

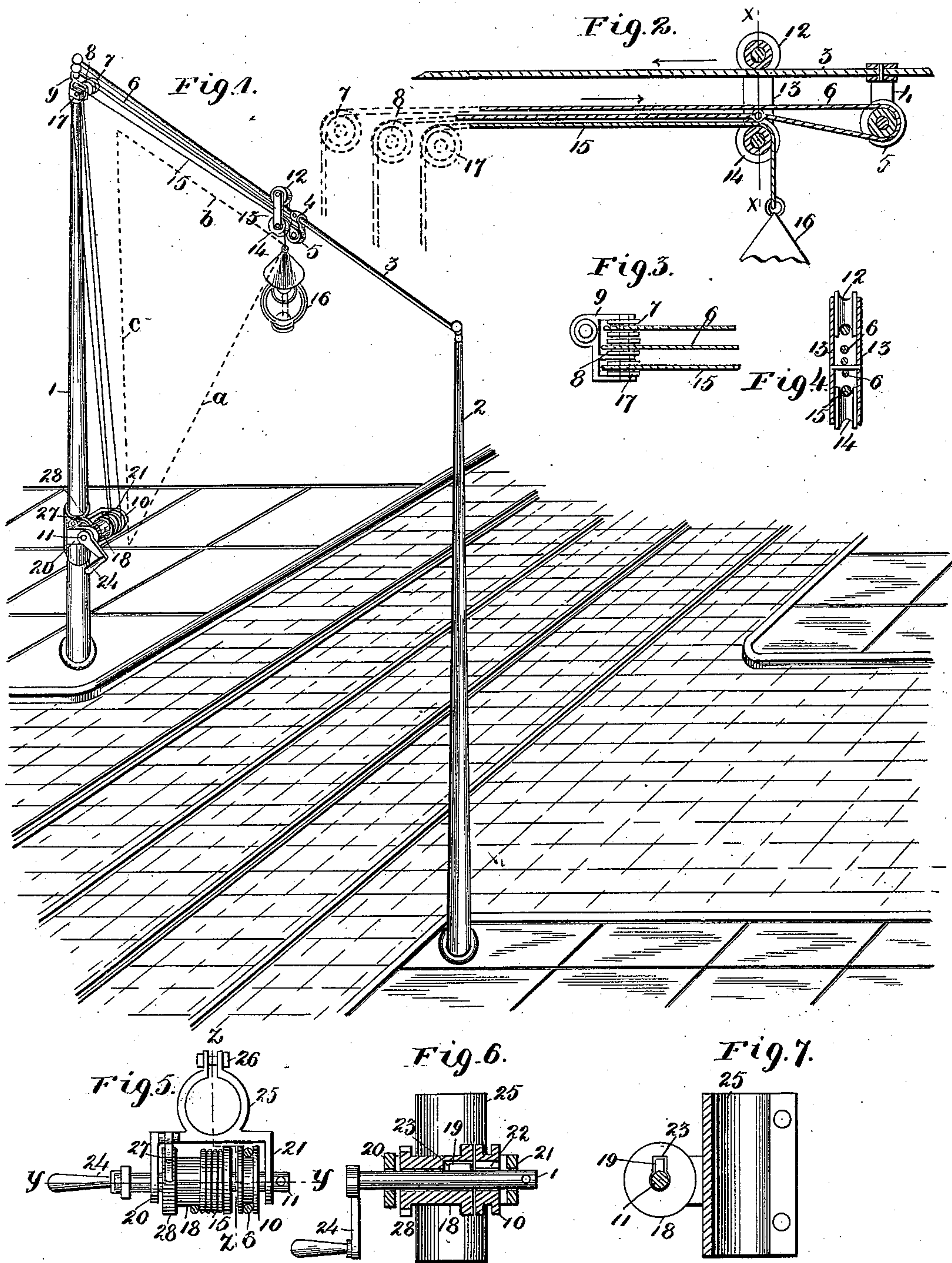
(No Model.)

F. W. SMITH.

DEVICE FOR HOISTING OR LOWERING LAMPS.

No. 545,539.

Patented Sept. 3, 1895.



Witnesses:

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# UNITED STATES PATENT OFFICE.

FRANK W. SMITH, OF ST. LOUIS, MISSOURI.

## DEVICE FOR HOISTING OR LOWERING LAMPS.

SPECIFICATION forming part of Letters Patent No. 545,539, dated September 3, 1895.

Application filed December 26, 1893. Serial No. 494,757. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK W. SMITH, of the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in Devices for Hoisting or Lowering Lamps, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in devices for raising or lowering street-lamps; and it consists in the novel arrangement and combination of parts, more fully set forth in the specification, and pointed out in the claim.

In the drawings, Figure 1 is a perspective view of two electric-light poles with cross-wire having my invention attached thereto. Fig. 2 is a side sectional view of the pulleys carrying the ropes from the windlass. Fig. 3 is a detail plan of the pulley-block secured to the top of one of the street-poles. Fig. 4 is a section taken along the line  $xx$  of Fig. 2. Fig. 5 is a detail plan of the windlass. Fig. 6 is a section taken on the line  $yy$  of Fig. 5, and Fig. 7 is a section taken on the line  $zz$  of Fig. 5.

The object of my present invention is to so construct a device by which street-lamps, particularly electric-arc lamps suspended over the middle of the street, can be lowered directly into, and raised back to their position from; the wagon of the lineman, which may be driven in close proximity to the windlass, secured to one of the poles. The lamp may be lowered directly into the wagon from its point of suspension, taking a straight diagonal course, or in case of obstructing wires in its path it may first be slid horizontally along the wire to which it is suspended as far as the pole to which the wire is secured, and then the lamp may be dropped down vertically into the wagon. The mechanism by which this is accomplished may be described as follows:

Referring to the drawings, 1 and 2 represent the poles to which the cross wire or way 3 is secured and between which it is stretched. At the middle of the length of the wire 3 is permanently secured, by means of suitable suspending plates or arms 4, a fixed pulley 5, over which passes an endless rope 6. The rope 6 passes over the pulleys 7 and 8 of the

pulley-block 9, secured to the top of the pole 1, the members of said rope 6 also passing over the pulley 19 on the shaft 11 of the windlass. From a grooved roller 12, adapted to run along the wire 3, between the pulley 5 and the pole 1, depend arms 13, between the lower ends of which is pivoted a pulley 14, over which passes a rope 15, the free end thereof carrying the lamp 16. The said rope 15 passes over the pulley 17 of the pulley-block 9, and the opposite end of said rope winds around the drum 18 on the shaft 11 of the windlass. One of the plates 13 is secured to one of the members of the endless rope 6, the other member of said rope passing freely between the two arms 13, as best shown in Fig. 2. The shaft 11 of the windlass carries a feather 19, and as the said shaft is adapted to be moved horizontally within its bearings 20 and 21, the said feather is thus adapted to enter either the groove 22 of the pulley 10 or the groove 23 within the drum 18. As the shaft 11 is rotated the feather on the same may revolve with it either the pulley 10 or the drum 18 or both, it being understood that the said pulley and drum are otherwise loose on said shaft 11. The shaft 11 is turned by a suitable detachable crank-arm 24, and the windlass is secured to the pole 1 by the retaining-arms 25, which embrace the pole and which are secured at their free ends by the bolt 26. A spring-pawl 27, pivoted to the windlass and co-operating with a ratchet-wheel 28, forming a part of the drum 18, retains the latter and its co-operating parts in proper position after the parts are once adjusted and the lamp restored to its desired position.

From the foregoing the operation will be apparent. Let us assume that the shaft 11 is moved so that the feather 19 thereof will wholly enter the groove 22 of the pulley 10, and that the drum 18 is simply held in position by the pawl 27, co-operating with the ratchet 28, and also assume that the lamp is in its raised position. To lower the same, the shaft 11 and pulley 10 thereon are turned so as to give to the endless rope 6, which passes around the pulley, the direction as indicated by the arrows in Fig. 2. This movement will bring the roller 12, carrying the arms 13, toward the pole 1, as indicated by the arrow in



Fig. 2; but as the pulley 14, carried at the bottom of said arms 13, carries the rope 15, to the free end of which the lamp 16 is suspended, then, as the pulley 14 advances toward the pole 1, the distance or length of rope between the lamp and said pulley 14 will gradually lengthen and the lamp will be lowered, taking the direction of the line *a* in Fig. 1. To raise the lamp, the operation, of course, is reversed. Let us suppose, however, that there are interfering wires or other obstructions in the path of the line *a*. In that event the lamp may be made to take the path outlined by the lines *b* and *c* in Fig. 1. To accomplish this, the shaft 11 is shifted, so that the feather 19 on the same may simultaneously key thereto both the pulley 10 and the drum 11. When motion is imparted under these circumstances to the pulley 10, so as to give direction to the rope 6, as shown by the arrows, the motion of the other parts will be identical with that just described; but in addition thereto the drum 18, now keyed to the shaft 11, will revolve with the pulley 10, and in its revolution the drum 18 will wind the rope 15, passing over the same, in the same proportion and as fast as the pulley 14 advances toward the pole 1. The lamp 16, therefore, instead of taking the direction of the line *a*, will take the direction of the line *b*. Finally, to lower the lamp from this position the shaft 11 is shifted so as to remove the feather 19 altogether from the pulley 10 and only key to said shaft the drum 18. The drum 18 is then given a rotation in the opposite direction, thus unwinding the rope 15 and lowering the lamp into the wagon, the lamp taking the direction of the line *c*. To restore the lamp to its original position, the said lamp is first raised by turning the drum 18 so as to wind the rope 15 thereon. Then the drum and pulley are both keyed to the shaft and given a reverse motion from that in the first instance, the parts restoring themselves to their original position. If it is desirable to lower the lamp vertically into the middle of the street in the first instance, then only the drum 18, as shown in Fig. 6, is keyed to

the shaft 11, and by turning the same in the proper direction the lamp is lowered.

I have shown part of Fig. 2 in dotted lines merely for the sake of clearness; but the pulleys 7, 8, and 17 preferably occupy contiguous positions within a single block, as shown in Fig. 3. It is to be understood, however, that I do not limit myself to the precisely mechanical details as here set forth, changes which are equivalents coming within the scope of the invention. The manner of securing one member of the rope 6 to the arm 13 may be varied. The manner of securing the windlass to the pole may be changed. The form of the pulley-blocks may be altered. Neither do I limit the application of the invention to street-lamps. It is of course understood that the pawl 27 is disengaged from the ratchet 28 when the device is rotated in the direction which may call for such disengagement.

Having described my invention, what I claim is—

In a lamp hoisting and lowering device, a windlass comprising arms for securing the same to a suitable pole, suitable bearings projecting from said arms, a longitudinally movable revolving shaft within said bearings, a feather on said shaft, a revolving drum and pulley on said shaft, grooves within said drum and pulley for the reception of the feather, a spring actuated pawl, a ratchet wheel on the shaft co-operating with said pawl, a crank arm for rotating said shaft, an endless rope winding over the pulley, a fixed pulley and guide pulleys for the same, a rope passing over the drum, a lamp secured to the free end of said rope, a suitable way, a traveling pulley at the end of said rope and adapted to be secured to the endless rope, substantially as set forth.

In testimony whereof I affix my signature in the presence of two witnesses.

FRANK W. SMITH.

Witnesses:

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EMIL STAREK.