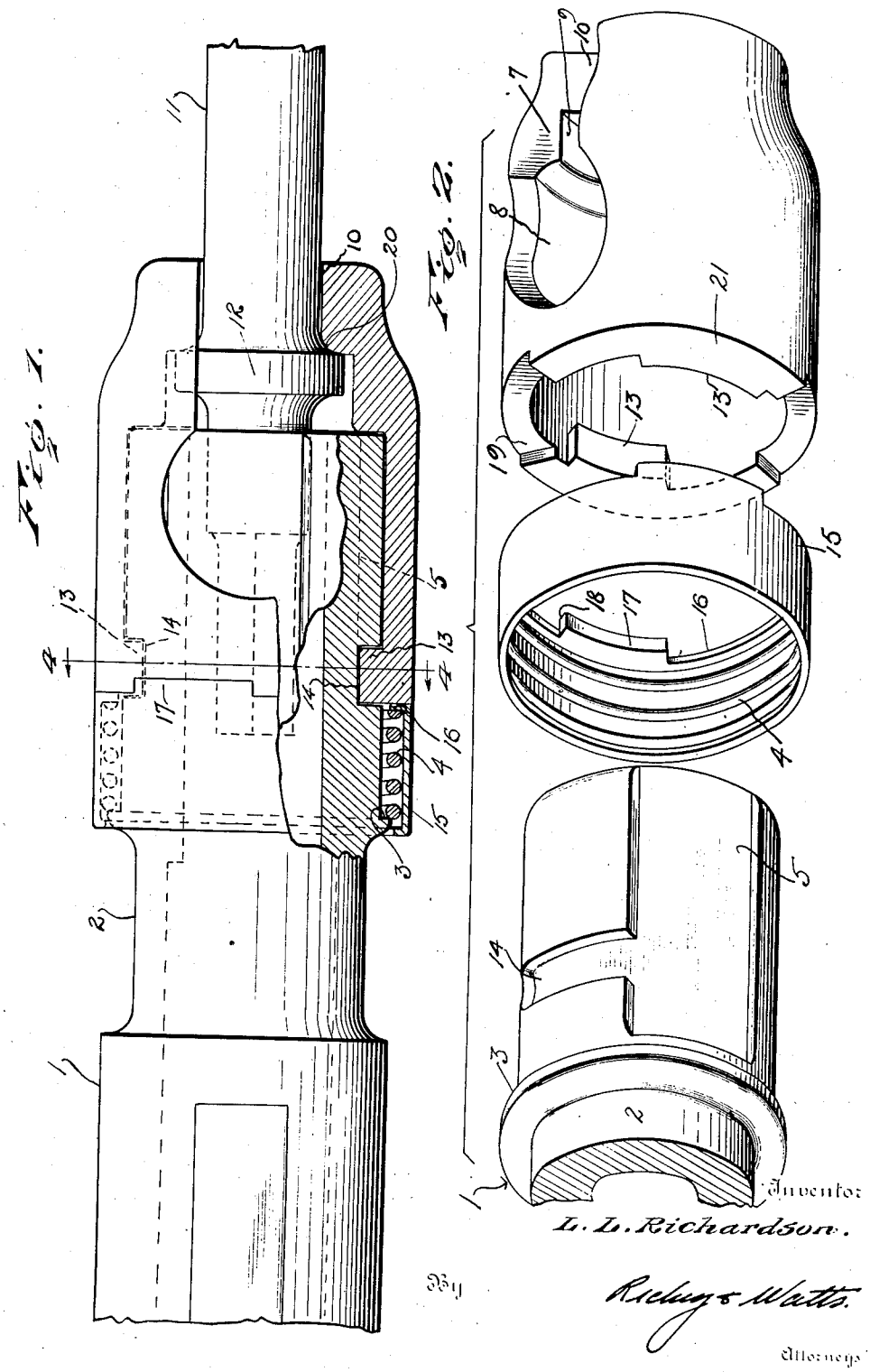
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DRILL STEEL RETAINER

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DRILL STEEL RETAINER

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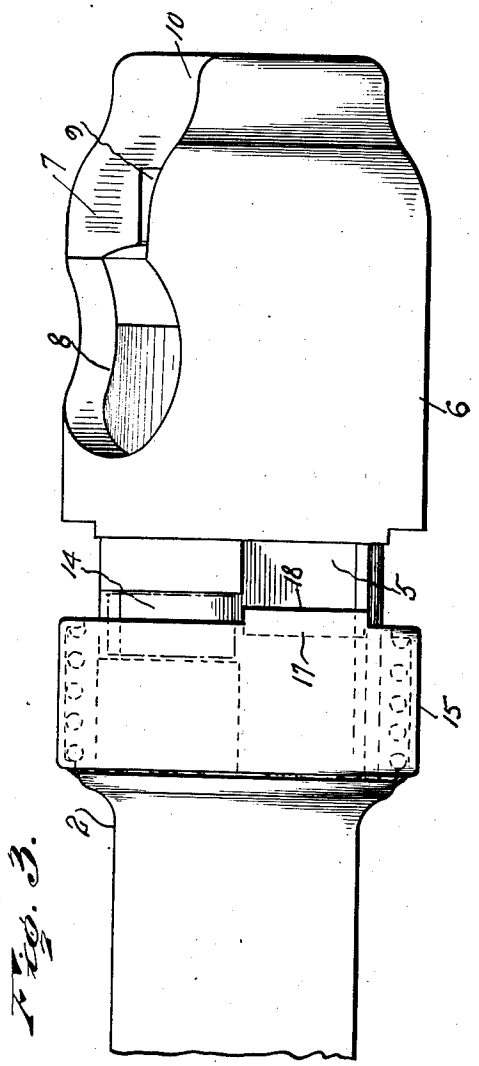


Fig. 3.

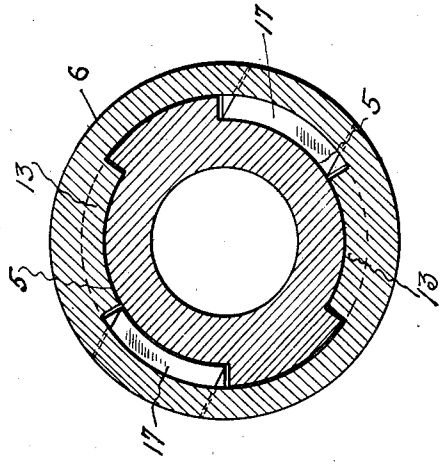


Fig. 4.

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Patented July 12, 1932 1,866,863

UNITED STATES PATENT OFFICE

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DRILL STEEL RETAINER

Application filed May 31, 1929. Serial No. 367,486.

This invention relates to pneumatic tools and more particularly to improvements in drill steel retainers for fluid actuated drills.

An object of the invention is to provide a device of the character so constructed that accidental ejection of the drill steel from the front head is positively prevented.

Another object of the invention is to provide a device of this character so constructed that the retainer may be quickly and easily manipulated to permit a drill steel to be removed or replaced.

Another object of the invention is to provide a device of this character which is simple in construction, durable, efficient in operation and one which may be manufactured at a relatively small cost.

These and other objects and an understanding of the invention itself and the merits thereof, will be had by reference to the following description and the accompanying drawings forming a part of this specification.

In the drawings:

Fig. 1 is a fragmentary elevational view of a pneumatic drill with certain parts broken away and shown in section;

Fig. 2 is a perspective view, showing the parts prior to assembly;

Fig. 3 is an elevational view, showing the retaining sleeve partially enveloping the front head;

Fig. 4 is a sectional view taken on line 4—4 of Fig. 1.

Referring to figures of the drawings wherein like parts are designated by like reference characters, there is shown the cylinder 1 of a fluid pressure actuated drill which has associated therewith a front head 2. The front head has an annular shoulder 3 serving as an abutment for the end of a helical spring 4 which is adapted to be telescopically engaged with the end of the head. A pair of diametrically opposed longitudinal grooves 5 are also provided in the surface of the head and are adapted to receive therein the lugs 13 of a drill retaining sleeve 6 and 17 of a collar 15.

The end of the drill retaining sleeve is formed with a slot 7 which extends longitudinally and communicates with a circular aperture 8 in the side of the sleeve. The other end of the slot provides a radial opening 10 in the end of the sleeve which is adapted to accommodate the shank 11 of a drill. A seat 9 is provided in the forward end of the sleeve contiguous the opening 10 and engages an integral annular collar 12, of the drill.

The end 21 of the sleeve is provided with inwardly extending lugs 13 which are adapted to slide in the grooves 5 of the head when the sleeve is telescopically engaged with the head. Lateral grooves 14 connect with the grooves 5 and the lugs 13 are adapted to cooperate therewith in a manner to be hereinafter explained.

The locking collar 15, which is adapted to be disposed about the head and flange 3, has its forward end provided with an inturned annular flange 16 against which an end of the spring 4 may bear. A pair of oppositely disposed lugs are provided on the flange which extend inwardly at 17, adapted to slide in the slot 5 on the head, and forward at 18, to project into recesses 19 in the rear edge of the sleeve 6. The spring 4 engages the flanges 16 of the collar 3 of the head to normally press the collar forward or to the right as viewed in the figures.

The drill 11 is coupled or engaged in the retaining sleeve 6, before the same is connected to the front head, by passing the end of the drill through the aperture 8 and the rear opening of the sleeve in such a manner that the collar or flange 12 on the drill aligns with the aperture 8, wherein the drill 11 and flange 12 will readily slip downward into the sleeve, the slot 10 accommodating the shank 11 and the aperture 8 allowing the collar 12 to pass there through. The drill may then be advanced in the sleeve, the reduced bore 9 accommodating the flange 12 and the drill being retained within the sleeve by the inturned end wall 20 thereof.

When the drill has been properly adjusted in the sleeve, the assembly may be aligned with the front head 2, wherein the drill shank will be in a position to enter the chuck.

The sleeve 6 is then telescoped on the head and forced rearward against the collar 15, moving the same backward against the pressure of the spring 4, the lugs 13 and 17 sliding rearward in the grooves 5, into alignment with the lateral grooves 14.

In this position the sleeve may be rotated and the lugs 13 may enter the grooves 14, at which time the recesses 19 align with the lugs 18 which snap into the recesses. The spring 4 presses the collar forward snapping the lugs into the recesses 19, thereby effecting the retention of the sleeve upon the head.

Since the lugs 13 are now disposed in the lateral grooves 14, and the lugs 17 are engaged by the groove 5, relative lateral and longitudinal movement of the sleeve and head is prevented and the drill is securely retained in operative relation to the head.

When it is desired to remove the sleeve to replace the drill, the collar may be pressed backward against the pressure of the spring 4 to disengage the lugs 18 of the collar from the recesses 19 of the sleeve, and the sleeve may then be rotated to move the lugs 13 from the grooves 14, whereupon the sleeve may be slid off of the head.

Having thus described my invention in an embodiment thereof, I am aware that numerous and extensive departure may be made therefrom but without departing from the spirit of my invention.

I claim:

1. A drill tool retainer having means cooperating with the front head of a drill for detachably securing the retainer thereto, a passage in the retainer adapted to pass the shank of a tool and to prevent passage of an abutment on the tool shank, an aperture in the side of the retainer connecting with the passage, said aperture permitting insertion of the tool and abutment carried thereby, the aperture being closed by the front head of the drill when the retainer is secured thereto.

2. A drill tool retainer having means cooperating with the front head of a drill for detachably securing the retainer thereto, a passage in the retainer adapted to pass the shank of a tool and to prevent passage of an abutment on the tool shank, an aperture in the side of the retainer connecting with the passage, said aperture permitting insertion of the tool and abutment carried thereby, the aperture being closed by the front head of the drill when the retainer is secured thereto, said retainer being joined to the drill by a bayonet-type of joint.

3. A drill tool retainer having means cooperating with the front head of a drill for detachably securing the retainer thereto, a passage in the retainer adapted to pass the shank of a tool and to prevent passage of an abutment on the tool shank, an aperture in the side of the retainer connecting with the passage, said aperture permitting insertion of the tool and abutment carried thereby, the aperture being closed by the front head of the drill when the retainer is secured thereto, said retainer being joined to the drill by a bayonet-type of joint, and an inter-locking element adapted to engage the drill and the retainer to lock the retainer against disengagement.

4. A drill tool retainer having means cooperating with the front head of a drill for detachably securing the retainer thereto, a passage in the retainer adapted to pass the shank of a tool and to prevent passage of an abutment on the tool shank, an aperture in the side of the retainer connecting with the passage, said aperture permitting insertion of the tool and abutment carried thereby, the aperture being closed by the front head of the drill when the retainer is secured thereto, said retainer being joined to the drill by a bayonet-type of joint, and a spring pressed member slidably and non-rotatably mounted on the drill adapted to engage the retainer when in secured position to hold the retainer against such rotation as would disengage the latter.

In testimony whereof I hereunto affix my signature this 27th day of May, 1929.

LED L. RICHARDSON.