

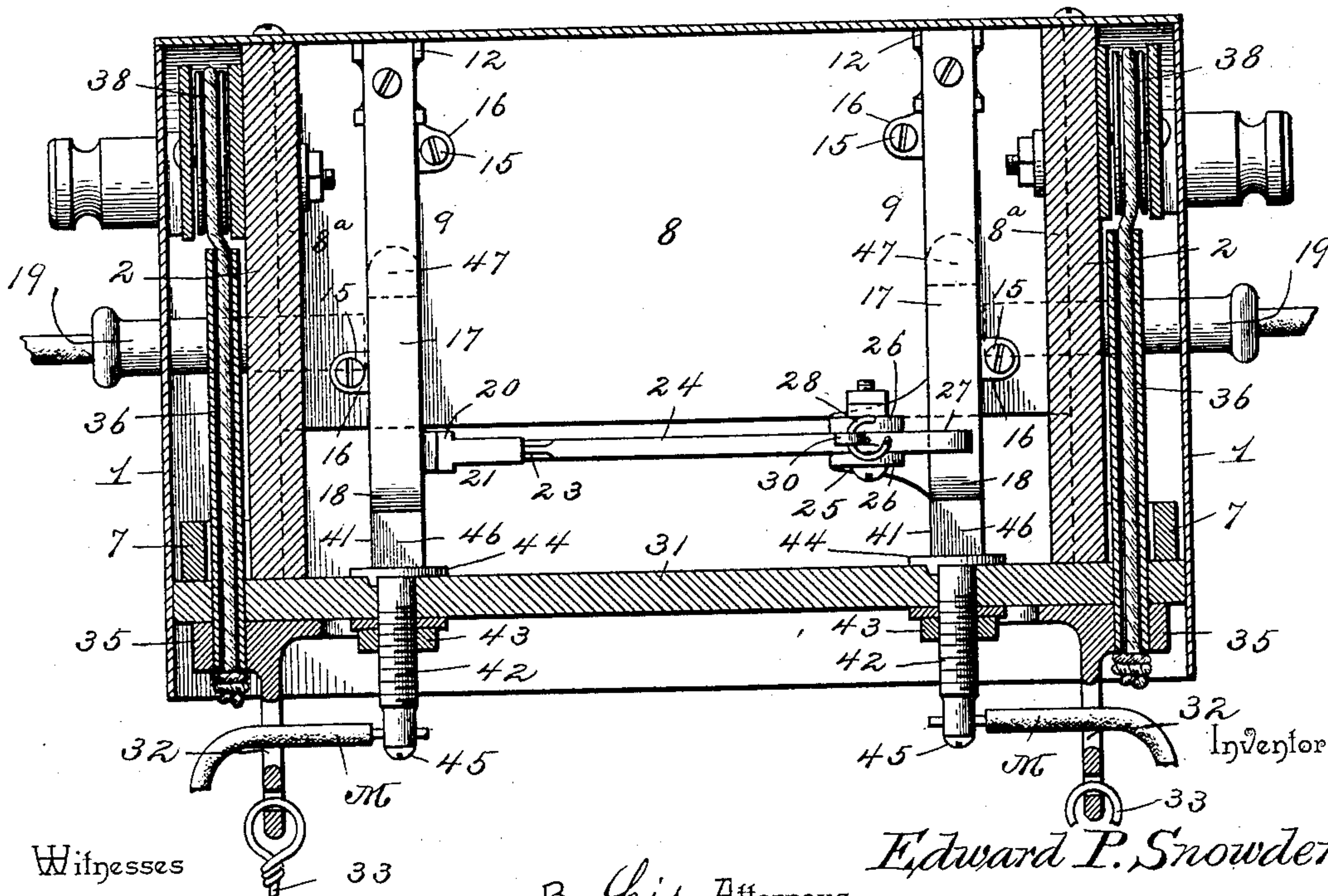
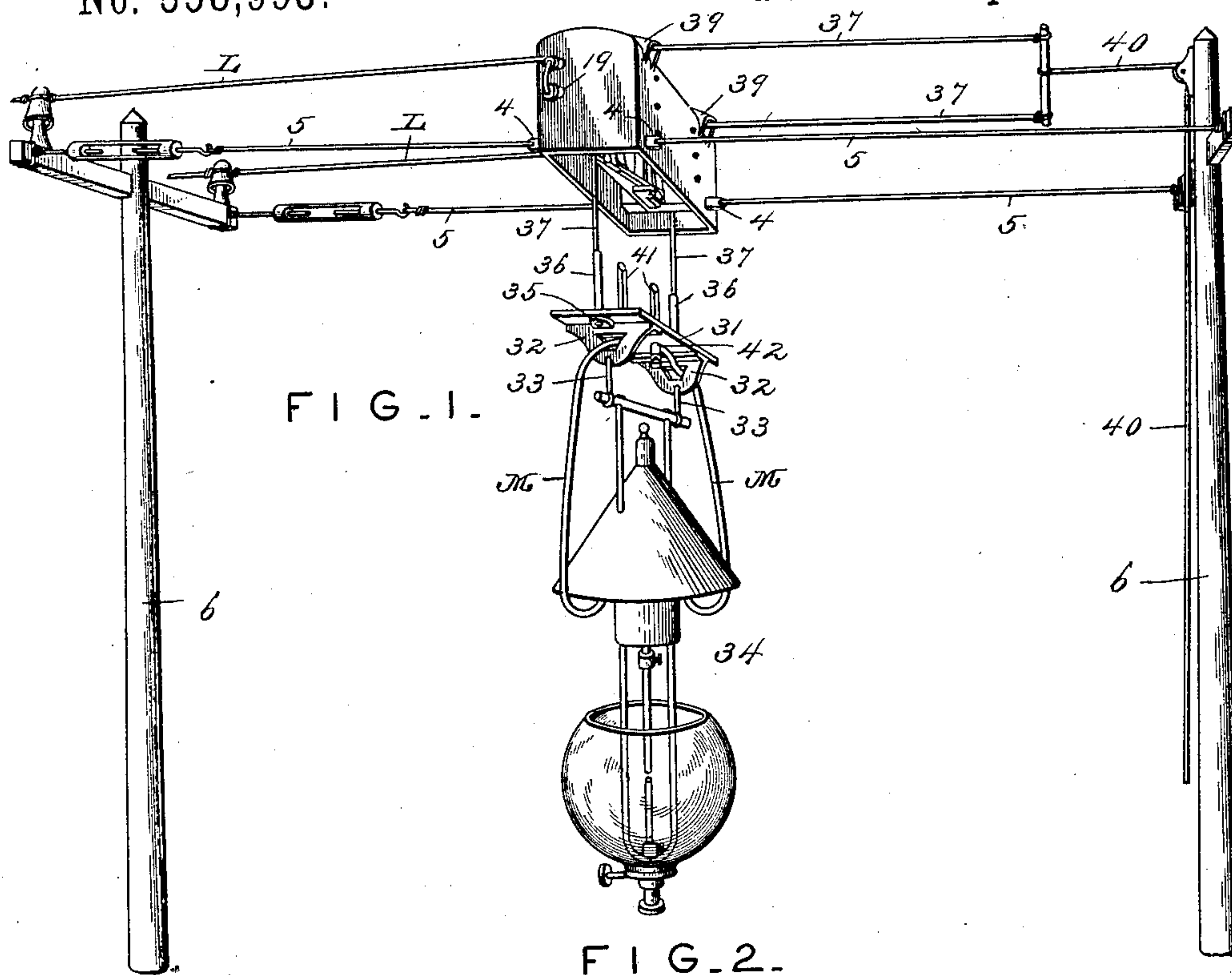
(No Model.)

2 Sheets—Sheet 1.

E. P. SNOWDEN.
SAFETY ARC LAMP HANGER.

No. 558,993.

Patented Apr. 28, 1896.



Witnesses

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By his Attorneys,

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FIG. 3.

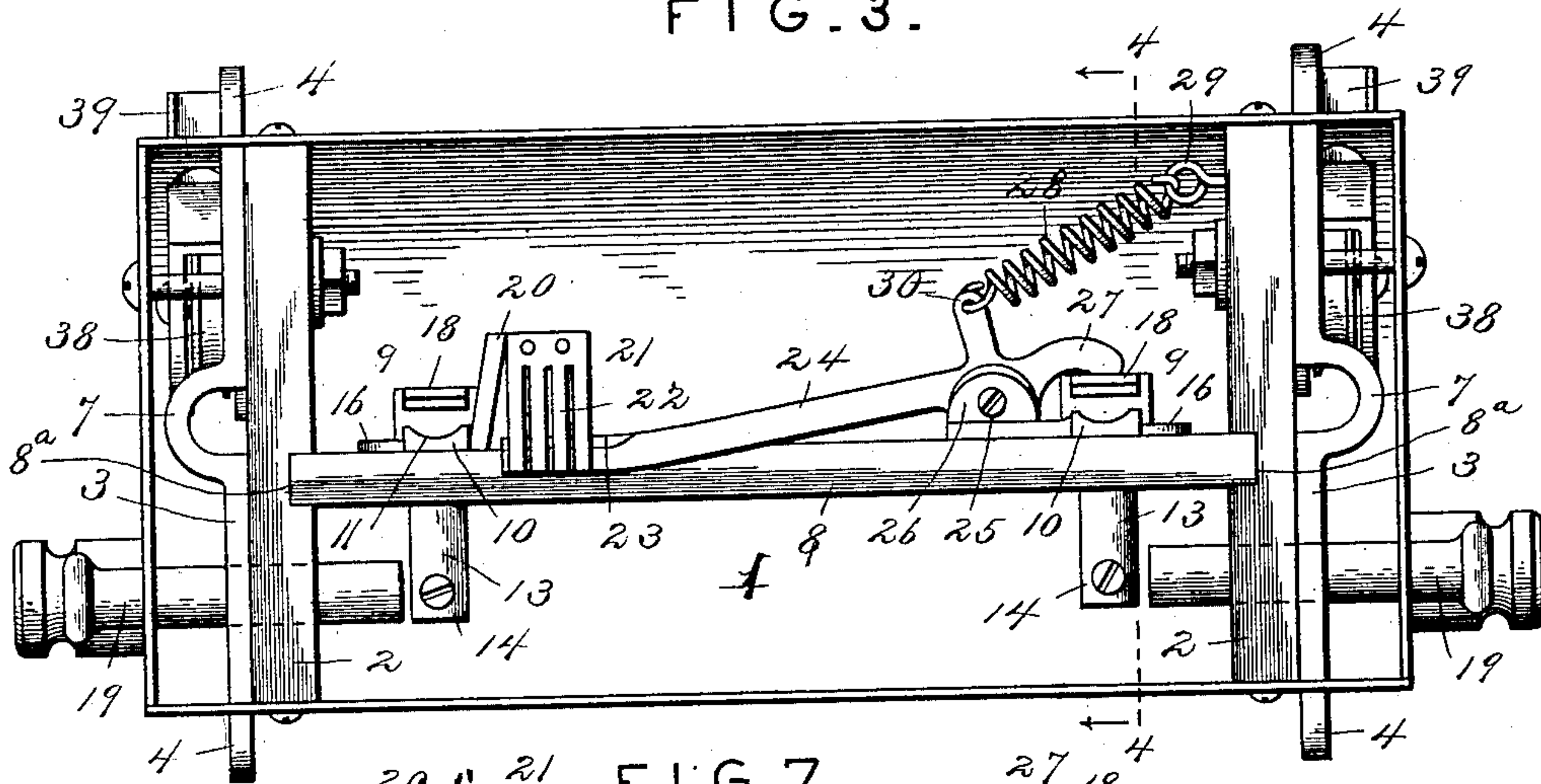


FIG. 7.

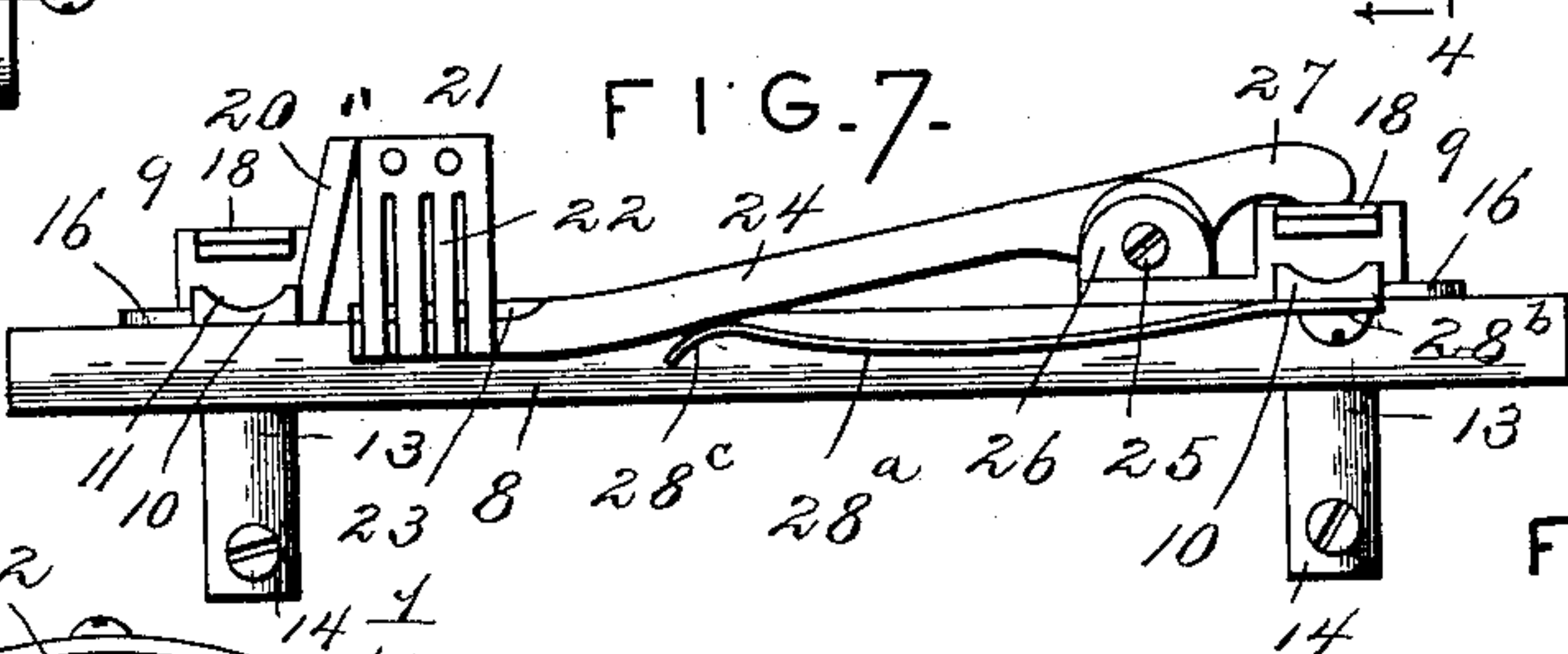


FIG. 4.

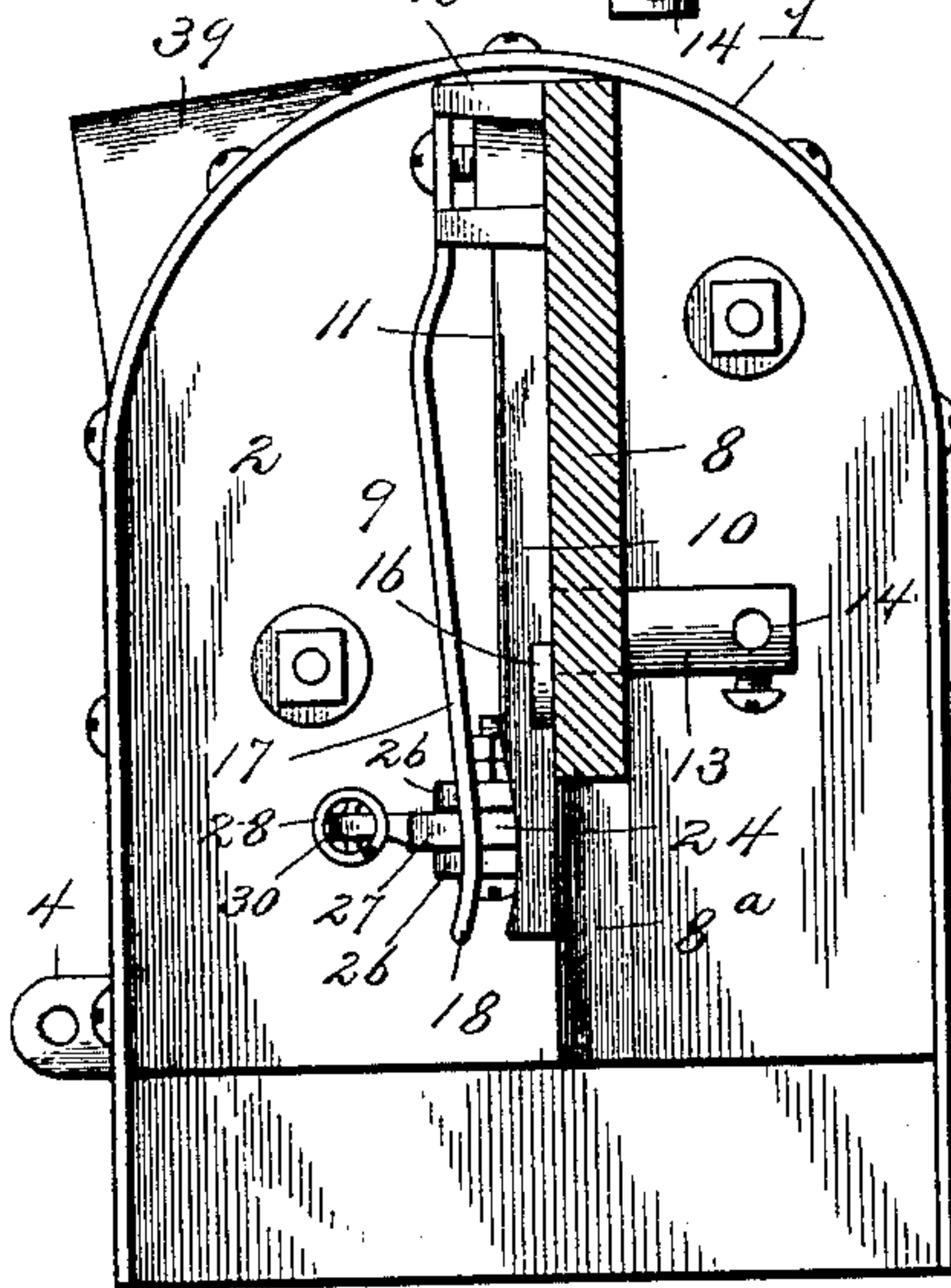


FIG. 5.

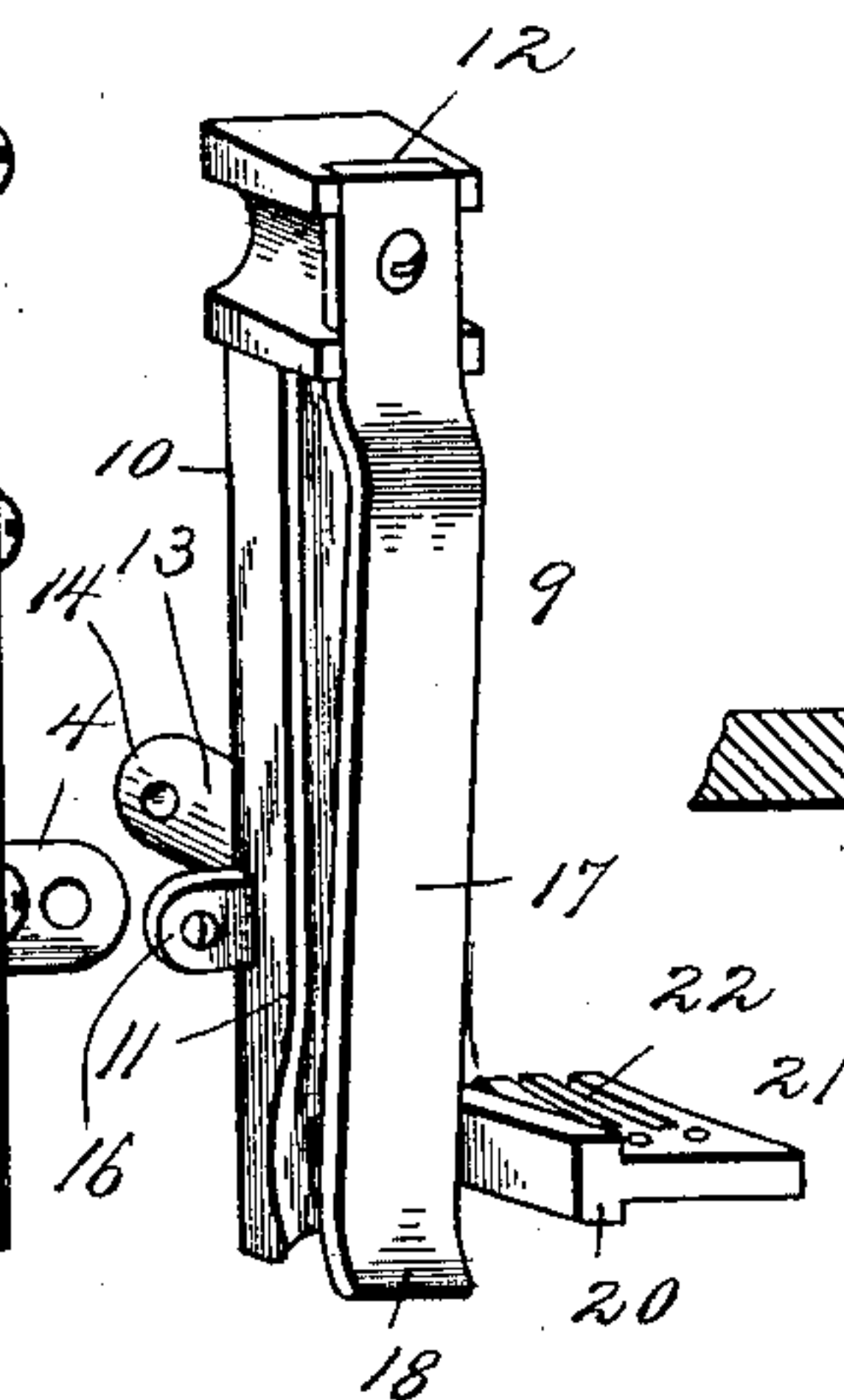
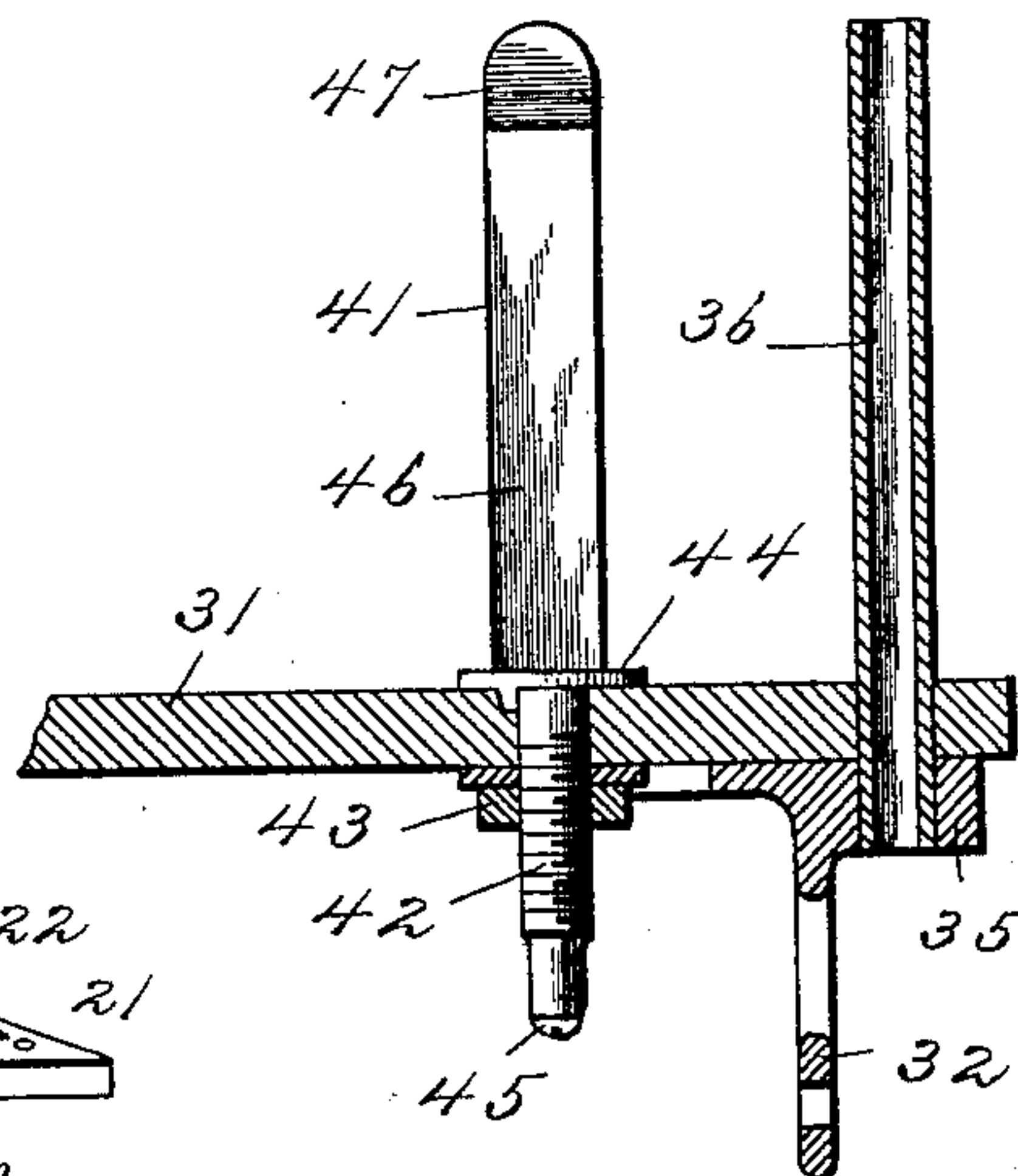


FIG. 6.



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UNITED STATES PATENT OFFICE.

EDWARD P. SNOWDEN, OF ST. JOSEPH, MISSOURI.

SAFETY ARC-LAMP HANGER.

SPECIFICATION forming part of Letters Patent No. 558,993, dated April 28, 1896.

Application filed February 11, 1896. Serial No. 578,881. (No model.)

To all whom it may concern:

Be it known that I, EDWARD P. SNOWDEN, a citizen of the United States, residing at St. Joseph, in the county of Buchanan and State of Missouri, have invented a new and useful Safety Arc-Lamp Hanger, of which the following is a specification.

This invention relates to safety arc-lamp hangers; and it has for its object to provide a new and useful device of this character for handling electric-arc lamps whereby such lamps may be lowered for trimming with perfect safety without danger of the current being grounded, and thereby obviating the necessity for using ladders or non-conductors of any kind commonly employed in trimming the ordinary street arc-lamps.

In the accomplishment of these objects the invention contemplates an improved hanging device providing means for entirely cutting the lamp out of the circuit when lowered, and at the same time closing the circuit directly between the line-wire terminals for the lamp, whereby such line-wires are allowed to remain in the air, thereby avoiding the possibility of the line-wires swinging in such close proximity to other wires as to complete a circuit therewith.

To these ends the invention is primarily in the nature of an improvement upon the construction set forth in my former patent, No. 542,210, dated July 2, 1895.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the drawings, Figure 1 is a perspective view of an arc-lamp hanger constructed in accordance with this invention, illustrated as in use, with the electric lamp in a position while being raised or lowered. Fig. 2 is a longitudinal sectional view with the hanger-table in its elevated position for closing the circuit through the lamp. Fig. 3 is a bottom plan view of the hanger with the hanger-table removed. Fig. 4 is a detail sectional view on the line 4 4 of Fig. 3. Fig. 5 is a detail in perspective of one of the metallic switch-plug receivers. Fig. 6 is a detail sectional view of a portion of the hanger-table. Fig. 7 is a

detail plan view showing a modified form of spring connection for the switch-lever.

Referring to the accompanying drawings, the numeral 1 designates a hanger-box open at the bottom and having fitted therein, parallel and adjacent to the outer ends thereof, the inner wooden or other non-conducting end pieces 2, which are rigidly secured in place within the box by any suitable fastening devices. The inner end pieces 2 of the hanger-box have fitted on their outer sides and at their lower edges the hanger-bars 3, provided with opposite perforated ends 4, projected through the sides of the box 1 near the outer ends thereof, and having connected thereto one end of the supporting-cables 5, which are tightly stretched between the said hanger-bars 3 and the supporting-poles 6, arranged at opposite sides of the hanger-box, and with which poles the cables 5 are connected in any suitable manner to provide for firmly supporting the hanger-box in an elevated position between the two poles 6. The hanger-bars 3 for the box 1 are provided intermediate of their ends with the perforated guiding-lugs 7, integrally cast with the hanger-bars, and the function of which guiding-lugs will be hereinafter more particularly referred to.

The oppositely-located inner end pieces 2 of the hanger-box 1 have securely fitted therebetween a switchboard 8, the opposite ends of which switchboard preferably engage or fit within the grooves 8^a, formed in the inner sides of the inner end pieces 2, to provide a readily-assembled connection between the switchboard and the inner end pieces of the hanger-box. The switchboard 8 has secured to one side thereof a pair of spaced vertically-disposed switch-plug receivers 9. The plug-receivers 9 are arranged on the switchboard 8, near the opposite ends thereof, and each of said plug-receivers consists of a fixed conductor-bar 10, provided with a longitudinally-concaved side 11, a recessed enlargement 12 at its upper end, and an integral binding-post 13, projected laterally from one side of the bar 10, intermediate of its ends, and extending through an opening in the switchboard, so as to dispose its wire-receiving end 14 at the side of the switchboard opposite to the side on which the conductor-bar is secured by means of the screws 15, passed

through perforated ears 16, formed at opposite side edges of the conductor-bar. In connection with the conductor-bar 10, each of the plug-receivers 9 is provided with a leaf-spring jaw 17, disposed opposite the concaved side of the conductor-bar and detachably secured at its upper end, as at 18, in the recess of the enlargement 12 at the upper end of said conductor-bar, and said leaf-spring jaw 17 is provided with an outturned lower end 18, which combines with the lower end of the conductor-bar to form a flared mouth for properly guiding the switch-plug, to be referred to, in position between the conductor-bar and the said spring-jaw.

The wire-receiving ends 14 of the binding-posts 13 receive the terminals of the line-wire L, which are guided through the insulator-tubes 19, fitted in openings in the inner and outer end pieces of the hanger-box at a point intermediate of the top and bottom of said box, and the inner ends of said insulator-tubes are disposed directly at one side of the said wire-receiving ends 14 of the binding-post in order that the line-wire terminals may be readily inserted in through the insulator-tubes and secured in the binding-posts 13, whereby the plug-receivers 9 will be included in the circuit of the line-wires. The conductor-bar 10 of one of said plug-receivers 9 is provided near its lower end with an off-standing bracket-arm 20, to which bracket-arm is secured a horizontally-disposed contact-keeper 21, comprising a pair of oppositely-located slitted spring-jaws 22, which are designed to snugly receive therebetween the beveled contact end 23 of a swinging switch-lever 24. The swinging switch-lever 24 is pivotally mounted near one end, as at 25, between a pair of pivot-lugs 26, projected from one side of the conductor-bar 10, opposite the bar which carries the contact-keeper 21. The said switch-lever 24 is provided at its extremity, opposite the contact end 23 thereof, with a rounded heel portion 27, which normally contacts with the outer side of the spring-jaw 17 of the plug-receiver having the pivotal support for the switch-lever, and said heel portion of the switch-lever is held in the normal position referred to by means of a retractile spring 28, secured at one end, as at 29, to one of the inner end pieces 2 and at its other end to a short offstanding adjusting-arm 30, projected from one side of the switch-lever 24, directly at or opposite its point of pivot, to provide means, through the medium of said spring, for holding the switch-lever normally in a position with the free contact end thereof held within the contact-keeper 21, thereby closing the circuit between the two plug-receivers and these separate line-wire terminals connected therewith, so that when the lamp is lowered for trimming the circuit on the main line will remain unbroken, while at the same time it will be entirely cut out from the lamp.

Arranged to work within and below the open

bottom of the hanger-box 1 is a hanger-table 31, preferably made of wood or other suitable insulating material. The hanger-table 31 has secured to the under side thereof at opposite ends hanger-brackets 32, to which hanger-brackets are connected the upper ends of the supporting-wires 33, suitably connected with the lamp 34, whereby the lamp may be raised and lowered with the hanger-table. The said hanger-brackets 32 are provided at their outer sides with the perforated lugs 35, in which are securely fitted the lower ends of the tubular guide-rods 36, which project through perforations in the ends of the table 31 and extend above the same, so as to slide in and out of the guiding-lugs 7 of the hanger-bars 3. The said tubular guide-rods 36 have secured therein one end of the adjusting-cables 37, which are passed around the guide-pulleys 38, mounted on the outer sides of the inner end pieces 2 near their upper ends, directly above the guiding-lugs 7 of the hanger-bars 3. From the guide-pulleys 38 the adjusting-cables 37 pass through the pulley-housings 39, formed at one top side of the box 1 directly at one side of the guide-pulleys 38, and said adjusting-cables 37 are suitably connected with the main adjusting-rope 40, which is guided in the ordinary manner to a convenient point near the ground, so that the position of the lamp may be readily adjusted from the ground.

The hanger-table 31 carries a pair of spaced switch-plugs 41, provided with lower threaded posts 42, passed through perforations in the table 31, and receiving thereon below the table the clamping-nuts 43, which provide means for rigidly securing the switch-plugs to the table in an upright position, and directly above the table the said switch-plugs are provided with the rest-flanges 44, which, through the medium of the nuts 43, are clamped tightly onto the table. The lower extremities of said threaded posts 42 are provided with ordinary binding-screws 45, which provide means for binding to the posts 42 the wire-terminals M for the lamp 34, such wire-terminals being entirely independent of the main-line terminals connected with the binding-posts of the plug-receivers within the hanger-box. The upright switch-plugs 41 are partly cylindrical, so as to register snugly in the concaved sides of the conductor-bars 10, and the said plugs are provided with flattened sides 46, which ride against the inner sides of the spring-jaws 17 of the plug-receivers. At their upper ends the switch-plugs are beveled, as at 47, so as to readily pass between said spring-jaws 17 and the conductor-bars 10 of each plug-receiver.

When the hanger-table 31 is in its elevated position and fitting within the open bottom of the hanger-box, the switch-plugs 41 will be disposed within the plug-receivers 9 and will thereby spread the spring-jaws 17 away from the conductor-bars 10. In this position of the parts the spring-jaw 17 at one side of the heel

portion 27 of the switch-lever will press against such heel portion of the switch-lever and swing the same to a position holding the contact end 23 of the switch-lever out of the contact-keeper 21, and the circuit of the main line will therefore be completed through the lamp, the switch-plugs, and the plug-receivers. When, however, it is desired to lower the lamp for trimming, the adjusting-cables 37 are slackened, so as to allow the lamp to fall of its own weight, which will lower the hanger-table 31 and withdraw the switch-plugs from the plug-receiver, thereby allowing the spring-jaws 17 of the plug-receivers to spring toward the conductor-bars 10. At the same time the retractile spring 28 will swing the switch-lever 24 on its pivot and throw the contact end of the switch-lever into the contact-keeper 21 and thereby switch the current directly through the plug-receivers without breaking the circuit of the main line, and at the same time allowing the lamp to be entirely cut out of the circuit, so that the same may be handled for trimming with perfect safety.

In the raising and lowering of the hanger-table 31 the tubular guide-rods 36, in conjunction with the guiding-lugs 7, provide simple and positive means for properly guiding the switch-plugs into position to throw the lamp back into the circuit after the same has been trimmed, as will be readily understood.

Various slight modifications of the herein-described arc-lamp hanger may be observed, and in Fig. 7 of the drawings is illustrated a modified form of spring connection for the switch-lever 24. In this modification the coiled retractile-spring 28 is replaced by a bowed leaf-spring 28^a, which is secured fast at one end, as at 28^b, to the lower end of the conductor-bar 10, with which the switch-lever has a pivotal connection, and the free end 28^c of said leaf-spring 28^a bears against one side of the switch-lever 24 and provides for normally holding the contact end 23 of the switch-lever within the contact-keeper 21.

Other changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In a hanger for electric lamps, the hanger-box having an open bottom and oppositely-located end pieces, hanger-bars fitted on the outer sides of said end pieces and provided intermediate of their ends with perforated guiding-lugs, guide-pulleys mounted on said end pieces above said guiding-lugs, pulley-housings arranged on the hanger-box at one side of said pulleys, supporting-cables connected with the ends of said hanger-bars to support the hanger-box in a fixed position, switch mechanism arranged within the hanger-box and having line-wire-terminal connections therewith, a vertically-movable hanger-

table provided at opposite ends with hanger-brackets for suspending the electric lamp, tubular guide-rods projecting above the table and fitted in the opposite ends of the latter, upright switch-plugs mounted on the hanger-table and having lamp-wire-terminal connections therewith and cooperating with said switch mechanism to open and close the circuit through the lamp, and adjusting-cables secured at one end in said tubular guide-rods, and passed through said guiding-lugs of the hanger-bars, around the guide-pulleys and through the housings therefor, substantially as set forth.

2. In a hanger for electric lamps the combination of a fixedly-supported hanger-box open at the bottom and provided within its opposite ends with opposite inner end pieces, hanger-bars fitted on the outer sides of said end pieces and provided with perforated ends projected through the sides of the box and with intermediate perforated guiding-lugs, supporting-cables connected with the ends of said hanger-bars, switch mechanism arranged within the hanger-box and having line-wire terminals connected therewith, a vertically-movable hanger-table provided at opposite ends with hanger-brackets for suspending the lamp, upright tubular guide-rods fitted in opposite ends of the table and adapted to work through said guiding-eyes of the hanger-bars, upright switch-plugs mounted on the hanger-table and having lamp-wire-terminal connections therewith, said switch-plugs cooperating with said switch mechanism to open and close the circuit through the lamp, and adjusting-cables secured at one end in said tubular guide-rods, substantially as set forth.

3. In a hanger for electric lamps, a fixedly-supported hanger-box having an open bottom, a switchboard arranged within said hanger-box, a pair of spaced vertically-disposed switch-plug receivers secured to one side of said switchboard and provided at a point intermediate of their ends with laterally-projected binding-posts extending through the switchboard, a switch-lever connection between said plug-receivers, insulator-tubes fitted in opposite ends of the box and having their inner ends disposed directly at one side of the wire-receiving ends of said binding-posts, and a vertically-movable lamp-hanger table carrying a pair of switch-plugs having lamp-wire-terminal connections therewith and adapted to work in and out of said switch-plug receivers to operate said switch-lever connection, substantially as set forth.

4. In a hanger for electric lamps, a fixedly-supported hanger-box having an open bottom, a switchboard arranged within said box, a pair of spaced vertically-disposed switch-plug receivers having line-wire-terminal connections therewith, and each essentially comprising a fixed conductor-bar and a leaf-spring jaw arranged at one side of said conductor-bar, the conductor-bar of one of said receivers being provided near its lower end with an

offstanding bracket-arm carrying a contact-keeper, and the conductor-bar of the other receiver being provided near its lower end with side pivot-lugs, a swinging switch-lever pivotally connected to said lugs and provided at one end with a heel portion engaging against the outer side of one of said spring-jaws, and with a short offstanding adjusting-arm adjacent to said heel portion, a retractile spring connected to said adjusting-arm and a fixed point of attachment to provide for normally holding one end of said switch-lever within said contact-keeper to close the circuit directly through the two plug-receivers, and a vertically-movable hanger-table carrying a pair of switch-plugs having lamp-wire-terminal connections therewith and adapted to work in and out of said plug-receivers, substantially as set forth.

5. In a hanger for electric lamps, a fixedly-supported hanger-box, a pair of spaced vertically-disposed switch-plug receivers supported within said box and having line-wire-terminal connections therewith, each of said receivers comprising a fixed conductor-bar

having a concaved side, and an enlargement at its upper end, and a leaf-spring jaw disposed opposite the concaved side of the conductor-bar and secured at its upper end to the enlargement of the same a normally-closed switch connection between the two plug-receivers, a vertically-movable lamp-hanger table, and a pair of spaced switch-plugs provided with lower binding-post ends secured in the table and projecting therebelow for connection with the lamp-wire terminals, said switch-plugs being partly cylindrical and provided with flattened sides and beveled upper ends, the entrance of said plugs into said plug-receivers providing for opening said switch connection between the two receivers, substantially as set forth.

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

EDWARD P. SNOWDEN.

Witnesses:

L. M. HARDISTY,
JAMES M. WILSON.