

Jan. 11, 1966

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DRIVING TOOL FOR INSTALLING DOOR
STOPS AND SIMILAR ARTICLES

3,228,269

Filed Feb. 8, 1963

2 Sheets-Sheet 2

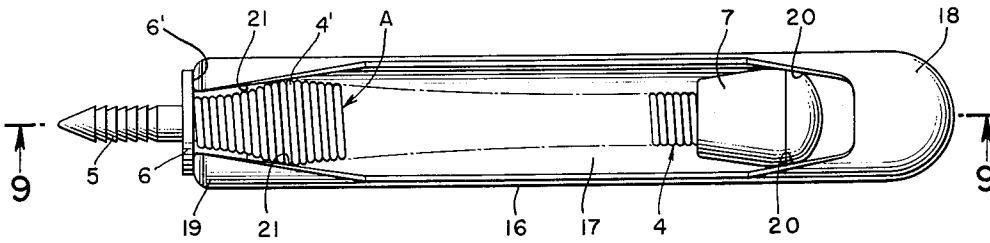


FIG. 8.

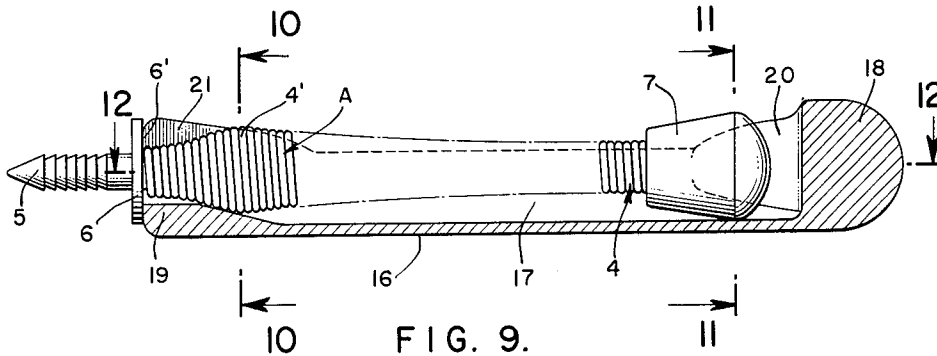


FIG. 9.

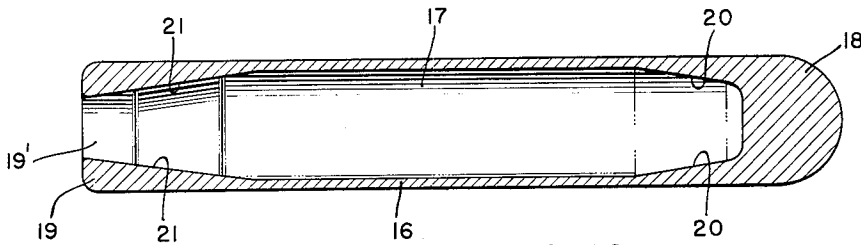


FIG. 12.

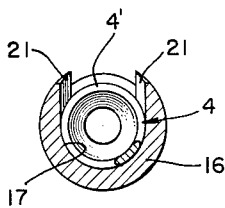


FIG. 10.

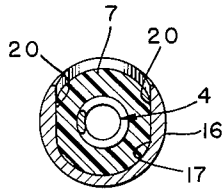


FIG. 11.

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1

2

3,228,269

DRIVING TOOL FOR INSTALLING DOOR STOPS AND SIMILAR ARTICLES

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Filed Feb. 8, 1963, Ser. No. 258,115
2 Claims. (Cl. 81—3)

This invention relates to a novel driving tool for use in installing door stops or similar articles which have fixed or joined thereto fastenings to be driven into supports for such articles.

This application is a continuation-in-part of my pending application for U.S. Letters Patent, Serial No. 39,362, filed June 28, 1960, and later abandoned.

In instances where door stops and similar articles such as described, apart from the fastenings carried thereby, are readily bendable or resiliently yieldable under impacts received during normal use thereof, particularly in coiled spring and rubber bumper type door stops, the driving of the fastenings presents a problem. This is due to the fact that these articles as well as the fastenings are so located and formed that no surface thereof is suitable or properly exposed for being struck by a hammer or similar impact tool to effect the driving of the fastenings without likelihood of damaging the articles or marring them or the surfaces of the supports into which the fastenings are to be driven. If the flexible and yieldable portions of the door stops or like articles are struck a hammer blow or twisted in an effort to drive the fastenings thereof, the driving action is most uncertain and becomes a difficult operation due to the instability of the parts receiving the hammer blow or that are being twisted, and in most instances the articles are either marred, deranged or damaged. If the rubber caps of rubber bumper door stops or the rubber elements such as usually provided on the outer ends of the springs in spring type stops are ruptured as a result of being struck hammer blows, the ends of the fasteners or springs will be exposed and this will cause scratching or marring of the surfaces of the doors which engage the stops.

Door stops generally have a mounting screw at one end and the screw is usually provided with a head having a crown projecting axially therefrom between the head and the bumper, the crown having flat surfaces adapted to be engaged by a wrench for turning the screw to install the stop. This use of a wrench for driving the screw requires considerable effort and time due to the small size of the screw, the location of the screw in the assembly, and the number of turns required to set the screw, it being ineffective to use the flexible coiled spring of spring stops as a handle in driving the screw and in many cases such use has caused derangement or damage thereof.

It is an object of the present invention to provide a simply constructed driving tool which may be easily operated to quickly drive in place the fastenings of door stops and the like such as described, without in any manner marring or deranging or damaging the stops or articles, or marring the surfaces of the supports on which they are mounted.

The above and other objectives of the invention are achieved by providing a driving tool which includes a rigid body adapted to support a door stop or similar article while means on the rigid body is engaged with the attached fastening in such a manner that when a driving force is developed in the rigid body, it will be effective through the driving means to positively and effectively drive the fastening into a support for the stop or similar article.

It is another object of this invention to provide a driving tool such as next above described wherein the driving

force may be developed in the rigid body of the tool either by one or more blows against an end of the body as effected with a hammer or other impact tool or by turning the body about its axis, the latter operation being optional when the fastening is a screw, since the impact force may be used for a quick driving of such a screw fastening, if this be desired.

More specifically, it is an object of the present invention to provide a one-piece drive tool such as described, wherein a rigid elongated body has an impact head at one end and a driving head at the other end, the latter for engaging the fastening joined to the door stop or similar article, the body being constructed to support and partially encompass the stop or similar article while the driving head is engaged with the fastening, whereby the rigid body serves as an effective handle and as a driving element subject to having blows struck against the impact head or to be turned like a socket wrench.

It is another object of this invention to provide a driving tool such as described in which the elongate rigid body is constructed to support a door stop between the ends thereof with the driving head in driving engagement with the fastening on the stop, the driving head being slotted to form jaws for gripping the flat sides of the crown of the screw head while the outer ends of the jaws drivingly engage the remainder of the head or in case of a nail, will drivingly engage the head thereof.

It is another object of this invention to provide a driving tool such as described wherein the elongate rigid body of the tool may be formed with a recess or pocket for removably receiving and supporting a door stop in such a manner that the slotted driving head will embrace the fastening and center the tool with respect thereto, whereby the stop is supported by the tool in a manner assuring a quick and effective driving of the fastening in response to forces applied to the driving head through the tool body according to whether the body is struck a hammer blow or turned similarly to a screw driver.

It is another object of this invention to provide a driving tool of the character described having novel means for releasably holding thereon a particular type of door stop in such a manner that during manipulation of the tool with the stop thereon preliminary to installation of the stop and regardless of the tool being positioned or held with the open side of the stop-receiving recess facing downwardly, sidewise, upwardly or in any direction, the tool will be held against unintentional dislodgment from proper driving position in the tool.

This construction of the tool makes it possible to install the stop in a wall or close to the floor with the open side of the recess facing downwardly and yet provide for ready removal of the tool with a straight upward movement from the stop after the latter is installed. Likewise, when installing the stop on a wall close to an adjacent wall, as in a corner, the open side of the recess of the tool may be faced in a direction toward the adjacent wall and the tool therefore readily removed from the installed stop laterally in a direction away from the adjacent wall.

It is another object of this invention to provide in a driving tool such as next above noted, means for retaining the stop in driving position in the tool by frictionally gripping the stop.

It is a further object of this invention to provide a tool such as described wherein the above objectives are achieved by having the side walls of the stop-receiving recess in the tool converge axially of the tool adjacent one end thereof so as to frictionally grip a portion of the stop.

A further object is the provision of a tool such as described in which the side walls of the recess for receiving the door stop are converged axially of the tool adjacent both ends of the recess to frictionally grip the stop at axially spaced points and thereby releasably retain the stop

3

in place during the handling of the tool preliminary to installing the stop.

Other objects and advantages of the invention will be hereinafter described or will become apparent to those skilled in the art, and the novel features of the invention will be defined in the appended claims.

Referring to the drawings:

FIG. 1 is a perspective view of a driving tool embodying the present invention;

FIG. 2 is a top plan view of the tool;

FIG. 3 is a sectional view taken on the line 3—3 of FIG. 2 and showing in dot-dash lines a door stop supported by the tool in position to be installed;

FIG. 4 is an end elevation looking toward the driving head end of the tool body;

FIG. 5 is an end elevation of the tool looking toward the impact head on the tool;

FIG. 6 is a sectional view corresponding to FIG. 3 showing the tool as applied to a door stop having a screw fastening joined thereto;

FIG. 7 is a sectional view taken on the line 7—7 of FIG. 6;

FIG. 8 is a top plan view of a modified form of driving tool embodying the present invention and showing the manner in which a door stop is mounted in the tool in preparation for installation thereof;

FIG. 9 is a longitudinal sectional view taken on the line 9—9 of FIG. 8;

FIG. 10 is a cross sectional view taken on the line 10—10 of FIG. 9;

FIG. 11 is a cross sectional view taken on the line 11—11 of FIG. 9; and

FIG. 12 is a longitudinal sectional view taken on the line 12—12 of FIG. 9 with the door stop omitted.

As shown in the accompanying drawing, the driving tool embodying the present invention comprises an elongate rigid body 1 preferably made of suitable metal and provided at opposite ends with an impact head 2 and a slotted driving head 3. In the present instance, the tool is shown as used in connection with two types of door stops which are different only as to the fastenings joined thereto, it being understood, however, that the tool may be used to advantage for installing other door stops as well as articles other than door stops, assuming that such articles have characteristics similar to the stop here shown.

FIG. 3 shows how the driving tool may be used in the operation of installing a coiled spring door stop A comprising a coiled spring 4, a headed nail fastening 5 having the head 6 thereof fixed to one end of the spring so as to extend laterally outwardly from the spring, and a rubber cushioning cap 7 mounted on the outer end of the spring.

FIG. 6 shows the driving tool as employed for installing a coiled spring door stop B having a spring 8 and cap 9 identical with the spring and cap shown in FIG. 2, but provided with a screw fastening 10 instead of a nail. This screw fastening has a head 11 corresponding to the nail head 6, but provided with a tubular crown 12 projecting axially from the center of the head for securing the screw to the spring, the crown being provided with facets 13 adapted to be engaged with the jaws of a wrench or similar tool.

Referring more specifically to the construction of the driving tool, it will be seen that the elongate body 1 is of such length and form as to constitute a support for a door stop as well as a handle which will facilitate a quick and easy installation of the stop, the impact head 12 of the tool being disposed in outwardly spaced and aligned relation to the spring while the slotted driving head 3 is disposed in embracing and driving engagement with the nail fastening 5 or the screw fastening 10, as the case may be. With this arrangement the stop, particularly the fastening thereon, is held in alignment with the axis of the rigid body and when the fastening is positioned against a wall or other support on which the stop is to be

4

mounted, this being facilitated by the use of the body 1 as a handle, the stop may be quickly installed by blows directed against the impact head 2 with a hammer or other tool, so that a driving force will be applied through the body 1 and the driving head 3 to the fastening.

In the case of installing the door stop B (FIG. 6) having the screw fastening 10, the driving head 3, as will be hereinafter described, serves as a wrench as well as a driving means against the head 11 of the screw, whereby the tool may be employed to drive the screw by impact or by being turned as a wrench or by both methods.

The body 1 may be in any suitable form provided that it will support the door stop with the driving head 3 drivingly engaged with the fastening carried by the door stop, and provided that it will have sufficient rigidity to act as a driving tool when struck a hammer blow at one end thereof. It is preferred, however, that the body be provided with a pocket or recess 15 which, as here shown, extends longitudinally thereof between the impact head 2 and the driving head 3. Accordingly, the body 1 may be in the cylindrical form here shown with a longitudinal portion thereof cut away along one side to define the recess or pocket 15 and to provide relatively solid heads 2 and 3. Preferably, the body 1 is die cast.

The width and length of the pocket or recess 15 is such that the coiled spring element of a door stop as here shown, readily may be mounted therein and removed therefrom. When the spring element of the door stop is mounted in the pocket or recess 15, the body encompasses and partially surrounds the spring and therefore will serve not only as a driving tool, but as a convenient handle facilitating positioning and driving of the fastening in the operation of installing the door stop on a support therefor.

The impact head 2 is tapered toward its outer end and provided with a slightly convex end surface 2a adapted to be struck with a hammer or other impact tool. Preferably this head is of solid form and may, as here shown, be provided with flat faces 2b to facilitate the turning of the body 1 with a wrench when this is desired.

The driving head 3 is of substantially cylindrical and solid form with the slot 3a opening on one side and at the outer end of the head. The slot 3a forms opposed jaws 3b between the recess 15 and the outer end of the driving head 3, this outer end being adapted to bear against the head 6 of the nail type fastening 5 as shown in FIGS. 3 and 4 while one end of the spring element 4 rests in the slot 3a between the jaws 3b, the remainder of the spring element being disposed in the recess 15. When the fastening is a screw 10, as shown in FIGS. 6 and 7, the opposed faces of the jaws 3b are engageable with the facets 13 of the crown 12 of the screw head 11 while the outer end of the driving head 3 abuts the head 11 of the screw, the spring element 8 being then disposed in the recess 15. The outer end of the head 2 may be slightly concaved as at 3c so as to center on the head of the fastening to be driven. With this arrangement the driving head 3 is operable to drive either the nail or the screw type fastening into the support therefor, responsive to hammer blows directed against the striking head 2. In the case of the screw fastening, the body 1 may be turned in the manner of a socket wrench, the jaws 3b then engaging facets 13 of the crown 12 to thereby drive the screw fastening.

A modified form of this invention as shown in FIGS. 8—12 provides in addition to the advantages afforded by the form of the invention shown in FIGS. 1—7, a novel means for frictionally retaining the door stop A in proper driving position in the tool while manipulating the tool with the stop thereon and with the open side of the stop receiving recess facing in any direction preliminary to using the tool in installing the stop.

The door stop A shown in FIGS. 8—12 is of the same construction as the stop shown in FIGS. 1—7 and includes an elongate flexible coiled spring body 4, a resilient rub-

5

ber cap 7 at one end of the body, a pointed fastening 5 fixed to the other end of the body, and a head 6 on the fastening with the head providing a shoulder designated 6' in FIGS. 8-11. It should be noted that the stop A has an enlarged portion 4' adjacent the juncture of the coiled spring body 4 with the fastening 6 and that as here shown this enlarged portion 4' and cap 7 are of greater diameter than the remainder of the tool excepting the head 6 of the fastening, which head as here shown is of greater diameter than the enlarged portion 4' and of substantially the same diameter as cap 7.

The tool shown in FIGS. 8-12 is of substantially the same construction as the tool shown in FIGS. 1-7 except for a special construction in the tool body to be hereinafter described. Accordingly, this tool includes an elongate rigid body 16 of suitable metal having an open sided door stop receiving recess 17 extending longitudinally thereof from a solid impact head 18 at one end of the tool to a slotted driving head 19 at the other end of the tool. The length and width of the recess 17 is such that a door stop A may be placed in the recess so as to be substantially coaxial to the body 16 of the tool with the fastening 5 extending outwardly from the slotted driving head 19 and the shoulder 6' on the head 6 of the fastening 5 squarely abutting the outer end face of the driving head.

The slotted driving head 19 has a slot 19' therein formed so as to align with the recess 17 and to receive a portion of the stop. This slot, however, is of less depth and width than the recess. The outer end face of the head 19 extends transversely to the axis of the body 16 so as to have square engagement with the shoulder 6' on the head 6 of the fastening 5. This construction of the head 19 and slot 19' therein makes it possible for the particular door stop A here shown to be positioned in the recess in snug coaxial relation to the body 16 and with the body substantially encompassing the door stop. Held in this manner the fastening 5 of the door stop may be quickly and easily driven into a wall or other support in the desired manner by simply striking the impact head 18 with a hammer or similar tool.

Means are provided in the body 16 of this modified form of the invention for frictionally gripping the stop A so that it will be held against dropping out of proper driving position in the recess 17 in the event the tool is held with the recess facing downwardly or in any position in which the stop otherwise might become dislodged in the handling of the tool preliminary to the driving of the stop in place. As here shown, particularly in FIG. 12, this means may be provided by having the side walls of the recess converged axially as at 20 adjacent the impact head 18 whereby the convergent side wall portions will frictionally grip opposite sides of the rubber cap 7 of the door stop as particularly shown in FIG. 11.

An additional means for holding the stop in place may be provided and as here shown, particularly in FIG. 12, comprises side wall portions of the recess which converge axially of the recess as at 21 adjacent the slotted driving head 19. These convergent side wall portions 21 will frictionally grip the enlarged portion 4' of the spring body 4 thereby assuring that the door stop will securely but releasably remain in driving position with the tool, subject to ready removal by being laterally withdrawn or lifted from the installed stop. No endwise movement of the tool is required in separating it from the door stop.

It should be noted that in both forms of the driving tool of this invention, the force applied by the tool for driv-

6

ing the fastening into a wall is directed solely against the head of the fastening. This is important inasmuch as the body of the stop is quite flexible and of considerable length so that if the driving force were applied through the tool to any part of the stop other than the head of the fastening, the flexible body would bend and cause the fastening to be moved out of proper driving position. Moreover, it is essential that the head of the fastening be held coaxial with the tool and in centered and intimate engagement with the driving head of the tool as otherwise the driving force would be angularly applied to the head 6 and as this head is connected to the flexible end of the stop that has limited lateral movement in the slot of the driving head and will bend, the fastening therefore will be deflected from proper driving position with the result that it will not be driven into the wall or will be driven into the wall at an undesirable angle, rendering the stop improperly positioned for its purpose.

While specific structural details have been shown and described, it should be understood that changes and alterations may be resorted to without departing from the spirit of the invention as defined in the appended claims.

I claim:

1. A driving tool for installing an elongate door stop having a pointed fastening at one end and enlarged portions adjacent opposite ends thereof, comprising: an elongate body having an impact head at one end and a slotted driving head at its other end; said body having between said heads an enlarged open-sided recess of such depth and width that the stop may be placed within the recess substantially coaxial to said body and with said fastening extending through the slot of said driving head; and holding means adjacent the ends of said recess for frictionally gripping said enlarged portions; said holding means including side wall portions of said recess extending convergently axially of said body adjacent opposite ends of said recess.

2. A driving tool for installing an elongate door stop having a transverse shoulder and a fastening element at one end thereof, comprising: an elongate body having an impact head at one end and a driving head at its other end; an elongated open-sided recess extending longitudinally of said body between said impact head and said driving head, said recess being of such depth and width that the central longitudinal axis of said body is within said recess whereby a door stop may be placed in said recess substantially coaxial to said body; a laterally open longitudinal slot in said driving head aligned with said recess but being of less depth and less width than said recess to receive a portion of said door stop; the outer end face of said driving head extending transverse to the axis of said body and being engageable with the shoulder of a door stop in said recess; and said recess having walls which converge axially of said body at points axially spaced along said recess for frictionally gripping portions of the door stop adjacent opposite ends of the door stop.

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