

D. R. KNAPP & I. S. SCHLESINGER.

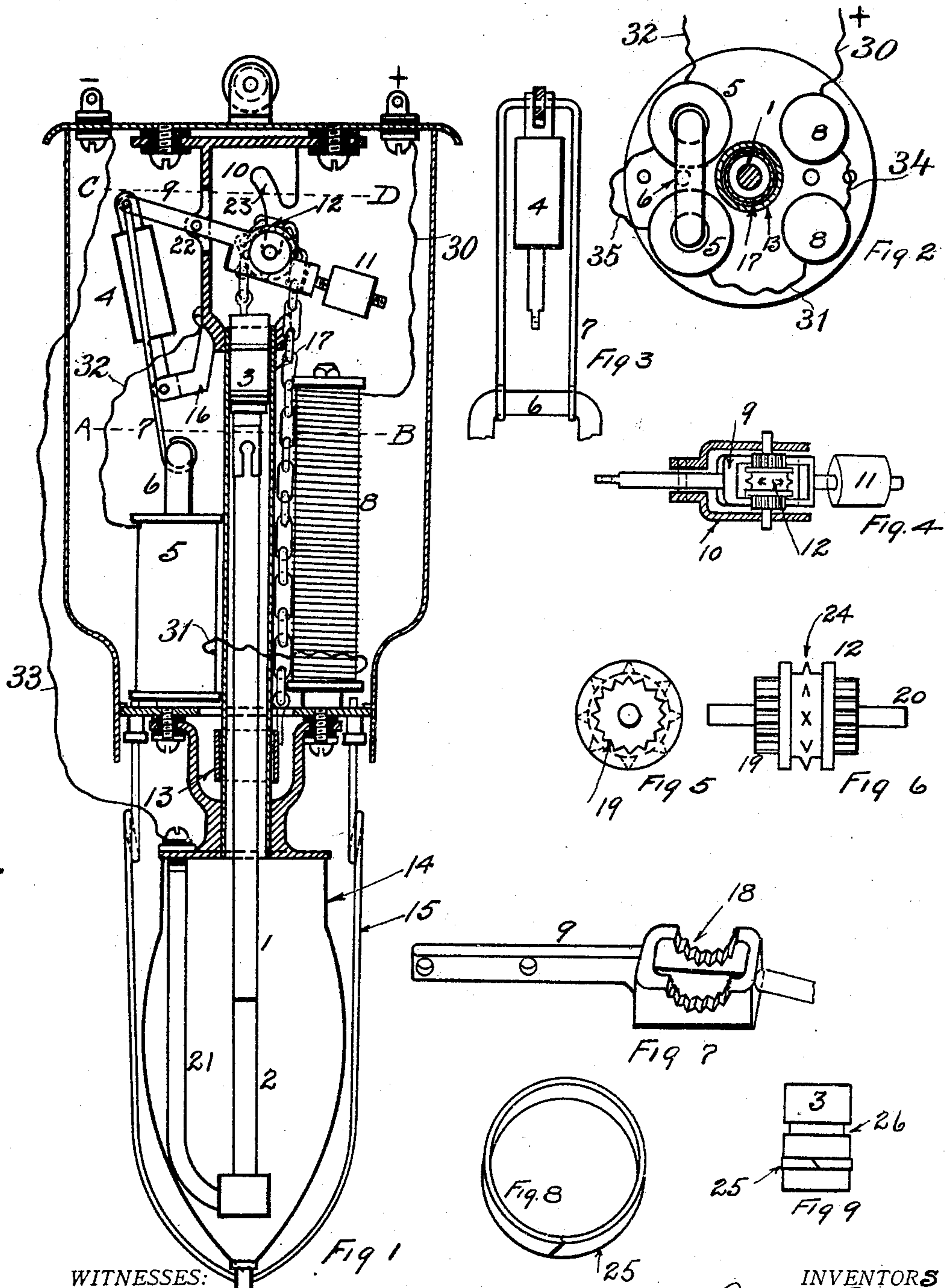
ARC LAMP.

APPLICATION FILED JULY 17, 1907.

928,464.

Patented July 20, 1909.

2 SHEETS—SHEET 1



WITNESSES:

Francis D. Morris
Robert C. Morris

INVENTORS

David R. Knapp
BY *Irwin S. Schlesinger*
BY *Howard C. Cade*
ATTORNEY.

D. R. KNAPP & I. S. SCHLESINGER.

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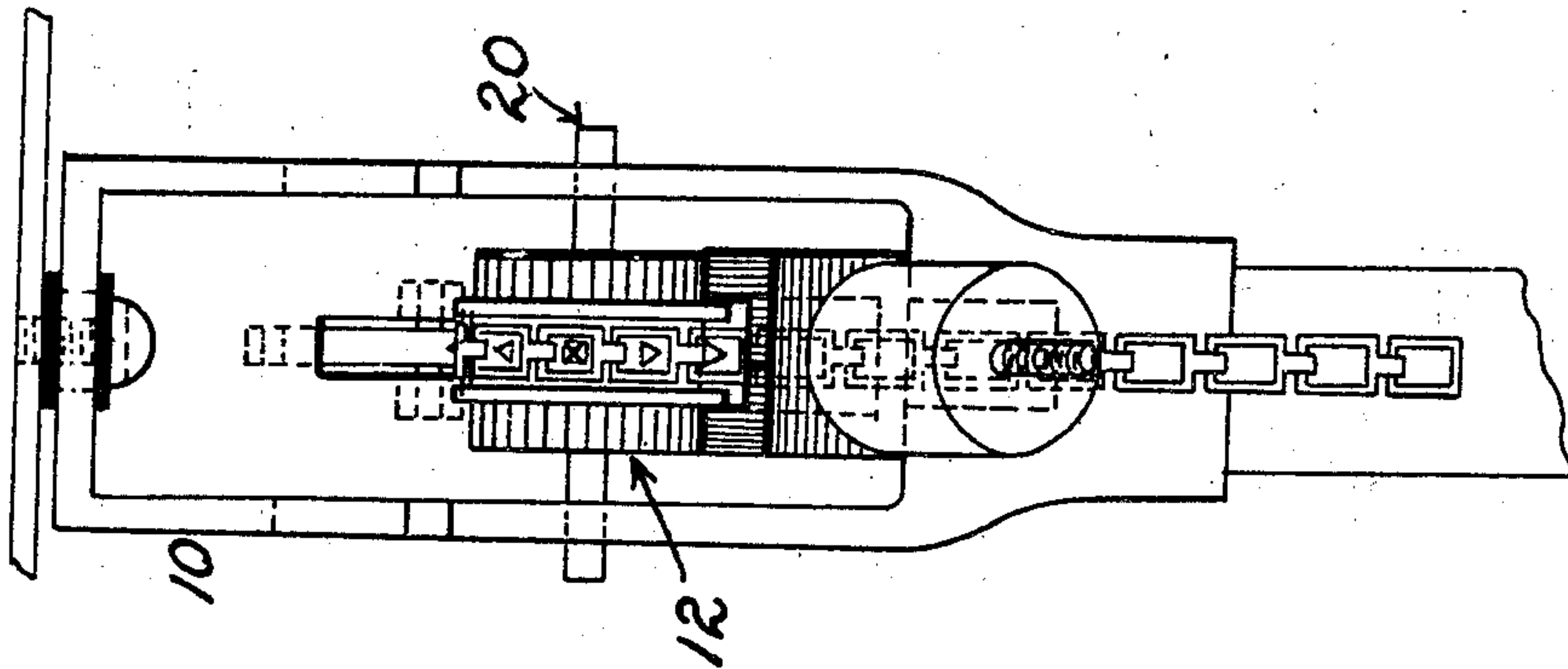


Fig. 11

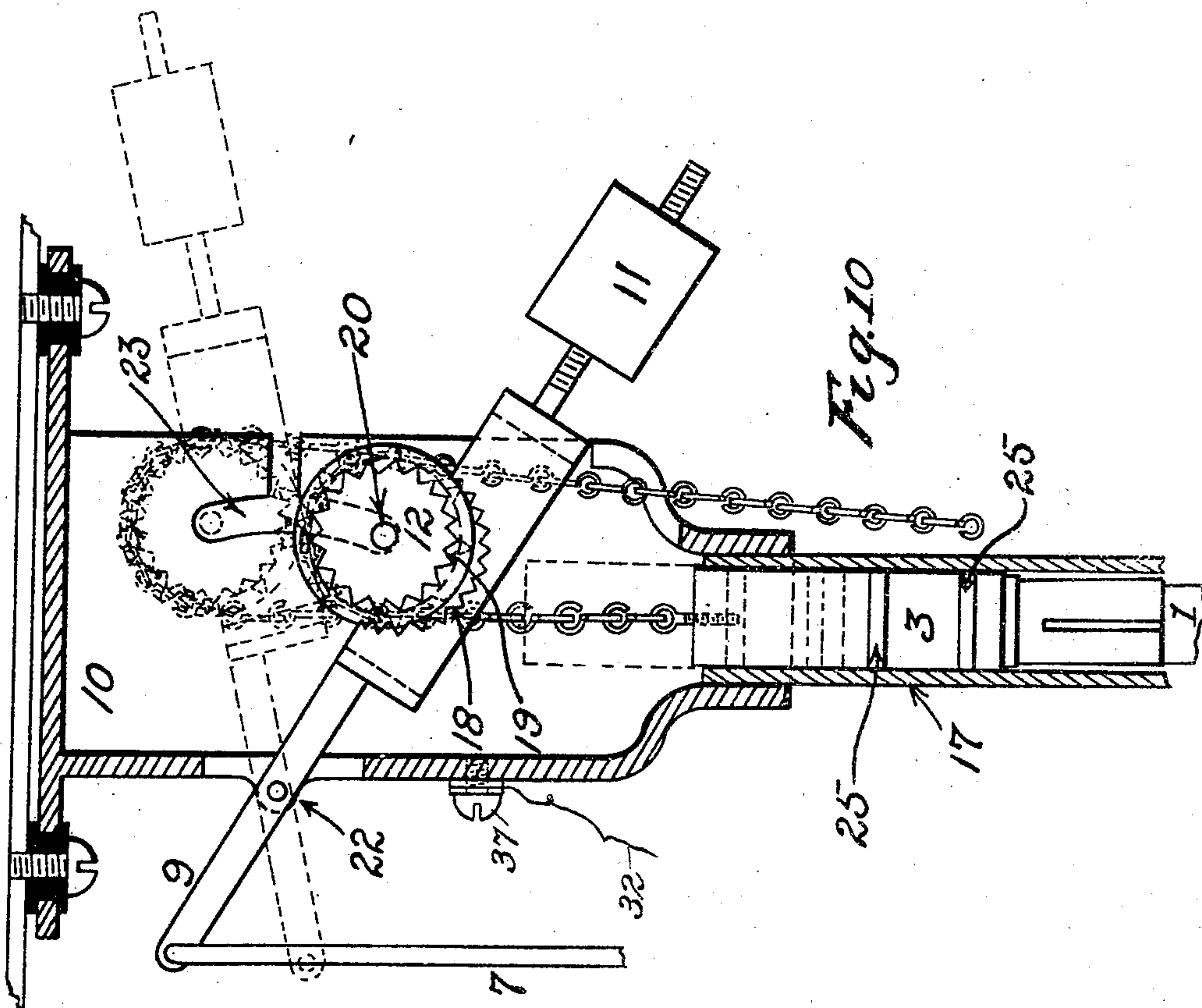


Fig. 10

Witness
Elias Gottlieb

Inventors
David R. Knapp
Irvin J. Schlesinger
 By *Howard C. Cade*
 Attorney

UNITED STATES PATENT OFFICE.

DAVID R. KNAPP AND IRVIN S. SCHLESINGER, OF PHILADELPHIA, PENNSYLVANIA.

ARC-LAMP.

No. 928,464.

Specification of Letters Patent.

Patented July 20, 1909.

Application filed July 17, 1907. Serial No. 384,215.

To all whom it may concern:

Be it known that we, DAVID R. KNAPP and IRVIN S. SCHLESINGER, residing in Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented certain new and useful Improvements in Arc-Lamps, of which the following is a specification.

Our invention relates particularly to that class of arc lamps that feed automatically and the object of our invention is to provide improved means for accomplishing automatic feeding, and for that class of arc lamps that have the arc inclosed by a globe, a means provided for keeping the gases in the presence of the carbons, while permitting proper feeding of the carbon. This part of our invention relates to the method of construction of the top carbon holder, which is fitted snugly in a tube, and means provided so that it can travel therein and yet retard the passage of air and gases into and from the globe inclosing the arc.

With these objects in view our invention consists in certain novel features of construction, arrangement of parts as will be hereinafter fully described and pointed out in the claims, reference being had to the accompanying drawings, forming part of the specification, in which:—

Figure 1 is a vertical section of the arc lamp showing the principal parts and illustrating the method of operation. Fig. 2 is a section view on A—B, which shows the relative location of the magnet coils and resistance tubes. Fig. 3 shows the method of attaching the feeding mechanism to the armature of the magnet. Fig. 4 is a section view on C—D, in which will be seen the relative parts of our said improvement for automatic feeding. Figs. 5 and 6 is a detail of the wheel over which the chain or flexible connection that supports the top carbon, passes. Fig. 7 is a view of the lever arm and clutch that engages the wheel as shown in Figs. 5 and 6. Figs. 8 and 9, views showing details of top holder and ring therefor. Fig. 10 is a vertical cross section showing the interacting teeth engaged and disengaged, and the shaft 20 resting in the bottom of slot 23. Fig. 11 is an elevation view of the feed mechanism.

In the accompanying drawings, in which similar numerals of reference indicate corresponding parts in the several views, the numeral 1 indicates the top carbon fastened to the top holder, 3, and 2 the lower carbon supported by the holder 21.

5 are magnet coils which are provided with the armature 6, and have the connecting rods 7 attached thereto.

4 is a dash pot which retards a sudden or quick pull of the armature 6, and is supported by the arm 16 and the lever 9. Lever 9 is adapted to engage wheel 12 and is connected at one end by the connecting rods 7 and is fulcrumed at 22, thereby a downward pull of the armature 6 will cause lever 9 to revolve on the pivot 22. The lever 9 is provided with the adjustable weight 11, which is sufficient to overbalance the weight of the parts on the other side of the pivot 22, neglecting the weight of wheel 12 and the corresponding weights attached thereto. It is obvious that by adjusting the weight 11 longitudinally with respect to said lever that a corresponding lesser or greater amount of force will have to be exerted by the magnet armature 6 acting on said lever in order to turn same on its fulcrum 22. A corresponding change in current through the magnets will therefore be required to exert this difference in force, therefore the current of the lamp may be adjusted to within a certain limit by the manipulation of the weight 11 on said lever.

The wheel 12, Figs. 5 and 6 has the spindle, or shaft 20 passing through the center. The middle portion of the wheel 12 is provided with the projections 24, over which the chain passes and prevents same from slipping. The lever 9 and the wheel 12 are provided with interacting teeth 19 and 18. 17 is a tube which supports the top and bottom parts of the lamp.

13 is a counterweight tube adapted to slide over tube 17, and is connected to the chain or flexible connection for the purpose of keeping the chain taut.

8 are resistance coils inserted in series with the main current and serve for the purpose of regulation.

10 is the top support of the tube 17, the sides having the slot 23 cut therein, the shape being adapted to conform with the travel of the pin 20 upon being raised by lever 9. The top support 10 is provided with a screw 37 to which the lead 32 is connected.

The top holder is shown in detail in Fig. 8 in which 25 are circular springs fitted in the grooves 26. These springs retard the passage of gas from the carbons and permit a free movement of the holder 3 for feeding.

By this means the life of the carbons will be prolonged and by the foregoing method of construction the top carbon may be burned to the shortest length possible.

30 is a lead connecting the positive side of the lamp to the resistance coils 8, 31 is a lead connecting the resistance coils 8 to the magnet coils 5, 32 is a lead connecting the magnet coils 5 to the support 10, 33 is a lead connecting the negative line to holder 21. Lead 34 connects the resistance coils together and lead 35 connects the magnet coils together.

14 is the globe inclosing the arc, and 15 the spring holder therefor.

The foregoing apparatus is suitably proportioned and connected throughout, all of which will be readily understood by those skilled in the art to which this invention relates, and its operation will be substantially as follows. The current being off the lamp, the weight 11 overcomes the armature 6, dash pot 4, and connecting rod 7, and allows the lever 9 to assume the lowest possible position. In this position the teeth 18 of lever 9 disengage with the teeth 19 in wheel 20 and allows the shaft 20 to rest in the lower extremity of the slot 23. The wheel 12 is then free to turn with its shaft 20, as the weight 3 overcomes the counterweight tube 13. The weight 3 will descend until the top and bottom carbons engage. Upon an introduction of current a circuit will be established as follows: from positive line through lead 30 to resistance coil 8, from resistance coil to resistance coil through lead 34, from resistance coil 8 through lead 31 to magnet coil 5, from magnet coil to magnet coil through lead 35, from magnet coil 5 through lead 32 to support 10, to positive carbon, to negative carbon, to carbon holder 21, thence through lead 33 to negative line. The introduction of current in magnet coils 5 will cause the armature 6 to be attracted which motion will be transmitted to the lever 9 through the connecting rod 7. Upon a slight motion of lever 9 the teeth 18 will engage with teeth 19 in wheel 12 and thereby lift wheel 12 off the bearing the shaft 20 had with the lower extremity of the circular slot 23. The engaging of teeth 18 upon 19 will prevent wheel 12 from turning as also the engagement of the chain with the projections 24 will prevent the chain from slipping, consequently the carbon will raise with the downward pull of the armature 6 and an arc between carbons 1 and 2 will be established. Upon the extinguishing of the arc due from any cause, the lever arm 9 will assume a position releasing wheel 12 so that it may turn with its shaft 20 until the carbons 1 and 2 engage thereby reestablishing the circuit aforesaid described and accomplishing the aforesaid object of our said invention.

Having thus described the nature and object of our said invention, what we claim as new and desire to secure by Letters Patent, is—

1. In a feeding mechanism for arc lamps, the combination with magnet coils and an armature therefor, of a wheel free to revolve in the top support of said lamp and having a flexible connection, attached to the top carbon holder, engaging therewith, said wheel free to move vertically in said support, guiding means for said vertical movement, and mechanism operatively connected to said armature normally disengaged with said wheel but adapted to engage therewith and raise said wheel vertically, substantially as described.

2. In a feeding mechanism for arc lamps, the combination with magnet coils and an armature therefor, of a wheel free to revolve in the top support of said lamp and having a flexible connection, attached to the top carbon holder, engaging therewith, said wheel free to move vertically in said support, guiding means for said vertical movement, and a lever fulcrumed to said support and operatively connected to said armature, normally disengaged with said wheel but adapted to engage therewith and raise said wheel vertically, substantially as described.

3. In a feeding mechanism for arc lamps, the combination with magnet coils and an armature therefor, of a wheel free to revolve in the top support of said lamp and having a flexible connection attached to the top carbon holder, engaging therewith, said wheel provided with means to prevent said flexible connection from slipping thereon, said wheel free to move vertically in said support, guiding means for said vertical movement, and mechanism operatively connected to said armature and normally disengaged with said wheel but adapted to engage therewith and raise said wheel vertically, substantially as described.

4. In a feeding mechanism for arc lamps, the combination with magnet coils and an armature therefor, of a wheel free to revolve in the top support of said lamp and having a flexible connection attached to the top carbon holder, engaging therewith, said wheel free to move vertically in said support, guiding means for said vertical movement, a lever fulcrumed to said support and operatively connected to said armature normally disengaged with said wheel but adapted to engage therewith and lift said wheel vertically, and said wheel and said lever provided with interacting teeth, substantially as described.

5. In a feeding mechanism for arc lamps, the combination with magnet coils and an armature therefor, of a wheel free to revolve in the top support of said lamp and having a flexible connection attached to the top car-

bon holder, engaging therewith, a means on
said wheel to prevent said flexible connec-
tion from slipping thereon, said wheel free
to move vertically in said support, guiding
5 means for said vertical movement, a lever
fulcrumed to said support and operatively
connected to said armature normally disen-
gaged with said wheel but adapted to en-
gage therewith and raise said wheel verti-
10 cally, and said wheel and said lever pro-

vided with interacting teeth, substantially as
described.

In testimony whereof we have signed our
respective names to this specification in the
presence of two subscribing witnesses.

DAVID R. KNAPP.

IRVIN S. SCHLESINGER.

Witnesses:

DAVID LEVINSON,

FRANK M. NEBINGER.