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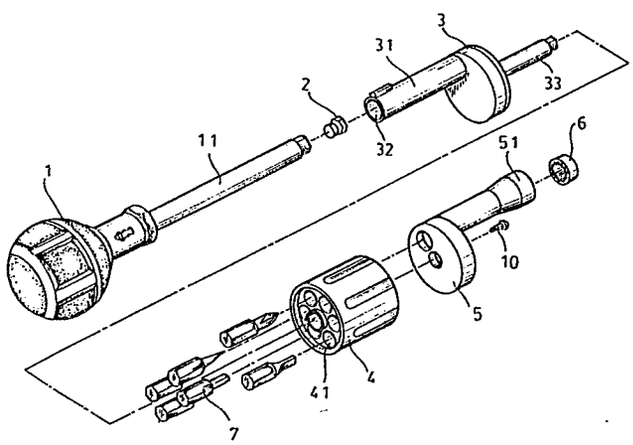
(54) A device for quickly replacing a standard screwdriver tip end.

(57) It is a device for quickly and simple replacing the screwdriver tip end of a screwdriver assembly that has a plurality of screwdriver tip ends for operation convenience.



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A DEVICE FOR QUICKLY REPLACING A STANDARD SCREWDRIVER TIP END

This invention relates to a device which can quickly replace a standard screwdriver tip end repeatedly.

Most of the currently used screwdrivers may be classified into following categories: A screwdriver, of which the handle and its tip end are fixedly connected together; another kind of screwdriver, which comprises a handle and a plurality of tip ends in different shapes and sizes to be mounted on or dismounted from the handle. In the former category, the whole screwdriver has to be discarded upon the tip end being damaged; further, one screwdriver of that category can only be good for operation on one type of screw, and it is rather inconcenient to a user who is working on various types of screw heads, and therefore it is deemed the major drawback of that screwdriver.

In the latter category, the handle of the screwdriver is adaptable to a plurality of tip ends of different shapes and sizes. Upon replacing a tip end, the user may pull out the tip end and insert another tip end of a right size in the handle. That pulling out and inserting in operations are considered being still not convenient to the user.

Further, there is another type of screwdriver, which contains several screwdriver tip ends. The tip ends can be replaced or changed quickly by means of pushing and pulling the handle stem. The tail end of the screwdriver tip end is formed into a shape something like a barbed hook through special process so as to be engaged with a channel on the end of the handle stem

as shown in Fig.1; as a result, the ordinary conventional screwdriver tip ends that were not processed specifically will be unable to adapt to the handle stem. Moreover, since the barbed hook portion (A) on the tip end and the channel (B) on the end of the handle stem as shown in Fig. 1 are rather weak in structure, they are susceptible to breaking upon the handle being often twisted with force during normal operation.

This invention provides a device which can quickly replace a standard screwdriver tip end repeatedly; that device comprises a handle, a magnetic piece, a lower cap, a body portion, an upper cap, and a dodecagon socket. The body portion mounted between the upper and lower caps can be rotated freely so as to facilitate the user to select a screwdriver tip end at any time desired. By means of a sleeve socket on the upper cap, various types and sizes of screwdriver tip ends can be mounted therein, whereby the objects of simplicity and interchangeability of parts are achieved.

The prime object of the present invention is to provide a screwdriver device which is adaptable to various kinds screwdriver tip ends in terms of shapes and sizes so as to simplify the parts, and to easily and quickly replace the tip end desired.

An embodiment of this invention is described by way of examples, with reference to the drawings in which:

Fig. 1 illustrates a conventional screwdriver, showing the tip end being specially treated, and the handle stem are to be engaged together.

Fig. 2 is a perspective view of the present invention after being disassembled.

Fig. 3 is a perspective view of the present invention,

showing the operation mode No.1.

Fig. 4 is a perspective view of the present invention, showing the operation mode No.2.

Fig. 5 is a sectional view of the present invention, showing the operation mode No.1.

Fig. 6 is a sectional view of the present invention, showing the operation mode No.2.

Referring to Fig. 2, there is shown a disassembled view of the present invention, which comprises a handle 1, a magnetic piece 2, a lower cap 3, a body portion 4, an upper cap 5, and a dodecagon socket 6. The body portion 4 may be made of a transparent material. Upon the screwdriver tip ends 7 being loaded in the holes 41, they can be seen clearly from the outside so as to facilitate a user to select a given screwdriver tip end 7 required.

Before assembling the present invention, fixedly mount the magnetic piece 2 in the end of the handle stem 11, and mount the dodecagon socket 6 in the sleeve socket 51 in a rotatable manner and rivet the edge portion of the socket 51 to prevent it from coming off. During assembling, mount the handle stem 11 through the sleeve hole 32 of sleeve 31, and then assemble the body portion 4 and the upper cap 5, etc. in correct sequence , and lock it in place with a screw 10. In that case, the body portion 4 can rotate around the center shaft 33 of the lower cap 3 so as to let the handle stem 11 push or change a screwdriver tip end 7 through any hole 41 of the body portion 4 quickly. The operation theory of pushing or changing the screwdriver tip end is to be described in the following paragraph. After the device being assembled as shown in Figs. 3 and 4, push the handle 1 forwards as shown in Fig. 3 to drive a screwdriver

tip end 7 out of the sleeve socket so as to be ready for operation. Fig. 4 shows the handle 1 being pulled backwards and then rotating the body portion 4 so as to change another screwdriver tip end desired.

Referring to Figs.5 and 6, there is shown the theory of how to push or change a screwdriver tip end quickly. As shown in Fig.5, one screwdriver tip end 7 has been pushed out after the handle stem 11 being pushed forwards as shown with an arrow. Since the screwdriver tip end 7 is attracted with the magnetic piece 2 and fixed with the dodecagon socket 6, the tip end 7 will rotate upon the handle stem 11 being rotated; the dodecagon socket 6 that is used for connecting the handle stem 11 and the screwdriver tip end 7 will also be rotated together with the handle stem synchronously. Since the screwdriver tip ends 7 are all designed and made into a uniform specifications or standards; they can be replaced, in case of being damaged, any time by pulling out the damaged one and replacing with a new one; and this is a prime feature of the present invention.

Referring to Fig.6, there is shown, with an arrow, the handle stem 11 being pulled backwards and being stopped on the bottom of the body portion 4; then, the screwdriver tip end 7 will be stored back in one of the holes 41 of the body portion 4. The user may further rotate the body portion 4 to select a screwdriver tip end 7 desired, and then push it out as shown in Fig.5 for intended operation.

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CLAIMS

1. A device for quickly replacing a standard screwdriver tip end, comprising a handle, a magnetic piece, a lower cap, an upper cap, a body portion and a dodecagon socket; and said magnetic piece being embeded in the end of the stem of said handle; and said body portion being mounted between said lower cap and said upper cap in a rotatable manner; and said dodecagon socket being mounted in the sleeve socket on said upper cap in a rotatable manner; and by means of said dodecagon socket, said handle and said screwdriver tip end being coupled together; and during operation said screwdriver tip end and said handle rotating synchronously; and also by means of said dodecagon socket, a standard screwdriver tip end being mounted or dismounted so as to facilitate replacing said screwdriver tip end if necessary.

2. A device for quickly replacing a standard screwdriver tip end, and arranged substantially as herein described with reference to any of the figures of the drawings.

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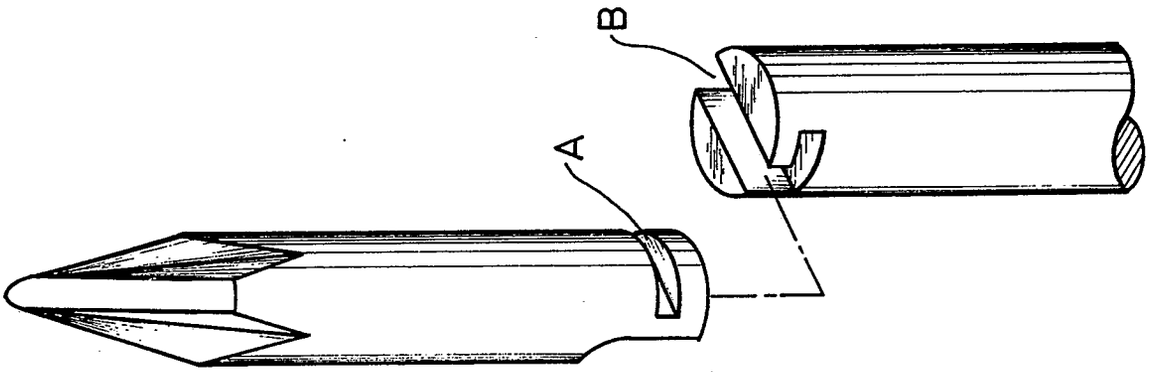

FIG.1

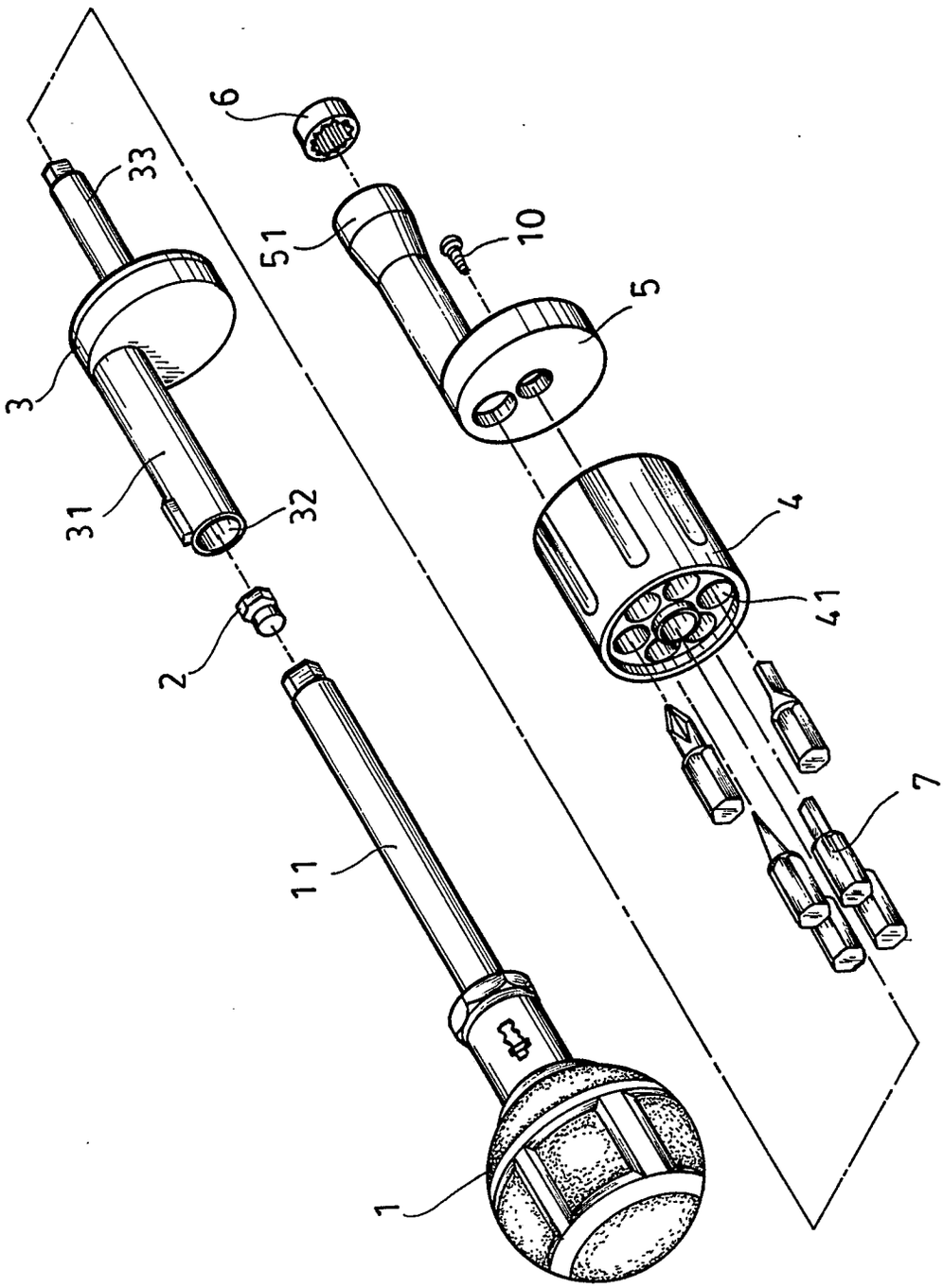

FIG.2

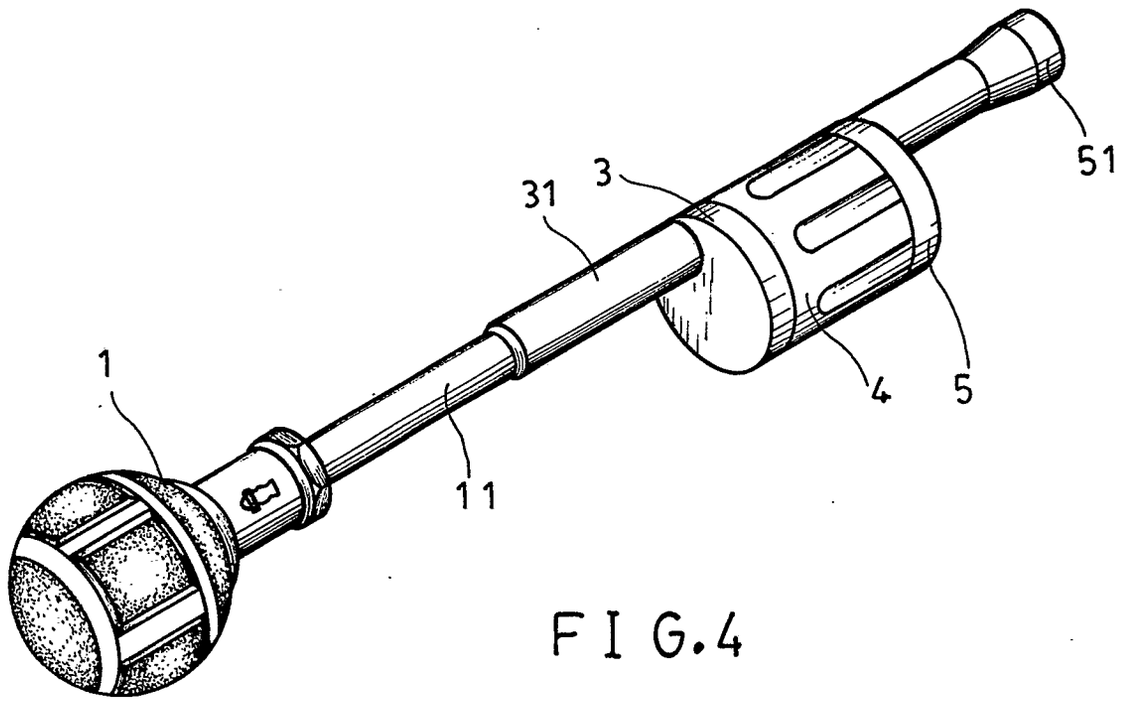

FIG.4

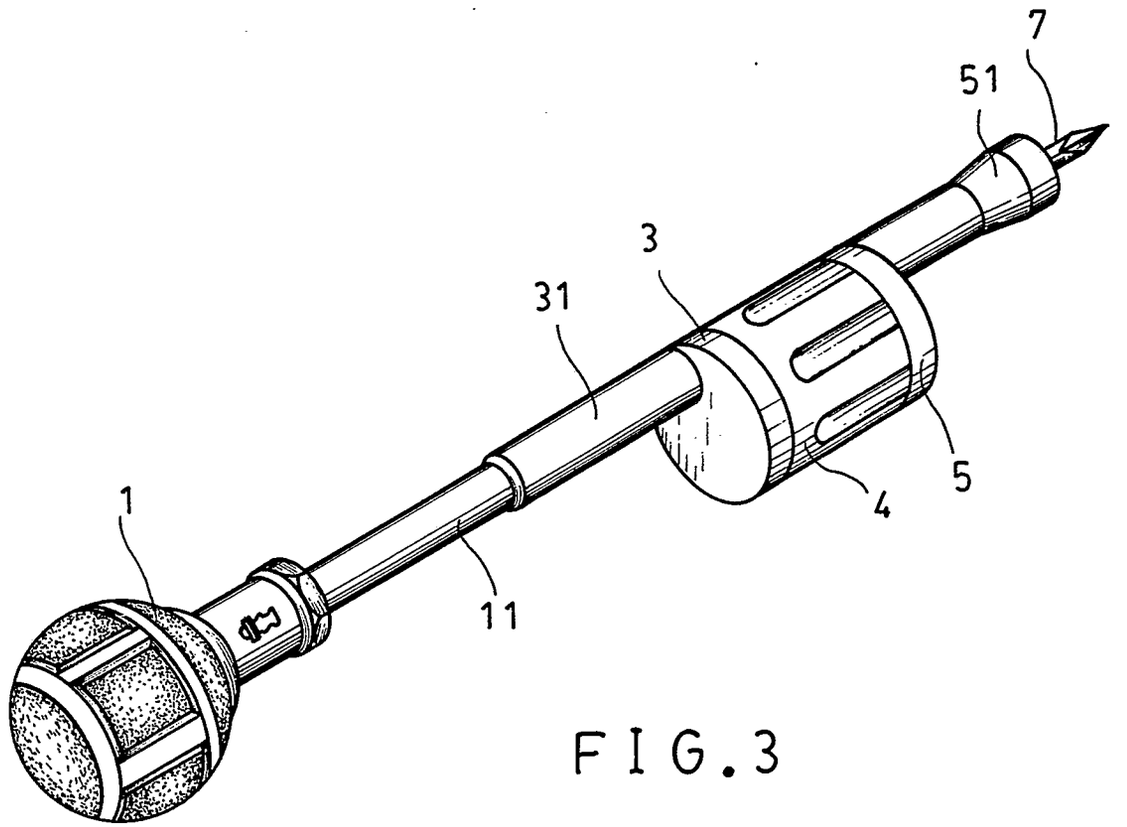

FIG.3

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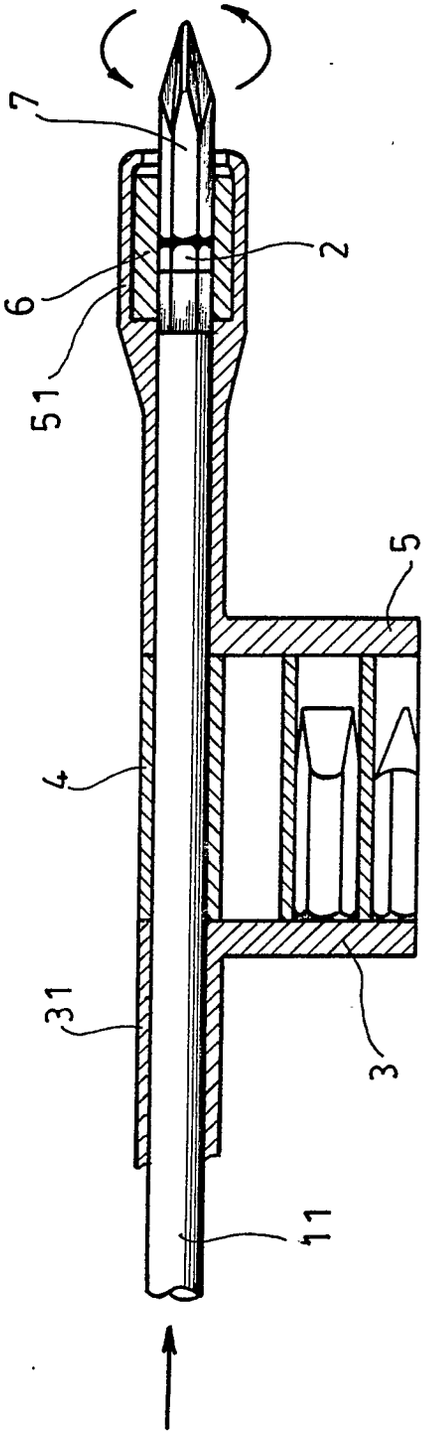

FIG.5

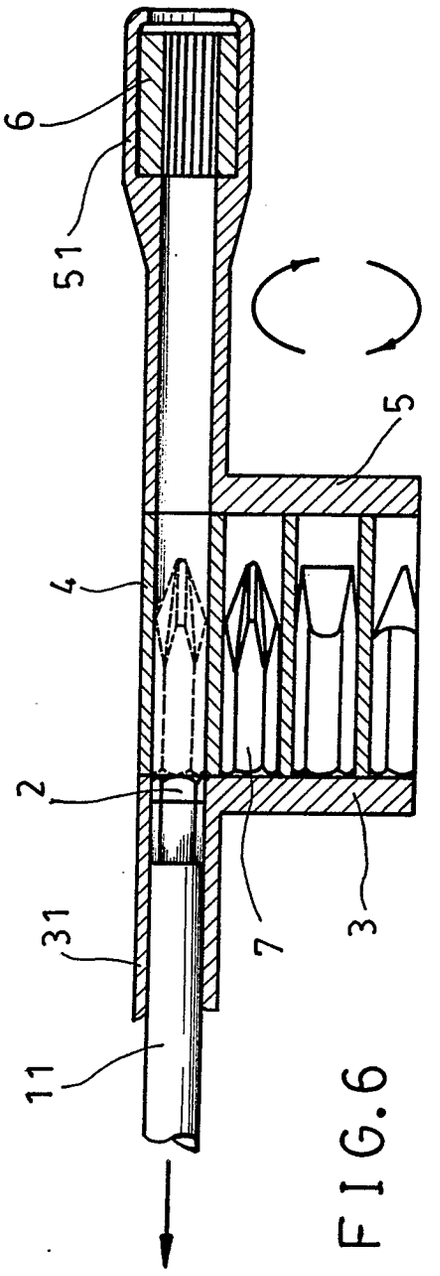

FIG.6

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EUROPEAN SEARCH REPORT

0247263
Application number

DOCUMENTS CONSIDERED TO BE RELEVANT

EP 86307852.3

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
Y	EP - A1 - 0 152 169 (GRAHAM) * Fig. 1-3 * --	1	B 25 F 1/04 B 25 G 1/08 B 25 B 15/00
Y	US - A - 2 550 775 (F.G.CLARK) * Fig. 1,2 * --	1	
A	US - A - 532 823 (H.F.SANGER) * Fig. 2 * ----	1	

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

B 25 F 1/00
B 25 G 1/00
B 25 B 15/00

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
VIENNA	07-09-1987	BENCZE

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
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E : earlier patent document, but published on, or after the filing date
D : document cited in the application
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