(No Model.)

I. KITSEE.

DISTRIBUTION OF ELECTRIC CURRENTS.

No. 557,398. Patented Mar. 31, 1896.

Fig. 1.

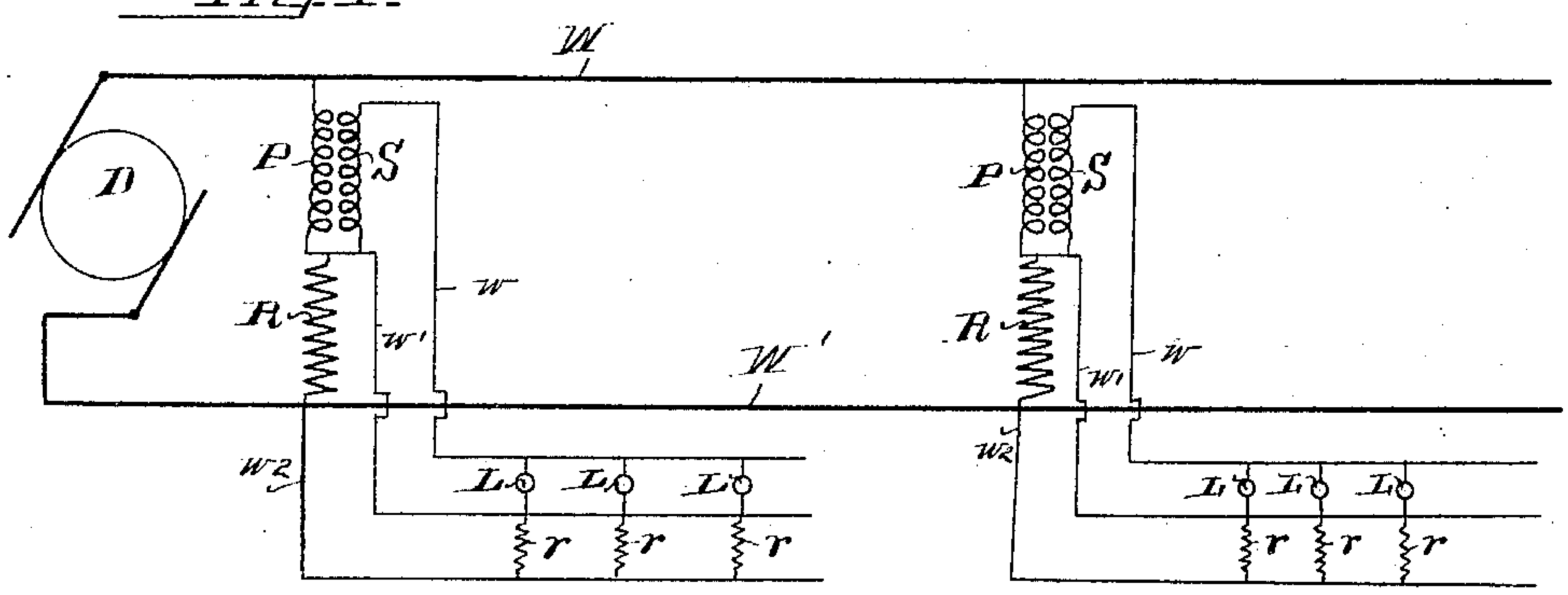


Fig. 2.

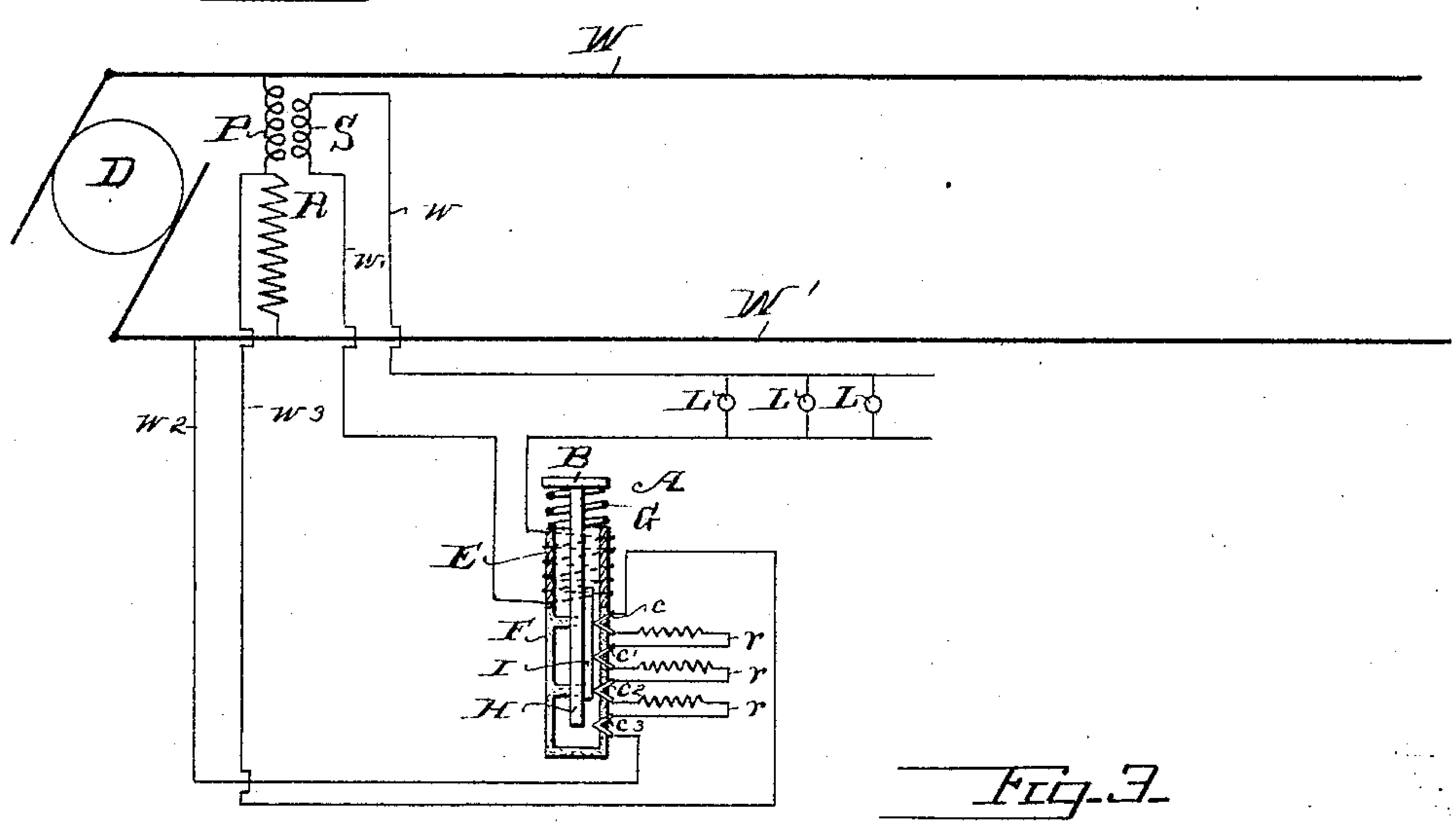
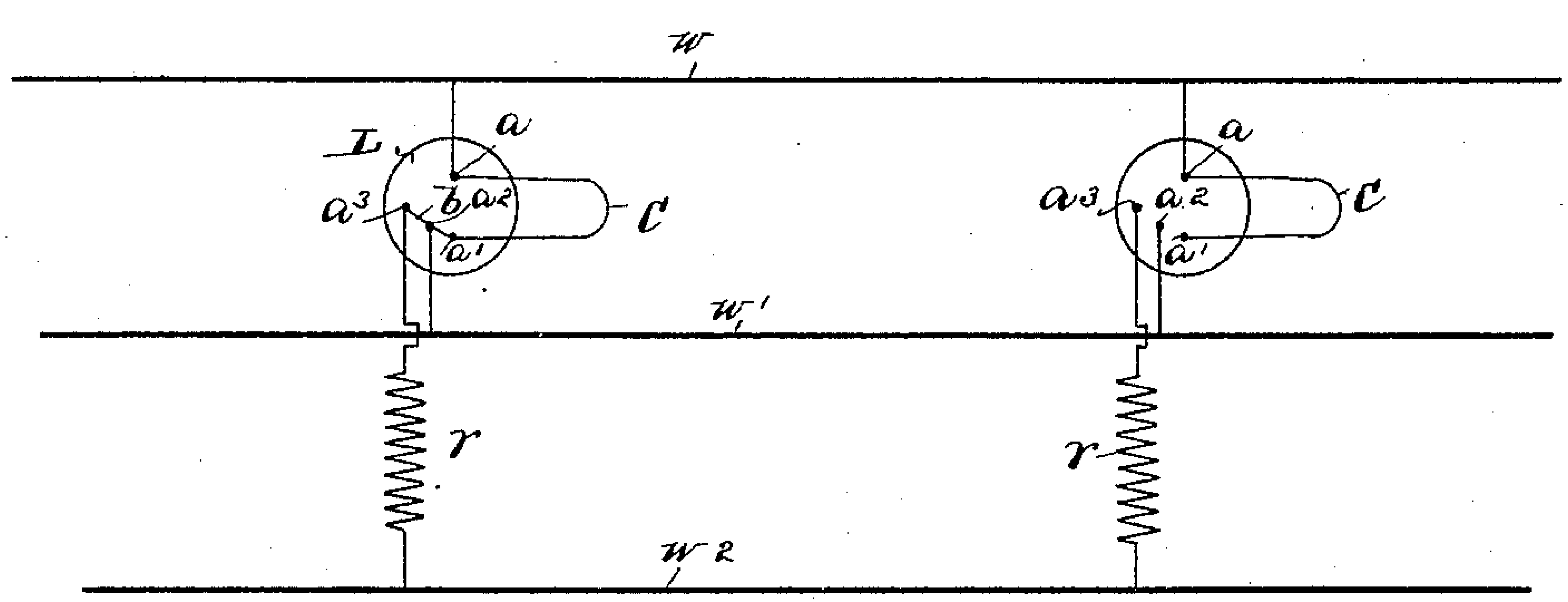


Fig. 3.



Witnesses:

Jesse B. Heller.

Inventor.

Isidor Kitsee

UNITED STATES PATENT OFFICE.

ISIDOR KITSEE, OF PHILADELPHIA, PENNSYLVANIA.

DISTRIBUTION OF ELECTRIC CURRENTS.

SPECIFICATION forming part of Letters Patent No. 557,398, dated March 31, 1896.

Application filed September 16, 1895. Serial No. 562,680. (No model.)

To all whom it may concern:

Be it known that I, ISIDOR KITSEE, of Philadelphia, Philadelphia county, Pennsylvania, have invented a new and useful Improvement in the Distribution of Electric Currents, of which the following is a specification.

My invention relates to the distribution of electric currents, and more especially of alternating currents employing converters at or near the consuming-station.

The greatest advantage in the employment of alternating currents lies in the fact that currents of high tension and small quantity are transmitted and at the point of consumption with the aid of converters changed into currents of necessary low tension and large amperage, and the greatest drawback in the employment of such currents and converting devices lies in the fact that the converters consume a comparatively high percentage of current even if unemployed, and the waste of energy is therefore out of proportion in such cases where the employment varies or lasts only a few hours a day. To obviate this disadvantage and to minimize the losses of current in the converters are the objects of my invention.

The underlying principle of my invention is the employment of resistances varying with the varying need of current.

In the drawings two variations of my method are illustrated.

Figure 1 is a diagrammatic view of my invention, in which the variable resistances are placed at the consuming devices, each of which is provided with an individual part of the resistance. Fig. 2 is a diagrammatic view of my invention, in which the automatic varying resistance is placed as a unit at a station more or less remote from the consuming device itself. Fig. 3 is a diagrammatic view showing the connection of an incandescent lamp to a circuit employing my invention, as illustrated in Fig. 1.

In Fig. 1, D is the dynamo or other generator of electric energy. W and W′ are the main wires carrying the current. P P are the primaries of the converting devices, of which S S are the secondaries. The primaries P P, instead of being connected directly to wires W W′, have in their circuit the resistances R R. The current therefore flowing, say from W through P to W′, encounters also the resistance R. Such resistance can be made as high or low as suits best each individual case.

It is best to so adjust the resistances R as to be the sum of all the small resistances r placed in the consuming-circuit of the secondaries S S of the particular converter.

The connections and the *modus operandi* of the consuming device, as illustrated in detail in Fig. 3, are as follows: From the secondaries emanate wires w and w' and connect with the lamps L. Wire w^2 emanates from the point where resistance R meets wire W′ and is carried to the points where the consuming device is placed in the circuit $w\,w'$. A resistance is then placed in the circuit formed by wires w' w^2. The path of the primary current, which formerly was only from W through P and high resistance R to W′, is now augmented by the path W through P, through wire w', resistance r and wire w^2, and as the resistance of each individual resistance r can be so regulated as to allow the flow only of such amount of electric energy as is necessary to produce the desired effect in secondary S it is obvious that with the opening or closing of the switch or key at each of the consuming devices the flow of the current will be decreased or increased not only, but also decreased or increased just in the proportion necessary to feed the lamps L or other consuming device placed in the circuit.

In Fig. 2, D is the generator of electric energy; W and W′, the circuit-wires; P, the primaries, and S the secondaries of the converting device; R, the main resistance placed in the circuit between P and W′, and L the consuming devices. The wire w' is not, as in Fig. 1, connected to both the primary and secondary of the converter, but to the secondary only, the wire w being connected, as before, to the secondary only. The wire w^2 emanates, as before, at the point where R and W′ meet. The individual resistances $r\ r\ r$ are not placed at the consuming devices, but are placed near a device which is capable of short-circuiting the same. This device is placed in the circuit of wire w' and consists of the core F, around which or around part of which the coil E is wound. It also consists of the movable soft-iron core B, held preferably by spring G at a prearranged position.

The action of the device and through such action the flow of the current will be as follows: Normally, with all the consuming devices unemployed, the flow of the current from W through P and R to W' will be sufficient only to induce in the secondary S energy sufficient for one lamp. The flow of the induced current through *w w'* will actuate the device A placed in series of *w'* in such a manner that the core B will be pulled downward. At prearranged intervals metallic contact-points c c' c^2 c^3 are placed in the core F in such manner that they protrude on the inner side of F. These contact-points are the terminals of the small resistances *r r r*. The core B is provided with a contact-plate I. Normally, if core B is not depressed, all the resistances *r r r* are in the circuit; but when through the closing of one of the consuming devices L a circuit is established in *w w'* the core B will move downward and the contact-plate I come in contact with points *c* and *c'* at the same time, thereby short-circuiting the first resistance *r*, whereby a less resistance is offered to the flow of the current in primary P, and so on till all consuming devices are closed, thereby proportioning the flow of the current through P.

In Fig. 3 the consuming device to the right is shown open and that to left closed. *w w'* are the wires corresponding to the same wires in Fig. 1; points a a' a^2 a^3, the points of connection; C, the filament of an incandescent lamp, and *r* the resistance. As illustrated, one terminal of C is permanently connected through point *a* to a wire leading from *w*, the other terminal of C terminating in point *a'*. In juxtaposition are point a^2, being the terminal of a wire leading from *w'*, and point a^3 the terminal of resistance *r*. In the figure to the left these points a' a^2 a^3 are connected together through switch-plate *b*.

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

1. The method of distributing electrical energy which consists in providing the translating or consuming circuit of a converting device with resistances placed in a shunt-circuit to a resistance opposing the flow of the current in the primary of said converting device and automatically short-circuiting or cutting out the same through the active employment of the consuming devices placed in said circuit.

2. The method of distributing electrical energy which consists in normally opposing the flow of the current in the primary of a converter with the aid of a comparatively high resistance, and then varying according to the varying need of the consuming devices placed in the secondary of said converter, the flow of the current in said primary through individual and comparatively small resistances.

3. A system of electrical distribution consisting of a generator of alternating currents, a current-carrying circuit, a converter or converters, the primaries of which are connected through comparatively large resistances, a circuit or circuits shunting through smaller resistances said large resistance, said last-named smaller resistances being normally, when no consuming device is in activity electrically disconnected from one of the shunt-wires, in combination with consuming devices placed in the secondary circuit of said converter, the mechanism of the consuming devices also controlling the smaller resistances.

4. In a system of electrical distribution a rheostat of high resistance placed in series with the primary of a converter connected to a current-carrying circuit in combination with individual resistances placed in a circuit shunting said high resistance and a controlling device or devices placed in conjunction with or in circuit to consuming devices connected to the secondary of said converter.

5. In a system of electrical distribution a generator of alternating currents, a current-carrying circuit, converters, the primaries of which are connected through resistances to the current-carrying circuit, consuming devices connected through one conductor to one of the terminals of the secondaries, and through a second conductor to the other terminal of the secondaries and also to the point where the primaries are connected to the resistances and a third conductor forming with the second-named conductor a shunt-circuit around said resistance or resistances in combination with consuming devices placed in the circuit formed by the two first-named conductors and small resistances placed in the circuit formed of the second and third named conductor.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 12th day of September, A. D. 1895.

ISIDOR KITSEE.

Witnesses:

WALLACE B. ELDRIDGE,
RICHARD M. POPHAM.