(No Model.)

O. B. SHALLENBERGER.

REGULATOR FOR ELECTRIC TRANSLATING DEVICES.

No. 390,911. Patented Oct. 9, 1888.

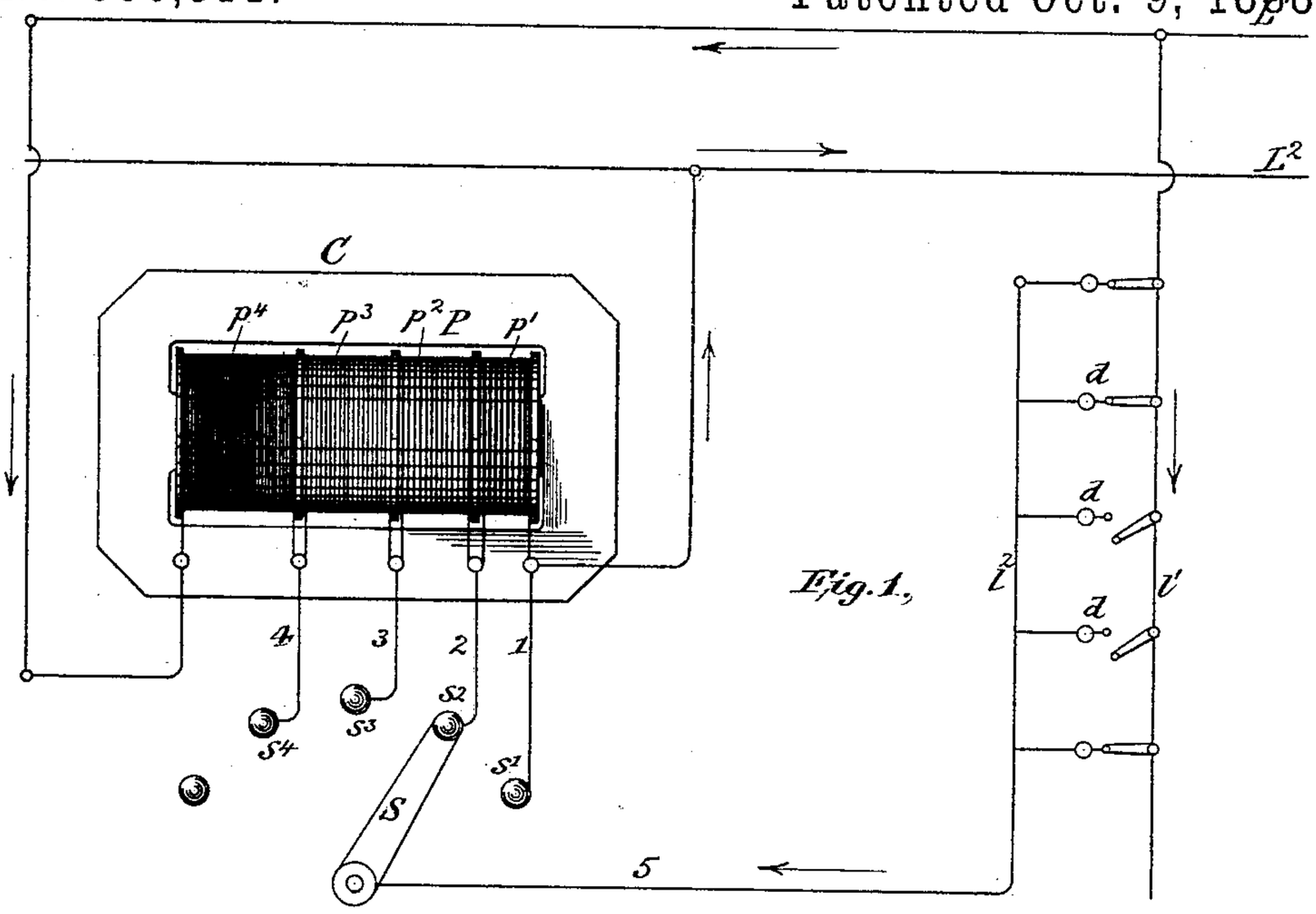

Fig. 1.

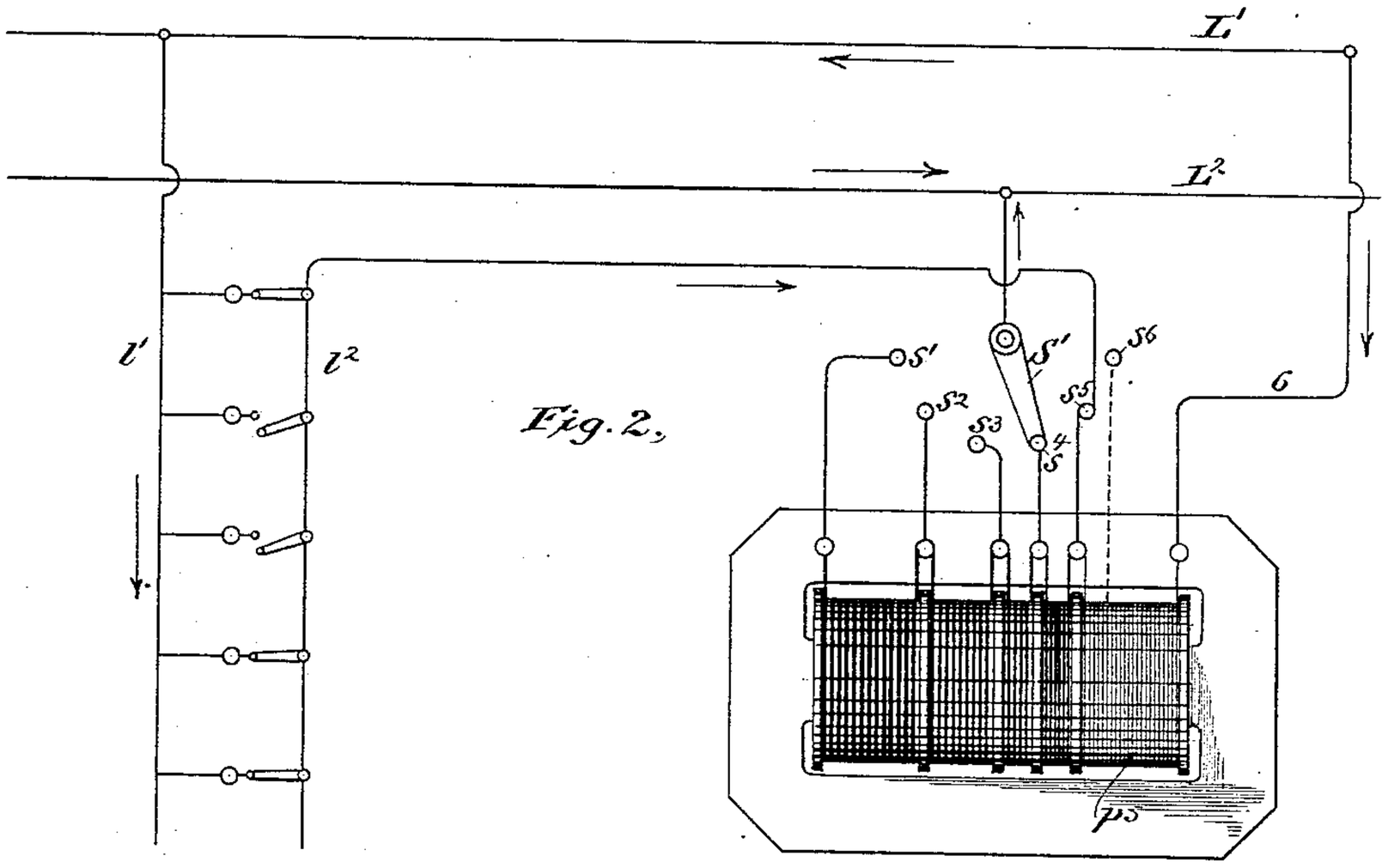

Fig. 2.

WITNESSES:

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REGULATOR FOR ELECTRIC TRANSLATING DEVICES.

SPECIFICATION forming part of Letters Patent No. 390,911, dated October 9, 1888.

Application filed December 9, 1887. Serial No. 257,406. (No model.)

To all whom it may concern:

Be it known that I, OLIVER B. SHALLENBERGER, a citizen of the United States, residing in Rochester, in the county of Beaver, in the State of Pennsylvania, have invented certain new and useful Improvements in Regulating Electric Translating Devices, (Case No. 172,) of which the following is a specification.

The invention relates to a plan of regulating the current supplied in a system of alternate-current distribution to translating devices—for instance, incandescent electric lamps.

The object of the invention is to provide convenient means whereby translating devices operated by alternating, intermittent, or pulsatory electric currents may be operated under the influence of a difference of potential which may be varied as required between certain limits.

The general plan of the invention is to connect either the supply-circuit or translating-circuit with the terminals of a coil of wire disposed about a core of soft iron while the other circuit is capable of being connected through a greater or less portion of the length. Thus the translating-circuit may be connected through a greater or less length of wire disposed about a core of soft iron, the entire length of the coil being included between the conductors supplying current to the system, or the translating-circuit may be connected between conductors leading from fixed points in the coil and an equal or greater length of this coil included between the supply-conductors.

It is found that by preserving throughout a given coil a fixed difference of potential and applying one terminal of the translating-circuit to different points in the length of this coil, the other being permanently connected at one extremity of the coil, the difference of potential at the translating devices may be varied in the same way as if a converter were employed having a secondary coil of adjustable length.

It is essential to the operation of this regulator that the core should be common to all the coils, otherwise there would be no mutual induction between the different sections of the coils.

If the translating devices are connected in fixed relation to the coil, practically the same effects may be accomplished by connecting the terminals of the supply-circuit to different points. By either of these arrangements a greater current will traverse the translating-circuit except when the two are equal. The device is usually employed, as has been described, to reduce the potential on the translating devices below that of the supply-circuit; but the arrangement may be such as to allow an increase above that potential, in which case the current is less than that of the supply-circuit. In general, the product of the difference of potential and current in the supply-circuit is approximately equal that in the translating-circuit. The device cannot therefore be regarded as a variable shunt or series resistance, such as has heretofore been employed for a like purpose.

In the accompanying drawings, Figure 1 is a diagram illustrating a method of carrying out the invention, and Fig. 2 illustrates a modification.

Referring to the figures, L′ L² represent main-line conductors leading from any suitable source of alternating electric currents, and *l′ l²* conductors supplying translating devices *d d*. Between the conductors L′ and L² there is connected a coil, P, of insulated wire disposed about a core, C. This coil may be considered as being divided into sections p' p^2 p^3 p^4. From these sections conductors 1 2 3 4 are derived, leading to switch-points s', s^2, s^3, and s^4. The switch-arm S is designed to be moved over these points. This switch-arm is connected by a conductor, 5, with one of the supply-conductors, l^2.

The lamps *d d* may be connected in multiple arc or otherwise between the conductor l^2 and the conductor l', which latter is derived from the line L′. By moving the switch-arm S along the points s' s^2, &c., any required difference of potential may be obtained for the lamps, varying from zero to the full electromotive force upon the circuit, the greatest brilliancy being secured when the switch S is upon the point s'.

In Fig. 2 a modification is shown in which the translating devices are connected to a definite length, p^5, of the regulating-coil, while the

regulation is effected by moving a switch-arm, S′, which is connected with the conductor L^2, over the points s' s^2 s^3, &c. One terminal of the section p^5, it will be understood, is connected with the conductor 6, while the conductor l^2 leads to the switch-point s^5, connected with the section p^5 of the regulating-coil. The conductor l' is derived from the line L′. In this instance the effect of moving the switch to the left is to lengthen the primary circuit, and the result is just the same as decreasing the length of the secondary circuit in Fig. 1—that is to say, the ratio of conversion is reduced and the lamps are turned down. The point s^6 is shown connected by a dotted line to a point within the section p^5. By placing the switch S′ upon this point the difference of potential may be increased above that of the circuit L′ L^2.

I claim as my invention—

1. The combination, with a source of alternating electric currents and one or more translating devices, of regulating coils, a core of magnetizable material common to all the coils, a circuit across the poles of the source including said coils, and a circuit including the translating devices in series with a portion of the coils.

2. The combination, with a source of alternating electric currents and one or more translating devices, of regulating-coils and a core of magnetizable material common to all the coils, a circuit across the poles of the source including said coils, a circuit including the translating devices in series with a portion of the coils, and a device for varying the length of the latter portion.

3. The combination of translating devices, a source of electricity supplying currents thereto, regulating-coils, a core of magnetizable material common to all of said coils, the coils having a portion of their length connected with said source in series with said translating devices, and a portion connected to the source in parallel with the translating devices, and means for varying the relative lengths of the portions of the coils so connected.

4. The combination, with the main lines l' l^2 and the translating devices d d, operated by currents transmitted over said lines, of the coil P, connected between conductors L′ and L^2 and divided into sections p', p^2, p^3, and p^4, a core, C, common to all the sections, and means for connecting the translating devices in shunt upon one or more of said sections, substantially as described.

In testimony whereof I have hereunto subscribed my name this 18th day of November, A. D. 1887.

OLIVER B. SHALLENBERGER.

Witnesses:

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