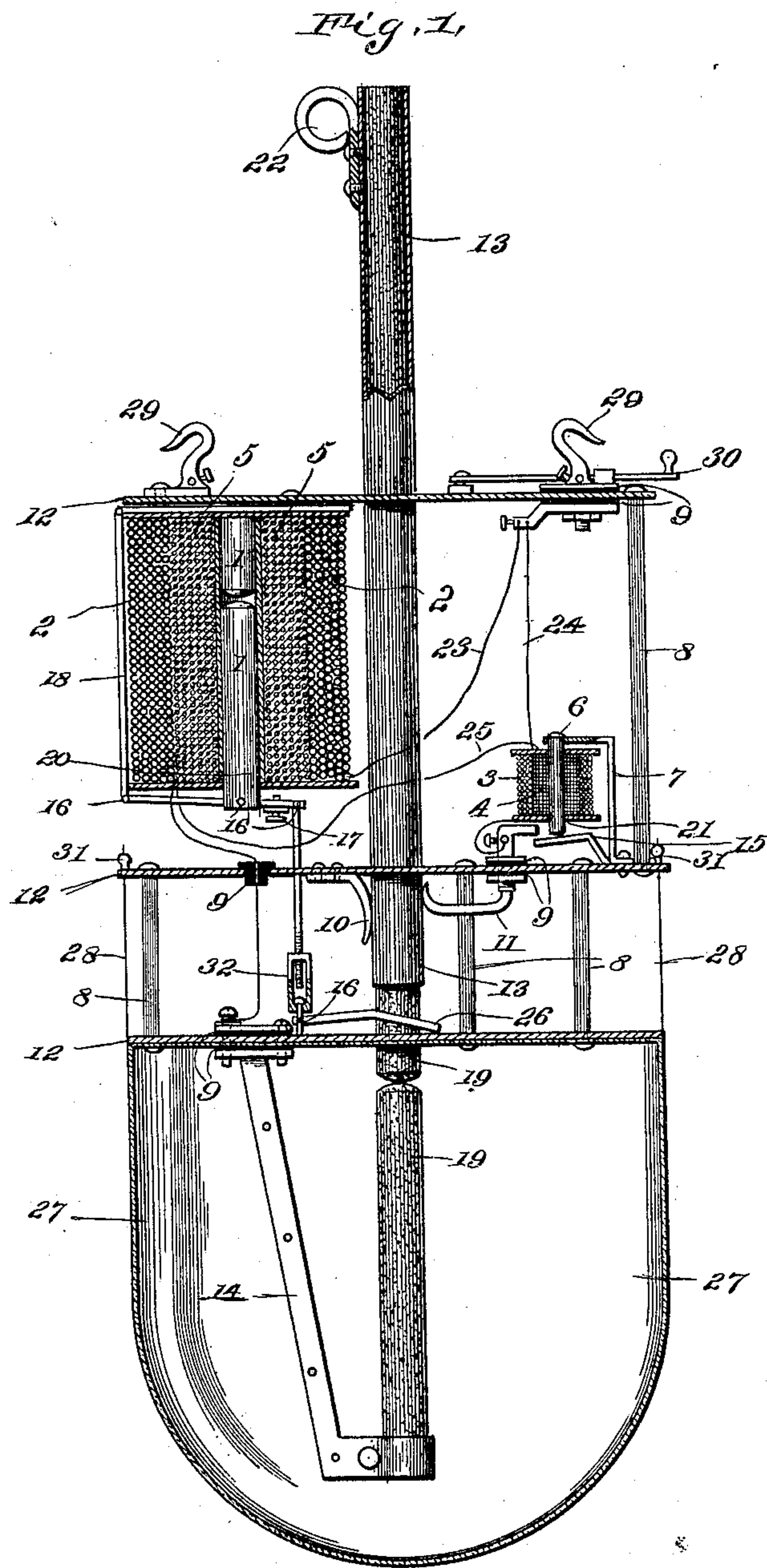


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Patented Apr. 29, 1902.

C. GILBERT.
ELECTRIC ARC LAMP.
(Application filed Jan. 12, 1900.)

(No Model.)



Witnesses:
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UNITED STATES PATENT OFFICE.

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ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 698,931, dated April 29, 1902.

Application filed January 12, 1900. Serial No. 1,256. (No model.)

To all whom it may concern:

Be it known that I, CLARK GILBERT, a citizen of the United States, residing at Bridgeport, in the county of Belmont and State of Ohio, have invented a new and useful High-Tension Direct-Current-Series Inclosed-Arc Lamp, of which the following is a specification.

My invention relates to improvements in arc-lamps, and more particularly to improvements in direct-current-series inclosed-arc lamps; and it consists in a series coil having a coil of fine wire wound within it, said fine-wire coil being adapted to demagnetize a soft-iron core when the arc becomes too long, allowing a clutch provided on said lamp to free itself from the upper carbon, so as to permit the lamp to feed automatically.

My invention further consists in the particular construction, arrangement, and combination of parts, which will hereinafter be fully described, and pointed out in the appended claim.

The object of my invention is to provide an arc-lamp of the character described which will automatically regulate the position of the upper carbon, so as to permit the lamp to feed when the arc becomes too long.

A further object is to provide a device within the lamp which will automatically close the electric circuit in case of accidents to the lamp or when the carbons are burned out.

A still further object of my invention is to provide a lamp composed of a fewer number of parts than is usually found in lamps of this class, making the lamp easier to trim and to keep in repair and also producing a lamp capable of being constructed in a size considerably reduced, and consequently lighter in weight than those now in common use.

In describing my invention in detail reference is had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical section of my invention, showing the various parts thereof. Fig. 2 is a plan view of the base or holder portion of the lower-carbon holder.

In the drawings like reference-numerals designate like parts.

The frame of the lamp consists of three plates 12, said plates being secured together by bolts 8.

18 is a soft-iron bar bent at right angles and

secured to the upper plate 12 of the frame by screws or bolts. Secured to and extending vertically downward from the horizontal portion of said bar 18 is a soft-iron core 1, and pivoted to the lower end of the vertical portion of said bar 18 at 16 is one end of a lever, to the opposite end of which is pivoted one end of a toggle-arm. The lower end of said toggle-arm is secured in a turnbuckle 32, which is pivoted at 16 to a dog or clutch 26, which is adapted to grip and hold the upper carbon 19, as will hereinafter be fully described. Pivotaly mounted on the lever before mentioned is a second soft-iron core 1, which is movable longitudinally in the spool on which the coils are wound. The upper end of said last-mentioned core 1 extends near to the lower end of the downwardly-extending core 1.

2 is a large series coil, which has wound within itself a fine-wire coil 5. As is apparent, when a sufficient electric current is sent through the series coil 2 the core 1, which is pivoted on the lever and which is movable within the spool, will be raised, which in turn will raise the lever, and through the intermediate mechanism the clutch 26 will be caused to grip and raise the top carbon 19. 17 is an adjusting-screw by which the distance between the two cores 1 and 1 may be regulated, so as to regulate the amount of magnetic leakage, and consequently to regulate the voltage across the arc. By adjusting the turnbuckle 32 the distance the upper carbon 19 will "pick up" after the lamp feeds may be regulated—that is, the distance may be either shortened or lengthened.

Leading from the binding-post on the under side of the upper plate 12 of the frame to the large series coil 2 is a connecting-wire 23.

14 is the lower-carbon holder, which is secured to the lower plate 12 of the frame by bolts, which are insulated from said plate by plates 9. Connecting the large series coil 2 and the lower-carbon holder 14 is a connecting-wire, which passes downward through an insulated opening in the middle plate 12 of the frame.

7 is a soft-iron support secured to the middle plate 12 of the frame, which has secured thereto a downwardly-extending soft-iron core 6, about which is a spool having wound thereon a coil of fine wire 4, and about said

coil of fine wire is wound a small series coil 3. Said coil of fine wire is connected in series with the fine-wire coil 5 by a connecting-wire.

15 is an armature the free end of which is normally a short distance beneath the upper end of a circuit-closer 11 and is adapted to be raised automatically into contact with said circuit-closer 11 when actuated by coil 4 and to hold the circuit closed through the coil 3 and to be firmly held in place, closing the line-circuit through said circuit-closer 11 coming into contact with the upper carbon 19. In this way the circuit is closed in one lamp in such a manner that other lamps on the feed-wire are not interfered with, permitting them to burn unaffected.

Leading from the binding-post, before mentioned, to the small series coil 3 is a connecting-wire 24, and leading from the coil 4 to the coil 5 is a fine connecting-wire 25. Connecting the circuit-closer 11 with the small series coil 3 is a short connecting-wire. Said circuit-closer 11 is insulated by the washers or plates 9 from the plate 12 of the frame, through which it passes.

The lamp is connected to the feed-wire by the hooks 29.

30 is a short-circuiting switch adapted to be operated or moved in contact with a contact-plate alongside the hook 29 to cut the current from the lamp.

27 is the globe, which is held firmly in place against the under side of the lower plate 12 of the frame by a wire 28, which has its ends passed upward through holes or slots provided in the edge of the middle plate 12 of the frame at opposite sides thereof. Both ends of said wire are screw-threaded, and a thumb-nut 31 is screwed thereon to hold said wire firmly in place, supporting the globe.

13 is a section of pipe secured in the frame and adapted to serve as a guide when inserting the upper carbon and also as a holder to protect the upper carbon. Secured on the upper end of said pipe 13 is a ring or loop 22, adapted to serve as a suspending-hook for the lamp.

The clutch 26 consists of a shank the heel of which is pivoted at 16 to the lower end of the turnbuckle 32 and carrying on its front end an integral ring, through which the upper carbon 19 extends. Now, as is apparent, when the lower core 1 is actuated to rise it will draw upward with it through the intermediate mechanism the heel of said shank, which will cause the ring-clutch to grip and raise said upper carbon. On the other hand, when the lower core 1 is lowered the ring-clutch will be also lowered until its forward end rests on the middle plate 12 of the frame, when said carbon will be released and will drop into contact with the point of the lower carbon.

10 is current-supplying brush secured on the under side of the middle plate 12 of the frame and having its point in contact with the pipe 13, which by making contact with the insulated circuit-closer 11 will close the circuit when the carbons burn out.

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

In an electric-arc lamp, the combination of a series coil 2 having a fine-wire coil 5 wound within it, a lever, a soft-iron core mounted on said lever and movable within said fine-wire coil, a friction-clutch, a toggle-arm pivoted to one end of said lever and supporting said friction-clutch, said fine-wire coil being adapted to demagnetize said soft-iron core when the arc becomes too long, permitting said clutch to free itself from the upper carbon and allowing the lamp to feed automatically, and an adjusting-screw 17 for regulating the magnetic leakage, substantially as and for the purposes set forth and described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CLARK GILBERT.

Witnesses:

HERSCHEL FRASIER BERRY,
BERT. B. BERRY.