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TOOL MOUNTING FOR HAMMERS

Original Filed May 19, 1938

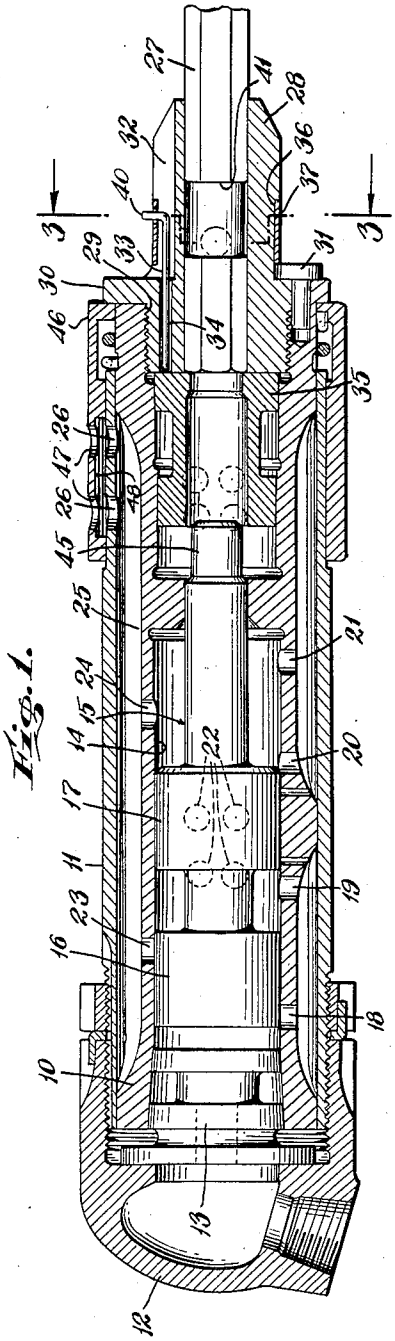


Fig. 1.

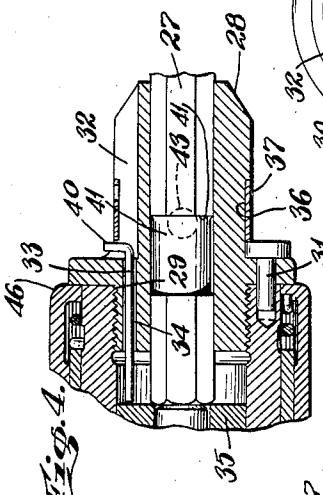


Fig. 4.

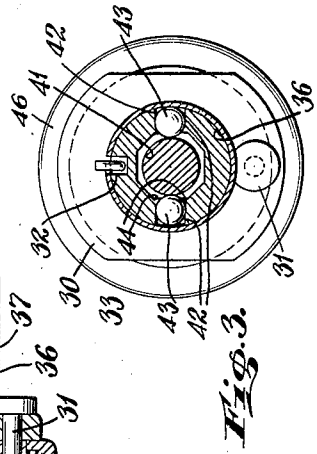


Fig. 3.

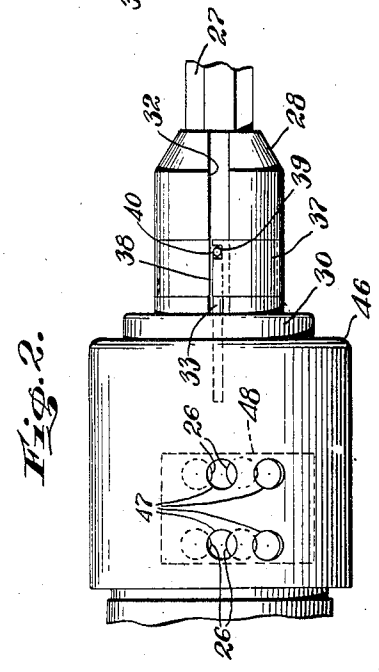


Fig. 2.

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TOOL MOUNTING FOR HAMMERS

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Original application May 19, 1938, Serial No. 208,773, now Patent No. 2,265,989, dated December 16, 1941. Divided and this application December 15, 1941, Serial No. 423,031

3 Claims. (Cl. 121—32)

This invention relates to what are commonly termed hammers or implements of this kind operated by compressed air or other pressure fluids and more particularly to the tool mounting for implements of this class, and the object of the invention is to provide a tool supporting chuck having resiliently operated means for retaining the tool against accidental displacement while compensating for reciprocating movement imparted to the tool by the hammer element of the implement, a further object being to provide means adjustable on the chuck body adapted, in one position thereof, to positively retain the control valve of the implement in open position, and with these and other objects in view the invention consists in a tool supporting chuck of the kind defined constructed as more fully hereinafter described.

This invention is fully disclosed in the following specification, of which the accompanying drawing forms a part, in which the separate parts of my invention are designated by suitable reference characters in each of the views, and in which:

Fig. 1 is a longitudinal sectional view through an implement made according to my invention.

Fig. 2 is a plan view of one end portion of the implement.

Fig. 3 is a cross section on the line 3—3 of Fig. 1; and

Fig. 4 is a view similar to Fig. 1 showing only part of the construction and with parts in a different position.

The present application constitutes a division of my prior application, filed under the name of Oliver O. App, Ser. No. 208,773, May 19, 1938, now Patent #2,265,989, issued December 16, 1941, since which time my name has been legally changed to the name used in this application.

To illustrate the general structure of the implement or hammer the following brief description is submitted:

In Fig. 1 of the drawing 10 represents the cylinder, 11 the casing or sleeve fitting on the cylinder and forming ports or passages longitudinally thereof which control the passage of air or other fluid pressure in the operation of the hammer. At 12 is shown the hollow cap on one end of the casing with which an air supply is adapted to be coupled in supplying air to the various ports or passages of the hammer. At 13 is shown a plug seating in one end of the cylinder and on the cap which controls the feed of air into the cylinder.

In the bore 14 of the cylinder is arranged a piston, plunger or hammer 15 having two cylindrical portions 16 and 17 controlling various ports 18, 19, 20 and 21 as well as intake ports 22 and exhaust ports 23 and 24. The ports 23 and 24 open into a long passage 25 which communicates with exhaust passages 26 arranged at the end portion of the cylinder in which the tool 27 is supported. A chuck body 28 is employed to support the tool 27 in the implement, the inner end of this body is externally threaded as seen at 29 to engage a correspondingly threaded end of the cylinder 10, the chuck body having a flange 30 seating upon the end of the cylinder. A key pin 31 passes through the flange and enters a recess in the end of the cylinder 10 to retain the chuck body against accidental displacement. The outer end portion of the chuck body has an elongated aperture 32 in which is slidably mounted a lock rod 33, the rod also operating in an aperture 34 in the body of the chuck to support a control valve 35 in open position as later described. The body of the outer end portion of the chuck is provided with a wide circumferential groove 36 in which is mounted a spring ring or collar 37. One side of the split portion 38 of this ring has a notch or recess 39 adapted to receive an angularly extending handle portion 40 on the rod 33, to support the rod in the retracted position as seen in Fig. 1, whereas when the rod is in operative position as seen in Fig. 4, the end 40 engages the inner surface of the ring 37 to retain the same in operative position.

The tool 27 has a shank portion of angular cross sectional contour being octagon in form in the construction shown, and this shank has an annular recess 41 extending longitudinally of the shank sufficiently to compensate for reciprocating movement of the tool. The chuck body, in alignment with the spring ring portion thereof, has opposed apertures 42 in which are arranged bearing balls 43, these balls being held in the groove 41 by the spring ring 37. These balls retain the tool 27 against accidental displacement from the chuck body, while at the same time providing quick attachment and detachment of the tool as will be apparent. The inner end portions of the apertures 42 have inturned flange portions 44 which check inward movement of the balls 43.

It will be understood that the end portion 45 of the plunger 15 is adapted to strike the tool in the operation of the tool, and the operation of the implement is controlled by the movement of the valve 35 and also through the medium of a baffle 46, adjustably supported on the tool end of

the implement and having discharge ports **47** registering with the ports **26**, or a crescent shaped aperture **48** formed in the bore of the baffle **46**, in accordance with the teachings in said prior application.

In certain uses of the implement the rod **33** is maintained in the position shown in Fig. 1 and upon admitting air or other fluid to the implement the plunger will be automatically reciprocated at high speed and controlled by the valve **35**, and further regulated by adjustment of the baffle **46** in controlling what might be termed heavy or light duty performance of the implement. In other uses of the implement it is desirable to maintain the valve **35** in open position in which event the finger piece end **40** of the rod **33** is forced through the split **38** of the ring **37** to bring the same into the position shown in Fig. 4 in which position the rod engages the valve to hold it in open position.

In the present application all specific reference to the various structure details of the implement have been dispensed with and only such parts thereof have been described to identify the general assemblage, the structure of the implement being covered generally in the original application and further more specifically in another divisional application filed of equal date herewith in which the baffle construction is more specifically defined.

With the present construction applicant provides a tool supporting chuck which is of simple and economical construction and one which can readily be attached and detached with respect to the cylinder of the implement for cleaning, repair or other purposes and at the same time a chuck is provided wherein a tool may be quickly and easily attached and detached to the chuck while being retained against accidental displacement therefrom in a manner which compensates for movement imparted to the tool in the operation of the implement.

I claim:

1. In a fluid pressure operated implement of the character described, an elongated cylinder, a tool operating piston movable longitudinally of the cylinder, means at the outer end of the cylinder for detachably coupling a tool therewith in alignment with said piston, said means comprising means retaining the tool against accidental displacement while providing reciprocating movement of the tool in said means, a reciprocating valve in the cylinder controlling operation of said implement, and manually adjustable means at the outer end only of the cylinder and supported in said first named means and cooperating with said valve to retain the valve in a predetermined position.

2. In a fluid pressure operated implement of the character described an elongated cylinder, a tool supporting body at one end of the cylinder, said body having an elongated bore of angular cross sectional form, a tool mounted in said body and having end portions corresponding in cross section to the bore of said body, the tool intermediate said end portions having a circumferential recess extending longitudinally thereof, bearing balls mounted in opposed walls of said body to engage the recessed portion of said tool in retaining the tool against accidental displacement from said body, a spring ring on said body engaging said balls to support the same in operative position, a reciprocating valve in the cylinder controlling operation of said implement, a key rod slidably mounted in said body and cooperating with said valve to retain the valve in a predetermined position, and means on said rod cooperating with said spring ring to retain the rod in different positions of adjustment in said body.

3. In a fluid pressure operated implement of the character described an elongated cylinder, a tool supporting body at one end of the cylinder said body having an elongated bore of angular cross sectional form, a tool mounted in said body and having end portions corresponding in cross section to the bore of said body, a tool intermediate said end portions having a circumferential recess extending longitudinally thereof, bearing balls mounted in opposed walls of said body to engage the recessed portion of said tool in retaining the tool against accidental displacement from said body, a spring ring on said body engaging said balls to support the same in operative position, a reciprocating valve in the cylinder controlling operation of said implement, said body having an elongated passage opening outwardly therethrough where said spring ring is located, a key rod slidably mounted in the passage of said body, the outer end of said rod having an offset finger piece, said spring ring having a notch receiving the finger piece of said rod to support the rod in inoperative position, and said finger piece engaging one end of the spring ring in supporting the rod in operative position engaging said valve to retain the valve in a predetermined position.

OLIVER O. APPTON.