May 26, 1942. V. R. KIMBALL ET AL 2,284,322

TELEGRAPH KEYBOARD TRANSMITTER

Filed Jan. 17, 1941

FIG. 1

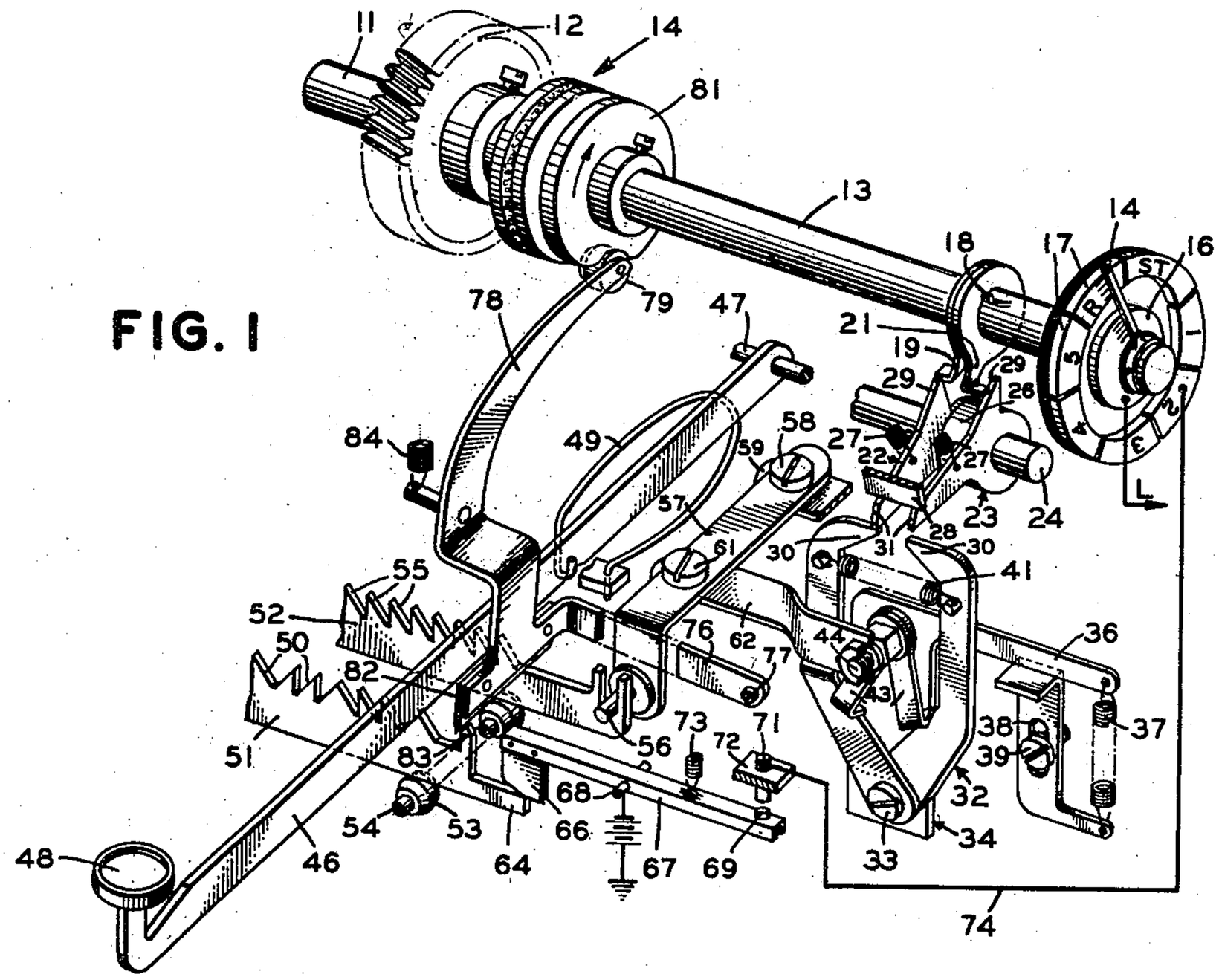


FIG. 3

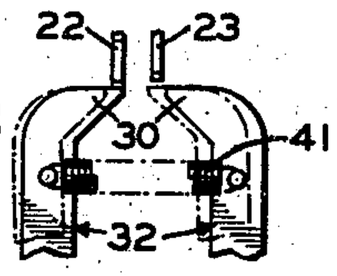


FIG. 2

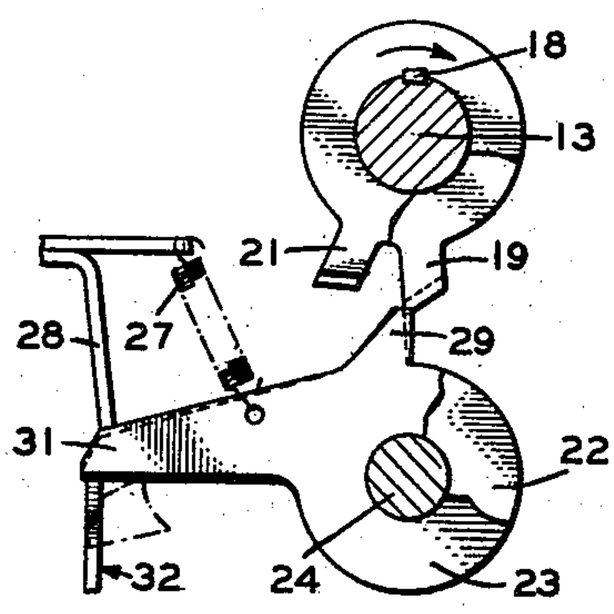


FIG. 4

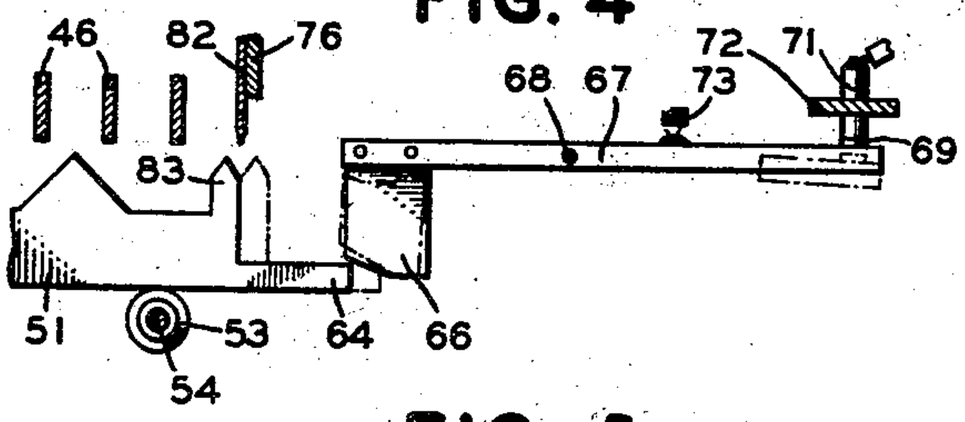
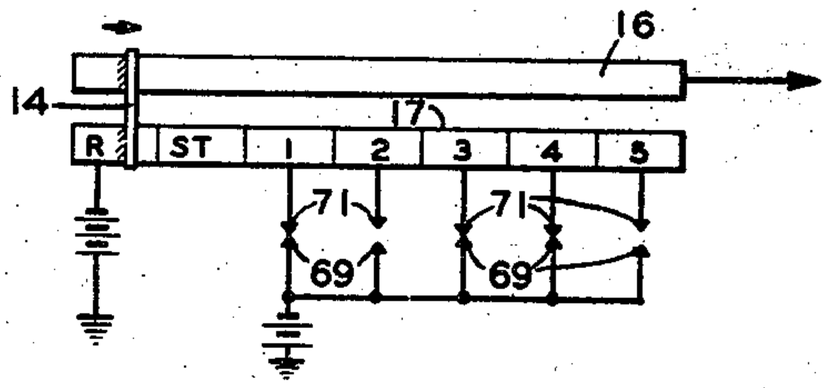


FIG. 5



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TELEGRAPH KEYBOARD TRANSMITTER

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11 Claims. (Cl. 178—53.1)

This invention relates primarily to telegraph transmitters and more particularly to that type of telegraph transmitters known as keyboard transmitters wherein a plurality of key levers are employed, the actuation of which one at a time causes the transmission of representative signal code groups to a sending circuit.

It is one of the objects of the present invention to provide a keyboard transmitter that is positive in operation, capable of operating at a high rate of speed, and comprises a minimum number of elements of simplified design and arrangement.

Another object of the invention is to provide a keyboard transmitter which, because of its simplified design and minimum number of parts employed, is easy to adjust and maintain and relatively cheap to manufacture.

Still another object of the invention is to provide a keyboard transmitter wherein the release of the rotatable distributor member is effected by a light and substantially uniform "touch" on the keys.

A more specific object of the invention resides in the releasing and stopping arrangement for the rotatable distributor member employed in such keyboards.

These and other objects of the invention will be more apparent when taken in conjunction with the following detailed description and the accompanying drawing, in the latter of which:

Fig. 1 is a perspective view showing the principal elements of the keyboard and the manner in which they cooperate with one another;

Fig. 2 is an enlarged vertical sectional view of the stop arms and stop gates for controlling the rotation of the rotatable distributor member;

Figure 3 shows the relative positions of the stop gates employed in conjunction with the rotatable distributor and the manner in which they cooperate with associated blocking members;

Fig. 4 is a view showing some of the key levers in section, together with a permutation bar and a cooperating contact controlling member; and

Fig. 5 is a developed view of the distributor, together with the transmitting contacts for controlling the signal code groups that are transmitted by the distributor.

Referring first to Fig. 1, a shaft 11 which is suitably journaled in journals (not shown) has fixed thereto for rotation therewith a gear 12. The gear 12 is driven from a source of power, such as an electric motor, and is constantly rotated thereby. The electric motor may be of any of the well-known types, such as a synchronous motor or a suitably governed direct current motor. In alignment with the shaft 11 is a transmitting or distributor shaft 13 and through a friction clutch, indicated in general by reference numeral 14, the shaft 13 tends to rotate with the constantly rotating shaft 11 but is normally prevented from doing so by means hereinafter described.

Insulatively supported on the right hand end of the transmitting shaft 13 and adapted to rotate therewith is a brush 14 which cooperates with a solid ring 16 and a segmented ring 17. The rings 16 and 17 are stationary relative to the shaft 13, and as the latter rotates, it being released for rotation as hereinafter described, the brush 14 successively bridges the segments of the segmented ring 17 with the solid ring 16. The solid ring 16 is connected to the line or outgoing circuit L while the segments of the segmented ring 17 are connected to circuit controlling means whereby signal codes are set up thereon. Therefore, as the brush 14 successively bridges the segments of the ring 17 with the solid ring 16, signal codes are transmitted to the line L. As shown in Figs. 1 and 5, the normal stop position of the shaft 13 is such that the brush 14 bridges the segment R or rest segment of the ring 17 with the solid ring 16. The rest segment R of the segmented ring 17 has potential applied thereto and hence with the brush in its normal stop position a closed line condition prevails on the line L, it being assumed that the opposite end of the line L is grounded through an appropriate receiving instrument.

Although, as will be pointed out in detail hereinafter, the keyboard in its preferred embodiment is arranged to transmit so-called start-stop code groups representing the actuated key levers wherein open and closed line conditions are established on the line L, with each code group being preceded by a start impulse of open line condition and followed by a rest impulse of closed line condition, the keyboard could be adapted by obvious arrangements to transmit code groups composed of opposite polarities.

The transmitting shaft 13 has fixed thereto for rotation therewith by means such as a key 18 two stop arms, a normal stop arm 19 and an auxiliary stop arm 21. The stop arms 19 and 21 have at the free ends thereof axially extending projections which cooperate with associated stop gates 22 and 23, respectively. The stop gates 22 and 23, hereinafter referred to as the normal stop gate and the auxiliary stop gate, respectively, are

pivotally mounted independently of each other on a stationary horizontal stud 24 and are spaced a slight distance apart by a spacing collar 26 disposed between the two stop gates. Individual springs 27 attached to the stop gates normally tend to pivot the same in a clockwise direction about the stud 24, as shown in Figs. 1 and 2, and as limited by a stationary stop 28.

The stop gates 22 and 23 have projections 29 extending from the upper sides thereof and each stop gate is so positioned on the stud 24 that it is in alignment with an associated one of the stop arms on the shaft 13. The stop gates 22 and 23 also have leftwardly extending arms 31, which as shown in Figs. 1 and 2, have associated therewith the upper ends of individual blocking members or interponents 32. Fingers 30 on the upper ends of the blocking members 32 cooperate with the leftwardly extending arms 31 of the stop gates 23, to stop the transmitting shaft 13 in a manner hereinafter described in its normal stop position and in an off-normal stop position.

The two blocking members or interponents 32 are pivotally mounted at their lower ends on a common shoulder screw 33 which also has pivotally mounted thereon a pivot plate 34. The pivot plate 34 is pivoted adjacent the lower edge thereof and has extending horizontally from the upper right hand corner an arm 36. A spring 37 attached to the arm 36 normally tends to pivot the pivot plate 34 in a clockwise direction to hold the arm 36 against the upper end of an adjustable stop 38. The adjustable stop 38 is clamped in position by a screw 39 and has the lower end of the spring 37 anchored thereto. A spring 41 is attached to the blocking members 32 and tends to pivot the same in opposite directions to bring the fingers 30 at the upper ends thereof together. However, adjustable arms 43 clamped to the pivot plate 34 by a stud 44 keep the ends of the fingers 30 at the upper ends of the blocking members 32 spaced apart. The left hand arm 43 on the pivot plate 34 is adjusted so that when the arm 36 of the pivot plate engages the stop 38, the inner end of the finger 30 on the left hand blocking member 32 is beneath the left hand stop gate 22.

With the pivot plate 34 in its normal position, as shown in Fig. 1, the normal stop arm 19 engages the left hand stop gate 22 to pivot the same in a counter-clockwise direction and bring the underside of the leftwardly extending arm 31 thereof into engagement with the top of the finger 30 on the left hand blocking member 32. Thus the transmitting shaft 13 is stopped in its normal stop position and the manner in which it is released to normally make one revolution in response to the actuation of a key lever will now be described.

Only one of the key levers 46 is shown in Fig. 1, there being the usual number thereof, which are pivoted at their rear ends on a pivot rod 47 and have key designating caps such as 48 on the front free ends. Individual springs such as 49 hold the key levers 46 elevated in their normal position and return the same to their normal position following the operation thereof. As in the usual arrangement in telegraph keyboards, a set of permutation bars extends transversely beneath the key levers 46 and have formed on the upper edges thereof different arrangements of notches. Only one of the permutation bars 51 is shown in order to simplify the drawings, there normally being as many permutation bars, which in most keyboards is five, as there are variable signalling impulses in each transmitted code group. On the actuation or depression of a key lever 46, the underside thereof cooperates with the sloping surfaces such as 50 of the permutation bars 51 to move the latter longitudinally to the left and right in various combinations to represent the actuated key lever. Depending upon the positions of the permutation bars as moved by the key levers, either one or the other of two line conditions are transmitted in a manner pointed out in following paragraphs. Also extending beneath the key levers 46 is a so-called release bar 52 which has arranged on the upper side thereof a plurality of notches or sloping surfaces 55, one for each key lever. The notches or sloping surfaces 55 are so arranged that the release bar 52 moves toward the left whenever any one of the key levers 46 is actuated. The release bar 52 and the permutation bars 51 are suitably guided in brackets (not shown) and rest upon individual rollers such as 53 on pivot rods such as 54.

The right hand end of the release bar 52 has a vertical bifurcation therein which engages a pin 56 extending from the forward depending end of a lever 57 which is pivotally mounted at the rear end thereof on a shoulder screw 58 extending from a section 59 of the frame. The lever 57 has attached adjacent the center thereof by a shoulder screw 61 the left hand end of a link 62, the right hand end of which is pivotally mounted on a shoulder of the stud 44. When the release bar 52 moves toward the left on the actuation of a key lever 46, it causes through the lever 57 and the link 62 the pivot plate 34 to pivot a slight amount in a counterclockwise direction against the action of the spring 37. This pivoting of the plate 34 causes the finger 30 of the left hand blocking member 32 to move out from beneath the end of the arm 31 on the normal gate stop 22. Thereupon the gate stop 22 is no longer blocked and the stop arm 19 and transmitting shaft 13 are free to rotate through the action of the friction clutch 14. When the stop arm 19 rotates a sufficient amount to clear the projection 29 on the stop gate 22, the attached spring 27 pivots the same in a clockwise direction back into engagement with the stationary stop 28. In this position the projection 29 of the blocking member 32 is again in the path of the normal stop arm 19 to reengage the same near the end of a revolution of the transmitting shaft. Reengagement of the stop arm 19 with the stop gate 22 pivots the latter to bring the end of the arm 31 into engagement with the top of the finger 30 of the left hand blocking member 32 and thus stops further rotation of the transmitting shaft 13 after one rotation thereof. In the above described cycle of operation it was assumed that the key lever effecting the release of the transmitting shaft 13 was promptly released or released some time before the shaft completed a revolution. This allows the spring 37 to return the pivot plate 34 and attached elements to their normal positions, which returning operation includes the return of the finger 30 beneath the stop gate 22. Thus the transmitting shaft 13 is released for one revolution at a time on the actuation of a key lever 46 and is stopped in its normal stopped position following the revolution.

In the preferred embodiment of the invention the arms 43 holding the blocking members 32 apart against the action of the spring 41 are so adjusted that just before the finger 30 of the left hand blocking member moves out from beneath the arm 31 of the stop gate 22, the inner

end of the finger 30 on the right hand blocking member moves beneath its associated stop gate 23. Thus, in normal operation of the keyboard at least one of the fingers 30 is invariably in position to block their associated stop gates 22 or 23. Normally the stop gate 23 does not function to stop the transmitting shaft. It only functions to stop the shaft when an operated key lever is held depressed for an abnormal length of time or for a length of time longer than that necessary to transmit the code group. When a key lever 46 is released before the shaft 13 has made a complete revolution from its normal rest position, the finger 30 on the left hand blocking member is moved by the action of the spring 37 back in its normal position to block the stop gate 22 which in turn stops the shaft 13 after one complete revolution. Just before the shaft 13 completes a revolution the auxiliary stop arm 21 engages the projection 29 on the auxiliary stop gate 23 to pivot the same in a counterclockwise direction against its attached spring 27. If at this time the key lever 46 which cause the release of the transmitting shaft has returned to its unoperated position and allowed the spring 37 to pivot the pivot plate 34 to its normal position, the finger 30 on the right hand gate stop will be out of operative relation with the arm 31 of the auxiliary stop gate 23. Hence, the stop arm 21 is permitted to pivot the stop gate 23 with the end of the arm 31 thereof moving down past the inner end of the right hand blocking member 32 and consequently the stop gate 23 is not effective to stop the shaft 13. As the auxiliary stop arm 21 clears or rotates out of operative relation with the projection 29, the spring 27 returns the auxiliary stop gate to its normal position against the stop 28. The stop arms 19 and 21 are so positioned on the shaft 13 that this unblocked pivoting of the auxiliary stop gate 23 occurs just prior to the engagement of the normal stop arm 19 with its associated stop gate 22. Thus, in normal operation of the keyboard or when a key lever is released prior to the transmission of a code group, the auxiliary stop gate 23 does not function to stop the transmitting shaft 13. However, as will now be described, the auxiliary stop gate 23 stops the transmitting shaft in an off-normal position when a key lever is held depressed or operated for an abnormal length of time.

The positions of the fingers 30 of the blocking members 32 relative to their associated stop gates 22 and 23 are shown in Fig. 3 in the normal positions by the full outline thereof which are their positions with all the key levers 46 unoperated. The dot-dashed outline of the fingers 30 of the blocking members 32 shows the same in their operated positions or the positions they assume when a key lever 46 is operated or held operated. With a key lever 46 held operated, the fingers 30 remain in such positions where the end of the finger 30 on the right hand blocking member 32 is beneath or in the path of the end of the arm 31 on its associated auxiliary stop gate 23. Hence, near the end of a revolution of the transmitting shaft 13, when a key lever is held operated, the stop arm 21 will engage the stop gate 23 to pivot the same a slight amount to bring the end of the projection 31 thereon into engagement with the upper side of its associated finger 30. This stops further rotation of the transmitting shaft in an off-normal position, and the same will remain stopped as long as the blocking members 32 remain in their operated positions as held by an actuated key lever 46. The positions of the stop arms 18 and 21 are such that with the shaft 13 stopped in an off-normal stop position by the auxiliary stop gate 23, the brush 14 contacts the rest segment R, the same as when stopped in its normal position.

With the transmitting shaft 13 stopped in its off-normal stop position the subsequent release of the actuated key lever 46 permits the return of the blocking members to their normal positions and during such movement the finger 30 of the right hand blocking member moves out from beneath its associated stop gate 23 just after the finger 30 on the left hand blocking member moves beneath its associated stop gate 22. The movement of the finger 30 from beneath the stop gate 23 releases the shaft 13 and allows the same to rotate until the normal stop arm 19 engages its associated stop gate to stop the shaft in its normal stop position as at this time finger 30 is beneath the said stop gate 22. Thus, on the actuation of a key lever 46, whether or not it is released immediately or held depressed for an extended length of time, the transmitting shaft 13 will make but one complete revolution. It will be noted that the horizontal arms of the stop gates 22 and 23 are considerably longer than the arms or projections 29, and therefore the pressure of the arms 31 on the fingers 30 of the blocking members 32 is correspondingly less than the pressure of either one of the stop arms 19 or 21 on the projections 29 when the shaft 13 is stopped. Thus the fingers 30 may be more easily withdrawn from blocking engagement with the stop gates than if the fingers blocked the stop arms 19 and 21 directly. Such an arrangement imposes less load on the key levers and permits easier operation or a lighter "touch."

If a key lever is released before the stop arm 19 has cleared or rotated out of operative relation with its associated stop gate 22, the latter may not have had sufficient time to pivot back into engagement with the fixed stop 28 before the end of the finger 30 on the left hand blocking member 32 starts to move or has completely moved back to its unoperated position. Thus the finger 30 may be above and in the path of the arm 31. However, the engagement of the top of the arm 31 with the underside of the finger 30 will not prevent the movement of the arm 31 back into engagement with the fixed stop 28 as the underside of the finger 30 is sloped and such engagement of the two elements cams the blocking member to the left to permit the arm 31 to clear the finger. The strengths of the springs 27 and 41 are such that the spring 41 has little effect in retarding the return of the arm 31 into engagement with the fixed stop 28. Thus, the stop gate 22 is not prevented from returning to its unoperated position where it can again cooperate with the finger 30 to stop the shaft 13 after one revolution thereof.

Each of the permutation bars 51, as shown in Figs. 1 and 4, has extending from the right hand ends thereof projections 64 which are adapted to cooperate with associated pieces of insulating material 66, such as Bakelite, carried on the left hand end of associated individual contact levers 67. The contact levers 67, one for each permutation bar 51, are pivotally supported adjacent their centers on a horizontal pivot rod 68, and each has adjacent its right hand end a contacting element 69. The contacting elements 69

are adapted to cooperate with other fixed contacting elements 71 individually supported in a common insulating support 72. Individual springs 73 attached to the contact levers 67 tend to pivot the same in a counter-clockwise direction to effect engagement of the movable contact elements thereon with associated fixed contact elements 71. The contact levers 67 and the springs 73 are insulatively supported from the rest of the keyboard and have potential applied thereto so that when the contacting elements 69 and 71 engage, potential is applied to the fixed contacting elements 71.

The projections 64 on the permutation bars 51 and the segments 66 on the contact levers 67 are so arranged that with a permutation bar in its left hand position, as shown by the full outline thereof in Fig. 4, the associated contact lever 67 is pivoted by its attached spring 73 to bring the contacting elements 69 and 71 together. The movement of a permutation bar 51 from its left to its right hand position effects engagement of the elements 64 and 66 which in turn causes the associated contact lever 67 to pivot a slight amount in a clockwise direction and disengage the movable contacting element 69 from the fixed contacting element 71. The permutation bars 51 are moved into their left and right hand positions in various combinations depending upon which of the key levers 46 are actuated and they thus in turn condition the sets of contacting elements 69 and 71 in open or closed positions to correspond with the positions of the permutation bars.

The fixed contacting element 71 of each set is connected by an individual conductor, such as 74, Fig. 1, to an associated segment of the segmented ring 17. Hence with potential connected to the movable contacting element 69, the segments of ring 17 corresponding to the permutation bars 51 in their left hand positions will have potential applied thereto, while the segments associated with the permutation bars in their right hand positions are dead or have no potential applied thereto. Thus potential is applied to the segments numbered 1 to 5 of the segmented ring 17 in various combinations to represent an actuated key lever, and as the brush 14 subsequently bridges these segments with the solid ring 16. the brush being released in conjunction with the operation of the key lever, as set forth above, a code group of impulses representative of the actuated key lever is transmitted to the sending circuit or line L. The brush 14 just after leaving its rest position or the rest segment R bridges a start segment ST with the solid ring and as the start segment is dead, an impulse or open line condition is transmitted to the line preceding each code group of impulses as is the usual practice in start-stop signalling. On the completion of a revolution of the brush 14 it contacts the rest segment R to transmit the rest or closed line impulse following each code group.

In order to prevent the actuation of a second key lever until after the transmission of a code group representative of a previously actuated key lever, a locking bail 76 is employed. The locking bail 76 is pivoted at 77, Fig. 1, and has an upwardly extending arm 78 which carries a cam follower 79 in operative relation with the periphery of a cam 81 fixed to the transmitting shaft 13 for rotation therewith. The bail 76 has fixed thereon a knife member 82, wedge-shaped on the lower edge, which is adapted to cooperate with upwardly extending wedge-shaped projections 83 adajacent the right hand ends of the permutation bars 51. With the transmitting shaft 13 stopped in its normal position, the cam 81 permits a spring 84 to elevate the knife section 82 so that the latter is out of operative relation with the projections 83. On the release of the transmitting shaft 13 the cam 81 pivots the bail 76 so that the knife section 82 engages either one side or the other of the projections 83 to prevent re-movement thereof until near the end of the revolution of the transmitting shaft 13 when the cam 81 permits the spring 84 to elevate the bail back to its normal position. In this manner the knife section 82 locks the permutation bars 51 and prevents movement thereof during substantially all rotation of the transmitting shaft 13.

It is obvious, of course, that various modifications of the invention may be made without departing from the spirit or essential attributes thereof, and it is desired therefore that only such limitations be placed thereon as are imposed by the prior art or are specifically set forth in the appended claims.

What is claimed is:

1. In a telegraph keyboard, a rotatable distributor mechanism for distributing code groups of impulses representative of actuated key levers to a sending circuit, a pair of stop arms rotatable with said distributor, individual stop gates associated with each of said stop arms, blocking members for each of said stop gates, the first of said blocking members normally blocking one of said stop gates whereby the latter through the associated stop arm maintains said distributor at rest in a normal position, solely mechanical means controlled by the actuation of said key levers for moving said first blocking member out of blocking relation with said associated stop gate and thereby release said distributor for rotation, and means operative on the unblocking movement of said first blocking member to move said second blocking member into blocking position relative to said associated stop gate whereby on continued actuation of a key lever said second blocking member, associated stop gate and stop arm stop rotation of said distributor following a predetermined amount of rotation thereof.

2. In a telegraph keyboard, a rotatable distributor mechanism for distributing code groups of impulses representative of actuated key levers to a sending circuit, a pair of stop arms rotatable with said distributor, individual stop gates associated with each of said stop arms, an individual blocking member for each of said stop gates, a set of key levers, and solely mechanical means including said blocking members, said stop gates and said stop arms for releasing said distributor member for one cycle of operation and invariably stopping the same following each cycle of operation in conjunction with each operation of a key lever.

3. In a telegraph keyboard transmitter mechanism, a cyclically operable distributor mechanism, a pair of stop arms rotatable with said distributor, an individual stop gate associated with each of said stop arms, an individual blocking member associated with each of said stop gates, means including first ones of said blocking members, stop gates and stop arms for maintaining said distributor at rest in a normal position, a set of key levers, means operative on the actuation of said key levers one at a time for withdrawing said first blocking member out of block-

ing relation with said associated stop gate to thereby release said distributor, means operative on the release of said key lever prior to the completion of a cycle of operation thereof for moving said first blocking member back into blocking relation with said associated stop gate to stop said distributor following a cycle of operation, and means including second ones of said blocking members, stop gates and stop arms for stopping said distributor on the operation of a key lever for an abnormal length of time.

4. In a telegraph keyboard transmitter mechanism, a cyclically operable distributor mechanism, a pair of stop arms rotatable with said distributor, an individual stop gate associated with each of said stop arms, an individual blocking member associated with each of said stop gates, means including first ones of said blocking members, stop gates and stop arms for maintaining said distributor at rest in a normal position, a set of key levers, means controlled by said key levers for moving said blocking members out of and into blocking relation with associated stop gates to release and stop said distributor mechanism respectively, and means for invariably maintaining at least one of said blocking members in blocking relation with an associated stop gate at all times.

5. In a telegraph keyboard transmitter mechanism, a cyclically operable distributor mechanism, a pair of stop arms rotatable with said distributor, an individual stop gate associated with each of said stop arms, an individual blocking member associated with each of said stop gates, means including first ones of said blocking members, stop gates and stop arms for maintaining said distributor at rest in a normal position, a set of key levers, means including said blocking members operative on the actuation of said key levers one at a time for unblocking said first stop gate and blocking said second stop gate, means operative on the release of said key lever prior to the completion of substantially a complete cycle of operation of said distributor for reblocking said first stop gate and unblocking said second stop gate to bring said distributor to rest in normal position, means operative on the continued blocking of said second gate by the continued actuation of said key lever to stop said distributor in an off-normal position, and means operative on a subsequent release of said key lever to unblock said second stop gate and reblock said first stop gate whereupon said distributor rotates from said off-normal position to said normal position.

6. In a telegraph keyboard transmitter, a rotary distributor mechanism, a stop gate for arresting said distributor mechanism, an interponent movable into and out of the path of movement of said stop gate, resilient means, said resilient means biasing said interponent into the path of said stop gate whereby said gate normally arrests said distributor mechanism in a normal position, a set of key levers, solely mechanical means actuated by said key levers to move said interponent out of the path of said stop gate against the action of said resilient means to release said distributor mechanism, means including said resilient means for moving said interponent back into the path of said stop gate on the release of a key lever to stop said distributor mechanism following a cycle of operation thereof, and means for varying the amount of movement of said interponent by said key levers and said resilient means in moving out of and into the path of said stop gate to initiate and arrest, respectively, the rotation of said distributor mechanism.

7. In a telegraph keyboard transmitter, a rotary distributor mechanism, a stop gate for arresting said distributor mechanism, an interponent movable into and out of the path of movement of said stop gate, resilient means, said resilient means biasing said interponent into the path of said stop gate whereby said gate normally arrests said distributor mechanism in a normal position, a set of key levers, solely mechanical means actuated by said key levers to move said interponent out of the path of said stop gate against the action of said resilient means to release said distributor mechanism, means including said resilient means for moving said interponent back into the path of said stop gate on the release of a key lever to stop said distributor mechanism following a cycle of operation thereof, and means for preventing said interponent from blocking the movement of said stop gate in returning to a normal position when said interponent returns to a normal position prior to the return movement of said stop gate.

8. In a telegraph keyboard transmitter, a rotary distributor mechanism, a stop gate for arresting said distributor mechanism, an interponent movable into and out of the path of movement of said stop gate, resilient means, said resilient means biasing said interponent into the path of said stop gate whereby said gate normally arrests said distributor mechanism in a normal position, a set of key levers, solely mechanical means actuated by said key levers to move said interponent out of the path of said stop gate against the action of said resilient means to release said distributor mechanism, means including said resilient means for moving said interponent back into the path of said stop gate on the release of a key lever to stop said distributor mechanism following a cycle of operation thereof, a sloping surface on said interponent opposite the stop gate blocking surface, and means including said sloping surface for camming said interponent out of the path of movement of said stop gate during the return movement of said stop gate when said interponent returns to said normal position prior to the return movement of said stop gate.

9. In a telegraph keyboard transmitter, a rotatable distributor mechanism, a pair of stop gates, a pair of interponents, one for each stop gate, movable into and out of blocking relation therewith to arrest and release said distributor mechanism, a resilient means, said resilient means normally biasing the first of said interponents into blocking relation with its associated stop gate to arrest said distributor mechanism in a normal position and the second of said interponents out of blocking relation with its associated stop gate, a set of key levers, means operated by said key levers against the action of said resilient means for withdrawing the first of said interponents out of blocking relation with its associated stop gate to release said distributor mechanism and concomitantly move the second of said interponents into blocking relation with its associated stop gate whereby said second stop gate is effective to stop said distributor following a predetermined amount of rotation thereof, and means operative on the release of an actuated key lever prior to the completion of said predetermined amount of rotation of said distributor to withdraw said second interponent from blocking rela-

tion with its associated stop gate and concomitantly move said first interponent into blocking relation with said first stop gate to stop said distributor in its normal position following a cycle of operation thereof.

10. In a telegraph keyboard transmitter, a rotatable distributor mechanism, a pair of stop gates, a pair of interponents, one for each stop gate, movable into and out of blocking relation therewith to arrest and release said distributor mechanism, a resilient means, said resilient means normally biasing the first of said interponents into blocking relation with its associated stop gate to arrest said distributor mechanism in a normal position and the second of said interponents out of blocking relation with its associated stop gate, a set of key levers, means operated by said key levers against the action of said resilient means for withdrawing the first of said interponents out of blocking relation with its associated stop gate to release said distributor mechanism and concomitantly move the second of said interponents into blocking relation with its associated stop gate whereby said second stop gate is effective to stop said distributor following a predetermined amount of rotation thereof, means operative on the release of an actuated key lever following the completion of said predetermined amount of rotation of said distributor with the same stopped by said second stop gate in an off-normal position to withdraw said second interponent from blocking relation with said second stop gate and concomitantly move said first interponent into blocking relation with said first stop gate whereupon said distributor rotates from said off-normal position to said normal position to complete a cycle of operation thereof.

11. In a telegraph keyboard transmitter, a rotatable distributor mechanism, a pair of stop gates, a pair of interponents, one for each stop gate, movable into and out of blocking relation therewith to arrest and release said distributor mechanism, a resilient means, said resilient means normally biasing the first of said interponents into blocking relation with its associated stop gate to arrest said distributor mechanism in a normal position and the second of said interponents out of blocking relation with its associated stop gate, a set of key levers, means operated by said key levers against the action of said resilient means for withdrawing the first of said interponents out of blocking relation with its associated stop gate to release said distributor mechanism and concomitantly move the second of said interponents into blocking relation with its associated stop gate whereby said second stop gate is effective to stop said distributor following a predetermined amount of rotation thereof, means operative on the release of an actuated key lever prior to the completion of said predetermined amount of rotation of said distributor to withdraw said second interponent from blocking relation with its associated stop gate and concomitantly move said first interponent into blocking relation with said first stop gate to stop said distributor in its normal position following a cycle of operation thereof, and means for varying the distance said interponents move from normal to operated positions in moving out of and into blocking relation with associated stop gates.

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