Sept. 12, 1967 J. B. RICKS 3,340,914

RATCHET GRIP

Filed May 10, 1965

FIG. 1

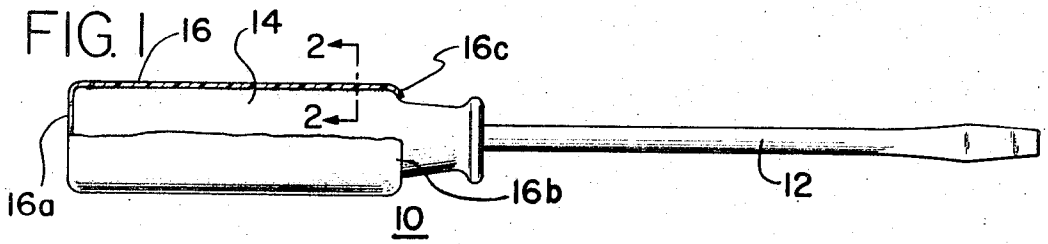


FIG. 3

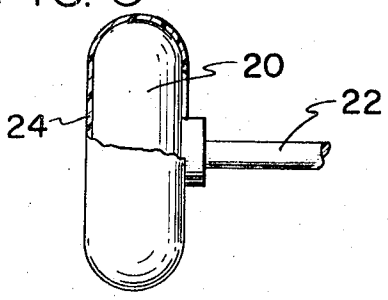


FIG. 2

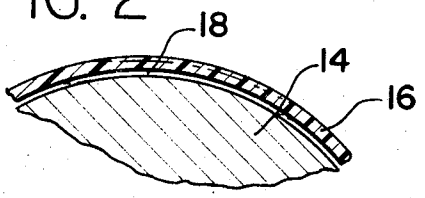


FIG. 7

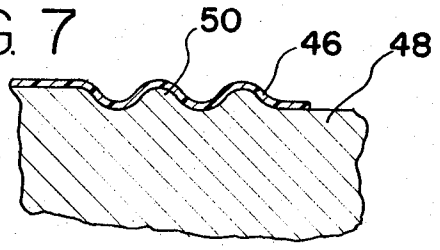


FIG. 4

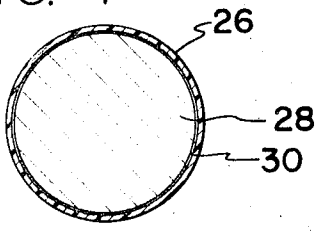


FIG. 8

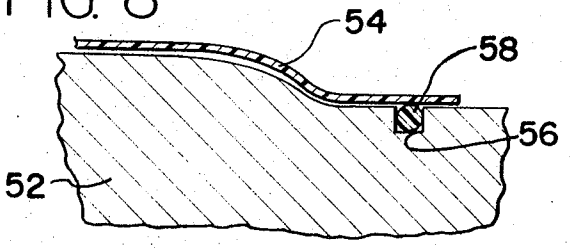


FIG. 5

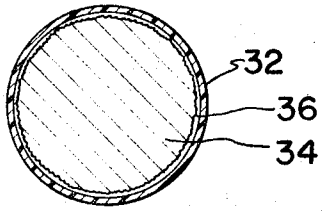
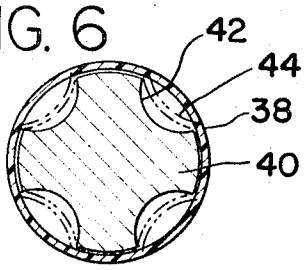


FIG. 6



INVENTOR.
JAMES B. RICKS
BY Mason, Kolehmainen, Rathburn & Wyss.

ATTORNEYS

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RATCHET GRIP

James B. Ricks, 2436 Marcy Ave., Evanston, Ill. 60201

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1 Claim. (Cl. 145—61)

The present invention relates to a new and improved ratchet drive, and, more particularly, to a ratchet drive adapted to be affixed to a standard screwdriver, hand tool, or other mechanism requiring rotation of a handle by the hand of the operator.

More specifically the present device may be attached or applied to any tool or mechanism requiring a rotary hand input by the operator. The invention is particularly well adapted to a conventional screwdriver or socket nut-driver. Moreover the invention is applicable to controls such as the "advance-stop-retract" control of a power lathe. Rotary output from the ratchet of the present invention may conveniently be combined with axial motion by the operator such as a combined push-pull and rotary motion.

Accordingly, one object of the present invention is to provide a new and improved ratchet drive for a hand gripped member.

Another object of the present invention is to provide a new and improved tool handle having a ratchet drive.

Yet a further object of the present invention is to provide a new and improved ratchet drive for a conventional hand tool such as a screwdriver.

Yet a further object of the present invention is to provide a new and improved hand tool having a ratchet drive.

Further objects and advantages of the present invention will become apparent as the following description proceeds and the features of novelty which characterize the invention will be pointed out with particularity in the claims annexed to and forming a part of this specification.

In accordance with these and many other objects of the present invention, there is provided a new and improved ratchet drive for an output member such as a hand tool. The ratchet drive includes a gripped member dimensioned to fit the hand of the operator. A gripping jacket of elastic material is inserted over the gripped member and is formed of a material having a usefully high coefficient of friction with the gripped member. The gripping jacket loosely fits over the gripper member and, in a preferred embodiment, is captive on the gripped member so that it does not become disassembled therefrom during transportation and use.

In a specific embodiment of the present invention, there is provided a hand tool such as a screwdriver having a generally elongated cylindrical jacket closely and loosely fitting over the handle of the tool. The jacket is formed of elastic material having a relatively high coefficient of friction with the material of the handle. An inwardly projecting lip portion of the jacket along its open end holds the jacket assembled to the handle of the screwdriver.

In operation it will be understood that a mere squeezing of the elastic jacket against the gripped member or handle of the screwdriver is effective to provide the necessary drive between the jacket and the handle to rotate the handle. Relaxing the grip will permit a free return of the gripping jacket. Moreover it has been found that the ratchet drive according to the present invention provides comfort to the operator because the grip moves with the hand and affords the equivalent of a smooth ratchet action. No setting of the conventional mechanical ratchet control is required to selectively obtain clockwise or counterclockwise rotation, and the increment of motion may be of any desired amount. This provides a sensitivity of motion lacking in the conventional mechanical ratchet.

For a better understanding of the present invention

reference may be had to the accompanying drawings wherein:

FIG. 1 is a partially broken away view of a screwdriver employing a ratchet drive according to the present invention;

FIG. 2 is a fragmentary cross sectional view of the hand tool of FIG. 1, taken along line 2—2 of FIG. 1, and illustrated to a larger scale than FIG. 1;

FIG. 3 is a fragmentary view, partially broken away, of a tool control employing the improved ratchet drive according to the present invention;

FIGS. 4, 5 and 6 are all cross sectional views of tool handles having ratchet drives according to various additional embodiments of the present invention; and

FIGS. 7 and 8 are fragmentary sectional views of ratchet drives according to yet additional embodiments of the present invention.

Referring now to the embodiment of FIG. 1, there is illustrated a hand tool **10** here shown as a conventional screwdriver employing the improved ratchet drive according to the present invention. The screwdriver **10** has a conventional output member or screwdriver shaft **12** extending from one end of a conventional elongated, generally cylindrical gripped member or handle dimensioned to fit the hand grip of the user, and which may be formed of any suitable material such as wood, plastic, or the like. In accordance with the present invention there is provided a removable gripping jacket **16** formed of elastic material having a relatively high coefficient of friction with the material of the handle **14**. The jacket **16** is closed at one end **16***a* and is open at the other end **16***b*. The open end **16***b* is provided with an inwardly projecting lip portion **16***c* which fits over the end of the handle **14** to hold the jacket assembled on the handle **14**. The jacket **16** may suitably be made of any high friction material such as natural or synthetic rubber or soft plastic.

The operation of the improved hand tool can readily be understood from the illustration of FIG. 2. It will be seen that a slight clearance **18** is provided between the jacket **16** and the handle **14**. Slight gripping pressure on the jacket **16** will depress the jacket to make frictional engagement with the handle **14**, as illustrated in phantom in FIG. 2. Consequently, a twisting of the hand under such depression will cause rotation of the handle **14** in the desired direction. Relaxing of the grip will permit the jacket **16** to return to its expanded condition, as illustrated in solid in FIG. 2, out of engagement with the handle **14**. Under these conditions return rotation of the hand will not be accompanied by a similar rotation of the hand tool.

FIG. 3 illustrates the ratchet drive applied to an output member such as a handle or control of a lathe. As therein illustrated, there is shown a tool control **20** connected to an output shaft **22** and having a loosely but closely fitting jacket **24** of elastic material covering the control member **20**. The jacket **24**, as in the preceding embodiment, is of suitable elastic material having a high coefficient of friction with the material of the control member **20**. Accordingly, the jacket **24** will function as a ratchet drive in similar manner as that described above.

FIGS. 4, 5, and 6 illustrate in cross section various surface conditions which are effective to provide the ratchet drive according to the present invention. Referring more specifically to FIG. 4, there is illustrated a smooth engagement between a gripping jacket **26** and a tool handle **28**. A clearance **30** is provided between the jacket **26** and the handle **28**. It will be seen that the engaging surfaces of the jacket **26** and the handle **28** are smooth, as in the embodiments of FIGS. 1 and 2, and of FIG. 3.

FIG. 5 illustrates an embodiment of the present invention wherein there is provided a gripping jacket **32** on a

tool handle **34**. The tool handle **34** has a serrated or roughened surface **36** so that the depression of the jacket **32** by gripping thereof will be effective to cause the inner surface of the jacket **32** to bite into the handle **34** and provide additional frictional engagement.

FIG. 6 illustrates yet another embodiment of the ratchet drive wherein an elastic jacket **38** is positioned over a tool handle **40** having longitudinally extending ribs **42**. Depression of the jacket **38** by tightening of the hand grip is effective to cause the jacket **38** to bite into the ribs **42**, as illustrated in phantom at **44**, thereby providing increased grip between the jacket **38** and the handle **40**.

FIG. 7 illustrates an embodiment of the present invention wherein a jacket **46** is positioned over a tool control or handle **48** having a plurality of annular ribs **50** to provide increased engagement between the jackets **46** and **48**.

The embodiment of FIG. 8 illustrates a ratchet drive for a control or tool handle wherein means are provided for excluding oil or other unwanted matter from entering upon the internal surfaces thereof. More specifically, there is shown a tool control or hand tool handle **52** provided with a suitable elastic jacket **54** according to the present invention. The handle **52** is provided with an annular groove **56** containing a sealing member **58** between the jacket **54** and handle **52** and thereby preventing oil or other foreign material from entering between the handle **52** and the jacket **54**.

It will be understood, however, that the jacket in the above embodiments may be removed and the gripping surfaces cleaned to restore proper operation if foreign matter enters between the engaging surfaces thereof.

Although the present invention has been described by

reference to several embodiments thereof, it will be apparent that numerous other modifications and embodiments will be devised by those skilled in the art which might fall within the true spirit and scope of the present invention.

What is claimed as new and desired to be secured by Letters Patent of the United States is:

A hand tool such as a screwdriver and the like provided with a generally elongated cylindrical handle having a lower straight portion of reduced diameter at one end; a tool shaft extending from said one end of said handle; a generally elongated cylindrical jacket open at one end and closely and loosely fitting over the other end of said handle defining a ratchet drive, said jacket being formed of elastic material having a high coefficient of friction with the material of said handle, said jacket including an inwardly extending portion of reduced diameter along its open end around said reduced diameter portion of said handle; and sealing means interposed between said reduced diameter portions for excluding foreign matter from entering between the engaging surfaces of said jacket and said handle.

References Cited

UNITED STATES PATENTS

1,668,716	5/1928	Herdman et al.	
2,781,220	2/1957	Zietlow.	
2,876,486	3/1959	Lindstrom	16—110
3,174,788	3/1965	Williams.	
3,189,069	6/1965	Stowell	145—61

WILLIAM FELDMAN, *Primary Examiner.*

R. V. PARKER, *Assistant Examiner.*