

April 18, 1939.

C. R. WALKER

2,154,547

TELETYPEWRITER SYSTEM

Filed Dec. 11, 1935

2 Sheets-Sheet 1

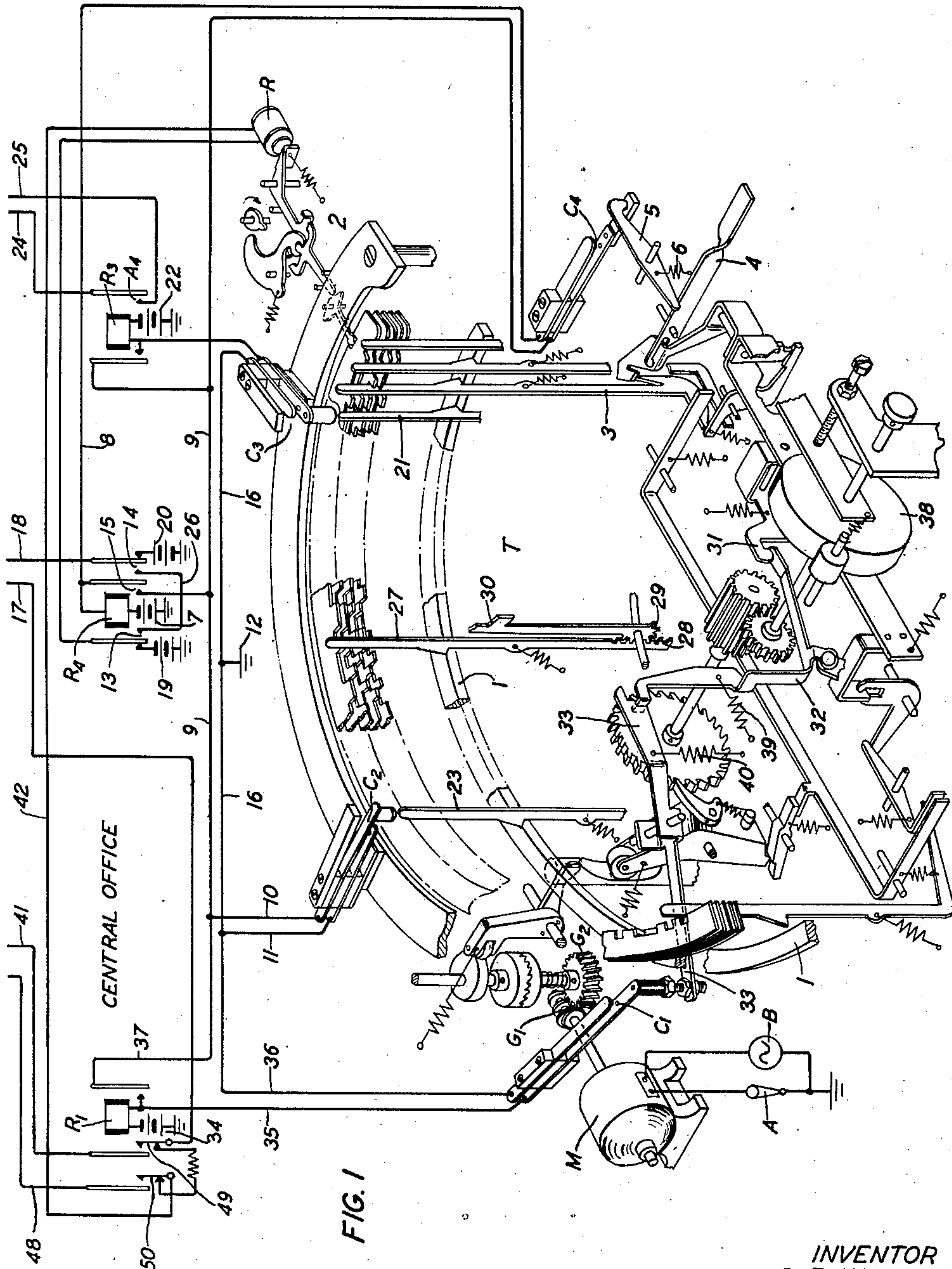


FIG. 1

INVENTOR
C. R. WALKER
BY *J. W. Schmied*
ATTORNEY

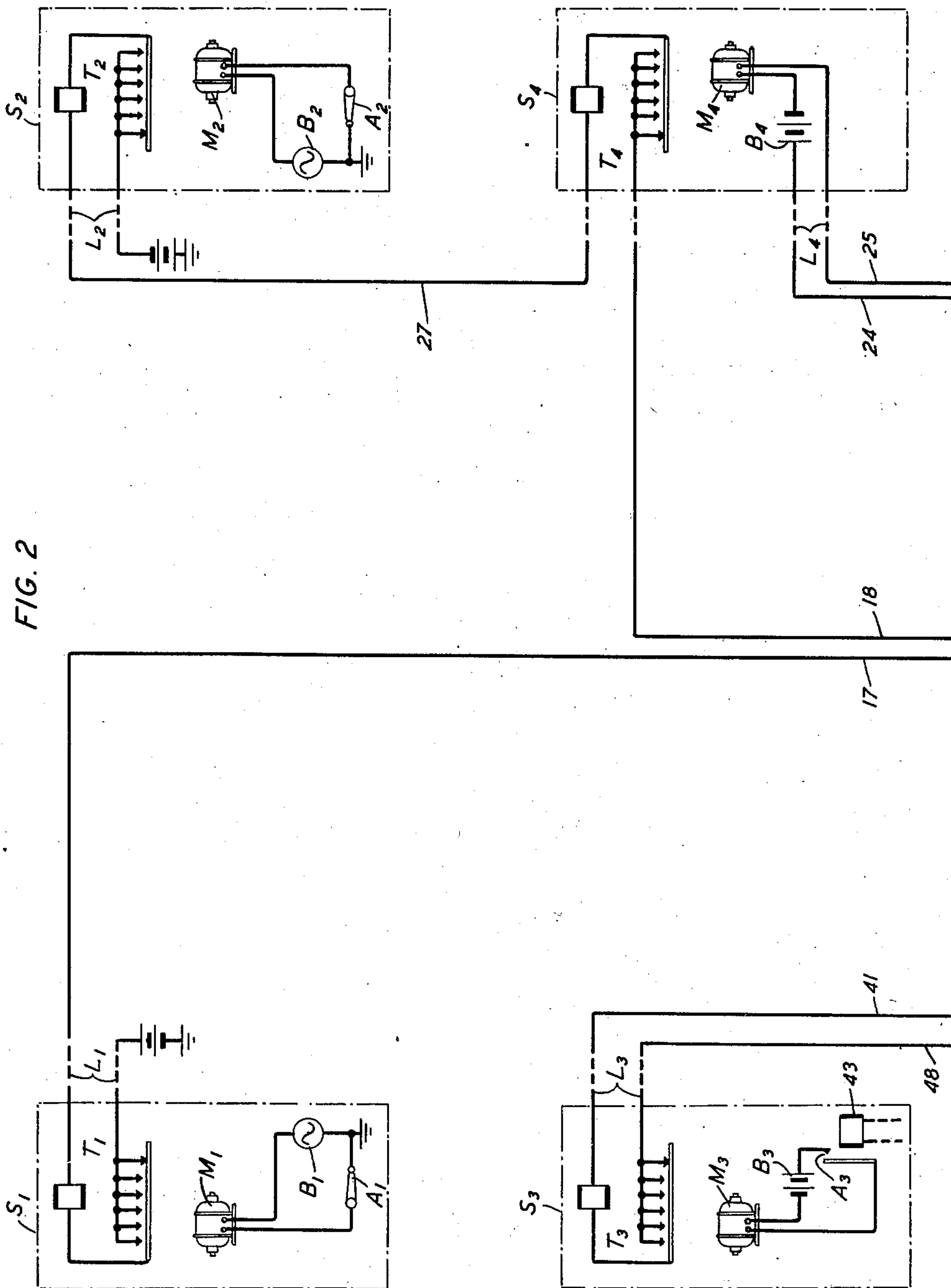
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BY *J. W. Schmied*
ATTORNEY

UNITED STATES PATENT OFFICE

2,154,547

TELETYPEWRITER SYSTEM

Charles R. Walker, Jersey City, N. J., assignor to
American Telephone and Telegraph Company,
a corporation of New York

Application December 11, 1935, Serial No. 53,950

18 Claims. (Cl. 178—2)

This invention relates to teletypewriter systems and, more particularly, to systems which include a teletypewriter having contacts for performing various functions.

5 It is an object of this invention to mount contacts, for performing various functions, in a teletypewriter to be operated by the teletypewriter mechanism.

10 It is also an object of this invention to open and close, by means of a central teletypewriter, telegraph lines leading from a teletypewriter office to other teletypewriter stations.

15 It is a further object of this invention to provide a central teletypewriter office with an improved switching device for switching various circuits.

20 It is an additional object of this invention to enable a subscriber at a teletypewriter station to connect his teletypewriter through a teletypewriter central office to another teletypewriter station without the assistance of an operator at the central office thereby effecting a saving in operating time.

25 It is a further object of the invention to enable subscribers having their lines connected together at a central office to disconnect the lines at the central office without the assistance of an operator at the central office thereby effecting a further saving in operating time.

30 These and other objects of the invention are attained by means of a plurality of contacts mounted in a teletypewriter at various predetermined positions. The contacts are adapted to be operated by the teletypewriter mechanism in response to certain preassigned teletypewriter signals which may, if desired, be sent from other teletypewriter stations. In the preferred embodiment of the invention, the operation of the contacts serves to operate a relay which operates and 40 locks-up to perform any desired function, such as switching a telegraph circuit. Also in the preferred embodiment of the invention, the operation of another contact unlocks the relay and causes it to deenergize thereby restoring the system to its normal condition. If desired, a plurality of these relays may be provided for performing a variety of functions, such as starting the teletypewriter motor of an outlying teletypewriter station.

45 These and other features of the invention will now be described in detail with reference to the drawings in which:

50 Fig. 1 represents a teletypewriter central office and shows a schematic diagram in perspective 55 of a teletypewriter provided with special contacts

and circuit connections leading to other teletypewriter stations; and

Fig. 2 shows the other teletypewriter stations to which the teletypewriter central office shown in Fig. 1 is connected.

5 The teletypewriter T, shown in Fig. 1, is similar to the teletypewriter disclosed in Patent 1,745,633 granted February 4, 1930 to S. Morton et al. The disclosure of this Morton et al. patent is incorporated herein by reference as a part of this specification. However, the invention is not limited to this type of teletypewriter nor is it limited to the specific structure shown in the drawings which is a preferred embodiment of the invention and is shown and described in order to illustrate and 15 explain the features and principles of operation of the invention.

For purposes of illustration, teletypewriter T is shown to be located at a teletypewriter central office although it may be located at an ordinary 20 teletypewriter station if desired. Connected to this central office by telegraph lines L₁, L₂, L₃, and L₄, respectively, are the subscribers' stations S₁, S₂, S₃, and S₄ each of which is provided with a teletypewriter T₁, T₂, T₃, and T₄, respectively, 25 and a teletypewriter motor M₁, M₂, M₃, and M₄, respectively. Each of the motors M₁, M₂, M₃, and M₄ is operated by a power supply source B₁, B₂, B₃, and B₄, respectively. At stations S₁ and S₂ the energizing circuits leading from the 30 power supply sources to the motors are opened and closed by manually operable switches A₁ and A₂, respectively, controlled by the local attendant at each station.

The energizing circuit of the motor M₃ is normally open at the armature and contact A₃ of relay 43 and is adapted to be opened and closed by any control method that may be desired, such as that shown in Patent 1,913,431 granted June 13, 1933 to W. Daum. The disclosure of this 40 Daum patent is incorporated herein by reference as a part of this specification. The energizing circuit of motor M₄ is normally open at contact A₄ of relay R₃ located at the central office. It is to be understood that these different motor control circuits may be varied as desired and that they are shown for the purpose of illustrating the wide extent to which the invention may be applied. It should also be understood that the invention is capable of use with any other type 50 of line circuits, such as duplex circuits.

The teletypewriter T at the central office has a motor M which is operated by a power supply source B over an energizing circuit closed by a manually operable switch lever A. Motor M 55

operates teletypewriter T by means of gears G₁ and G₂ which alternately raise and lower the printing bail 1 to operate the pull bars selected by the selecting mechanism 2 as is described in the Morton et al. patent. Mounted in the teletypewriter T are four contacts C₁, C₂, C₃, and C₄ all of which are normally open except contact C₃ which is normally closed. These contacts are adapted to be operated by the teletypewriter mechanism as will be explained subsequently.

In the operation of the system, let it first be assumed that the subscriber at station S₁ wishes to be connected to the subscriber at station S₂. The subscriber at station S₁ normally has his switch A₁ closed during business hours so that his motor M₁ is energized by his local power supply source B₁. Accordingly, the subscriber transmits, by means of his teletypewriter T₁, a combination of significant current impulses, corresponding to a preassigned upper case permutation code signal, out over line L₁ and conductor 17 to the central office. At the central office, the preassigned combination of significant current variations is received by the receiving magnet R which operates the selecting mechanism 2 of the teletypewriter T for selecting the pull bar 3. Pull bar 3 is then elevated by the reciprocating printing bail 1. This elevates the left end of lever 4 and causes its right end to drop down thereby allowing the left end of lever 5 to be pulled down by spring 6. Consequently, the right end of lever 5 is raised to allow the spring contact C₄ to close.

A circuit is now closed from grounded battery 7, through relay R₄, over line conductor 8, through contact C₄, along conductor 9, then conductor 10, through the normally closed contact C₂, conductor 11, conductor 16, and then to ground 12. As a result, relay R₄ becomes energized and operates both its armatures. This switches the line conductor 17 to contact 13, joining conductor 26, contact 14, line conductor 18, through station S₄, conductor 27, and then out over line L₂ to the subscriber's station S₂. At the same time, relay R₄ locks up from grounded battery 7 through contact 15, over conductor 9, conductor 10, through the normally closed contact C₂, conductor 11, conductor 16, and then to ground 12.

Since the subscriber at station S₂ normally has his switch A₂ closed during business hours, his motor M₂ will be energized at this time by his local power supply source B₂. Accordingly, the system is now in condition for communication to take place between the subscriber at station S₁ and subscriber at station S₂. Significant current variations transmitted by the teletypewriter T₁ will travel over line L₁, conductor 17, contacts 49 and 50 of relay R₁, conductor 42, relay R, operated armature and contact 13 of relay R₄, conductor 26, operated armature and contact 14 of relay R₄, conductor 18, through station S₄, conductor 27, and then out over line L₂ to the teletypewriter T₂ at station S₂. Due to both motors M₃ and M₄ being disconnected from their respective power supply sources B₃ and B₄ at this time, neither teletypewriter T₃ nor teletypewriter T₄ will record the signals sent from teletypewriter T₁ to teletypewriter T₂.

Thus, the subscriber at station S₁, which may be located at a remote point, has connected himself through the central office to the distant subscriber's station S₂ without any assistance from an operator at the central office. In other words, the subscriber at station S₁ has switched both

his and the other subscriber's lines 17 and 18 from their terminations at batteries 19 and 20, respectively, to the joining conductor 26 thereby switching the line conductors 17 and 18 together. Consequently, a considerable saving in operating time is effected since the subscriber at station S₁ simply sends the code combination assigned to select pull bar 3 which closes contact C₄ to operate relay R₄ which immediately switches the two lines 17 and 18 together without any act by an operator at the central office. This saving in operating time is of importance in certain types of business where time is of the essence and promptness in putting calls through is essential.

When the subscribers at stations S₁ and S₂ have finished communicating with each other, either one of them may effect a disconnection of their lines at the central office by transmitting a preassigned permutation code signal from either station S₁ or station S₂. This signal is received by receiving relay R at the central office which operates the selecting mechanism 2 to select pull bar 23. Bail 1 then elevates pull bar 23 thereby momentarily opening the normally closed contact C₂. The opening of contact C₂ opens the locking-up circuit of relay R₄. Consequently, relay R₄ releases its armatures and switches the line conductors 17 and 18 from the joining conductor 26 to batteries 19 and 20, respectively, thereby disconnecting the two stations S₁ and S₂ from each other and restoring the system to its normal condition. Since this disconnection was accomplished by either subscriber without the assistance of an operator at the central office, a further saving in operating time is effected.

The nature of the business of the subscriber at station S₁ might be such that it would be desirable for him to send a message to both the subscriber at station S₂ and the subscriber at station S₄ (which may, for example, be an outlying station near the central office) and have the message recorded practically simultaneously by the teletypewriters T₂ and T₄. To accomplish this conference connection, it is first necessary to start the teletypewriter motor M₄ at station S₄ by energizing relay R₃. The subscriber at station S₁ energizes the relay R₃ by transmitting a certain preassigned permutation code combination of signal impulses out over line L₁, conductor 17, contacts 49 and 50 of relay R₁, conductor 42, relay R, and then to battery 19. This code combination will cause the selecting mechanism 2 of teletypewriter T to select pull bar 21 which will then be operated by the reciprocating printing bail 1.

Bail 1 will elevate pull bar 21 and cause it to momentarily close contact C₃. A path for energizing relay R₃ is now closed from grounded battery 22, through the winding of relay R₃, contact C₃, conductor 16, and then to ground 12. As a result, relay R₃ operates its armatures and locks-up through a path from battery 22, winding of relay R₃, left armature and contact of relay R₃, conductor 9, conductor 10, normally closed contact C₂, conductor 11, conductor 16, and then to ground 12. At the same time, the right armature of relay R₃ is operated and closes a path from power supply source B₄ at station S₄, over line L₄, line conductor 24, operated right armature and contact A₄ of relay R₃, line conductor 25, line L₄, motor M₄, and then back to power supply source B₄ thereby energizing motor M₄ and starting it into operation.

The subscriber at station S₁ then transmits the

permutation code signal for selecting pull bar 3 in the teletypewriter T at the central office. When bail 1 elevates pull bar 3, contact C₄ is momentarily closed and relay R₄ operates its armatures and locks-up as was described above. The messages sent now by the subscriber at station S₁ will travel out over line L₁, conductor 17, conductor 42, through relay R, left armature and contact 13 of relay R₄, joining conductor 26, right armature and contact 14 of relay R₄, conductor 18, through the teletypewriter T₄ at station S₄, conductor 27, line L₂, and then to the teletypewriter T₂ at the station S₂. Thus, messages sent from station S₁ will be recorded practically simultaneously on both the teletypewriters T₂ and T₄. The subscriber at station S₂ can now transmit messages to both stations S₁ and S₄ which will be practically simultaneously recorded by both teletypewriters T₁ and T₄. Likewise, the subscriber at station S₄ can send messages which will be recorded on both teletypewriters T₁ and T₂.

At the close of communication, any of the subscribers at stations S₁, S₂, or S₄ may disconnect this conference connection by transmitting the preassigned code signal assigned to select pull bar 23 at the central office which will momentarily open the normally closed contact C₂ as was described above. The opening of contact C₂ will open the locking-up circuits of both relays R₃ and R₄ and will cause them to release their armatures. This switches the communication circuit from conductor 26 to batteries 19 and 20 as was described above. At the same time, the energizing circuit for motor M₄ is opened at the contact A₄ of relay R₃. Consequently, motor M₄ stops running. The system is thus restored to its normal condition.

In the event that the subscriber at station S₁ desires to communicate with the subscriber at station S₃ (which may, for example, be an outlying station near the central office), he will transmit a preassigned upper case code signal which, upon being received by relay R, will effect the selection of pull bar 27 by the selecting mechanism 2 and, at the same time, shift the platen 38 to its upper case position, shown in the drawings in the manner described in the Morton et al. patent. The elevation of pull bar 27 by bail 1 will, by means of the ratchet 28 and gear 29, drive the top of bar 30 downward in an arcuate path. Bar 30 will then hit lever 31 thereby tilting downward the right end of lever 32. This drives the top end of lever 32 to the right and allows spring 40 to pull down the right end of lever 33 into latching engagement with the top end of lever 32. Consequently, the left end of lever 33, which is normally located immediately beneath the printing bail 1 as shown in the drawings, is driven upward to close contact C₁.

The closure of contact C₁ closes a path from grounded battery 34, through the winding of relay R₁, along conductor 35, through contact C₁, conductor 36, conductor 16, and then to ground 12. Consequently, relay R₁ operates both its armatures and locks-up through its right armature over a path from grounded battery 34, winding of relay R₁, operated right armature and contact of relay R₁, conductor 37, conductor 10, normally closed contact C₂, conductor 11, conductor 16, and then to ground 12.

It might be mentioned here that, if it were not for this locking-up circuit, relay R₁ would otherwise be deenergized when the reciprocating printing bail 1 moves back to its normal position. This

is due to the fact that the left end of lever 33 has been tilted up into the position normally occupied by the printing bail 1. Thus, when bail 1 moves back to its normal position, it will strike the left end of lever 33 and force it downward into the position shown in the drawings thereby allowing the spring contact C₁ to open. This will drive the right end of lever 33 upward thereby allowing spring 39 to pull back the top end of lever 32 into the lower notch in the right end of lever 33. This elevates the right end of lever 32 into the position shown in the drawings and restores this system of levers to its normal condition.

When relay R₁ is energized, it operates its armatures and the two left armatures operate and open the make-before-break contacts 49 and 50 thereby closing a path from battery 19, left armature of relay R₄, through relay R, over conductor 42, contact 50, outer left operated armature of relay R₁, conductor 48, line L₃, teletypewriter T₃, over line L₃, conductor 41, operated inner left armature and contact 49 of relay R₁, conductor 17, line L₁, and then to the teletypewriter T₁ at station S₁. The subscriber at station S₁ then transmits motor start signals, such as those as described in the Daum patent mentioned above, which effect the energization of a relay 43 similar to the motor control relay disclosed in the Daum patent. Upon being energized, motor control relay 43 operates its armature to close the contact A₃ thereby closing the energizing circuit of motor M₃ and starting motor M₃ into operation.

Communication may now take place between the two stations S₁ and S₃, the signals from station S₁ passing over line L₁, conductor 17, operated inner left armature and contact 49 of relay R₁, conductor 41, line L₃, through the teletypewriter T₃ at station S₃, back over line L₃, conductor 48, outer left operated armature and contact 50 of relay R₁, conductor 42, through relay R, and then over the left armature of relay R₄ to grounded battery 19. It will thus be understood that relay R will follow all signals sent over the communication circuit. It might be mentioned here that this is the case with all connections between the four subscriber stations S₁, S₂, S₃, and S₄; that is, relay R follows all the signals sent between these stations to provide a complete record at the central office of all messages. It is to be understood that this arrangement may be changed if desired and that the circuit connections may be designed to cut relay R out of some of the connections to the subscribers' stations.

At the close of communication, either the subscriber's station S₁ or S₃ will send the permutation code signal for selecting pull bar 23 which momentarily opens contact C₂, as described above, with the consequent opening of the locking-up circuit of relay R₁. Relay R₁ now releases its armatures thereby opening the circuit leading to station S₃. The motor at station S₃ may be stopped by either the subscriber at station S₁ or by the subscriber at station S₃ in the manner described in the Daum patent.

If the subscriber at station S₁ wishes to send a message to be recorded by the teletypewriters T₂ and T₃ at stations S₂ and S₃, he will send the upper case permutation code signals to select pull bars 3 and 27 for closing contacts C₄ and C₁. This will operate relays R₄ and R₁ which will lock-up as described above to close the lines leading to stations S₂ and S₃. Any of the subscribers may disconnect this conference connection by sending the code signal to select pull bar 23 which opens contact C₂. This opens the lock-

ing-up circuits of both relays R_1 and R_4 thereby restoring the system to its normal condition.

Also, if the subscriber at station S_1 wishes to send a message to be recorded by the teletype-
 5 writers at each of stations S_2 , S_3 , and S_4 , he will follow the same procedure as that outlined in the preceding paragraph except that he will, in addition, send the permutation code signal to select
 10 pull bar 21. The operation of pull bar 21 will close contact C_3 and operate relay R_3 which will close the energizing circuit of the motor M_4 at station S_4 thereby conditioning station S_4 for reception and/or transmission of messages. Any
 15 of the subscribers may disconnect this conference connection in the manner described above.

It is to be understood that this specific application of the invention has been shown and described for purposes of explaining the principles and features of operation of the invention. Many
 20 changes may be made in the construction shown without exceeding the scope of the invention. More switching contacts to be operated by the pull bars of the teletypewriter at the central office may be added whenever desired to perform any
 25 function that may be required. Likewise, the circuit connections of the various subscribers' stations may be varied as desired. Whereas for the sake of simplification only one dominant subscriber's station (station S_1) has been shown, it
 30 is to be understood that other dominant subscribers' stations may readily be added with their necessary contacts to meet the individual requirements of any particular system. In short, the scope of the invention is to be limited only
 35 by the claims appended hereto.

What is claimed is:

1. A teletypewriter system having in combination a first teletypewriter station, a second teletypewriter station, a transmission line for connecting the two stations, said first station having
 40 a teletypewriter motor having a normally open energizing circuit, said second station having a teletypewriter including a plurality of pull bars, a reciprocating bail for momentarily elevating the
 45 pull bars individually, a switching relay also located at the second station for closing the energizing circuit of the teletypewriter motor at the first station, an energizing circuit for energizing said switching relay, a control contact located in
 50 the teletypewriter and connected in series with said energizing circuit of said switching relay for controlling the energization of the switching relay, and means for operating said control contact in response to the elevation of a preassigned
 55 pull bar by the bail.

2. A teletypewriter system including in combination a first teletypewriter connected by a communication circuit to a second teletypewriter having a plurality of pull bars, a reciprocating
 60 bail for momentarily elevating the pull bars individually, a plurality of switching relays, a plurality of energizing circuits, each energizing circuit being individual to one of the switching relays, a plurality of control contacts located in
 65 the second teletypewriter, each of said control contacts being connected in series with an individual energizing circuit for controlling the energization of the switching relay individual to each particular energizing circuit, each of said
 70 control contacts being operable by a predetermined pull bar individual to each control contact.

3. A teletypewriter station having in combination a teletypewriter including a plurality of pull bars, a reciprocating bail for momentarily
 75 elevating the pull bars individually, a normally

unoperated switching relay, an energizing circuit for said switching relay, a normally open contact located in the teletypewriter and connected in series with said energizing circuit for controlling the energization of the switching relay, said normally open control contact being momentarily closed by a preassigned pull bar when elevated by the bail, a locking-up circuit for said switching relay, a normally closed control contact located in the teletypewriter and connected in
 10 series with said locking-up circuit, said normally closed control contact being momentarily operated by a second preassigned pull bar whereby the locking-up circuit is momentarily opened.

4. A teletypewriter system having in combination a teletypewriter central office having a teletypewriter with a plurality of pull bars, a reciprocating bail for momentarily elevating the pull bars individually, a plurality of telegraph lines, a plurality of teletypewriter stations connectable
 20 to the central office by the telegraph lines and normally disconnected from each other, and instrumentalities for enabling an operator at one of the teletypewriter stations to establish a conference connection by connecting his station
 25 through the central office to a plurality of the other teletypewriter stations without the assistance of an operator at the central office, said instrumentalities including a plurality of contacts operable by the pull bars when elevated by the
 30 bail.

5. A teletypewriter system including in combination a teletypewriter central office having a teletypewriter with a plurality of pull bars, a plurality of telegraph lines, a plurality of teletypewriter stations connectable to the central office
 35 by the telegraph lines and normally disconnected from each other, and instrumentalities for enabling an operator at one of the teletypewriter stations to connect his station through the central office to one of the other teletypewriter stations, said instrumentalities including a plurality of switching contacts mounted in the teletypewriter at the central office in operative relationship with said pull bars.
 45

6. A teletypewriter system including in combination a teletypewriter central office having a teletypewriter with a plurality of pull bars, a reciprocating bail for momentarily elevating the pull bars individually, a plurality of telegraph
 50 lines, a plurality of teletypewriter stations connectable to the central office by the telegraph lines and normally disconnected from each other, a plurality of normally deenergized relays for connecting the teletypewriter stations together
 55 in various combinations, each of said relays having an energizing circuit and a locking-up circuit, each energizing circuit having a normally open contact connected in series therein for controlling the energization of the relay individual to
 60 each particular energizing circuit, each of said control contacts being operable by a predetermined pull bar individual to each control contact, and an instrumentality operable by a pull bar for unlocking any of the relays which happen
 65 to be energized and locked-up at a particular time whereby any of the teletypewriter stations which were connected together are now disconnected.

7. A teletypewriter system including in combination a teletypewriter central office having a teletypewriter with a plurality of pull bars, a reciprocating bail for momentarily elevating the pull bars individually, a first teletypewriter station,
 70 a first telegraph line for connecting said

station to the central office, a second teletypewriter station, a second telegraph line connecting said second station to the central office, a conductor adapted to join said telegraph lines together but normally disconnected therefrom, and means operating in response to the elevation of a preassigned pull bar for connecting the telegraph lines to the joining conductor.

8. A teletypewriter system including in combination a first station, a second station, a third station, each station being provided with a teletypewriter having permutation code selector mechanism and also having receiving mechanism together with recording mechanism, a transmission line connecting the first station and the second station, a transmission line extending between the second station and the third station, contacts at the second station controllable by the permutation code selector mechanism thereat for cutting the third station into and out of circuit relation with the first and second station, means for operating said contacts from the first station to connect the third station into operative circuit relation, instrumentalities for cutting said third station out of operative circuit relation, and means for operating said instrumentalities from either the first or the third stations.

9. A printing telegraph system comprising in combination a first teletypewriter station, a second teletypewriter station, a telegraph line extending between said stations, a second telegraph line extending away from said second station, at least one additional teletypewriter station remotely connected to said second telegraph line, each of said stations being provided with permutation code selector mechanism and recording mechanism, switching contacts in said second station for switching said second telegraph line into and out of circuit relation with said first telegraph line, means for operating said switching contacts under the control of said permutation code selector mechanism, means for connecting said first and second stations into operative circuit relation independently of said switching contacts, means for operating said switching contacts from said first station for effecting the switching of said second telegraph line into operative circuit relation with said first telegraph line, means for disconnecting said second telegraph line from operative circuit relation with said first telegraph line, and operating means at said additional station for effecting the operation of said last-mentioned means.

10. A teletypewriter system including in combination a teletypewriter central office having a teletypewriter comprising a two-position platen assembly with means for shifting the platen assembly from one position to the other, a plurality of telegraph lines, a plurality of teletypewriter stations each provided with a teletypewriter and normally disconnected from each other and connectable to the central office by the telegraph lines for the transmission and reception of permutation code signals, switching apparatus for enabling an operator at one of the teletypewriter stations to connect his teletypewriter through the central office to one of the other teletypewriter stations, actuating means for actuating said switching apparatus, and control means for operating said actuating means in response to the reception by the teletypewriter at the central office of a preassigned permutation code signal that has been preceded by a different

preassigned permutation code signal, said control means including a lever with operating means therefor and an instrumentality attached to the platen assembly for permitting said lever to be operated only when the platen assembly is in a preassigned position.

11. A teletypewriter system including in combination a teletypewriter central office having a teletypewriter, a plurality of telegraph lines, a plurality of teletypewriter stations normally disconnected from each other and connectable to the central office by the telegraph lines for the transmission and reception of permutation code signals, switching apparatus at the central office for enabling an operator at one of the teletypewriter stations to connect his teletypewriter through the central office to a second teletypewriter station, means in the teletypewriter at the central office for enabling the operator at the first teletypewriter station to effect the operation of said switching apparatus at the central office for effecting said connection, means at the central office for disconnecting said first and second stations, and operating means in the teletypewriter at the central office for enabling the operator at said second teletypewriter station to effect the operation of said last-mentioned means.

12. A communication system including in combination a first teletypewriter station, a second teletypewriter station having a teletypewriter, a communication channel connecting the two stations, a plurality of other teletypewriter stations each having a communication channel leading to the second station, said communication channels being normally disconnected from the teletypewriter at the second station, switching apparatus for automatically connecting a plurality of the communication channels to the teletypewriter at the second station in any combination that may be desired for simultaneously receiving a message, a plurality of control contacts in the teletypewriter at the second station for controlling the operation of said switching apparatus, a plurality of pull bars in the teletypewriter at the second station for operating said control contacts, and selecting mechanism in the teletypewriter at the second station responsive to significant current variations transmitted from the first teletypewriter station to the second teletypewriter station for operating said pull bars.

13. A communication system comprising in combination a communication line, a first station having a teletypewriter for transmitting permutation code signals over the communication line, a second station having a teletypewriter for receiving permutation code signals transmitted over the communication line by the teletypewriter at the first station, a plurality of other teletypewriter stations each having a communication path extending to the second station, switching means at the second station for selectively connecting any one of said communication paths to the teletypewriter at the second station, a plurality of pull bars in the teletypewriter at the second station for effecting the operation of said switching means, control means for operating the pull bars in accordance with permutation code signals transmitted by the teletypewriter at the first station and received by the teletypewriter at the second station.

14. A communication system including in combination, a first teletypewriter station, a second teletypewriter station having a teletypewriter, a communication channel connecting the two stations, a plurality of other teletypewriter stations

each having a communication channel leading to the second station, said communication channels being normally disconnected from the teletypewriter at the second station, switching apparatus for automatically connecting a plurality of the communication channels to the teletypewriter at the second station in any combination that may be desired for simultaneously receiving a message, a plurality of control contacts in the teletypewriter at the second station for controlling the operation of said switching apparatus, a plurality of pull bars in the teletypewriter at the second station for operating said control contacts, and selecting mechanism in the teletypewriter at the second station responsive to significant current variations transmitted from the first teletypewriter station to the second teletypewriter station for operating said pull bars, instrumentalities at the second station for disconnecting the communication channels from the teletypewriter at the second station, and means for operating said instrumentalities from any of the teletypewriter stations that become connected to the teletypewriter at the second station.

15. A teletypewriter system including in combination, a teletypewriter central office having a teletypewriter, a plurality of telegraph lines, a plurality of teletypewriter stations normally disconnected from each other and connectable to the central office by the telegraph lines for the transmission and reception of permutation code signals, switching apparatus for enabling an operator at one of the teletypewriter stations to connect his station through the central office to one of the other teletypewriter stations, means for operating said switching apparatus in response to the reception by the teletypewriter at the central office of a preassigned permutation code signal that has been preceded by a different preassigned permutation code signal, instrumentalities for disconnecting this connection, and means for operating said instrumentalities from either of the teletypewriter stations that become connected through the central office.

16. A teletypewriter system including in combination a teletypewriter central office having a teletypewriter with a platen assembly provided with an upper case position and a lower case

position, shift mechanism for shifting the platen from one of said positions to the other, a plurality of telegraph lines, a plurality of teletypewriter stations connectable to the central office by the telegraph lines and normally disconnected from each other, normally ineffective instrumentalities for enabling an operator at one of the teletypewriter stations to connect himself through the central office to one of the other teletypewriter stations, and control means attached to the platen assembly for movement therewith for conditioning said instrumentalities for effective operation.

17. A teletypewriter system including in combination a teletypewriter central office having a teletypewriter with a platen assembly provided with an upper case position and a lower case position, shift mechanism for shifting the platen from one of said positions to the other, a plurality of teletypewriter stations connected to the central office by a plurality of telegraph lines, normally unoperated switching apparatus at the central office for switching said telegraph lines together, and control means for operating the switching apparatus in response to the reception by the teletypewriter at the central office of permutation code signals of a preassigned case transmitted over one of the lines by one of the stations.

18. A teletypewriter system including in combination a central office having a teletypewriter with a plurality of pull bars and a platen assembly provided with an upper case and a lower case position, shift mechanism for shifting the platen from one of said positions to the other, a plurality of subscribers' teletypewriter stations, a plurality of communication lines extending from the subscribers' stations to the central office but normally disconnected from each other, switching means for selectively connecting the communication lines together at the central office, said switching means including contacts mounted in the teletypewriter at the central office, and control means for enabling certain of the pull bars to effect the operation of said contacts only when the platen assembly is in a preassigned case position.

CHARLES R. WALKER.