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(54) **Sun blind power unit with integral hand crank.**

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DE-C- 433 708
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Description

The invention relates to a sun blind power unit with integral hand crank provided with a manually actuated handle inserted in a crank. Such blinds, however, are disadvantageous, because they cannot be operated to automatically open and close.

Therefore, the object underlying the invention is to provide an improved sun blind having a system which apart from permitting conventional opening and closing, the blind comprises automatic electric actuation by the actuation of separate push buttons for opening and closing the blind. In this connection the device according to the invention should also be retrofitted without having to modify the blind in any way. Fitting and operating the power unit should also be straight-forward and reduced to merely essential procedures.

This object will be achieved by a system for automatic electric actuation of the blind by the action of separate push buttons for opening and closing the blind by means of a motor located externally on the blind with the hand crank positioned at the same of the two longitudinal ends of the blind.

Other advantages of the invention reside in that a limit switch is located near the close stop of the blind actuating a separate electric circuit to permit gentle closing in order to protect both the fabric of the blind and its constructive components, including the motor, from excessive forces which could otherwise result in damages.

Moreover, when the blind is opened the limit switch ensures that actuating the power unit longer than necessary will not result in the blind winding in the opposite direction. As soon as the position of maximum opening is attained further rotation of the blind take-up roller is automatically prevented.

Further details of the invention can be gathered from the following description in connection with the drawings in which two embodiments of the invention are shown.

- Fig. 1 is a longitudinal section of the right end of the housing of the sun blind power unit including the motor for driving the blind, constructed in accordance with the invention,
- Fig. 2 is a longitudinal section of the right end of the sun blind power unit without motor but only with a hand crank, constructed in an usual and known manner,
- Fig. 3 is an end cross-section view of the housing in accordance with the embodiment of the invention shown by Figure 1.

The complete sun blind power unit as shown in Fig. 1 is made up of an opening limit switch, a

differential gear, a manual crank, a motor, a closing limit switch and a control unit.

The sequence in which these components function is clearer to understand by describing the movements involved in opening and closing the blind.

In order to automatically open the blind the operator presses the push button 1 and continues to hold it pressed as long as opening is proceeding. Should he release the push button, the blind will be held partially open. Rotation of the motor shaft 2 is imparted by the coupling 3 keyed to the end of the pinion gear 4 to rotate the three planetary gears 5 about the pinion, thus rotating also the flange 6 which is part of the limit switch by it being also geared to the three planetary gears in movement.

At this point the limit switch for opening located inside the tubular take-up-roller of the blind comes into action to permit opening of the blind.

If opening of the blind will not be accomplished by motor action but manually the operator actuates the handle supplied in the kit, inserted in the lug 7 of the crank 8. This is used to turn the helical gear which causes, the reason of its coupling to the square hole in drum 9, rotation of the flange 6 which is part of the limit switch.

The planetary gears 5 rotating about the pinion gear 4 which remains stopped due to being rigidly secured to the motor shaft 2, render rotation impossible because of the coupling of the idle worm gear of the motor 18 itself.

In both cases of opening by motor action or by cranking the limit switch prevents rewinding of the blind in the opposite direction when the arms of the blind are fully open.

Opening, in every case requires the safety device to be disinserted by manually actuating the lever located externally on the front of the veranda.

The motor 18 is secured by the screws 19 to the hood 15 which is secured to the veranda by screws 16 screwed into the seal insert 17 provided in the side enclosures 24 of the veranda.

The closing procedure can also be accomplished by motor action and manually. In order to close the opened blind by motor action the operator presses the corresponding push button 1 and continues to hold it pressed as long as closing is proceeding. Should he release the push button, the blind will halt partially closed.

The interaction of the components of the system is identical to that already described in the opening phase. Merely the sense of direction is the opposite. Near to the fully closed position the edge of the blind actuates the limit switch 23.

The electric circuit contained in the control unit reduces the voltage of the power supply from 12V DC to approximately 8V DC, thus reducing the

power output of the motor 18. This reduces the closing speed and diminishes the closing torque. Even if the operator wrongly reacts or should accidentally press the wrong button in attempting to fully close the blind (either opening or closing) the motor will thus cause no adverse effect, for not having sufficient torque.

If the blind should be operated manually, then actuation of the crank 8 and functioning of the system are the same as described in the opening phase. Merely the sense of direction is the opposite. In both cases of motor actuated or manual closing the safety device prevents accidental opening.

The cover 10 which is secured to the hood 15 by screws 20 protects the system from dust and facilitates removal and assembly for inspection of all components and maintenance.

Figure 2 shows the assembly of the blind in standard version without the power unit, the blind being prepared for installation of the power unit.

The spacer 21 which can be adjusted by means of the screw 22 is used to eliminate any play in the blind resulting from any back lash in mating of the gears in the components.

Thus, the above-mentioned sun blind power unit, apart from permitting conventional opening and closing the system, allows electric actuation by the actuation of separate push buttons for opening and closing. The unit requires a 12V DC supply and thus permits connection to a battery which can be installed together with the sun blind.

In the second version (Fig. 2) the device can also be retrofitted without having to modify the blind in any way. Fitting and operation of the power unit is also straight-forward and reduced to merely essential procedures.

A limit switch located near the close stop of the blind actuates a separate electric circuit to permit gentle closing to protect both the fabric of the blind and its constructive components, including the motor, from excessive forces which could otherwise result in damage. When the blind is opened the limit switch ensures that actuating the power unit longer than necessary will not result in the blind winding in the opposite direction. As soon as the position of maximum opening is attained further rotation of the blind take-up roller is automatically prevented.

Claims

1. Sun blind including a power unit for driving the blind, comprising an electric motor (18) and a hand crank (7) which are both permanently connected to the blind, the electric motor (18)

being coupled to a shaft (4) of a reduction gear pin engaged with planetary gears (5) surrounding the reduction gear pin and rotatably mounted on axes fixed to a drum-like housing (9) surrounding the shaft of the reduction gear pin, which planetary gears are engaged by a flange-like sunwheel (6) surrounding them and connected to a ratchet of the blind, whereas the hand crank (7), which is normally blocked through a helical gear is in driving connection with the drum-like housing (9), which is supported in a circumferential extension of the sunwheel and is trapped in its rim by a snap ring so that both the hand crank (7) and the electric motor (18) are connected to block either the shaft (4) of the reduction gear pinion or the drum-like housing (9) from rotation and to allow the planetary gears (5) to rotate.

Revendications

1. Store-pare-soleil incorporant une unité d'entraînement, comportant un moteur électrique (18) et une manivelle (7) qui sont tous les deux en liaison permanente avec le store, le moteur électrique (18) étant couplé avec l'arbre (4) du pignon d'un réducteur en prise avec des pignons planétaires (5) entourant ledit pignon et montés tournants sur des axes fixés sur un boîtier (9) en forme de tambour qui entoure l'arbre du pignon du réducteur, lesquels pignons sont en prise avec une couronne (6) qui les entoure et qui est en liaison avec un cliquet du store, pendant que la manivelle (7) qui est normalement bloqué par un engrenage hélicoïdal, se trouve en liaison motrice avec ledit boîtier (9) en forme de tambour, qui est supporté par un prolongement périphérique de la couronne et est retenu dans le rebord de ce dernier par une bague fendue, de sorte que, à la fois la manivelle (7) et le moteur électrique (18) sont en prise pour bloquer en rotation soit l'arbre (4) du pignon du réducteur, soit le boîtier (9) en forme de tambour, et pour permettre aux pignons planétaires (5) de tourner.

Ansprüche

1. Markise mit einer Antriebseinheit zum Antreiben der Markise, bestehend aus einem Elektromotor (18) und einer Handkurbel (7), die beide dauerhaft mit der Markise verbunden sind, wobei der Elektromotor (18) mit einer Welle (4) eines Reduziergetrieberitzels verbunden ist, welches mit planetenrädern (5) in Eingriff steht, die das Reduziergetrieberitzel um-

geben und auf Achsen drehbar gelagert sind, die an einem trommelartigen Gehäuse (9) befestigt sind, welches die Welle des Reduziergetrieberitzels umgibt, wobei die Planetenräder mit einem flanschähnlichen Sonnenrad (6) in Eingriff stehen, das sie umgibt und mit einer Ratsche der Markise verbunden ist, während die Handkurbel (7), die normalerweise durch eine Schraubenspindel blockiert wird, mit dem trommelartigen Gehäuse (9) in Antriebsverbindung steht, das von einer Umfangsverlängerung des Sonnenrads getragen wird und an seinem Rand von einem Schnappring in der Weise gehalten wird, daß die Handkurbel (7) sowie der Elektromotor (18) so miteinander verbunden sind, daß entweder die Welle (4) des Reduziergetrieberitzels oder das trommelartige Gehäuse (9) gegen Drehen blockiert sind und die Planetenräder (5) sich drehen können.

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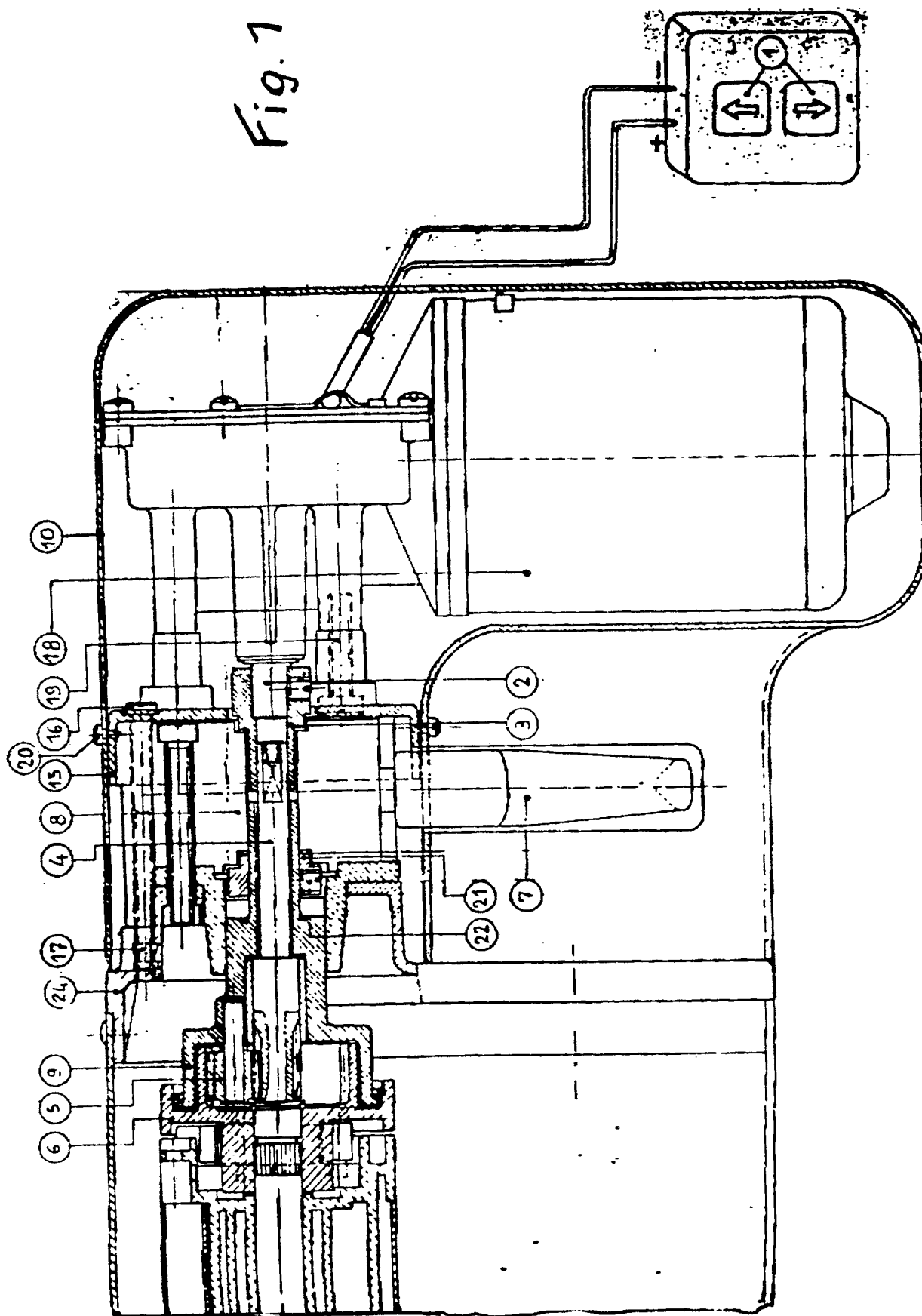
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Fig. 1



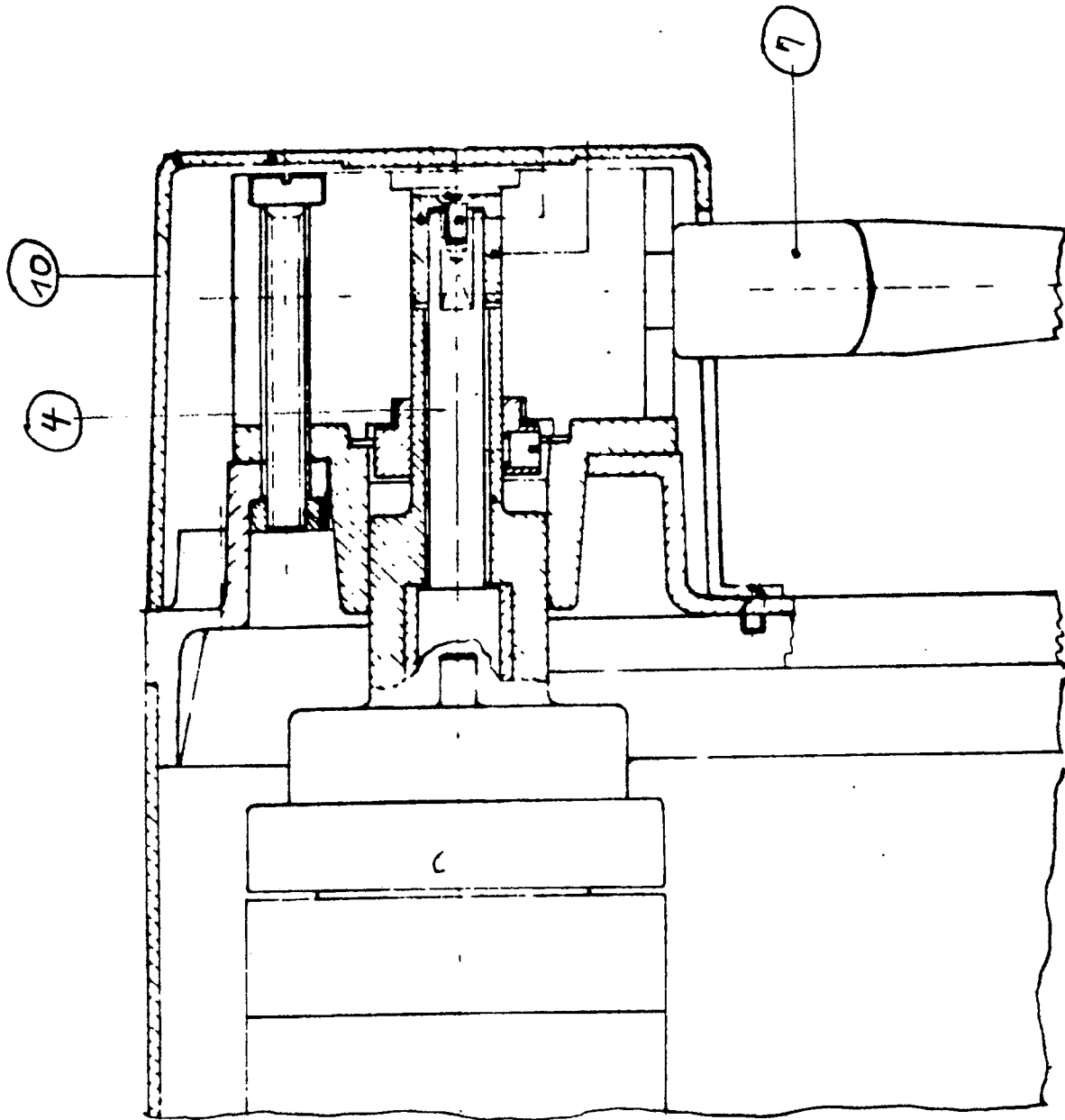


Fig. 2

Fig. 3

