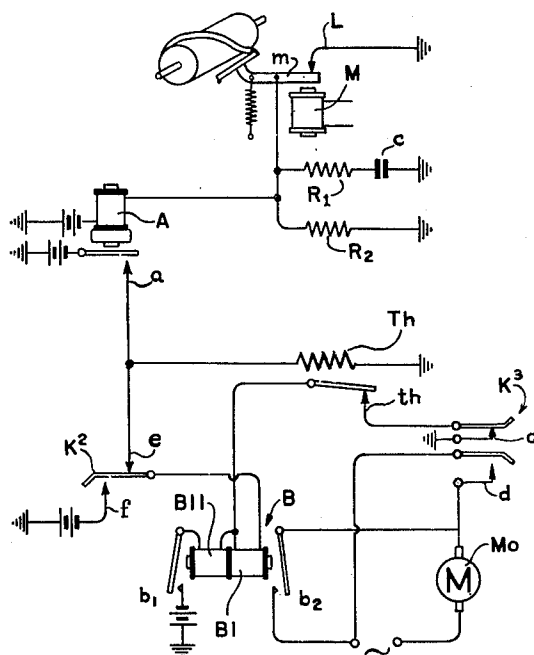


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SYSTEM FOR REMOTELY SWITCHING IN AND OUT THE
DRIVING MOTOR OF TELEGRAPH APPARATUS
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SYSTEM FOR REMOTELY SWITCHING IN
AND OUT THE DRIVING MOTOR OF TELE-
GRAPH APPARATUS

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This invention relates to a system for remotely starting and stopping the driving motor of telegraph apparatus, and more particularly for the wireless telegraph apparatus in which the signal characters are analyzed in lines. The systems hitherto known for the remote control of motors of wireless telegraph apparatus have the great disadvantage that they are influenced adversely by atmospheric disturbances.

The present invention relates to a system for remotely controlling the motors of telegraph receivers operating on the same wave, whereby undesirable influences due to atmospheric disturbances are avoided. Specifically a simultaneous start or a simultaneous stop of various apparatus is to be effected. According to the invention control means are arranged having control elements operating with retardation which cause a starting of the motor in response to the reception of a longer current impulse at least longer than the longest marking character impulse and a stop in response to the reception of an impulse of at least twice the duration of that for the starting. Preferably a current impulse is transmitted from the sending station for stopping the driving motor of the telegraph apparatus which has a duration about ten times that of the starting impulse. In this manner a confusion of the function of a starting and a stopping signal is prevented.

The independence of atmospheric disturbances is attained by retarding the release of the controlling relays to such an extent that a signal impulse required for exercising control over a motor is much greater than any probable similar signal impulse arising from atmospheric disturbance. Stopping of the motor may be effected through a thermo-contact.

A hand-operated switch arranged according to the invention in parallel relation to the remote starting system may cause starting of the driving motor independently of the remote control in such a manner that when this hand-operated switch is brought back into its initial position a remote control condition which may have occurred in the meantime is maintained.

Further details of the invention are apparent from the following description taken in connection with the accompanying drawing in which an embodiment of the invention is shown in diagrammatic form.

At rest relay A is energized to hold contact *a* open by a current of the battery through the relay A and through the armature contact L of the receiving magnet M which simultaneously

opens the contact L in vibrating manner and effects the recording of the signal characters in lines, thus providing means for opening the contact *a* as shown in the drawing. If a current impulse is received which is longer than the longest marking signal of character transmission the magnet system M is operated to open contact L for a sufficient period and the release of the armature of the retarded or slow-to-release relay A is permitted. The retardation is effected in part by a condenser C having an attenuation resistance R_1 and in part by a resistance R_2 through which flows a weak residual current. The contact *a* closes and energizes the relay B₁ over a circuit through contact *a*, contact *e*, winding BI, contact *th*, contact *c*, and ground. In this manner the relay B is operated and, on the one hand, energizes the holding coil BII through the contact *b*₁ and, on the other hand, connects the motor M₀ to the supply circuit through the contact *b*₂, thus causing starting of the driving motor. Slow to operate relay Th has received current but has not operated.

In order to stop the motor an impulse of about ten times the duration of the starting impulse is transmitted from the sending station. The release of the relay A is effected in the manner as above described when the motor is started and winding of relay Th receives a current through the contact *a*, i. e. for a period which is sufficient to open the contact *th* and to cause the relay B to release its contacts. In this manner the contact *b*₂ and the circuit of the motor M₀ is opened so that the telegraph apparatus comes to rest.

The operation may be effected also by hand by a reversible switch K₂, or K₃. If the switch K₃ is brought into the lower position and retained there the contact is closed at *d* so that the motor is connected to the supply circuit independently of the automatic remote control system. This is important if, for instance, the battery B fails. The hand switch K₃ is arranged as reversible switch in such a manner that while it is retained depressed a remotely controlled starting condition may be set up through the control relay B and will be maintained after the reversible switch is brought back to its central position corresponding to the position shown. Alternatively, operation of the motor may be accomplished by the momentary operation of key K₂ due to the fact that in the lower position the circuit for B₁ will have been closed by K₂ through the contact *f*, so that the B-relay could remain energized through the holding circuit. Thereafter, stopping may be effected remotely. In the upper

position of the reversible switch K; the circuit for the B-relay may be manually opened at c, thereby causing the motor to be stopped by local control.

5 The present system is rendered independent of atmospheric disturbances by correspondingly designing the A-relay for a predetermined retardation. The release of the relay A may be retarded
10 to such an extent that the ratio of atmospheric interference time to the motor control interval of the recording magnet contact L may be very great. Since even in very unfavorable cases short
15 intervals always occur between the atmospheric disturbances the condenser C will always be again rapidly discharged through the resistance R₁ even in the case of a very short period during which the contact L is closed. An essential feature is to avoid atmospheric disturbances by the contact L that may affect the wireless receiver placed
20 immediately adjacent to the recorder. A low voltage of 4 volt as is applied to commercial wireless receivers for tube heating has been, therefore, chosen. The condenser C has been, therefore, amply dimensioned; however, it is of very small
25 dimensions in the case of electrolytic condensers. For eliminating the last-mentioned disturbances a further resistance R₂ is parallel connected to the contact L which resistance is so high that the residual current does not hold the armature
30 of A, but causes the armature only to drop with retardation. By rendering the duration of the stopping impulse ten times longer than that of the starting impulse it is possible to employ a very cheap thermo-contact, since the great leak-
35 ages during the operating period of the thermo-contact are readily counteracted by the long contact period. By giving the starting and stopping impulses a predetermined duration it results that receipt of a stopping signal by a non-operating
40 apparatus will result first in starting and then in stopping the apparatus.

I claim as my invention:

1. A system for remotely controlling the driving motor of telegraph apparatus particularly
45 for the wireless operation of telegraph apparatus in which the transmitted characters are analyzed in lines, comprising signal contacts responsive to all transmitted signals, slow operated contacts responsive to a prolonged operation of said signal
50 contacts, a driving motor, a motor starting relay for said motor responsive to said slow operated contacts, a circuit controlled by said starting relay to start said motor, and slower operated contacts responsive to a prolonged operation of said slow
55 operated contacts to open said circuit and stop said motor.

2. A system as set forth in claim 1 in combination with a facsimile recording magnet by whose armature said signal contacts are operated directly.

3. A system as set forth in claim 1 charac-

terized in that the operation of the said slow operated contacts is retarded to such an extent that the ratio of atmospheric interference time to the interval from the opening instant in the closing instant of said signal contacts for motor control is substantial.

4. A system as set forth in claim 1 in combination with a manually operated switch operating momentarily to control energization of said motor starting relay.

5. A system for remotely controlling the driving motor of telegraph apparatus particularly for the wireless operation of telegraph apparatus in which the transmitted characters are analyzed in lines comprising a relay responsive to remotely generated received signals, a slow-acting relay responsive to said first mentioned relay, another relay responsive to said slow-acting relay, means responsive to said slow-acting relay to start a motor, and means responsive to said other relay to stop the said motor.

6. A system for remotely controlling the driving motor of telegraph apparatus particularly for the wireless operation of telegraph apparatus in which the transmitted characters are analyzed in lines comprising a relay responsive to remotely generated received signals, a slow-acting relay responsive to said first mentioned relay, a further slow-acting relay responsive to said slow-acting relay, means responsive to said slow-acting relay to start a motor, means to maintain said motor in operation, and means responsive to said further slow-acting relay to stop said motor.

7. A system for remote control of telegraph motors comprising a slow-acting relay, a further slow-acting relay, first means responsive to said slow-acting relay to start a motor, second means to maintain said motor in operation, third means responsive to said further slow-acting relay to stop the motor, and a manual control key co-operating with said second means to start the motor and to maintain the motor in operation subject to control by said third means.

8. A system for remotely controlling the driving motor of telegraph apparatus comprising a first slow-acting relay responsive to a received prolonged line signal to operate its contacts, a driving motor, a relay responsive to operated contacts of said slow-acting relay and effective to start said motor, and a further slow-acting relay responsive to operated contacts of said first slow-acting relay and effective upon its energization to stop said motor.

9. A system for remotely controlling the driving motor of telegraph apparatus, comprising means responsive to a measured received signal of predetermined nature for starting a motor, local means for maintaining said motor in operation, and means responsive to a prolonged received signal of said nature for stopping said motor.

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