June 14, 1938. J. F. BEATTIE ET AL 2,120,235

TELETYPEWRITER SYSTEM

Filed Jan. 2, 1936 2 Sheets-Sheet 1

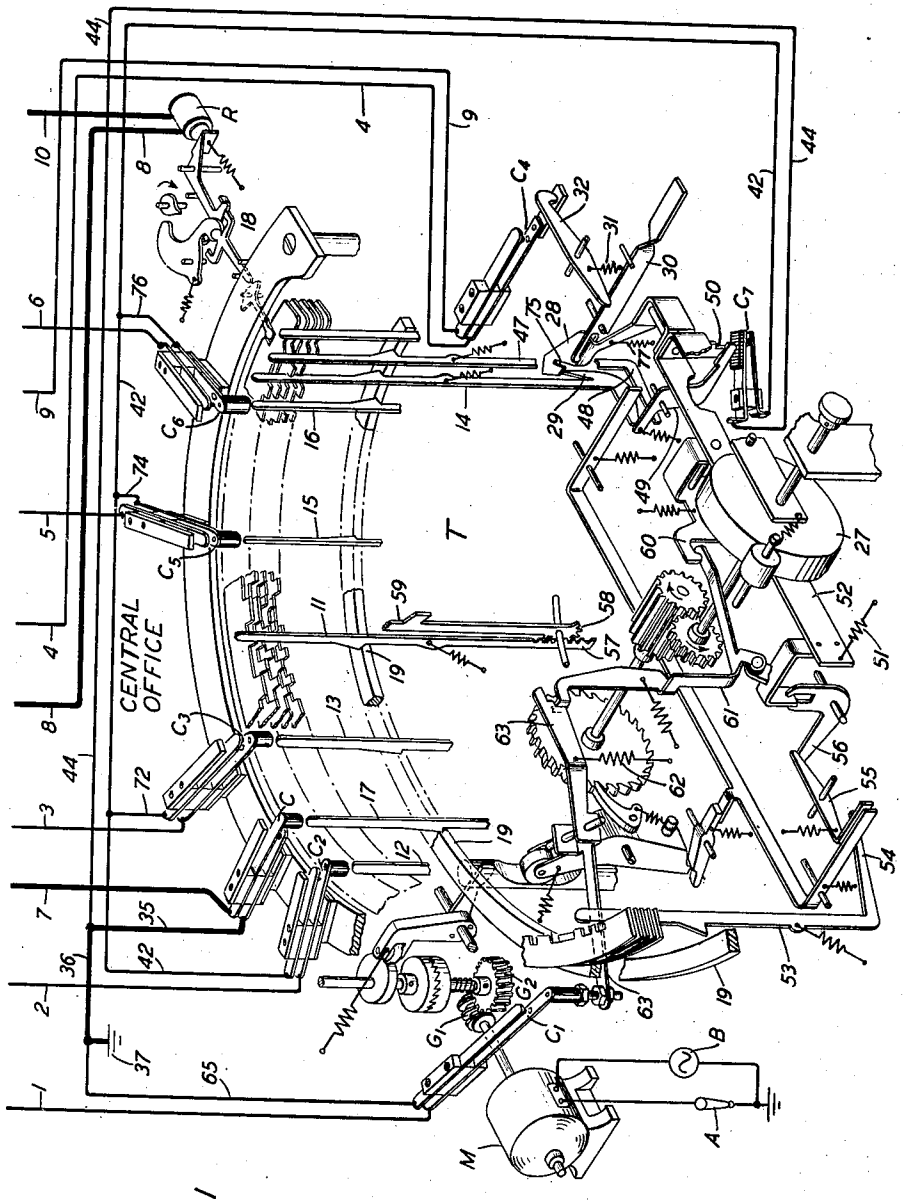

FIG. 1

INVENTORS: J. F. BEATTIE
H. J. CUNNINGHAM
W. R. ROYCROFT

BY

ATTORNEY

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TELETYPEWRITER SYSTEM

Filed Jan. 2, 1936 2 Sheets-Sheet 2

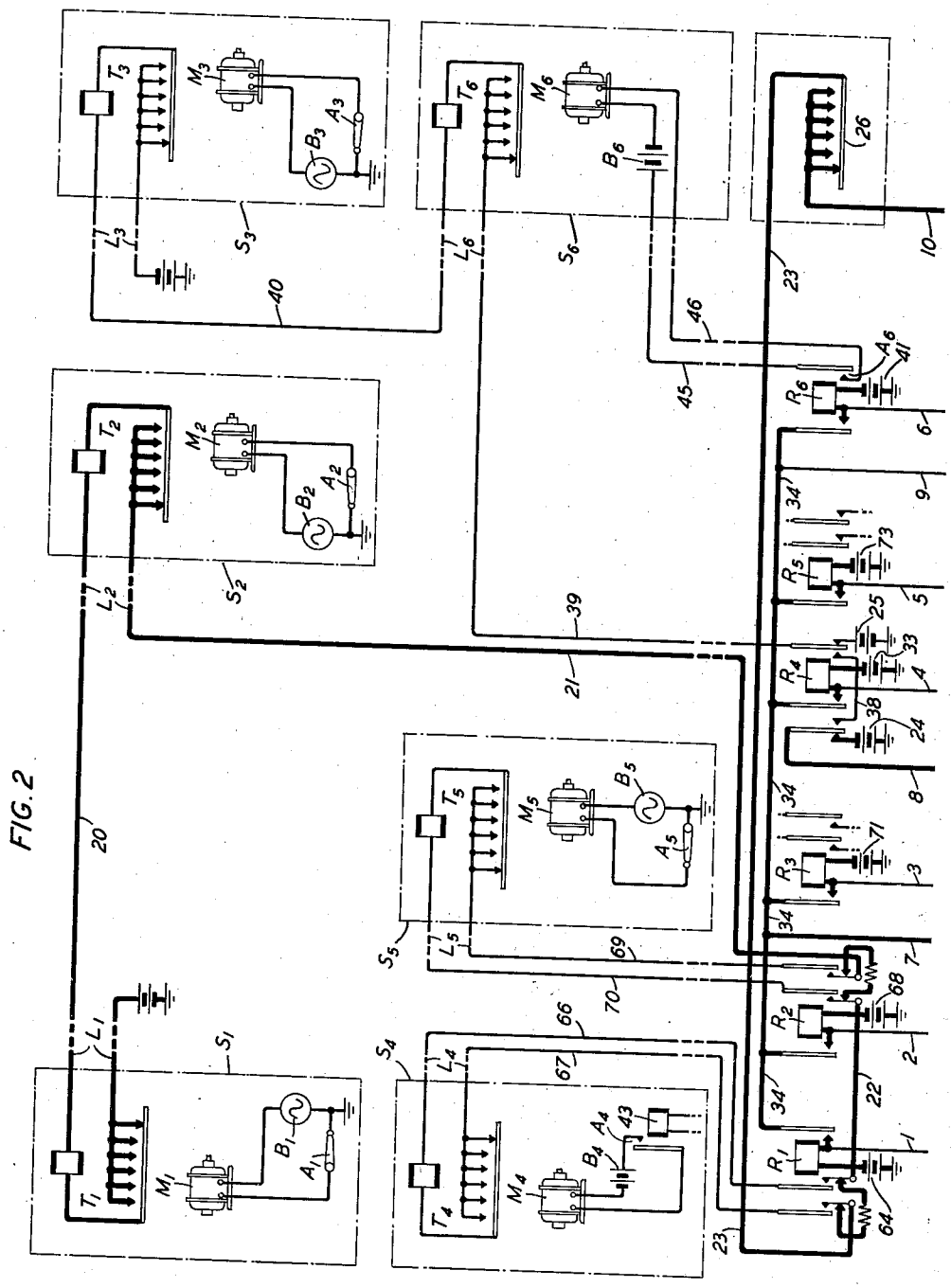

FIG. 2

INVENTORS: J.F.BEATTIE
H.J.CUNNINGHAM
W.R.ROYCROFT

BY

ATTORNEY

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UNITED STATES PATENT OFFICE

2,120,235

TELETYPEWRITER SYSTEM

James Francis Beattie, Norwood, and Harold Jerome Cunningham, Scotch Plains, N. J.; and Walter Richard Roycroft, Ozone Park, N. Y.; said Beattie and said Roycroft assignors to Western Electric Company, Inc., a corporation of New York, and said Cunningham assignor to American Telephone and Telegraph Company, a corporation of New York

Application January 2, 1936, Serial No. 57,268

7 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.

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

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.

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

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.

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

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 relays which operate and lock-up to perform any desired function, such as switching telegraph circuits. Also in the preferred embodiment of the invention, the operation of a particular contact unlocks the switching relays and causes them to deenergize thereby restoring the system to its normal condition. If desired, these relays may be designed to perform a variety of functions, such as switching on and off a teletypewriter motor at an outlying teletypewriter station.

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

Figure 1 represents a teletypewriter central office and shows a schematic diagram in perspective of a teletypewriter provided with special contacts and circuit connections leading to the switching relays; and

Fig. 2 shows the switching relays at the central office and the telegraph lines leading to the other teletypewriter stations.

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 explain the features and principles of operation of the invention.

For purposes of illustration, teletypewriter T, which is shown to be in its upper case position, is represented as being located at a teletypewriter central office although it may be located at an ordinary teletypewriter station if desired. Connected to this central office by telegraph lines L_1 to L_6, inclusive, are the subscribers' teletypewriter stations S_1 to S_6, inclusive, each of which is provided with a teletypewriter T_1 to T_6, inclusive, and a teletypewriter motor M_1 to M_6, inclusive. Each of the motors M_1 to M_6, inclusive, is operated by an individual power supply source B_1 to B_6, respectively. At stations S_1, S_2, S_3, and S_5 the energizing circuits leading from the respective local power supply sources to the motors are opened and closed by manually operable switches A_1, A_2, A_3, and A_5, respectively, controlled by the local attendant at each station.

The energizing circuit of the motor M_4 is normally open at the armature and contact A_4 of the normally unoperated relay 43. This energizing circuit is adapted to be opened and closed by any control method that may be desired, such as the method described in Patent 1,913,431 granted June 13, 1933 to W. Daum. The disclosure of this Daum patent is incorporated herein by reference as a part of this specification. The energizing circuit of motor M_6 is normally open at contact A_6 of relay R_6 located at the central office. It is to be understood that these different motor control circuits may be varied as desired to meet the particular requirements of a given system and that they are shown here 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 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 operates teletypewriter T by means of gears G_1 and G_2 which alternately raise and lower the printing bail **19** to operate the pull bars selected by the selecting mechanism **18** as is described in the Morton et al. patent. Mounted in the teletypewriter T is one normally closed contact C and six normally opened contacts C_1 to C_6, inclusive. Contacts C_1 and C_4 are operated by portions of the teletypewriter mechanism only in response to the reception by the receiving magnet R of upper case teletypewriter signals. Contact C is operated by a pull bar **17** which may, if desired, be selected by the selecting mechanism **18** only in response to the reception of a preassigned upper case code combination of signals. Contacts C_2, C_3, C_5 and C_6 are each designed to be operated, in this particular embodiment of the invention, by pull bars **12**, **13**, **15** and **16**, respectively, in response to the reception of both upper and lower case signals. However, since these contacts C_2, C_3, C_5 and C_6 are connected in series with contact C_7, which is designed to be closed only when the platen **27** is in its upper case position, they will only be effective to perform their switching functions when the platen **27** is in its upper case position. Thus, the pull bars **12**, **13**, **15** and **16** associated with these contacts can be used for performing their normal lower case functions.

In the operation of the system, let it first be assumed that the subscriber at station S_1 wishes to connect himself through the central office to the subscriber at station S_3. The subscriber at station S_1 normally has his switch A_1 closed during business hours so that his motor M_1 is energized by his local power supply source B_1. Accordingly, the subscriber, by means of his teletyewriter T_1, first transmits a figures shift signal out over line L_1, conductor **20**, line L_2, through station S_2, line L_2, conductor **21**, through the normally closed contacts of relay R_2, conductor **22**, through the normally closed contacts of relay R_4, conductor **23**, sending contacts **26**, conductor **10**, receiving magnet R, conductor **8**, outer left armature of normally unoperated relay R_4, and then to grounded battery **24**. The shift signal transmitted over this path energizes the receiving magnet R which operates the selecting mechanism **18** to select the figures pull bar **47** which is then elevated by the printing bail **19**. In rising, pull bar **47** causes its extension **48** to elevate the left end of bell crank **49**. This causes the right end of bell crank **49** to dip down thereby releasing latch **50**. The release of latch **50** allows spring **51** to pull the platen assembly **52** forward. In moving forward, the platen assembly **52** pulls lever **28** forward sufficiently to remove slot **75** from the path of travel of extension **29** of the so-called "blank" pull bar **14**. This places the platen assembly **52** and its associated apparatus in the upper case position so that this apparatus is now in the condition shown in Fig. 1.

The subscriber at station S_1 now transmits a preassigned code combination of significant current variations which in this preferred embodiment of the invention, is known as a "blank" signal. Upon being received at the central office, the blank signal causes the selecting mechanism **18** to select pull bar **14**. Accordingly, the printing bail **19** elevates the pull bar **14** with the result that extension **29** of pull bar **14** will engage with lever **28** and raise it up. This elevates the left end of lever **30** and, consequently, lowers the right end of this lever **30** thereby allowing spring **31** to pull down the left end of lever **32**. As a result, the right end of lever **32** is raised and allows the spring contact C_4 to close. This closing is only momentary because pull bar **14** is soon lowered by bail **19** and spring **77** then pulls lever **28** back into the position shown in the drawings.

The closing of contact C_4 momentarily closes the energizing circuit of relay R_4 from grounded battery **33** through the winding of relay R_4, conductor **4**, contact C_4, conductor **9**, conductor **34**, conductor **7**, through the normally closed contact C, conductor **35**, conductor **36**, and then to ground **37**. As a result, relay R_4 becomes energized and operates both its armatures. Before contact C_4 opens, relay R_4 locks-up over a circuit from grounded battery **33**, through the winding of relay R_4, inner left armature, conductor **34**, conductor **7**, through contact C, conductor **35**, conductor **36**, and then to ground **37**. At the same time, the communication circuit is switched from grounded battery **24** to the joining conductor **38** and then to conductor **39**, out over line L_6 to station S_6, over line L_6, conductor **40**, line L_3, and then to station S_3.

Since the subscriber at station S_3 normally has his switch A_3 closed during business hours, his motor M_3 will be energized at this time by his local power supply source B_3. Accordingly, the system is now in condition for communication to take place between the subscriber at station S_1 and the subscriber at station S_3. Significant current variations transmitted by the teletypewriter T_1 will travel over line L_1, conductor **20**, line L_2, through station S_2, line L_2, conductor **21**, conductor **22**, conductor **23**, sending contacts **26**, conductor **10**, receiving magnet R, conductor **8**, conductor **38**, conductor **39**, line L_6, through station S_6, conductor **40**, line L_3, and then to station S_3.

When the subscriber at station S_1 wishes to effect a lower case selection, he transmits the so-called "letters" shift code signal for causing the selecting mechanism **18** of teletypewriter T to select pull bar **53**. Upon being elevated by the printing bail **19**, pull bar **53** elevates its extension **54** which correspondingly elevates the left end of lever **55** which depresses the right end of lever **55**. When the right end of lever **55** is depressed, it causes the left end of bell crank **56** to be correspondingly depressed, which causes the top end of bell crank **56** to move backward to the rear of the teletypewriter. This acts as a lever to pull back the platen assembly **52**. In traveling to the rear of the teletypewriter T, the platen assembly **52** causes latch **50** to also move to the rear of the teletypewriter T with the result that latch **50** will engage with the catch in the right end of bell crank lever **49** thereby holding the platen assembly **52** in this position and preventing spring **51** from pulling it forward. Thus, the platen assembly **52** is latched in its lower case position.

Since both stations S_4 and S_5 are disconnected from the communication circuit at the armatures of relays R_1 and R_2, respectively, neither teletypewriter T_4 nor teletypewriter T_5 will record the signals sent from teletypewriter T_1 at this time. Teletypewriter T_6 will also not record these signals due to the fact that the energizing circuit for its motor M_6 is open at contact A_6 of relay R_6. However, with the system in the condition shown in the drawings, teletypewriter T_2 will follow the signals transmitted by teletypewriter T_1 because the energizing circuit for its motor M_2

is closed at switch A_2. If the subscriber at station S_2 finds that the message being transmitted from station S_1 to station S_3 is of no interest to him, he can open switch A_2 which will shut down his motor M_2 with the result that his teletypewriter T_2 will not now record the signals being transmitted.

Thus, the subscriber at station S_1, which may be located at a remote point, has connected himself through the central office to the distant subscriber's station S_3 without any assistance from an operator at the central office. In other words, the subscriber at station S_1 has switched both his and the other subscriber's lines **8** and **39** from their terminations at batteries **24** and **25** to the joining conductor **38** thereby switching the line conductors **8** and **39** together. Consequently, a considerable saving in operating time is effected since the subscriber at station S_1 simply transmits the upper case code combination assigned to select pull bar **14** which closes contact C_4 to operate relay R_4 which immediately switches the two lines **8** and **39** 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 S_1 and S_3 have finished communicating with each other, either one of them may effect a disconnection of their lines **8** and **39** at the central office by transmitting a preassigned telegraphic signal from either station S_1 or station S_3. This signal is received by the receiving magnet R at the central office which accordingly operates the selecting mechanism **18** to select pull bar **17**. Bail **19** then elevates pull bar **17** thereby momentarily opening the normally closed contact C. The opening of contact C opens the locking-up circuit of relay R_4: Consequently, relay R_4 releases its armatures and switches the line conductors **8** and **39** from the joining conductor **38** to batteries **24** and **25** thereby disconnecting stations S_1 and S_3 from each other and restoring the system to its normal condition. If desired, the subscriber at station S_2 may also effect this disconnection. Since this disconnection is accomplished by any of the connected subscribers 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 S_1 may be such that it would be desirable for him to send a message to both the subscriber at station S_3 and the subscriber at station S_6 (which may, for example, be an outlying station near the central office) and have the message recorded practically simultaneously by the teletypewriters T_3 and T_6. To accomplish this conference connection, it is first necessary to start the teletypewriter-motor M_6 at station S_6 by energizing relay R_6. Accordingly, the subscriber at station S_1 transmits a shift signal for selecting pull bar **47** to effect the release of latch **50** to allow the platen assembly **52** to be pulled forward by spring **51**. In moving forward, the platen assembly **52** carries latch **50** forward along the top edge of bell crank **49** thereby forcing down the right end of bell crank **49** to close contact C_7. Consequently, contact C_7 remains closed during the time that the platen **27** remains in its upper case position.

The subscriber at station S_1 next transmits a preassigned combination of code impulses out over line L_1, conductor **20**, line L_2, through station S_2, conductor **21**, conductor **22**, conductor **23**, sending contacts **26**, conductor **10**, receiving magnet R, conductor **8**, and then to grounded battery **24**. This code combination will cause the selecting mechanism **18** of teletypewriter T to select pull bar **16** which will then be momentarily operated by the printing bail **19** to close contact C_6 momentarily. A path for energizing relay R_6 is now closed from grounded battery **41**, through the winding of relay R_6, conductor **6**, through contact C_6, conductor **76**, conductor **42**, through contact C_7, conductor **44**, conductor **36**, and then to ground **37**.

As a result, relay R_6 operates its armatures and locks-up through a path from battery **41**, through the winding of relay R_6, operated left armature, conductor **34**, conductor **7**, through the normally closed contact C, conductor **35**, conductor **36**, and then to ground **37**. At the same time, the right armature of relay R_6 is operated and closes a path from power supply source B_6 at station S_6, over line conductor **45**, operated armature and contact A_6 of relay R_6, line conductor **46**, motor M_6, and then back to power supply source B_6 thereby energizing motor M_6 and starting it into operation. The subscriber at station S_1 then transmits the code signal for selecting pull bar **14** in the teletypewriter T at the central office. When bail **19** elevates pull bar **14**, contact C_4 is momentarily closed and relay R_4 operates its armatures and locks-up in the manner described above.

As soon as the platen assembly **52** moves back to its lower case position, the right end of bell crank **49** will be elevated sufficiently to allow contact C_7 to open. However, this has no effect on the switching relays R_4 and R_6 because these relays are locked up through the normally closed contact C.

Messages now sent from station S_1 will pass through station S_2, through the central office, and then through stations S_6 and S_3. The messages will thus be recorded practically simultaneously on both the teletypewriters T_3 and T_6. They will also be recorded on the teletypewriter T_2 at station S_2 provided the subscriber at this station has his switch A_2 closed. The subscriber at station S_3 can transmit messages to any of the connected stations and these messages will be practically simultaneously recorded by the teletypewriters T_1, T_2 and T_6. Likewise, the subscriber at station S_6 can also send messages which will be recorded on any of the connected teletypewriters.

At the close of communication, any of the subscribers at stations S_1, S_2, S_3, or S_6 may disconnect this conference connection by transmitting the code signal assigned to select pull bar **17** at the central office which will momentarily open the normally closed contact C as was described above. The opening of contact C will open the locking-up circuits of both relays R_4 and R_6 and will cause them to release their armatures. This switches the communication circuit from conductors **8** and **39** to batteries **24** and **25** as was described above. At the same time the energizing circuit of motor M_6 is opened at the contact A_6 of relay R_6. Consequently, motor M_6 stops running. The system is thus restored to its normal condition.

In the event that the subscriber at station S_1 wishes to communicate with the subscriber at station S_4 (which may, for example, be an outlying station near the central office), he will transmit the shift signal to cause the platen **27** to be shifted to its upper case position as

shown in the drawings. The subscriber will then transmit a preassigned upper case code signal which, upon being received by the receiving magnet R, will effect the selection of pull bar 11 by the selecting mechanism 18 of teletypewriter T. The elevation of pull bar 11 by bail 19 will, by means of the ratchet 57 and gear 58, drive the top of type bar 59 downward in an arcuate path. Bar 59 will then hit lever 60 thereby tilting downward the right end of lever 61. This drives the top end of lever 61 to the right and allows spring 62 to pull down the right end of lever 63 into latching engagement with the top end of lever 61. Consequently, the left end of lever 63, which is normally located immediately beneath the printing bail 19, as shown in the drawings, is driven upward to close contact C_1 momentarily.

The closure of contact C_1 closes a path from grounded battery 64, through the winding of relay R_1, along conductor 1, through contact C_1, conductor 65, and then to ground 37. Consequently, relay R_1 operates both its armatures and locks-up through its right armature over a path from grounded battery 64, winding of relay R_1, operated right armature and contact of relay R_1, conductor 34, conductor 7, normally closed contact C, conductor 35, conductor 36, and then to ground 37. It is necessary that relay R_1 be designed to lock-up quickly because, when the reciprocating bail 19 comes down, it strikes the left end of lever 63 thereby knocking the right end of lever 63 up out of latching engagement with the top end of lever 61. This permits contact C_1 to resume its normally open position.

The operation of the two left armatures of relay R_1 opens the normally closed left contacts of relay R_1 and closes a path from conductor 22, over the inner left armature of relay R_1, conductor 66, line L_4, through station S_4, back over line L_4, conductor 67, outer left armature of relay R_1, conductor 23, sending contacts 26, conductor 10, magnet R, conductor 8, and then to grounded battery 24. The subscriber at station S_1 now transmits motor start signals, such as those described in the Daum patent mentioned above, which effect the energization of a relay 43 at station S_4, 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 A_4 thereby closing the energizing circuit of motor M_4 and starting motor M_4 into operation.

Communication may now take place between stations S_1, S_2 and S_4, the signals passing out over line L_1, conductor 20, line L_2, through station S_2, conductor 21, conductor 22, conductor 66, line L_4, through station S_4, conductor 67, conductor 23, and then to grounded battery 24 as was described above. These signals will also pass through the receiving magnet R. It might be mentioned here that this is the case with all connections between the various subscribers' stations; that is, receiving magnet R follows all the signals sent between these stations.

At the close of communication, any of the subscribers at the three connected stations S_1, S_2, and S_4, may send the code signal for selecting pull bar 17 which momentarily opens contact C, as described above, with the consequent opening of the locking-up circuit of relay R_1. Relay R_1 now releases its armatures, thereby opening the circuit leading to station S_4 and connecting conductor 22 directly to conductor 23 without passing through station S_4. Incidentally, the motor at station S_4 may be stopped by any of the subscribers in the manner described in the Daum patent. It might also be stated here that the central office operator can effect any of the disconnections between any of the subscribers' stations because her sending contacts 26 are always connected in series with the communication circuits. This circuit construction can be modified in accordance with the requirements of different systems.

If the subscriber at station S_1 wishes to send a message to be recorded by the teletypewriters T_3 and T_4 at stations S_3 and S_4 (leaving station S_2 out of consideration for the sake of simplicity) he will send the code signals to select pull bars 11 and 14 for closing contacts C_1 and C_4. This will operate relays R_1 and R_4 which will lock-up as described above to close the lines leading to stations S_3 and S_4. Any of the connected subscribers may disconnect this conference connection by sending the code signal to select pull bar 17 for opening contact C. This opens the locking-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 teletypewriters at each of the stations S_3, S_4 and S_6 (again leaving station S_2 out of consideration for the sake of simplification), he will follow the same procedure as that outlined in the preceding paragraph except that he will, in addition, send the code signal to select pull bar 16. The operation of pull bar 16 will close contact C_6 and operate relay R_6 which will lock-up and close the energizing circuit of motor M_6 at station S_6 thereby conditioning station S_6 for the reception and/or transmission of messages. Any of the connected subscribers, or the central office operator, may disconnect this conference connection in the manner described above.

Likewise, the subscriber at station S_1 may connect himself through the central office to the station S_5 by first transmitting the shift signal for shifting platen 27 in teletypewriter T to its upper case position thereby closing contact C_7. The subscriber at station S_1 then transmits the preassigned code combination for selecting pull bar 12. The elevation of pull bar 12 by bail 19 closes contact C_2 thereby closing the energizing path for relay R_2 from grounded battery 68 through the winding of relay R_2, conductor 2, contact C_2, conductor 42, contact C_7, conductor 44, conductor 36, and then to ground 37.

Upon being energized relay R_2 operates its armatures and locks-up from battery 68, through the winding of relay R_2, operated left armature, conductor 34, conductor 7, through the normally closed contact C, conductor 35, conductor 36, and then to ground 37. In operating its two right armatures, relay R_2 switches the line circuit from along conductor 21, over the outer right operated armature of relay R_2, conductor 69, line L_5, teletypewriter T_5 at station S_5, back over line L_5, conductor 70, inner operated right armature of relay R_2, conductor 22, conductor 23, and then through the receiving magnet R, to grounded battery 24. If a conference connection is desired, other stations may be connected into the communication circuit in the manner described above. At the close of communication, any of the connected subscribers may disconnect the connection by effecting the operation, or opening, of the

normally closed contact C at the central office in the manner described above.

In the event that it is desired to connect some other station into the communication circuit, or to perform any other switching function, the platen 27 is first shifted to its upper case position as has been described above thereby closing contact C_7. Then the upper case code combination is transmitted for selecting pull bar 13 which, when operated by bail 19, momentarily closes contact C_3 to enable relay R_3 to operate over a path traced from grounded battery 71 through the winding of relay R_3, conductor 3, contact C_3, conductor 72, conductor 42, through contact C_7, conductor 44, conductor 36, and then to ground 37.

Upon being energized, relay R_3 operates its armatures and locks-up over a path from grounded battery 71, through the winding of relay R_3, operated left armature, conductor 34, conductor 7, through the normally closed contact C, conductor 35, conductor 36, and then to ground 37. In operating its right armatures, relay R_3 will perform the desired switching function. When it is desired to discontinue the switching operation, the code signal is sent for causing pull bar 17 to open the normally closed contact C which opens the locking-up circuit of relay R_3 thereby causing its release and restoring the system to its normal condition.

If it is desired to perform still other switching functions, they may be effected by shifting the platen 27 to its upper case position to again close contact C_7. The upper case code combination for selecting pull bar 15 is then transmitted. The operation of pull bar 15 closes a path from grounded battery 73, through the winding of relay R_5, conductor 5, contact C_5, conductor 74, conductor 42, contact C_7, conductor 44, conductor 36, and then to ground 37 thereby energizing relay R_5. Upon operating its armatures, relay R_5 will lock-up over a path from grounded battery 73, through the winding of relay R_5, operated left armature, conductor 34, conductor 7, through the normally closed contact C, conductor 35, conductor 36, and then to ground 37. In operating its right armatures, relay R_5 will perform the desired switching functions. When it is desired to terminate this switching operation, the signal for effecting the opening of the normally closed contact C is transmitted thereby opening the locking-up circuit of relay R_5 which now releases its armatures and restores the system to its normally unoperated condition.

Whereas the operation of the system has been described principally with reference to connections originating from the dominant station S_1, it is to be understood that these connections may be effected and disconnected in a similar manner by the subscriber at the other dominant station S_2. It is to be further understood that other dominant stations may be added to the system according to the particular requirements of an individual system.

For the purpose of illustration, contact C_1 has been shown to be operable only by an upper case code combination by means of a particular arrangement of the teletypewriter apparatus which obviates the necessity for having contact C_1 in series with the platen contact C_7. If it is desired to have levers 60, 61 and 63 perform some other function, contact C_1 may be mounted above a pull bar and connected in series with the contact C_7 the same as contacts C_2, C_3, C_5, and C_6. The same applies to contact C_4 which has also been shown to be operated in response to a particular upper case code combination due to a particular arrangement of the teletypewriter apparatus. If it is desired to have levers 28, 30 and 32 perform some other function, this may readily be done by placing contact C_4 above a pull bar and connecting it in series with the contact C_7 the same as contacts C_2, C_3, C_5 and C_6. Contact C may be arranged to be operated in response to the reception of either an upper or a lower case code combination. It may be preferable to design the selecting mechanism of teletypewriter T in such a manner that pull bar 17 will only be selected in response to an upper case selection.

Thus, by means of this invention, the various pull bars of the teletypewriter T at the central office may be used for performing their regular printing functions in response to lower case selections. The restriction of the switching functions of the pull bars to upper case selections thereby facilitates regular communication between the stations. Otherwise if the pull bars were not connected in series with the platen contact C_7, whenever the pull bars were operated, they would close their contacts to operate the particular switching relays associated therewith.

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 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 functions that may be required. Likewise, the circuit connections of the various subscribers' stations may be varied as desired to meet the requirements of any particular communication system. In short, the scope of the invention is to be limited only by the claims appended hereto.

What is claimed is:

1. A teletypewriter having pull bars, selecting mechanism for selecting certain of the pull bars, a reciprocating bail for elevating those pull bars selected by the selecting mechanism, switching contacts located in the teletypewriter above the pull bars and adapted to be selectively operated individually by the pull bars when the pull bars are elevated, circuits adapted to be opened and closed by the switching contacts, a control contact connected in series with said circuits whereby the operation of said switching contacts is normally ineffective to perform any useful function, an instrumentality for operating said control open contact for rendering the operation of said contacts effective, and a special contact located in the teletypewriter for discontinuing the effect of the operation of any one of the switching contacts following the operation of the control contact.

2. 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, a control contact located in the teletypewriter at the central office for con-

ditioning said instrumentalities for effective operation, and means operating in response to the operation of the platen assembly for operating said control contact.

3. 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 a control contact for conditioning the switching apparatus for operation 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.

4. 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 for operation by the pull bars, a control contact for controlling the effectiveness of the operation of said contacts, and means for operating said control contact in response to the reception by the teletypewriter at the central office of permutation code signals of a preassigned case.

5. A teletypewriter having shift mechanism, a plurality of pull bars, selecting mechanism for selecting certain of the pull bars, a reciprocating bail for operating those pull bars selected by the selecting mechanism, switching contacts mounted in the teletypewriter in operative relationship with the pull bars, circuits adapted to be opened and closed by the switching contacts, a normally open contact connected in series with said circuits whereby the operation of said contacts is normally ineffective, an instrumentality for closing said normally open contact for rendering the operation of the switching contacts effective, and means for operating said instrumentality in response to the selection and operation of a preassigned pull bar.

6. A teletypewriter system comprising in combination a teletypewriter central office having a teletypewriter with a plurality of pull bars, a plurality of teletypewriter stations connected to the central office by a plurality of telegraph lines for the transmission and reception of signals, normally unoperated switching apparatus at the central office for switching said telegraph lines together, operating means for operating said switching apparatus, and a control contact mounted in the teletypewriter at the central office for rendering said operating means ineffective to perform any useful function.

7. A teletypewriter system including in combination a teletypewriter central office having a teletypewriter with a plurality of pull bars, operating means for operating the pull bars, a plurality of teletypewriter stations, a plurality of telegraph lines connecting the teletypewriter stations to the central office for the transmission and reception of signals, normally unoperated switching apparatus at the central office for switching said telegraph lines together, operating means for operating said switching apparatus, a control contact mounted in the teletypewriter at the central office for rendering said operating means ineffective to perform any useful function, and an instrumentality for closing said control contact in response to the operation of one of the pull bars and for opening said control contact in response to the operation of a different pull bar.

JAMES FRANCIS BEATTIE.
HAROLD JEROME CUNNINGHAM.
WALTER RICHARD ROYCROFT.