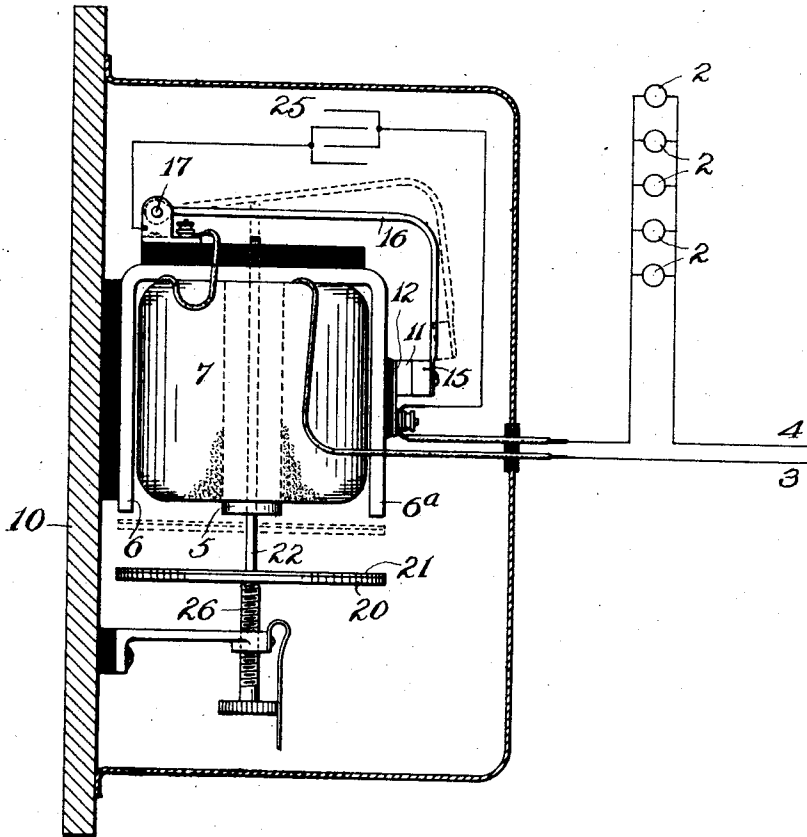


C. H. SPANGLER.
CURRENT LIMITER.
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1,215,422.

Patented Feb. 13, 1917.



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CURRENT-LIMITER.

1,215,422.

Specification of Letters Patent.

Patented Feb. 13, 1917.

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To all whom it may concern:

Be it known that I, CHARLES H. SPANGLER, a citizen of the United States, residing at Reading, in the county of Berks and State of Pennsylvania, have invented certain new and useful Improvements in Current-Limiters, of which the following is a specification.

My invention consists in an improved current limiter for electric circuits in which a series of lights or other translating devices is included, whereby the current is automatically interrupted when a determined maximum flow is exceeded. The invention provides a simple and advantageous device of this character applicable to both direct and alternating systems, and is fully described in connection with the accompanying drawing, and the novel features specifically pointed out in the claim.

The drawing indicates, in elevation, a construction embodying the essential features of my improved device.

A series of electric lights 2, 2, 2, is indicated in circuit with the line wires 3, and 4, and with my improved current limiter whereby the flow of current is automatically restricted so as to properly supply only a determined maximum current.

My improved device, as shown, comprises an electromagnet of tubular type, having a hollow central core 5 forming one pole thereof, while the other pole is formed by opposite parallel members 6, 6^a.

The magnet is conveniently secured to a base board 10 by means of the pole member 6; and a carbon contact 11 is insulatively fixed to the other pole member 6^a, by means of a conductor plate 12 as indicated. A swinging carbon contact 15 is carried by a lever 16, preferably of bent flexible form, which is pivotally connected to an insulated support 17; this support being located above and to one side of the axis of the magnet so that the lever will extend across said axis; and being thus adapted to be actuated, as hereinafter described, so as to angularly swing its contact end 15 toward and away from the fixed contact 11.

This swinging action is affected by the movement of an armature comprising an iron disk 20 having an upper facing 21 preferably of aluminum, and a rod extension 22, also of nonmagnetizable material; said rod extending upward through the hollow core 5 and having its upper end adapted to con-

tact with the lever 16 when the armature is raised by the electromagnet. The armature is normally supported at a regulated distance below the magnet by means of a central adjusting screw 26, so as to permit its free movement under action of the magnet.

The ends of the energizing coil 7 are connected to the wire 3 and the lever support 17 respectively, as indicated, while the line wire 4 connects to the fixed contact plate 12; the circuit through the limiter device being completed normally by the lever 16 and its contact 15. The position of the armature 20 below the magnet being properly regulated by the supporting screw 26, the required flow of current for a determined maximum number of lights or translating devices will be insufficient to affect the armature, but in case an additional light be thrown into service excess flow will energize the magnet to a greater strength so as to raise the armature and thereby actuate the lever 16 to break the circuit; the quick release and repeated attraction of the armature causing a continued flickering of the lights until normal service is restored. The pivotal swing of the lever 16 upon its support 17 brings the contacts 15 and 11 together with a slight wiping action which is practically important to the securing of satisfactory effects.

When the contacts are parted by the action of the armature, arcing is apt to follow, and to avoid this I provide for advantageously carrying the current across the gap; this being accomplished by means of a condenser shunt across the gap, connecting the fixed contact plate 12 with the lever support 17, through condenser 25, as shown.

My device is applicable either to a direct current or an alternating current system; the adjusting screw 26 permitting the armature to be accurately adjusted in either case to the proper normal position relative to the magnet; and the nonmagnetizable facing 21 of the freely carried armature insuring in all cases its proper action and prompt release when the circuit is broken. Both the construction and application of the device are very simple and satisfactory.

What I claim is:

A current limiter for electric circuits, comprising an electromagnet having spaced parallel pole members of one polarity and a wound intermediate pole member of opposite polarity with an axial opening there-

through, an adjustably-supported armature
disk having a lever-operating rod extending
through said opening, a fixed contact, a fixed
lever support, a freely swinging contact-
5 carrying lever pivoted to said support and
operated by said armature rod, and a con-
denser shunted across the gap.

In testimony whereof I affix my signature
in presence of two witnesses.

CHARLES H. SPANGLER.

Witnesses:

D. M. STEWART,
V. L. STRATTON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."