

(No Model.)

H. S. MAXIM.

APPARATUS FOR TREATING CARBON CONDUCTORS.

No. 264,042.

Patented Sept. 5, 1882.

Fig. 1.

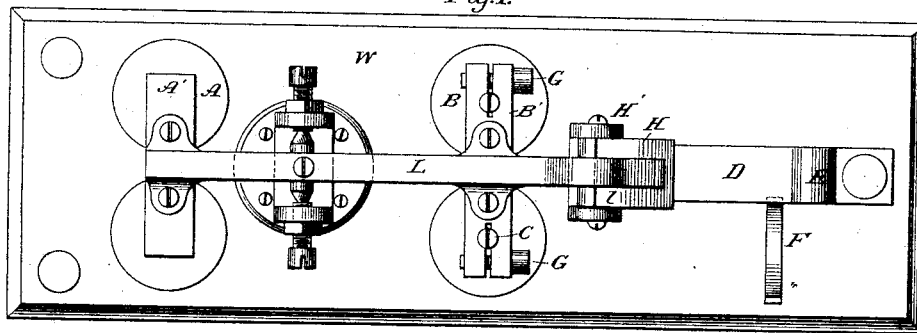


Fig. 2.

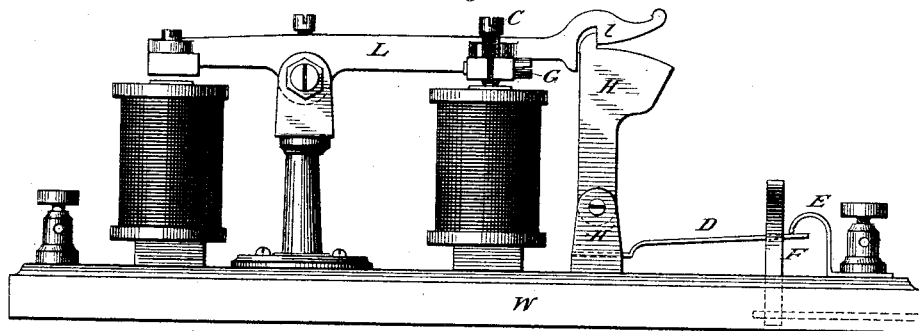


Fig. 3.

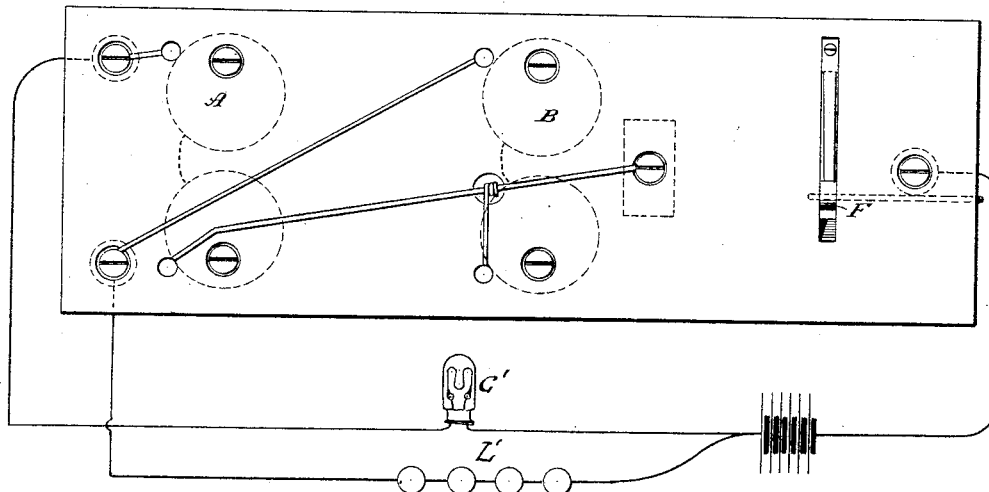
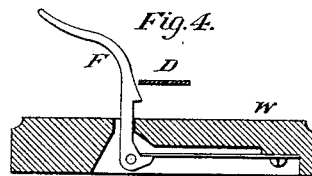


Fig. 4.



Attest:
R. H. Barnes.
W. Fishby

Inventor:
Hiram S. Maxim
By Parker W. Page
att'y.

UNITED STATES PATENT OFFICE.

HIRAM S. MAXIM, OF PARIS, FRANCE.

APPARATUS FOR TREATING CARBON CONDUCTORS.

SPECIFICATION forming part of Letters Patent No. 264,042, dated September 5, 1882.

Application filed February 18, 1882. (No model.)

To all whom it may concern:

Be it known that I, HIRAM S. MAXIM, a citizen of the United States, at present residing in Paris, in the Republic of France, have invented certain new and useful Improvements in Apparatus for Treating the Carbon Conductors of Incandescent Lamps, of which the following is a specification, reference being had to the drawings accompanying and forming a part thereof.

In another application filed by me I have shown and described an apparatus for use in the electrical treatment of carbon conductors by means of which the circuit in which the carbon while undergoing treatment was included was disrupted the instant that the carbon had acquired the requisite degree of electrical resistance. The mechanism employed for effecting this was described as consisting substantially of an electro-magnet in circuit with the carbon under treatment, an adjustable armature, and a circuit-breaker arranged to be actuated thereby.

My present invention consists in improvements on the above mentioned devices, said improvements comprising mainly the employment of an electro-magnet in a branch circuit in lieu of the retractile spring, and means for effecting the adjustment of the armature and rendering its action more delicate and accurate.

In the accompanying drawings, Figure 1 is a plan view of my improved apparatus; Fig. 2, a side elevation of the same; Fig. 3, a diagram of the under side of the base, illustrating the arrangement of circuits; and Fig. 4, a detail of mechanism.

Similar letters of reference indicate corresponding parts.

The several parts of the apparatus are mounted on a base, W, the armature-lever L being pivoted to a standard between the two bipolar magnets A and B and carrying-armatures A' and B', arranged to vibrate in face of the magnets, as shown.

H is a weighted arm pivoted to standard H' on the base W, and arranged to be maintained in a vertical position by a catch, I, of any suitable description on lever L.

D is a spring fastened to standard H', and

constructed with a normal tendency to press upward against a stop, E.

F is a spring-catch for holding the spring D when depressed, and preventing the same from vibrating in and out of contact with stop E, as explained in my former application.

Through the armature B' pass brass screws C, in connection with which binding-screws G are preferably used. The ends of screws C bear on the poles of magnet B, so that the approach of armature B' to the poles may be determined by the adjustment of screws C.

The apparatus is to be used as follows: The coils of magnet A are included in a circuit containing also the carbon strip which is to be treated inclosed in a receiver, C', containing a proper liquid or gas, such as gasoline-vapor. The weighted arm H is set as shown in Fig. 2, and the spring D allowed to press on stop E. A path for the current is thus completed through the apparatus. Magnet B is to be connected with a branch circuit around the carbon to be treated and the magnet A. The resistance of this circuit should be four or five times greater than the standard resistance to which the lamps are to be brought, and for this purpose four or five lamps, L', each of the standard resistance, may be inserted in series. It may also be observed that the resistance of magnet B should be somewhat greater than that of A—say four times—and the fulcrum of lever L, to compensate for these differences, should be nearer magnet A than magnet B. The distance of the armature B' from its magnet is adjusted by means of screws C, the position of which is determined by experiment, and, when once ascertained, may be fixed by tightening the clamping-screws G. If a carbon surrounded by gas be inserted in the circuit of magnet A and the circuit closed, the current divides itself between the two branches, the one containing magnet A, the other magnet B. The latter will have sufficient power to hold down its end of the armature-lever L until the resistance of the other branch of the circuit becomes so far reduced by the deposition of carbon on the carbon strip that the attraction of magnet A preponderates and draws the lever L down toward its poles. When this takes place the arm H falls and breaks the cir-

cuits through both magnets, they being in multiple arc, as shown in Fig. 3. The carbon-strip, having received just the proper deposit of carbon, may then be removed and others inserted in its stead.

5 In practice I design using a large number of these instruments in connection with the same main circuit, so that the process of treating the carbons in large numbers may be maintained indefinitely without interrupting the current by inserting new carbon conductors immediately in the place of those that have received the requisite treatment and been cut out.

15 The above-described apparatus may be varied in well-known ways, as by winding both branches of the circuit-wires in reverse direction on the same core and using a spring or weight as the opposing force to the differential attraction. In either case the result is practically the same, and a greater nicety of action and adjustment attained, as it is obvious that by this arrangement the actual rise and fall in the current will not be a factor in tripping the weight H.

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

30 1. In an apparatus for treating carbons, the combination, with an armature-lever and armatures carried thereby, of two opposing electro-magnets included in branches of the same

circuit, and mechanism adapted to be tripped or released by said lever, and thereby break the circuit through both magnets at the time and in the manner set forth. 35

2. In an apparatus for treating carbons, the combination, with an armature-lever and armatures carried thereby, of an electro-magnet in circuit with the carbon to be treated, an electro-magnet in a derived circuit of fixed resistance around the first magnet and carbon, and mechanism adapted to be actuated by the said armature, and thereby break the circuit through both magnets, as and for the purpose specified. 45

3. The combination of an electric circuit, a carbon conductor surrounded by a hydrocarbon gas or vapor, and an electro-magnet and armature with a shunt or derived circuit of fixed resistance around the said magnet and carbon, an electro-magnet contained therein, and mechanism adapted to be actuated by the movement of the armature effected by the action of the magnets, and thereby break the circuit through both magnets at the time and in the manner specified. 55

In testimony whereof I have hereunto set my hand this 25th day of January, 1882.

HIRAM S. MAXIM.

Witnesses:

CARL FOCKE,

PERCY B. LAMMIN,

35 Rue Boissy d'Anglas, Paris, Solicitor.