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Description

The invention relates to 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-A-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 is done in limited spaces.

Similar problems arise with a motor suspension as described in GB-A-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 type disclosed in the preamble of claim 1 (US-A-3 219 129).

According to the invention, the holder, particularly one for a high-speed motor, has the features disclosed in the characterizing part of claim 1.

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 carrier member may be fitted with two end stops between which the pivoting holder 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.-A-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 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 belt-suspendible holder for an electric motor for driving a hand tool via a flexible shaft, comprising a plate-shaped carrier member for suspension from a belt and a motor holder member, pivotly connected to the carrier member, characterized in that said carrier member (1) is mountable on a belt in a fixed position and said motor holder member (2) has a plate-shaped part substantially parallel to and pivotally connected (10) to the carrier member (1) in frictional engagement therewith, said holder member (2) having means (5, 9) extending from the plate-shaped part in which the motor (8) can be fixed with the motor shaft in a substantially horizontal position and parallel to the plate-shaped part thereof, the frictional engagement between the carrier member (1) and the holder member (2) being such that when unloaded the holder member (2) retains any pivotal position relative to the carrier member (1) until a pivotal force is exerted thereon by the flexible shaft of the motor (8). 5 10 15 20
2. A holder according to claim 1, characterized in that the fixed carrier member (1) is fitted with two end stops (12), between which the pivoting holder member (2) is movable. 25
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 holder member (2) pivots relative to the fixed carrier member (1) before the bend in the shaft becomes unacceptably sharp. 30 35
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 carrier member (1) above the pivoting holder member (2). 40 45

Patentansprüche

1. An einem Gurt aufhängbarer Halter für einen Elektromotor zum Antrieb eines Handgeräts über eine biegsame Welle, welches ein plattenförmiges Trägerteil zur Aufhängung an einem Gurt und einen Motorhalter umfaßt, der an dem Trägerteil schwenkbar angebracht ist, **dadurch gekennzeichnet**, daß das Trägerteil (1) an einem Gurt in einer festen Lage anbringbar ist und daß das Motorhalterteil (2) ein plattenförmiges Teil hat, welches im wesentlichen parallel zu dem Träger- 50 55

element (1) mit diesem schwenkbar in Reibeingriff stehend verbunden ist, daß das Trägerteil (2) Mittel (5,9) aufweist, die sich von dem plattenförmigen Teil, in dem der Motor (8) mit der Motorwelle in einer im wesentlichen horizontalen Lage und parallel zu dem plattenförmigen Teil befestigt werden kann, erstrecken, und daß der Reibeingriff zwischen dem Trägerteil (1) und dem Halterteil (2) so groß ist, daß das Halterteil (2) im unbelasteten Zustand jedwede Schwenkstellung bezüglich des Trägerteils (1) behält, bis eine Schwenkkraft auf jenes durch die biegsame Welle des Motors (8) ausgeübt wird.

2. Halter nach Anspruch 2, **dadurch gekennzeichnet**, daß das feste Trägerteil (1) mit zwei Endanschlägen (12) ausgestattet ist, zwischen denen das schwenkbare Halterteil (2) beweglich ist.
3. Halter nach Anspruch 1 oder 2, **dadurch gekennzeichnet**, daß die beiden Teile (1,2) durch eine Schwenkachse (10) und eine Scheibe (11) geeigneten Materials derart miteinander verbunden sind, daß beim Biegen der biegsamen Antriebswelle (13) das schwenkbare Halterteil (2) bezüglich des feststehenden Trägerteils schwenkt, bevor die Biegung in der Welle unannehmbar scharf wird.
4. Halter nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet**, daß ein Einsatzrohr (4) für Werkzeuge über dem schwenkbaren Halterteil (2) an dem feststehenden Trägerteil (1) angebracht ist.

Revendications

1. Support suspendu par courroie, pour un moteur électrique servant à entraîner un outil manuel par l'intermédiaire d'un arbre flexible, comportant un organe de support en forme de plaque, destiné à être suspendu à une courroie, et un organe portant le moteur relié à pivotement à l'organe de support, caractérisé en ce que ledit organe de support (1) est monté en position fixe sur une courroie, et ledit organe (2) portant le moteur présente une partie en forme de plaque, essentiellement parallèle à l'organe de support (1) et reliée à pivotement (10) à celui-ci par contact à friction, ledit organe porteur (2) présentant des moyens (5, 9) en saillie par rapport à la partie en forme de plaque, dans lesquels le moteur (8) peut être fixé avec l'arbre du moteur en position 50 55

essentiellement horizontale et parallèle à sa partie en forme de plaque, le contact à friction entre l'organe de support (1) et l'organe porteur (2) étant tel que lorsqu'il n'est pas en charge, l'organe porteur (2) conserve toute position de pivotement par rapport à l'organe de support (1) jusqu'à ce qu'une force de pivotement soit exercée sur lui par l'arbre flexible du moteur (8).

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2. Support selon la revendication 1, caractérisé en ce que l'organe fixe de support (1) est équipé de deux arrêts d'extrémité (12) entre lesquels l'organe porteur pivotant (2) peut se déplacer.

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3. Support selon la revendication 1 ou 2, caractérisé en ce que les deux organes (1, 2) sont reliés par un pivot (10) et une rondelle (11) en matériau approprié, de telle sorte que lorsque l'arbre flexible d'entraînement (13) est courbé, l'organe porteur (2) pivote par rapport à l'organe de support (1) avant que la flexion de l'arbre devienne inacceptablement accusée.

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4. Support selon l'une quelconque des revendications précédentes, caractérisé en ce qu'un tube d'insertion (4) pour outils est monté sur l'organe fixe de support (1), au-dessus de l'organe porteur (2).

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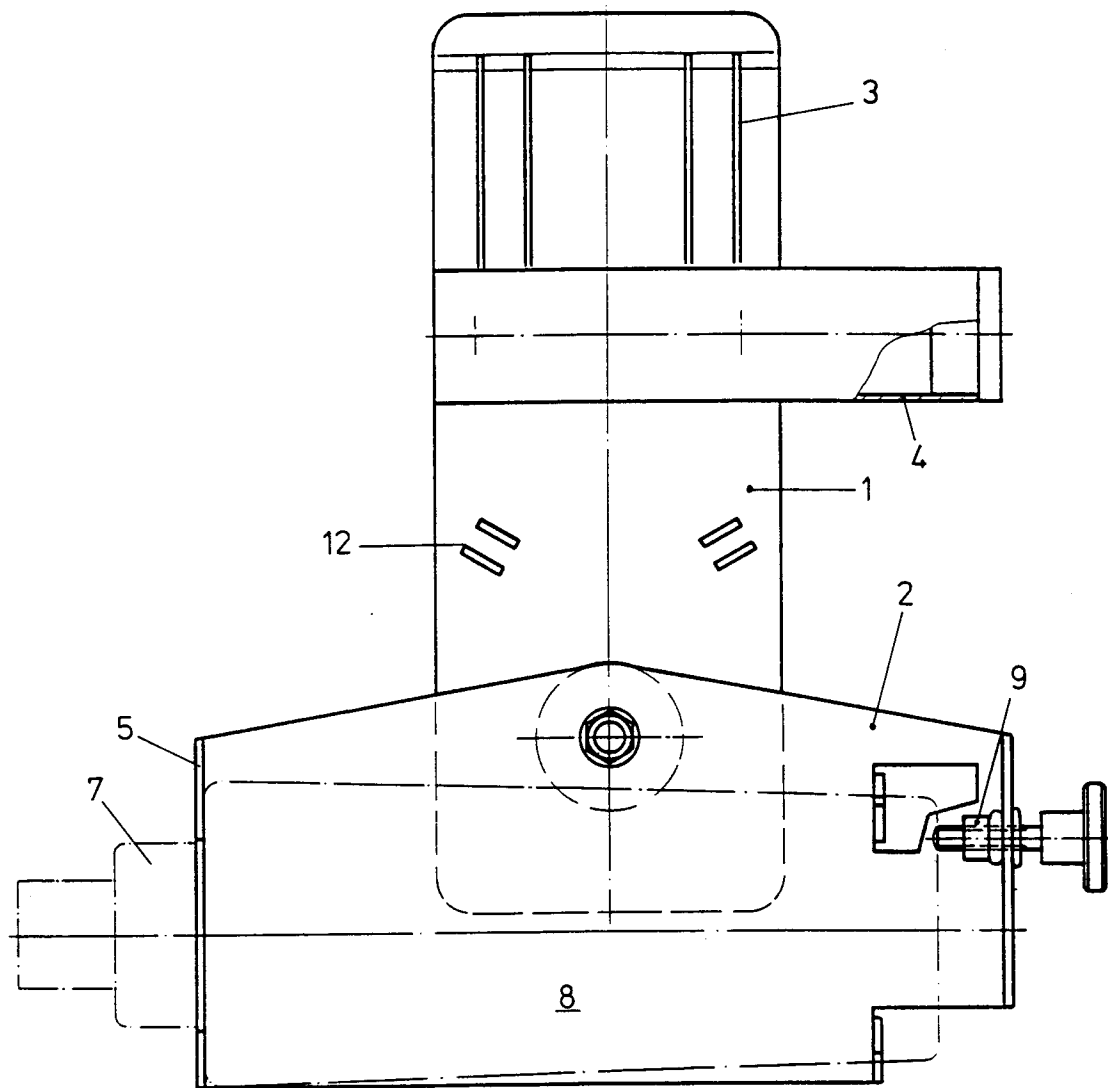


FIG.1

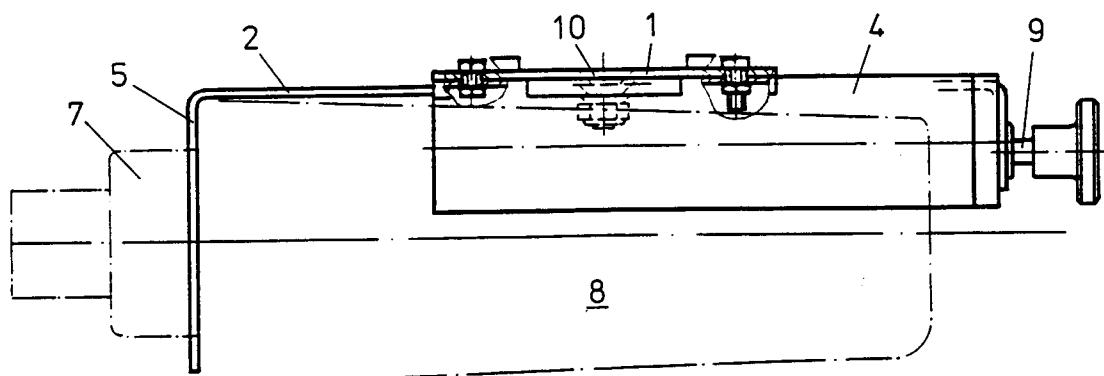


FIG.3

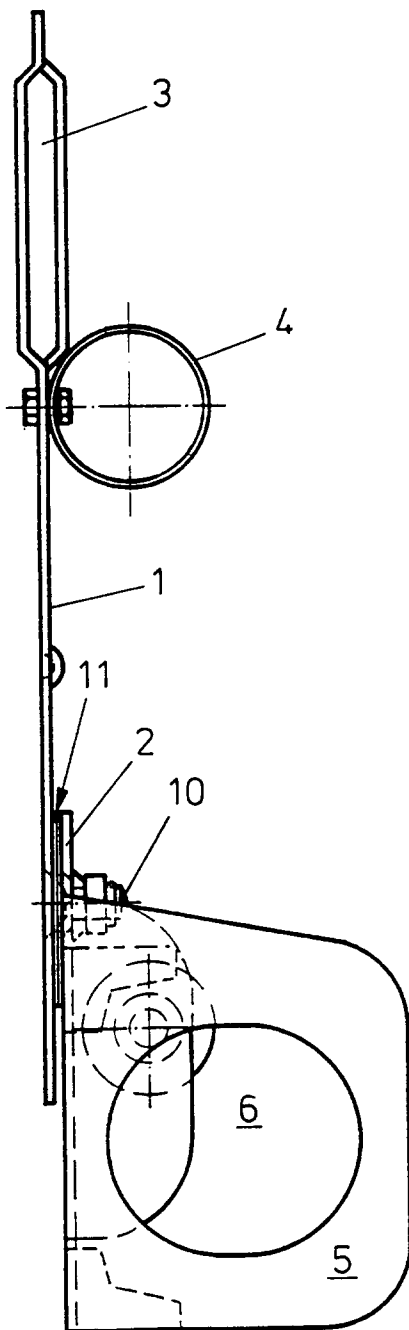


FIG.2