May 5, 1959 H. E. DIERKER 2,884,971

DRIVING TOOL AND HOLDER ATTACHMENT

Filed Aug. 17, 1953

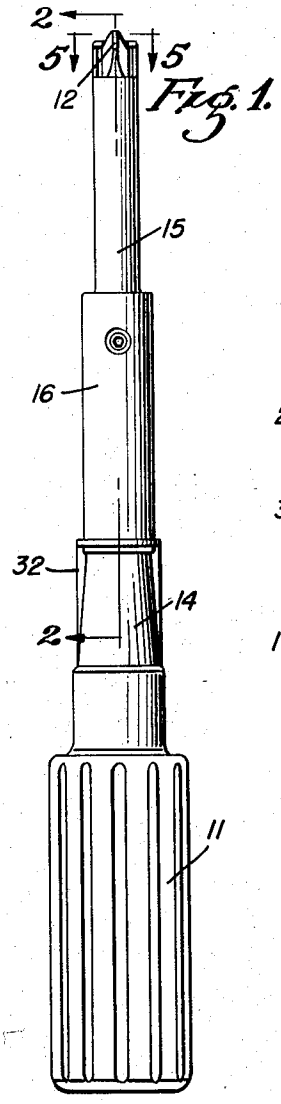

Fig. 1.

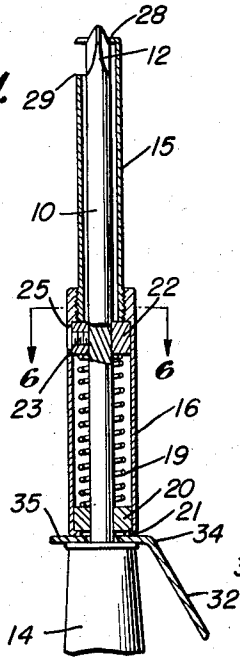

Fig. 2.

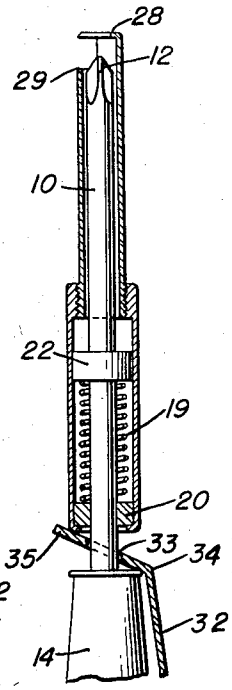

Fig. 3.

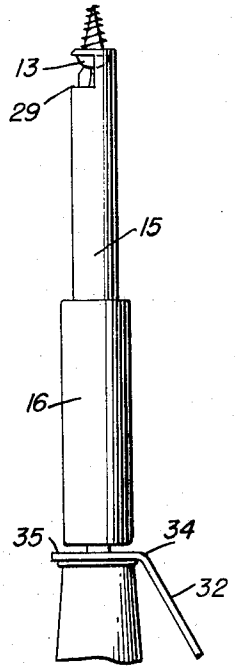

Fig. 4.

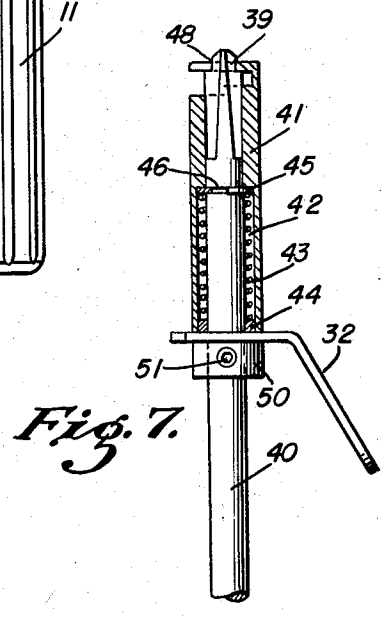

Fig. 7.

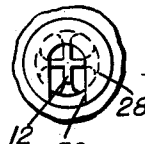

Fig. 5.

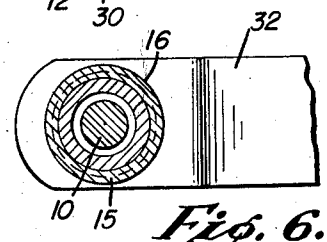

Fig. 6.

Hugh E. Dierker
INVENTOR.

BY

Attorney

United States Patent Office 2,884,971 Patented May 5, 1959

2,884,971

DRIVING TOOL AND HOLDER ATTACHMENT

Hugh E. Dierker, Los Angeles, Calif.

Application August 17, 1953, Serial No. 374,527

2 Claims. (Cl. 145—52)

This invention relates to an attachment for a tool for holding a fastening device, such as a screw, bolt, nail and the like, in engagement with the tool, for the purpose of driving or for removing the fastening device, and a general object of the invention is to provide a new and improved holder that is adapted for easy and convenient operation thereof and is simple in construction, permitting it to be manufactured at low cost.

Another object of the invention is to provide a fastening device holder of the spring loaded type that is enclosed in a housing and adapted for easy attachment to the shank of a driving tool.

Another object is the provision of a fastening device holder having a lever for operating the holder which permits the use in the holder of a strong enough spring to hold a fastening device firmly in place and securely in engagement with a tool element for driving the fastening device.

A further object is to provide a holder for mounting on the shank of a driving tool and operable by a lever which in one form of the invention utilizes the handle of the tool as a fulcrum for the lever.

Still another object is to provide a lever operated fastening device holder on a tool, wherein the lever may be easily moved on the tool so as not to interfere with operation of the tool when used in driving a fastening device.

Further objects and advantages of this invention will appear in the following part of the specification wherein the details of construction and mode of operation of two specific embodiments of the invention are described with reference to the attached drawing, in which:

Fig. 1 is a side elevational view of a screw driver equipped with a screw holding attachment embodying a form of the present invention;

Fig. 2 is a sectional view taken substantially on line 2—2 of Fig. 1;

Fig. 3 is a sectional view similar to that of Fig. 2 but illustrating the relative positions of the screw driver and screw holding attachment when operated to receive a screw;

Fig. 4 is a side elevational view of the screw driver and screw holding attachment of Fig. 1, with a locked-in screw ready to drive;

Fig. 5 is an end view of the screw driver and attachment, taken in the direction of the arrows on line 5—5 of Fig. 1;

Fig. 6 is an enlarged transverse sectional view taken substantially on line 6—6 of Fig. 2; and

Fig. 7 is an axial section of a modified form of this invention.

The invention is illustrated in the drawing as applied to screw drivers, and more particularly to screw drivers of the type wherein the screw engaging ends thereof are contoured to fit into cross slots in the heads of specially formed screws known as Phillips head screws. The invention is, of course, applicable for use with screw drivers of other well-known design, and is adaptable for use

to hold and drive fastening devices of various types such as nails, tacks, bolts, etc.

Referring now to the details of the drawing, the numeral 10 designates the shank of a screw driver having a handle 11 fixed on one end and being contoured at its outer end to provide a tool head 12 adapted to fit into the cross slots in the head of a screw 13, shown in Fig. 4. The handle 11 of the screw driver carries a ferrule 14 on its inner end, for reenforcing the handle in the usual manner.

In Figs. 1 to 4 inclusive, the attachment on the shank 11 for holding a screw in engagement with the tool head 12 comprises a sleeve or housing formed of an outer tubular section 15 and a tubular section 16 of larger diameter than the section 15. The sections 15 and 16 are connected together in axial alignment and in substantially end-to-end relation with the overall length of the housing being nearly equal to that of the portion of the shank 10 which extends from the handle 11. In the embodiment shown in the drawing, the connection for the sections of the housing constitutes a threaded connection whereby the section 15 may be disconnected from the section 16. Thus the section 16 may be used with outer sections having screw engaging seats of various sizes. If desired, the section 15 may be fixed permanently in the end of the section 16 in any suitable way as, for example, by spinning the outer end of section 16 over a flanged end on section 15.

The tubular section 16 houses a coil spring 19 around shank 10. One end of the spring 19 abuts against a bushing 20 which is slidable on the shank and held in the end of the tubular section 16 by means of an inwardly extending annular end flange 21 spun over the bushing. The outer end of the spring 19 abuts against a stop or ring 22 which is mounted and secured in adjusted position on shank 10 by means of a set screw 23 carried by the ring. The set screw is of a length such that when tightened on the shank the head thereof will not extend beyond the outer periphery of the ring, thus permitting the tubular section 16 to slide over the ring without interference from the set screw. A hole 25 is formed in the wall of the tubular section 16 for access to the set screw 23 with a small tool for tightening the set screw to the shank of the screw driver. It is seen, therefore, that the holder is secured to the shank of the screw driver by a single screw, permitting the housing to be removed by merely loosening the set screw 23. Thus, should the tool end of the screw driver become worn or burred, it may be removed easily and quickly replaced by another screw driver.

The outer end of the tubular section 15 is provided with an inwardly extending annular flange 28, the purpose of which is to seat the underside of the head of a screw such as that shown at 13 in Fig. 4, and to hold the screw with its head in engagement with the tool end 12. Access to the seat of flange 28 is had through an opening 29 formed in the side wall of section 15 adjacent its outer end, and through a slot 30 in the flange 28 extending from the side opening 29. The width of the opening 29 is substantially equal to the internal diameter of section 15. As thus described, it will be seen that the annular end flange 28 constitutes a seat of bifurcated form for receiving and holding the screw 13 in engagement with the tool end 12.

To shift the screw holding housing outwardly on the shank for inserting a screw with its head between the tool end 12 and the bifurcated seat 28, I provide a lever 32 positioned on the shank 10 and arranged between the inner end of the housing and the handle 11 of the screw driver. The lever 32 has a hole 33 for receiving the shank of the screw driver, and the hole 33 is of oblong shape with its longer diameter being greater than the diameter

of the shank 10 for freely pivoting the lever on the shank. The outer end of the lever 32 may be bent as indicated at 34, in a direction toward the handle of the screw driver, to provide a thumbpiece for operating the lever. When the thumbpiece of the lever is pressed downwardly, as from the position shown in Fig. 2 to that shown in Fig. 3, the lever will turn on the edge of the ferrule 14, which acts as a fulcrum for the lever. The end 35 of the lever will then press against the end flange 21 of the housing to move the housing outwardly on the shank 10 against the force of the spring 29, thus spacing the bifurcated seat 28 from the tool end 12. With a screw placed in the seat 28, release of the lever will cause the housing to slide by the action of the spring, in a direction toward the handle 11 until the tool end 12 engages the head of the screw as shown in Fig. 4. Thus, the screw may be started and turned, even in places not readily accessible. It should be noted too, that since the lever is free to rotate on the shank, it may be moved around on the shank to a position where it will not interfere with the driving of a screw in an out-of-the-way place.

After starting the screw it may be disengaged from the tool by pressing on the thumbpiece of the lever 32 and sliding the bifurcated seat away from the screw. When the lever is again released, coil spring 19 will slide the housing toward the handle of the screw driver to expose the tool end 12 beyond the seat 28. Thus the screw driver may then be used to tighten the screw and drive it home.

To prevent burring of the screw head and to insure that the screw is being driven straight, especially when starting the screw, it is necessary to apply a strong force between the tool and the screw to keep them in tight engagement with each other. The screw holder of the present invention is particularly well suited for uses requiring unusually strong forces for this purpose, and to this end the coil spring 19 may constitute a relatively strong spring. I have found that in some cases coil springs of as much as 35 pounds spring tension may be used to obtain optimum screw and tool engaging forces. Even with a spring of such high tension the screw holder may be actuated easily by the lever provided by this invention. A relatively strong spring is needed for properly holding fastening devices of long length. In all cases, however, the actuating lever of this invention provides a simple, convenient and effective way for operating the holder against the strong force of the coil spring.

Fig. 7 illustrates a form of the invention, wherein the screw holding attachment is mounted permanently on the tool end 39 of the shank 40 of a screw driver. The housing of the attachment in this form constitutes a sleeve 41 having a counterbore 42 to receive a coil spring 43. As in the embodiment shown in Figs. 1 to 4, the spring 43 abuts at its inner end against a bushing 44, slidable on the shank 40, and at its outer end against a spring clip or washer 45 fitted into an annular groove 46 around the shank for holding the clip 45 and keeping it from sliding on the shank. The bushing 44 is secured in the inner end of the sleeve 41 in any suitable manner as, for example, by sweating or by screwing it in the end of the sleeve. The outer end of the sleeve is provided with a screw head seat similar to that of the form shown in Fig. 1. Also, the tool end of shank 40 may be recessed around its end as indicated at 48, to expose the end of the tool appreciably beyond the screw head seat for turning the screw after it has been disengaged from the holder.

The fulcrum for the lever 32 in the device illustrated in Fig. 7, constitutes a collar 50 which is slidably adjustable on the shank 40 and adapted to be fixed to the shank as with the set screw 51. For uses where a long series of screws are to be started, the sleeve 41 and the collar 50 may be moved outwardly on the shank 40 to a place where the collar will hold the sleeve 41 with its screw seat spaced slightly from the tool end of the driver. Thus, as an operator proceeds from one screw to another, he need apply but slight pressure on the lever to provide enough space between the screw seat and the tool end of the driver to receive a screw head. This advantage is substantial in efficient mass production processes.

Should it be desirable to position the lever 32 adjacent to the handle of the screw driver of Fig. 7, the collar 50 may be fixed to the shank at a place close to the handle of the screw driver, and a satisfactory sleeve (not shown) may be positioned on the shank 40 between the lever 32 and the inner end of the spring housing.

I claim:

1. A holder adapted for use with a driving tool and comprising: a tubular housing formed of two sections connected together substantially in end to end relation, one of said sections being of smaller diameter than the other of said sections, the outer end of said one section having a slot therein for accommodating the head of a fastening device; a collar slidable within the other said section, the outer end of said other section having an inwardly extending portion; a coil spring within said other section and operatively engaged at one end thereof with said inwardly extending portion and its other end with said collar; center holes in the inwardly extending portion and in the collar for accommodating the shank of a driving tool; means on said collar for adjustably securing the collar to said shank; an opening in the side wall of said other section to admit a tool for operating said collar securing means; and said holder being freely removable from the shank of the tool when said collar is unsecured.

2. A holder adapted for use with a driving tool, comprising: a tubular housing formed of two sections connected together with axial alignment and in substantially end to end relation, one of said sections being of smaller diameter than the other of said section, the outer end of one section having a slot therein for receiving the head of a fastening device; a collar slidable in said other section; a coil spring within said other section and operatively engageable at one end thereof with said section and at its other end with said collar; center holes in the collar and ring through which the shank of a driving tool may be extended; a radially extending and tapped hole extending through said collar; a set screw in said tapped hole; an opening in the side wall of said other section near the end thereof permitting access to said set screw when the said other section is in extended position for securing said collar to the shank of a driving tool; and said holder being freely removable from the shank of the tool when said set screw is not secured.

References Cited in the file of this patent

UNITED STATES PATENTS

258,329	Thomas	May 23, 1882
1,529,528	Wohead	Mar. 10, 1925
1,539,782	Stansell	May 26, 1925
1,641,307	Velepec	Sept. 6, 1927
1,645,753	Hanson	Oct. 18, 1927
1,777,395	Coon	Oct. 7, 1930

FOREIGN PATENTS

839,757	France	Jan. 7, 1939