

(No Model.)

4 Sheets—Sheet 1.

G. W. SMITH.  
ELECTRIC LIGHT HANGER.

No. 454,815.

Patented June 23, 1891.

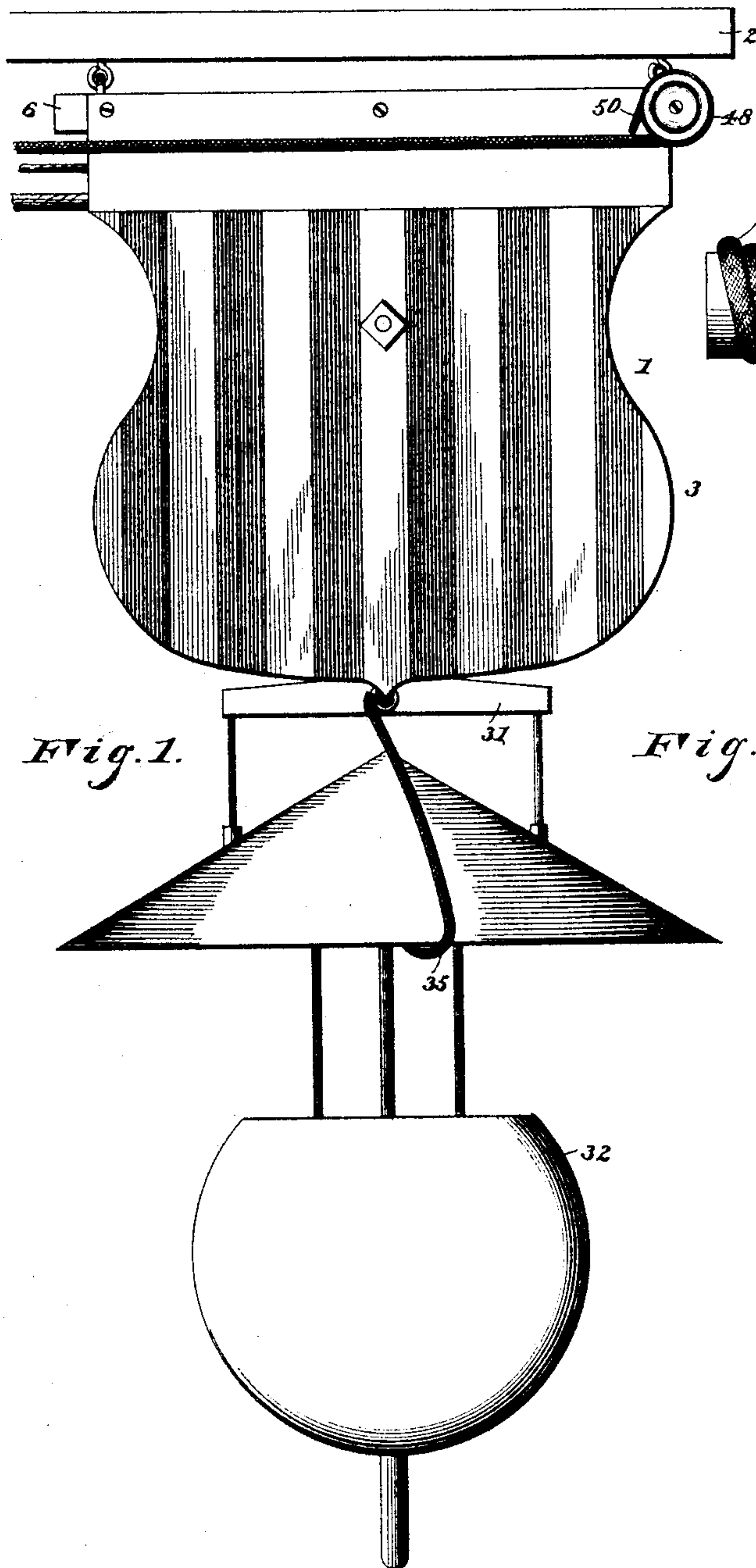


Fig. 1.

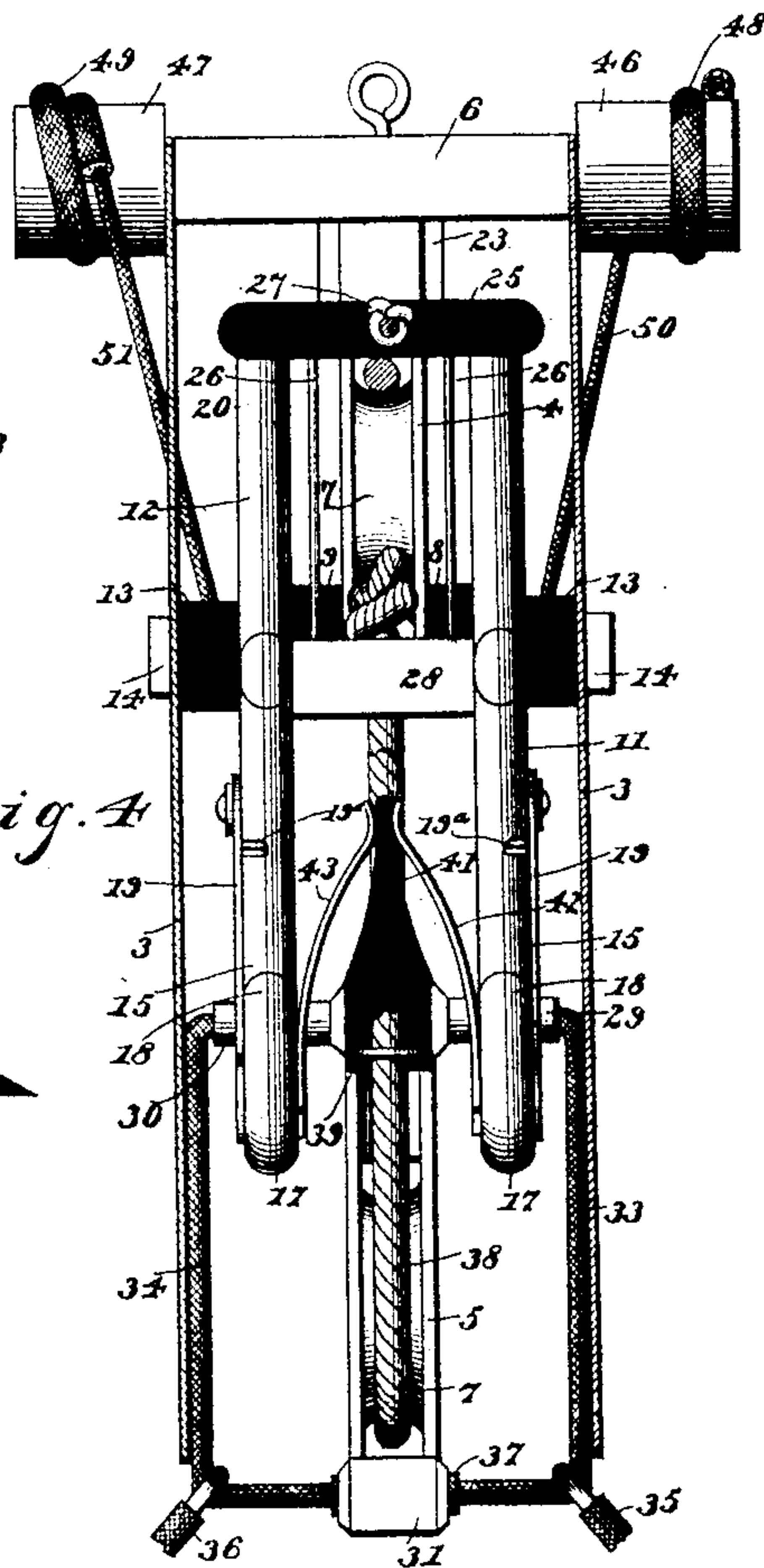


Fig. 4.

Witnesses;

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By *his* Attorneys,

*C. A. Snow & Co.*

Inventor  
*George W. Smith,*

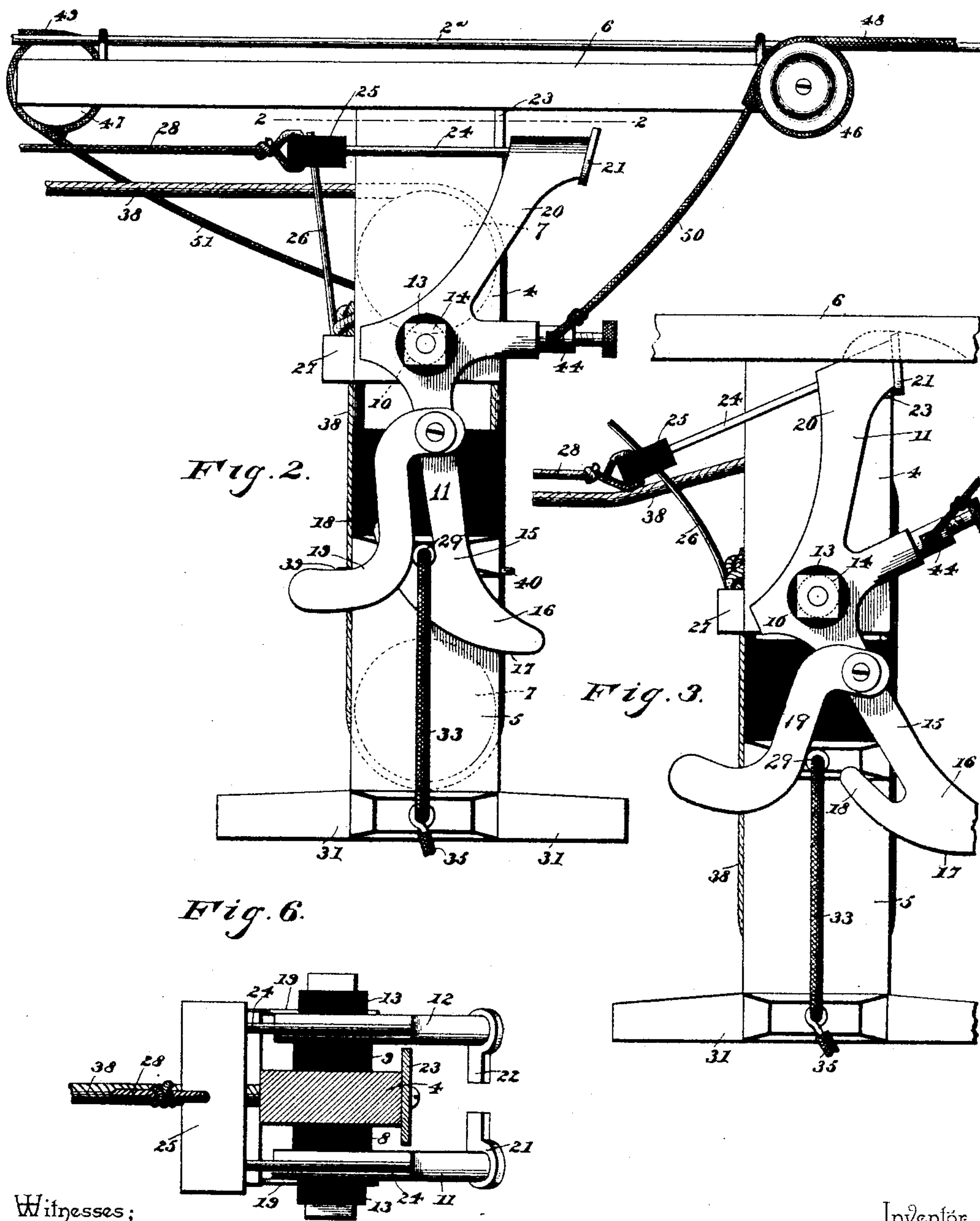
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4 Sheets—Sheet 2.

G. W. SMITH.  
ELECTRIC LIGHT HANGER.

No. 454,815.

Patented June 23, 1891.



Witnesses;

*J. M. Withers*

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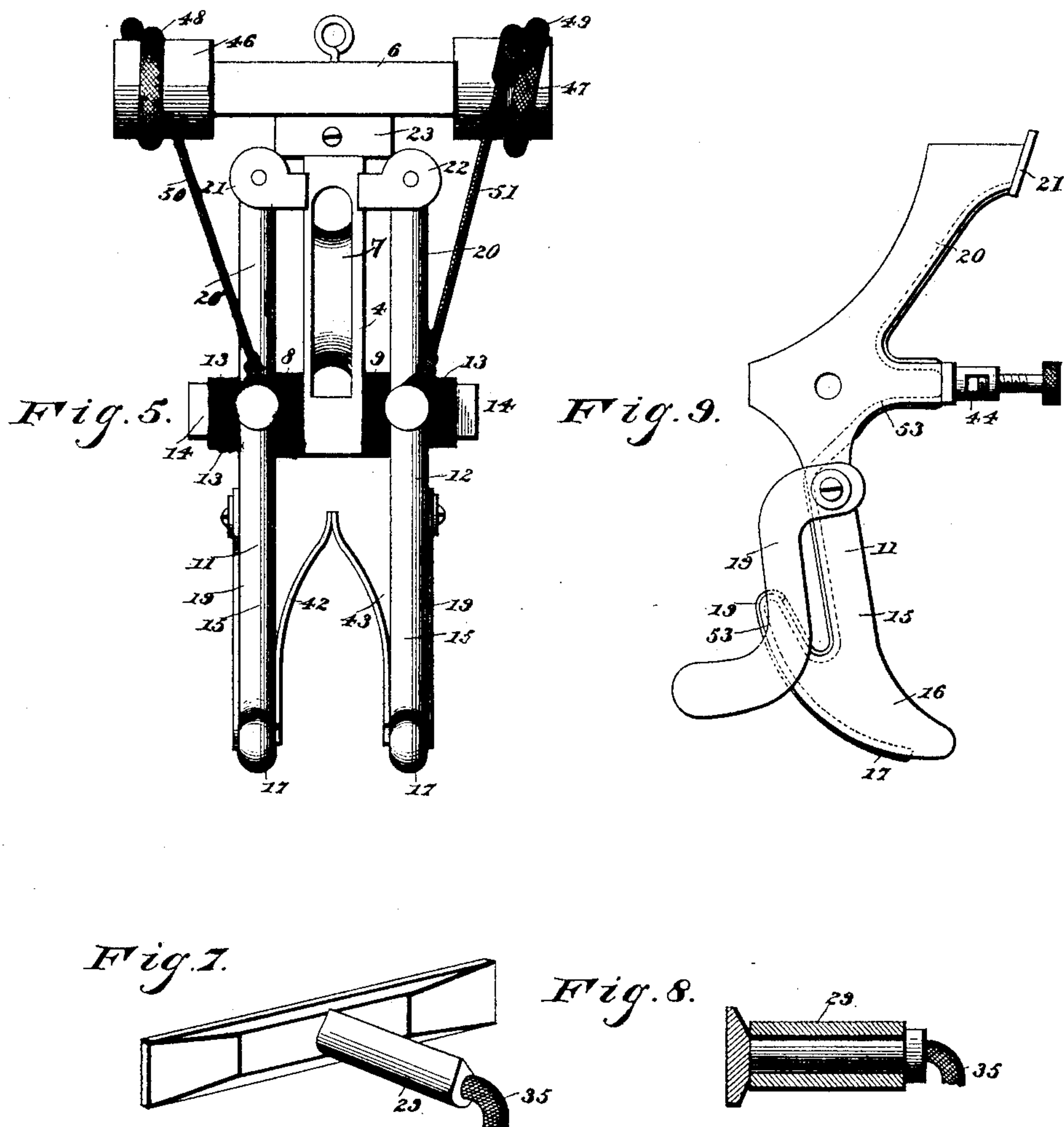
(No Model.)

4 Sheets—Sheet 3.

G. W. SMITH.  
ELECTRIC LIGHT HANGER.

No. 454,815.

Patented June 23, 1891.



Witnesses;

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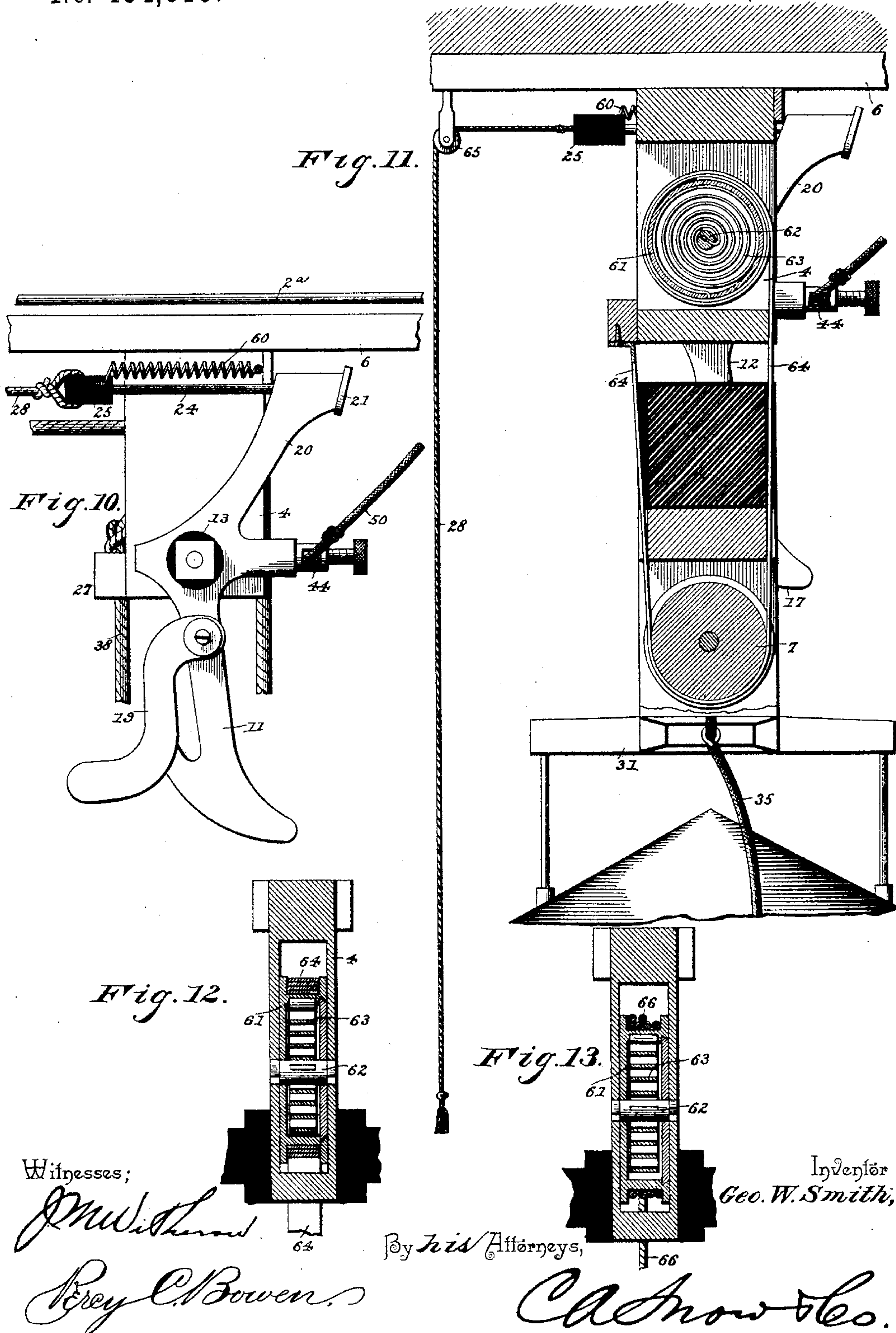
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4 Sheets—Sheet 4.

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# UNITED STATES PATENT OFFICE.

GEORGE WELLS SMITH, OF UNION CITY, INDIANA.

## ELECTRIC-LIGHT HANGER.

SPECIFICATION forming part of Letters Patent No. 454,815, dated June 23, 1891.

Application filed January 22, 1891. Serial No. 378,697. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE WELLS SMITH, a citizen of the United States, residing at Union City, in the county of Randolph and State of Indiana, have invented a new and useful Electric-Light Hanger, of which the following is a specification.

My invention is an improvement in hangers for electric lights, the object in view being to provide a device of this character which will properly support the light and at the same time admit of its being conveniently lowered when necessary to make repairs or to renew or arrange the carbons, and also to provide means for disconnecting the lamp from the circuit in such a manner as to keep the circuit closed while the lamp is disconnected therefrom.

A further object of the invention is to provide mechanism whereby the operation of lowering the lamp will operate to close the electric circuit in the hanger, thus preventing interruption in the line-current, and also disconnect the lamp from all electrical connection with the line or with the conducting portions of the hanger, thereby making it impossible for the workmen to receive injury from shocks when making repairs while the current is on.

These objects and such others as fairly fall within the scope of my invention I attain by means of the mechanism illustrated in the accompanying drawings, the peculiar construction, combination, and arrangement of which will be hereinafter fully described, and the specific points of novelty particularly pointed out in the claims.

In the drawings, Figure 1 is a side elevation of my invention, showing the same suspended from the horizontal arm of the supporting-crane. Fig. 2 is a side elevation of my invention with the hood or casing removed, showing the device suspended from a wire and the operating parts in their normal position. Fig. 3 is a side elevation similar to Fig. 2, showing the parts in position for lowering the lamp. Fig. 4 is a rear elevation of the interior mechanism, showing the casing in section. Fig. 5 is a front elevation of the upper pulley-block and the mechanism attached thereto. Fig. 6 is a horizontal section taken on the line 2 2 of Fig. 2. Figs. 7 and

8 are detail views showing modified forms of contact-lugs for the lower pulley-block. Fig. 9 is a detail side elevation of a modified form of one of the conducting-levers, showing the electrical conductor embedded therein. Figs. 10, 11, 12, and 13 illustrate modified forms of my invention.

Similar numerals of reference designate corresponding parts in the several views.

In Fig. 1 is shown my improved hanger 1, suspended from the horizontal arm 2 of the usual crane or support. The working parts of my invention are inclosed within a hood or casing 3, which I prefer to make in the form of a shield and ornament with the national colors, although it will be understood that any suitable and desirable form or ornamentation may be used without departing from the spirit of my invention.

Referring now more particularly to Fig. 2, it will be seen that the operating parts of my invention consist of two pulley-blocks 4 and 5, the upper block 4 being rigidly secured to a top piece 6, which forms the top of the hood or casing 3 and also is a supporting-block for the device. Each of the pulley-blocks 4 and 5 is provided with a sheave 7, housed within the said blocks. To the sides of the upper pulley-block 4, near the lower end thereof, are secured laterally-extending studs 8 9, which are formed of insulating material and round in shape, having reduced portions 10 10, upon which are journaled metallic levers 11 12. Suitable washers 13 13, also of insulating material, may be placed upon the ends of the lugs 8 9 between the levers 11 12 and the securing-nuts 14 14. The lower arms 15 15 of the levers 11 12 are formed into heads 16 16, having inclined curved surfaces 17 17 and hooks 18 18. The said lower arms are also provided with curved conducting-arms 19 19, pivoted to their sides and adapted to hang against the sides of the hooks 18 18. The said arms 19 19 are provided with inwardly-projecting stop-lugs 19<sup>a</sup> 19<sup>a</sup> to limit the downward movement thereof. The purpose of the foregoing construction will be hereinafter explained.

The upper arms 20 20 of the levers 11 12 extend upwardly and forwardly nearly to the top piece 6 and beyond the front of the pulley-block 4, where they are provided with inwardly-projecting contact-lugs 21 22. A con-



ducting-strip 23 extends across the front edge of the block 4 at the upper end thereof in proper position for the lugs 21 22 upon the levers 11 12 to make contact with the opposite ends thereof when the said levers are drawn backwardly, as shown in Fig. 3.

A rod 24 extends backwardly from each of the upper ends of the levers 11 12, and the said rods 24 are connected together at their rear ends behind the block 4 by a transverse piece 25 of insulating material. Springs 26 project upwardly from a block 27, secured to the lower rear edge of the pulley-block 4, the upper ends of which springs pass through the transverse piece 25 and serve to keep the upper ends of the levers normally in a forward position, as shown in Fig. 2. A rope or cord 28 is secured to the center of the transverse piece 25 and extends along the arm 2 of the support for the hanger and down the vertical portion thereof to within the reach of the workman. By means of the said cord 28 the upper ends of the levers 11 12 may be drawn backward against the tension of the spring 26 to the position shown in Fig. 3.

The upper end of the lower pulley-block 5, to which the lamp is suspended, is formed of insulating material and has two laterally-extending lugs 29 30 secured to the sides thereof in such position as to pass into the hooks 18 18 when the said pulley-block is raised to its normal position and so suspend the said block 5 by the levers 11 12, as shown in Fig. 2.

The lower end of the pulley-block 5 is extended longitudinally, as at 31 31, and below these extensions is suspended the lamp 32 in any suitable manner. Conductors 33 34 are secured at their upper ends to the ends of the contact-lugs 29 30 and at their lower ends to the sides of the pulley-block 5, forming also braces for the said lugs 29 30. Suitable conductors 35 36 are secured to the lower ends of the conductors 33 34 and serve to carry the electricity to the lamp 32. An insulation 37 is interposed between the conductors 33 34 and the pulley-block 5. A rope or cord 38 has one end secured under the block 27 upon the pulley-block 4 and is passed downwardly through an eye 39, round the sheave 7, and upwardly through an eye 40 of the lower pulley-block 5, then over the sheave 7 in the upper pulley-block 4, and along the arm 2 and down to within reach of a workman, the lower end of the said rope 38 being secured in any suitable manner, or it may be attached to a windlass for convenience of operation.

The upper end of the lower pulley-block 5 is of insulating material and wedge-shaped, as shown at 41, and when the said block is raised to its normal position the wedge-shaped upper end 41 passes between contact-springs 42 43, which are secured to the inner sides of the lower arms of the levers 11 12, as shown in Fig. 4. The said levers 11 12 are also provided with suitable binding-posts 44 45.

In operation my device may be hung upon the horizontal arm 2 of a suitable support, as

shown in Fig. 1, or it may be swung upon a wire 2<sup>a</sup>, as shown in Fig. 2. In either case the ropes 28 and 38 will be extended horizontally to a vertical standard or other suitable point where they may be brought down so as to be within reach of a person upon the ground. When the crane or support is formed of gas-pipe, the ropes 28 and 38 may be carried through the inside of the pipe, which will protect the said ropes from the weather. The line-wires or main-conductors 48 49 will be secured to insulators 46 47, secured at the most suitable points upon the top piece 6, and flexible conductors 50 51 are secured at one end to the ends of the main-line wires 48 49 and at their opposite ends to the binding-posts 44 45 upon the levers 11 12.

The contact-lugs 29 30 may be round, as shown in Fig. 2, or may be wedge-shaped upon their upper sides, as shown in Fig. 7, or they may be provided with rollers, as in Fig. 8, whichever may be found most desirable in practice.

Should the levers 11 12 be made of iron or other metal of less conductivity than copper, they may be suitably grooved to receive a conductor of high conductivity, as shown at 53 in Fig. 9.

The operation of my invention is as follows: When the parts are in their normal position, the lower pulley-block 5 is supported by the lugs 29 30, resting in the hooks 18 18 at the lower end of the levers 11 12, the upper wedge-shaped end 41 of insulating material being between the contact-springs 42 43. The lamp 32, which is attached to the lower part of the block 5, is electrically connected to the said block by the conductors 35 36, one of which extends from each of the conductors 33 34 to one of the carbons of the lamp. The electric current will enter from the positive main-line wire 48 through the flexible conductor 50 and binding-post 44 to the lever 11, from the hook 18 of which it will pass to the lug 29 upon the lower pulley-block 5 through the conductors 33 and 35 to the positive carbon in the lamp. The return will be from the negative carbon in the lamp through the conductors 36 and 34 to the lug 30, from which it will pass to the hook 18 of the lever 12, then from the binding-post 45 by the conductor 51 to the negative main-line wire 49, thus completing the circuit through the hanger and lamp. Should it be necessary to renew or arrange the carbons or make repairs on the lamp while the current is on, the operation may be performed with safety by lowering the pulley-block 5 and with it the lamp in the following manner: The operator will first pull upon the rope 38 to raise the lower pulley-block 5 slightly, thereby raising the lugs 29 30 in the hooks 18 18. Then a pull upon the cord 28 will draw the upper ends of the levers 11 12 backward until the contact-lugs 21 22 are brought into contact with opposite ends of the conducting-strip 23 upon the upper pulley-block 4, thus short-cir-



cutting the current through the said strip 23 and cutting out the lamp. The two previously-described movements will bring the parts to the position shown in Fig. 3 of the drawings, by reference to which it will be seen that if the rope 38 is now paid out it will allow the pulley-block 5 and the lamp to descend. As soon as the upper end 41 of the pulley-block 5 has passed from between the contact-springs 42 43 the latter will make contact with each other, and thus close the circuit at this point, while the lamp passes from all electrical contact with the fixtures upon the top piece 6 and descends to within reach of the workmen, supported by the rope 38, the circuit meanwhile being closed above, as hereinbefore described. As soon as the lower pulley-block is clear of the hooks 18 18 upon the levers 11 12 and the springs 42 43 have come together the cord 28 may be released, which will allow the levers 11 12 to assume their normal position, the circuit being closed through the springs 42 43. In order to raise the lamp back to the hanger and into the circuit, it is only necessary to pull upon the rope 38, which passes over the sheaves 7 7 in the pulley-blocks 4 5 and will raise the block 5 and with it the lamp toward the block 4, as will be readily understood. As the pulley-block 5 approaches the pulley-block 4 the contact-lugs 29 30 will come in contact with the inclined surfaces 17 17 of the heads 16 16 of the lower arms of the levers 11 12 and also with the curved conducting-arms 19 19, the lower ends of which hang by gravity in close proximity to the hooks 18 18, thus making electrical connection with the lamp. As the upward movement continues the wedge-shaped upper end 41 of the pulley-block 5 will pass between the contact-springs 42 43, separating the said springs and causing the current to flow into the lugs 29 30 and pass through the lamp. The upward movement of the pulley-block 5 is continued until the lugs 29 30 pass over and into the hooks 18 18, thus suspending the said block 5 and the lamp by the levers 11 12 of the hangers, as hereinbefore explained.

The purpose of the arms 19 19 is to keep an electrical connection with the lugs 29 30 while the latter are passing over the hooks 18 18 and while the wedge-shaped end 41 of the block 5 is passing between the contact-spring 42 43, thus preventing any break in the circuit or sparking while the pulley-block 5 is being drawn in place.

It will be understood that I do not wish to limit myself to the precise details of construction as herein set forth, as many modifications may be made therein without departing from the spirit of my invention—as, for instance, I have shown in Fig. 10 a modification in which coiled retractile springs 60 are secured at one end to the sides of the pulley-block 4, near the upper front edge thereof, and have their rear ends connected to the ends of the insulating-piece 25, the springs 60 operating

instead of the springs 26 to keep the levers 11 12 in their normal position.

In Figs. 11 and 12 I have shown in two sectional views, taken at right angles to each other, a modification, in which the sheave 7 in the upper pulley-block is omitted and in lieu thereof a hollow drum 61 is mounted upon a shaft 62, which passes through the said drum and the block 4 and is rigidly secured to the latter. A flat spring 63 is secured at one end to the shaft 62 and is coiled therearound within the drum 61 and fastened at its opposite end to the interior of the said drum. The exterior of the drum 61 is grooved, as shown in Fig. 12, and a flat metallic ribbon 64 is secured at one end to the pulley-block 4 and passes downwardly around the sheave 7 of the lower pulley-block and upwardly to the drum 61, within the groove of which it is secured. The ribbon 64 is long enough to allow of the lower pulley-block and the lamp being lowered so as to come within easy reach of the operator, and when the said lower block and lamp are in their raised position the ribbon 64 will be coiled upon the drum 61. The relation of the spring 63 and ribbon 64 is such as to cause the spring to be wound up when the ribbon is unwound from the drum, and the tension of the said spring is arranged to about balance the lamp while it is being raised or lowered.

The rope 28 may be carried over a sheave 65 to the ceiling of a room and hang down to within reach of the operator, as shown in Fig. 11.

If found desirable, a rope 66 may be substituted for the ribbon 64, as shown in Fig. 13.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In an electric-lamp hanger, a block secured to a suitable support, levers pivoted upon the said block, hooks at the lower ends of the said levers arranged to support a lamp, and contact-arms pivoted to the said levers to hang over and close the hooks of the same, substantially as described.

2. In an electric-lamp hanger, a block, levers pivoted upon the said block, a yoke joined to the levers at their upper ends, springs suitably connected to the said block to operate upon the yoke to keep the said levers in their normal position, and hooks at the lower ends of the said levers arranged to support a lamp, substantially as described.

3. In an electric-lamp hanger, a block secured to a suitable support, levers 11 12, pivoted upon said block, a yoke secured to the upper ends of the said levers, comprising the rods 24 24 and a transverse piece 25, and springs secured to the said block, arranged to operate upon the transverse piece 25 to keep the levers 11 12 in their normal position, said levers being provided with hooks at their lower ends, arranged to hold a lamp, substantially as described.

4. In an electric-lamp hanger, a top piece



6, secured to a suitable support, a block 4, secured to said top piece, levers 11 12, pivoted upon said block 4, a yoke consisting of the rods 24 24, secured to the upper ends of the levers 11 12 and secured together at their ends by a transverse piece 25, springs secured to the said block, arranged to operate upon the transverse piece 25 to keep the levers 11 12 in their normal position, hooks upon the lower ends of the said levers, arranged to hold a lamp, and contact-arms 19 19, pivoted to the said levers to hang over and close the hook of the same, substantially as described.

5. In an electric-lamp hanger, a block secured to a suitable support, studs projecting laterally from the said block, levers pivoted upon the said studs, a yoke connecting the upper ends of the said levers together, springs arranged to operate upon the said yoke to keep the levers 11 12 in their normal position, and hooks upon the lower ends of the said levers to hold a lamp, substantially as described.

6. In an electric-light hanger, the levers 11 12, studs 8 9, of insulating material, upon which the said levers are pivoted, a yoke the cross-piece 25 of which is of insulating material, arranged to connect the upper ends of the said levers together, hooks upon the lower ends of the said levers, arranged to support a lamp, substantially as described.

7. In an electric-light hanger, the levers 11 12, studs of insulating material secured upon a supporting-block 4, upon which the said levers are pivoted, a yoke having a cross-piece 25, of insulating material, connecting the levers together at their upper ends, contact-lugs 21 22 upon the upper ends of the levers 11 12, a conducting-strip 23 upon the said supporting-block 4, with which the lugs 21 22 are adapted to make contact, hooks 18 at the lower ends of the levers 11 12, adapted to support a lamp, springs to hold the said contact-lugs 21 22 out of contact with the strip 23, and means for moving the levers to bring the contact-lugs into contact with the conducting-strip 23, substantially as described.

8. In an electric-lamp hanger, the combination of the levers pivoted upon the insulating-studs and having hooks 18 18 at their lower ends with a block having a lamp attached thereto, and lugs upon the said block adapted to engage the said hooks 18 18 to suspend the said block in the said hooks, substantially as described.

9. In an electric-lamp hanger, the combination of the levers pivoted upon insulating-studs and having hooks 18 18 at their lower ends with a block having a lamp attached thereto, lugs upon the said block adapted to engage the said hooks 18 18 to suspend the said block in the said hooks, and means for raising and lowering said block, substantially as described.

10. In an electric-lamp hanger, the combination of a block 4, studs 8 9, of insulating material, upon the said block, conducting-levers 11 12, pivoted to the studs, to which le-

vers are connected the opposite ends of the line-wire, and hooks 18 18 at the lower ends of the said levers with a second block 5, to which is attached a lamp, contact-lugs upon the said block 5, electrically connected to said lamp and adapted to engage the hooks 18 18 upon the said levers 11 12, and thus support the block 5 and lamp and also bring the lamp into electrical contact with the levers 11 12, and means for raising and lowering the block 5, substantially as described, for the purpose set forth.

11. In an electric-lamp hanger, the combination of a block 5 and contact-lugs 29 30 upon the said block, to which the opposite poles of an electric lamp are electrically attached, with conducting-levers 11 12, to which are connected the ends of the line-wires, hooks 18 18 upon the said conducting-levers to engage the lugs 29 30, insulating-studs 8 9, upon which the said levers are pivoted, contact-lugs 21 22 at the upper ends of the levers, adapted to make and break contact with a conducting-strip 23, and means for raising and lowering said blocks 5, substantially as described.

12. In an electric-lamp hanger, the combination of a block 5, the upper end 41 of which is of insulating material, and contact-lugs 29 30 upon the block 5, to which the opposite poles of an electric lamp are electrically attached, with conducting-levers 11 12, pivoted upon a suitable support, to which levers are connected the ends of the line-wire, hooks 18 18 upon the said conducting-levers to engage the lugs 29 30, contact-springs 42 43 upon the levers 11 12, between which the upper insulating end 41 of the block 5 is adapted to pass when the said block is raised to engage the hooks 18 18, substantially as described.

13. In an electric-lamp hanger, the combination of the conducting-levers 11 12, to which are connected the line-wires, the said levers being pivoted to a support and insulated from each other, hooks 18 18 at the lower ends of the said levers, contact-arms 19 19, pivoted to the levers, and means for closing the circuit from lever to lever when the block 5 is withdrawn therefrom, with the block 5, contact-lugs upon the block 5, adapted to engage the hooks 18 18 and conduct the current from the levers 11 12 to the lamp and also to support the said block and lamp in an elevated position, substantially as described.

14. In an electric-lamp hanger, the combination of the spring-actuated conducting-levers 11 12, to which are connected the line-wires, the said levers being pivoted to a supporting-block 4 and insulated from each other, hooks 18 18 at their lower ends, contact-arms 19 19, pivoted thereto, and means for closing the circuit from lever to lever when the block 5 is withdrawn therefrom, with the block 5, contact-lugs upon the block 5, adapted to engage the hooks 18 18 and conduct the current from the levers 11 12 to the lamp, and also to support the said block and lamp in an elevated



position, and means for raising and lowering the said block 5, consisting of a drum journaled in the block 4, a rope or metallic ribbon secured to the block 4, passing under a sheave in the block 5 and over the drum in the block 4, and means for operating the said rope, substantially as and for the purpose set forth.

15. In an electric-lamp hanger, the spring-actuated levers 11 12, pivoted to a suitable support, hooks 18 18, contact-lugs 29 30, electrically connected to a lamp and adapted to be engaged by the hooks 18 18, conductors 53, embedded in the said levers to convey the current from the main line to the lamp, and means for making electrical connections from the conductor of one lever to the conductor of the other when the lugs 29 30 are withdrawn from the hooks 18 18, substantially as described.

16. In an electric-lamp hanger, the combination of an inclosing case consisting of sides made in the form of a shield and a top piece 6, suspended from a suitable support and having insulators secured thereto, to which are attached the ends of the line-wire, with a block 4, insulating-studs upon the block 4, the spring-actuated conducting-levers piv-

oted upon the said insulating-studs, said levers being connected by suitable conductors to the ends of the line-wire, hooks 18 18, secured to the lower ends of the said levers, contact-lugs upon a block 5, adapted to be engaged by the said hooks, said contact-lugs being electrically connected to an electric lamp suspended from the block 5, means for engaging and disengaging the lugs 29 30 and hooks 18 18, contact-arms 19 19, pivoted to the levers 11 12 and arranged to hang over the hooks 18 18 and make electrical contact with the lugs 29 30 and prevent sparking when the latter are moved into or out of the hooks 18 18, and means for raising and lowering the block 5, said levers 11 12 being provided with suitable means for closing the circuit from lever to lever when the block 5 is lowered, substantially as described, for the purpose specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

GEORGE WELLS SMITH.

Witnesses:

JOHN A. SHOCKNEY,  
THEODORE SHOCKNEY.