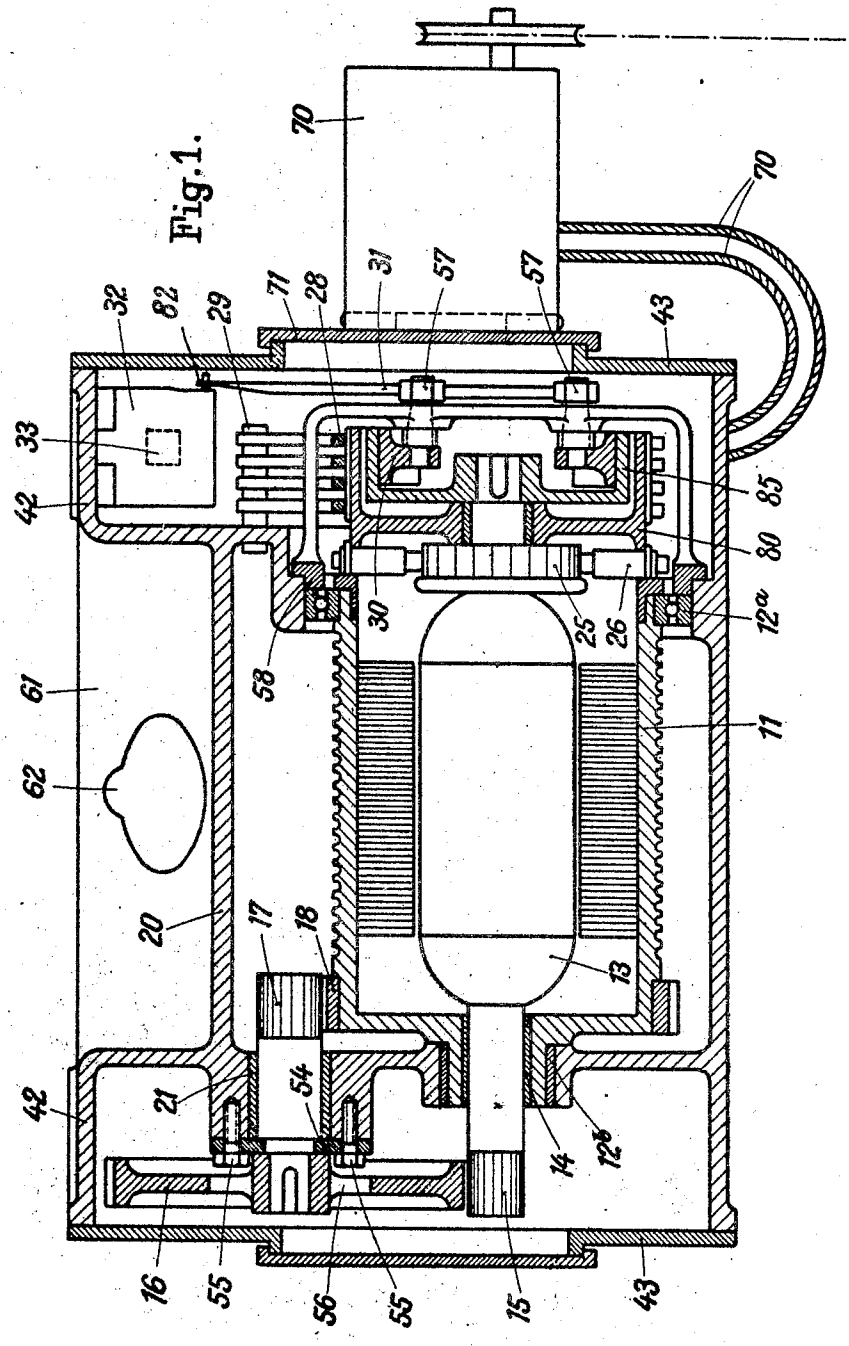
May 18, 1926. 1,585,065

P. WILSING

ELECTRIC WINCH

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Fig. 1.



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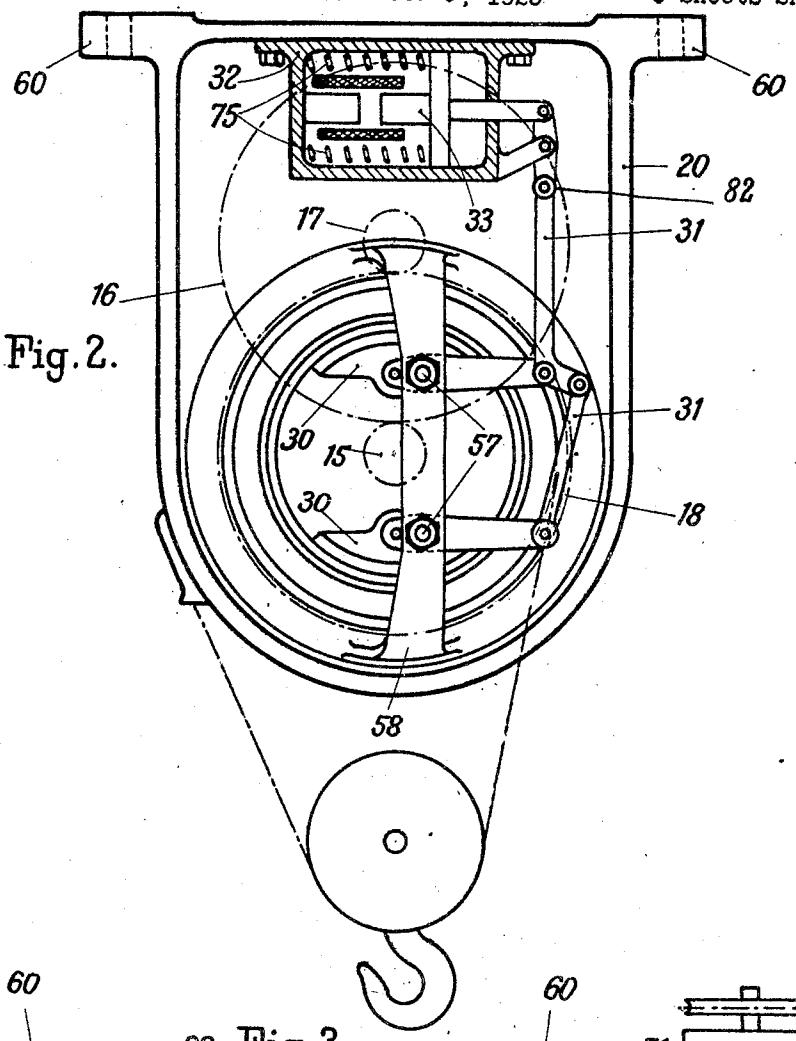


Fig. 2.

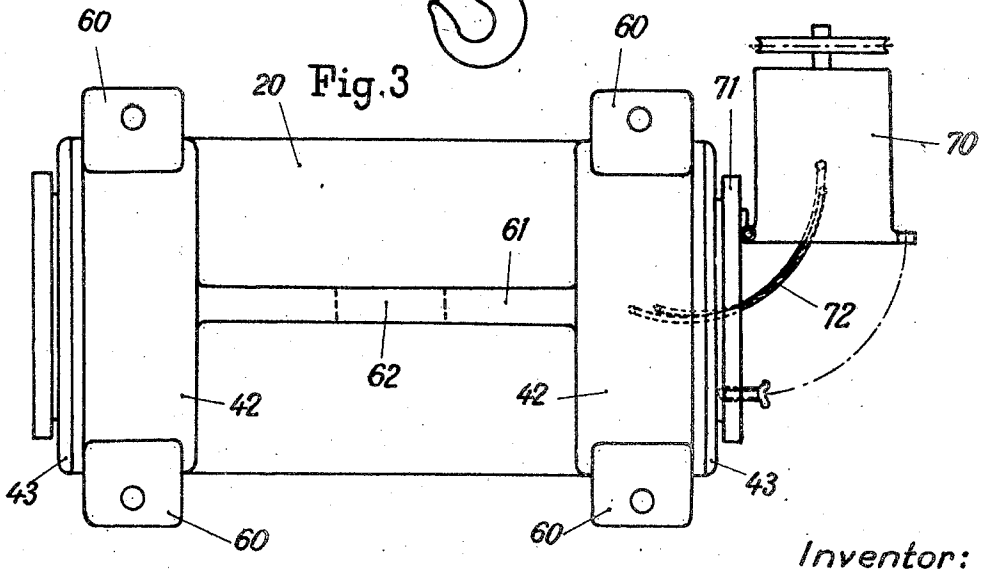


Fig. 3

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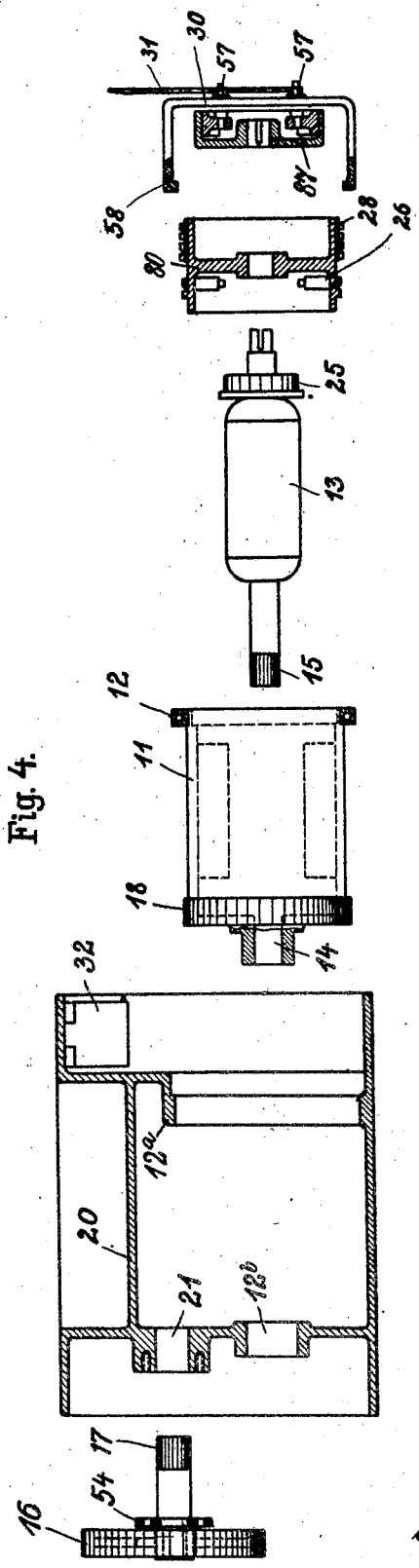


Fig. 4.

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Patented May 18, 1926. 1,585,065

UNITED STATES PATENT OFFICE.

PAUL WILSING, OF DUISBURG, GERMANY.

ELECTRIC WINCH.

Application filed October 8, 1925. Serial No. 61,241.

My invention refers to electrically driven winches, more especially of the kind in which the electromotor is mounted in a casing and the rotary field of the motor is arranged to form the cable drum, the armature and field being mounted for rotation in opposite directions and their required relative speed of rotation being ensured by a train of gear wheels mounted in the casing. It is an object of my invention to improve this type of electric winches with a view to simplifying and facilitating the assembling and dismantling of the several parts constituting it and to rendering all these parts as easily accessible as possible.

To this end I mount the electromotor within the casing in such manner that it can be withdrawn therefrom as a self-contained unit, this being rendered possible by making the ball or roller bearing inserted between the casing and the cable drum forming part of the motor large enough to allow the spur wheel serving for the transmission of power and which can form a toothed rim mounted on the drum to pass freely through the opening in the casing. In a similar manner the neck journal bearing provided in the opposite end wall of the casing is made large enough to allow the pinion mounted on the motor shaft to pass through. If the electromotor is thus withdrawn, the pinion on the motor shaft will simply be moved out of gear with the spur wheel serving for transmitting power onto the cable drum. Obviously therefore the end cover closing the casing on one side need merely be removed and the electromotor can then be withdrawn sideways as a whole.

In a similar manner the armature is mounted within the field forming the cable drum so as to be easily withdrawn therefrom.

In the drawings affixed to this specification and forming part thereof an electric winch embodying my invention is illustrated diagrammatically by way of example.

In the drawings—

Fig. 1 is a longitudinal section,

Fig. 2 an end view, partly in cross section, with the cover removed.

Fig. 3 is a plan view drawn to a smaller scale, with the starter shown in unfolded position.

Fig. 4 is an elevation, partly in axial section, drawn to a still smaller scale and showing the several parts constituting the winch after withdrawal from the casing.

Referring to the drawings, 20 is the casing and 11 is the cable drum which at the same time forms the field of the electromotor. 13 is the rotary armature of this motor which is mounted axially within the drum 11 and 29 are the leads, 28 the slip rings, 26 the brushes and 25 the collector serving for supplying current to the motor. 15 is the pinion mounted on the motor shaft and 16 is the large spur wheel meshing with this pinion and mounted coaxially with another pinion 17 meshing with the toothed rim 18 mounted on the drum 11. 30 are the brake blocks and 32 is the brake magnet serving to operate these blocks by means of links and levers 31.

According to the present invention now the opening 12^a provided in the casing 20 for the insertion of the ball bearing 12 mounted on the cable drum 11 is large enough to allow the toothed rim 18 mounted on the other end of the drum to pass through freely. The neck bearing 12^b provided in the opposite end wall of the casing is large enough to allow the pinion 15 on the motor shaft to pass through. As the toothed rim 18 forms part of the cable drum 11, the right hand cover 43 need merely be removed and the locking ring 58 securing the bearing 12 in position need merely be loosened in order to enable the cable drum and the parts mounted therein to be withdrawn in axial direction without removing the pulley block from the place where it is mounted. In thus withdrawing the electromotor the rim 18 and pinion 15 are automatically moved out of gear with the pinion 17 and spur wheel 16 respectively.

On the other hand the neck bearing 14 of the motor shaft provided in the end wall of the cable drum is made large enough to allow the pinion 15 to pass through. By removing the part 80 mounted on the drum 11 and containing the slip rings 28 and brushes 26, which can easily be done by loosening the nuts or the like securing it in place, the armature 13 can simply be withdrawn from the drum, and this is possible even in case that it is not intended to remove the drum from the casing 20.

In a similar manner the transmission gear

can be withdrawn; on removing the cover 43 mounted on this end of the casing 20 and loosening the screw bolts 55 securing the transmission shaft in position in the flange 54, this being rendered possible by apertures 56 being provided in the spur wheel 16, the wheels 16 and 17 can be withdrawn laterally from the bearing 21, this bearing having a diameter large enough to allow the pinion 17 to pass through. Obviously the bearing 21 need not be a plain bearing, but a ball bearing or roller bearing might be inserted in its place.

The brake blocks 30 acting on the brake wheel 85 from within are mounted together with this wheel in the extension 81 of the drum, so that by removing the locking ring 58 they can be withdrawn. The pivots 57 for the brake levers, which are fixed in space, are provided on the locking ring 58. The connection between the levers 31 and the brake magnet 32 is severed by simply pulling the levers off the journal 82 (Fig. 1). Owing to this arrangement of parts, when the drum shall be removed, the brake need not be removed from the drum.

The armature 33 of the brake magnet is maintained in one end position by springs 75, which balance its weight, so that the magnet can be mounted in the casing in any desired position and the pulley block can be mounted in any position whatsoever without the action of the brake magnet being affected.

The starter 70 is hinged to the end plate 71 of the casing so as to allow being unfolded as shown in Fig. 3, thereby offering a free access to the interior of the casing. The leads 72 are arranged in such manner as not to require being disengaged when the starter is swung in its hinges.

In order to allow the winch to be fixed in position for instance in a trolley, the enlarged end portions 42 of the casing 20 are formed with flanges 60. A rib or web 61 connecting the enlarged portions 42 and provided with a grip hole 62 facilitates the handling and fastening of the winch.

I wish it to be understood that I do not desire to be limited to the exact details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

I claim:—

1. Electric winch comprising a casing, an electromotor in said casing, the rotary field of said motor forming the cable drum, a rotary armature in said drum, power transmitting means on said drum, and an antifriction bearing for said drum in an opening of said casing having a larger diameter than said power transmitting means.

2. Electric winch comprising a casing, an electromotor in said casing, the rotary field of said motor forming the cable drum, a rotary armature in said drum, a bearing in said drum for said armature and power transmitting means connected with said armature, said bearing having a larger diameter than said power transmitting means.

3. Electric winch comprising a casing, an electromotor in said casing, the rotary field of said motor forming the cable drum, a rotary armature in said drum, separate power transmitting means connected with said drum and said armature, respectively, a bearing in said casing for said drum and a bearing in said drum for said armature, said bearings having larger diameters than the power transmitting means adjoining same.

4. Electric winch comprising a casing, an electromotor in said casing, the rotary field of said motor forming the cable drum, a rotary armature in said drum, a toothed rim on said drum, a neck bearing in said casing of larger diameter than said toothed rim, a pinion on said armature, a neck bearing in said drum of larger diameter than said pinion and a spur wheel rotatably mounted in said casing for transmission of power from said pinion to said toothed rim.

5. Electric winch comprising a casing, an electromotor in said casing, the rotary field of said motor forming the cable drum, a rotary armature in said drum, a toothed rim on said drum, a neck bearing in said casing of larger diameter than said toothed rim, a pinion on said armature, a neck bearing in said drum of larger diameter than said pinion, a spur wheel rotatably mounted in said casing for transmission of power from said pinion to said toothed rim, a second pinion fixed to said spur wheel and a neck bearing in said casing supporting said spur wheel and having a larger diameter than said second pinion.

6. Electric winch comprising a casing, an electromotor in said casing, the rotary field of said motor forming the cable drum, a rotary armature in said drum, power transmitting means on said drum, an antifriction bearing for said drum in an opening of said casing having a larger diameter than said power transmitting means, a locking ring securing said antifriction bearing in place and a brake lever supported by said locking ring.

7. Electric winch comprising a casing, an electromotor in said casing, the rotary field of said motor forming the cable drum, a rotary armature in said drum, power transmitting means on said drum, an antifriction bearing for said drum in an opening of said casing having a larger diameter than said power transmitting means, an electromagnetic brake mounted on said casing, a locking ring securing said antifriction bearing in place, an extension on said drum, a brake wheel on said extension, a brake block arranged to cooperate with said wheel and a

brake lever connected with said brake and said block and supported by said locking ring.

8. Electric winch comprising a casing, an electromotor in said casing, the rotary field of said motor forming the cable drum, a rotary armature in said drum, power transmitting means on said drum, and an antifriction bearing for said drum in an opening of said casing having a larger diameter than said power transmitting means, a brake magnet, a brake armature and springs holding said brake armature in one of its end positions.

9. Electric winch comprising a casing, an electromotor in said casing, the rotary field of said motor forming the cable drum, a rotary armature in said drum, power transmitting means on said drum, an antifriction bearing for said drum in an opening of said casing having a larger diameter than said power transmitting means and a starter hinged to and, when unfolded, giving access to the interior of said casing.

In testimony whereof I affix my signature.

PAUL WILSING.