Dec. 12, 1933. J. E. RENFER 1,938,860

TOOL RETAINER

Filed June 27, 1932

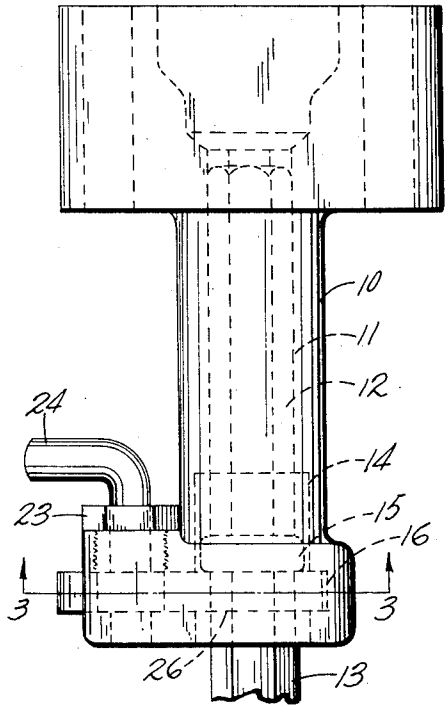


Fig. 1

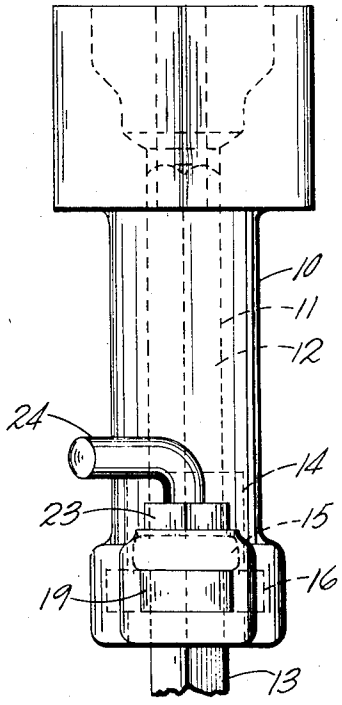


Fig. 2

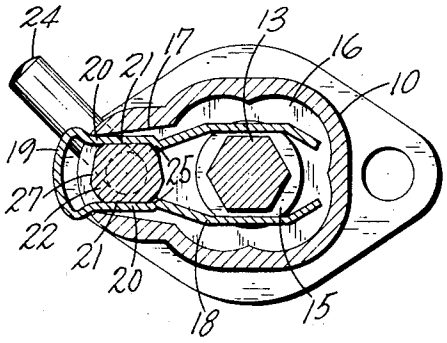


Fig. 3

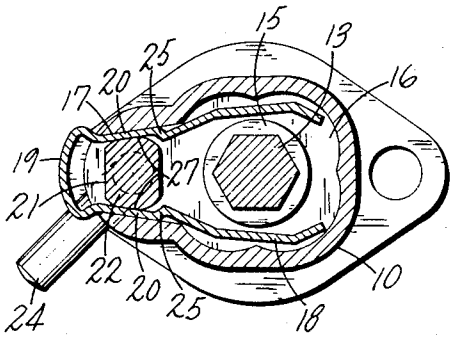


Fig. 4

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TOOL RETAINER

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5 Claims. (Cl. 121—32)

The present invention relates broadly to rock drills of the percussion type and more specifically to improvements in tool retainers.

One of the objects of this invention is to provide a releasable tool retainer which is simple in design, economic of manufacture, and susceptible of ready manipulation.

Another object is to provide a tool retainer which is organized to prevent the accidental disengagement of the tool from the drill.

Another object of the invention is to provide a tool retainer which can be readily affixed to and removed from the drill.

Other objects and advantages more or less ancillary to the foregoing and the manner in which the various objects are attained reside in the specific construction and aggroupment of the elements peculiar to this structure, as will become apparent from a more complete examination of this specification, in the claims of which there are assembled certain specific combinations of parts and specific constructions indicative of the scope and spirit of the invention.

In the drawing which illustrates a preferred embodiment of the invention:

Fig. 1 is an elevational view of the lower portion of a rock drill provided with the improved tool retainer:

Fig. 2 is an elevational view taken at right angle to Fig. 1.

Fig. 3 is a cross sectional view taken in a plane indicated by the line 3—3 in Fig. 1 illustrating the tool retainer in the operative position.

Fig. 4 is a view similar to Fig. 3 illustrating the tool retainer in the inoperative position.

Referring to the drawing, in which like symbols designate corresponding parts throughout the several views, there is shown a front housing 10, being provided with a bore 11 conveniently machined to slidably receive the shank 12 of a drilling tool 13, upon which the hammer is capable of delivering its blows. Formed in axial alignment with the bore 11, there is a counterbore 14, of a sufficient diameter to accommodate a collar 15, made integral with the drilling tool 13, and capable of engagement with the bottom wall of the counterbore 14, for limiting the penetration of the shank 11 within the housing 10. Intermediate the ends of the counterbore 14, the housing is provided with a recess or chamber 16 in communication with the atmosphere through a laterally disposed opening or slot 17.

Disposed within the chamber 16, there is a U-shaped member or retainer 18, preferably made of flat spring steel of a width substantially equal to the heighth of the chamber 16. The U-shaped retainer has its loop 19, made somewhat larger than the opening 17, and capable of engagement with the external wall of the housing 10 to limit the penetration of the retainer within the chamber 16. The retainer is originally shaped with the arms 20 thereof, bent toward each other for affording a clamping action upon two parallel flats 21 of a cam 22 interposed therebetween to maintain these arms in parallel alignment. Formed at substantially right angle from the flats 21, there is provided two other flats 27, disposed in angular relation with each other and positioned further away from the center axis of the cam than the flats 21. The cam 22 is rotatably secured to the housing 10 by the medium of a nut 23, and has an end projecting therefrom bent at right angle to afford a handle 24. At a convenient distance from the loop 19, the arms 20 of the retainer are formed with a shoulder 25 engageable with the cam 21 to prevent the accidental removal of the retainer from the chamber 16. The remaining portion of the arms 20 extend past the center axis of the drill tool in straddled relation with the tool to prevent the passage of its collar 15.

When the cam 22 is positioned as illustrated in Fig. 3, the removal of the drill tool 13 from the housing 10 is prevented by the engagement of its integral collar 15 with the arms 20 of the retainer 18, the distance between these arms being less than the diameter of the collar 15. The complete arms are engageable or supported by the bottom wall 26 of the chamber or recess 16, consequently the accidental blows transmitted by the collar 15 to the arms 20 are checked by the housing 10, preventing thereby the breakage of the retainer and affording an efficient tool arresting device.

When it is desired to remove or introduce the drill tool from or into the housing 10, the cam 22 may be rotated to position the flats 27 in engagement with the arms 20 as illustrated in Fig. 4. These flats being further away from the central axis of the cam 22 than the flats 21, cause the arms 20 to spread apart sufficiently to allow the passage of the collar 15, permitting thereby the removal or introduction of the drill tool 13 from or into the housing 10.

It will be noted that the cam 22 is locked into operative or inoperative position by the spring tension of the arms 20 in engagement with the flats 21 or 27. The cam is therefore free from accidental rotation, it may be kicked from one position to another without any danger of rotat-

ing too far past the operative or inoperative position of the retainer 18.

Although the foregoing description is necessarily of a detailed character, in order to completely set forth the invention, it is to be understood that the specific terminology is not intended to be restrictive or confining and it is to be further understood that various rearrangements of parts and modification of structural detail may be resorted to without departing from the scope or spirit of the invention as herein claimed.

I claim:

1. A tool retainer comprising a housing capable of receiving a tool in slidable engagement therein, said tool having a collar integral therewith located at a convenient distance from one end thereof, a spring retainer within said housing having a duality of arms formed with a shoulder, a member engageable with said arms to maintain them in spaced relation with each other, said shoulders being engageable with said member to prevent the removal of said retainer from said housing, said arms extending past the center axis of said tool in straddled relation therewith and capable of engagement with said collar to prevent the removal of said tool from said housing, said member being capable of rotation to spread said arms away from each other to allow the passage of said collar therebetween, permitting thereby the removal of said tool from said housing.

2. A tool retainer comprising a housing, a tool formed with a collared shank slidably mounted within said housing, a retainer having arms within said housing engageable with the collar of said shank, a cam in constant engagement with said arms capable of rotation to cause the disengagement of the latter with said collar, and means on said arms engageable with said cam for preventing the withdrawal of said retainer from said housing.

3. A tool retainer comprising a housing, a tool formed with a collared shank slidably mounted therein, a spring retainer having arms within said housing extending past the center axis of said tool in straddled relation therewith, a member disposed between said arms and engageable therewith, said member being capable of rotation to spread said arms out of engagement with the collar of said shank, and means on said arms capable of engagement with said member for preventing the withdrawal of said retainer from said housing, the engagement of said means with said member being responsive to the spring tension of said arms.

4. A tool retainer comprising a housing, a tool formed with a collared shank slidably mounted therein, a retainer having arms within said housing capable of engagement with the collar of said shank, a member rotatably and detachably secured to said housing engageable with said arms for spreading the latter out of engagement with the collar of said shank and simultaneously preventing the removal of said retainer from said housing.

5. A tool retainer comprising a housing, a tool formed with a collared shank slidably mounted therein, a spring retainer having arms within said housing capable of engagement with the collar of said shank, and a member detachably secured to said housing and engageable with said arms for maintaining the latter in proper spaced relation against the spring tension thereof for engagement with said collar and simultaneously preventing the removal of said retainer from said housing.

JOHN E. RENFER.