United States Patent [19]

Rydberg

[11] **3,892,149**

[45] **July 1, 1975**

[54] **MULTIPLE HAND TOOL**

[76] Inventor: **Allan Rydberg,** 76 Chapman Ave., Warwick, R.I. 02886

[22] Filed: **Jan. 6, 1975**

[21] Appl. No.: **538,509**

[52] **U.S. Cl.** ..... **81/71;** 81/177 E; 145/50 C

[51] **Int. Cl.²** **B25B 13/48**

[58] **Field of Search** ..... 81/177 E, 71; 145/50 C

[56] **References Cited**

UNITED STATES PATENTS

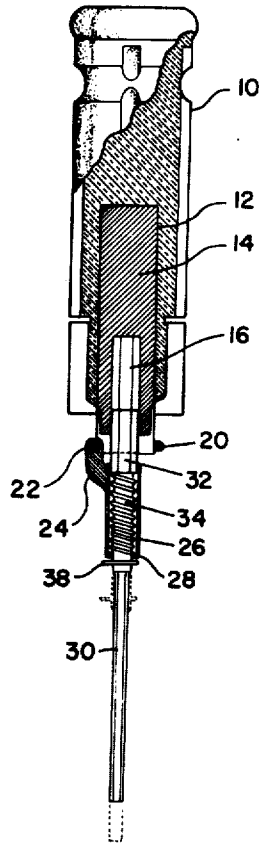
2,786,380	3/1957	Rolland	81/71
3,186,009	6/1965	Simmons	81/177 E

Primary Examiner—James L. Jones, Jr.
Attorney, Agent, or Firm—Max Schwartz

[57] **ABSTRACT**

A hand tool for different sized tools such as Allen head drivers which allows for a selection of the required size on a single tool handle. The cylindrical handle is provided with a central axial socket member mounted in a central axial opening. The socket member has a hexagonal axial opening at the bottom end. A pivot ring is mounted over the bottom edge of the socket member and a plurality of pivot members are mounted on the ring. Each pivot member supports a sleeve holder in which a hexagonal base of a hand tool is positioned. Each tool base is slidable in its sleeve against the action of a coil spring in the sleeve. The cylindrical handle is provided with longitudinal grooves extending from the bottom end in alignment with the pivot members so that the tools nest in their respective grooves in the handle. When a tool size is selected, it is pivoted from its groove downwardly until the base reaches the socket opening. The tool is pulled against the action of the spring to withdraw the tool into the sleeve holder. This allows the sleeve holder to swing directly over the opening in axial alignment therewith. The tool can now be released and pushed into the opening and the hand tool is ready for use. To remove the tool, it is pulled from the socket opening against the action of the spring until it is clear of the socket member. It can now be pivoted upwardly and back into the handle groove.

10 Claims, 3 Drawing Figures



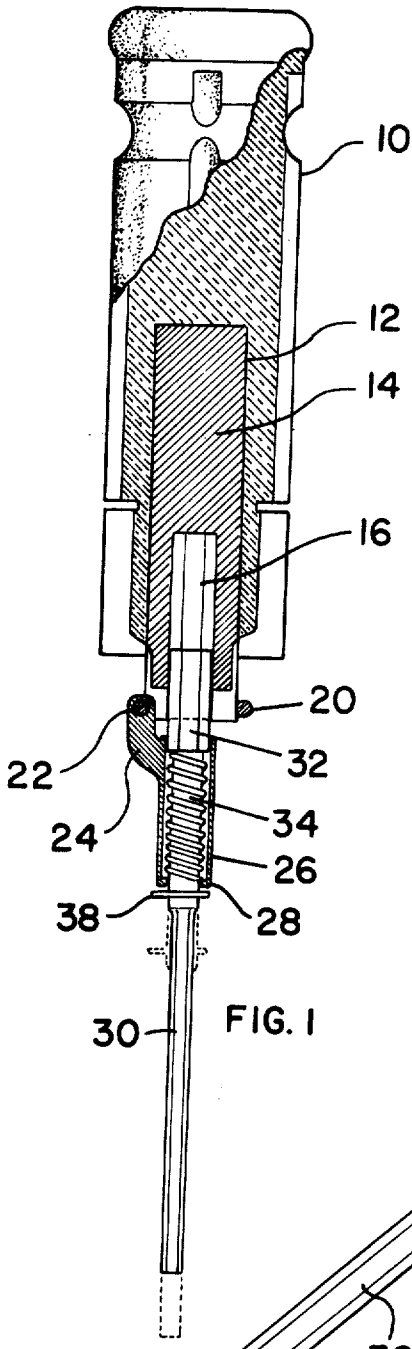


FIG. 1

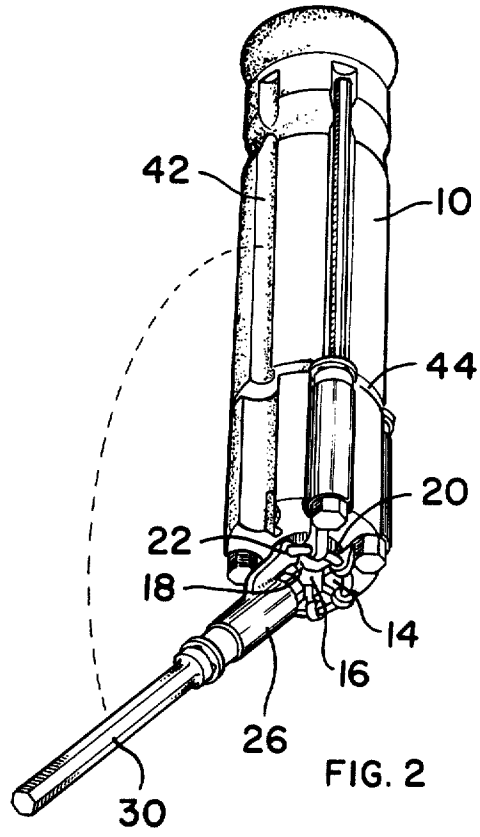


FIG. 2

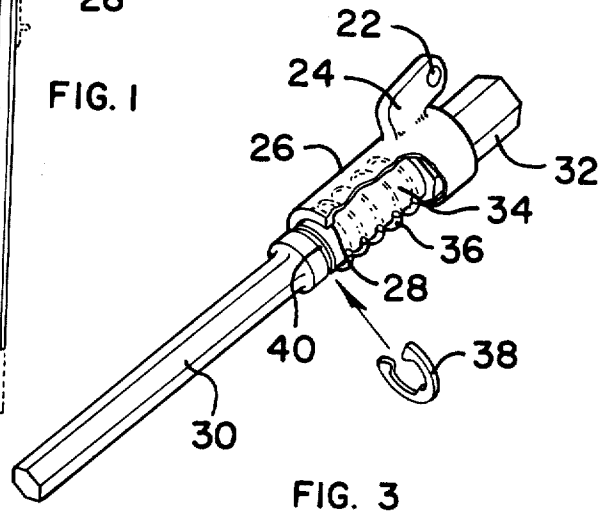


FIG. 3

MULTIPLE HAND TOOL

BACKGROUND OF THE INVENTION

Many factory assemblies require a plurality of screws in different sizes. Consequently, at each assembly, the worker must have a set of tools for the different sizes. Furthermore, the tools must be precise for different sized Allen or Phillips screws. Because of crowded conditions, speeded assembly operations, and human error, tools are often mislaid, borrowed, lost, etc. This makes for delays and inefficiency in the assembly operations.

SUMMARY OF THE INVENTION

The present invention is designed to provide a single hand tool having a plurality of different sized driving tools mounted thereon for easy selection and rapid positioning for use. A cylindrical handle is provided with a central axial socket member having an axial hexagonal opening. A pivot ring is mounted over the bottom edge of the socket member and a plurality of pivot members are mounted on the ring. Each pivot member supports a sleeve holder in which the hexagonal base of an Allen head driving tool is positioned. Each tool base is slidable in its sleeve against the action of a coil spring. Normally, each tool is pivoted up against the handle and rests in a groove in the handle. When a tool size is selected, it is pivotally swung down so that its base approaches the socket opening. The tool is now pulled against the action of the spring into its sleeve holder. This allows the holder to swing over the opening in axial alignment therewith. The tool is now released and pushed into the hexagonal opening. The assembly is now ready for use. To remove the tool the action is reversed. The tool is pulled from the opening until it is clear of the socket, allowing it to be pivoted back toward the handle and into its groove.

DESCRIPTION OF THE DRAWING

In the drawings:

FIG. 1 is a side elevation, partially broken away, of a driver embodying my present invention;

FIG. 2 is a perspective view of the driver showing the positioning of the tools; and

FIG. 3 is a perspective view, partially broken away, of one of the tool assemblies.

DESCRIPTION OF THE INVENTION

The present invention provides for a set of graduated sizes of Allen head driving tools to be irremovably mounted in a single handle, provision being made for selectively positioning any of the tools in operative position.

Referring more in detail to the drawings, the device comprises a cylindrical handle **10** which can be of wood, plastic, or any other suitable material. The handle **10** is provided with a central axial opening **12** extending upwardly into the handle from the bottom end. A steel socket member **14** is tightly mounted in the opening **12** with its lower end extending from the opening, FIG. **1**.

The socket member **14** is provided with a central, axial, hexagonal opening **16** extending upwardly from the bottom end. The bottom end of the socket member **14** is also provided with a slot **18** extending through the wall at each corner of the hexagonal opening **16** (**6** slots). A steel pivot ring **20** is fitted over the bottom end of the socket member **14** and brazed or otherwise locked in place. A pivot member **22** is pivotally mounted on the ring **20** at each slot **18**, the slots permitting free pivotal movement of the pivot members **22**.

An integral supporting rod or arm **24** extends from each pivot member **22** and is attached to the side, adjacent one end, of a hollow, cylindrical, sleeve holder **26**. As can be seen in FIG. **3**, the bottom end of each sleeve holder **26** has a restricted opening forming a shoulder **28**. The device is provided with a plurality (**6** shown) of Allen head driving tools **30** in graduated sizes, each tool having the required hexagonal cross section. Each tool **30** is provided with an enlarged hexagonal base portion **32**. All of the base portions **32** are the same size and adapted to fit tightly into the hexagonal opening **16** in the socket member **14**. Each tool **30** is provided with an intermediate annular portion **34** between the tool end **30** and the base end **32**.

Each base end **32** extends into the sleeve member **26**, and a coil spring **36**, FIG. **3**, surrounds the portion **34** with the upper end of the spring abutting the hexagonal base portion **32** and the lower end abutting the sleeve shoulder **28**. A circle clip **38** extends in a groove **40** below the assembly to hold the parts together.

The outer surface of the handle **10** is provided with a plurality (**6** shown) of grooves **42**. As can be seen in FIG. **2**, when the tools **30** are pivoted up against the handle **10**, each tool will nest in its groove **42**. A small, transverse groove **44** extends around the handle **10** to accommodate the clip **38**.

Now viewing FIGS. **1** and **2**, the handle **10** holds six Allen head driving tools in graduated sizes, each tool being tethered to the handle so that it cannot be removed or lost. The user selects the desired size and swings it away from the handle as shown in FIG. **2**. The tool **30** is now pulled against the action of the spring **36** so that the hexagonal base **32** is withdrawn into the sleeve member **26**. This allows the pivotal movement to continue into the position shown in FIG. **1**, with the sleeve member **26** and tool **30** in axial alignment with the hexagonal opening **16**. The tool **30** is now released and pushed into the opening **16** into the position shown in FIG. **1**. The tool is now ready for use.

To remove the tool the action is reversed. The tool **30** is pulled against the action of the spring **36** until the hexagonal end **32** leaves the opening **16** and is clear of the bottom end of the socket member **14**. The sleeve member **26** and the tool therein can now be pivoted upwardly until the tool **30** nests in its groove **42**.

The basic construction can also be used for other tools. For example, hand twist drills of different sizes can be used instead of the Allen head driver. Even a standard screw driver or a Phillips head screw driver can be used in this manner.

The device thus provides a simple and efficient means of mounting a set of six tools in graduated sizes on a single handle. The tools are nested out of the way, but can be readily swung into use as desired. The selection and positioning of the required size is a simple and easy operation.

Other advantages of the present invention will be readily apparent to a person skilled in the art.

I claim:

1. A multiple hand tool construction comprising a cylindrical handle, a socket member mounted axially in said handle, said socket member having an axial, hex-

agonal opening, a plurality of sleeve holders pivotally mounted around the lower end of said socket member, a tool having a hex base mounted in each sleeve holder, means for resiliently retaining said tools in said holders, whereby said holders may be pivoted into axial alignment with said socket member to insert a tool base into said socket opening, and means for retaining said tools in pivoted position on said handle.

2. A multiple hand tool as in claim 1, wherein said retaining means comprises a plurality of longitudinal grooves along said handle, said tools nesting in said grooves.

3. A multiple hand tool as in claim 1, wherein a pivot ring is mounted on the lower end of said socket member, said sleeve holders being pivotally mounted on said pivot ring.

4. A multiple hand tool as in claim 1, wherein said socket member is provided with spaced slots through its lower end, said sleeve holders being mounted for pivotal movement through said slots.

5. A multiple hand tool as in claim 1, wherein said resilient retaining means includes a coil spring mounted in said sleeves, one end of each spring bearing against a shoulder in said sleeve and the other end of each spring bearing against a shoulder on said tool base.

6. A multiple hand tool as in claim 1, wherein said tools are in graduated sizes for driving different sized Allen heads.

7. A multiple hand tool as in claim 3, wherein said socket member is provided with spaced slots through its lower end, said sleeve holders being mounted for pivotal movement through said slots.

8. A multiple hand tool as in claim 7, wherein said retaining means comprises a plurality of longitudinal grooves along said handle, said tools nesting in said grooves.

9. A multiple hand tool as in claim 7, wherein said resilient means includes a coil spring mounted in said sleeves, one end of each spring bearing against a shoulder in said sleeve and the other end of each spring bearing against a shoulder on said tool base.

10. A multiple hand tool as in claim 9, wherein said retaining means comprises a plurality of longitudinal grooves along said handle, said tools nesting in said grooves.

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