

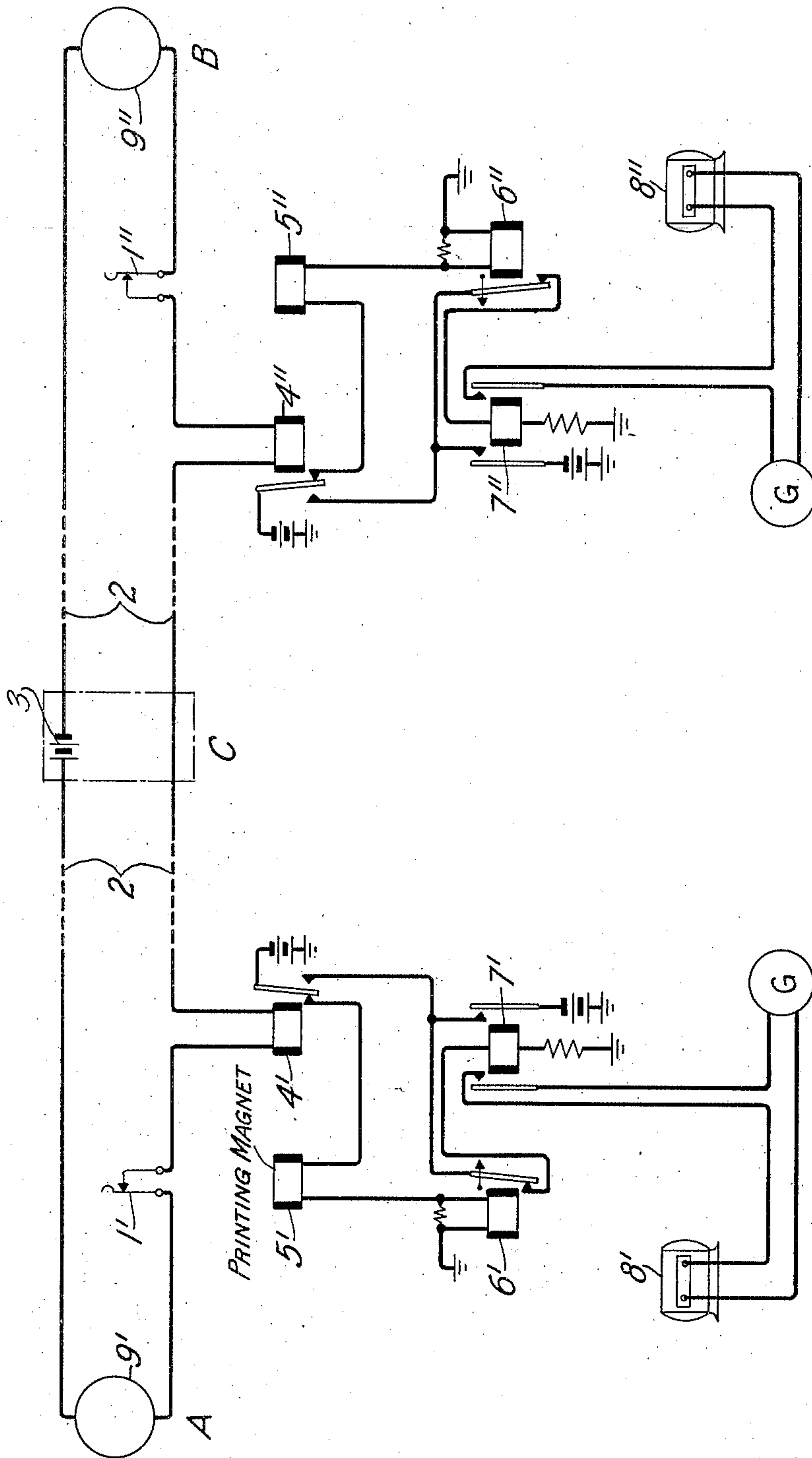
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PRINTING TELEGRAPH SYSTEM

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PRINTING-TELEGRAPH SYSTEM.

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This invention relates to printing telegraph systems, and more particularly to those systems in which the motors are arranged for remote control.

5 Electric motors at interconnected stations have been controlled by various remote control methods, and certain of these methods have been employed in printing telegraph systems in which either the normally open
10 or the normally closed type of transmission line is used. It is to systems in which the line is normally closed that the present invention is especially adapted, and in methods heretofore used in connection with
15 systems of this type, particularly those designed for light traffic in which the motors connected to the line may be idle for a considerable part of the time, the motors were started and stopped by opening and closing
20 the line at a distant station, the actual starting or stopping not being effected until the line was closed at the end of an open interval. In order to differentiate between intervals required for starting and stopping, the
25 intervals for starting were of a predetermined duration and the intervals for stopping were of longer duration.

According to the present invention the starting and the stopping of the motors are
30 effected during the open intervals of the line. Any opening of the line, regardless of its duration, will cause the motors to start, and if the opening is prolonged for a predetermined period the motors will automatically stop and cause all sources of current supply at the various stations connected
35 to the line, to be disconnected from their respectively associated apparatus.

A preferred embodiment of the present
40 invention is set forth in the following description and the appended claims and the invention may be more readily understood when the description is taken in conjunction with the accompanying drawing.

45 The invention is shown in the drawing as embodied in a printing telegraph system comprising a plurality of stations connected in serial relation with only that equipment necessary for a clear understanding of the
50 invention. The serial relation provides for a plurality of stations being adapted to simultaneously receive from any one of the stations information such as news bulletins, stock quotations or any other news of general
55 interest to those engaged in a particular

business. Each station may be equipped with transmitting apparatus so that messages, or news, may be transmitted from any station to the other stations in the system, the motors at the other stations being under
60 control of the operator at the transmitting station.

Referring now to the drawing there are shown two printing telegraph stations A and B connected through to a series of stations
65 included in the inclosure designated C, having a line battery provided at any one of the stations. The equipments shown at stations A and B are identical and representative of the equipments provided at the other stations
70 included in inclosure C. A description of the equipment at station A will therefore suffice for a clear understanding of the equipments at the other stations.

Assuming for the purpose of illustration
75 that the operator at station B desires to send news items out over the system, a start signal is sent over the line 2 by actuating a non-locking key 1'', and the line circuit, which extends through all the stations in
80 the system, battery 3 being furnished at one of the stations in enclosure C, is opened momentarily. The opening effected in the line circuit when the start signal is transmitted, is somewhat longer than the open
85 periods ordinarily effected by message, or news, signals. The opening of the line circuit causes a deenergization of the normally operated line relays located respectively at the various stations and these relays
90 upon releasing, operate the station equipment to start the motors. Line relay 4' at station A upon operating, opens a circuit extending from battery, armature and front contact of relay 4', through the windings of
95 printer magnet 5' and slow release relay 6' in series, to ground. The slow release relay which is normally operated does not release in response to this momentary opening of the line and therefore aids at its normally engaged armature and contact in effecting the
100 operation of a control relay 7' when the line relay 4' releases. The operating circuit for relay 7' may be traced from battery, armature and back contact of relay 4', armature and contact of relay 6', through the winding of relay 7', to ground. Relay 7 upon operating, closes at its left armature and contact an obvious operating circuit for motor 8',
105 and its right armature and contact a locking
110

circuit for itself, which may be traced from battery, right armature and contact of relay 7', armature and contact of relay 6' through the winding of relay 7' to ground. The motor begins operating as soon as its operating circuit is closed and is maintained in this condition by means of the locking circuit which is unaffected by any subsequent line openings caused by incoming message signals, because of the slow release characteristic of relay 6'. It is seen therefore, that motor 8' is started practically simultaneously with the opening of the line.

The release of non-locking key 1'' permits the closing of the line circuit and the line relays at the various stations are again operated. At station A the normally closed circuit hereinbefore traced as extending through the windings of printer magnet 5' and slow release relay 6', is consequently closed, and the printer magnet is thus prepared for the reception of the message transmitted from transmitter 9''. Line relay 4' is responsive to the message impulses and therefore during the transmission of the message opens and closes in rapid succession the normally closed circuit extending through the windings of printer magnet 5' and relay 6'. Magnet 5' responds to the operations of relay 4' and thereby records the message impulses incoming from the central station, but relay 6' being of the slow-release type does not respond, thus maintaining the locking circuit for relay 7' closed during transmission.

At the completion of the message, key 1'' is again actuated, but this time for a longer period than that for the start signal, to open the line circuit and cause the release of the line relay. At station A the circuit extending through the windings of printer magnet 5' and slow release relay 6' is opened and maintained thus for a period of sufficient duration to effect the release of relay 6'. The release of relay 6' opens both the operating and the locking circuit for relay 7' and the latter relay releases thereby stopping motor 8'.

In this manner, the transmitting station may control in a simple, economic and efficient manner the motors at the other stations connected to the line. The starting of the motors is effected as soon as the line is opened and if the open period is prolonged the motors will automatically come to a stop, thereby providing a system in which the motors are restored to normal condition should the line be broken by any extraneous cause such as lightning, wind or any other such element.

It is understood that the invention may be adapted to a power system, in general, in which a normally energized line interconnects a plurality of stations having motors arranged to start and stop by remote

control methods. It is also understood that instead of employing a metallic circuit for interconnecting a plurality of stations a ground return circuit may be used, in which event grounded line battery will be furnished at each of the terminal stations, having the positive pole of one battery connected to one end of the line circuit and the negative pole of the other line battery connected to the other end of the line circuit. The invention may also be adapted to radial systems in which a plurality of stations are interconnected through a central station by a continuous metallic circuit, or in which the plurality of stations are connected in parallel to the central station by a ground return circuit, the latter circuit providing an arrangement in which the central station is the only one capable of holding direct communications with the other stations.

What is claimed is:

1. A communication system comprising a normally closed line, a plurality of stations connected to said line, a signal receiving set and a motor therefor at one of said stations, means at the other of said stations for opening and closing said line, and means at the first of said stations responsive when said line is opened to effect the operation of said motor and further responsive when said line is maintained opened for a predetermined period to effect the stopping of said motor.

2. A communication system comprising a normally closed line, a plurality of stations connected to said line, a receiving set and a motor therefor at each of said stations, means at one of said stations for opening and closing said line, and electromagnetic means at each of the other said stations responsive when said line is opened to effect the operation of said motors and further responsive when said line is maintained opened for a predetermined period to effect the stopping of said motors.

3. In a communication system, a normally closed line, a plurality of stations connected to said line, a receiving and a transmitting set and a motor therefor at each of said stations, switching means at one of said stations for opening and closing said line, and electromagnetic means at each of the other said stations responsive when said line is opened to effect the operation of said motors and further responsive when said line is maintained open for a predetermined period to effect the stopping of said motors.

4. In a telegraph system, a line, a plurality of stations connected to said line, means at each of said stations for opening and closing said line, a receiving set at each of said stations comprising a printer and a motor therefor, a relay for controlling the operation of said motor, a line relay responsive to said openings and arranged to operate said control relay to thereby start said

motor and another relay responsive to open periods of certain lengths and arranged to effect the release of said control relay to thereby stop said motor, each of said means
5 being effective to start and stop said motors during the open intervals.

5. In a telegraph system, a line, means for opening and closing said line, a motor and a power source therefor, and means
10 selectively responsive to said line openings, said means comprising a line relay, a slow-release relay and a control relay, said relays coacting to effect the connection and
15 disconnection between said motor and said power source during the open intervals.

6. In a telegraph system, a line, a line relay, a motor and a power source therefor, means responsive to an opening of said
20 line to connect said motor to said power source, and means responsive to those open periods only which exceed a predetermined length, said first mentioned means being under the control of said last mentioned means, said last mentioned means causing said first
25 mentioned means to disconnect said motor from said power source.

7. In a telegraph system, a normally closed line, a plurality of stations connected to said line, means at one of said stations
30 for opening said line for different periods, a motor and a power source therefor at each of said stations, and means at each of said stations selectively responsive to said line openings, said means comprising a line relay, a slow-release relay and a control relay, said relays coacting to effect the connection
35 and disconnection between the associated

motor and power source during the open periods.

8. In a telegraph system, a normally closed line, a plurality of stations connected to said line, means at one of said stations for opening and closing said line, a motor and a power source therefor at each of said stations, means at each of said stations responsive to an opening of said line to connect its associated motor to its power source, and other means at each of said stations responsive to those openings only which exceed a predetermined period, said second
45 mentioned means being under control of said last mentioned means, said last mentioned means causing said first mentioned means to disconnect its associated motor from its power source.

9. In combination, a line conductor, circuit breaking means for opening said conductor, and a rotary dynamo-electric machine, mechanism controlled by said circuit breaking means to start the rotation of said
60 dynamo-electric machine during the open state of said line, and devices controlled by said circuit breaking means to stop said dynamo-electric machine, said mechanism and devices being associated with said line and
65 dynamo-electric machine by means selective in accordance with the time duration of the opening of said line to determine whether said machine is stopped or started.

In testimony whereof, I have signed my
70 named to this specification this 22nd day of June, 1927.

BURDETTE S. SWEZEY.