United States Patent [19]

Triska

[11] **3,825,048**

[45] **July 23, 1974**

[54] **INTERLOCKING SCREW AND DRIVER**

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[22] Filed: **Jan. 2, 1973**

[21] Appl. No.: **320,673**

[52] **U.S. Cl.** ..... **145/50 E**

[51] **Int. Cl.** **B25b 15/00**

[58] **Field of Search** ..... 145/50 R, 50 A, 50 D, 50 E

[56] **References Cited**

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[57] **ABSTRACT**

A screw head and driving tool therefor are releasably coupled by means of a pair of radially shiftable anchors held in alternate engaged and disengaged relation to a complementary screw slot by a driver blade shiftable longitudinal therebetween. The engaged anchors and complementary slot are of undercut or dovetailed cross section which prevents displacement of the driving tool from the screw head, and released when the anchors are set in the disengaged condition.

1 Claim, 3 Drawing Figures

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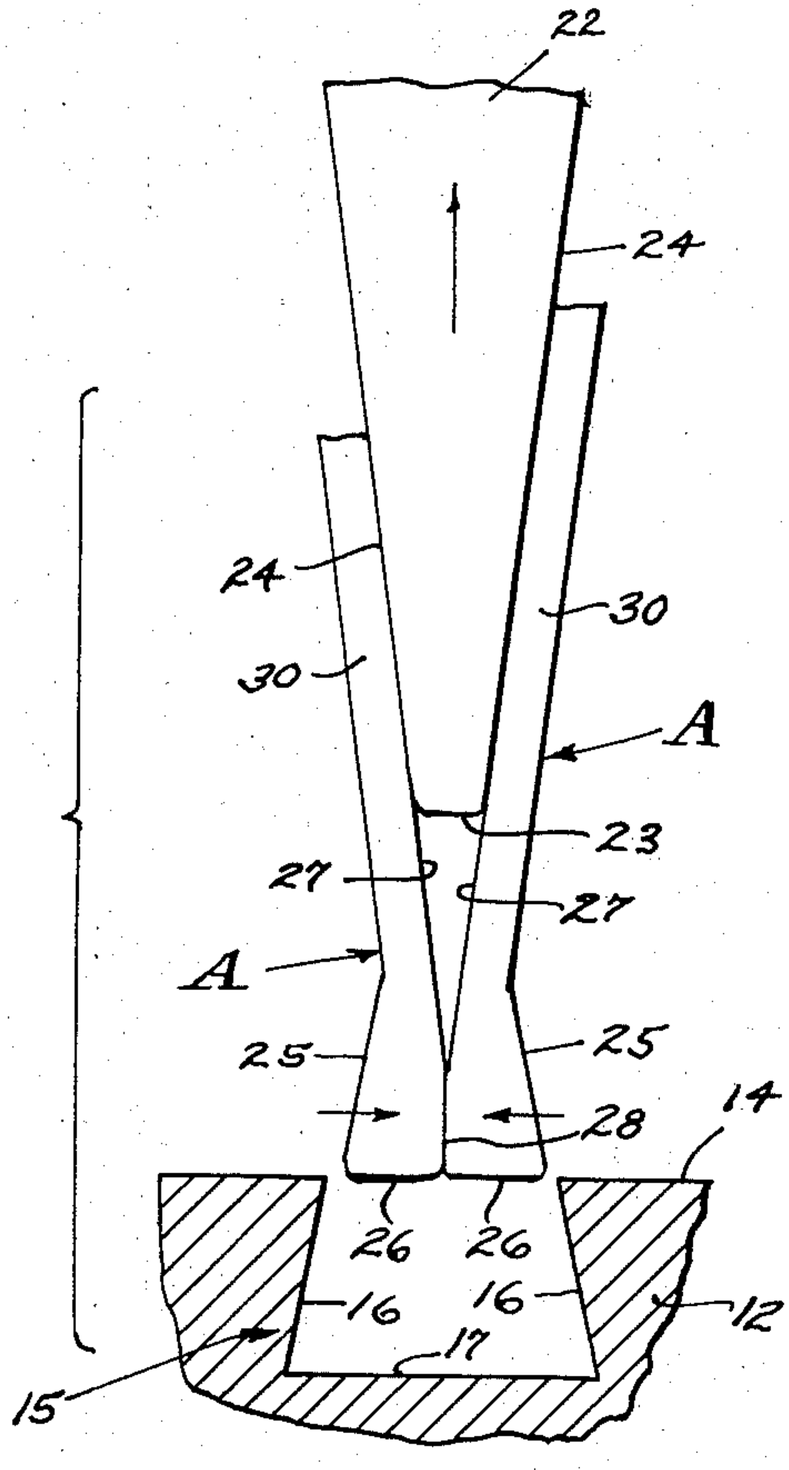


FIG. 1.

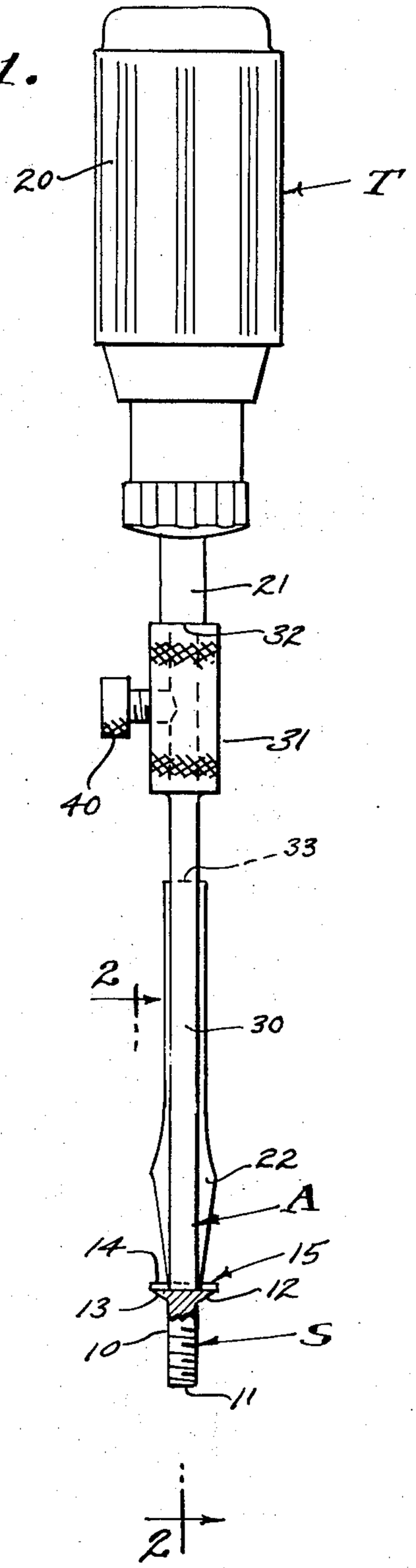


FIG. 2.

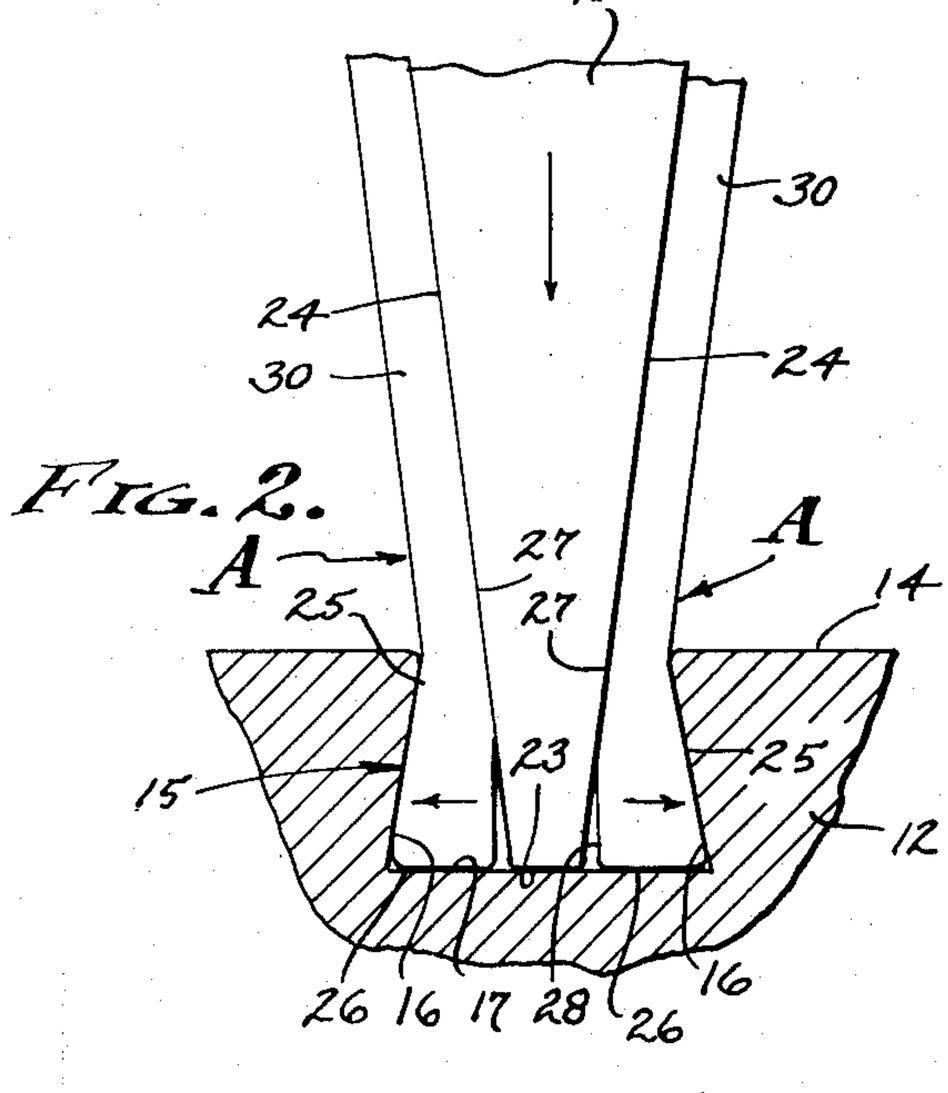
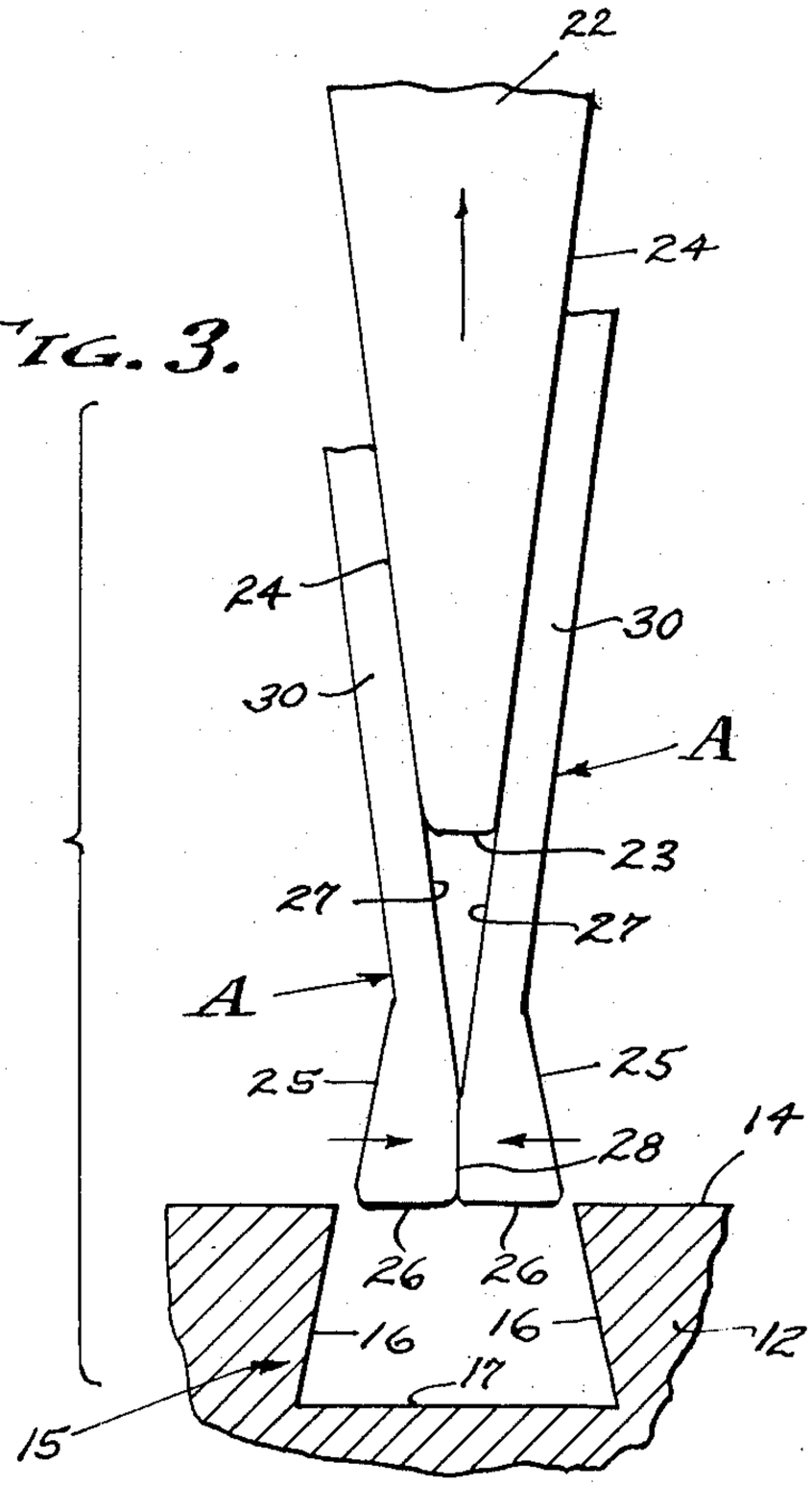


FIG. 3.



INTERLOCKING SCREW AND DRIVER

The fastener art is redundant with many screw and driver configurations, one of the major problems being the holding of a screw fastener to the driving tool during its revolvement into and out of working position. Fasteners have a head and which is usually of enlarged diameter and sometimes polygonal, said heads taking various forms such as cylindrical fillister head, spherical round heads, conical flat heads, and convex topped and conical oval heads etc. The most common type of driving connection between such screws and driving tools therefor is the ordinary screw driver slot which extends diametrically across the top of the screw head in the form of a channel that receives the normal and flattened end of the driver blade. The slot is usually narrow and the driver blade is usually tapered to its normal end, from a thickened shank. Heretofore, difficulty is experienced in maintaining the driving connection between the drive tool and the screw head, and as well to hold or secure a screw to the driving tool while placement of the screw is to be attained. Therefore, it is an object of this invention to obviate the deficiencies hereinabove set forth and to provide a substantially conventional slot-type screw head and a driver therefor and which are mated for releasable coupled engagement, whereby accidental displacement of the driver from the screw is virtually eliminated.

An object of this invention is to provide a driver and screw head combination wherein axial forward movement of the driver and forwardly applied pressure inserts and interlocks the driver into the screw, and wherein release of said pressure and axially rearward movement of the driver unlocks and releases the driver from the screw.

Another object of this invention is to provide locked and unlocked engagement of the driver with the screw head, that is manually operable through deliberation and not by accidental movements. In practice, the normal forward pressure and simultaneously applied torque is inherently conducive to locked engagement of the driver with the screw head; and conversely the normal release of said pressure and retraction is inherently conducive to unlocked engagement of the driver and screw head.

The various objects and features of this invention will be fully understood from the following detailed description of the typical preferred form and application thereof, throughout which description reference is made to the accompanying drawings, in which:

FIG. **1** is a side view of the interlocking screw and driver of the present invention, the two being coupled for drive engagement. FIG. **2** is an enlarged detail sectional view taken as indicated by line **2—2** on FIG. **1,** and FIG. **3** is a view similar to FIG. **2** showing the driver released and separate from the screw.

A typical flat head screw S is shown in the drawings and which involves a cylindrical shank **10** having a threaded end portion **11** and a head **12** at its operated end. The flat head has a conical lower face **13** and a flat top face **14,** and through which an upwardly opening drive slot **15** is diametrically formed. In accordance with normal screw machining practice, the slot **15** is a straight channel-shaped slot having opposite and parallel sides **16** and a joining bottom **17.** It is the opposite sides **16** which are engageably coupled with the driver, and in accordance with the present invention the sides

16 are undercut so as to present a channel of dovetailed cross section. That is, the two opposed sides **16** are oppositely divergent as they extend inwardly toward the bottom **17,** defining a minimum width opening in the plane of the top face **14,** the bottom **17** being of maximum width. It is to be understood that a slot of this configuration can be furnished in other types of screw heads and like fasteners, as circumstances require.

The driving tool T is shown in the drawings as a hand operated screw driver having a grip **20,** a shank **21** and a driver blade **22.** The grip **20** is proportioned for manipulation, while the shank **21** is an elongated shaft adapted to be revolved by turning the grip. The driver blade **22** comprises the lower terminal end portion of the shank and in accordance with the present invention carries a pair of radially shiftable anchors A held in alternate engaged and disengaged relation to the screw slot **15** hereinabove described, and to which they are complementary, by means of the driver blade **22** which is shiftable longitudinally therebetween.

The driver blade **22** is a flattened element that tapers to a narrow end face **23,** substantially narrower than the above mentioned minimum width opening of the slot **15.** This is at variance with the normal practice of substantial occupation of the slot by the screw driver blade. The width of the flattened blade **22** can vary as required, and the typical gradual taper of the blade is symmetrical and presents two oppositely faced inclined planes **24** that converge toward the end face **23.** It is the plane **24** which controls and upon which the anchor A rides in each instance.

The two anchors A are alike and a description of one will suffice for the other. As shown, anchor A is movably juxtapositioned to the inclined plane **24** and is complementary to the opposed configuration of the side **16,** to fit therewith when the anchor is spread into an engaged and locked position by forward movement of the driver blade **22.** Therefor, the anchor A has an abutment **25** disposed in parallelism with side **16,** a bottom end **26** disposed in parallelism with bottom **17,** and a cam face **27** disposed in parallelism with the inclined plane **24.** The lowermost portion is truncated at **28** in a plane parallel to the axis of the tool, and preferably to a height not to exceed the depth of the slot **15.** The driver blade **22** is movable longitudinally relative to the anchor A (or vice versa) and the said anchor is shiftably secured to the driver blade by a strap **30** that extends along the driver blade depending from a collar **31** manually positioned along the shank **21.** The collar **31** has two stopped positions against shoulders **32** and **33** as shown, either to extend or to retract the driver blade **22,** the manually selected position of the collar and connected anchors A being maintained by tightening a set screw **40** or held and/or maintained by the inward bias of the straps **30** that frictionally engage the inclined planes **24.**

From the foregoing, it will be seen that there is a pair of oppositely faced anchors A and each of which is releasably engageable with a downwardly disposed wall **16.** The parts and elements are so proportioned that the anchors A are spread and fully occupy the cross sectional configuration of the slot **15** when the driver blade **22** is advanced as shown in FIG. **2**; and so that the anchors A are retracted within the minimum opening width of slot **15** when the driver blade **22** is retracted as shown in FIG. **3.** The function of insertion, engage-

ment and locking is inherent with forward movement and application of pressure that is manually applied, and conversely the retraction, disengagement and unlocking is inherent with removal of pressure and rearward movement. With the driver locked with a screw, the screw is held thereto for placement of the screw, followed by the application of torque for threading the screw into working position, and after which disconnection and retraction is simple and automatic.

Having described only a typical preferred form and application of my invention, I do not wish to be limited or restricted to the specific details herein set forth, but wish to reserve to myself any modifications or variations that may appear to those skilled in the art:

1. A driving tool for revolving a head having a diametrically disposed and upwardly opening slot with opposed downwardly divergent sides and a bottom extending therebetween, and comprising, a shank with a symetrically flattened blade having oppositely faced

downwardly and inwardly tapered inclined planes terminating at a normally disposed end engageable with the bottom of the slot, and a pair of oppositely shiftable anchors movable into and out of engagement with the opposite sides of the slot and each anchor having an abutment disposed parallel to and engageable with a side of the slot and having a bottom disposed parallel to and engageable with the bottom of the slot and having a cam face disposed parallel with and movably engaged along a complementary said inclined plane, the anchors being shifted into engagement with the sides of the slot upon downward movement of the blade relative thereto to be engaged upon the bottom of the slot, the inner lowermost portion of each anchor being truncated in a plane parallel one with the other so as to engage permitting the anchors to collapse inwardly and to shift out of engagement with the sides of the slot upon upward movement of the blade relative to the anchor.

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