June 30, 1931. G. T. HARCOURT 1,812,652

TOOL RETAINER

Filed April 22, 1929

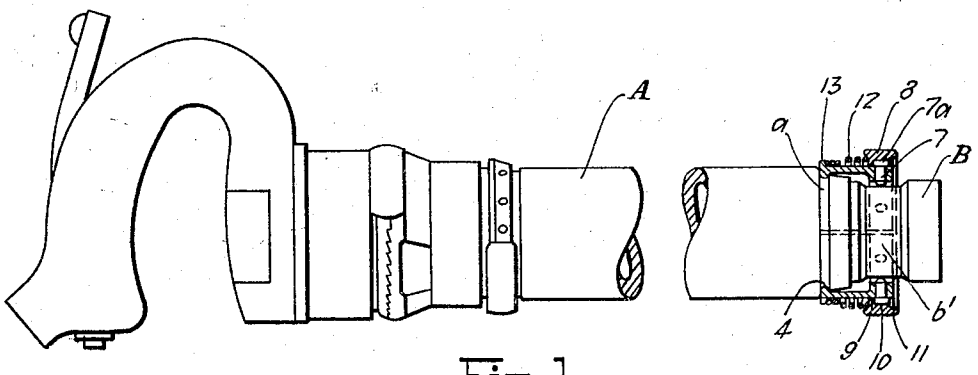


Fig. 1

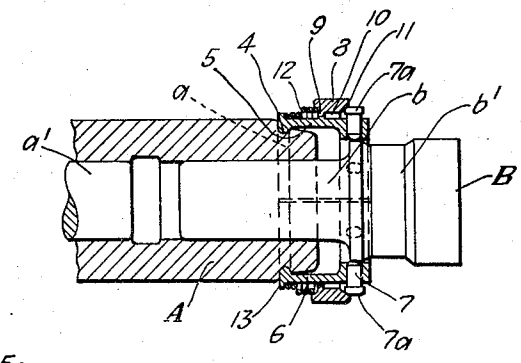


Fig. 2

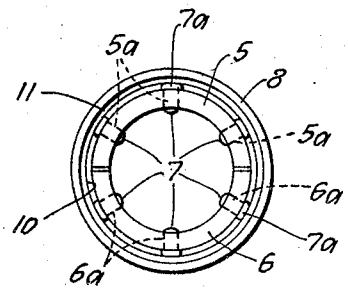


Fig. 3

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UNITED STATES PATENT OFFICE

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TOOL RETAINER

Application filed April 22, 1929. Serial No. 357,161.

This invention relates to percussive machines and tools and more particularly to devices for releasably securing the working tool in operative relation to the machine.

One object of the invention is to hold a working tool in place to receive blows and to permit its quick removal and replacement when desired. Another object is to provide a simple, compact retaining device which is economical to manufacture and assemble as well as highly convenient to use. Other objects will be apparent from the detailed description which follows.

In order to illustrate the invention one concrete embodiment thereof is shown in the accompanying drawings, in which:—

Fig. 1 is a side elevational view of a percussive tool partly broken away and showing, in section, the retainer applied thereto;

Fig. 2 is a fragmentary sectional view of the forward end of the hammer barrel showing a working tool being removed therefrom; and

Fig. 3 is a front end elevational view of the retainer assembly.

The retainer of the present invention is shown in Fig. 1 of the accompanying drawings as applied to a barrel A of a percussive motor or tool, in the present instance a pneumatic riveting hammer. The hammer barrel A has adjacent the forward end thereof the conventional annular groove *a* upon the exterior thereof. A working tool of any desired form, such as a rivet set B, has a shank *b* extending within the bore of the hammer barrel A to receive the blows of the impact member or piston *a'* (Fig. 2). Rivet set B has the conventional broad annular retaining groove *b'*.

The retainer consists of a sleeve for telescoping engagement with the end of the hammer barrel and provided at one end with an inwardly projecting rib or flange 4 which seats in groove *a* in the hammer barrel when the retainer is applied thereto, as indicated in Figs. 1 and 2. The sleeve is by preference made up of a plurality of arcuate parts, in the present instance two in number, 5 and 6, generally semicircular in form and having at the ends remote from retaining rib 4 a series of radial bores 5*a* and 6*a*, respectively, in which are mounted pins 7, in the present instance six in number, three in each of the sleeve parts 5 and 6 and equally spaced about the periphery of the retaining sleeve. Pins 7 have heads 7*a* which limit their projection through bores 5*a* and 6*a*. The inner rounded ends of the pins, when at the limit of their inward movement, engage rivet set B within the broad groove *b'* thereof. An annulus 8 telescopes over the exterior of the retaining sleeve and has a portion 9 slidably fitting the same, a broad portion 10 for holding pins 7 at the limit of their inward projection (Fig. 1), and a tapered portion 11 for permitting the pins to retract in bores 5*a* and 6*a* for the insertion and removal of a working tool such as rivet set B (Fig. 2). A coil spring 12, encircling the exterior of the sleeve parts 5 and 6, is compressed between an exterior flange or abutment 13 on the inner end of sleeve parts 5 and 6 and the slidable annulus 8, thereby having the double function of holding the retainer in assembled relation securely upon the hammer barrel and of yieldingly maintaining annulus 8 at the limit of its outward movement (Fig. 1) with pins 7 in engaging contact with the retaining groove on the working tool B.

With the retainer assembly in place on the hammer barrel if the operator wishes to insert or remove a working tool such as B, he slides annulus 8 rearwardly toward abutment 13 to the position shown in Fig. 2 since in this position the tapered portion 11 of the annulus permits stop pins 7 to move outwardly far enough to pass the broadest diameter of the working tool. When shank *b* of the working tool is fully within the hammer barrel, the tool is substantially in the position shown in Fig. 1. Annulus 8 is then released and under the pressure of the spring 12 moves outwardly until portion 9 engages heads 7*a* of pins 7 and the pins 7 are locked in their inward position by portion 10 of the annulus.

From the above it will be apparent that the retainer assembly comprises but a few easily manufactured parts which can be quickly assembled and applied to the barrels of conventional percussive motors for retaining

conventional working tools in place, that once the tool is inserted it is securely locked in place until annulus 8 is manually retracted but that excessive shocks may be taken care of without breakage to parts by the yielding of the single coil spring 12 which has the dual function of holding the retainer parts in assembled relation on the hammer barrel and of maintaining the annulus 8 in position to lock the stop pins 7 in tool engaging position.

While the invention is herein disclosed in what is now considered to be a preferred form, it is to be understood that the invention is not limited to the specific details thereof, but covers all changes, modifications, and adaptations within the scope of the appended claims.

I claim as my invention:

1. The combination with a percussive motor having a barrel into which a working tool is to be inserted, of retaining means for the tool engaging said barrel, and means comprising a sleeve having inwardly projectable members, an annulus in telescoping engagement with the exterior of said sleeve, and resilient means having the dual function of holding said sleeve on said barrel and of yieldingly maintaining said annulus in position to hold said members in tool engaging position.

2. In combination, a barrel into which the shank of the working tool is to be inserted, and a retainer for holding the working tool in place comprising a split sleeve, interengaging parts on said barrel and said sleeve, inwardly projecting members on said sleeve for engagement with the tool, means for holding said members in tool-engaging position and resilient means encircling the exterior of said sleeve and arranged to hold said parts in engagement and said holding means in operative relation with said members.

3. In combination, a barrel into which the shank of a working tool is to be inserted, said barrel having an annular groove, and a retainer for holding the working tool in place comprising arcuate parts forming a sleeve for telescoping engagement with the end of said barrel, an inner rib on said parts to fit said barrel groove, a coil spring encircling said parts to hold the same in assembled relation and in engagement with said barrel, and means supported by said arcuate parts and acted upon by said spring for engagement with said tool.

4. In combination, a barrel into which the shank of a working tool is to be inserted, and a retainer for holding the working tool in place comprising arcuate parts forming a sleeve for telescoping engagement with the end of said barrel, interfitting means on said barrel and on said parts, a coil spring encircling said parts to hold the same in assembled relation and in engagement with said barrel, abutments for said spring adjacent the opposite ends of said sleeve, one of said abutments being movable, and means controlled by said movable abutment for engagement with said tool.

5. In combination, a percussive motor having a barrel into which the shank of a working tool is to be inserted, said barrel having an annular groove, and a retainer for holding the working tool in place comprising arcuate parts forming a sleeve for telescoping engagement with the end of said barrel, an inner rib on said parts to fit said barrel groove, a coil spring encircling said parts to hold the same in assembled relation and in engagement with said barrel, abutments for said spring adjacent the opposite ends of said sleeve, one of said abutments being movable, and stop means movable inwardly to engage said tool and controlled by said movable abutment.

6. In combination, a percussive motor having a barrel into which the shank of a working tool is to be inserted, and a retainer for holding the working tool in place comprising arcuate parts forming a sleeve for telescoping engagement with the end of said barrel, interfitting means on said barrel and on said parts, a coil spring encircling said parts to hold the same in assembled relation and in engagement with said barrel, abutments for said spring adjacent the opposite ends of said sleeve, one of said abutments being movable and in the form of an annulus in telescoping engagement with said sleeve parts, and means controlled by said annulus for engagement with said tool.

7. In combination, a percussive motor having a barrel into which the shank of a working tool is to be inserted, said barrel having an annular groove, and a retainer for holding the working tool in place comprising arcuate parts forming a sleeve for telescoping engagement with the end of said barrel, an inner rib on said parts to fit said barrel groove, a coil spring encircling said parts to hold the same in assembled relation and in engagement with said barrel, flanges on said parts at one end forming an abutment or shoulder for one end of said spring, a sliding abutment for the other end of said spring in the form of an annulus telescoping over said sleeve, and means on said parts controlled by said annulus for engagement with said tool.

8. In combination, a percussive motor having a barrel into which the shank of a working tool is to be inserted, and a retainer for holding the working tool in place comprising arcuate parts forming a sleeve for telescoping engagement with the end of said barrel, interfitting means on said barrel and on said parts, a coil spring encircling said parts to hold the same in assembled relation and in engagement with said barrel, flanges on said parts at one end forming an abutment or shoulder for one end of said spring, a sliding

abutment for the other end of said spring in the form of an annulus telescoping over said sleeve, stop pins extending through radial bores in the outer ends of said sleeve parts, and means on said annulus for locking said pins in engagement with said tool in one position of said annulus and permitting partial withdrawal of said pins in another position of said annulus to release said working tool.

9. A retainer device in the form of a sleeve for engagement with the barrel of a percussive motor comprising a plurality of parts forming the sleeve, fixed abutment means on said parts at one end thereof, an annulus for telscoping engagement with said sleeve parts with a sliding fit, inwardly projectable members on said parts controlled by said annulus, and a coil spring encircling said parts and compressed between said abutment means and said annulus.

10. A retainer device in the form of a sleeve for engagement with the barrel of a percussive motor comprising a plurality of parts forming the sleeve, a rib or flange on the exterior of said parts at one end thereof to form an abutment shoulder, said parts having a series of radial bores at the other ends thereof, stop pins in said bores, an annulus having a portion for engaging said parts with a telescoping sliding fit, a tapered portion for engagement over the heads of said pins, and a portion to hold said pins at the limit of their inward movement, and a coil spring for encircling said parts between said abutment shoulder and said annulus.

Signed by me at Detroit, in the county of Wayne and State of Michigan, this 18 day of April, 1929.

GEORGE T. HARCOURT.