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F. L. YOUNG

COMBINATION TOOL

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Fig. 1.

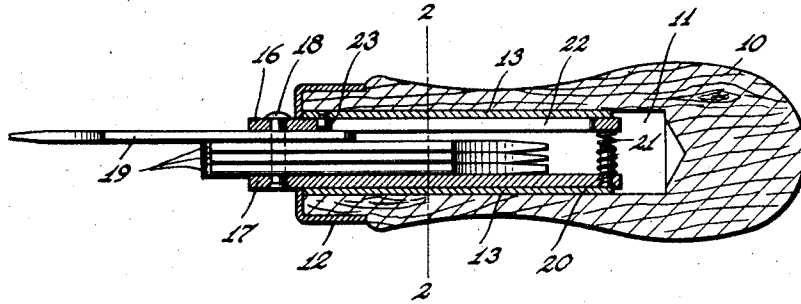


Fig. 2.

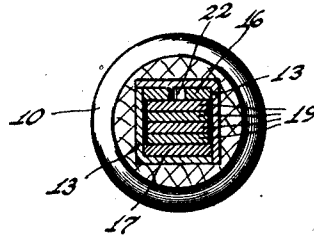
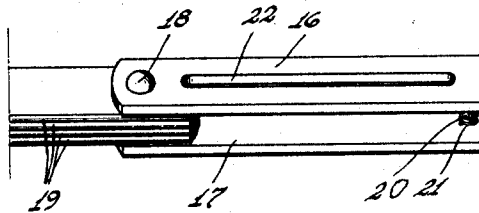


Fig. 3.



Inventor

Frank L. Young

By *W. H. Lindsey*

His Attorney

UNITED STATES PATENT OFFICE.

FRANK L. YOUNG, OF WINDSOR, CONNECTICUT.

COMBINATION TOOL.

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This invention relates to tools of the sort having a magazine or socket which may be within a handle, a carrier slidably mounted in the magazine, and a plurality of tool members of the desired sort mounted on the carrier, the arrangement being such that the carrier may be drawn out so that the desired tool member may be selected and thrown into working position, and when the slide is retracted in the socket, all of the tool members may be retained in inoperative position therein or all of the tool members may be retained in inoperative position with the exception of the selected one which is maintained in operative position.

The aim of the invention is to provide a tool of this sort having various features of novelty and advantage and which is particularly characterized by its simplicity in construction, its economy in manufacture, and its effectiveness in operation.

A more particular aim of the invention is to provide a tool of this sort with an improved carrier of such construction that the parts may be readily assembled, the carrier may be frictionally maintained within the socket, and sufficient clearance or tolerance is provided for inaccuracies which may occur in the tool members, such, for instance, as warping.

Other objects will be in part obvious and in part pointed out more in detail hereinafter.

The invention accordingly consists in the features of construction, combination of elements, and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the application of which will be indicated in the appended claims.

In the accompanying drawings, I have shown the features of the present invention incorporated in a combination screw-driver having a handle shaped similarly to the ordinary screw-driver; but it is obvious that this disclosure is by way of illustration only, as the magazine may take any desired form or shape and the tool members may be of any proper nature, the invention not being limited to a device having tool members in the form of screw-drivers. In said drawings:

Fig. 1 is a longitudinal sectional view taken through my improved tool;

Fig. 2 is a transverse view taken on line 2-2 of Fig. 1; and

Fig. 3 is a perspective view of the tool carrier and the butt ends of the tool members.

Referring to the drawings in detail, 10 designates a handle of any desired shape and formed of any desired material. This handle has a bore or socket 11 of any suitable cross-section, in the present instance this socket being square in cross-section. At the forward end of the handle is the usual ferrule 12. There may be provided within the socket 11 a sleeve or lining. This sleeve or lining may, if desired, be in the form of square tubing but, by preference, it comprises two angle members 13, 13, which form a square tube when assembled as shown in Fig. 2. The advantages of making this sleeve of two members are to effect economy in manufacture, to facilitate assembling the parts, and to avoid fluctuations in the price of square brass tubing. Obviously, the sleeve may have other cross-sectional forms than that shown, so long as the sleeve is non-rotatable with respect to the handle.

My improved carrier includes a pair of plates or strips 16 and 17 which are spaced apart so as to engage the opposed faces of the lining or sleeve. These plates are tied together at their forward ends by a pin 18 which may be riveted in place, and pivoted on this pin are the tool members 19 which, as previously stated, may take any suitable form, but which are here shown as comprising screw-drivers having operating ends of different sizes. In accordance with the present invention, the inner ends of the members 16 and 17 are urged apart. The means for urging these arms apart may take various forms but, by way of example, I have shown this means as comprising a coiled spring 21 held in place by a post 20 riveted to the member 17. 23 designates a stop or stud preferably secured to one of the members 13 adjacent its forward end, and this stud engages in a longitudinal groove 22 provided in the member 16.

When it is desired to select one of the tool members for use, the carrier, with the tool members thereon, is slid forwardly of the handle and then the selected tool is swung out of position between the members 16 and 17. Then the carrier is retracted within the socket 11 so that those tool members which are not to be used are stored within the handle, and the other tool member, which is to be used, projects from the handle.

When the selected tool is in the position shown in Fig. 1, the butt end thereof is within the socket so that this tool is held against rotation on the pin 18.

- 5 When the tool is not in use, as, for example, when it is desired to carry the tool around in the pocket or in a kit, all of the tool members may be positioned between the arms or strips 16 and 17 of the carrier and
10 stored within the handle.

Sliding movement of the carrier is limited by the stud 23. The extent to which the carrier can be withdrawn from the socket is limited by the engagement of this stud
15 against the rear or inner end of the slot 22, and when the tool is in use this stud engages against the outer or forward end of the slot.

It is of particular advantage to construct
20 the carrier so that the arms thereof may be urged against the sides of the chamber in which the carrier is mounted. With the arrangement described, the spring 21 effectively holds the carrier in the position shown
25 in Fig. 1 without employing catches or other holding means which would complicate the structure. Owing to the frictional engagement of the arms against the walls of the sleeve, likelihood of the carrier dropping
30 down, owing to the weight thereof and the weight of the tool members when the tool is in use, is avoided. Also, with this arrangement, the carrier may be readily inserted into the sleeve, it being obvious that,
35 to accomplish this operation, it is merely necessary to spring the inner ends of the arms towards each other so that they will slide past the stop 23 and, after the arms are inserted in the socket, the spring will force
40 the arms apart so that, when the carrier is withdrawn when it is desired to select a tool for operation, the stud 23 will engage against the rear end of the slot. A further advantage of permitting movement between the
45 arms is that sufficient clearance may be had between the arms for the tool members although these tool members may not be made within close limits and may be warped to a considerable degree during the hardening
50 operation of these elements.

From the foregoing description taken in connection with the accompanying drawings, it will be seen that my improved structure may be economically manufactured and is
55 very effective in use.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from
60 the scope thereof, it is intended that all mat-

ter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention which, as a matter of language, might
65 be said to fall therebetween.

I claim as my invention:

1. A tool of the character described comprising a handle having a magazine, a carrier slidably mounted in the magazine, and
75 a plurality of tool elements supported by the carrier, said carrier having members between which said tool elements are positioned and means for urging said members apart.

2. A tool of the character described comprising a handle having a magazine, a tool carrier slidably mounted in the magazine, and a plurality of tool elements pivotally
80 supported by said carrier, said carrier having a pair of arms, a pivot pin connecting said arms on which said tool elements are pivoted, and means for urging the arms of the carrier apart and into frictional engagement with
85 the walls of the magazine.

3. A tool of the character described comprising a handle having a magazine, a tool carrier slidably mounted in the magazine, and a plurality of tool elements rotatably
90 supported by the carrier, said carrier having a pair of arms, a pivot pin connecting the forward ends of said arms and on which said tool elements are pivoted, and a spring urging the inner ends of the arms apart and into frictional engagement with the walls of
95 the magazine.

4. A tool of the character described comprising a handle having a magazine square in cross-section, a tool carrier slidably mounted in the magazine and having a pair
100 of arms engaging opposite walls of the magazine, a pivot pin connecting the forward ends of said arms, a plurality of tool elements pivoted on said pin between said arms, a spring normally urging said arms apart and into frictional engagement with
105 the walls of the magazine, one of said arms having a slot, said magazine having a stud engaging in said slot.

5. A tool of the character described comprising a square socket, a square sleeve fitting
110 in said socket and comprising a pair of angle members, a tool carrier slidably mounted in said sleeve, and a plurality of tool elements rotatably supported by said carrier.

FRANK L. YOUNG.