United States Patent

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[73] Assignee **The United States of America as represented by the Secretary of the Air Force**

[54] **OFFSET SCREWDRIVER WITH INTERCHANGEABLE HEADS**
2 Claims, 3 Drawing Figs.

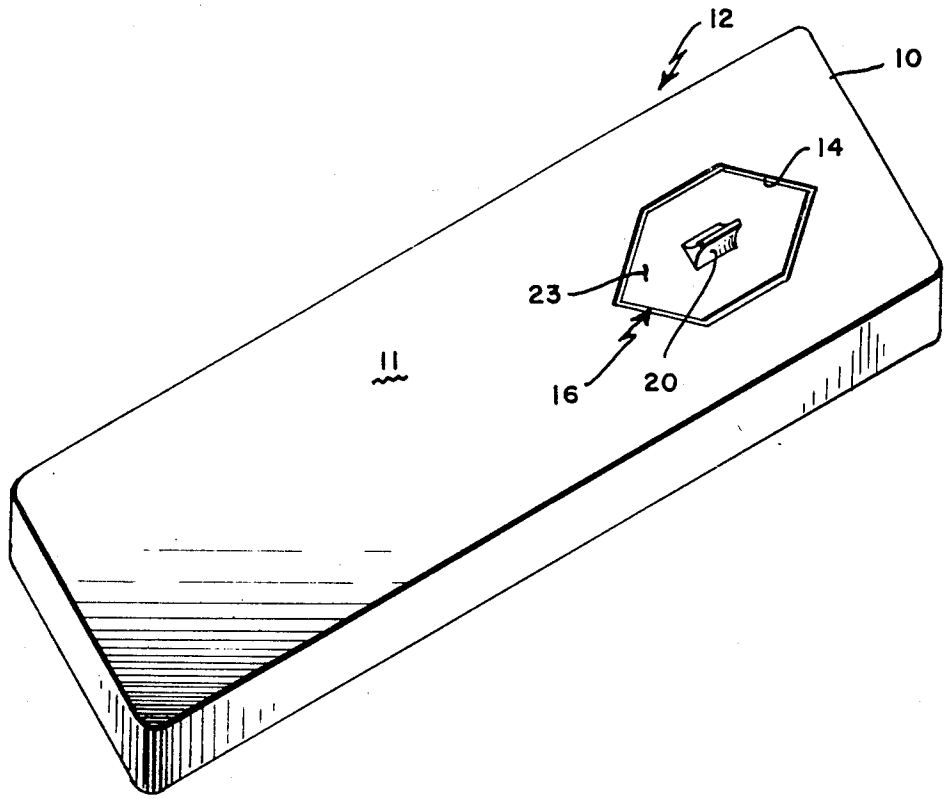
[52] U.S. Cl. 145/50
[51] Int. Cl. B25b 15/02
[50] Field of Search 145/50

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ABSTRACT: A flat bar having an extended flat surface is recessed adjacent one of its ends to receive any one of a plurality of screwdriver heads of complementary configuration. The configuration is preferably a regular hexagon having vertical walls. Some of the walls of the recess are provided with springs which are adapted to mesh with recesses present in all of the walls of each head so that each head is capable of a multiplicity of angular positions. Each head is provided with a differently designed screwdriver tip.



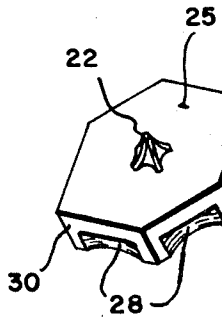


FIG.2

FIG.1

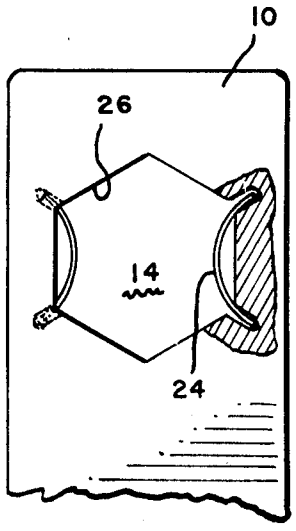


FIG.3

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OFFSET SCREWDRIVER WITH INTERCHANGEABLE HEADS

BACKGROUND OF THE INVENTION

The present invention relates to offset screwdrivers and more particularly to a tool provided with replaceable heads and adaptable for use in many otherwise inaccessible places and close quarter situations.

There is a need, and presently available sources do not provide tools for installing and removing screws in unusually shallow, restricted, and hard to get at places. Often it is necessary to dismantled equipment already assembled to remove or install screws and to provide tightening of screws already in place. Furthermore, whatever tools are available are designed for a specific use in a specific environment and lack adaptability. Varying requirements of design and performance have resulted in the development of an almost infinite variety of head shapes for screws, bolts, nuts and the like, and a cumbersome array of tools is the required possession of each mechanic.

SUMMARY OF THE INVENTION

The object of the present invention is to reduce the inventory of tools required by a mechanic, and provide a device for him which is simple to operate, inexpensive to manufacture, and one which will provide him with access to otherwise inaccessible places.

A further object of the invention is the provision of a simple tool which is in itself capable of coping with any one of the many types of screwheads which he daily encounters, by providing replaceable heads, each head in itself being capable of at least six positions of angular adjustment.

A further object of the invention is the provision of an offset tool which provides leverage not afforded by the ordinary screwdriver, and one which additionally provides the versatility described above. The handle is swung about the screw axis in cranking fashion to drive the screw home.

The tool is designed with a flat surfaced handle which has a recess, preferably hexagonal, located adjacent one of its ends. The walls of the recess are perpendicular to the flat surface of the bar handle, and in at least one of these walls there is installed a spring, adapted to resiliently fit recesses provided in the walls of the heads which are of complementary design and adapted to fit into this recess. The tool is equipped with as many heads and as many screwdriver tip configurations as the mechanic will need. The operating tip arises from a flat surface provided on the head which forms a smooth continuation of the flat surface of the bar handle, and is right angularly offset.

The handle recess and tool heads are described herein and shown in the drawing as hexagonal in shape. Any other regular polygonal configuration can of course be used within the scope of the invention.

These and other advantages, features and objects of the invention will become more apparent from the following description taken in connection with the illustrative embodiment in the accompanying drawing.

DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view of the tool, showing one form of replaceable head in operating position;

FIG. 2 is a perspective view of a head element equipped with one form of operating tool; and

FIG. 3 is a top plan view of the operating end of the device with portions broken away to show the springs which hold each head in place.

DESCRIPTION OF PREFERRED EMBODIMENT

A flat bar **10**, having a smooth surface **11**, serves as a handle for the tool, indicated generally by the numeral **12**.

A recess **14** is provided near one end of the bar, and within the area of its smooth surface.

As shown in the drawing and as described, this recess, and the heads **16** and **18** adapted to be fitted into it, are shown as hexagonal in configuration. Any regular polygonal configuration may be used, as pointed out above, since the object is to provide angular positioning versatility.

The heads **16** and **18** show two tool designs **20** and **22** respectively, rising right angularly from the flat surfaces **23** and **25**, which surfaces form a continuation of the smooth flat surface of the bar **10**. The tool is thus rendered useful in situations where protruding instruments are incapable of being utilized. The tips **20** and **22** are intended to be representative of any number of screwdriver tip designs which modern complex machinery requires.

As shown in FIG. **3** leaf springs **24** are installed in two of the vertical walls **26** of the recess **14**. A spring recess shown at **28** is provided in all of the vertical walls **30** of each of the heads **16** and **18**. It will be seen that the head **16** or **18**, when it is inserted downward into the recess **14**, will be firmly held, by the pressure of the springs **24** acting against the wall of the recesses **28**, and further, that each, if it is of hexagonal configuration, fitting into a hexagonal recess, will be capable of six angular positionings.

Although the invention has been described with reference to a particular embodiment it will be understood to those skilled in the art that the invention is capable of a variety of alternative embodiments within the spirit and scope of the appended claims.

I claim:

1. In an offset screwdriver, a handle comprising a bar having an extended flat surface, a recess adjacent one end of said bar, said recess being of regular polygonal configuration, walls in said recess in perpendicular relationship to the flat surface of said bar, a spring member located in at least one of said walls for exerting pressure on a head element placed therein to maintain said head element firmly seated within said recess, a head for attachment to said bar, said head being of a configuration complementary to said recess and insertable therein in a plurality of angular positions, said head having a flat surface which presents a continuation of the flat surface of said bar, said head having a screwdriver tip extending outwardly therefrom.

2. An offset screwdriver as claimed in claim **1**, wherein said regular polygonal configuration of said recess and said head is a regular hexagon.