

(No Model.)

W. S. WESTON.
ELECTRIC LAMP HANGER.

No. 561,185.

Patented June 2, 1896.

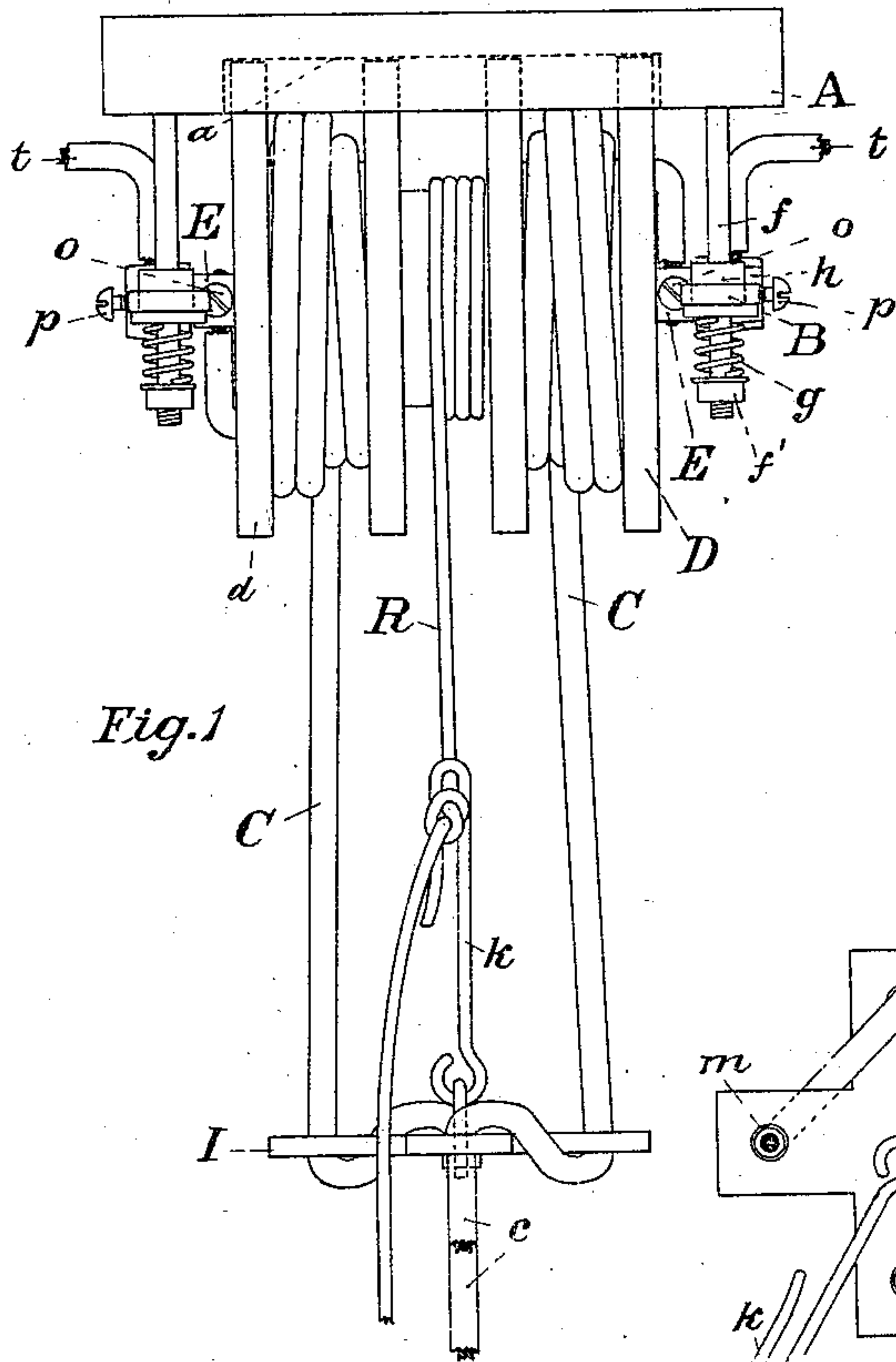


Fig. 1

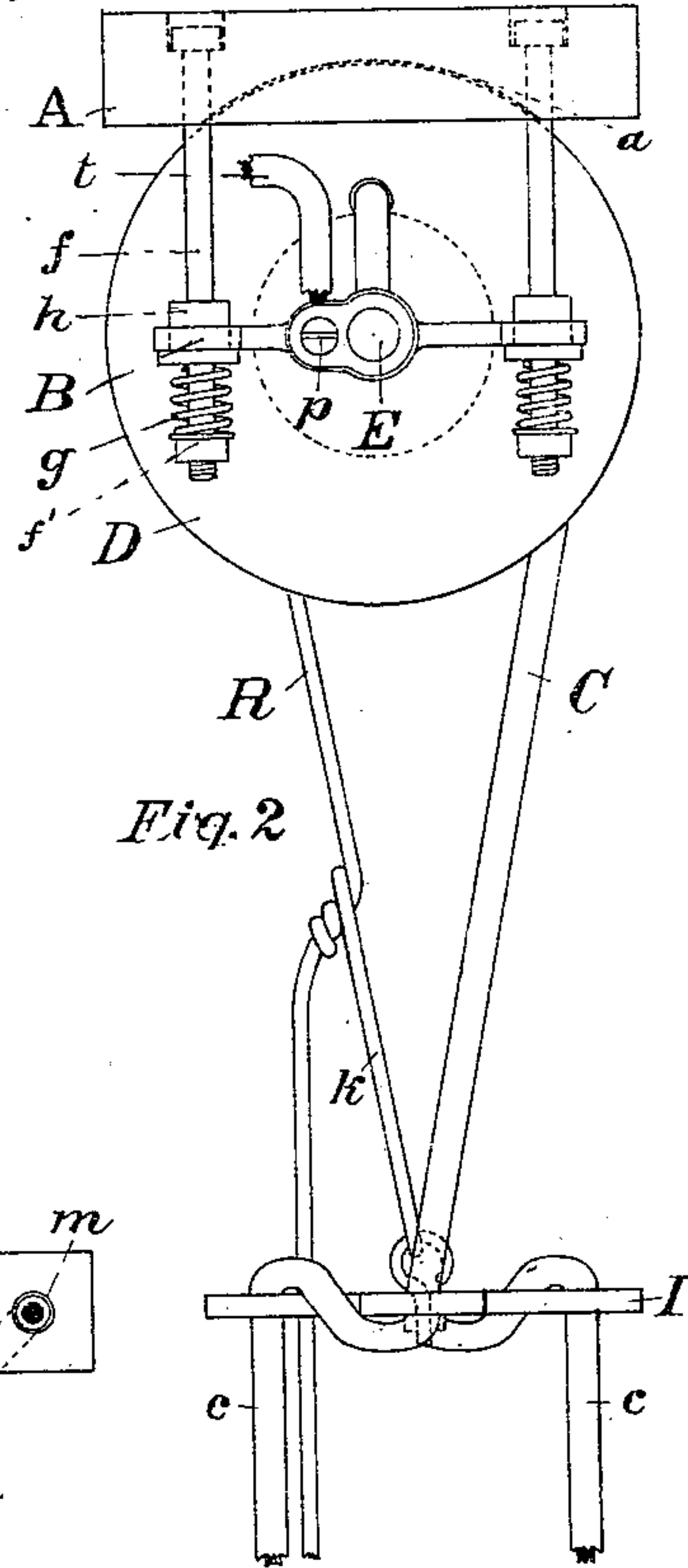


Fig. 2

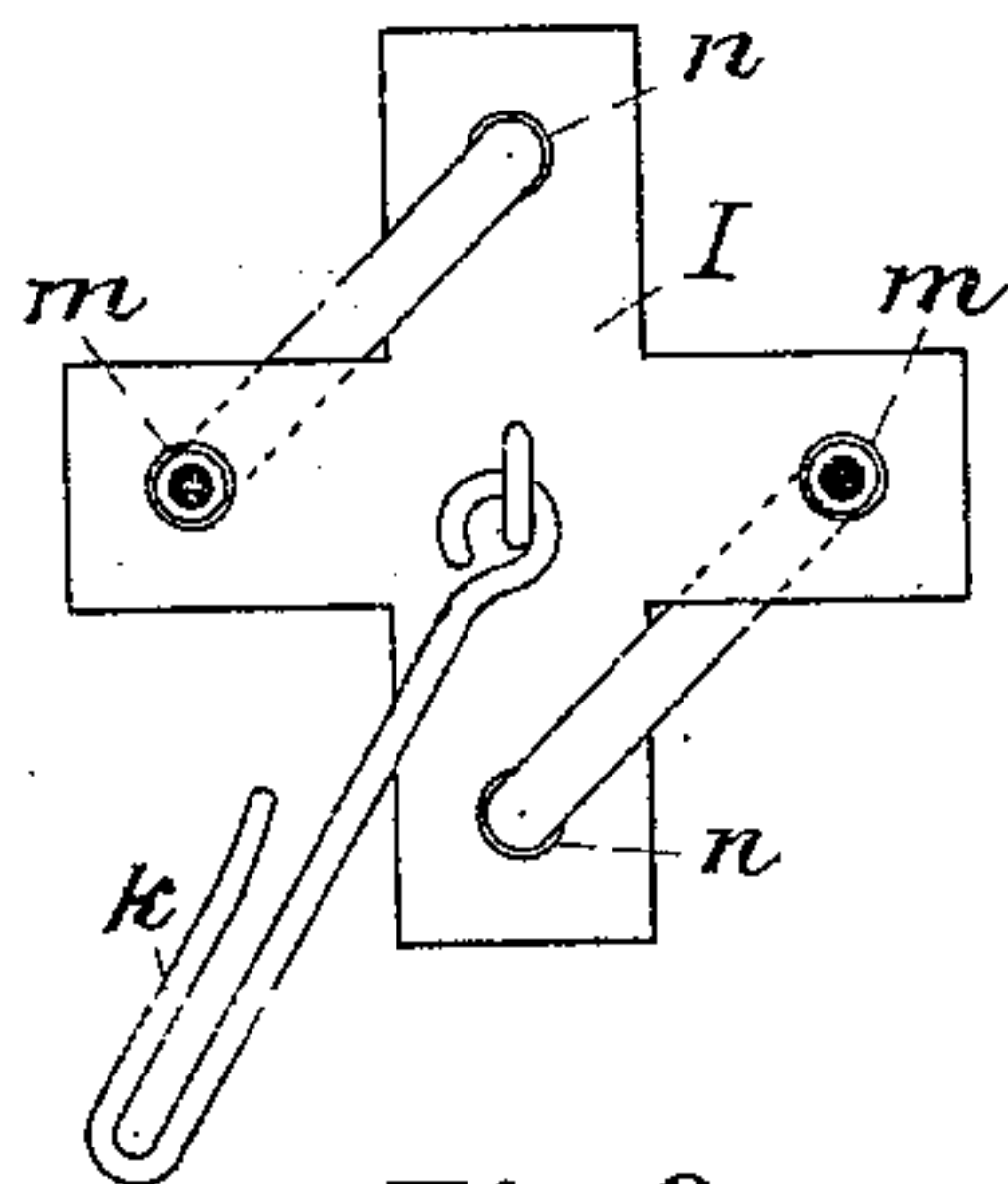


Fig. 3

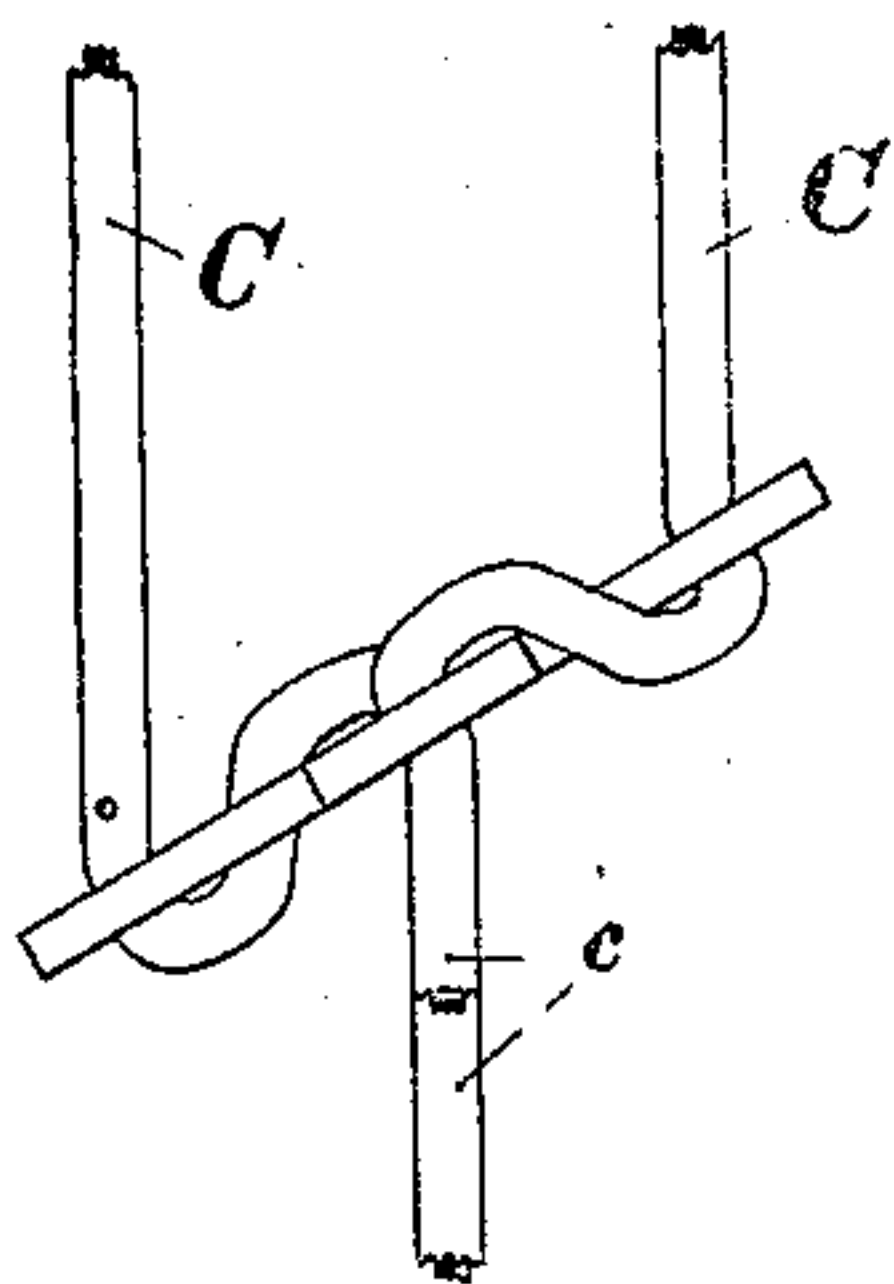


Fig. 4

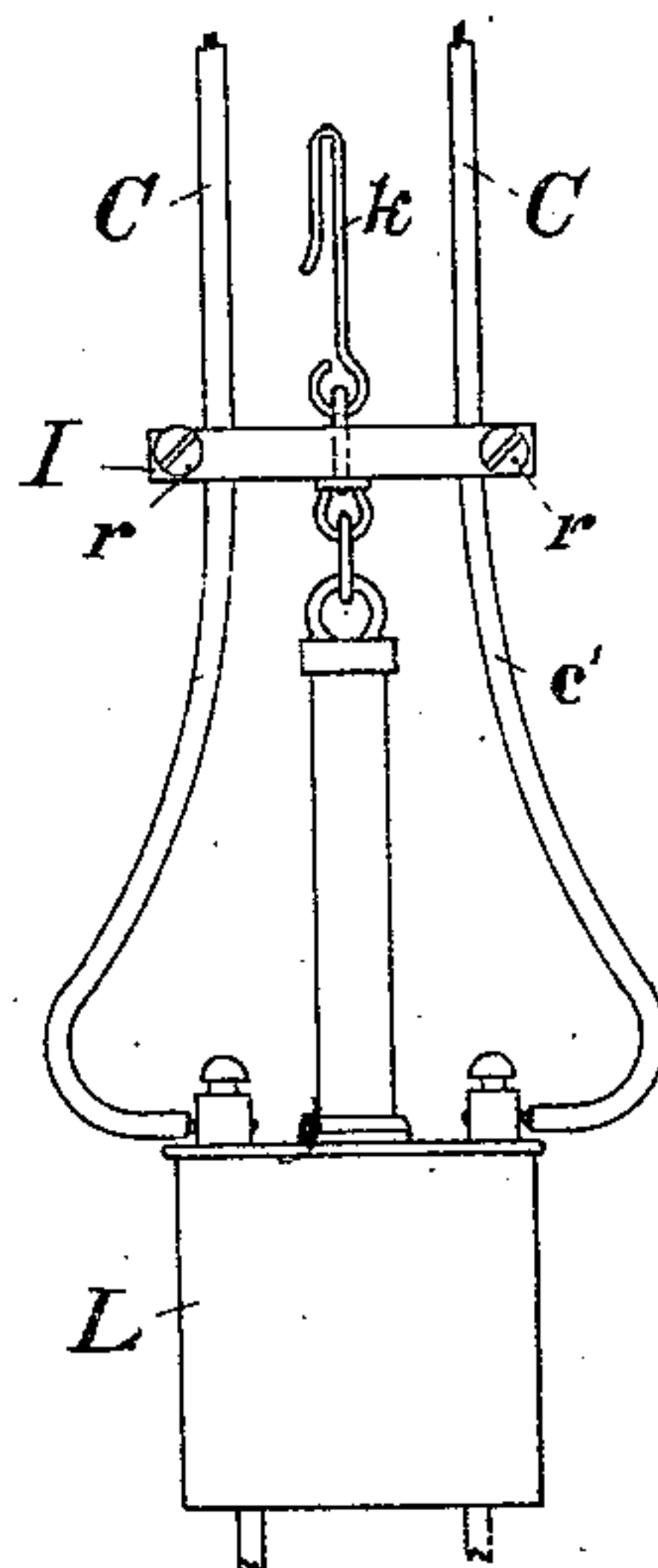


Fig. 6

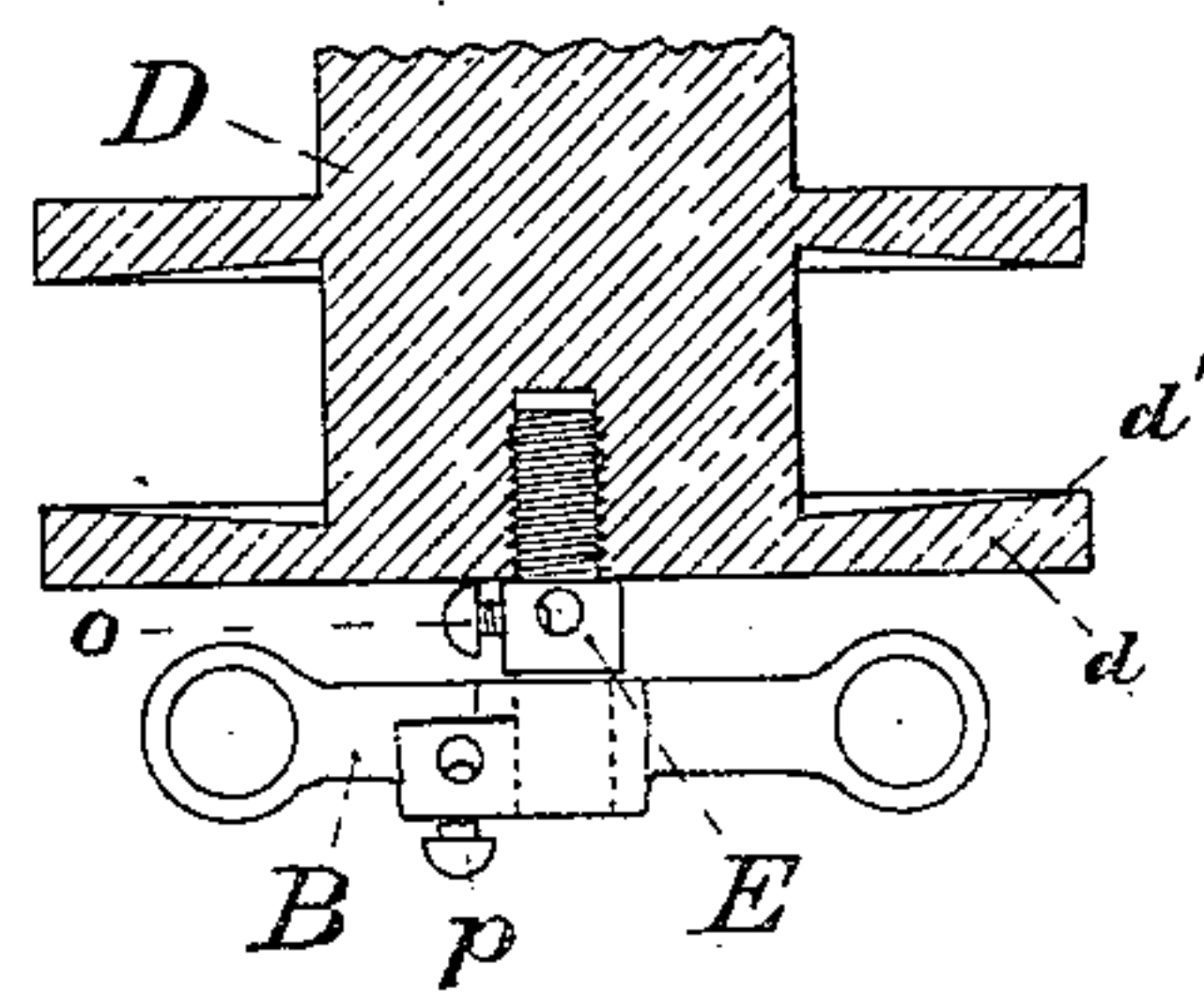


Fig. 5

Witnesses

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UNITED STATES PATENT OFFICE.

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ELECTRIC-LAMP HANGER.

SPECIFICATION forming part of Letters Patent No. 561,185, dated June 2, 1896.

Application filed May 22, 1895. Serial No. 550,192. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. WESTON, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Electric-Lamp Hangers, of which the following is a specification.

My invention relates to improvements in that class of electric-lamp-supporting devices wherein the conductor-cables to which the lamp is attached are wound upon a rotating drum, and has for its object improved means for supporting the lamp in any desired position, improved means for the automatic locking of the drum in case of accident to the normal means of support, and improved construction for coiling the cable on the drum and for equalizing its length.

My invention consists in the novel devices and novel combinations of parts and devices herein shown and described, and specified in the claims.

In the accompanying drawings, which form a part of this specification, and in which similar letters of reference indicate like parts in all the views, Figure 1 is a front view of the hanger. Fig. 2 is an end view as seen from the right of Fig. 1. Fig. 3 is a top view of the equalizer. Fig. 4 shows a position of the equalizer varied from that shown in Fig. 1. Fig. 5 is a top view of the journal B and pivot E, showing the end of the drum in section. Fig. 6 shows an alternate method of equalizing the length of the cables.

A is a hanger board or block to be attached to the ceiling or other support. The under side of this board for a portion of its length is made concave to conform to the periphery of the flanges of the drum D. The drum D has pivots E E, bearing in journals B B, which are secured to the hanger-board by bolts *f*. In order to hold the drum up against the concave surface *a* of the hanger-board with a determinate amount of pressure, the journal-pieces B rest on spring *g*, whose tension may be adjusted by the nuts *f'* on the end of the bolts. The drum D has four deep flanges *d*, dividing it into three parts, and making it practically a three-grooved pulley. It may be made in one piece or built up of several pieces, and is preferably made of wood or other insulating material. In the end grooves are

wound the lamp-supporting conductor-cables C C and in the middle groove the hand-rope R. The grooves are narrow and deep and are intended to take two or more superimposed coils of the cable. In order to insure that the cable in winding up will fill each coil the full width of the groove before starting another coil and not pile up on one side until the top of the flange is reached, I have constructed the inner face of the flanges to converge toward the periphery, as shown at *d'* in the section Fig. 5. The periphery of the flanges being closer than the bottom tends to keep the cable near the center of the groove, and while the cable is winding up it has a natural tendency to complete the coil until stopped by the flange. When a coil is completed, the converging periphery starts the cable back toward the center on the next coil. This coil is then completed before another coil is started, and so on until the groove is practically filled. By this construction I am enabled to make the drum D much shorter than has been possible heretofore in devices of this kind when designed to carry arc-lamps.

It will be seen that the cables C C in winding up in their respective grooves will vary more or less in the relative length of the portions still unwound due to irregularities of coiling and the fitting of the cables in the grooves. A lamp suspended to the two cables would thus be thrown more or less out of plumb. To obviate this difficulty, I have employed the equalizer I in connection with the cables between the lamp and the hanger, which allows the lamp to hang plumb irrespective of the varying length of the cables. The lamp L, which is shown in Fig. 6, but not in Figs. 1, 2, and 4, is to be attached directly to the ends *c* of the cables extending below the equalizer. The equalizer consists of a stiff plate I with four holes *m m n n*, arranged in pairs *m m* and *n n*, so that the members of each pair will be on opposite sides of a line connecting the members of the other pair. The plate is preferably of insulating material and may be of any shape which will permit the cables to pass through the holes, as shown. The cables are passed down through one pair of holes *m m*, and then brought to the top of the plate and passed down through the other pair of holes *n n*. The plane of the

two cables above the plate is at an angle with that of the cables below the plate. By observing Fig. 4 as compared with Fig. 1 it will be seen that a variation of the suspended length of cable above the plate does not affect that portion which is below; also any difference in length of the cable below the plate or equalizer is taken up in the equalizer without affecting the cables above.

Normally the equalizer will be placed on the cables immediately above the lamp, although its construction permits it to be shifted readily to any position between the lamp and the hanger.

In Fig. 6 I have shown an equalizer of common form, which may be used instead of the one described above. It consists of a cross-bar *I*, securely clamped to the cables with screws *r r*, and the lamp is suspended from this bar. That portion of the cables which is below the bar and is attached to the lamp has sufficient slack to allow for a variation in length of the suspended portion of the cables above the bar.

The hand-rope *R* is wound on the drum in the opposite direction from that in which the cables are wound, so that as the drum is rotated the cables wind up and the hand-rope unwinds, or vice versa. The lamp is lowered by its own weight or a strain put on the cables, while it is raised by a strain put on the hand-rope.

To leave the lamp suspended in any desired position, it is sufficient to transfer part of the weight of the lamp from the cables to the hand-rope. I accomplish this object by means of a holding device *k*, the same being preferably in the form of a hook, and which is attached to the lamp indirectly through the equalizer and is adapted to engage or be engaged by the hand-rope.

In the construction shown the hand-rope is provided with a projection or knot, which is caught by the hook. If no equalizer is used, the hook may be attached directly to the lamp.

To release the hand-rope for lowering the lamp, pull down on the rope until the hook becomes loose and rests in a horizontal position, as shown in Fig. 3, and then move the rope out of the hook.

To guard against possible damage to the lamp or hanger in case of any accident to the hand-rope whereby the drum becomes free to rotate by the weight of the lamp without any counter-strain on the hand-rope, I have provided a brake or lock which acts automatically as soon as the counter-strain on the hand-rope is removed. This brake consists of the friction-contact between the periphery of the flanges *d* of the drum and the hanger-board *A*, as determined by the tension of the springs *g*. This tension is so regulated that when the strain on the hand-rope is sufficient to balance the weight of the lamp the drum swings clear of the board and the lamp may be raised and lowered at will—that is, the

combined strain on the drum from the power applied to the rope and the weight on the cables compresses the springs and frees the drum from the board. Any accident to the hand-rope which would permit the drum to rotate by weight of the lamp unrestrained removes temporarily all weight from the drum and allows the springs to lock it firmly to the board. The tension of the springs is such that the weight of the lamp alone on the drum will not free it. This device acts first as a brake to a falling lamp and then as a lock to hold it suspended. I do not limit myself to the use of this friction-brake and lock as a safety device only. It may be used alone to hold the lamp suspended in any desired position, in which case the tension of the springs is increased, so that the combined weight on the drum due to the strain of the hand-rope and the weight of the lamp will not free the drum. To lower the lamp, it will be sufficient to pull down on the lamp itself, overcoming the friction of the lock. To raise the lamp, use the hand-rope as before. Particular attention is called in this locking device to the fact that the friction is decreased instead of increased in the operation of raising or lowering the lamp.

One or more of the rims or flanges *d* of the drum *D* may engage the hanger-board or other fixed object to serve as the locking or braking device; but I preferably make all four of the flanges or rims *d* so engage, and I prefer to use the hanger-board as the other member of the friction-brake or lock.

The conductor-cables wound on the drum receive the current from the external circuit through the journals *B B* and pivots *E E*, the external circuits *t* being connected to the journals *B B* and the cables to the pivots *E E*, as shown in Figs. 1 and 2.

In order to insulate the circuit from the bolts *f*, which pass through the ceiling-board, I have used bushings *h* of insulating material around the bolts and between the journals *B B* and springs *g*, as shown in Figs. 1 and 2.

I do not herein claim, broadly, an electric lamp hanger having continuous cables extending in one continuous piece or wire from the main or external circuit to the lamp, a rotating drum about which the cables are wound and adapted to permit the cables to be wound and unwound from the drum to raise and lower the lamp, nor, broadly, devices for arresting the movement of the lamp having a spring or yielding action to prevent injury by too suddenly stopping the descent of the lamp, as such subject-matter is shown in my pending application, Serial No. 540,421, filed March 4, 1895, and made in connection with other parts the subject of claim therein; and I further desire it to be distinctly understood that I do not herein claim any subject-matter which is shown and described and made the subject of claim in my said prior application, Serial No. 540,421, to which and to the pat-

ent to be granted thereon reference is hereby expressly made.

I claim—

1. An electric-lamp hanger, consisting of a rotating supporting-drum, conductor-cables to which the lamp is attached wound on the drum, a hand-rope for raising and lowering the lamp wound on the drum in the opposite direction from that in which the cables are wound, a hook or holding device attached to the lamp and adapted to engage with or be engaged by the hand-rope for the purpose of holding the lamp suspended in any desired position, and means for conveying the current from the external circuit to the conductor-cables, substantially as specified.

2. An electric-arc-lamp hanger, consisting of a rotating supporting-drum, conductor-cables to which the lamp is attached wound on the drum, a hand-rope for raising the lamp wound on the drum in the opposite direction from that in which the cables are wound, a friction-brake applied to the periphery of the drum for the purpose of holding the lamp suspended in any desired position and means for conveying the current from the external circuit to the conductor-cables, substantially as specified.

3. An electric-lamp hanger, consisting of a rotating supporting-drum, conductor-cables to which the lamp is attached wound on the drum, a hand-rope for raising and lowering the lamp wound on the drum in the opposite direction from that in which the cables are wound, a hook or holding device attached to the lamp and adapted to engage with or be engaged by the hand-rope for the purpose of holding the lamp suspended in any desired position, a friction-brake applied to the periphery of the drum to automatically retard the rotation of the drum when such rotation is unrestrained by the hand-rope, and means for conveying the current from the external circuit to the conductor-cables, substantially as specified.

4. An electric-lamp hanger, consisting of a rotating supporting-drum, conductor-cables to which the lamp is attached wound on the drum, a hand-rope for raising and lowering the lamp wound on the drum in the opposite direction from that in which the cables are wound, a hook or holding device attached to the lamp and adapted to engage with or be engaged by the hand-rope for the purpose of holding the lamp suspended in any desired position, and means for conveying the current from the external circuit to the conductor-cables, consisting in the pivots and journals of the drum, substantially as specified.

5. An electric-arc-lamp hanger, consisting of a rotating supporting-drum, conductor-cables to which the lamp is attached wound on the drum, a hand-rope for raising the lamp wound on the drum in the opposite direction from that in which the cables are wound, a friction-brake applied to the periph-

ery of the drum for the purpose of holding the lamp suspended in any desired position and means for conveying the current from the external circuit to the conductor-cables consisting in the pivots and journals of the drum, substantially as specified.

6. An electric-lamp hanger, consisting of a rotating supporting-drum, conductor-cables to which the lamp is attached wound on the drum, a hand-rope for raising and lowering the lamp wound on the drum, in the opposite direction from that in which the cables are wound, a hook or holding device attached to the lamp and adapted to engage with or be engaged by the hand-rope for the purpose of holding the lamp suspended in any desired position, a friction-brake applied to the periphery of the drum to automatically retard the rotation of the drum when such rotation is unrestrained by the hand-rope, and pivots and journals of the drum for conveying the current from external circuit to the conductor-cables, substantially as specified.

7. A suspension-equalizer for electric lamps or other articles held suspended by two cords or cables, consisting of a stiff plate with two pairs of holes so situated that the members of each pair will be on opposite sides of a line connecting the other pair, the plate being so shaped that the two cords or cables may be passed down through one pair of holes, then brought to the top and passed down through the other pair of holes, substantially as specified.

8. In an electric-arc-lamp hanger, the combination with a hanger-board of a drum engaging the hanger-board as a friction-brake or locking device for the drum, and lamp-supporting conductor-cables wound upon the drum, substantially as specified.

9. In an electric-arc-lamp hanger, the combination with a hanger-board of a drum engaging the hanger-board as a friction-brake or locking device for the drum, and lamp-supporting conductor-cables wound upon the drum, means for automatically holding the drum in engagement with the hanger-board, and means for releasing the engagement between board and drum, substantially as specified.

10. In an electric-arc-lamp hanger, the combination with a hanger-board of a drum engaging the hanger-board as a friction-brake or locking device for the drum, and lamp-supporting conductor-cables wound upon the drum, said hanger-board having a concaved surface to engage the drum, substantially as specified.

11. In an electric-arc-lamp hanger, the combination with a hanger-board of a drum engaging the hanger-board as a friction-brake or locking device for the drum, and lamp-supporting conductor-cables wound upon the drum, and springs for pressing the drum against the hanger-board, substantially as specified.

12. In an electric-arc-lamp hanger, the combination with a hanger-board of a drum engaging the hanger-board as a friction-brake or locking device for the drum, and lamp-supporting conductor-cables wound upon the drum, springs for pressing the drum against the hanger-board, and a hand-rope wound around the drum in the opposite direction to the cables, substantially as specified.
13. In an electric-arc-lamp hanger, the combination with a hanger-board of a drum engaging the hanger-board as a friction-brake or locking device for the drum, lamp-supporting conductor-cables wound upon the drum, and an equalizer interposed between the drum and the lamp, substantially as specified.
14. In an electric-arc-lamp hanger, the combination with a hanger-board of a drum engaging the hanger-board as a friction-brake or locking device for the drum, lamp-supporting conductor-cables wound upon the drum, and an equalizer interposed between the drum and the lamp, said drum having two grooves for the two cables to wind in superimposed coils, and converging flanges to cause the coils to superimpose uniformly, substantially as specified.
15. A lamp-hanger drum having two grooves for the lamp-supporting cables and converging flanges as to their inner faces to cause the coils to superimpose uniformly, substantially as specified.
16. A drum having a groove for winding a cable upon in superimposed coils and converging flanges as to their inner faces to cause the coils to superimpose uniformly, substantially as specified.
17. In a lamp-hanger the combination with a drum, of two lamp-supporting continuous cables wound upon the drum, and the equalizer interposed between the drum and the

lamp to cause the lamp to hang plumb, said equalizer having four arms, one pair for each cable, substantially as specified.

18. In a lamp-hanger the combination with a drum, of two lamp-supporting continuous cables wound upon the drum, and the equalizer interposed between the drum and the lamp to cause the lamp to hang plumb, said equalizer having two separated points of engagement with each cable, substantially as specified.

19. In an electric-lamp hanger the combination with a rotating drum, of lamp-supporting conductor-cables wound upon the drum, a hand-rope wound upon the drum in the opposite direction from the conductor-cables, and a hook or holding device engaging the hand-rope to hold the lamp suspended thereby, substantially as specified.

20. In an electric-lamp hanger, the combination with rotating drum, of lamp-supporting conductor-cables wound upon the drum, a hand-rope wound upon the drum in the opposite direction from the conductor-cables, and a hook or holding device engaging the hand-rope to hold the lamp suspended thereby, said hand-rope having a knot or projection to engage said hook or holding device, substantially as specified.

21. In an electric-lamp hanger having a rotating drum on which the lamp-supporting cables are mounted, the combination with the normal means of holding the lamp suspended, of an automatic safety friction-brake applied to the drum for locking the drum when the said normal holding device fails to act, substantially as specified.

WILLIAM S. WESTON.

Witnesses:

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H. M. MUNDAY.