No. 698,046. Patented Apr. 22, 1902.

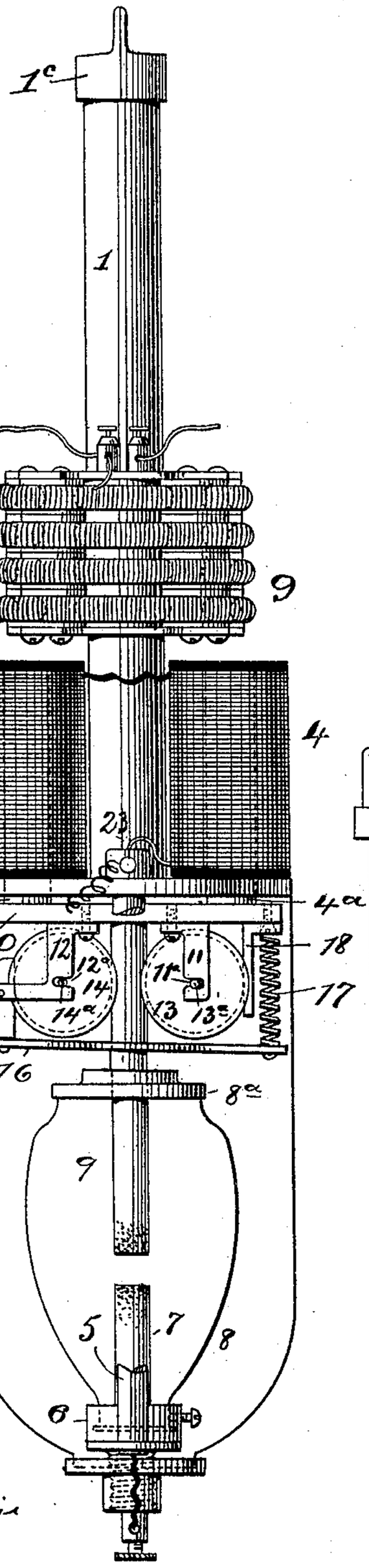
M. S. OKUN.

ELECTRIC ARC LAMP.

(Application filed Nov. 15, 1897. Renewed Mar. 14, 1902.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.



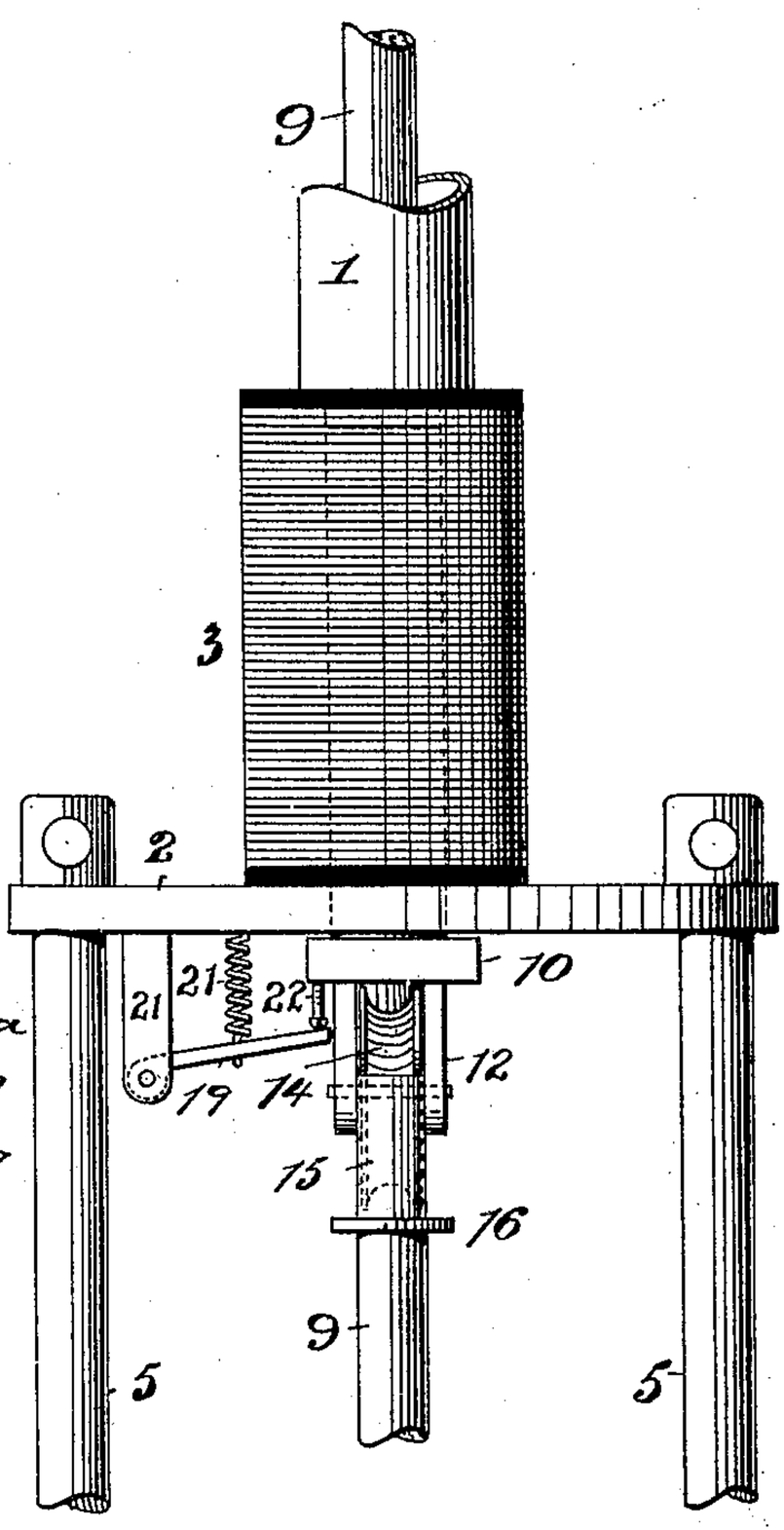


Fig. 2.

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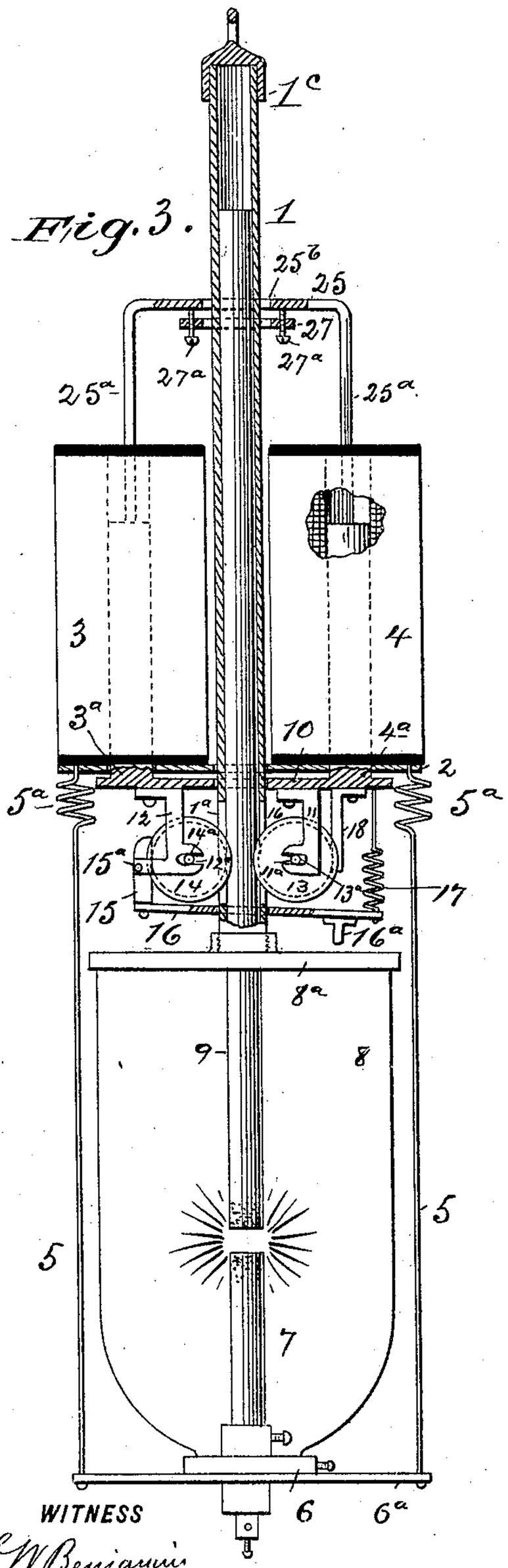
Fig. 3.



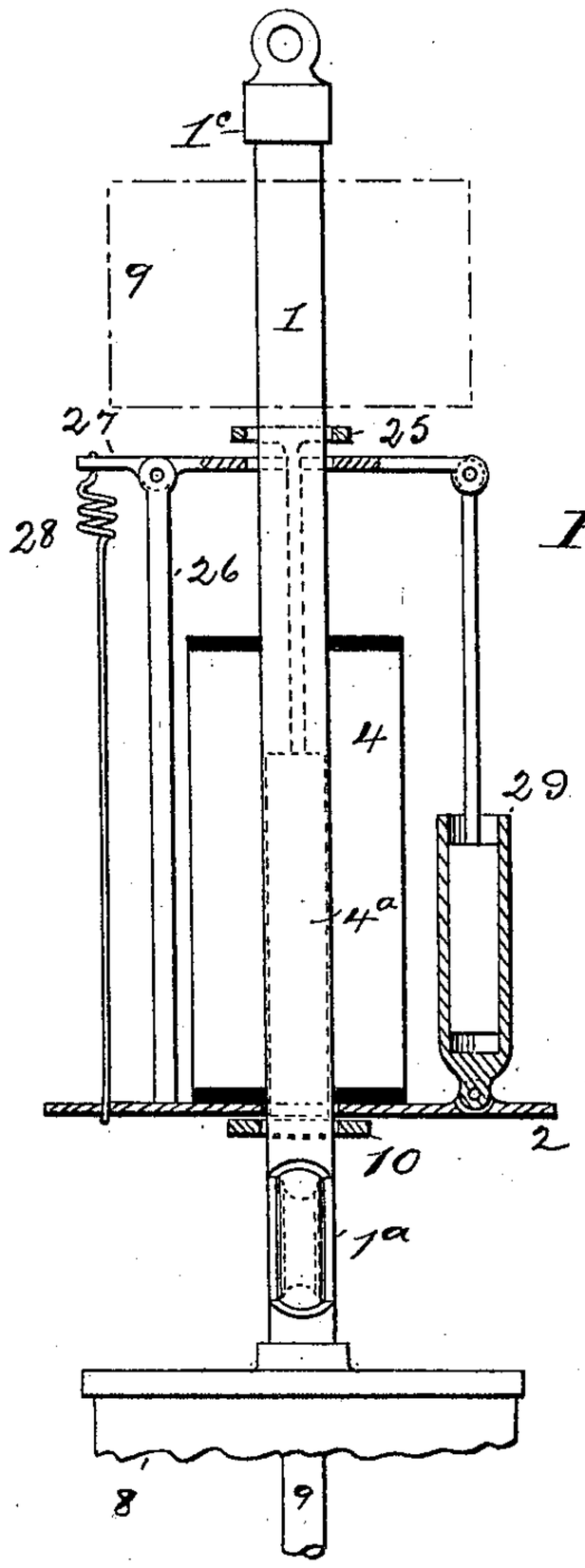
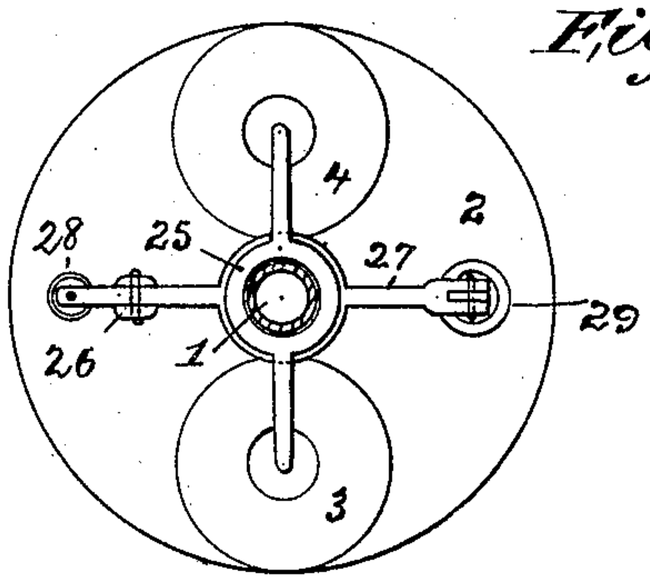


Fig. 4.

Fig. 5.



WITNESS

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MOSES S. OKUN, OF NEW YORK, N. Y.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 698,046, dated April 22, 1902.

Application filed November 15, 1897. Renewed March 14, 1902. Serial No. 98,266. (No model.)

To all whom it may concern:

Be it known that I, MOSES S. OKUN, a citizen of the United States, residing in the city of New York, county and State of New York, have invented certain new and useful Improvements in Arc-Lamps, of which the following is a specification.

One object of my invention is to provide an improved carbon-feeding mechanism for arc-lamps.

Another object of the invention is to provide improved means for permitting the free passage of the carbon into a globe while retarding the escape of gases therefrom.

The invention consists in a carbon-feeding mechanism comprising an abutment, a movable clutch member to coact therewith to grasp a carbon or carbon-feeding rod, a presser to act upon the movable member to move the carbon or its rod, and means for pressing it toward said abutment, and means to relieve the pressure of presser upon the movable clutch member.

The invention also consists in the combination of carbon-feeding devices with a tube and a cover for a globe secured to said tube, an aperture in the cover being in line with the bore of the tube, whereby a carbon can pass through said tube and said cover, said tube having opposed apertures through which the clutches act upon a carbon or carbon-rod within the tube, whereby the carbon may be fed into the globe, while at the same time the presence of the carbon in the opening in the cover acts to retard the passage of gases from the globe through the tube.

The invention also further consists in the novel details of improvement and the combinations of parts, that will be more fully hereinafter set forth, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming part hereof, wherein—

Figure 1 is a side elevation, partly broken, of an arc-lamp embodying my improvements. Fig. 2 is an enlarged detail view of a portion of a lamp looking from the left in Fig. 1, illustrating my improved carbon-feeding mechanism. Fig. 3 is a partly-sectional side elevation of a lamp, showing means for retarding the consumption of the carbon. Fig. 4 is a partly-sectional detail view looking from the left in Fig. 3, and Fig. 5 is a plan view of Fig. 4.

In the accompanying drawings, in which similar numerals of reference indicate corresponding parts in the several views, 1 indicates a tube to which a plate 2 is attached, and upon plate 2 are mounted solenoids or magnet-coils 3 4, the cores 3^a 4^a passing through apertures in the plate 2. From the plate 2 depend one or more arms 5, to which the socket 6 for the lower carbon 7 is attached and upon which a globe 8 may be supported. To the tube 1 is or may be secured a resistance 9 for connection with the magnets 3 4.

The parts 1, 2, 3, 4, 5, 6, 8, and 9, constituting the main portion or frame of the lamp, may be of any usual or desired construction and are not limited to the arrangement shown. Within the tube 1 the upper carbon 9 is to be located, and it is adapted to feed through said tube into the globe 8 in well-known manner.

The cores 3^a 4^a carry my improved carbon-feeding devices, which are shown arranged as follows:

10 is a bar carried by the cores 3^a 4^a and suitably secured thereto. From the bar 10 depend brackets or arms 11 12, that carry the clutch members 13 14, which grasp the carbon or a carbon-feeding rod between them. The clutch member 13 is virtually an abutment, and the member 14 is movable laterally toward and from said abutment, so as to press against the carbon or its feeding-rod and force the same against said abutment or member 13, so as to grasp the carbon or its rod. The clutch member 14 is actuated by means of a lever or rocker arm 15, that is shown pivotally carried by bracket or arm 12, as at 15^a, in such position as to bear against the periphery of the clutch member 14 from the lever or rocker arm 15, having an arm 16. 17 is a spring shown interposed between the arm 16 and the bar 10 and acting to force lever 15 against the clutch member 14; but it is evident that if arm 16 were sufficiently heavy for the purpose spring 17 could be dispensed with. An abutment is provided for the arm 16 of the lever to act against to cause the lever 15 to reduce the pressure on clutch mem-

ber 14 during the feeding of the carbons. Such an abutment may be provided in any suitable manner. In Fig. 1 I have shown the arm 16 as in position to bear against a cover 8^a on globe 8, which cover has an opening in which the carbon 9 snugly fits to retard the passage of gases from the globe in well-known manner. In Fig. 3 the arm 16 has a projection 16^a to bear on the cover 8^a. By preference the clutch members 13 14 are in the form of grooved rollers, into the grooves of which the opposite sides of the carbon or its feeding-rod may fit. In the example illustrated the brackets 11 12 are arranged in pairs to receive the rollers 13 14 between them, and the pivots 13^a 14^a of these rollers are journaled in bearings in said brackets. I have shown slots 11^a 12^a in the brackets 11 12, in which the pivots 13^a 14^a are located, whereby bearings are formed for said pivots and whereby also said pivots may have lateral movement. By preference I provide an abutment 18, against which the periphery of clutch member 13 is adapted to bear, the arrangement being such that the opposite sides of the clutch member 13 may bear against the carbon 9 or its rod and the abutment 18 at the same time, the abutment also acting as a brake when the member 13 is rotative. Now it will be understood that when the feeding devices are raised so that the arm 16 is free from its abutment the spring 17 will act to force the lever 15 against the abutment or roller 14, thus pushing the latter against the carbon 9 or its feeding-rod, thereby clamping the same between the clutch members 13 14, the member 13 being held from movement away from the carbon to permit of this clutching action. When the feeding devices descend so that the arm 16 engages its abutment, the arm 16 will be moved against the action of spring 17 and will thus relieve the pressure of lever or rocker arm 15 upon the clutch member 14, whereupon the weight of the carbon will enable it to feed downwardly. A weight may be applied to the carbon to help it feed. By having one or both clutch members 13 14 in the form of rollers the free feeding of the carbon is permitted without undue frictional resistance; but it is evident that the abutments 13 14 need not rotate, it being necessary, however, that one of these abutments should be laterally movable to grip and release the carbon and its feeding-rod.

While I have shown two solenoids and their cores as carrying the bar 10, which supports the clutching devices, it is evident that a single solenoid may be provided and suitably arranged to support the clutch members. It is also evident that a magnet and armature could be used instead of a solenoid and a core, in which case the clutch devices shown would be operated by the armature.

It is to be seen that the clutch devices are suspended from the cores and that the cores tend to lift the clutch devices through the magnetic action of the solenoid, and any suitable means may be provided for counterbalancing the weight of the clutch devices. In Fig. 2 I have shown an arrangement comprising a pivoted arm 19, carried by a support 20 and normally pressed upwardly by spring 21, the free end of arm 19 acting upon bar 10. To permit proper adjustment of the tension of spring 21, I have shown a screw 22 interposed between a bar 10 and arm 19.

It will be seen that the clutch devices described may be brought very close to the top of globe 8 and that therefore a carbon-feeding rod may be dispensed with, the clutch devices acting directly on the carbon, as shown. By this means a very short lamp may be made and one that is but little longer than the upper and lower carbons together. The circuit through the lamp and carbons may be in substantially the usual form; but one portion of it will lead through the abutments 13 14 to the carbon, as from the magnet-coil through wire 23 to bar 10.

In Figs. 3, 4, and 5 I have shown an improved means for retarding the consumption of the carbons and also improved devices for regulating the action of the carbon-feeding devices. In this case the tube 1 is carried down and secured to the cover 8^a of globe 8 in line with the aperture therein, whereby said cover is suspended from the tube. The globe-socket 6 is shown pressed up against the globe to hold the latter against the cover 8^a, and for this purpose I have shown a bar 6^a supporting the part 6 and in turn supported by rods or arms 5, having springs 5^a to lift the globe against its cover; but of course the globe can be connected with its cover in any other manner desired. Above the cover 8^a the tube 1 is provided with apertures 1^a 1^b of such dimensions as to permit the clutch members or rollers 13 14 to project therethrough to engage the carbon 9 within the tube 1. (See Fig. 3.) The bore or tube 1 is of such diameter as to permit the carbon 9 to feed freely therein, and the presence of the carbon in the aperture of the cover 8^a tends to retard the escape of gases from the globe 8, a cap 1^c on tube 1 serving to prevent the escape of gases from the top of the tube. This cap may have an eye by which the lamp may be suspended. As shown in Figs. 3, 4, and 5 the cores 3^a 4^a are connected by a yoke 25, having depending arms 25^a, that pass into the bores in the solenoids and which are connected with the cores, yoke 25 having an aperture 25^b to receive the tube 1. From the plate 2 a standard 26 extends upwardly, to which is pivoted a lever 27, that crosses beneath the yoke 25 and is adapted to act upon the latter to assist in sustaining the cores and the clutch devices connected therewith. As shown, one end of lever 27 is connected by a spring 28 with plate 2, and the opposite end of said lever is connected with a dash-pot 29, shown pivotally carried by plate 2. By this means as the

cores rise under magnetic influence the spring 28 will correspondingly raise lever 27, and as the cores descend said spring and the dash-pot will serve to prevent quick motion of the cores and the upper carbon, the parts 25 27 28 29 thereby serving to regulate the vertical movements of the cores. I have shown screws 27ª, Fig. 3, carried by lever 27 and acting against yoke 25, whereby adjustment of the parts 25 27 relatively to each other and the tension of spring 28 may be regulated.

The details of construction shown and described may be varied without departing from the spirit of my invention.

Having now described my invention, what I claim is—

1. A feeding mechanism comprising a solenoid and core, a pair of rotative clutch members, brackets rigidly secured to the core for supporting the same, said clutch members having lateral movement relatively to said brackets, an abutment carried by the brackets for one of said clutch members, the other of said clutch members being adapted to have lateral movement, a presser adapted to act on the last-mentioned clutch member and means for regulating the action of said presser upon said clutch member, substantially as described.

2. A feeding mechanism comprising a solenoid and core, a pair of rotative clutch members, brackets rigidly carried by the core to support said clutch members so they may have lateral movement, an abutment carried by the bracket for one of said members, a presser to act on the other of said clutch members, and means for regulating the action of said presser upon said member, substantially as described.

3. A feeding mechanism comprising a solenoid and core, brackets rigidly carried by the core, a pair of grooved rotative clutch members supported by the brackets, an abutment carried by the core for one of said members, one of said clutch members held from lateral movement, being adapted to have lateral movement, a lever to act upon said movable member, said lever having a spring-actuated arm, and an abutment for said arm, substantially as described.

4. A feeding mechanism comprising a bar, brackets depending therefrom, rotative clutch members journaled on said brackets, one of said members being adapted to have lateral movement, a lever pivotally carried by one of said brackets to act on said movable clutch member, and an abutment for said lever, substantially as described.

5. A feeding mechanism comprising a bar, brackets depending therefrom, rotative grooved clutch members journaled on said brackets, to have lateral movement relatively thereto, an abutment for one of said clutch members, the other clutch member being adapted to have lateral movement, a lever to act on said movable clutch member, said lever having a spring-actuated arm, and an abutment for said arm, substantially as described.

6. The combination of a pair of solenoids and their cores with a bar carried by said cores, a pair of clutch members carried by said bar, one of said clutch members being adapted to have lateral movement, a presser to act upon said movable clutch member, to move bodily toward a carbon, an independent abutment for the presser, and means for regulating the pressure of said presser upon said clutch member, substantially as described.

7. The combination of a pair of solenoids and their cores with a bar carried by said cores, a pair of grooved rotative clutch members carried by said bar, an abutment for one of said clutch members, the other clutch member being adapted to have lateral movement bodily toward a carbon, a lever to act on said movable clutch member, said lever having a spring-actuated arm, and an abutment independent of the core for said arm, substantially as described.

8. A feeding mechanism comprising a pair of brackets having laterally-extending slots or openings, means for supporting said brackets, a pair of clutch members having supports located in said slots or openings to travel laterally therein, an abutment for one of said clutch members, a presser to act with the other clutch member, and an abutment to act with said presser, substantially as described.

9. A feeding mechanism comprising a bar 10, a pair of brackets depending therefrom, said brackets having laterally-extending slots or openings, a pair of rotative clutch members having their pivots journaled in said slots or openings, an abutment for one of said clutch members, a presser to act upon the other clutch member, and an abutment for the said presser, substantially as described.

10. The combination of a cover for a globe having an opening for the passage of a carbon, and a tube having openings in opposite sides, with a clutch device comprising a pair of clutch members that are adapted to project into said openings in the tube to act upon the carbon, one of said clutch members being laterally movable, a presser to act with said movable clutch member, means for supporting said clutch members, and an abutment for said presser, substantially as described.

11. The combination with a pair of solenoids and their cores, and carbon-feeding devices connected with said cores, of a yoke connected with said cores, and a spring-operated lever acting on said yoke against the weight of the cores and feeding devices, substantially as described.

12. The combination with a pair of solenoids and their cores, and carbon-feeding devices connected with said cores, of a yoke connected with said cores, and a spring-operated

lever extending beneath said yoke and adapted to act thereon, and a dash-pot connected with said lever, substantially as described.

13. In an arc-lamp the combination of a frame, a pair of solenoids carried thereby, cores for said solenoids, carbon-feeding devices connected with said cores, a yoke also connected with said cores, a support carried by said frame, a spring-operated lever pivoted to said support and extending beneath said yoke to act thereon, and a dash-pot carried by said frame and connected with said lever, substantially as described.

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Witnesses:
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F. E. TURNER.