

No. 653,984.

Patented July 17, 1900.

H. G. CARLETON.
ELECTRIC ARC LAMP.
(Application filed Nov. 7, 1899.)

(No Model.)

Fig. 1.

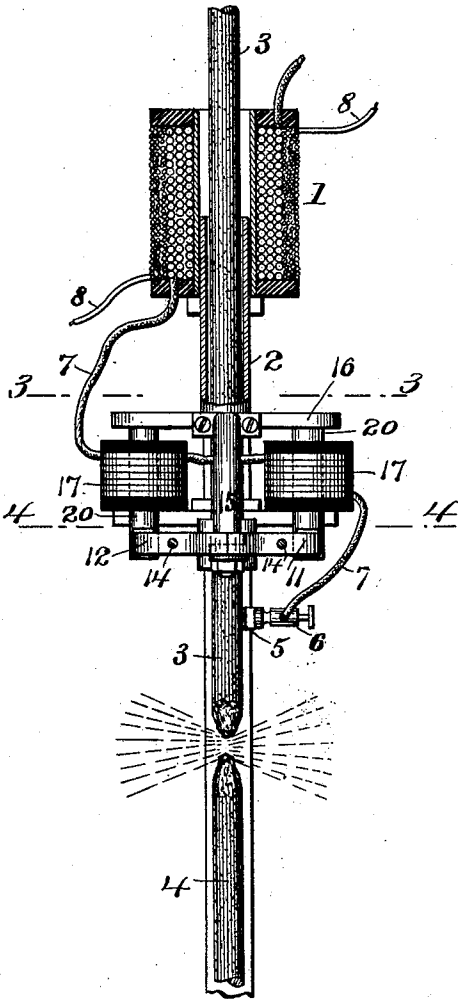


Fig. 2.

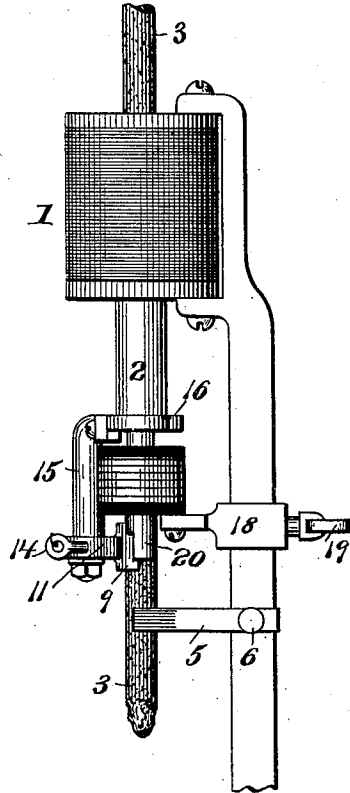


Fig. 3.

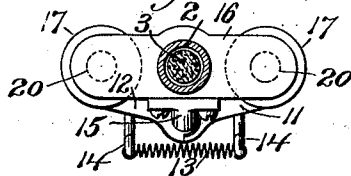
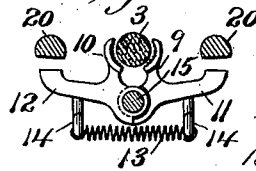


Fig. 4.



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UNITED STATES PATENT OFFICE.

HENRY GUY CARLETON, OF NEW YORK, N. Y., ASSIGNOR TO THE CARLETON ELECTRIC COMPANY, OF SAME PLACE.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 653,984, dated July 17, 1900.

Application filed November 7, 1899. Serial No. 736,175. (No model.)

To all whom it may concern:

Be it known that I, HENRY GUY CARLETON, a citizen of the United States, residing at New York, county of New York, and State of New York, have invented certain new and useful Improvements in Electric Clutch Mechanism, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to certain improvements in an electric clutch mechanism, said mechanism being more particularly intended for use in connection with arc-lamps. The invention, however, is adapted for use in other connections and is not, therefore, to be limited to the particular use stated.

It is the object of the invention to produce a cheap, simple, and reliable electric clutch mechanism which while particularly adapted for securing the carbon to its controlling mechanism in an arc-lamp shall also be capable of use wherever a cheap, positive, and powerful electric clutch mechanism is required.

With this and other objects in view the invention consists in certain constructions and in certain parts, improvements, and combinations, as will be hereinafter described, and more fully pointed out in the claims hereunto appended.

In the accompanying drawings, which form a part of this specification, and in which like characters of reference indicate the same parts, Figure 1 is a front view of an arc-light of ordinary construction with one form of the improved clutch mechanism applied thereto, said mechanism being shown in elevation. Fig. 2 is a side view of the construction shown in Fig. 1. Fig. 3 is a section on the line 3 3 of Fig. 1. Fig. 4 is a section on the line 4 4 of Fig. 1.

Referring to the drawings, the invention is shown as embodied in an arc-lamp of ordinary form. In the construction shown 1 indicates the common reversely-wound solenoid usually employed in arc-lamps, the hollow movable core 2 of which constitutes the controller for the upper carbon 3 of the lamp. The lower carbon 4 is supported in any usual or desired manner.

5 indicates a brush bearing against the upper carbon 3, said brush having connected thereto a binding-post 6, which in turn is connected to the feed-wire 7, said wire being connected to or forming the inner coil of the solenoid. The outer finer coil is formed by a wire 8, which connects with a branch circuit in an ordinary manner.

The parts so far described may be of any ordinary and well-known construction, preferably that of the Brush arc-lamp controller, which is well-known in the art.

The clutch mechanism by which the upper carbon 3 is secured to the carbon-controller 2 may be variously constructed. In its preferred form it consists of a pair of pivoted jaws 9 10, these jaws being arranged to partially embrace the carbon and being preferably roughened on their gripping-faces, as shown. The jaw 9 is provided with an extension 11, and the jaw 10 is provided with an extension 12, these extensions constituting an armature for a magnet to be hereinafter described. The extensions 11 and 12 are preferably, though not necessarily, provided with a spring 13, by which they are opened, the spring being connected to suitable eyes 14, secured to the extensions. The clutch members 9 and 10 are preferably pivoted on a bracket-arm 15, which extends from a base-piece 16, this base-piece being arranged to move with the controller 2, preferably by being carried on it.

Suitably supported on any stationary support, but preferably on the lamp-frame, are a pair of magnet-coils 17. In the preferred form of the invention these coils are stationary with respect to the controller; but they may move with it, if desired. In the construction shown a bracket 18 is shown as embracing the lamp-frame and secured thereto by a set-screw 19, the coils being secured to the bracket by means of suitable screws.

While in some forms of the device the magnet-coils 17 may be energized from any suitable source of electric energy, they are preferably included in the circuit 7, which leads from the upper carbon to the solenoid. It is apparent, therefore, that as the solenoid-circuit is made and broken by the movement of

the carbon in the ordinary and well-known manner the magnet-coils will be energized and deenergized.

In the construction shown the pole-pieces 20 are constructed to move with the carbon-controller and therefore work through the magnet-coils 17. While this result may be effected in various ways, the said pole-pieces are preferably secured to the base 16, before described. The pole-pieces 20 extend through the magnet-coils 17 and are located back of or beneath the extensions 11 and 12, which, as before stated, constitute the armature for these pole-pieces. The pole-pieces will preferably be flattened upon one side, as shown in Fig. 4, so that the extensions which, as has been said, form the armature for the magnet may be held firmly to them.

The operation of the construction described is as follows: As long as the circuit of the controlling-solenoid 1 remains unbroken the magnet-coils 17 are energized and the pole-pieces 20 attract the extensions 11 and 12, thus causing the clutch-jaws 9 and 10 to grip the carbon, and thus secure it to the carbon-controller 2. When, however, the circuit through the solenoid is broken, as happens through the burning away of the carbon or from other causes, the magnet-coils 17 become deenergized and the pole-pieces 20 no longer attract the extensions 11 and 12. The jaws 9 and 10 therefore release the carbon and it is allowed to drop. As soon as the contact with the carbon reestablishes the solenoid-circuit the controller 2 is again drawn up, and at the same time the coils 17 are again energized, causing the pole-pieces 20 to attract the extensions 11 and 12 and causing the jaws 9 and 10 to firmly grip the carbon, thus securing it to the controller.

It is to be understood that the invention may be embodied in constructions which are widely different from that which has been herein described. The invention is not, therefore, to be limited to the specific construction which is described in the foregoing specification.

What I claim is—

1. In an arc-lamp, the combination with a carbon-controller, of a solenoid for automatically varying the position of the controller, means for securing the carbon to the controller, and electrically-controlled operating devices for said means, said devices being separate from and always in circuit with the solenoid, substantially as described.

2. In an arc-lamp, the combination with a carbon-controller, of a solenoid for automatically varying the position of the controller, a clutch for securing the carbon to the controller, and electrically-operated means for operating the clutch, said means being separate from and always in circuit with the solenoid, substantially as described.

3. In an arc-lamp, the combination with a carbon-controller, of a solenoid for varying the position of the controller, means carried

by the controller for securing the carbon thereto, and an electromagnet for operating said securing means, said electromagnet being always in circuit with the solenoid, substantially as described.

4. In an arc-lamp, the combination with a carbon-controller, of a solenoid for varying the position of the controller, a clutch mechanism mounted on the controller, and an electromagnet for operating the clutch, said electromagnet being always in circuit with the solenoid, substantially as described.

5. In an arc-lamp, the combination with a carbon-controller, of a solenoid for varying the position of the controller, means for securing the carbon to the controller, and operating devices for said securing means, said operating devices including an electromagnet, the coils of which are stationary and the pole-pieces of which are movable, substantially as described.

6. In an arc-lamp, the combination with a carbon-controller, of a solenoid for varying the position of the controller, means for securing the carbon to the controller, and operating devices for said securing means, said operating devices including an electromagnet, the coils of which are stationary and the pole-pieces of which are movable, the magnet being in circuit with the solenoid, substantially as described.

7. In an arc-lamp, the combination with a carbon-controller, of a solenoid for varying the position of the controller, a clutch mechanism carried by the controller, and an electromagnet for operating the clutch mechanism, the coils of the magnet being stationary and the pole-pieces of the magnet moving with the controller, substantially as described.

8. In an arc-lamp, the combination with a carbon-controller, of a solenoid for varying the position of the controller, a clutch mechanism carried by the controller, and an electromagnet for operating the clutch mechanism, the coils of the magnet being stationary and the pole-pieces of the magnet being carried by the controller, substantially as described.

9. In an arc-lamp, the combination with a carbon-controller, of a solenoid for varying the position of the controller, a clutch mechanism carried by the controller, and an electromagnet for operating the clutch mechanism, the coils of the magnet being stationary and the pole-pieces of the magnet being carried by the controller, and said magnet being in circuit with the solenoid, substantially as described.

10. In an arc-lamp, the combination with a controller, of a solenoid for varying the position of the controller, clutch members moving with the controller, said members having extensions which form an armature, and an electromagnet separate from the solenoid for operating the extensions, substantially as described.

11. In an arc-lamp, the combination with a

controller, of a solenoid for varying the position of the controller, clutch members carried by the controller, said members having extensions which form an armature, a pair of stationary magnet-coils, and a pair of movable pole-pieces carried by the controller, said pole-pieces working through the stationary magnet-coils and serving to operate the armature extensions, substantially as described.

12. In an arc-lamp, the combination with a carbon-controller, of a solenoid for varying the position of the controller, a pair of pivoted jaws carried by the controller, said jaws having extensions forming an armature, a spring connecting the extensions and operating to open the jaws, and an electromagnet for operating the extensions, substantially as described.

13. In an arc-lamp, the combination with a carbon-controller, of a solenoid for varying the position of the controller, a pair of pivoted jaws carried by the controller, said jaws having extensions forming an armature, a spring connecting the extensions and operating to open the jaws, a pair of stationary magnet-coils, a pair of pole-pieces working through the coils and operating when they attract the armature to close the jaws, and means for energizing the magnet, substantially as described.

14. In an arc-lamp, the combination with a carbon-controller, of a solenoid for varying the position of the controller, a pair of pivoted jaws carried by the controller, said jaws having extensions forming an armature, a spring connecting the extensions and operating to open the jaws, an electromagnet operating to attract the armature extensions to close the jaws, and means for energizing the magnet, the magnet being in circuit with the solenoid, substantially as described.

15. In an arc-lamp, the combination with a carbon-controller, of a solenoid for varying the position of the controller, a pair of pivoted jaws carried by the controller, said jaws having extensions forming an armature, a spring connecting the extensions and operating to open the jaws, a pair of stationary magnet-coils, a pair of pole-pieces working through the coils and operating when they attract the armature to close the jaws, and means for energizing the magnet, the magnet being in circuit with the solenoid, substantially as described.

16. The combination with a movable part, of a clutch device carried by said part, stationary magnet-coils, movable pole-pieces working through the coils and serving to operate the clutch device, and means for energizing the magnet, substantially as described.

17. The combination with a movable part, of means for moving it, a pair of clutch members, an electromagnet separate from the means for moving the movable part, said magnet serving to actuate both the clutch

members, and means for energizing the magnet, substantially as described.

18. The combination with a movable part, of a pair of clutch members, a pair of pole-pieces moving with the movable part and serving to operate the clutch members, a pair of stationary magnet-coils through which the pole-pieces work, and means for energizing the magnet, substantially as described.

19. The combination with a movable part, of means for moving it, a pair of pivoted clutch members carried by the part, an electromagnet separate from the means for moving the part, said magnet operating to turn the clutch members on their pivots to operate them, and means for energizing the magnet, substantially as described.

20. The combination with a movable part, of a pair of pivoted clutch members carried by the part, a pair of pole-pieces serving to operate said clutch members, said pole-pieces moving with the movable part, a pair of stationary magnet-coils through which the pole-pieces work, and means for energizing the magnet, substantially as described.

21. The combination with a movable part, of means for moving it, a pair of pivoted clutch-jaws, said jaws having extensions which form an armature, an electromagnet separate from the moving means, the pole-pieces of said magnet being arranged to attract the armature and close the clutch-jaws, and means for energizing the magnet, substantially as described.

22. The combination with a movable part, of a pair of pivoted clutch-jaws carried by the part, said jaws having extensions which form an armature, a pair of pole-pieces secured to the movable part and serving to operate the clutch-jaws, a pair of stationary magnet-coils through which the pole-pieces work, and means for energizing the magnet, substantially as described.

23. The combination with a movable part, of a pair of stationary magnet-coils, a pair of pole-pieces moving with the movable part, said pole-pieces having flattened sides, a pair of pivoted clutch members having extensions by which they are operated, said extensions constituting an armature for the pole-pieces, and means for energizing the magnet, substantially as described.

24. The combination with a movable part, of means for moving it, a pair of pivoted clutch members having extensions which form an armature, an electromagnet separate from the moving means, the pole-pieces of said magnet having flattened sides, and means for energizing the magnet, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

HENRY GUY CARLETON.

Witnesses:

T. F. КЕНОЕ,
G. M. BORST.