C. B. WHITAKER.

COMBINATION TOOL.

APPLICATION FILED OCT. 5, 1916.

1,229,843. Patented June 12, 1917.

Fig. 1.

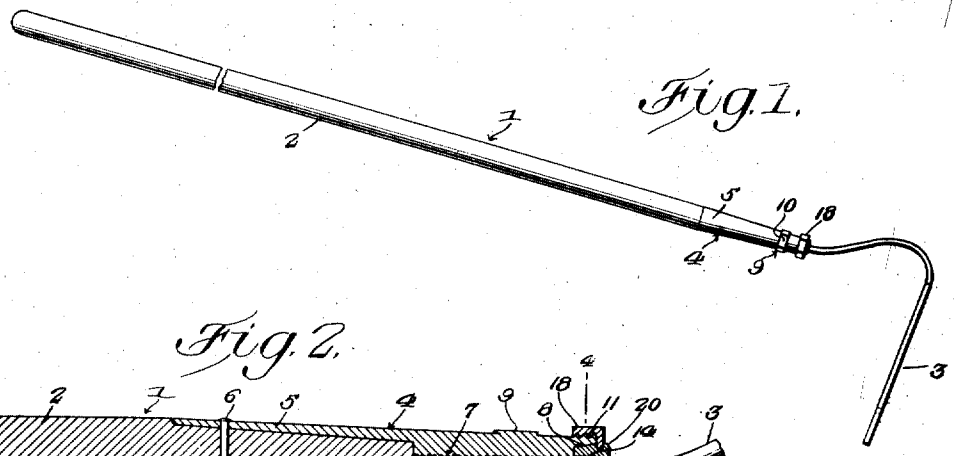


Fig. 2.

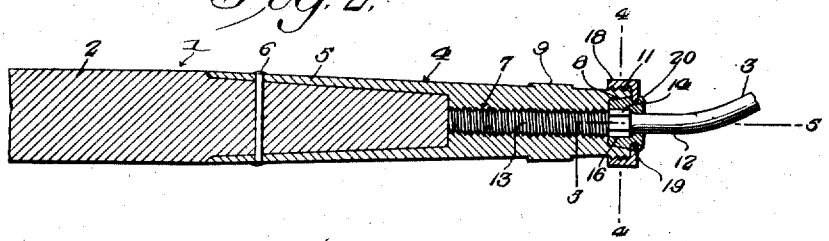


Fig. 3.

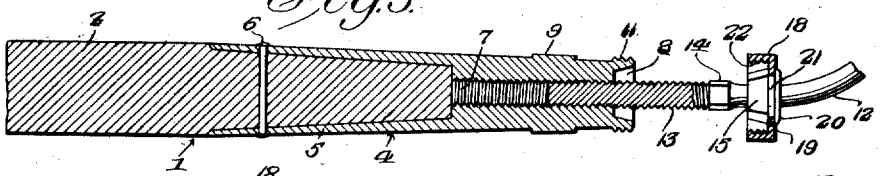


Fig. 4.

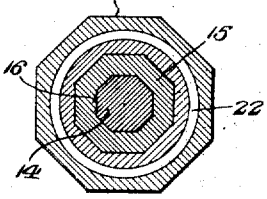


Fig. 5.

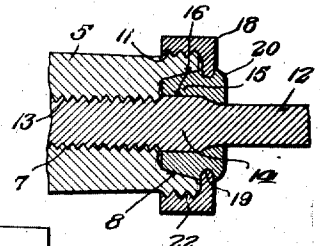


Fig. 8.



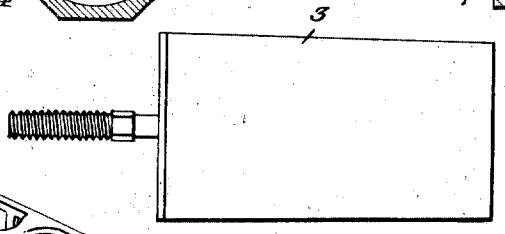


Fig. 7.

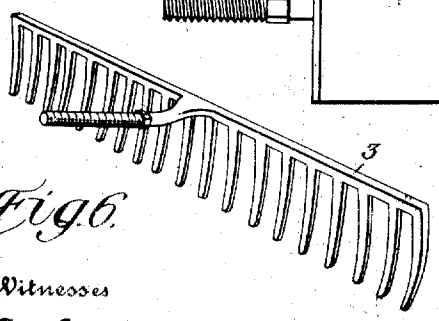


Fig. 6.

Witnesses

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COMBINATION-TOOL.

1,229,843. Specification of Letters Patent. Patented June 12, 1917.

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To all whom it may concern:

Be it known that I, CALVIN B. WHITAKER, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented new and useful Improvements in Combination-Tools, of which the following is a specification.

This invention relates to tools and more particularly to a tool of the combination type which is provided with a plurality of interchangeable heads by means of which the tool may be rendered especially serviceable for household and garden purposes.

The primary object of the invention is to provide a tool of this character in which the tool handle and the shank on the tool heads for use in connection with the handle are so constructed that any one of the heads best suited for the work which the tool is to perform may be easily and quickly connected with the tool handle and in such a manner that the shank on the tool head connected with the handle will be prevented from turning or moving longitudinally of the tool handle while the tool is in use.

Another object of the invention is the provision of a combination tool of this character in which the interchangeable heads for connection with the tool handle have the shanks thereof threaded for a portion of their length to be received in a threaded bore in a ferrule on the tool handle, said shanks having mounted thereon lock nuts engageable therewith and with the ferrule on the tool handle and provided with rotatable retaining caps also engageable with the ferrule on the tool handle and coacting with the threads in the bore thereof and with the lock nuts in preventing longitudinal movement of the shanks on the tool heads within the ferrule when the tool is in use.

A further object of the invention is to provide a combination tool of the class described in which the interchangeable tool heads have formed upon the shanks thereof polygonal shaped enlargements to be received in similar shaped recesses in tapered and polygonal shaped lock nuts mounted upon the shank and adapted for disposition within a tapered and polygonal shaped recess in one end of the ferrule on the tool handle and by means of which the shanks on the tool heads are prevented from turning within the tool handle when the tool is in use.

A still further object of the invention is to provide the lock nuts which coact with the polygonal shaped enlargements upon the shank and the recess in the ferrule upon the tool handle in preventing turning movement of the shanks on the tool heads within the ferrule with rotatable caps threaded for connection with the threaded end of the ferrule and by means of which the lock nuts may be wedged within the recess in the ferrule and retained therein.

With these and other objects in view, the invention resides in the novel combination and arrangement of parts, which will be hereinafter described and particularly pointed out in the claim.

The preferred embodiment of the invention has been illustrated in the accompanying drawing, although no restriction is necessarily made to the precise details of construction therein shown, as changes, alterations, and modifications, within the scope of the claim may be resorted to when desired.

Like characters of reference denote corresponding parts throughout the several views in the drawing, in which:

Figure 1 is a view in elevation of a combination tool constructed in accordance with the invention and adapted to be used as a hoe.

Fig. 2 is an enlarged longitudinal sectional view through a portion of the handle, the shank on the head of the tool connected therewith being shown in elevation.

Fig. 3 is a view similar to Fig. 2, the shank on the tool head being shown partly removed from the ferrule on the tool handle and the lock nut on the shank being shown in elevation.

Fig. 4 is a vertical transverse section on the line 4—4 of Fig. 2.

Fig. 5 is a detail longitudinal sectional view on the line 5—5 of Fig. 2.

Figs. 6, 7, and 8 are detail views of interchangeable heads for connection with the handle of the improved combination tool.

Referring now to the drawing in detail, the numeral 1 designates the improved combination tool which comprises a handle 2 and a plurality of interchangeable tool heads 3, one of which in this instance has been shown connected with the handle 2 in Fig. 1 in the drawing to enable the improved tool to be used as a hoe.

A ferrule 4 connected with one end of the handle 2 by means of a socket 5 within the ferrule and a pin 6 passing through the ferrule and handle, has formed therein for a portion of its length a longitudinally extending and threaded bore 7 opening out at one end into a tapering and polygonal recess 8 formed in one end of the ferrule 4, said recess being octagonal in shape in cross section.

The ferrule 4 has formed thereon between its ends an enlargement 9 provided with a plurality of angularly arranged wrench engaging faces 10, said ferrule being exteriorly threaded as indicated by the numeral 11 for a portion of its length adjacent the end thereof in which is formed the recess 8.

Each of the interchangeable tool heads 3 is provided with a shank 12 having a threaded portion 13 to be received in the threaded bore 7 in the ferrule 4 and arranged in advance of a polygonal shaped enlargement 14 on the shank having a diameter less than the diameter of the recess 8 in one end of the ferrule 4 in which said enlargement is adapted to be received when the threaded portion of the shank is threadedly engaged with the threaded bore in the ferrule 4.

Each shank 12 of the interchangeable tool heads 3 has loosely mounted thereon a tapering and polygonal shaped lock nut 15 corresponding in diameter to the diameter of the recess 8 in the end of the ferrule 4 in which said nut is adapted to be received, said lock nuts having formed therein polygonal shaped chambers 16 corresponding in diameter and shape to the enlargements 14 on the shanks to be received in said chambers as shown in Fig. 2 in the drawing when the lock nuts are arranged in the recesses 8, thus holding the shank on the tool head which is disposed in the threaded bore 7 of the ferrule 4 against turning within the ferrule when the tool is in use.

Each lock nut 15 carries a cap 18 having an opening 19 therein through which said lock nut is passed and in which it is retained through the medium of a flange 20 on the cap received in an annular groove 21 formed in the outer peripheral surface of said nut thus rotatably mounting the caps 18 upon the lock nuts 15, said caps being interiorly threaded as at 22 to enable the caps to be connected with the threads 11 on the outer peripheral surface of the ferrule 4 and retain the lock nuts in the recess 8 in the end of the ferrule 4.

From the above described manner of arranging the lock nuts upon the shanks on the tool heads and providing the nuts with the rotatable caps 19, it will be seen with reference to Fig. 2 in the drawing that the caps not only serve to retain the lock nuts upon the enlargements 14 on the shanks and within the recess 8 in the ferrule 4 to prevent turning movement of the shanks within the ferrule but also coact with the lock nuts and the threads in the bore and on the shanks of the tool heads in preventing longitudinal movement of said shanks within the ferrule when the tool is in use.

When it is desired to use the improved combination tool, an interchangeable head 3 for connection with the tool handle is selected which is best suited to enable the tool to perform the work required and the threaded portion of the shank on the selected head is screwed into the threaded bore 7 in the ferrule on the tool handle until the enlargement 14 on the shank is received in the recess 8 in the end of the ferrule.

The cap on the lock nut on the shank threadedly connected with the ferrule is now engaged with the threads 11 on the ferrule and turned to cause said cap to force the lock nut into the tapered recess 8 in the end of the ferrule and the enlargement 14 on the shank within the chamber in the lock nut thus effectually locking the shank connected with the handle against turning movement within the ferrule or longitudinal movement thereof while the tool is in use.

When it is desired to remove the tool head connected with the handle so that any of the other tool heads may be substituted therefor, the cap 18 on the shank of the tool head connected with the tool handle is disconnected from the ferrule 4 and the shank of the tool head disconnected from the bore 7 after which the desired tool head may be connected with the tool handle in a manner as above described.

From the foregoing description, taken in connection with the accompanying drawing, it is at once apparent that a combination tool has been provided in which the tool handle and shanks on the tool heads for connection therewith are so constructed that the tool heads are rendered interchangeable and may be connected with the handle in such a manner that turning or longitudinal movement of the shanks on the tool heads within the handle is prevented.

Having thus described the invention, what is claimed as new, is:

In a device of the class described, in combination, a ferrule having a tapered and polygonal shaped recess in one end thereof and

a threaded bore communicating therewith, a shank disposed in said bore and having threads thereon engaging the threads in the bore, an angular enlargement on said shank, a nut carried by said shank and having a groove therein and a chamber receiving said enlargement, a tapered and polygonal portion on said nut disposed in said recess, a cap threadedly connected with said ferrule and having an opening therein receiving said nut, and a flange on said cap extending within the groove in said nut.

In testimony whereof I affix my signature.

CALVIN B. WHITAKER.