

No. 841,820.

PATENTED JAN. 22, 1907.

B. L. SCOTT.  
ELECTRIC ARC LAMP.  
APPLICATION FILED SEPT. 6, 1905.

Fig. 1.

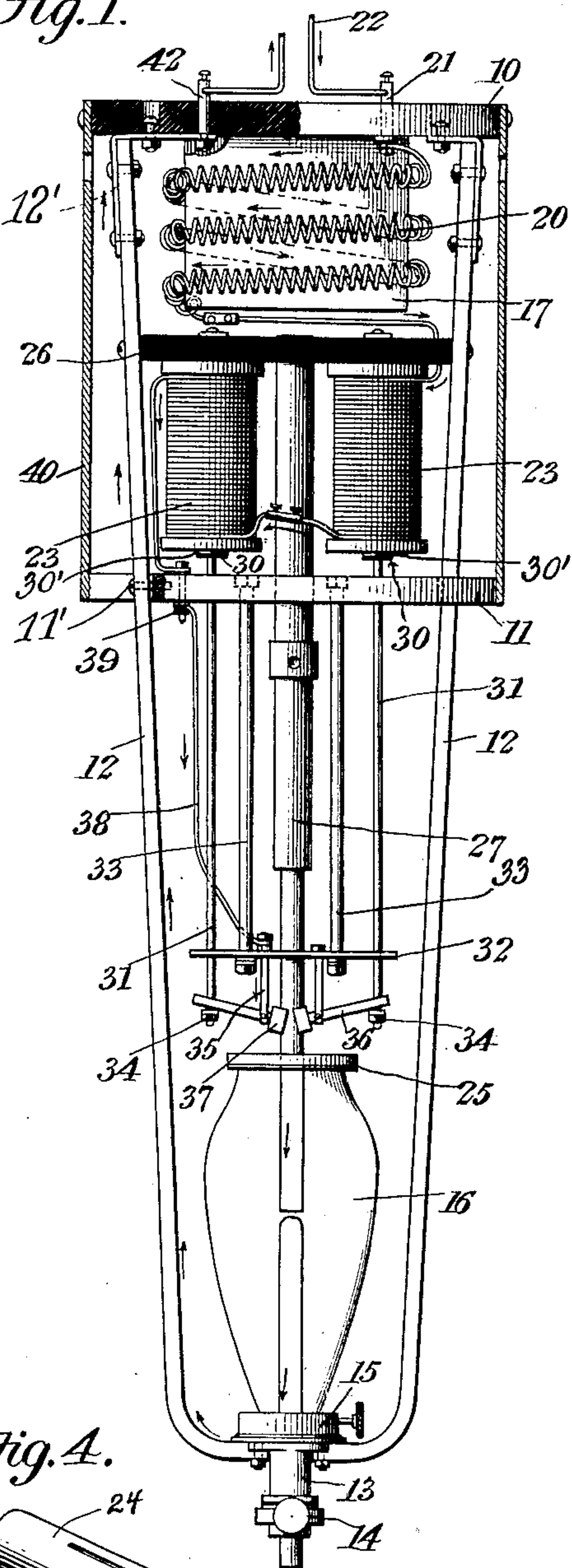


Fig. 2.

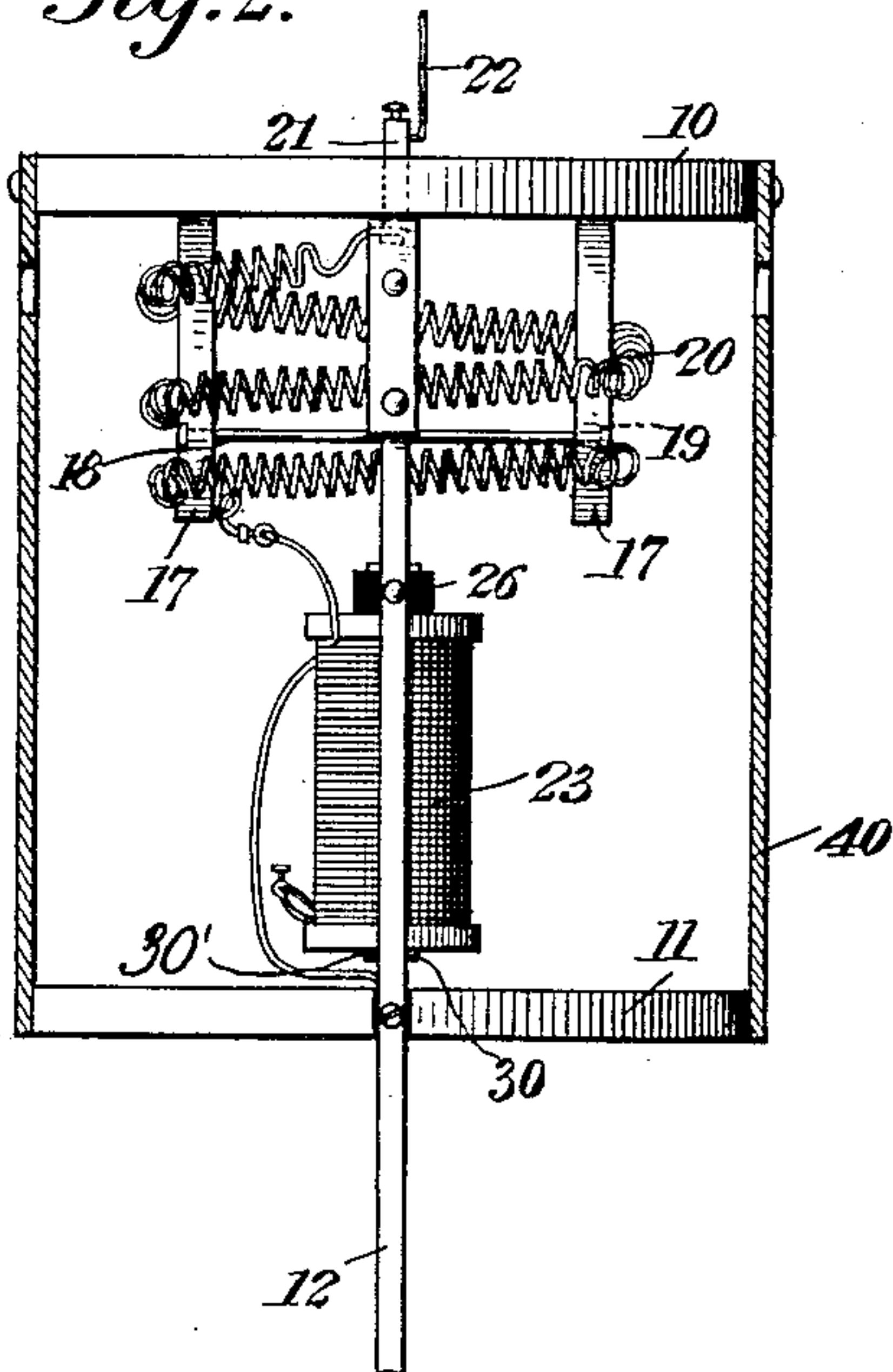


Fig. 3.

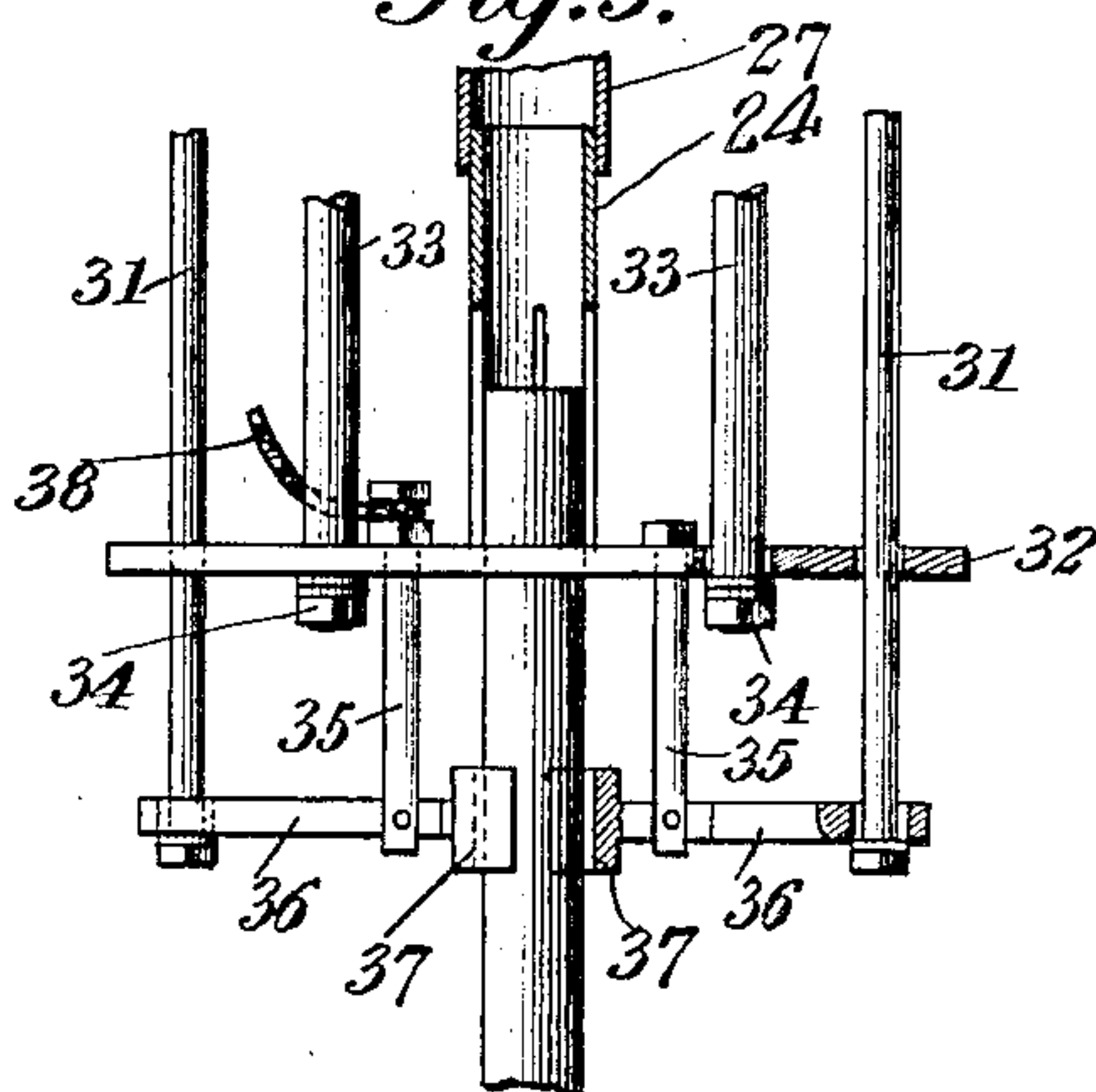
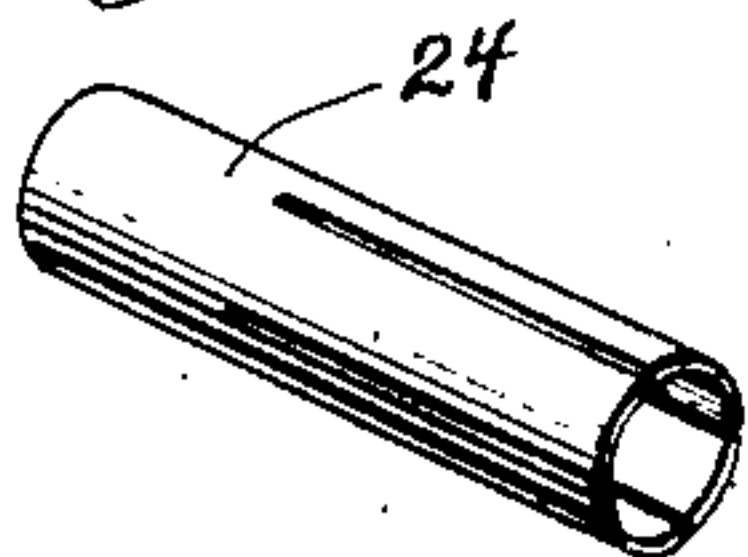


Fig. 4.



Witnesses

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# UNITED STATES PATENT OFFICE.

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## ELECTRIC-ARC LAMP.

No. 841,820.

Specification of Letters Patent.

Patented Jan. 22, 1907.

Application filed September 6, 1905. Serial No. 277,188.

*To all whom it may concern:*

Be it known that I, BRAXTON L. SCOTT, a citizen of the United States, residing at Washington, District of Columbia, have invented a new and useful Electric-Arc Lamp, of which the following is a specification.

This invention relates to electric-arc lamps, and has for its principal object to provide a lamp of simple and economical construction and to so arrange all of the parts that repairs may be quickly made and all of the working portions of the lamp made readily accessible.

A further object of the invention is to provide a simple form of resistance-coil and support which may be readily placed in or removed from position and the length of which may be quickly adjusted in accordance with the resistance required.

A still further object of the invention is to provide a carbon-clutch of simple construction and to provide readily-accessible connections whereby the clutch and its carrier may be arranged in the lamp-circuit.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in certain novel features of construction and arrangement of parts herein-after fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is an elevation, partly in section, of an arc-lamp constructed in accordance with the invention. Fig. 2 is an elevation looking from the left of Fig. 1, the casing or housing being shown in section. Fig. 3 is a detail view of a portion of the mechanism shown in Fig. 1, the parts being drawn on an enlarged scale. Fig. 4 is a detail perspective view of the upper-carbon clip or sleeve detached.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The general frame of the lamp comprises an upper disk 10 and lower disk 11, that are formed of wood or other non-conducting material and are connected by a pair of approximately vertical bars 12, both of which are formed of brass or other suitable conducting material, the lower ends of the bars converging slightly and being bent inward toward

each other to form a support for a lower sleeve 13. The opposite sides of the disk 11 are provided with notches for the reception of the bars 11 and 12, and the latter are locked in place by screws 11', passing through openings in the bars and screwing into the material of which the disk is formed. The upper ends of the bars are riveted or otherwise secured to clips 12', each in the form of a right-angled bar having one arm secured to a rod and the other end secured to the upper disk 10. The sleeve 13 is provided with a clamping member 14 for the support of the lower carbon, and, further, carries a globe-support 15, that is arranged for the reception of a globe 16 of the usual construction.

Secured to and depending from the upper disk 10 is a pair of spaced plates 17, formed of suitable non-conductor, these plates being preferably connected by a cross-bar 18, having threaded ends and arranged for the reception of nuts 19, which are concealed in recesses formed in the outer portions of the plates. The plates 17 serve to support a steadying resistance in the form of a coil 20, formed of any suitable material, and one end of the coil is connected by a binding-post 21 to the leading-in wire 22, while the opposite end is connected to the windings of the clutch-actuating magnets 23. The coil is wound around the plates, and the several turns of the coil are spaced from each other, as shown in Figs. 1 and 2, so that there is no danger of short-circuiting, while all portions of the coil are freely exposed to the air to permit dissipation of the heat. The coil is stretched around the plates, so that the various turns of the coil will be held in proper position, and the coil-sections may be cut of any desired length in accordance with the resistance required.

Extending between the two bars 12 is a cross-bar 26, formed of fiber or other insulating material, and through the center of the bar and the central portion of the lower disk 11 are formed openings for the reception of a guiding-tube 27 for the upper carbon. The bar 26 serves, further, as a support for a pair of electromagnets 23, which are connected in series with the coil in the main circuit, and beneath the lower pole-piece 30' of the electromagnets are arranged armatures in the form of disks 30, that are secured to the upper ends of clutch-operating rods 31, these rods being guided through suitable openings formed in the disk 11.



At a point below the disk 11 is arranged a metallic cross-bar 32, that is provided with a central opening for the passage of the upper carbon, and is further provided with openings for the passage of a pair of guide-rods 33, the upper ends of which are rigidly secured to disk 11, while the lower ends of said rods are provided with nuts or stops 34 for limiting the downward movement of said bar 32. Rigidly secured to and depending from the cross-bar 32 is a pair of bars 35, to the lower ends of which are pivoted carbon-clutch levers 36. These levers are pivoted at a point intermediate of their ends, and to the outer end of each is connected one of the rods 31. The inner end of each lever is provided with a curved clutch-face 37, arranged to engage with the carbon. The upper end of one of the bars 35 is provided with a binding-post, to which is connected the lower end of a current-conducting wire 38, the opposite end of which is connected by a binding-post 39 to the winding of the electromagnet 23. On the top of the upper carbon is placed a split sleeve 24, which engages against the top of bar 32, as shown in Fig. 3, and prevents the upper carbon falling into the globe when too short for further use. On top of the globe 16 is placed a cap 25, having a central opening for the passage of the upper carbon, the cap being of the construction ordinarily employed in lamps of this general type. The resistance-coil and the electromagnets are protected by a suitable casing 40, extending between the two disks 10 and 11 and secured thereto in any suitable manner, the casing being preferably provided with ventilating-openings to permit the free passage of air, so that the parts may be kept cool.

In the operation of the lamp the current enters through leading-in wire 22 to binding-post 21 and passing through resistance-coil 20 and electromagnets 23 leads through wire 38 to the binding-post at the upper end of the rod 35. Before turning on the current the carbons are supposed to be in contact with each other, and as soon as the circuit is established through the clutch members and the bar 32 to the upper carbon and from thence through the lower carbon and frame to the upper binding-post 42 the electromagnets will be energized and the armatures 30 will be attracted. This immediately throws the clutches 37 into engagement with the carbon, and as the upward movement of the armature continues the rods 31 are raised, and in carrying the clutch-levers 36 upward bars 35 will be raised and the bar 32 will also be carried upward. The upper carbon is

raised the proper distance to strike the arc, and the lamp continues in action until the length of the arc is such as to temporarily break the circuit, whereupon the electromagnets 23 are deenergized and the armatures 30 are allowed to fall, the upper carbon descending until it again engages with the lamp-carbon and the circuit is reestablished, the electromagnets being again energized and attracting the armatures for the purpose of again striking the arc.

One of the principal advantages of the construction described is that all of the parts of the lamp are readily accessible and in case of burning out or accidental damage any one of the parts may be quickly replaced with the lamp *in situ*, there being no delicate machinery which would require the removal of the lamp to the station for repairs.

Having thus described the invention, what is claimed is—

1. In an arc-lamp, a frame including upper and lower disks, the lower disk being provided with a pair of diametrically opposed notches, a pair of side bars extending through said notches and secured to the disk, the upper ends of said bars being secured to the upper disk, the lower ends of said bars converging and forming a support for the lower carbon and globe, a casing connecting the upper and lower disks, an insulating cross-bar arranged at a point between the upper and lower disks and connected to and supported by the side bars, a steadying resistance arranged in the space between the cross-bar and the upper disk, a pair of series magnets supported by and depending from the cross-bar, and a carbon-clutch under the control of said magnets.

2. In an arc-lamp, the combination with electromagnets, of a pair of rigid bars or rods provided with stops at their lower ends, a cross-bar having openings for the passage of said bars or rods and also provided with an opening for the passage of the upper carbon, hanger-rods depending from the cross-bar and disposed in parallel relation, carbon-clutch members pivoted to the hanger-rods, vertically-guided armature-carrying rods, the lower ends of which extend through openings formed in the cross-bar and in the clutching members, and electromagnets adjacent to the armature.

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

BRAXTON L. SCOTT.

Witnesses:

JAS. BRAY WINGATE,  
JAMES W. BURDINE.