

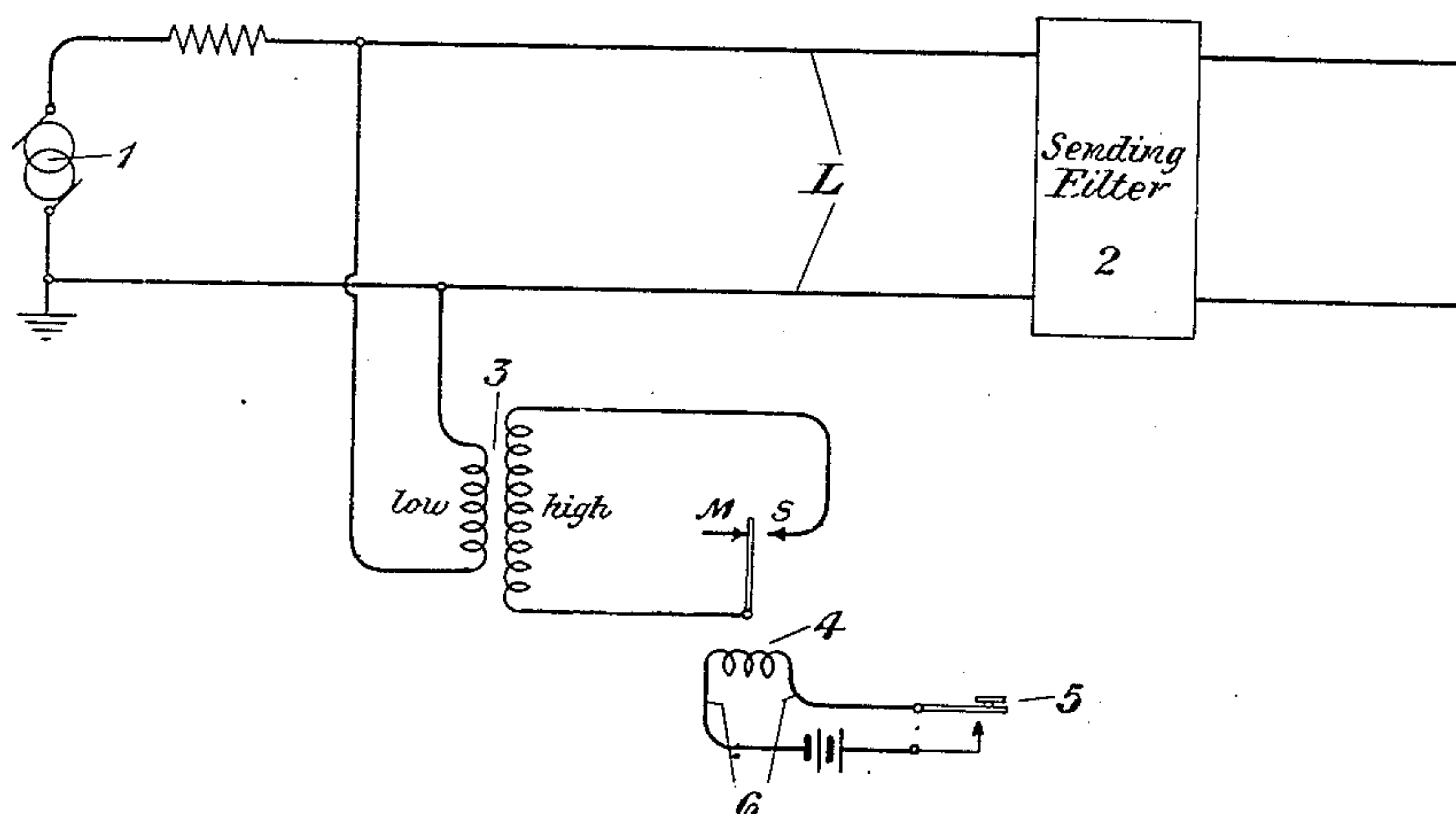
Oct. 17, 1933.

O. H. DAVIDSMEYER ET AL

1,930,609

SIGNALING SYSTEM

Filed April 21, 1932



INVENTORS
O. H. Davidsmeyer and
BY *V. M. Augustine*
JEHOK
ATTORNEY

UNITED STATES PATENT OFFICE

1,930,609

SIGNALING SYSTEM

Orville H. Davidsmeyer, Downer's Grove, and
Vernon M. Augustine, Chicago, Ill., assignors
to American Telephone and Telegraph Com-
pany, a corporation of New York

Application April 21, 1932. Serial No. 606,738

3 Claims. (Cl. 178—66)

This invention relates to telegraph systems, and more particularly to improvements in the transmission of signals in such systems when such transmission is dependent upon the operation of relay contacts or switching devices therein.

The arrangements of the invention are particularly applicable to carrier telegraph systems, in the transmitting circuits of which the contacts of a sending relay are utilized to effectively open and close a short-circuit across the line, to which is connected a source of carrier frequency current, and thus control the signals. The primary object of the arrangements of the invention is to improve the transmission of the signals by reducing the effect of resistance at the sending relay contacts. Other objects and features of the invention will appear more fully from the detailed description thereof hereinafter given.

In the present circuit arrangements used in voice frequency carrier telegraph systems, for example, the armature and spacing contact of the sending relay, are used to short-circuit the input to the sending filter when it is desired to transmit a spacing signal. Some trouble has been experienced with this arrangement due to an occasional high resistance contact between the armature and spacing contact, presumably caused by the presence of dirt or a film on the contacts which is not broken down by the very low voltages applied. This would result in allowing some carrier current to be transmitted during a spacing signal. In the arrangements of the inventions this difficulty is obviated by providing in the input circuit of the sending filter a step-up transformer in order to increase the voltage across the relay contacts, and to increase the impedance of the circuit in which the contacts operate.

The invention may be more fully understood from the following description together with the accompanying drawing, in the figure of which is illustrated a circuit arrangement embodying a preferred form of the invention.

In the drawing is shown a line L which might be part of the transmitting circuit of a carrier telegraph system. A source of current 1 of carrier telegraph frequency would be connected to the line, and a sending filter 2 would also be included in the line. By operating the key 5 in the sending loop 6, the sending relay 4 may switch its armature back and forth between the marking and spacing contacts M and S to control the transmission of signals over the line. Bridged across the line is the low impedance winding of a step-up transformer 3. The high impedance winding would be connected to the spacing contact S and the armature of the sending relay 4. When the armature moves to the spacing contact S in order to send a spacing signal, it is ob-

vious that the high impedance winding of the step-up transformer will be short-circuited. Consequently, the low impedance winding of the transformer acts as a short-circuit across the input to the sending filter during spacing signals. When the armature is on the marking contact and the high impedance winding of the transformer is not short-circuited, the low winding at the transformer will act as a high impedance shunt. Accordingly, when spacing signals are being sent, the initial high voltage across the armature and spacing contact of the relay due to the step-up ratio of the transformer, will tend to reduce contact resistance. Furthermore, the contacts will be operating, due to the step-up transformer 3, into a high impedance circuit, and the contact resistance which is present at the sending relay contacts will be reduced in its effect in proportion to the square of the turn ratio of the transformer.

While the invention has been disclosed as embodied in certain specific forms which are deemed desirable, it is understood that it is capable of embodiment in many and other widely varied forms without departing from the spirit of the invention as defined by the appended claims.

What is claimed is:

1. A transmission line, a source of current connected thereto, and means for controlling the current flow from said source out over said line, said means comprising a transformer having a low impedance winding connected across said line and a high impedance winding, and switching contacts for short-circuiting said high impedance winding.

2. A transmission line, a source of current connected thereto, a set of relay contacts for controlling the flow of current from said source out over said line, and means for increasing the voltage across said relay contacts and for increasing the impedance of the circuit in which said contacts operate, said means comprising a step-up transformer connected to said line and said relay contacts.

3. A circuit, a source of current connected thereto, a transformer having low and high windings, said low winding being bridged across said circuit, and means for short-circuiting said high winding.

ORVILLE H. DAVIDSMEYER.
VERNON M. AUGUSTINE.

115

120