

(No Model.)

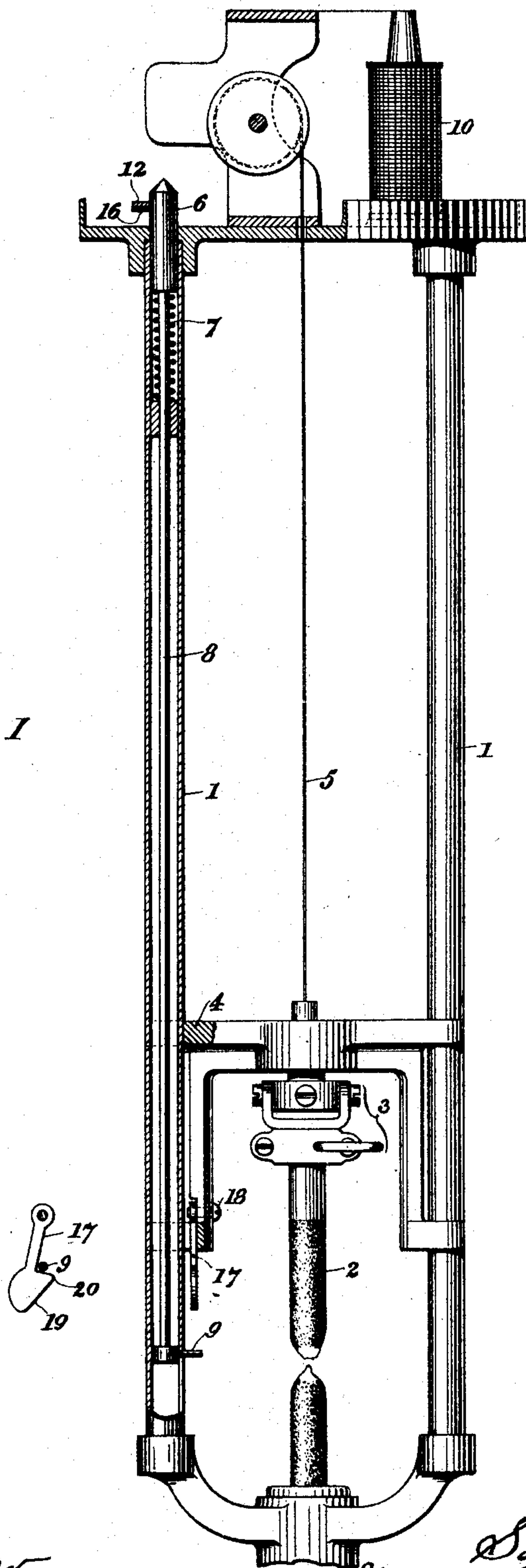
2 Sheets—Sheet 1.

S. BERGMANN.  
ELECTRIC ARC LAMP.

No. 505,383.

Patented Sept. 19, 1893.

Fig. 1



Witnesses  
F. H. Netter  
W. C. Pinkney

Inventor  
Sigmund Bergmann  
By his Attorney  
H. C. Behrens

(No Model.)

2 Sheets—Sheet 2.

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Fig. 2

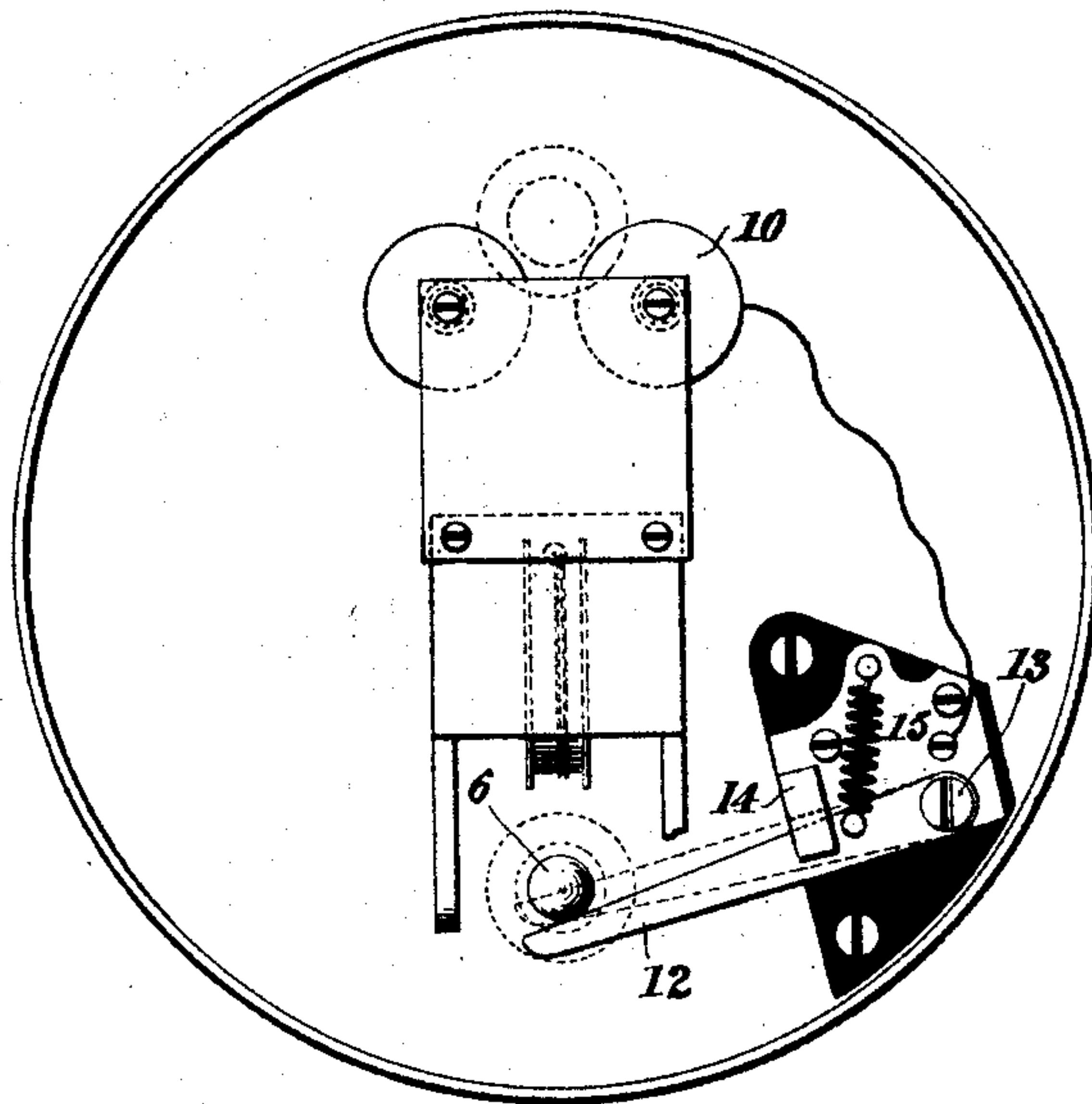
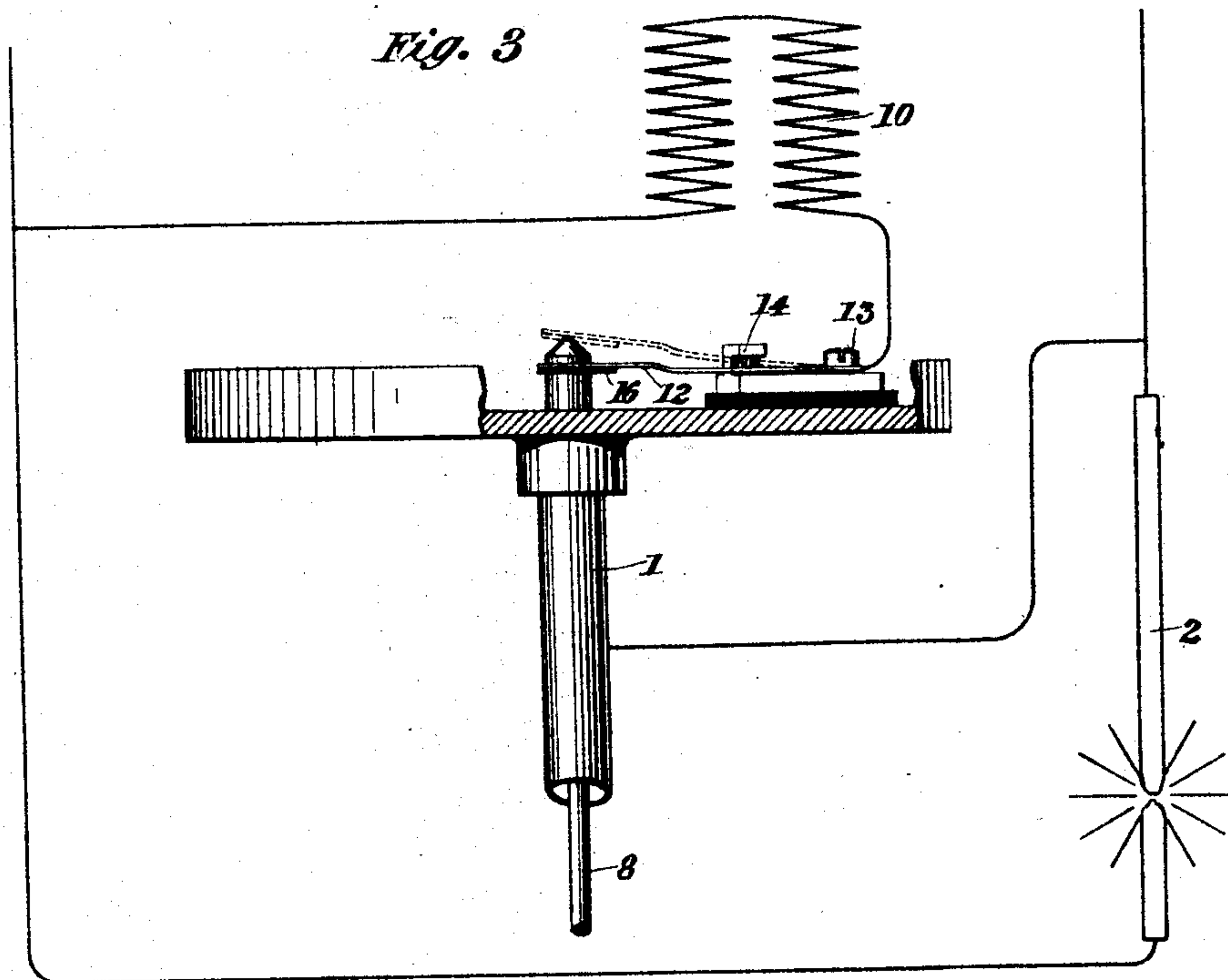


Fig. 3



Witnesses  
Raphael Netter  
W. C. Pinckney

Inventor  
Sigmund Bergmann  
By his Attorney  
Wm. C. Schwan.



# UNITED STATES PATENT OFFICE.

SIGMUND BERGMANN, OF NEW YORK, N. Y.

## ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 505,383, dated September 19, 1893.

Application filed July 19, 1893. Serial No. 480,894. (No model.)

*To all whom it may concern:*

Be it known that I, SIGMUND BERGMANN, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Electric-Arc Lamps, of which the following is a specification.

My invention relates to electric arc lamps, especially to that class in which the toothed rod of the feeding mechanism is replaced by a flexible conductor to economize space.

The object of my invention is to effectively cut the shunt of the lamp out of the circuit when the carbons are practically burned out. I accomplish this object by the means hereafter described and claimed.

In the accompanying drawings forming part of this specification Figure 1 represents a front elevation partly in section, of an arc lamp embodying my invention. Fig. 2 is a top view of the same and Fig. 3 is in the main a diagrammatic view of the construction and operation of the invention.

Referring to the drawings, 1 represents the vertical rods of a lamp frame, one of said rods being shown in section. The upper carbon 2 is attached to a carbon holder 3 which in turn is connected to the guide frame 4. To the latter the lower end of the flexible conductor or cord 5 is attached, which operates to feed the carbon.

I lay no claim to the carbon holder, nor to the mechanism for feeding by means of a flexible conductor for these are not of my invention and hence a detailed description of the same is unnecessary.

In the hollow vertical rod 1 is contained a movable switch rod or piece 6 which is pressed normally upward by a coiled spring 7. It has a diminished extension 8 which passes down to within a short distance of the bottom of the lamp, where it is provided with a lateral projection 9 located in the path of the guide frame 4. Its upper end is cone-shaped.

The feeding electro-magnets 10 are shown diagrammatically in Fig. 3 arranged in a shunt.

12 is a switch lever loosely secured in place by screw 13 so as to allow of both a vertical and lateral movement. (See Figs. 2 and 3.) This switch lever is arranged to act in con-

nection with switch rod 6 to cut the shunt of the lamp out of the circuit when the carbons have burned out and arrest any further feeding.

14 is a double stop which acts to limit the upward as well as the lateral movement of the switch lever, as is clearly shown in Figs. 2 and 3.

15 is a spiral spring connected to frame and lever which acts to impart the necessary lateral movement to the switch lever and 16 is a piece of insulation on the under side of said switch lever.

The operation of the mechanism so far described is as follows: When the carbons have been nearly consumed the guide frame 4 as it descends comes in contact with the projection 9 of the switch rod and gradually lowers or pulls it down to allow the switch lever to ride upon the conical end of the switch rod and, by reason of the insulation on its under side, to cut out the shunt and stop entirely the further operation of the feeding mechanism.

It might happen in the lapse of time that the spring 7 became weak and failed to return the switch rod 6 to its normal position, after it had been depressed by the weight of the guide frame. To guard against accidents of this nature I have provided the following simple positive and effective device. I loosely pivot to one side of the guide frame at 18 in the path of the projection 9 a weighted catch 17. (See Figs. 1 and 3.) This catch is formed with a cam 19 and a tooth or lifting cam 20 for the purposes hereinafter described.

The operation of this mechanism is as follows: When the guide frame descends by its weight it strikes the cam of the weighted catch and gradually pushes it out of the way until the end of the cam is reached when the weighted catch falls by its gravity to its normal position and the projection 9 is engaged by the tooth 20. At the same time the weighted frame strikes projection 9 and both descend together until the switch rod has been sufficiently lowered to allow the switch lever to operate. If now the guide frame is elevated it carries with it the projection 9 and thus positively lifts the switch rod. Of course the frame and projection 9 were moved upward together for the same distance that



they were moved downward together, but after that as the frame with its catch ascends the tooth of the weighted cam recedes from the pin 9 and the said cam resumes its normal position having accomplished its work.

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

1. In an electric arc lamp the combination with the vertically movable frame and the switch rod arranged to be operated thereby in its movement of the vertically and laterally movable switch lever provided with insulation and included in the shunt circuit of the feeding magnets.

2. In an electric arc lamp the combination with the vertically movable frame and the conically pointed switch rod arranged to be operated thereby in its movement of the vertically and laterally movable switch lever provided with insulation at its free end, and included in the shunt circuit of the feeding magnets, substantially as described.

3. In an electric lamp a hollow vertical side rod, a switch rod vertically movable in the same and pressed upward by spring pressure, and a vertically movable guide, which in its descent strikes a projection of the switch rod and gradually draws down the latter, in combination with a switch lever and feed electro-magnets, substantially as described.

4. In an electric arc lamp the combination with the vertically movable frame and the conically pointed switch rod provided with a

lateral projection, of the vertically and laterally movable switch lever provided with insulation on its under side, and provided with a spring for moving it laterally and a stop arranged to limit the vertical and lateral movements of said lever substantially as described.

5. In an electric arc lamp the combination of the guide frame provided with a weighted catch and a switch rod provided with a projection with which said catch co-operates to lift the switch rod, substantially as described.

6. In an electric arc lamp the combination of the guide frame provided with a weighted catch having a cam surface and a lifting cam or tooth, with a switch rod having a projection co-operating with the lifting cam or tooth of said catch to lift the switch rod, substantially as described.

7. In an electric arc lamp the combination with the vertically movable frame provided with a weighted catch of the switch rod provided with a projection in the path of the movable frame and weighted catch whereby the switch rod is depressed or elevated as it descends or rises, substantially as described.

Signed at New York, in the county of New York and State of New York, this 15th day of July, A. D. 1893.

SIGMUND BERGMANN.

Witnesses:

W. H. BRINES,  
I. WERTHEIMER.