No. 861,010. PATENTED JULY 23, 1907.

J. A. ZEMAN.

SCREW DRIVER.

APPLICATION FILED JUNE 8, 1906.

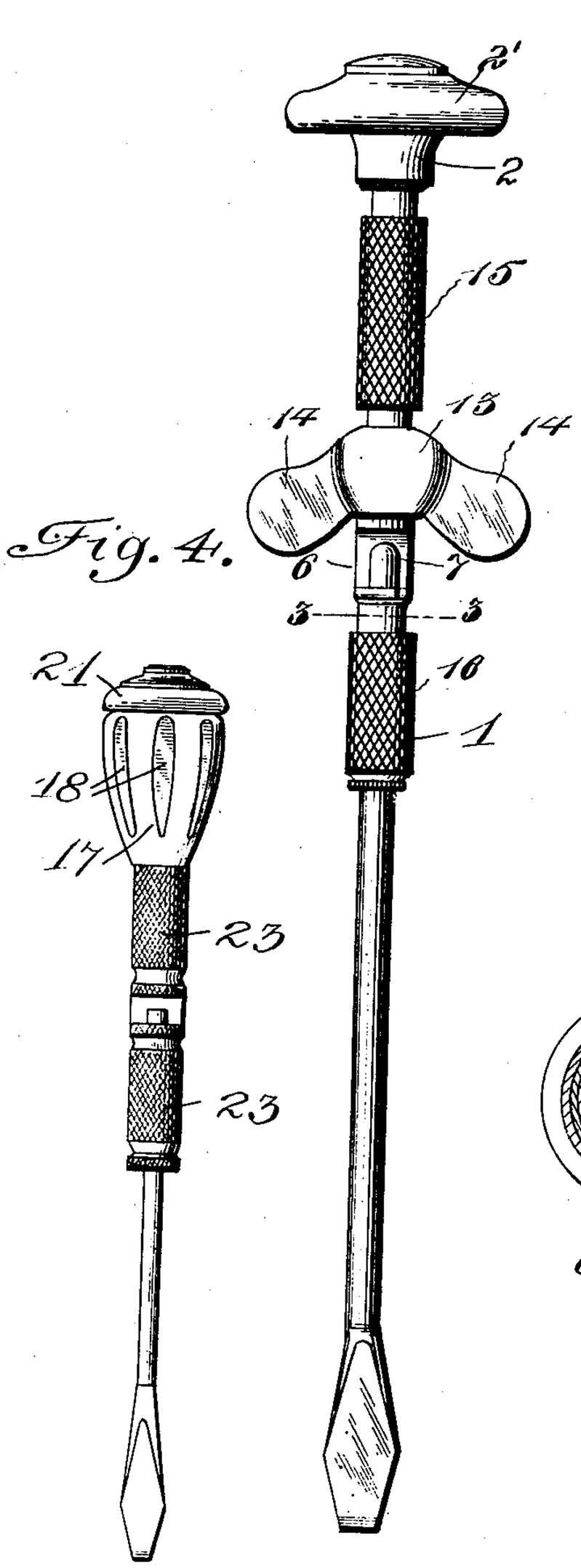

Fig. 4.

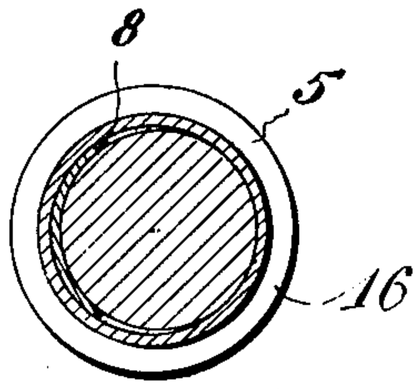

Fig. 3.

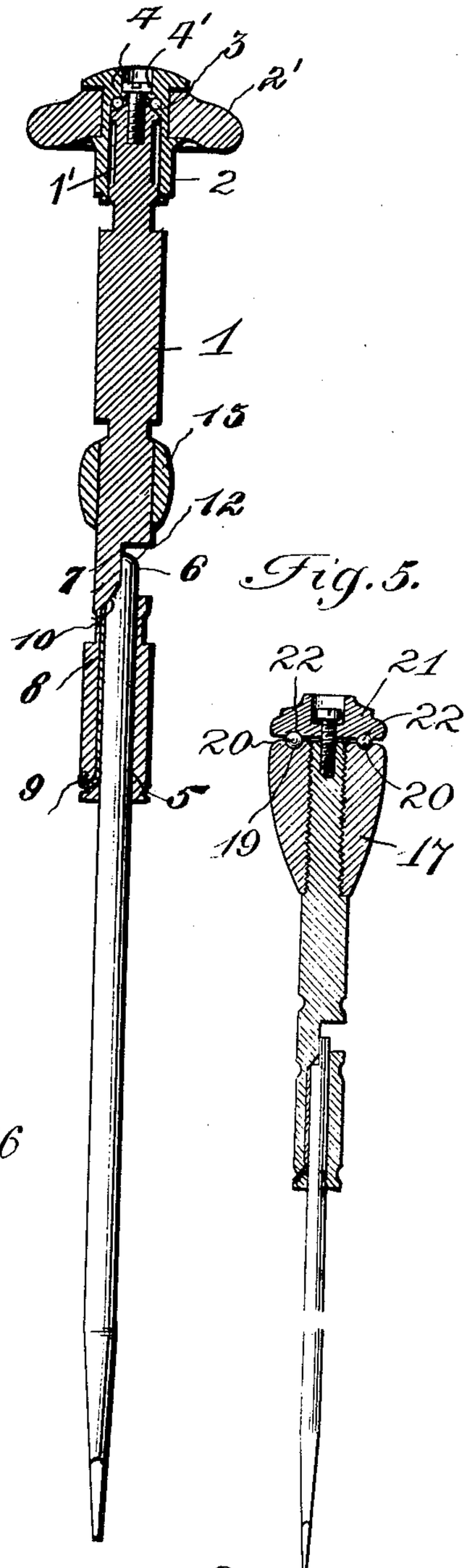

Fig. 5.

Fig. 1.

Fig. 2.

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UNITED STATES PATENT OFFICE.

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SCREW-DRIVER.

No. 861,010. Specification of Letters Patent. Patented July 23, 1907.

Application filed June 8, 1905. Serial No. 264,340.

To all whom it may concern:

Be it known that I, JOSEPH A. ZEMAN, a citizen of the United States, residing at Davenport, in the county of Scott and State of Iowa, have invented certain new and useful Improvements in Screw-Drivers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in tool handles.

The object of the invention is to provide a handle for screw drivers and similar tools by which the use of such tools may be greatly facilitated.

Another object is to provide a handle of this character having arranged on one end thereof a revolubly mounted head which has an anti-friction engagement with said handle; means being provided whereby the handle may be spun around or rapidly revolved with either one or two hands; said handles being also provided with thumb and finger levers by which a firm grip may be had on the same.

With these and other objects in view, the invention consists of certain novel features of construction, combination and arrangement of parts, as will be hereinafter described and claimed.

In the accompanying drawings:—Figure 1 is a side elevation of the handle, showing a screw driver bit placed therein; Fig. 2 is a longitudinal sectional view of the same; Fig. 3 is a detail transverse sectional view through the handle taken on the line 3—3 in Fig. 1. Fig. 4 is a side elevation of a modified form of the handle; and Fig. 5 is a longitudinal sectional view of the same.

Referring more particularly to the drawings, 1 denotes the handle on the outer end of which is revolubly mounted a cap 2 in which is formed an annular ball race 3 to receive balls 4, whereby an anti-frictional engagement is had between the cap and the handle, as shown.

The tip or end of the handle is conical and its periphery adjacent thereto is slightly reduced for a short distance as shown at 1′. The cap 2 is preferably formed as or provided with a hollow sleeve, which extends down over the reduced portion of the handle and is thereby given a long bearing, yet it only engages at two points, above and below the reduced portion respectively, and the friction is reduced to the minimum. The exterior of the sleeve is preferably reduced annularly to form shoulders for the reception of an annular flange 2′ to increase the area of the cap. The cap is secured in position by a screw 4′ which also serves as a means for adjustably holding the balls 4 in position upon the tapering or conical end of the handle, and especially if they should become worn from use. In the opposite end of the handle 1 is formed a tool receiving socket 5 having one of its side walls at its inner end inclined to form a stop for the bit hereinafter described. Formed in one side of the handle at the upper end of the socket and communicating therewith is formed a recess 6, said recess having a flat bearing surface 7, the purpose of which will hereinafter appear. In the socket 5 is arranged a longitudinally disposed leaf spring 8, the lower end of which is reduced and is clenched in an aperture 9 formed in the wall of the socket, as shown.

The tool bits used in connection with this handle are cut away on their inner ends or provided with recesses 10 to form a flat bearing surface 12 which when the tool bit is inserted in the socket 5 is adapted to engage the bearing surface 7 of the recess 6 formed in said handle, thereby preventing said bit from turning in the handle.

The spring 8 is preferably curved in cross section as shown in Fig. 3 which adds considerably to its rigidity thereby permitting of the use of very thin material and its free end extends up nearly to the recess 6, thereby holding the tool against movement in case it should work loose, but having the portion adjacent to its upper end rigidly secured within the socket of the handle whereby the tool is held rigidly at that point and any possible lateral movement is prevented.

Should it be found difficult to pull the bit from the socket when it is desired to remove the same a suitable instrument may be inserted between the inner end of the bit and the adjacent wall of the recess 6, whereby a prying movement may be given to the bit to start the same in its outward movement from the socket, after which the bit may be readily drawn therefrom.

Above the recess 6 in the handle is a rigidly mounted collar 13, on which are formed laterally projecting wings or blades 14 forming thumb and finger levers to facilitate the turning of the handle when it is necessary to apply considerable force to the tool. On the handle 1 above and below the wings or blades 14 are formed checkered gripping surfaces 15 and 16 by which the handle may be grasped by one or both of the hands to rapidly revolve or spin the same around, so that when the tool is used for light work requiring little pressure, as for instance, when used as a screw driver for removing loose screws, the same may be spun around, thus greatly facilitating and expediting removal of the screw, the ball bearing engagement of the handle with the cap 2 decreasing the friction of these parts and permitting the rapid revolution of the handle.

By providing checkered gripping surfaces both above and below the wings or blades 14, the tool may be used with either one or both hands, as may be desired.

By providing a handle of this character a number of different tools may be used therewith.

In Figs. 4 and 5 of the drawings is shown a slightly modified construction of the handle, in this instance the wings or blades 14 are omitted and on the end of the handle is secured a conical head 17 in the sides of which is formed a series of longitudinally disposed grooves 18. In the top of the head is formed an annular groove or channel 19, in which are disposed anti-friction balls 20.

Pivotally mounted on the end of the handle adjacent to the end of the head is a cap 21, said cap having formed on its inner side an annular groove 22 which is adapted to coincide with the groove 19 in the head to form a race-way for the balls 20. By this construction the cap 21 is adapted to have a loose pivotal engagement with the upper end of the head 17. The handle is provided with checkered gripping surfaces 23 which correspond to the checkered surfaces 15 and 16 in Fig. 1 of the drawing.

The form of handle shown in Figs. 4 and 5 of the drawings is intended to be used with tools for performing light work.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described my invention, what I claim as new and desire to secure by Letters-Patent, is:—

In combination, a handle, the lower end of which is socketed longitudinally and having a portion of one side cut away at the bottom of the socket, said bottom being inclined toward the cut away portion and the side of the handle opposite the cut away portion being provided with an opening near the mouth of the socket, and a spring in the socket, curved in cross section, with its lower end reduced and passed through said opening and bent upwardly whereby the lower end of said spring is rigidly secured in said opening and its free end extending into said socket and terminating adjacent to the inclined bottom thereof.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOSEPH A. ZEMAN.

Witnesses:
MARIA A. BEAUCHAINE,
H. M. MITCHELL.