be used readily for this purpose. The hammer body has a tapered eye 18 that receives a tapered tip or nose 20 on the end of the handle 17, and a shoulder 22 is formed on the handle to seat against the hammer body adjacent the larger end of the eye. A transverse pin 21 can be driven into a hole drilled through the side of the body 1 while the tip 20 is in place. This pin can have its ends riveted over to prevent its working out of its hole, or other means may be employed for securing it in position.

It will be evident that when a percussion head such as described, is being screwed onto the end of the hammer body, its conical abutment will become compressed against the conical side face of the socket that receives it; and the frictional contact between the conical surfaces will develop a "drag" or circumferential distortion effect at the periphery of the abutment. When blows are struck with the hammer, this circumferential distortion will finally become reduced, with a consequent increase in the outward pressure of the confined material in a radial direction. In other words, the forces developed at the periphery, will cause an increase in the resistance to loosening of the head due to vibrations caused by the blows.

Many other embodiments of the invention may be resorted to without departing from the spirit of the invention.

We claim as our invention:

1. A hammer head having a rigid body, a percussion head of yielding cushion material seated on said body and having a percussion face on its outer end, a baffle head in the form of a disc embedded in the cushion material of said head and extending transversely therein behind the percussion face, and a stem connecting said baffle head to said rigid body, said disc operating to absorb a portion of the force developed in the percussion head when a blow is struck with the hammer at the percussion face.

2. A hammer according to claim 1, in which the hammer body includes a socket on its end to receive the percussion head, said socket located opposite the percussion face; and in which the entire percussion head is composed of a yielding cushion material that extends into the said socket in the hammer body, said baffle head operating as a shield for the inner portion of the yielding cushion material of the percussion head so as to reduce the distortion thereof when a blow is struck by the hammer.

3. A hammer according to claim 1, including means associated with the said stem and projecting in a general radial direction therefrom for

preventing relative rotation between the stem and the percussion head.

4. A hammer head having a rigid body with a socket on its end, a percussion head of yielding cushion material having a percussion face at its outer end, and having its inner end received in said socket, a baffle-head in the form of a disc embedded in the cushion material of said head and extending transversely therein behind the percussion face, a stem embedded in the cushion material of the percussion head and projecting outwardly from the same at the inner end of the percussion head, the end of said stem having threads thereon; said body having a threaded hole at the bottom of said socket to receive the threaded stem, said stem being connected to said baffle head, and means associated with said disc and said stem to prevent relative rotation of the percussion head and stem,

and enabling rotation of the percussion head to screw the end of the stem into the threaded hole to seat the inner end of the percussion head in its socket.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
918,060	Kabureck	Apr. 13, 1909
974,021	Blake	Oct. 25, 1910
1,250,959	Brown	Dec. 25, 1917
1,839,835	Cook	Jan. 5, 1932
2,377,157	Kindland	May 29, 1945