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(54) Motor holder for hand-tool.

(57) The invention relates to a holder, in particular a belt-suspendible, constructionally simple and hence light holder for an electric motor for driving a hand tool via a flexible shaft. According to the invention, the holder, in particular for a high-speed motor (8), consists of two members, viz. a member (1) which is mounted on a belt in a fixed position and a pivoting member (2) in which the motor (8) with the motor shaft can be fixed substantially horizontally, while the pivoting member (2), initiated by the flexible shaft, can pivot relative to the fixed member (1) with some friction. Thus, the flexible drive shaft is prevented as much as possible from being bent too sharply during work requiring the tool to be moved far from the motor.

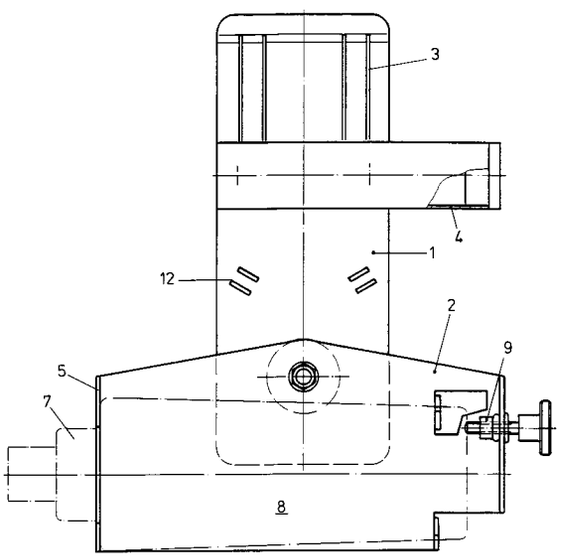

FIG.1

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The invention relates to a holder, in particular a belt-suspendible holder for an electric motor for driving a hand tool.

In the mending of window frames (removing parts in bad repair), use is often made of rotary hand tools, such as cutters and the like. In particular, the tool is driven via a flexible shaft by a high-speed motor (24,000 rpm).

An objection experienced in practice is that when the flexible shaft is bent too sharply, unacceptable heat generation develops between the rotating drive shaft and the stationary jacket. Normally, the motor is carried in a kind of casing on a belt with the drive shaft in vertical, upward or downward, orientation, as shown for instance in GB patent specification 1,075,857.

During work, the flexible shaft is sometimes unconsciously pulled too tautly into a bend, giving rise to the above-mentioned objection of great heat generation. Avoiding the flexible shaft being pulled too taut by making the shaft longer has the inherent disadvantage that accidents may occur when the shaft is caught behind some object or other, in particular when work in done in limited spaces.

Similar problems arise with a motor suspension as described in GB patent specification 189,576, where a motor which drives a hand tool via a flexible shaft is attached to a belt carried across the shoulder. Owing to the flexibility of the shoulder belt, the driving motor may swing in an uncontrolled manner.

The present invention concerns a belt-suspendible holder of the subject type, in which the above-mentioned objections have been avoided.

According to the invention, the holder, particularly one for a high-speed motor, consists of two members, viz. a member which is mounted on a belt in a fixed position, to be named the carrier, and a pivoting member in which the motor with the motor shaft can be fixed substantially horizontally, to be named the motor holder, while the pivoting member, initiated by swinging motions of the flexible shaft, can pivot with some friction relative to the fixed member.

When using the motor holder according to the invention, with a certain minimum length of the flexible shaft, a large working area extending in lateral, forward, upward and downward direction relative to the user can be covered without undue bending of the flexible shaft.

In further elaboration of the invention, the fixed member may be fitted with two end stops between which the pivoting member is movable.

To provide some frictional braking action when the two members of the holder pivot relative to each other, the two members may be interconnected by a pivot and an intermediate ring of appropriate material, so that upon bending of the flexible drive shaft, the pivoting member pivots relative to the fixed member before the bend in the shaft becomes unacceptably sharp.

For safe storage of the tool, an insertion tube may be mounted on the fixed member of the holder above the pivoting member.

It is observed that it is known per se from U.S. patent specification 3,219,129 to pivotally mount a portable motor which drives tools via a flexible shaft. However, this concerns a combustion engine for a rotary mower or the like, which is carried on the back and can be pivoted on a vertical shaft.

To clarify the invention, one embodiment of the holder for an electric motor for hand tools will now be described, by way of example, with reference to the accompanying drawings, in which:

Fig. 1 is a front view of the holder;

Fig. 2 is a side elevation; and

Fig. 3 is a top plan view of the holder.

Referring to the drawings, the tool motor holder comprises a fixed carrier 1 and a motor holder 2 which can be pivoted relative thereto, both made of plate material. Formed in the fixed carrier 1 are lateral apertures 3 for receiving a belt (not shown). Further, a tube 4 is mounted on the carrier 1.

The shape of the pivoting motor holder 2 depends on the configuration of the motor to be mounted therein and, in the embodiment shown, has an end 5 bent over at right angles, having a passage 6 for the front end 7 of an electric motor 8, which, in the case of a cutter for mending woodwork, is typically a high-speed motor. Opposite the flanged end 5, the motor holder 2 comprises an axial clamping screw 9 which can engage with the rear end of the motor housing, thereby retaining it against the bent end 5.

The members 1 and 2 of the tool motor holder are interconnected by a pivot 10 with interposition of a sliding disc or washer 11 generating a certain braking friction during pivotal motion of the motor holder 2, in such a manner that when unloaded, the motor holder 2 retains any pivotal position relative to the carrier 1 and does not change its pivotal position until a pivotal force is exerted, generated by a flexible shaft on the motor 8 being pulled into a sharp bend.

Pivotal motions of the motor holder 2 on opposite sides of the horizontal position shown are limited by two end stops 12.

It will be clear that the invention is not limited to the embodiment described, but that various modifications are conceivable without departing from the scope of the invention. Thus, adaptations to the shape of the motor to be carried are possible without departing from the essence of the invention, i.e., a constructionally simple and hence light tool motor holder preventing as much as possible the flexible drive shaft from being bent too sharply

during work requiring the tool to be moved far from the motor.

Claims

1. A holder, in particular a belt-suspendible holder for an electric motor for driving a hand tool via a flexible shaft, characterized in that the holder, in particular for a high-speed motor (8), consists of two members, viz. a member (1) which is mounted on a belt in a fixed position and a pivoting member (2) in which the motor (8) with the motor shaft can be fixed substantially horizontally, while the pivoting member (2), initiated by the flexible shaft, can pivot relative to the fixed member (1) with some friction.

2. A holder according to claim 1, characterized in that the fixed member (1) is fitted with two end stops (12), between which the pivoting member (2) is movable.

3. A holder according to claim 1 or 2, characterized in that the two members (1,2) are interconnected by a pivot (10) and a washer (11) of appropriate material, in such a manner that upon bending of the flexible drive shaft (13) the pivoting member (2) pivots relative to the fixed member (1) before the bend in the shaft becomes unacceptably sharp.

4. A holder according to any one of the preceding claims, characterized in that an insertion tube (4) for tools is mounted on the fixed member (1) above the pivoting member (2).

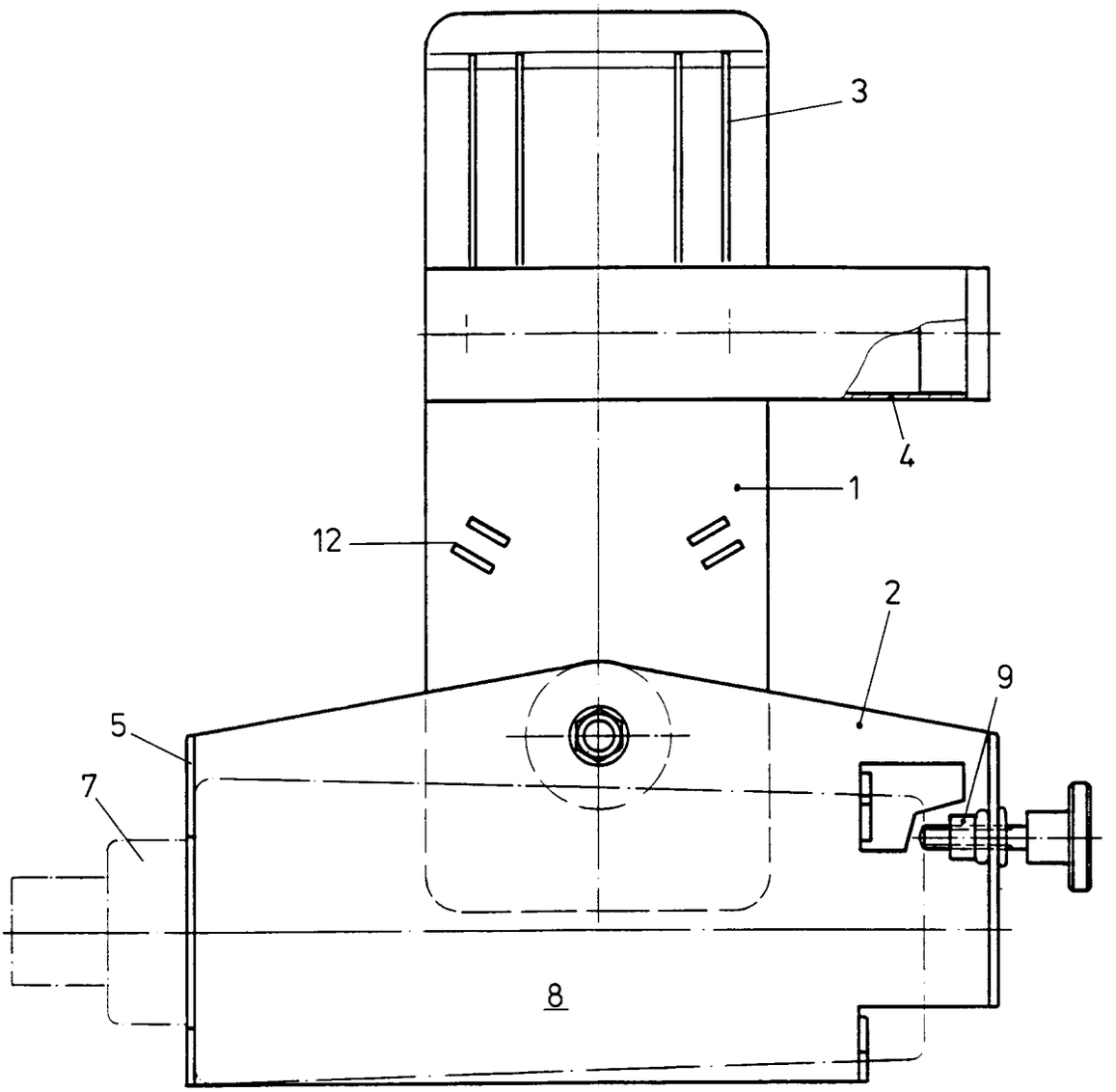

FIG.1

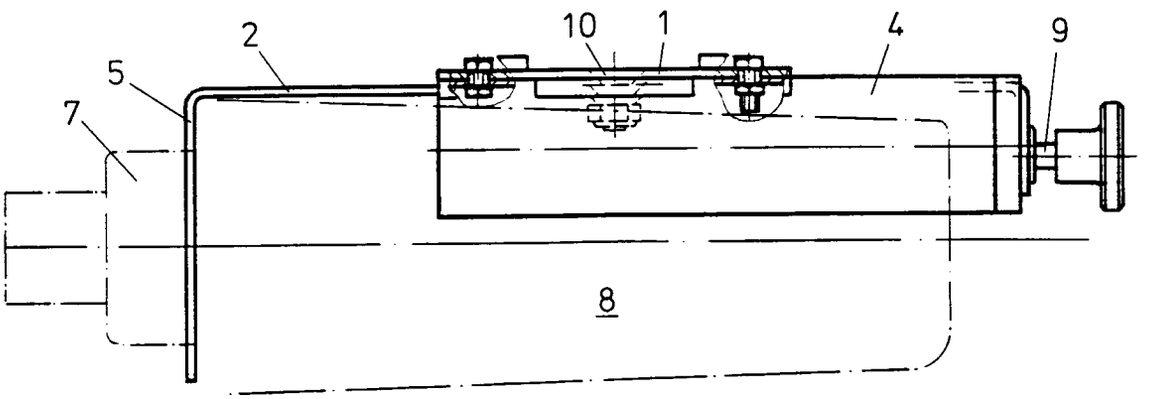

FIG.3

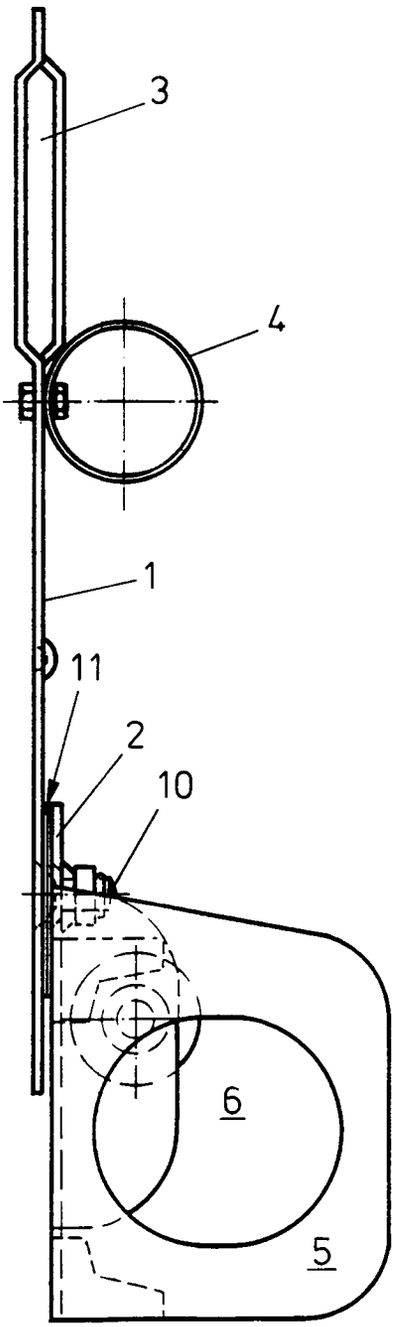

FIG. 2

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 92 20 0287

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
Y	US-A-4 106 679 (HILLINGER) * column 2, line 52 - column 3, line 36; figures 1,3 *	1-3	B23B45/02 B25F5/00
D,Y	GB-A-1 075 857 (BURNDEPT LIMITED) * the whole document *	1-3	
A	CH-A-666 640 (SCHWARZ) * abstract *	2	
A	DE-U-8 704 878 (MARKUS TRÜMPY ZÜRICH) * figure 1 *	4	

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

B25F
B25H
B23B
B23D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	08 APRIL 1992	CARMICHAEL D.G.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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