Aug. 5, 1947. C. B. JOHNSON 2,425,245

CUSHION GRIP FOR AIR HAMMERS AND THE LIKE

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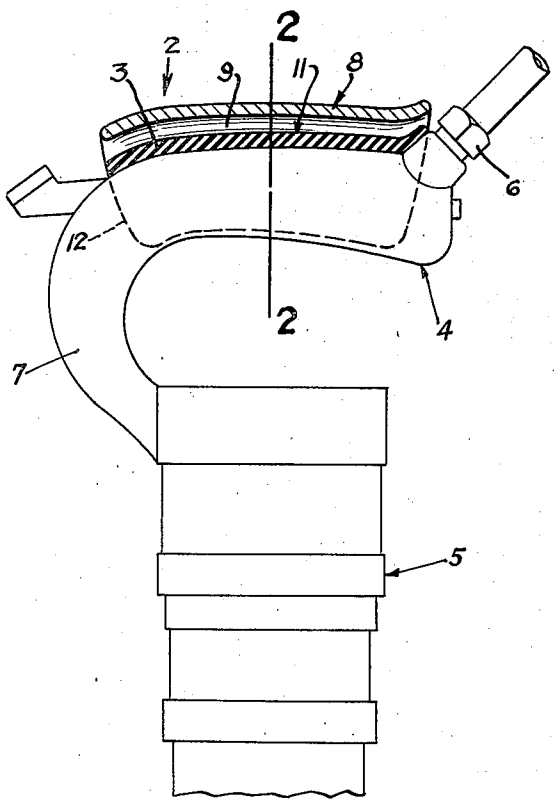

FIG. 1

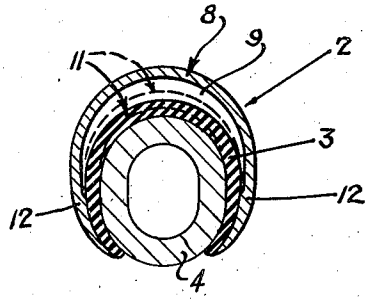

FIG. 2

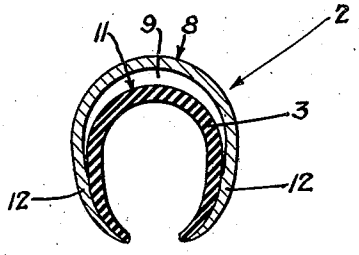

FIG. 3

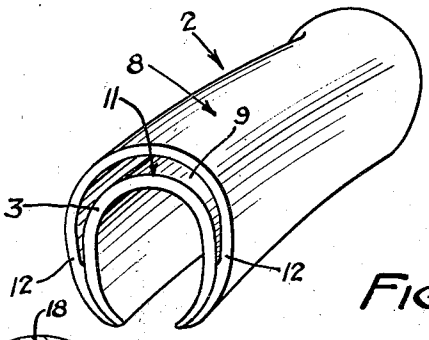

FIG. 4

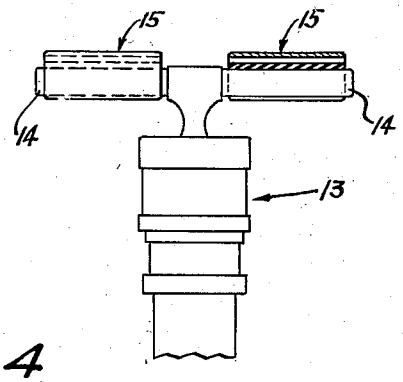

FIG. 5

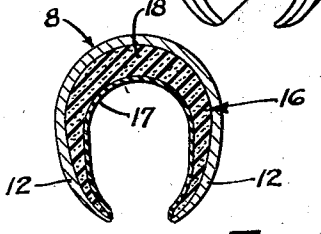

FIG. 6

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CUSHION GRIP FOR AIR HAMMERS AND THE LIKE

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7 Claims. (Cl. 121—36)

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This invention relates to new and useful improvements in handles for air hammers, rock drills, and various other devices of the general character which do their work by repeated impact into or against the material being worked upon, and more particularly relates to an improved cushion grip for such handles adapted to prevent the transmission of vibration and shock from the handle of the air hammer to the operator's hand and arm.

It is well known that air hammers, rock drills, and other devices which accomplish their work by a series of repeated impacts following in rapid succession, are usually very fatiguing to the operator because of the vibration imparted to his hand and arm, when grasping the usual handle or handles of such a device to support it against the work, which vibration is usually very discomforting to the operator, and may result in injurious effects upon the operator.

Numerous attempts have heretofore been made in an endeavor to provide a cushion grip for air hammers and the like, which would absorb vibration and prevent its transmission from the handle of the air hammer or other such device to the operator's hand or arm, but to the best of my knowledge none have proven entirely satisfactory.

The novel cushion grip herein disclosed is the result of considerable experimental and research work in an attempt to provide such a device which is extremely simple and inexpensive, and which adequately serves the purpose for which it is intended, namely, to substantially completely absorb all vibration transmitted to the handles of such tools as air hammers, rock drills, and the like, comprising a member adapted to impart a series of hammer-like blows or impacts to the work, in rapid succession, whereby a very definite vibration is imparted to the tool body and its operating handle. When the cushion grip herein disclosed is applied to the operating handle of such a tool, an operator may manipulate the tool for long periods without discomfort and without becoming unduly fatigued, whereby the usefulness of such a tool is materially enhanced.

An object of the present invention, therefore, is to provide a simple and inexpensive cushion grip of the class described, comprising an inner cushion or vibration-absorbing member adapted to directly engage the conventional handle of the air hammer or rock drill with which the grip is to be used, and having an outer resilient member fitting over the inner member whose lower marginal wall portions are suitably secured to the walls of the inner member in such a manner that

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a substantial air gap is provided between the upper wall portions of the two members, whereby the upper portions of the inner member is free to flex relative to the outer member to thereby absorb vibration and shocks which otherwise would be transmitted to the operator's hand and arm.

A further object is to provide a device of the class described, comprising an outer resilient member of U-shaped cross-section, having a cushion member fitted thereinto with at least portions of its walls secured to the walls of the outer member, said inner member being shaped to directly engage the handle of an air hammer, rock drill, or the like, and being firmly held thereagainst by the inherent tension in the legs of the outer member, whereby the inner member will absorb all vibration imparted to the handle of the tool and thereby prevent its transmission to the outer member which forms the grip for the operator's hand.

Other objects of the invention reside in the unique construction of the cushion grip whereby it may be manufactured in quantity production at low cost, and also whereby the grip may quickly and conveniently be fitted over the usual handle of an air hammer, or rock drill to eliminate or minimize vibration, which otherwise would be transmitted to the operator's hand and arm when using the air hammer.

Other objects of the invention will appear from the following description and the accompanying drawing and will be pointed out in the annexed claims.

In the accompanying drawing there has been disclosed a structure designed to carry out the various objects of the invention, but it is to be understood that the invention is not confined to the exact features shown, as various changes may be made within the scope of the claims which follow.

In the drawing:

Figure 1 is a view showing the upper portion of an air hammer with the invention applied to the usual handle thereof;

Figure 2 is a cross-sectional view on the line 2—2 of Figure 1, indicating in dotted lines the relative yieldability of the inner member;

Figure 3 is a view similar to Figure 2, but showing the grip retracted, as when removed from the handle;

Figure 4 is a perspective view of the grip shown in Figure 1;

Figure 5 is a view showing a commercial type of air hammer or drill with the invention applied to the handles thereof; and

Figure 6 is a view showing a modified construction wherein the inner vibration-absorbing member is made of sponge rubber.

The novel cushion grip herein disclosed is generally designated by the numeral 2, and is shown comprising an inner cushion or vibration-absorbing member 3 which preferably is made of a suitable elastic material such as rubber. The inner member 3 is shown in the form of an inverted U, cross-sectionally, and is adapted to be fitted directly over the usual handle 4 of a conventional air hammer, designated by the numeral 5. The handle 4 is shown provided at one end with a suitable fitting 6, to which the usual air supply hose may be connected, and in the present illustration, the opposite end of the handle is shown secured to the body 5 of the hammer by a curved portion or neck 7, as is well known in the art.

An outer U-shaped member 8 is fitted over the inner member 3 and has its marginal wall portions suitably secured to the outer surfaces of the corresponding wall portions of the inner member 3 by suitable means, as, for example, vulcanizing, whereby the two members become, in effect, a single unitary structure which is light in weight, and neat and attractive in appearance.

By referring to the drawing, it will be noted that the upper portions of the two members are spaced apart to provide a substantial air gap 9 therebetween. This air gap 9 is important in that it permits the upper free wall portion 11 of the inner member to yield to vibration imparted to the handle 4, independently of the upper wall of the outer member 8, as indicated by the dotted lines in Figure 2, thereby to prevent vibration from being transmitted from the tool handle 4 to the outer member 8, and therefore the operator's hand which is graspingly engaged with the outer member only.

Another important feature of the invention resides in the formation of the outer member which may be made from any suitable material having sufficient resiliency or springiness to cause the grip to engage the drill handle 4 with sufficient pressure to frictionally retain it in operative position thereon. Certain types of hard rubber or plastics have been found suitable.

The inner member is preferably made from a suitable elastic material such as rubber, and is fashioned so that substantially its entire inner surface will, as clearly shown in Figure 2, engage the handle 4, whereby it serves as a saddle to retain the grip in proper position on the handle. Because of the inherent elasticity of the inner member, and the fact that the lower portions only of the legs 12 of the outer member are secured to the lower side portions or legs of the inner member, the major portion of the inner member is free to yield relatively to the upper portion of the outer member, as indicated by the dotted lines in Figure 2, whereby the inner member will absorb all vibration in the handle 4 and prevent its transmission to the hand of the operator through the outer member 8.

In Figure 5 I have shown the invention embodied in a heavy duty drill 13 comprising two opposed handles 14 to which a pair of cushion grips 15, similar to the ones shown in Figures 1 to 4, are detachably mounted.

In Figure 6 there is shown a cushion grip wherein the inner vibration-absorbing member 16 is constructed of some such material as sponge rubber, which, if desired, may be lined with an elastic liner 17 adapted to directly engage the tool handle 4. In the form here shown, the upper

wall portion 18 of the sponge rubber is of adequate thickness to completely absorb all vibration imparted to the tool handle when the tool is in operation. The liner 17 cooperates with the sponge rubber to absorb vibration, and its ability to absorb vibration may be varied by increasing or decreasing its thickness. It is preferably constructed of a highly elastic material such as rubber.

In the drawing I have shown the invention applied to the handles of conventional air hammers. It is to be understood, however, that it may be applied to handles of other devices or mechanisms where it is deemed advisable to provide means for absorbing or preventing the transmission of vibration from a handle or member to be grasped by an operator in the operation of the tool.

As many apparently widely different embodiments of this invention may be made without departing from the spirit and scope thereof, it is to be understood that I do not limit myself to the specific embodiments herein except as defined by the appended claims.

I claim as my invention:

1. A cushion grip comprising an outer U-shaped resilient member having spaced legs for embracing a tool handle, and an inner vibration-absorbing member having its opposed edge portions secured to the legs of the outer member and having its intermediate wall portion spaced from the corresponding wall portion of the outer member in the direction of thrust on the grip when in use, whereby said inwardly spaced wall surface may readily flex independently of the outer member to absorb vibration in the tool handle to which the grip may be attached.

2. A cushion grip comprising an outer U-shaped resilient member having spaced legs for embracing a tool handle, and an inner elastic member having its opposed edged portions secured to the legs of the outer member and having its intermediate wall portion spaced from the corresponding wall portion of the outer member in the direction of thrust on the grip when in use, whereby said inwardly spaced wall surface may readily flex independently of the outer member to absorb vibration in the tool handle to which the grip may be attached, the inherent resiliency of the legs of the outer resilient member frictionally retaining the cushion grip in position on the tool handle.

3. A cushion grip comprising an outer resilient member having spaced legs, and an inner elastic member adapted to directly engage a tool handle subject to vibration, said inner member having its opposed marginal edge portions secured to the marginal edge portions of the legs of said outer member with its intermediate wall portion spaced from the corresponding wall portion of the outer resilient member, whereby the inner member may flex independently of the outer member to absorb vibration in the tool handle.

4. A cushion grip comprising an outer U-shaped resilient member having spaced legs, and an inner elastic U-shaped member adapted to directly engage a tool handle, said inner member having its opposed marginal edge portions secured to the legs of the outer member to provide an integral structure, the intermediate wall portion of the inner member being spaced from the corresponding wall portion of the outer member whereby the central portion of the inner member may flex independently of the outer member to absorb vibration in the tool handle.

5. A cushion grip comprising an outer resilient member of U-shape cross-section having spaced legs, and a relatively smaller inner elastic member of similar cross-section fitted into the outer member and adapted to directly engage a tool handle, said inner member having each of its opposed marginal wall portions tapering to a thin edge and secured to the legs of said outer member with its intermediate wall portion unattached to the corresponding wall portion of the outer resilient member, whereby the unattached wall portion of the inner member may freely flex independently of the outer member to absorb vibration in the tool handle.

6. A cushion grip comprising an outer non-elastic member of U-shape cross-section having spaced resilient legs, and an inner elastic member of similar cross-section fitted into the outer member and adapted to directly engage a tool handle subject to vibration, the marginal edges of the adjacent legs of said outer and inner members tapering inwardly towards the edges of said legs and being secured together to provide an integral structure, the major central portion of the inner member being spaced from the corresponding wall portion of the outer member, whereby the central portion of the inner member

may freely flex independently of the outer member thereby to absorb vibration in the tool handle, and the inwardly tapering edges of said leg portions causing the outer surfaces of the legs of the outer member to merge into the periphery of the handle to which the grip is attached.

7. A cushion grip comprising an outer resilient member having spaced legs, and an inner elastic member adapted to directly engage a tool handle subject to vibration, said inner member having its opposed marginal edge portions secured to the marginal edge portions of the legs of said outer member with its intermediate wall portion spaced from the corresponding wall portion of the outer resilient member, and means between said members for absorbing vibration in the tool handle.

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

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