

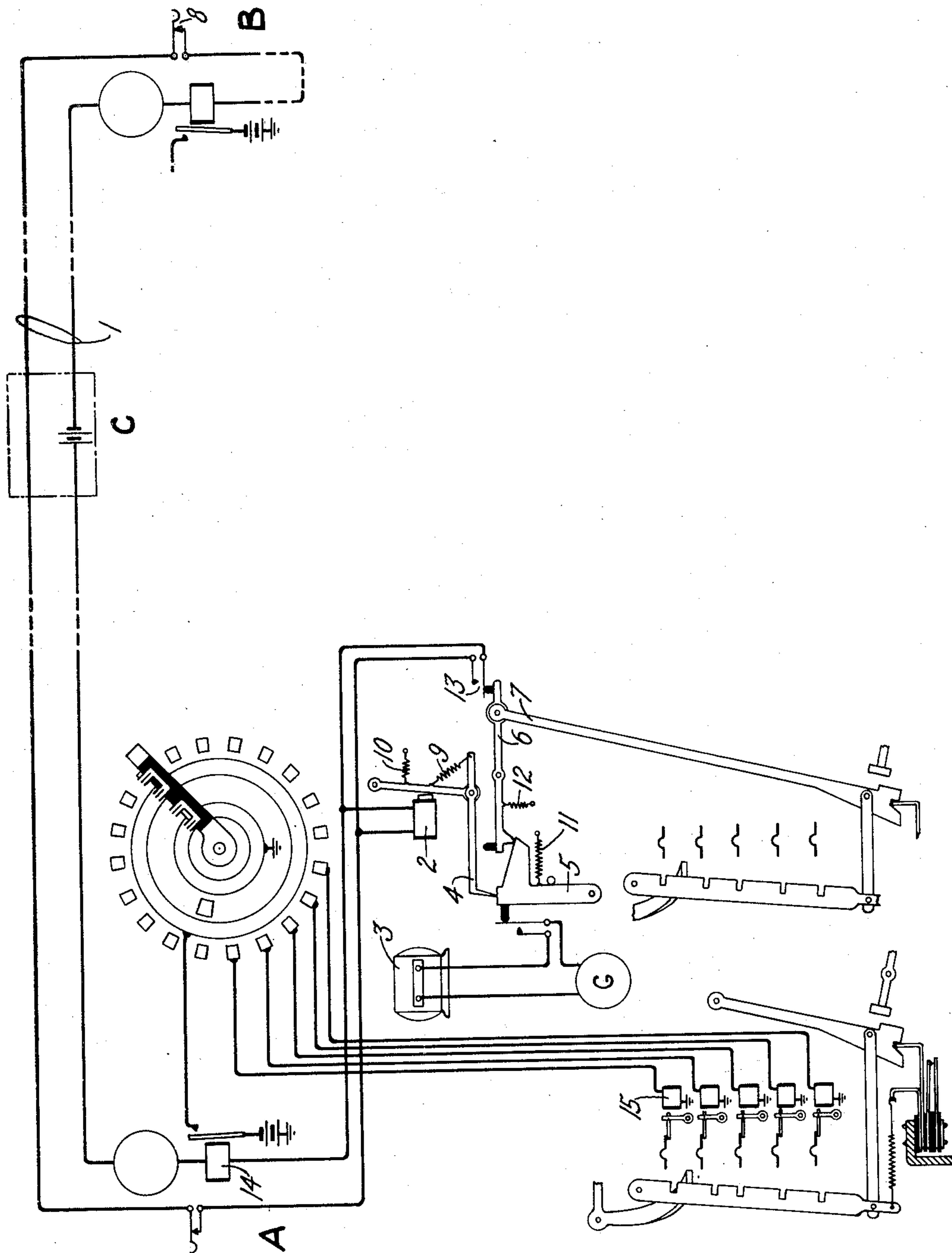
Jan. 10, 1928.

1,655,448

E. F. WATSON

PRINTING TELEGRAPH SYSTEM

Filed March 30, 1926



Inventor:
Edward F. Watson

by

g e y o r e

Att'y.

UNITED STATES PATENT OFFICE.

EDWARD F. WATSON, OF LARCHMONT, NEW YORK, ASSIGNOR TO AMERICAN TELEPHONE AND TELEGRAPH COMPANY, A CORPORATION OF NEW YORK.

PRINTING TELEGRAPH SYSTEM.

Application filed March 30, 1928. Serial No. 98,568.

This invention relates to telegraph systems and more particularly to printing telegraph systems, wherein local power supply at printer stations is controlled from a distant point.

An object of this invention is to reduce the current consumption and the maintenance expense incurred in the operation of the apparatus in telegraph systems.

Another object is to render the telegraph equipment effective automatically when required for use and to disable the same when its service is no longer needed.

This invention is particularly adapted to those systems in which the printers are idle for a considerable part of the time. During the idle time it is desired to have no parts in motion, and a minimum consumption of electric energy. Accordingly a feature of the invention relates to a novel mechanical arrangement in which the motor and other current using parts at a subscriber's station are controlled by impulses of different characteristics transmitted from any distant station. Considering this feature more specifically, there is provided a printer set mechanism in which the operating circuit for the motor is closed in response to the act of opening and then closing the line at any station, and is opened at the conclusion of the message by a special code signal which is received from the distant station and is effective to release the means for maintaining the motor circuit closed during the transmission of the message.

Another feature of this invention resides in the means for preventing the printing of characters during the interval between the transmission of the starting impulse and the first message impulse.

The above and other objects and features of this invention are set forth in the following description and appended claims and may be more readily understood if considered in conjunction with the accompanying drawing illustrating the invention, in which is shown two telegraph subscribers' stations interconnected through a central office, with only such apparatus as is necessary for a clear understanding of the invention.

Referring now to the drawing the line circuit 1 interconnects through a central office C, subscribers' stations A and B, sta-

tion A representing for the purpose of describing the invention, the receiving end of the line. It is understood of course, that the apparatus (not shown) at station B is identical to that shown at station A, and is simultaneously and correspondingly operated therewith. In the arrangement shown at station A there is provided a normally operated line relay 2 which is designed to release momentarily when a start signal is transmitted from station B for the purpose of sending a message, and in response to this signal, that is, when the line relay returns to its normally operated condition, a mechanical device comprising members 4, 5 and 6 is actuated and locked in an operated condition to effect and maintain for the duration of the message the operation of motor 3 of the local printer. The printer adapted for use in this invention is of the type disclosed in the copending application of H. Pfannenstiehl, filed July 21, 1920, Serial No. 397,903, and since the printer structure per se does not form a part of the present invention, only so much of the structure as is necessary for a complete and clear understanding of the present invention has been shown. At the conclusion of the message a special signal of a particular code combination is transmitted from station B to operate a shifting mechanism of the printer which effects the actuation of a pull bar 7 in the manner described in the above mentioned copending application, to effect the release of the mechanical device and to stop the motor.

Assume for the sake of an illustration that the subscriber at station B desires to communicate telegraphically with the subscriber at station A and that the connection therebetween is established. The subscriber at station B thereupon transmits a start signal by actuating a non-locking key 8, thereby effecting the momentary opening of the line circuit and line relay 2 at station A is deenergized and reenergized accordingly. Pivotaly supported on the free end of the armature of relay 2 is an operating bar 4, shown in the drawing as a horizontal member, which is arranged to engage a second pivotaly supported operating bar 5, shown as a vertical member. When relay 2 is deenergized in response to the start signal the relay armature is released and withdrawn from the relay by means of the tension in coil

spring 10. The retractive movement of the armature draws the horizontal member 4 toward the right to permit one end of the member to engage a recess in the top of vertical member 5, the engagement being assured by the tension in coil spring 9 which connects the other end of member 4 with the armature. The reenergization of relay 2 re-attracts the armature and the member 4, in engagement with the recess, moves member 5 in a counter-clockwise direction to effect the closing of the operating circuit for motor 3, thereby starting the motor.

Pivotaly supported on the framework structure (not shown) is a locking member 6 one end of which rests on a pointed projection on member 5, and when the latter member is moved to close the motor circuit this end of member 6, which is notched, yields to the tension in coil spring 12 and engages the pointed portion of the projection to hold member 5 in an operated position. Adjacent to the opposite end of member 6 there is arranged a pair of normally opened contacts 13 which are provided for the purpose of closing a path in the line circuit so as to shunt relay 2 during the transmission of the message, and when member 6 is operated at the closing of the motor circuit, it effects the closing of these contacts, thereby shunting relay 2 which is now rendered non-responsive to the message impulses.

At the conclusion of the message when it is desired to stop motor 3, a special signal is transmitted from station B after the printing platen (not shown) of the printer described in the above mentioned copending application has been moved into its shifted position, thereby causing the pull bar 7 which is pivotaly affixed to the member 6 at a point adjacent to contacts 13, to move downwardly. However, it is to be understood that it is not absolutely necessary that the printer should be in a shifted position to operate pull bar 7, because the printer can be readily adapted to perform the same function in response to any combination of impulses reserved for this purpose. The shunt circuit around relay 2 is now opened and the relay returns to its normally operated condition. The downward movement of bar 7 releases the locking engagement between members 6 and 5 and the upward movement of member 6 at the end which formed the locking engagement, raises the member 4 clear of the recess in member 5. Member 5 under the tension in coil spring 11 is restored to its normal position and the operating circuit for motor 3 is thereby opened and the motor stopped.

When relay 2 was momentarily released in response to the start signal, relay 14 which is arranged in the normally closed line circuit and is employed as a means for connecting a local battery supply for the op-

eration of the printer selecting magnets 15, was likewise released, but at that time the motor 3 was in a non-operated condition and therefore the selecting magnets were not affected. During the interval between the transmission of the start signal and the first message impulse the motor is operating and relay 14 is energized, and the operating circuit for the printer selecting magnets is opened at the contact of relay 14 thereby preventing the printing of any characters before the message is started.

Although the invention had been illustrated as applied to a particular type of system it is understood, of course, that this invention could be adapted for use in systems wherein the subscribers' stations are interconnected by direct, or fixed lines, and in printing telegraph exchange systems of either the machine switching or manually operated types, and also in those systems in which the plurality of stations are connected in series. In this connection it should be noted that the line circuit may, if desired, be normally open instead of normally closed as above described. If normally open, the power would be automatically turned on as soon as the line circuit is closed. Furthermore, in systems in which a common battery supply is furnished by a central office, the energy required to operate the selecting magnets 15 of the printers at the subscribers' stations may be supplied by the generators which operate the motors.

What is claimed is:

1. A communication system comprising a plurality of stations, receiving equipment including a selectively operated mechanism and a local circuit for supplying electric power at each of said stations, electromagnetic means responsive to a signal from a distant station for closing said circuit, mechanical means for locking said circuit and rendering said electromagnetic means non-responsive, and means controlled from the distant station for operating said mechanism to effect the release of said mechanical means to thereby open the local power circuit and restore said electromagnetic means to a responsive condition.

2. A communication system comprising a plurality of stations, recording means including a selectively operated mechanism and a local circuit for supplying electric power at each of said stations, signaling responsive means controlled from a distant station for closing said circuit, automatic mechanical means for locking said circuit and rendering said signal responsive means ineffective, and means controlled from the distant station for operating said mechanism to permit the release of the mechanical means to thereby open the local circuit and restore said signaling responsive means.

3. A telegraph system comprising a plu-

ality of subscribers' lines, means for inter-
connecting a calling and a called line, re-
ceiving equipment including selectively op-
erated mechanisms and sources of electrical
5 energy for said lines, electromagnetic means
at the called station responsive to a signal
from the calling station for connecting said
sources of energy, automatic mechanical
means for maintaining the connection of said
10 sources of energy and for rendering said
electromagnetic means non-responsive for
the duration of a message, and means con-
trolled from the calling station for operat-
ing said mechanisms to effect the release of
15 said mechanical means to thereby disconnect
the sources of energy and restore said elec-
tromagnetic means to a responsive condition.

4. A printing telegraph system comprising
a plurality of subscribers' stations, a line cir-
20 cuit for interconnecting said stations, a
printer set including a motor and a selec-
tively operated mechanism at each of said
stations, electromagnetic means responsive
to a signal from a distant station for start-
25 ing said motor, automatic mechanical means
for maintaining said motor in an operated
condition and for rendering said electromag-
netic means non-responsive for the duration
of a message, and means controlled from the
30 calling station for operating said mechanism
to effect the release of said mechanical means
to thereby stop the motor and restore said
electromagnetic means to a responsive con-
dition.

35 5. A printing telegraph system compris-
ing a plurality of subscribers' stations, a line
circuit for interconnecting said stations, con-
tacts arranged to be normally opened in said
circuit, a printer set including a motor and a

shifting mechanism at each of said stations, 40
electromagnetic means responsive to a signal
from a distant station for starting said mo-
tor, automatic mechanical means for main-
taining said motor in an operated condition
and for closing said contacts to render the 45
electromagnetic means non-responsive for
the duration of the message, and means con-
trolled from the calling station for operat-
ing said mechanism to effect the release of
said mechanical means to thereby stop the 50
motor, and to open said contacts to thereby
restore said electromagnetic means to a re-
sponsive condition.

6. A printing telegraph system compris-
ing a plurality of subscribers' stations, a line 55
circuit for interconnecting said stations, a
printer set including a motor and a selec-
tively operated mechanism at each of said
stations, electromagnetic means responsive
to a signal from a distant station for start- 60
ing said motor, other electromagnetic means
for preventing the printing of characters ex-
cept in response to message impulses from
the distant station, automatic mechanical
means for maintaining said motor in an op- 65
erated condition and for rendering the first
mentioned electromagnetic means non-re-
sponsive for the duration of a message, and
an operable member controlled from the
calling station for operating said mechanism 70
to effect the release of said mechanical means
to thereby stop the motor and restore said
first mentioned electromagnetic means to a
responsive condition.

In testimony whereof, I have signed my 75
name to this specification this 29th day of
March, 1926.

EDWARD F. WATSON.