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CHISEL RETAINER FOR PNEUMATIC HAMMERS

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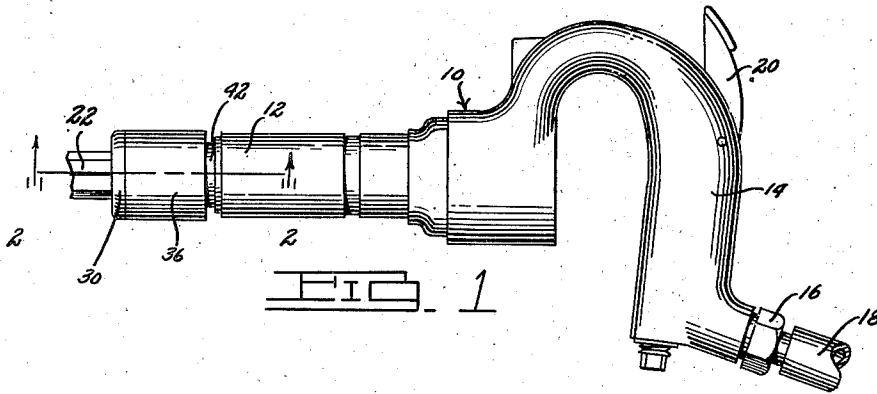


FIG. 1

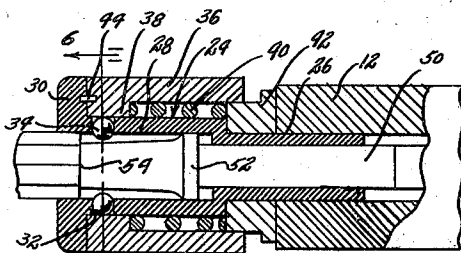


FIG. 2

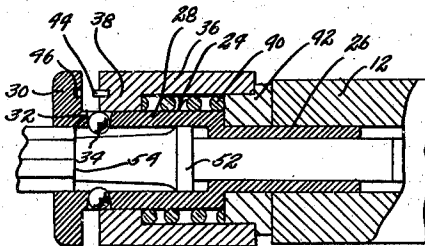


FIG. 3

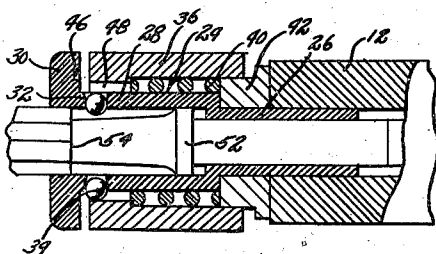


FIG. 4

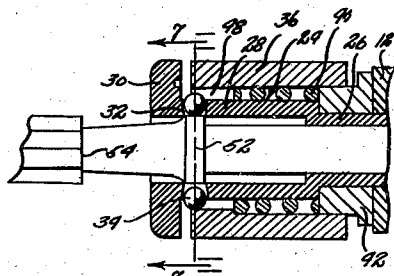


FIG. 5

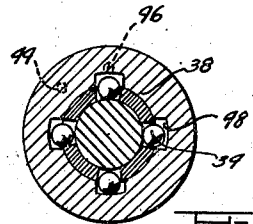
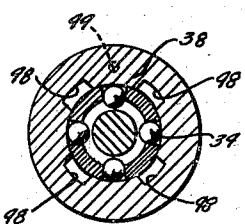
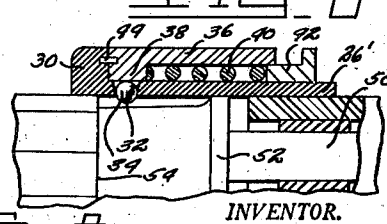


FIG. 6

FIG. 7



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CHISEL RETAINER FOR PNEUMATIC HAMMERS

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2 Claims. (Cl. 279—19.5)

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This invention relates to a pneumatic hammer, and more particularly to a locking device for retaining a chisel on the hammer barrel.

An object of the invention is to provide a chisel retainer which is quickly operated for retaining the chisel in operating position and which will permit easy replacement of the chisel when it is desired to substitute one tool for another.

Another object of the invention is to provide a chisel locking device which may be manufactured as a unit assembly and press fitted on to the end of the hammer barrel.

A further object of the invention is to provide an improved gripping surface on the chisel for cooperation with the improved locking device.

Other objects and advantages of the invention will more fully appear from the following description taken in connection with the accompanying drawings in which:

Fig. 1 is a side elevational view of a pneumatic hammer showing the improved chisel locking device applied thereon;

Fig. 2 is an enlarged sectional view taken on line 2—2 of Fig. 1;

Figs. 3, 4 and 5 are views corresponding to Fig. 2 but showing different positions of the locking ring;

Fig. 6 is a sectional view taken on line 6—6 of Fig. 2;

Fig. 7 is a sectional view taken on line 7—7 of Fig. 5; and

Fig. 8 is a sectional view corresponding to Fig. 2 but showing a modified form of the invention.

Referring to the drawings, a pneumatic hammer 10, having a barrel 12 and a handle 14, is shown with the improved chisel locking device applied thereto. The handle has a connection 16 for communication with an air pressure line 18 connected to a source of pressure, not shown. A control is shown at 20 for admitting the air pressure to the operating parts of the hammer which are conventional construction.

A chisel 22 is removably received in the barrel end of the hammer and is securely held in operating position by the locking mechanism more fully illustrated in Figs. 2-8 inclusive.

In pneumatic hammers of the type selected for illustrating the invention, the barrel 12 receives the shank end of the chisel. Heretofore, a bushing in the barrel end formed a guide for the inner end of the chisel shank. In my improved construction, the bushing is replaced by a part 24 having an inner tubular portion 26 adapted to be press fitted in the barrel in place of the bushing. The part 24 has an outer enlarged sleeve portion,

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hereinafter referred to as the ball cage 28, and a radially extending flange 30 is formed on the outer end of the part 24.

Ball receiving apertures 32 are formed in the wall of the ball cage 28 for the reception of balls 34 having a diameter greater than the wall thickness of the ball cage 28. The apertures are preferably tapered to prevent the balls from passing entirely through the apertures.

A sleeve 36 surrounds the ball cage 28 and is provided with an inwardly extending flange 38 bearing on the outer periphery of the ball cage 28. The inner end of the sleeve 36 is spaced from the outer periphery of the ball cage 28 to provide a space for a compression spring 40 having one end abutting the inner surface of the flange 38 and its opposite end abutting a retaining ring 42 which is press fitted on the outer periphery of the tubular portion 26. The inner periphery of the sleeve 36 slidably fits the outer periphery of the retaining ring 42.

In assembly of the device the balls 34 are placed in the apertures 32 and the sleeve is slid over the inner end of the ball cage 28. The compression spring 40 is then inserted between the sleeve 36 and the ball cage 28. Finally the retaining ring 42 is pressed on the tubular portion 26 subjecting the spring 40 to compression and urging the sleeve 36 against the flange 30. The entire assembly is then secured to the barrel by pressing the tubular portion 26 into the open end of the barrel 12 with the inner end of the retaining ring 42 abutting the outer end of the barrel.

An outwardly projecting member 44, in the form of a pin, is inserted in the outer end face of the sleeve 36 adapted to be received in an opening 46 in the inner face of the flange 30.

The inner periphery of the flange 38 is provided with circumferentially spaced recesses 48, corresponding in number to the balls 34 and which are correspondingly spaced.

The chisel 22 has an annular inner end portion 50 which slidably fits within the tubular portion 26 and an enlarged flange 52 which slidably fits within the ball cage 28 of larger inner diameter than the inner diameter of the tubular portion 26. The shank, outwardly of the flange 52, is tapered inwardly toward the tool end in the region adjacent the shank contact with the balls 34.

In Fig. 2 the parts are shown in locked or holding position with the chisel free for limited axial movement relative to the device and the hammer barrel. The recesses 48 are positioned between the balls 34 so that the flange 38 positions the

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balls radially inwardly into holding position. This position is determined by the pin 44 in the aperture 46. When it is desired to remove the chisel from the barrel, the sleeve 36 is slid axially into the position shown in Fig. 3 to free the pin 44 from the apertures 46. The sleeve is then turned to the position shown in Fig. 4 with the recesses 48 opposite the balls 34. When the chisel is removed, the flange 52 forces the balls partially into the recesses 48, as shown in Fig. 5 so that the chisel is freely withdrawn from the device.

A shoulder 54 is formed on the shank outwardly beyond the balls 34. The distance between the shoulder 54 and the balls 34 is substantially equal to the distance between the inner edge of the flange 52 and the shoulder portion formed by the tubular portion 26. When the tool is in operation the operator forces the tool inwardly so that the shoulder 54 bears against the balls 34 providing a freely rotatable tool and a bearing stop for the tool.

In the form of the invention shown in Fig. 8, the parts are substantially the same as shown in Figs. 2 to 7 inclusive, except that the tubular portion 26' is made of larger diameter so that it can be press fitted over the outer end of the barrel rather than press fitted within the barrel. This form may be found expedient when it is not desirable to replace the bushing in the standard hammer for the sleeve 26.

It will be understood that various changes including the size, shape and arrangement of parts may be made without departing from the spirit of my invention, and it is not my intention to limit its scope other than by the terms of the appended claims.

I claim:

1. A releasable holding means for a shanked tool at the end of the barrel of a pneumatic hammer comprising a tubular member constructed and arranged for press fit insertion into the open end of the hammer barrel and to slidably receive the shank of a tool therein; a ball cage having a diameter greater than the diameter of said tubular member having a plurality of cir-

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cumferentially spaced apertures through the wall thereof, balls in the apertures of said ball cage, an axially slidable and rotatable sleeve having circumferentially spaced recesses in its inner periphery over said ball cage, an outwardly extending flange at the outer end of said ball cage for limiting the outward axial movement of said sleeve, and a retaining ring press fitted on said tubular member for limiting the inward axial movement of said sleeve.

2. A releasable holding means for a shanked tool at the end of the barrel of a pneumatic hammer comprising a tubular member constructed and arranged for press fit insertion into the open end of the hammer barrel and to slidably receive the shank of a tool therein; a ball cage having a diameter greater than the diameter of said tubular member having a plurality of circumferentially spaced apertures through the wall thereof, balls in the apertures of said ball cage, an axially slidable and rotatable sleeve having circumferentially spaced recesses in its inner periphery over said ball cage, an outwardly extending flange at the outer end of said ball cage for limiting the outward axial movement of said sleeve, a retaining ring press fitted on said tubular member for limiting the inward axial movement of said sleeve, and a compression spring operable between said sleeve and said retaining ring.

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REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
1,074,044	Brown	Sept. 23, 1913
1,309,815	Shinkez	July 15, 1919
1,345,583	Church	July 6, 1920
1,346,341	Shinkez	July 13, 1920
1,812,652	Harcourt	June 30, 1931
1,898,726	Hess	Feb. 21, 1933
2,191,699	Stephens	Feb. 27, 1940
2,333,405	Appton	Nov. 2, 1943