converted into an automatic fire-alarm, without in any way interfering with its use as a call. Pressure upon the thimble causes electric contact between the springs in the base of the button-fixture, in the usual manner, completing the circuit and ringing the bell.

As a fire-alarm, it operates as follows: When the heat of any room in which this attachment has been placed reaches a predetermined temperature, the alloy melts, and releases the pin, which is forced out of the thimble by the expansion of the spring. The springs in the fixture are then brought into continuous contact by the pressure of the pin, the circuit is thereby closed, and the alarm transmitted to a central station, where measures can immediately be adopted for extinguishing the fire. The device is applicable to open or closed circuit, and to all purposes for which a thermostat is required. It is an efficient substitute for the more complicated and expensive thermostats, and should be very reliable, as the wires and connections are constantly being tested.

AN IMPROVED ELECTRIC SYSTEM.

THE Sperry system of electric lighting, which has been widely introduced, especially in the Western States, has recently been considerably improved. The dynamo as now made is shown in

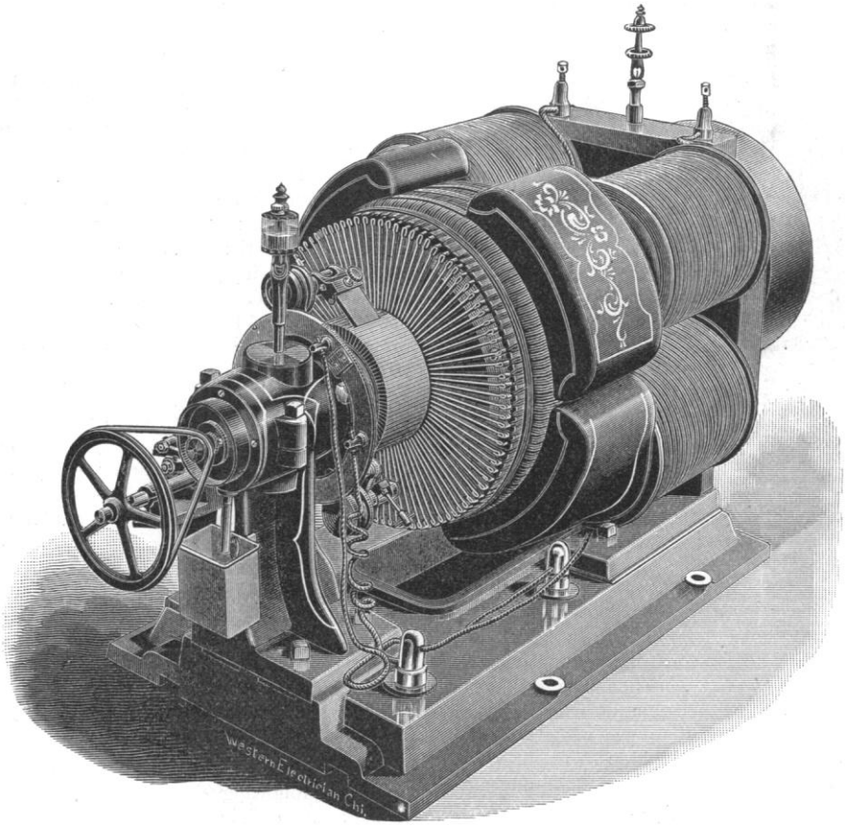
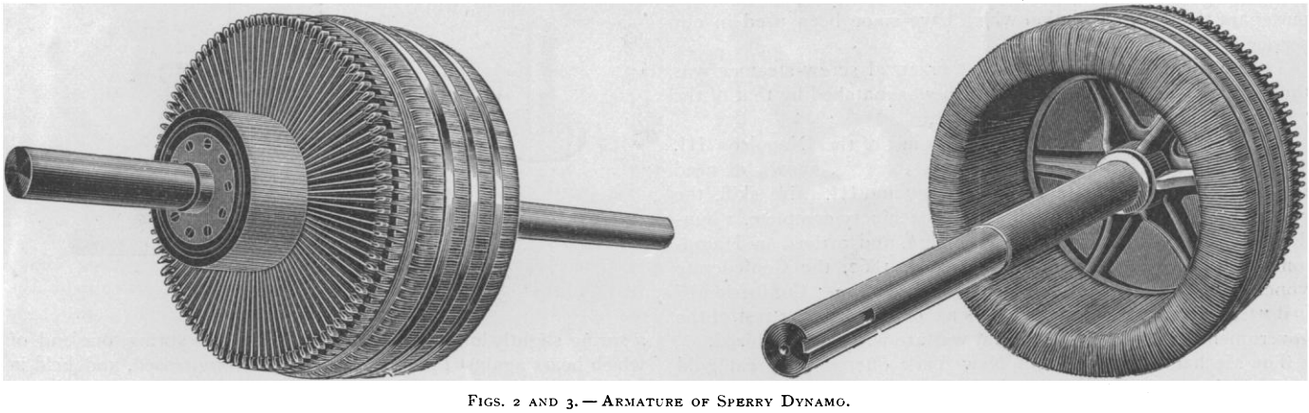


FIG. 1. — SPERRY DYNAMO COMPLETE.

Fig. 1. A special feature of this is the automatic regulator. The brushes consist of overlapping flat copper strips attached to a movable yoke. This yoke is connected by means of an arm to an electro-magnetic regulator placed in the lamp-circuit. Any variation in the electrical resistance of the lamp-circuit operates the keeper of the electro-magnet. By an ingenious device, this movement adjusts the current of the dynamo in proportion to any variation in the resistance of the lamp-circuit. The manufacturer claims that all of the lights, a single light, or any number from zero to full capacity, may be extinguished without danger to the dynamo, and without the presence or knowledge of the dynamo-tender or engineer.



FIGS. 2 AND 3. — ARMATURE OF SPERRY DYNAMO.

The field-magnets (Fig. 4) are provided with an annular recess, in which the annular armature (Figs. 2 and 3) rotates. It is claimed that by employing this peculiar construction of the armature, and

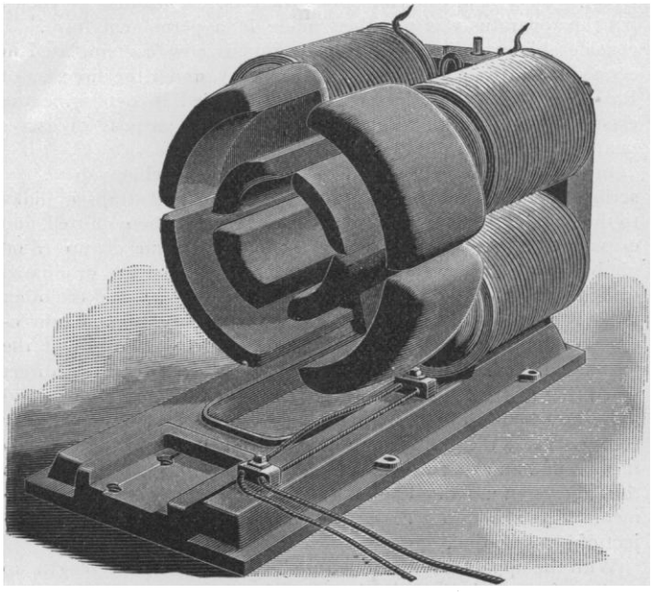


FIG. 4 -- FIELD-MAGNETS, SPERRY DYNAMO.

exposing its inner surface to the action of the inner pole-pieces, the output of electrical energy is increased.

Another feature of the Sperry armature is that there is no overlapping of coils, each coil being separate and distinct from the

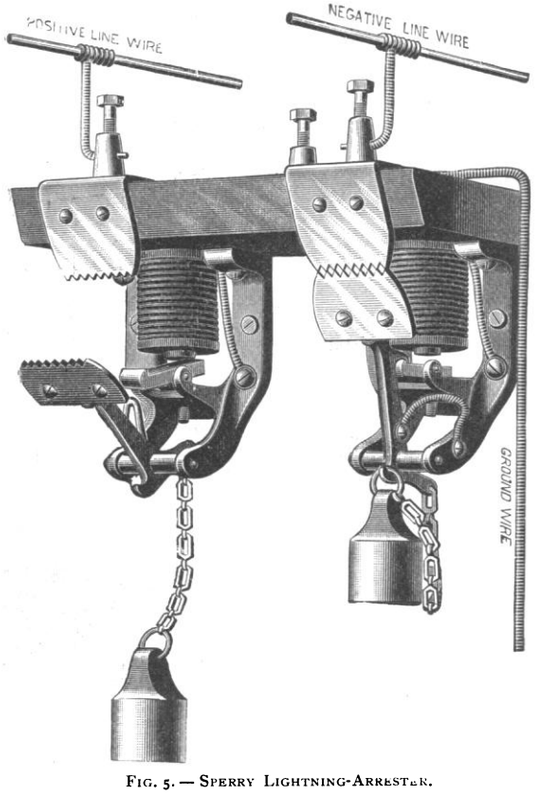


FIG. 5. — SPERRY LIGHTNING-ARRESTER.

others. Thus any mechanical injury sustained by one coil will not cause the destruction of the whole armature, as the injured part can easily be removed, and replaced by a new one, without disturbing any other coil.

Each lamp is provided with a hand-switch, and also an automatic switch, which cuts the lamp out of circuit in the event of neglect or carelessness on the part of the trimmer, or trouble in the lamp itself. The regulation is such that the carbon rod is made to operate in both directions, up and down, without friction. On starting the machine, the normal arc is at once secured, and maintained throughout the entire operation.

The discharge-plates of the lightning-arrester are movable, one from the other, in such a way as to break the arc established between these two plates, which follows the discharge of static electricity from the line, be it produced by lightning or friction electricity by belts, which has been discovered to be the case in some instances. The arc being ruptured automatically, and the plates restored, no

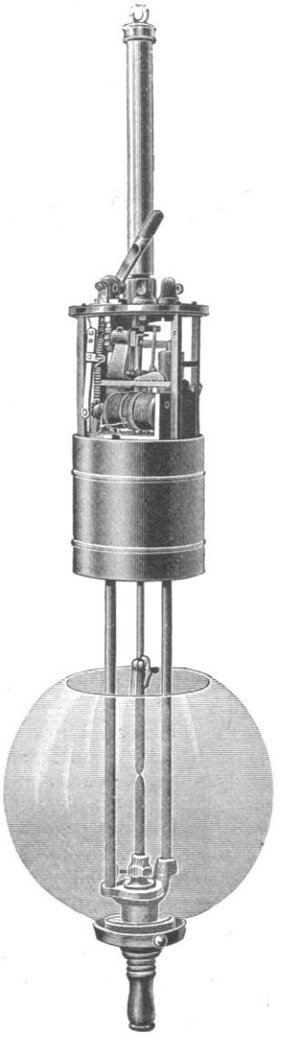


FIG. 6. — SPERRY ARC-LAMP, TOP REMOVED.

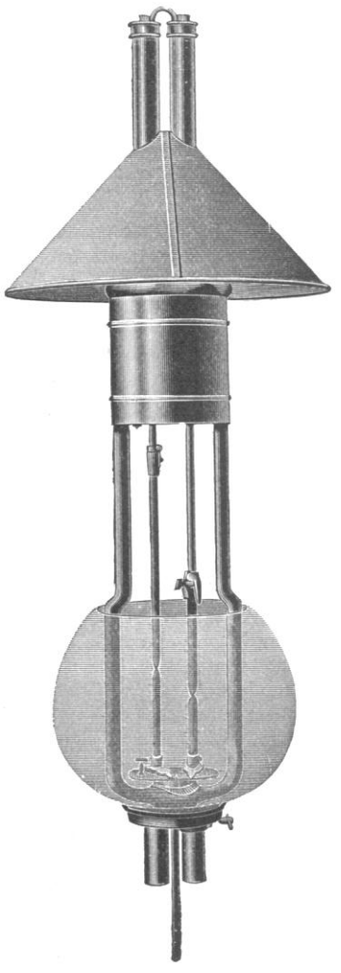


FIG. 7. — LAMP COMPLETE.

shutting-down of the light is necessary; and the consumer knows nothing of its operation, and is not annoyed by the extinguishing of his light. All possibility of disabling the dynamo from lightning is done away with, either from lightning direct or from the instantaneous short-circuiting of the dynamo, resulting from the arc established between the two leads by way of the two discharge-plates, which are present in all forms of lightning-arresters. These lightning-arresters have operated continuously for over two years upon sixty and eighty light circuits. Heavy discharges have been taken off of lines continuously all last summer and spring, and the apparatus has not been injured in the least. A single lightning-arrester serves for an entire circuit, being attached to both positive and negative wires between the dynamo and first lamps on either lead, the ground wire being attached to the rear terminal or binding-post, all of which are shown in Fig. 5.