Feb. 27, 1951 G. F. CRUMMEY 2,543,441

CAM ACTION SCREW DRIVER

Filed March 11, 1947

Fig.1.

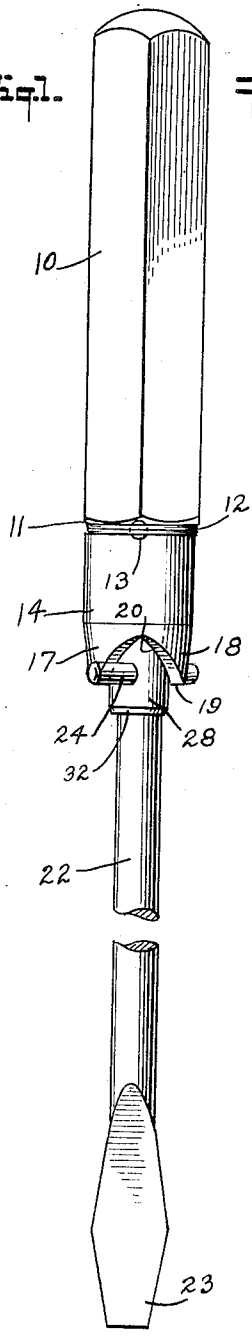


Fig.2.

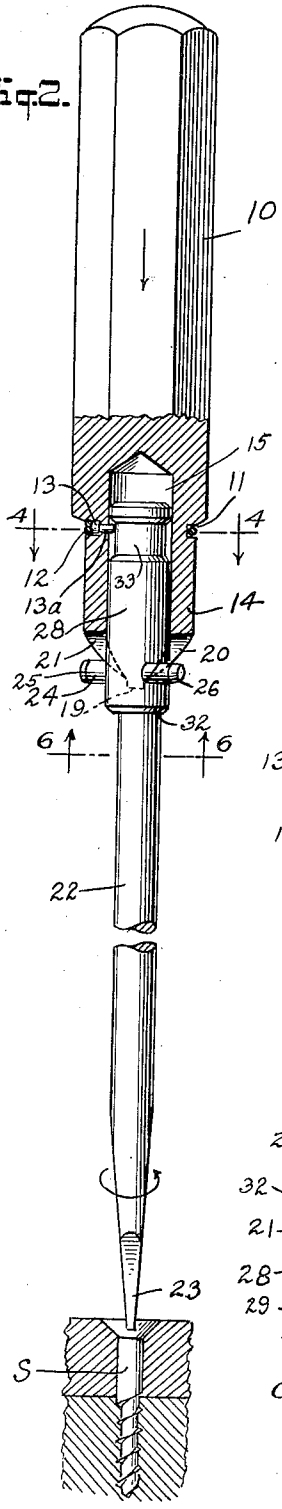


Fig.3.

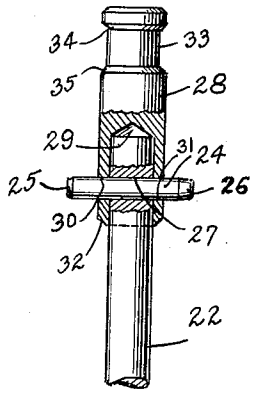


Fig.4.

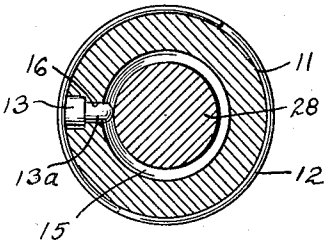
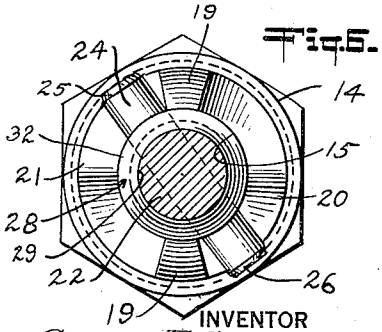


Fig.5.



Fig.6.



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CAM ACTION SCREW DRIVER

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2 Claims. (Cl. 145—50)

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This invention relates to cam action screw tools, and more particularly to a hand-operated tool for seating and unseating tight or mutilated screws.

One object of the present invention is to provide a device of the above nature including a driving shank having a blade for engaging in a screw slot and in which said shank is provided at its upper end with a cross pin and an adaptor which may be detachably held in the lower end of the handle.

A further object is to provide a tool of the above nature in which the handle is provided with a coiled spring located in an exterior groove near the lower end of said handle for pressing inwardly resiliently upon a radial locking pin which is located in an elongated groove in the outside of the adaptor.

A further object is to provide a tool of the above nature, having a metal handle on which are a pair of V-shaped oppositely arranged cams at the lower end thereof for engaging the cross pin for turning the shank selectively in either direction whenever said handle is struck on its top by a hammer.

A further object is to provide a tool of the above nature, which will be simple in construction, inexpensive to manufacture, easy to install and manipulate, compact, ornamental in appearance, and very efficient and durable in use.

With these and other objects in view, there has been illustrated on the accompanying drawing one form in which the invention may conveniently be embodied in practice.

In the drawing,

Fig. 1 represents a side view of the cam action screw tool.

Fig. 2 is a view of the same, taken at right angles from the view of Fig. 1, and showing a longitudinal section through the lower end of the handle, as it appears when used for removing a tight screw from a socket.

Fig. 3 is a longitudinal side sectional view, of the upper portion of the adaptor, and a tool shank on which it is mounted.

Fig. 4 is a cross sectional view on a larger scale, taken along the line 4—4 of Fig. 2, looking downwardly.

Fig. 5 is a perspective view on a larger scale of the coiled spring for retaining the locking pin in operating position within the groove of the adaptor.

Fig. 6 is a cross sectional view on a larger scale, taken along the line 6—6 of Fig. 2, looking upwardly.

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The present invention is especially adapted for use for loosening tight screws where the screw slot is paint-filled or mutilated. It is also adapted to be used for removing screws or bolts having broken or mutilated heads without the use of taps and drills.

By means of the present invention, the former disadvantages have been overcome.

Referring now to the drawings in which like reference numerals denote corresponding parts throughout the several views, the numeral 10 indicates a solid metal handle, preferably hexagonal in shape, and having near the bottom portion thereof an annular exterior groove 11 within which is seated a coiled spring having at least one turn. The coiled spring 12 is adapted to be pressed inwardly against the head of a lock pin 13 having a reduced interior rounded shank 13a.

The handle 10 has a reduced lower end 14 provided with a drilled socket 15 having a radial hole 16 at the inside of the groove 11 for receiving the shank 13a of the lock pin 13. The bottom end of the reduced section 14 of the handle 10 is provided with a pair of V-shaped cams 17, 18 having flat bottoms 19 and between which are a pair of V-shaped cam slots 20, 21 of "gothic" arch shape.

The screw driver has a shank 22 provided with a flat bottom blade 23, and said shank 22 is provided near its upper end with a horizontal driving pin 24 having chamfered ends 25, 26. The pin 24 is driven through an aperture 27 in the upper portion of the shank 22, and also through a pair of aligned side holes 30, 31 in an adaptor 28, which is detachably seated in the socket 15 in the lower end of the handle 10.

The adaptor 28 is provided with an interior cylindrical socket 29 for fitting tightly over the upper end of the shank 22—the lower end of said adaptor 28 being chamfered at 32.

In order to permit the adaptor 28 and the shank 22 to be readily removed from the handle 10 whenever desired, as for the purpose of inserting a different shank therein, provision is made of an elongated upper groove 33 in the adaptor 28, said groove having bevelled upper and lower ends 34, 35. The width of the groove 33 is the same as the maximum longitudinal throw of the cam handle 10.

Operation

When it is desired to use the tool, assuming the pin 24 engages one of the cams 20, 21, the heavy handle 10 which is held firmly in one hand, will be struck a blow with a hammer held in the

other hand. Through the medium of the cross pin 24 and cams 20, 21, a torque force will be transmitted to the shank 22 for rotating the screw S or other object engaged by the shank blade 23. In other words, when the handle 10 descends under the force of the hammer blow, the two oppositely inclined edges of the cam members 20, 21 will exert a wedging action on the oppositely disposed sides of the shank pin 24 and produce a very strong turning action upon the screw S.

One advantage of the present invention is that the tool is applicable to both right-hand or left-hand threaded screws, and that a considerable number of shanks of different shapes and sizes may be interchangeably carried in the same handle, as the adaptors have uniform exterior dimensions.

While there has been disclosed in this specification one form in which the invention may be embodied, it is to be understood that this form is shown for the purpose of illustration only, and that the invention is not to be limited to the specific disclosure, but may be modified and embodied in various other forms without departing from its spirit. In short, the invention includes all the modifications and embodiments coming within the scope of the following claims.

Having thus fully described the invention, what is claimed as new, and for which it is desired to secure Letters Patent, is:

1. In a cam action screw driving tool, a handle having an interior socket opening out of the lower end thereof, said handle having an exterior annular groove adjacent the upper end of said socket, said groove being connected with said socket by means of a transverse hole, a headed locking pin slidably mounted in said hole and having a rounded inner end, a coiled spring fitted into said groove for pressing inwardly upon the head of said locking pin, a screw driver shank, an adaptor located within said socket and having a lower socket embracing the top of said shank, said adaptor being provided with an enlongated groove adjacent the upper end thereof and in alignment with the spring-pressed pin, whereby

said handle will have a limited up and down movement with respect to said adaptor and shank, the upper end wall of said elongated groove being beveled to permit said rounded end pin to be manually forced upwardly beyond said adaptor to release said adaptor and shank from said handle, said handle having a pair of V-shaped oppositely disposed cam lugs at its lower end, and a horizontal pin extending through and connecting said adaptor and said shank, said horizontal pin having projecting ends for engagement by said lugs to rotate said shank when the handle is struck by a hammer.

2. In a cam action screw driver, a handle having a socket opening out of its lower end, a screw-engaging shank, an adaptor having a lower end socket embracing said screw-engaging shank, said adaptor being insertable loosely into said handle socket and having an elongated exterior groove adjacent its upper end, the upper extremity of said groove being beveled, a slidable inwardly spring pressed pin rounded at its inner end passing through said handle and adapted to seat in said groove to detachably lock said adaptor and shank in said handle, said handle having a pair of V-shaped oppositely disposed cam lugs at its lower end and said adaptor having a horizontal pin extending through said adaptor and said shank and having projecting ends for engagement by said lugs to rotate said shank when the handle is struck by a hammer.

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