

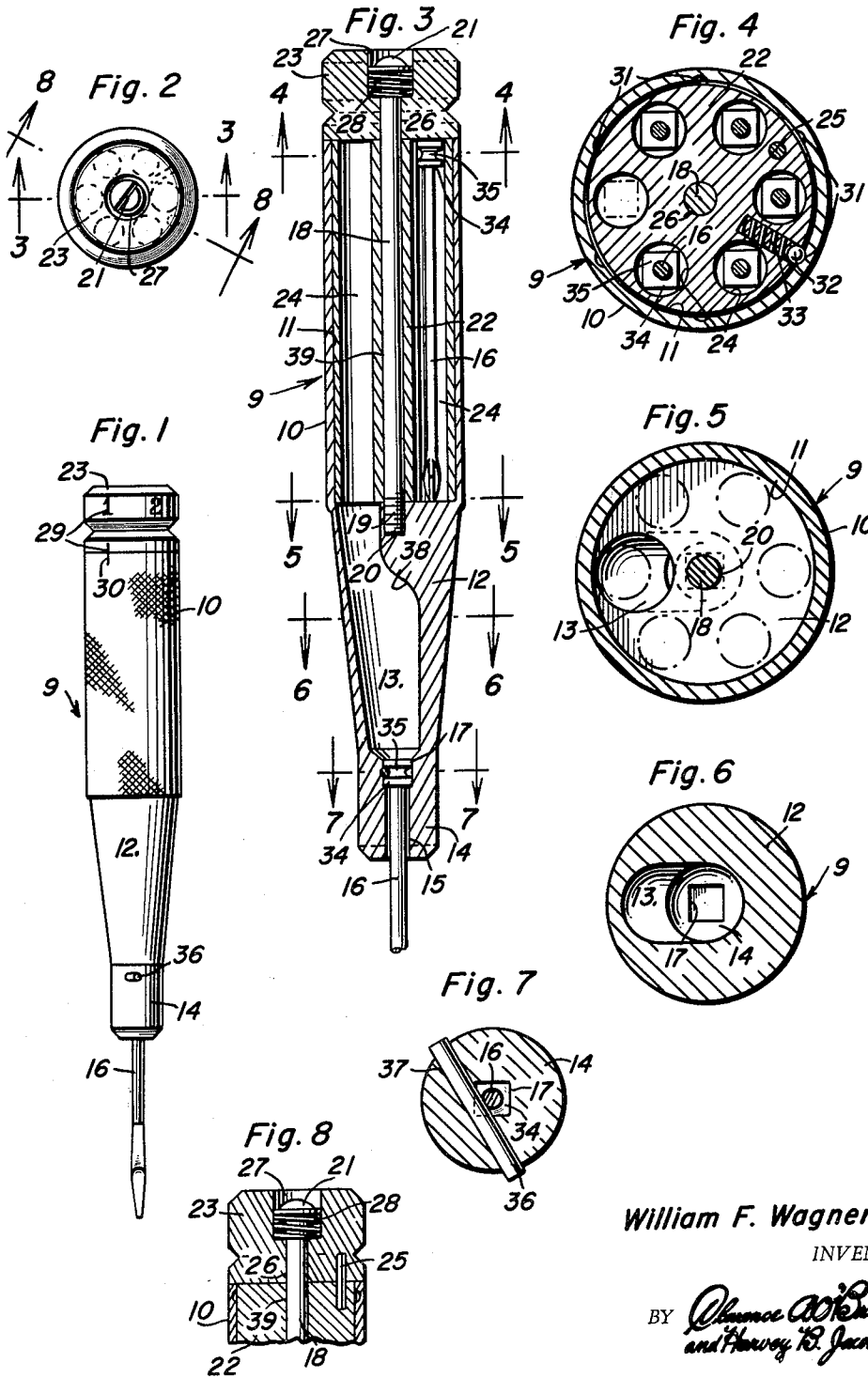
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SCREWDRIVER WITH REGISTERING CHAMBER MAGAZINE HANDLE

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SCREWDRIVER WITH REGISTERING CHAMBER MAGAZINE HANDLE

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This invention relates generally to new and useful improvements in screwdrivers and has for its primary object to provide, in a manner as hereinafter set forth, a tool of this character comprising a multiplicity of selectively usable bits of various sizes and types which may be expeditiously brought into working position as they are needed.

Another important object of the present invention is to provide, in a multiple-bit screwdriver of the type including a rotary cylinder having a plurality of chambers therein, novel means for frictionally securing said cylinder against rotation.

Still another important object of this invention is to provide an improved screwdriver of the aforementioned character which embodies unique chuck means for securing the selected bit in working or operative position.

Another object of the invention is to provide a multiple-bit screwdriver of the character set forth wherein access may be readily had to the interior of the device when necessary.

Other objects of the invention are to provide a screwdriver of the character set forth which is comparatively simple in construction, strong, durable, compact, of light weight and which may be manufactured at low cost.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawing forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a side elevational view of a screwdriver constructed in accordance with the present invention;

FIGURE 2 is a top plan view of the device;

FIGURE 3 is a vertical sectional view on an enlarged scale through the tool, taken substantially on the line 3-3 of FIGURE 2;

FIGURE 4 is a view in horizontal section on an enlarged scale, taken substantially on the line 4-4 of FIGURE 3;

FIGURE 5 is a similar view in horizontal section on an enlarged scale, taken substantially on the line 5-5 of FIGURE 3;

FIGURE 6 is a view in horizontal section on an enlarged scale, taken substantially on the line 6-6 of FIGURE 3;

FIGURE 7 is a view in horizontal section on an enlarged scale, taken substantially on the line 7-7 of FIGURE 3; and

FIGURE 8 is a fragmentary view in vertical section through the upper portion of the device, taken substantially on the line 8-8 of FIGURE 2.

Referring now to the drawing in detail, it will be seen that the embodiment of the invention which has been illustrated comprises a handle of metal or other suitable material which is designated generally by reference numeral 9. The handle 9 includes a knurled cylindrical tubular upper portion 10 providing a cylindrical compartment or chamber 11 which is open at its upper end. Below the cylindrical portion 10 thereof, the handle 9 further includes a tapered lower portion 12 having therein a duct 13 which communicates with the compartment 11. The portion 12 of the handle 9 terminates at its lower end in a chuck 14 having a bore or passage 15 therein which receives and retains the selected bit in working position,

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as indicated at 16. Of course, the bore or passage 15 of the chuck 14 is in communication with the duct 13 for receiving the bits therefrom. The bore or passage 15 of the chuck 14 includes a square upper end portion 17 the purpose of which will be presently set forth.

Mounted centrally in the compartment 11 is a stationary removable shaft 18. The shaft 18 comprises a threaded lower end portion 19 which is adapted to be screwed tightly into a socket 20 provided therefor in the top of the portion 12 of the handle 9 for rigidly but removably securing the shaft in position. At its upper end, the shaft 18 is provided with a kerfed head 21.

Mounted for rotation on the shaft 18 in the compartment 11 is a slidably removable cylinder 22 having extending longitudinally therethrough a plurality of cylindrical chambers 24 for the reception of a plurality of the bits 16 of various sizes and types. The chambers 24 are adapted to be brought selectively into registry with the duct 13.

Mounted on the upper portion of the shaft 18 is an operating cap or knob 23 for the cylinder 22. A pin 25 (see FIGURE 8) operatively connects the knob 23 to the cylinder 22. The central vertical opening 26 in the knob 23 receives the shaft 18. The opening or bore 26 includes an enlarged or counterbored upper end portion 27 which accommodates the head 21 of the shaft 18. The enlargement 27 also accommodates the coil spring 28 which encircles the shaft 18 and which is engaged under tension beneath the head 21 for yieldingly urging the knob 23 and the cylinder 22 downwardly. Indicia 29 in the form of numbers on the knob 23 is cooperable with a mark or the like 30 on the handle 9 for bringing a particular chamber 24 with the desired bit or tool 16 therein into registry with the duct 13.

The cylinder 22 is provided, in its upper portion, with circumferentially spaced depressions or dimples 31, one for each of the chambers 24, as shown to advantage in FIGURE 4 of the drawing. The dimples or sockets 31 are for the reception of a ball detent 32 (see FIGURE 4) for releasably securing the chamber 22 in rotatably adjusted position in the compartment 11. A coil spring 33 engages the ball detent 32 in the sockets or dimples 31 in an obvious manner.

The bits 16 comprise on their upper ends identical square heads 34 which are engageable in the enlarged square upper portion 17 of the chuck bore 15 for suspending the bits in the chuck and connecting said bits thereto for rotation in unison therewith. The square heads 34 have extending therearound grooves or channels 35 for the reception of an anchoring pin 36 which is mounted tangentially in an opening or bore 37 provided therefor in the chuck 14. Thus, the selected bit 16 is releasably secured in working position in the chuck 14.

It is thought that the use of the tool will be readily apparent from a consideration of the foregoing. Briefly, to bring a particular bit 16 into position for use, the tool is held in an upright position or inverted. Through the medium of the knob 23, the chamber 22 is rotatably adjusted to bring the chamber 24 with the desired bit 16 therein into registry with the duct 13. This is readily accomplished by consulting the indicia 29, 30 as will be understood. The tool is now returned to an upright position and the selected bit 16 slides by gravity through the duct 13 and drops downwardly through the chuck 14 in which it is held suspended by the square head 34 engaging in the portion 17 of said chuck. The pin 36 is then inserted and the tool is ready for use.

The duct 13 is shaped as indicated at 38 to permit the headed bits to align readily with the bore or passage 15 in the chuck 14. Of course, to return the selected bit 16 to its respective cylinder chamber 24, the pin 37 is removed and the tool is again inverted. Ac-

cess to the interior of the compartment 11 and the elements therein may be quickly had by unscrewing the threaded shaft 18, this permitting removal of the knob 23 with the shaft 18 thereon. A central bore 39 through the cylinder 22 accommodates the shaft 18. It will be noted that in the embodiment shown the pin 36 may be inserted in the chuck 14 and removed therefrom in either direction. If desired, a suitable lock or retainer may be provided for the pin 36. The coil spring 28 yieldingly urges the knob 23 downwardly on the cylinder 22 with the coupling pin 25 therebetween and in this manner said cylinder is yieldingly secured against longitudinal movement in the compartment 11. It will be understood that the heads 34 of the bits 16 may be of any suitable noncircular shape other than square, as shown, this also applying to the enlarged upper end portion 17 of the chuck bore or passage 15.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A screwdriver comprising a tubular handle having an enlarged longitudinal duct therein, a cylinder, means rotatably mounting the cylinder in the handle, said cylinder having a plurality of chambers therein selectively registerable with a first end of the duct upon rotation of the cylinder, means for actuating the cylinder, bits mounted in the chambers, and a chuck on one end of the handle, said chuck having a bore therein communicating with the opposite end of the duct for slidably receiving the bits by gravity therethrough from the chambers, said bore having a substantially circular cross-section smaller in diameter than said duct, said bore also having an enlarged upper end, said upper end being square in cross-section and having a smaller cross-sectional area than the duct, said bits being substantially circular in cross-section and selectively receivable through said bore, the upper end portion of each bit being square in cross-section and snugly receivable within the square upper end of the bore in a manner so as to equally engage all four equal length sides of the upper end portion of the bit with the four sides of the upper end of the bore, and releasable means for locking a bit within the chuck bore.

2. The structure of claim 1 wherein the square upper end portion of each bit has an annular groove thereabout between the upper and lower limits of this end portion, said means for locking the bit within the bore including a passage extending transversely completely through the chuck and intersecting the square upper end of the bore, said passage being off center so as to pass

along a portion of the annular groove of a bit positioned within the chuck, and a removable pin positioned within the passage and extending completely across and beyond the intersected portion of the square upper end of the bore so as to lie within the groove of an included bit so as to prevent retraction of the bit.

3. A screwdriver comprising a tubular handle having an enlarged longitudinal duct therein, a cylinder, means rotatably mounting the cylinder in the handle, said cylinder having a plurality of chambers therein selectively registerable with a first end of the duct upon rotation of the cylinder, means for actuating the cylinder, bits mounted in the chambers, and a chuck on one end of the handle, said chuck having a bore therein communicating with the opposite end of the duct for slidably receiving the bits by gravity therethrough from the chambers, said bore having a substantially circular cross-section smaller in diameter than said duct, said bore also having an enlarged upper end, said upper end being rectangular in cross-section and having a smaller cross-sectional area than the duct, said bits being substantially circular in cross-section and selectively receivable through said bore, the upper end portion of each bit being rectangular in cross-section and snugly receivable within the rectangular upper end of the bore in a manner so as to engage all four sides of the upper end portion of the bit with the four sides of the upper end of the bore, the rectangular upper end portion of each bit having an annular groove thereabout between the upper and lower limits of this end portion, and releasable means for locking a bit within the chuck bore, said means for locking the bit within the bore including a passage extending transversely completely through the chuck and intersecting the rectangular upper end of the bore, said passage being off-center so as to pass along a portion of the annular groove of a bit positioned within the chuck, and a removable pin positioned within the passage and extending completely across and beyond the intersected portion of the rectangular upper end of the bore so as to lie within the groove of an included bit so as to prevent retraction of the bit.

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