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H. E. POLLARD

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POWER OPERATED RECIPROCATING TOOL DEVICE

Filed May 19, 1930

Fig. 1.

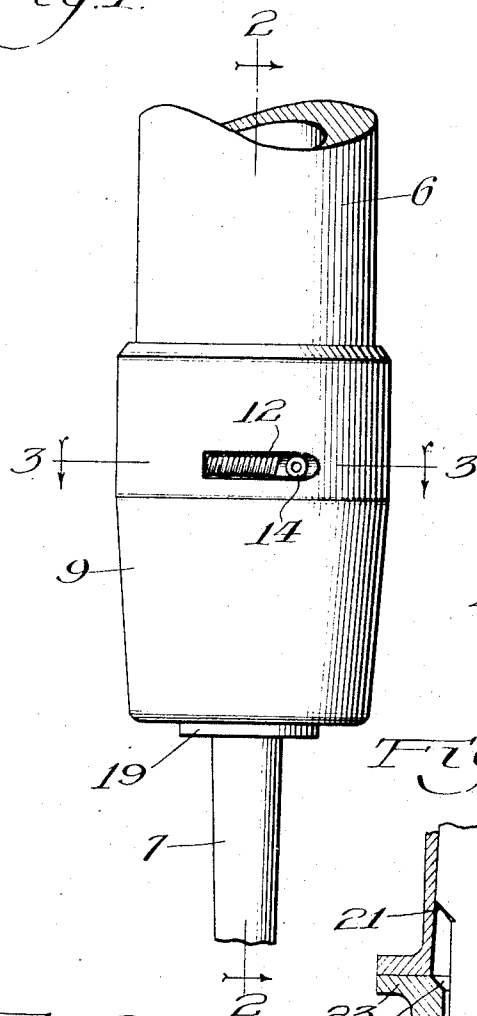


Fig. 2.

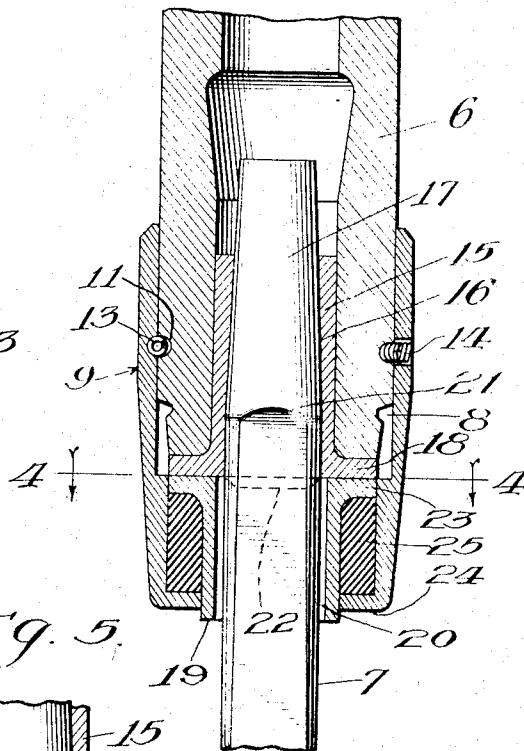


Fig. 5.

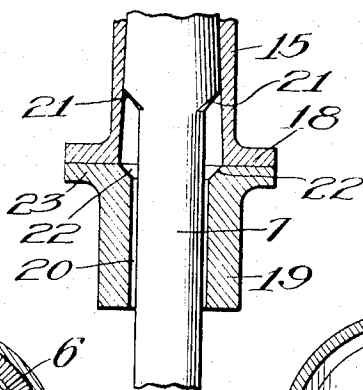


Fig. 3.

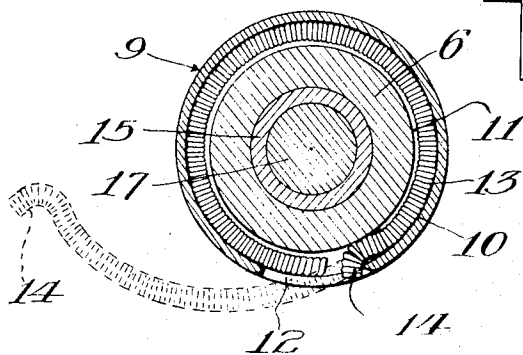
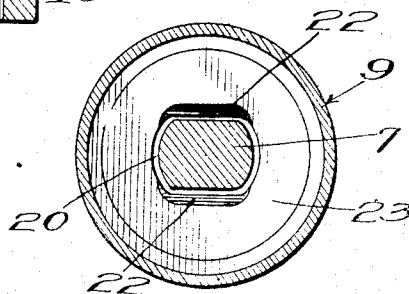


Fig. 4.



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## UNITED STATES PATENT OFFICE

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## POWER OPERATED RECIPROCATING TOOL DEVICE

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My invention relates more particularly to means whereby pneumatic riveting tools as commonly provided may be readily and quickly conditioned for permitting a cutting operation such as and more particularly for the cutting off of the heads of rivets especially in the disassembling of structural elements riveted together.

The converting of a riveting device into a chisel device involves the provision of means which, while permitting of the desired reciprocation of the chisel, will prevent the chisel from being driven out of the device as for example at the termination of the operation of the cutting off of the head of a rivet.

My primary object is to provide a novel, simple and inexpensive construction of means for releasably securing the chisel-retainer on the outer end of the barrel of a riveter to which it is applied.

Another object is to provide means of the character above stated whereby the chisel-retainer may be quickly and readily firmly secured in position on the riveter-barrel and with equal facility be removed therefrom when it is desired to use the device as a riveter.

Another object is to provide means of the character stated of such construction that the barrel of the riveter may be conditioned for use with the chisel-retainer without requiring the cutting of a thread on the riveter-barrel or any other operation which would require the machining of the riveter barrel but which conditioning may be effected by tools or appliances commonly accessible, as for example a grinding wheel.

Referring to the accompanying drawing:

Figure 1 is a view in side elevation of the outer end of the barrel of a pneumatic riveter shown as equipped with a chisel-retainer, with a chisel therein, in accordance with my invention.

Figure 2 is a section taken at the line 2—2 on Fig. 1 and viewed in the direction of the arrows.

Figure 3 is a cross sectional view taken at the line 3—3 on Fig. 1 and viewed in the direction of the arrows, this view showing by full lines the operative position of the spiral

spring member for locking the chisel-retainer on the barrel and by dotted lines one of the positions occupied by the coil spring member upon applying it to, or withdrawing it from, operative position.

Figure 4 is a section taken at the line 4—4 on Fig. 2 and viewed in the direction of the arrows; and

Figure 5, a broken view in longitudinal sectional elevation taken through the sectional sleeve device of the retainer with the chisel located therein, this section being taken normal to the plane of the section line on which Fig. 2 is viewed.

The barrel of a pneumatic riveting device in connection with which I have chosen to illustrate my invention and such as is commonly provided, is represented at 6, the compressed-air-operated piston (not shown) of the device reciprocating in this barrel to deliver blows to the riveting tool (not shown) and to the chisel represented at 7 when substituted for the riveting tool referred to, the piston extending into, and being reciprocable in, the outer end of the barrel 6.

The barrel 6 is provided, in accordance with common practice, with an annular groove 8 for receiving the means commonly employed in riveters for preventing the riveting tool referred to from dropping out of the barrel when the device is not in use.

In accordance with the preferred embodiment of my invention I provide for application to the outer end of the barrel 6 a chisel-retainer device represented generally at 9 to be applied to the barrel 6 when the pneumatic device is to be used for operating a chisel, it being understood that the riveting tool and the retaining means therefor above referred to would be removed from the barrel 6 preliminary to the substitution therefor of the chisel 7 and its retaining means.

The chisel retaining means is in the form of a casing adapted to be slipped over the outer end of the barrel 6, the inner surface of the casing 9 containing a peripheral groove 10 which registers with an annular groove 11 provided about the periphery of the barrel 6, the groove 11 being formed in any

desirable way, as for example by grinding the barrel with a grinding wheel.

The casing 9 in alinement with the groove 10 therein contains an opening 12 in its side wall through which a locking member or key hereinafter described is adapted to be inserted into locking position in the registering grooves 10 and 11 from either the right hand side or the left hand side of said opening and withdrawn from these grooves when it is desired to remove the chisel retainer from the riveter barrel.

The locking member or key, in accordance with the particular illustrated embodiment of my invention, and represented at 13, is in the form of a member of bendable material permitting of the threading of this member through the opening 12 into the registering grooves, to assume substantially the form of an annulus as represented in Fig. 3. The member 13, however, is preferably formed of a length of spring wire wound into a spiral as shown, whereby upon threading it into the position above referred to it will be deflected into substantially annulus form. One end of the member 13 is preferably permanently deflected outwardly as represented at 14 to form a part which may be readily engaged by the finger of a workman for withdrawing the member 13 from the registering grooves 10 and 11 and thereby free the casing 9 for removal from the riveter barrel 6.

The internal construction of the chisel retainer may be of any desirable form but preferably of the form shown in the drawing the construction shown comprising a sleeve 15 which surrounds the inner end of the chisel 7 and extends into the open end of the barrel 6, the bore 16 of this sleeve being inwardly tapered as shown and co-operating with the inner tapered end portion 17 of the chisel to form stop means limiting outward movement of the chisel when pressed against the work to the position shown in the drawing, in which position the inner extremity of the chisel extends inwardly beyond the inner end of the sleeve 15 to be engaged by the piston above referred to.

The outer end of the sleeve 15 is annularly flanged as represented at 18 at which portion it laps the outer portion of the barrel 6 thereby forming stop means limiting inward movement of this sleeve.

The retaining means also comprise a sleeve 19 surrounding the chisel 7 and disposed in alinement with the sleeve 15, the bore 20 of the sleeve 19 in one cross sectional direction being of less width than the bore 16 of the sleeve 15.

The chisel 7 is provided at diametrically opposed portions with outwardly facing shoulders 21 preferably chamfered as shown which oppose shoulders 22, also preferably chamfered as shown, and presented by the sleeve 19 at the inner end of its bore 20, the

arrangement and proportions of the parts described being such, as shown, that when the chisel 7 is in its innermost position as represented, the shoulders 21 are spaced from the shoulders 22 and outward movement of the chisel relative to the sleeve 19 is limited by the engagement of the shoulders 21 with the shoulders 22.

The sleeve 19 is externally flanged as represented at 23 at which flange it abuts the outer flanged portion 18 of the sleeve 15, these sleeves being held on the barrel 6 by an inwardly extending annular flange 24 between which and the flange 23 on the sleeve 19, a buffer 25, as for example of rubber, is interposed, the outer end of the sleeve 19 preferably extending loosely through the open end of the casing of the retainer 9.

In the use of the device the operator grasping the barrel 6 forces the chisel against the work, as for example the head of a rivet to be cut, and the piston above referred to delivers the desired impacts against the inner end of the chisel for severing the head of the rivet. When there is no resistance by the work to outward movement of the chisel under the impacts produced by the piston, as for example when the device is started into operation before applying it to the work, or should the chisel glance from the rivet, or the device is continued in operation following the cutting off of the head of the rivet, the chisel is driven at its shoulders 21 against the shoulders 22 of the sleeve 19 which transmits the force exerted by the chisel to the sleeve 19 and in turn to the buffer 25 backed by the flange 24 of the casing 9.

When it is desired to remove the chisel retainer 9 from the barrel 6, as for example to recondition the riveter for setting rivets, the operator withdraws the key member 13 from the registering grooves by sliding this member out through the opening 12.

While I have illustrated and described a particular construction embodying my invention, I do not wish to be understood as intending to limit it thereto as the same may be variously modified and altered without departing from the spirit of my invention.

What I claim as new and desire to secure by Letters Patent, is:

1. In combination, a pneumatic-riveter barrel containing a peripheral groove in its outer surface, a holder for a chisel adapted to be slipped over said barrel and containing a groove in its inner surface, said grooves registering in the assembled position of said barrel and holder, said holder containing an opening in its side registering with the groove in said holder, and a key member in the form of a wire wound into a spiral and insertable through said opening into said grooves for releasably securing said holder to said barrel.

2. In combination, a pneumatic-riveter barrel containing a groove in its outer surface, a holder for a chisel adapted to be slipped over said barrel and containing a groove in its inner surface, said grooves registering in the assembled position of said barrel and holder, said holder containing an opening in its side registering with the groove in said holder, and a key member in the form of a spiral spring insertable through said opening into said grooves for releasably securing said holder to said barrel, said key member being provided with a portion extending laterally therefrom, for the purpose set forth.

HUGH E. POLLARD.