Dec. 10, 1957 E. L. DANIELS 2,815,692

HAND TOOL PROVIDED WITH AXIAL IMPACT MEANS

Filed Jan. 10, 1957

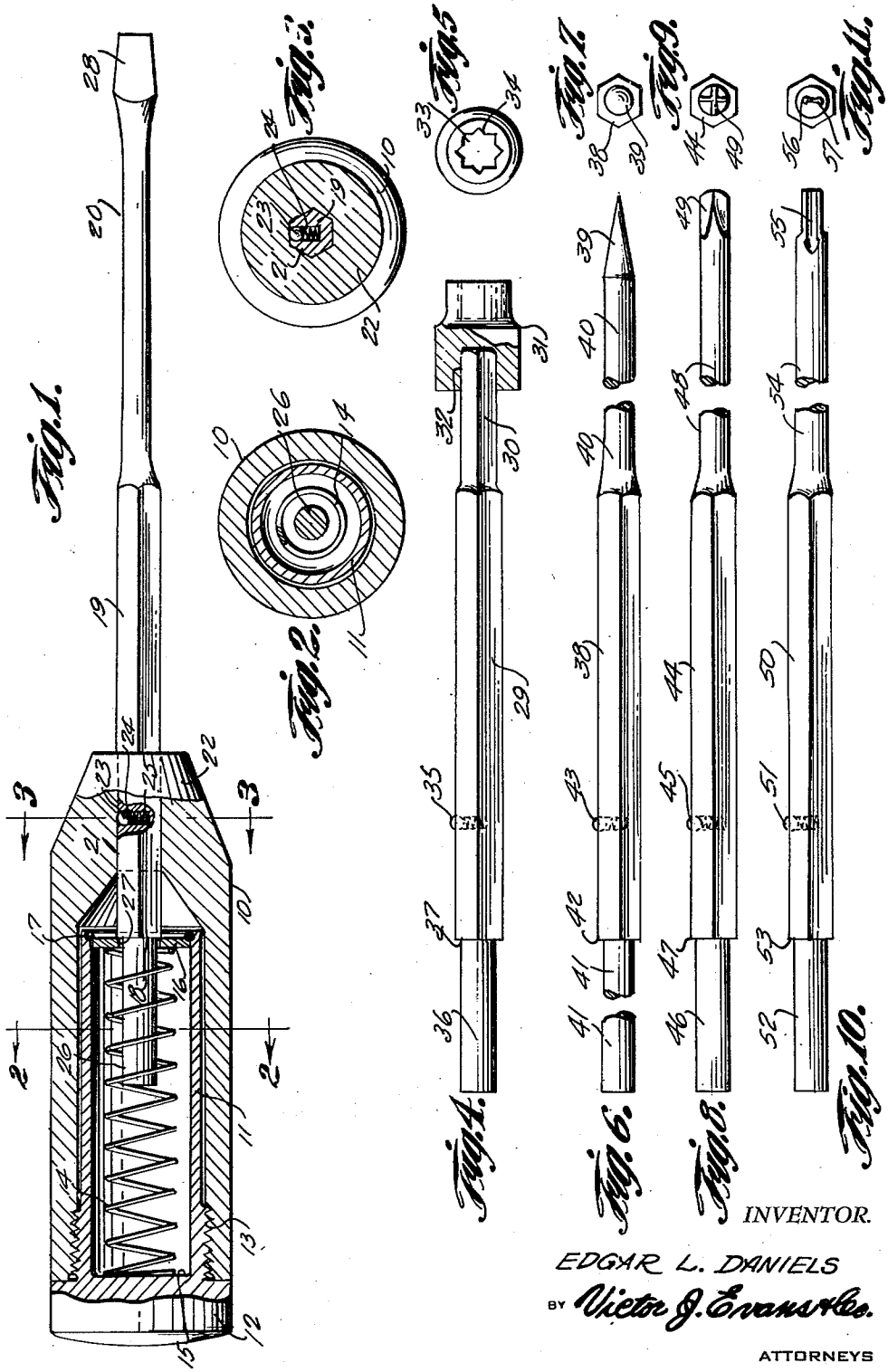

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

Fig. 8.

Fig. 9.

Fig. 10.

Fig. 11.

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United States Patent Office 2,815,692 Patented Dec. 10, 1957

2,815,692

HAND TOOL PROVIDED WITH AXIAL IMPACT MEANS

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Application January 10, 1957, Serial No. 633,446

5 Claims. (Cl. 81—52.35)

This invention relates to combination tools used particularly in repairing motor vehicles such as in service stations, garages, body shops and the like and also for use in wood working shops, mills, factories, and in the home, and in particular a screw driver having a relatively heavy hammer slidably mounted on the shank whereby with the bit of the screw driver in the slot in the head of a screw the handle, which is resiliently mounted on the shank is reciprocated with a hammer action for loosening the screw before turning.

The purpose of this invention is to provide a combination hammer and tool in which the tool is slidably mounted in a handle and in which tools of different types may be used in the same handle.

In taking machinery and other devices apart it is often difficult to remove screws, nuts, bolts, and the like, particularly where such parts are subjected to the elements so that corrosion and rust exists in the threads or between the parts and in using a conventional screw driver, socket wrench, or the like it is often necessary to use a hammer to jar the parts loose before turning is possible. With this thought in mind this invention contemplates a tool having a relatively heavy handle slidably mounted on a shank thereof wherein the handle is adapted to be reciprocated to provide a hammer for jarring screws, nuts, bolts and the like loose from elements in which they are threaded.

The object of this invention is, therefore, to provide means for forming a hammer in combination with a screw driver whereby the same tool is used for jarring a screw loose and also for removing the screw.

Another object of the invention is to provide a combination tool having a handle with a hammer action therein adapted to be slidably mounted on a shank of a tool and in which tools adapted to be used in combination with the handle are interchangeable.

A further object of the invention is to provide a combination tool having a hammer action handle in which the tool is of a simple and economical construction.

With these and other objects and advantages in view the invention embodies a plurality of tools having extended shanks with flat sides and with spring actuated balls incorporated therein and a handle having an opening in one end for receiving the shank of a tool and having a spring in a bore therein for returning the handle to an outwardly disposed or starting position.

Other features and advantages of the invention will appear from the following description taken in connection with the drawing, wherein:

Figure 1 is a side elevational view showing the combination tool with part of the handle of the tool broken away showing a longitudinal section therethrough.

Figure 2 is a cross section through the handle taken on line 2—2 of Fig. 1 showing the spring in the handle.

Figure 3 is a cross section taken on line 3—3 of Fig. 1 showing a spring actuated ball for frictionally retaining a tool in the handle.

Figure 4 is a side elevatonal view showing a shank of a

tool and illustrating the use of a socket, for nuts, bolts, and the like on the end of the shank, part of the socket being broken away and the remaining part shown in section.

Figure 5 is an end elevational view of the socket shown on the tool in Fig. 4.

Figure 6 is a side elevational view showing a tool having a pointed end providing a punch and adapted to be used in the handle shown in Fig. 1.

Figure 7 is an end elevational view of the tool or shank shown in Fig. 6.

Figure 8 is a side elevational view of a shank having the webs of a Phillip's head screw driver on the extended end and with parts broken away.

Figure 9 is an end elevational view of the shank shown in Fig. 8.

Figure 10 is a side elevational view of a tool having a special tip on one end and also with parts broken away.

Figure 11 is an end elevational view of the tool shown in Fig. 10.

Referring now to the drawing wherein like reference characters denote corresponding parts the combination tool of this invention includes a substantially cylindrical handle **10** having a sleeve **11** extended from a head **12** threaded in the handle with threads **13**, a spring **14** in the handle and positioned between the inner surface **15** of the head **12** and a washer **16** retained in the sleeve with a spring locking ring **17** and positioned to engage a shoulder **18** of a shank **19**, such as the shank of a screw driver **20** and which is slidably mounted in an opening **21** extended through the end **22** of the handle and retained in position by a ball **23** in a socket **24** in the shank **19** and urged outwardly by a spring **25**.

The spring assembly is incorporated in the sleeve **11** extended from the head **12** and positioned in the handle **10** and a cylindrical portion **26** extended from the shoulder **18** at the end of the shank **19** extends through an opening **27** in the washer **16** and into the spring.

With the parts, as illustrated in Fig. 1, a bit **28** of the screw driver may be inserted in a slot of a screw and by reciprocating the handle on the shank **19** the screw is hammered until the screw loosens. With the opening **21** in the end of the handle having flat sides to correspond with the flat sides of the shank **19** the screw driver is adapted to be actuated in the conventional manner for removing screws from material or for inserting screws therein.

In the design illustrated in Figs. 4 and 5 a shank **29**, similar to the shank **19** is provided with a section **30** having flat sides that are adapted to be positioned in a socket **31**, such as thte socket of a socket wrench, with the section in an opening **32** in one end of the socket and with the opposite end of the socket provided with an opening **33** having flat surfaces **34** which are positioned to receive a square or hexagonally shaped nut, bolt head, or the like. The shank **29** is provided with a spring actuated ball **35** and the opposite end is provided with a cylindrical section **36** that extends from a shoulder **37** similar to parts on the inner end of the shank **19**.

In the design illustrated in Figs. 6 and 7 a shank **38** is provided with a punch **39** on the end of a cylindrical section **40** and the opposite end is provided with a cylindrical section **41** that extends from a shoulder **42**. The shank **38** is also provided with a spring actuated ball **43** by which the shank of the punch may be retained in the opening **21** in the end **22** of the handle **10**, similar to the shank **19** of the screw driver.

In the design illustrated in Figs. 8 and 9 a shank **44**, which is provided with a spring actuated ball **45** and a cylindrical section **46** extended from a shoulder **47** is provided with a bit **48** having cross webs **49** to correspond with a Phillip's head screw or the like on the ex-

tended end; and in Figs. 10 and 11 a shank 50 having a spring-actuated ball 51 therein and having a cylindrical section 52 extended from a shoulder 53, similar to corresponding parts of the screw driver shank 19 and the opposite end of the shank 50 is provided with a cylindrical section 54 having a special formation 55 with ridges 56 and 57 on the edges of a web extended therefrom.

It will be understood that any suitable number of tools may be provided on the ends of shanks, similar to the shank 19 and the tools may be substituted for the screw driver when use thereof is desired.

By this means a combination tool is provided wherein screws, bolts, nuts, and the like may be jarred loose by hammering with the handle or head of the screw driver, or other tool and wherein, after loosening, the screws, bolts, nuts, or the like may be turned and readily removed from parts held thereby.

The tool is also particularly adapted for working out dents in doors of motor vehicles without removing the inner panels of the doors. By drilling small holes in the inner panels the bit may be placed against the inner surface of the outer panel and the outer wall of the door hammered by the weight or handle. After working the dent from the wall of the door the holes in the inner panel may be covered with tape or the like.

Each small hole in the inner panel would permit the working of an area of several square inchs of the outer wall.

It will be understood that modifications, within the scope of the appended claims, may be made in the design and arrangement of the parts without departing from the spirit of the invention.

What is claimed is:

1. An impact type hand tool having a shank with a bit on the extended end thereof a handle having solid portions providing a hammer slidably mounted on the shank, resilient means in the handle for urging the shank and bit outwardly of the handle, and means limiting outward movement of the shank and bit from the handle.

2. An impact type hand tool comprising an elongated shank having flat sides with a tool extended from one end, a handle having an opening in one end in which said shank is slidably mounted, means for resiliently urging the shank outwardly of the handle, and means for limiting outward movement of the shank from the handle.

3. An impact type hand tool comprising an elongated shank having flat sides, a tool extended from one end of the shank, a handle having an opening in one end through which said shank extends, a head threaded in the end of the handle opposite to that in which the opening is positioned and having a sleeve extended through the handle from the head to a point spaced from the opposite end a shoulder on the end of the shank extended into the handle a disc on the shank and positioned against the end of the sleeve extended from the head, a spring in the sleeve positioned between the heads and shoulder for urging the shank from the handle, and means limiting outward movement of the shank and tool.

4. In an impact type hand tool, the combination which comprises a cylindrical handle having a substantially solid end with an opening having flat sides extended therethrough, the opposite end of the handle being open, a head having a sleeve extended therefrom positioned in the open end of the handle, a spring in said sleeve, a shank having a tool on the extended end slidably mounted in the opening through the end of the handle and extended into the sleeve, said shank having a shoulder thereon, and a washer mounted on the shank and positioned in the shoulder providing a seat for the spring, whereby the shank is urged outwardly from the handle.

5. In an impact-type hand tool, the combination which comprises an elongated handle having a longitudinally disposed opening with flat sides extended through a solid portion at one end thereof, the opposite end of the handle being open and being threaded internally, a head having a sleeve extended therefrom threaded in the open end of the handle, a shank having a tool on the extended end and also having flat sides extended through the opening in the end of the handle and having a shoulder on a portion thereof extended into the sleeve of the handle, a washer on the shank and positioned against the shoulder, means for retaining the washer in the sleeve, a spring in the sleeve and positioned between the outer end thereof and the washer, whereby with the washer positioned against the shoulder of the shank the shank is urged outwardly of the handle by the spring, and a spring actuated ball in a socket in the shank and positioned to engage the handle for frictionally retaining the shank in the handle.

References Cited in the file of this patent

UNITED STATES PATENTS

804,679	Searle	Nov. 14, 1905
1,384,330	Moshier	July 12, 1921
1,643,433	Walker	Sept. 27, 1927
1,952,395	Tillyer et al.	Mar. 27, 1934
2,787,178	Maxim	Apr. 2, 1957

FOREIGN PATENTS

239,426	Switzerland	Jan. 16, 1946
610,208	Great Britain	Oct. 13, 1948
924,131	France	Mar. 3, 1947