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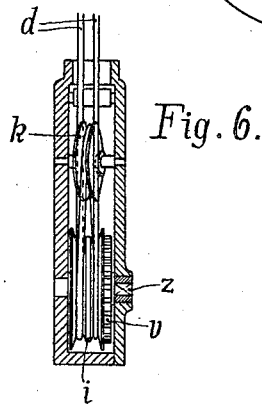
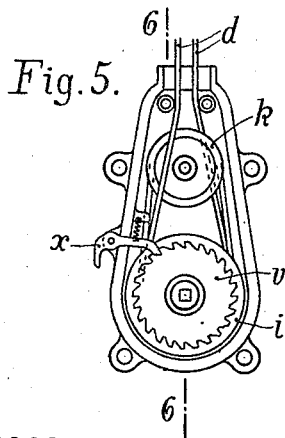
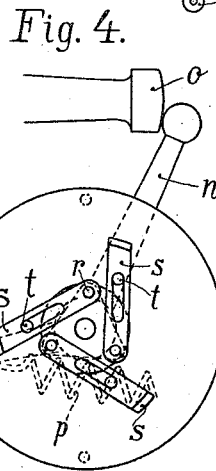
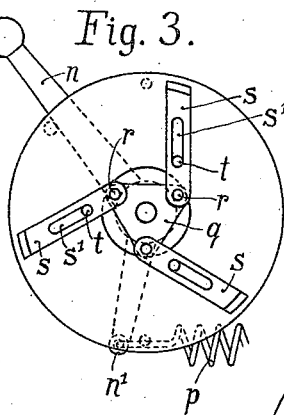
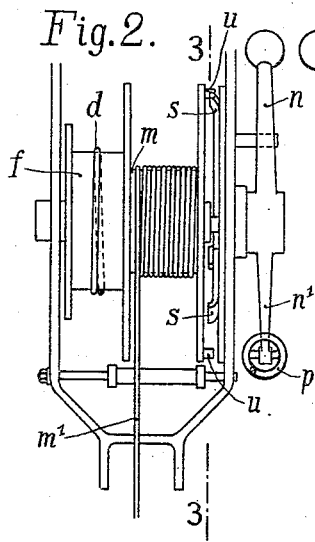
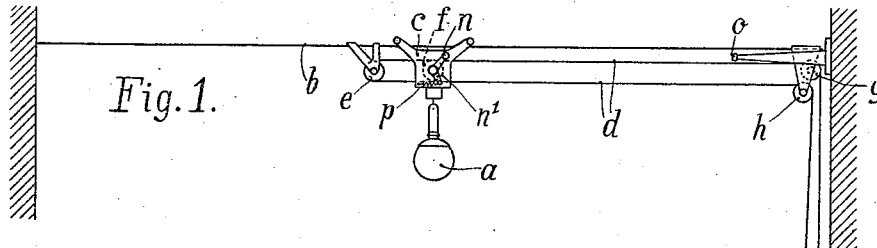
F. KROHN

1,885,732

RAISING AND TRAVERSING MECHANISM FOR SUSPENDED STREET LAMPS

Filed April 14, 1931

2 Sheets-Sheet 1



Witnesses:
Golfriede Frey.
Ludwig Mandelartz

Inventor:
Fritz Krohn.

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F. KROHN

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2 Sheets-Sheet 2

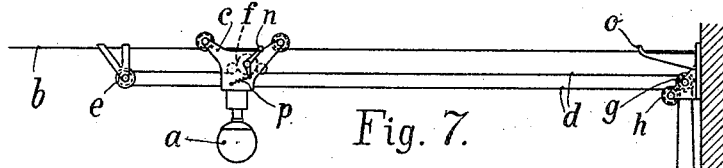


Fig. 7.

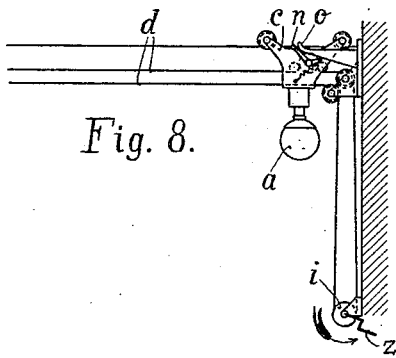


Fig. 8.

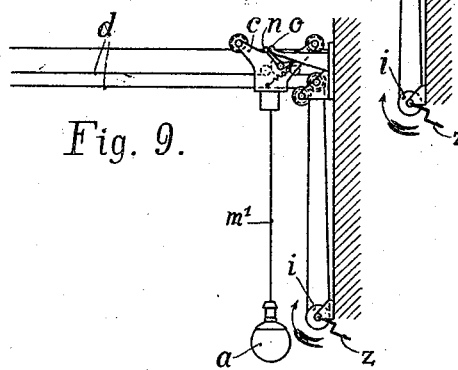


Fig. 9.

Fig. 10.

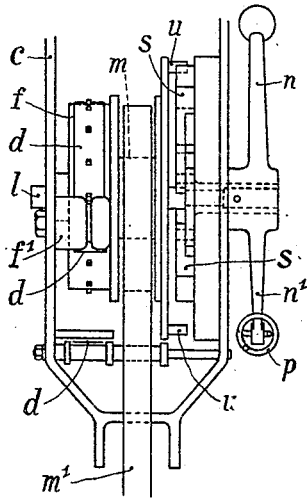


Fig. 11.

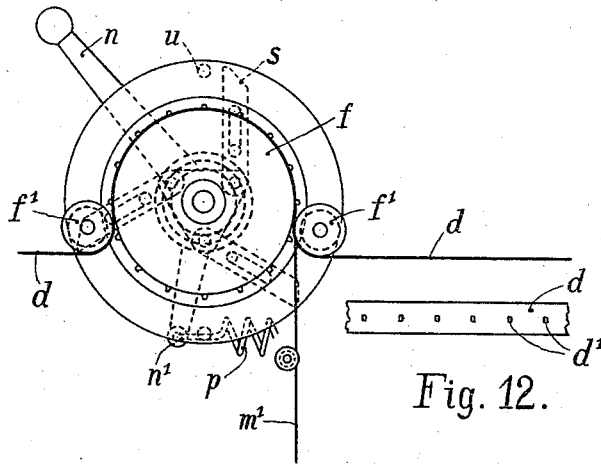


Fig. 12.

Witnesses:

Gottfried Frey
Ludwig Mandelartz

Inventor:

Fritz Krohn.

UNITED STATES PATENT OFFICE

FRITZ KROHN, OF ESSEN-RUHR, GERMANY

RAISING AND TRAVERSING MECHANISM FOR SUSPENDED STREET LAMPS

Application filed April 14, 1931, Serial No. 530,040, and in Germany April 17, 1930.

The invention relates to a raising and traversing mechanism or tackle for suspended street lamps. The hitherto known tackle or mechanism of this type have the inherent disadvantage that the winch mechanism comprises two winches which have to be operated one after the other, and as they are arranged one on top of the other the whole device protrudes too far into the street, and they possess the further disadvantage, that because of the fact that two winches or drums have to be operated and because the coupling arranged between them is too complicated accidents and damages occur frequently.

The invention eliminates these disadvantages by the fact, that the endless cable is carried around a pulley which is mounted on a lamp winch which is mounted in its turn on a trolley, said lamp winch being normally rigidly fixed and unable to rotate by means of a clamping and braking device. The purpose of the invention is also to devise the actuating device that it is necessary, for the transition from the horizontal movement of the lamp, to the vertical movement of lowering or raising, to change the direction of rotation of the winch handle. This simplifies the attendant's labour and makes for reliability.

The accompanying drawings show two constructional forms of the invention:

Fig. 1 showing a diagram of the device,

Fig. 2 showing a side view of the trolley,

Fig. 3 a section along the line 3—3 of Fig.

2, seen from the left,

Fig. 4 showing a view corresponding to Fig. 3 but with the working parts in another position,

Fig. 5 shows a front view of the winding mechanism,

Fig. 6 a section along the line 6—6 of Fig. 5 seen from the left,

Fig. 7 shows a view corresponding to Fig. 1 of a second embodiment,

Figs. 8 and 9 a view corresponding to Fig. 7 but with the lamp in another position.

Figs. 10 and 11 are views corresponding to Figs. 2 and 3 of the lamp trolley, and

Fig. 12 is a view of the endless actuating rope.

The lamp *a* is suspended in the manner known per se from a suspension rope *b* drawn across the street by means of a run away trolley *c*. This trolley can be moved by means of an endless cable *d*. The cable *d* passes over a guide rope pulley *e* which is fixed to the tensioning cable or rope *b* to a drum *f* which is mounted on the trolley *c* and is wound once around said drum, (Fig. 2), thence the rope or cable passes over a pulley *g* to the actuating mechanism and over a further pulley *h* back to the pulley *f*. The actuating mechanism (Figs. 5 and 6) consists of a double drum *i* mounted in the housing and of a rope pulley *k* mounted above it. The cable or rope *d* passes in the housing first over one groove of the double drum *i* and then over the rope pulley *k* and then over the other groove of the double drum. The pulley *f* is mounted on a rope drum *m* the rope or cable of which carries the lamp *a*. coaxially with the drum *m* there is mounted on the frame or housing of the trolley *c* a two armed tiltable lever, the arm *n* of which can work conjointly with a fixed abutment *o* whereas the other arm *n'* is acted upon by the pull spring *p*, which tends to keep it in the position shown in Figs. 1 and 3. Furthermore a triangular disc *q* is mounted on the shaft of the lever *n, n'*, slides *s* being mounted by means of trunnions on said triangular disc, these slides are displaceable on a fixed bolt *t* by means of a slot *s'*.

In the case of the position of the organs as shown in Figs. 1 and 3 the slides *s* protrude within the path of pins *u* which are mounted on the drum *m*, they thus prevent the rotation of the drum. But when the lever *n* strikes against the stop or abutment *o* it is tilted into the position shown in Fig. 4, in which position it has turned the disc *q* so far that the slide *s* is drawn back out of the path of the pins *u* thus allowing the drum *m* to revolve. A ratchet wheel *v* is rigidly mounted with the double drum *i*, a pawl *w* engaging my means of the action of a compression spring into said ratchet wheel.

The device works as follows, viz.: If the lamp, now in its proper illuminating position (Fig. 1) is to be lowered, then a handle

is inserted into the hole z of the shaft of double drum i and turned. The endless cable d that is coiled around the drum f , which is prevented from rotating by the locking latches s and thus moves the trolley c along until the lever n strikes the stop o , as soon as this stop has tilted the lever n so far back, that the slides s release the pins u , the drum f and with it the rope drum m is free to rotate thus lowering the lamp.

By turning the handle in the opposite direction the lamp a is raised again. But as soon as the lamp has arrived at the top the rope drum m is prevented from further rotation, consequently as the rotation proceeds the trolley c is moved back into the position shown in Fig. 1. When the lever n has left the stop o the spring p pulls the lever n and the latches s back into their position according to Fig. 3 in which the drum m and the pulley or disc f are prevented from rotating.

The device has that advantage in comparison with known devices, that the required four motions, viz. the to and fro travel of the trolley c , and the raising and lowering of the lamp a can be effected by means of one single cable or rope. Instead of the described locking device for the drum m it is of course also possible to use a brake for the same purpose.

In the case of the constructional form according to Figs. 7 to 12 steel bands of non-rusting steel are used instead of the wire ropes, the endless band of these rust free steel bands being provided with perforations d' by means of which it engages on a pin wheel i arranged in the band winch, and also with a pin wheel f mounted in the trolley c . Two guide pulleys f' are mounted in the trolley c which ensure, that the steel band d grips the greatest part of the circumference of the pulley f and remains in engagement with its teeth or pins. The steel band m' acting as the supporting rope, is wound on the drum m in such a direction of rotation that the handle z must, after the trolley c has reached the limiting device or abutment o be rotated in the opposite direction, if the lamp is to be lowered. For the purpose of relieving the load on the lamp rope m' the lamp is coupled in a manner known per se with the trolley c by means of a locking device (not shown) or some other suitable device, which alternately is coupled in and out should the lamp be wound over the working position.

The device works in the following manner, viz.: If the lamp, at the time in its working position is to be lowered, the handle or manual crank is first rotated in the direction of the arrow shown in Fig. 7. The wheels f , m loosely mounted on the spindle or shaft l are prevented from turning by means of the slides s shown in Fig. 10 in their locking position. The trolley c is therefore moved by the clockwise rotation of the manual crank

z towards the stop o . When the lever n strikes the limiting stop o said lever is tilted into the position shown in Fig. 8, thus causing the slides s to recede and thereby to release the wheels. If the crank z is still rotated somewhat further then the lamp a is freed from its locking device which is drawn back, so that the lamp is now freely suspended from the rope m' . By rotating the manual crank z in the opposite sense, that is in the sense of the arrow according to Fig. 8, it is now possible to lower the lamp a into the position shown in Fig. 9.

If the manual crank z is turned back, that is in the direction of the arrow shown in Fig. 9, then the lamp is wound up again, but before it arrives at its top position, it again throws the locking device in. The various members now again occupy the position as shown in Fig. 8 and if the crank z is then again turned in the sense of the arrow in Fig. 8, the lamp is in the first instance lowered so far until it rests on the locking device or unloading device, and the lamp rope m' is relieved of its load, consequently if the crank is further rotated, the trolley c is carried along by the endless rope d and is moved back into its proper working position.

When lowering or raising the lamp the weight of the trolley c and the horizontal component of the weight of the lamp acting on the drum m helps to ensure that the trolley c does not leave the stop o .

The operations are therefore defined as follows, viz: 1. Right hand rotation: the trolley c rolls or travels to the stop o ; 2. Left hand rotation: The lamp a is lowered; 3. Right hand rotation: The lamp a is wound up again; 4. Left hand rotation: The trolley c travels back into its working position.

If, when raising the lamp, the pawl of the carrying rope should for instance fail to act, the lamp a remains suspended from the carrying rope, and a left hand rotation of the manual crank z does not cause a backward travel or return of the trolley but causes the lamp to be further lowered.

Even if in the most unfavourable case the endless band d should break, while the lamp a does not yet rest on the pawl of the load relieving device, it is impossible for the lamp to drop down, because the trolley c immediately leaves the stop o and the slides s are moved into a locking position by means of the spring p , thus preventing the drum m to rotate further.

By means of this device the utmost safety and reliability is attained.

I claim:

1. In a winding device for suspended street lamps: a lamp trolley adapted to roll on a suspension rope, a guide rope pulley fixed to the suspension rope; a pulley mounted in the said lamp trolley; an endless cable to actuate the said pulley and running about the guide

rope pulley; a lamp winch arranged in the trolley and rigidly connected to the said pulley; and means for locking the endless cable to the said trolley.

2. In a winding device for suspended street lamps: a lamp trolley adapted to roll on a suspension rope; a pulley mounted in the said lamp trolley; an endless cable to actuate the said pulley; a lamp winch arranged in the trolley and rigidly connected to the said pulley; means for locking the endless cable to the said trolley; a lever on the axle of the said locking means; a stationary stop mounted on the said suspension rope and cooperating with the said lever to unlock the said locking device.

3. In a winding device for suspended street lamps: a lamp trolley adapted to roll on a suspension rope; a pulley mounted in the said lamp trolley; an endless cable to actuate the said pulley; a lamp winch arranged in the trolley and rigidly connected to the said pulley; a locking device for the endless cable provided on the said trolley; a spring actuated lever for the locking device; a stationary stop mounted on the said suspension rope and cooperating with the said lever to unlock said locking device against the action of the spring.

4. In a winding device for suspended street lamps: a lamp trolley adapted to roll on a suspension rope, a guide rope pulley fixed to the suspension rope; a pulley mounted in the said lamp trolley; an endless cable to actuate the said pulley and running about the guide rope pulley; a lamp winch arranged in the trolley and rigidly connected to the said pulley; a locking device for the endless cable provided on the said trolley; and a driving mechanism for the said endless cable consisting of a pulley, mounted in a stationary housing and acted upon by a crank lever.

5. In a winding device for suspended street lamps: a lamp trolley adapted to roll on a suspension rope, a guide rope pulley fixed to the suspension rope; a pulley mounted in the said lamp trolley; an endless cable to actuate the said pulley and running about the guide rope pulley; a lamp winch arranged in the trolley and rigidly connected to the said pulley; means for locking the endless cable provided on the said trolley; a lamp carrying rope wound on said winch in the sense adapted to bring about a tendency of rolling movement of the lamp pulley on the endless cable towards the street side; and a locking device to alternately lock and unlock the lamp carrying rope by raising the lamp above its working position.

6. In a winding device for suspended street lamps: a lamp trolley adapted to roll on a suspension rope; a guide rope pulley fixed to the suspension rope; a pulley mounted in the said lamp trolley; an endless cable to actuate the said pulley and running about

the guide rope pulley; a lamp winch arranged in the trolley and rigidly connected to the said pulley; means for locking the endless cable provided on the said trolley; a limiting stop cooperating with said means for locking the endless cable arranged at the street side; a lamp carrying rope wound on said winch in the sense adapted to bring about a tendency of rolling movement of the lamp pulley on the endless cable towards the street side; and a locking device to alternately lock and unlock the lamp carrying rope by raising the lamp above its working position.

In testimony whereof I have hereunto set my hand.

FRITZ KROHN.

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