H. SHOEMAKER.

TRANSMITTING APPARATUS.

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918,208.

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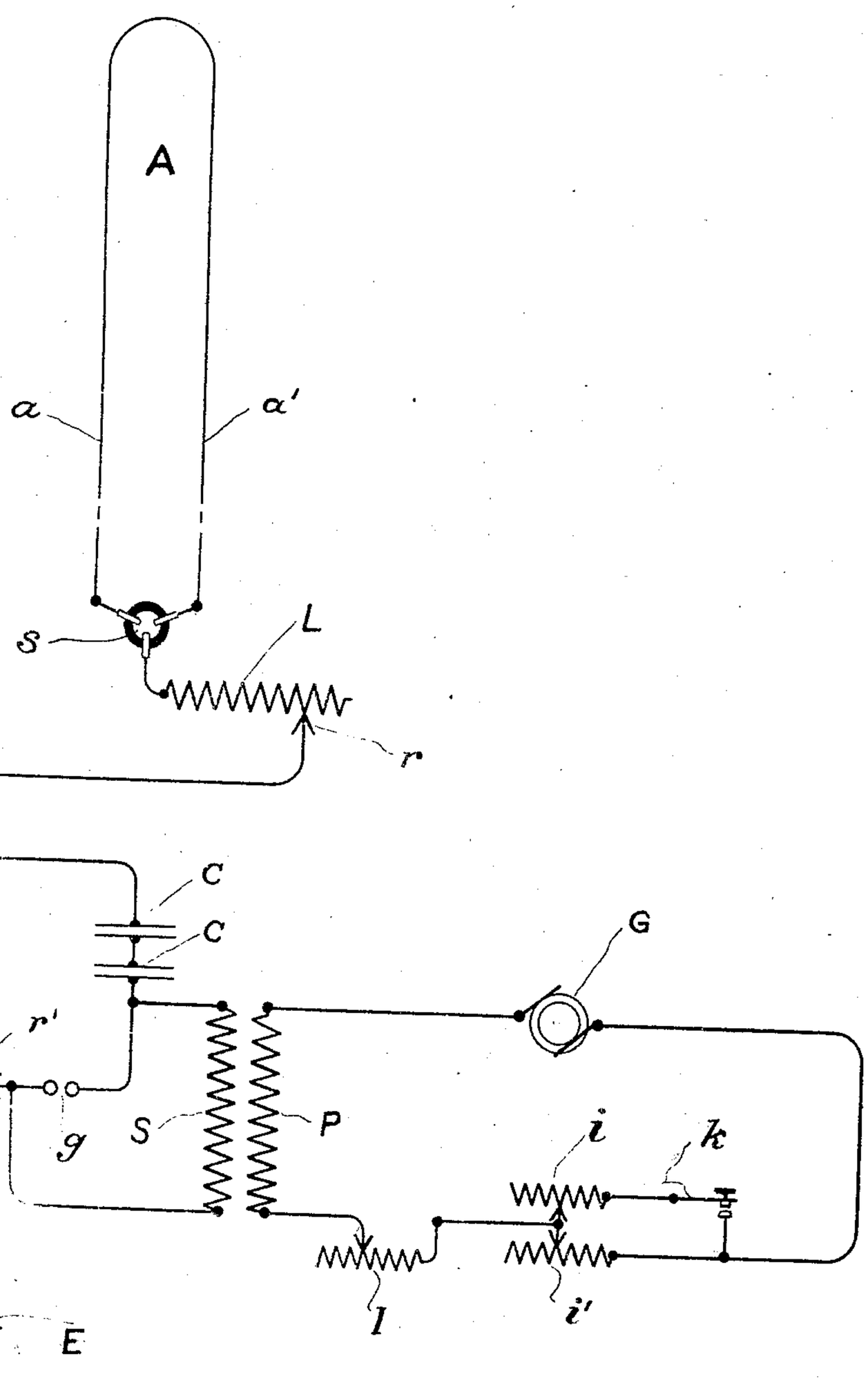

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TRANSMITTING APPARATUS.

No. 918,208. Specification of Letters Patent. Patented April 13, 1909.

Application filed December 23, 1905. Serial No. 293,120.

To all whom it may concern:

Be it known that I, HARRY SHOEMAKER, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented a new and useful Transmitting Apparatus, of which the following is a specification.

My invention relates to a telegraphic system wherein an operator's key is required to interrupt or control a considerable amount of electrical energy, especially of considerable current magnitude.

My invention resides in apparatus so disposed that sparking at a telegraphic key, which is required to handle considerable current, as in a wireless telegraphic system, is greatly reduced, whereby the key is protected from the destructive effects of arcing and the clearness and sharpness of signals transmitted is improved.

My invention resides also in a disposition of circuits and apparatus whereby the generator supplying the electricity is always maintained under some considerable fraction of its full load corresponding with the instants of spark production, with the result that signaling is improved in clearness; and fluctuations in load from open position of key to closed position of key are reduced, with consequent reduction of strain upon the generator and its driving apparatus.

For an illustration of a form my invention may take, reference is to be had to the accompanying drawing.

In the drawing A represents a looped aerial radiating conductor consisting of the legs a and a' electrically joined together at their upper ends. While a and a' are shown to consist of a single conductor only, it is to be understood that any number of conductors may be used in their stead. The lower ends of the conductors a and a' terminate in the anchor spark gap terminals, the third terminal being connected with the inductance L. A rider r serves to include more or less of the inductance L in circuit, and is connected to the upper end of second inductance L′ whose lower terminal connects to earth at E. Serially connected between the rider r' and the upper end of the inductance L′ are the spark gap g and the condensers C, C. The terminals of the secondary S of a step up transformer are connected to the spark gap g. The primary P of said transformer is connected in circuit with the generator G, preferably an alternating current generator, the key k, inductances i, i', and the inductance I.

With key k in open circuit position as shown, portions of the adjustable inductance I and i' are in series with each other and with the generator G and the primary P. The magnitudes of these inductances are so chosen or adjusted that in said position no spark passes over the gap g so that there is no radiation from the aerial conductor A. Upon closing the key k, a portion of the inductance i, preferably equal in magnitude to the portion of the inductance i', is thrown into parallel with the inductance i', thus permitting a much greater flow of current in the primary P, resulting in the production of sparks at the gap g, and radiation of electro-radiant energy from the aerial conductor A. The current flowing when the key k is closed may be called the full load current. That current is much greater than the current flowing when the key k is open. The partial load current, when key is open, is of such magnitude as to keep the generator G and its associate driving motors sufficiently loaded to prevent serious strains, electrical or mechanical when throwing on full load by closing the key.

The inductances i and i' are so disposed that they may be correspondingly and equally adjusted by the movement of the double rider shown; or they may be independently adjustable. When the key is raised or moves to open circuit position it is not required to break the entire current of the generator G, but only a fraction thereof with resultant great reduction in sparking at the key contacts. With a sharper break at the key contacts the signaling is clearer and with reduced sparking the wearing away of the key contacts is minimized.

The inductance i' in circuit, when the key is open, is quite high as compared with the inductance I, so that the opening of the key throws into the circuit of the generator G a considerable reactance thus reducing the current of the primary P from a full load current to a fraction of a full load. By depressing the key however the entire inductance of the circuit is reduced by throwing the inductance i into parallel with i', thus permitting increased flow of current into primary P with resultant radiation of electro-radiant energy from A. By this disposition the key

is required to interrupt or control only a fraction of the full load current of the generator and the generator is not compelled to stand the shocks of removal of the full load to zero, or the increase from zero to full load.

In place of the self induction reactances I, i and i', non-inductive resistances may be employed and may be proportioned and adjustable along the lines indicated herein for the inductances.

What I claim is:

1. In a signaling system, means for producing high frequency oscillations, a signaling circuit for supplying energy thereto, a source of electrical energy in said circuit, inductive resistances of different magnitudes serially connected in said circuit, and an inductive resistance and a key adapted to close a circuit in parallel to one of said resistances, whereby signals are transmitted.

2. In a signaling system, a signaling circuit, a source of electrical energy associated therewith, inductive resistances of different magnitudes serially connected in said circuit, and a circuit in parallel with one of said resistances including an inductive resistance equivalent thereto, and an operator's key.

3. In a signaling system, a signaling circuit, a source of electrical energy associated therewith, a plurality of practically equivalent inductive resistances connected in parallel with each other and in series with said circuit, and a key for removing one of said resistances from circuit.

4. In a wireless signaling system, an oscillating circuit, a step up transformer associated therewith, a source of electrical energy, a plurality of inductive resistances adapted to be connected in parallel with each other and in series with said source and the primary of said transformer, and an operator's key controlling the relation of said inductive resistances.

In testimony whereof I have hereunto affixed my signature in the presence of the two subscribing witnesses.

HARRY SHOEMAKER.

Witnesses:

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M. M. ACHESON.