May 4, 1937. D. V. CLERK 2,078,924

TOOL RETAINER

Filed July 25, 1935

Fig. 1.

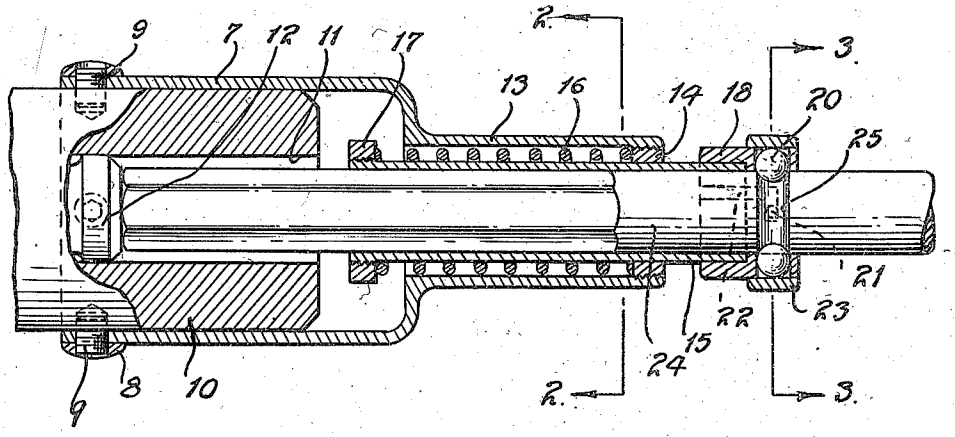


Fig. 2.

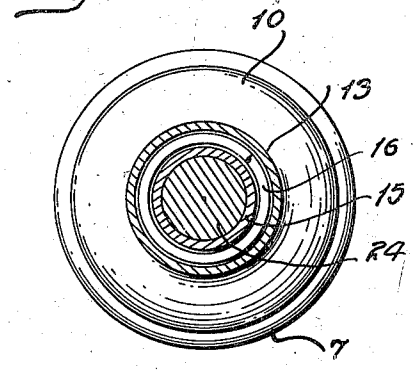
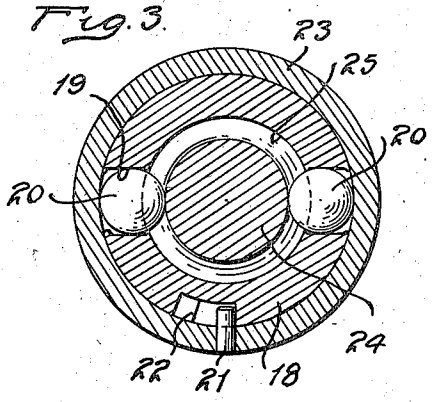


Fig. 3.



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TOOL RETAINER

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2 Claims. (Cl. 121—32)

My invention relates to a new and useful improvement in a tool retainer adapted for attachment to a pneumatic hammer or operating tool.

It is an object of the present invention to provide a tool retainer which may be easily and quickly attached to a pneumatic hammer or other operating device and so arranged and constructed as to retain the tool in position for actuation without interfering with its normal movement while in operation, and yet at the same time preventing its undue removal while in operation.

In the operation of pneumatic hammers it is quite customary when using a chisel, punch or other similar tool, to insert the tool into position for operation by the penumatically-driven plunger, but the tool when so inserted is loose and if unduly operated upon may be driven outwardly from its normal position, resulting in considerable danger to others who may be in the vicinity. The present invention avoids this undesirable feature.

Another object of the invention is the provision of an attachment of this kind which may be easily and quickly mounted in position on a pneumatic hammer.

Another object of the invention is the provision of a tool retainer which will serve to retain the end of the tool in engagement with the driving plunger while at the same time permitting a free movement when actuated.

Another object of the invention is the provision of a retainer of this class whereby the tool may be easily and quickly placed in position and removed therefrom.

Another object of the invention is the provision of a device of this class which will be simple in structure, economical of manufacture, durable, highly efficient in use, compact and easily and quickly operated.

Other objects will appear hereinafter.

The invention consists in the combination and arrangement of parts hereinafter described and claimed.

The invention will be best understood by a reference to the accompanying drawing which forms a part of this specification, and in which:

Fig. 1 is a longitudinal, central, sectional view of the invention showing it applied.

Fig. 2 is a sectional view taken on line 2—2 of Fig. 1.

Fig. 3 is a sectional view taken on line 3—3 of Fig. 1.

The invention comprises a cup-shaped supporting member 7 on the open end of which is welded or otherwise suitably secured a reinforcing ring 8 through which are threaded the screws 9 which will serve to lock the cup-shaped supporting member on the nose or end of the pneumatic hammer 10. This portion 10 is provided with a central passage 11 in which slidably operates the driving plunger 12. Projecting centrally from the base of the cup-shaped supporting member 7 is a guide neck 13, in the end of which is threaded a guide collar 14. Slidably projected through this guide collar 14 is a tube 15, embracing which is a spring 16, one end of which engages the inner face of the collar 14 and the other end of which engages one face of the collar 17 which is threaded on the end of the tube 15.

Mounted, preferably by a press fit, on the end of the tube 15 is a sleeve 18 through which are formed openings 19. In each of these openings is positioned a locking ball 20. Formed in the sleeve 18 is a bayonet slot 22 into which projects a stud 21 which projects inwardly from and is securely attached to a locking ring 23 which is rotatably mounted on the sleeve 18 so as to overlie and cover the openings 19. Each of the openings 19 is peened so that the locking balls 20 cannot be entirely removed from the openings. The tools used with a pneumatic hammer, whether they are a punch, chisel or the like, are all provided with a shank 24 and in the shank is formed a peripheral groove 25. When the shank is inserted into the tube 15, the peripheral groove 25 will lie in registration with the openings 19 and the balls 20 will then seat themselves in the groove 25. When this is accomplished, the balls 20 will not project beyond the periphery of the sleeve 18 and the locking ring 23 may be then mounted in position so as to retain the balls 20 engaged in the groove 25. In order to place the shank in proper relative position, it will be necessary to force the sleeve 15 outwardly so as to place the spring 16 under compression. Consequently, when the supporting member 7 is mounted in position on the body 10 the end of the shank 24 will always lie in engagement with the outer face of the driving plunger 12. In operation, the sleeve 15 will, of course, reciprocate in unison with the shank 24.

In order to remove the tool from the retainer it is but necessary to remove the ring 23 whereupon the balls 20 may be forced outwardly out of engagement with the groove 25.

In this manner I have provided a simple and effective means for mounting a tool free for longitudinal movement and yet attached so as to prevent its propulsion out of the retainer. It is believed obvious that the supporting member 7 may

be easily and quickly removed from the nose 10 of the hammer.

While I have illustrated and described the preferred form of construction, I do not wish to limit myself to the precise details of structure shown, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

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

1. In combination, with a pneumatic working tool having a slidable driving plunger, a tool retainer comprising: a cup-shaped supporting member adapted for mounting on said tool; a neck projecting centrally outwardly from the base of said supporting member; a tube slidably projected through said neck and extended at its inner end into said cup-shaped member through said base and extended at its opposite end beyond the end of said neck; means for detachably mounting a tool shank projected through said tube; and means between said neck and tube for normally retaining the end of said tool shank constantly engaged with the face of said plunger.

2. In a fluid operated percussive tool having a head provided with an axial bore and a hammer reciprocable therein; a hollow cylindrical casing open at each end, means supporting the casing from said head in spaced relation from its end and axially aligned with its bore, a hollow tube reciprocable in and through said casing and coaxial therewith, said tube projecting at each end beyond the casing ends, spring means between said casing and tube and normally urging an end of the tube against said head, a tool shank disposed through said tube into the head bore in abutting engagement with said hammer, and tool shank engaging means on the other end of said tube whereby to connect said tube and tool shank for movement in unison at all times while connected.

DONALD V. CLERK.