Feb. 10, 1942. G. F. MILLER ET AL 2,272,420

TELEGRAPH KEYBOARD APPARATUS

Filed July 30, 1940

FIG. 1

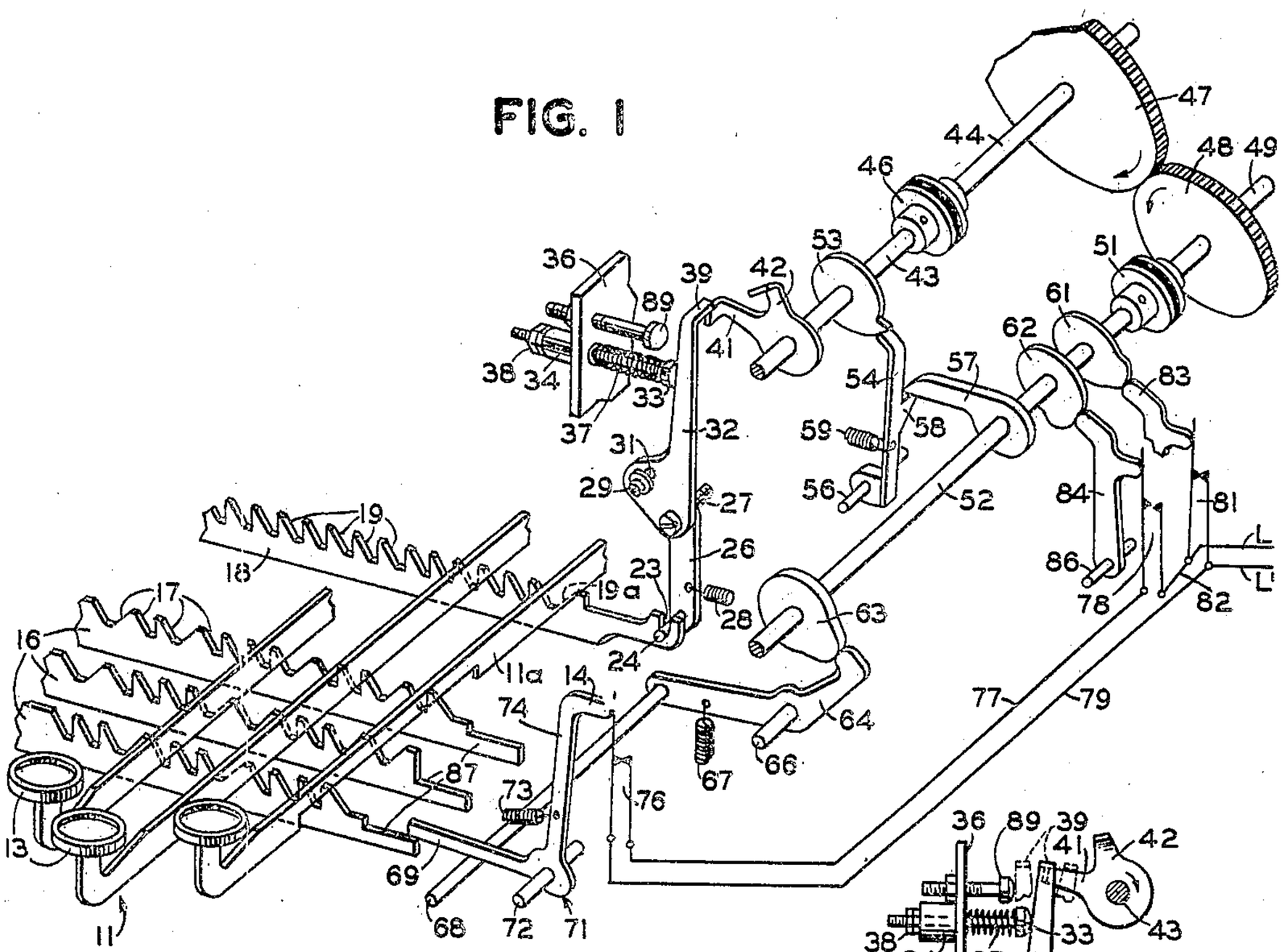


FIG. 2

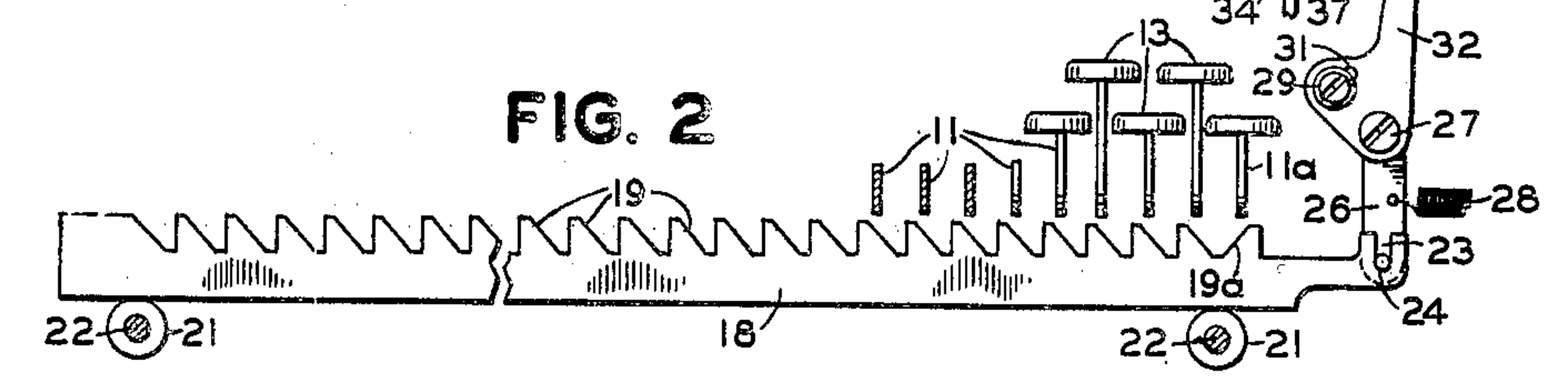


FIG. 3

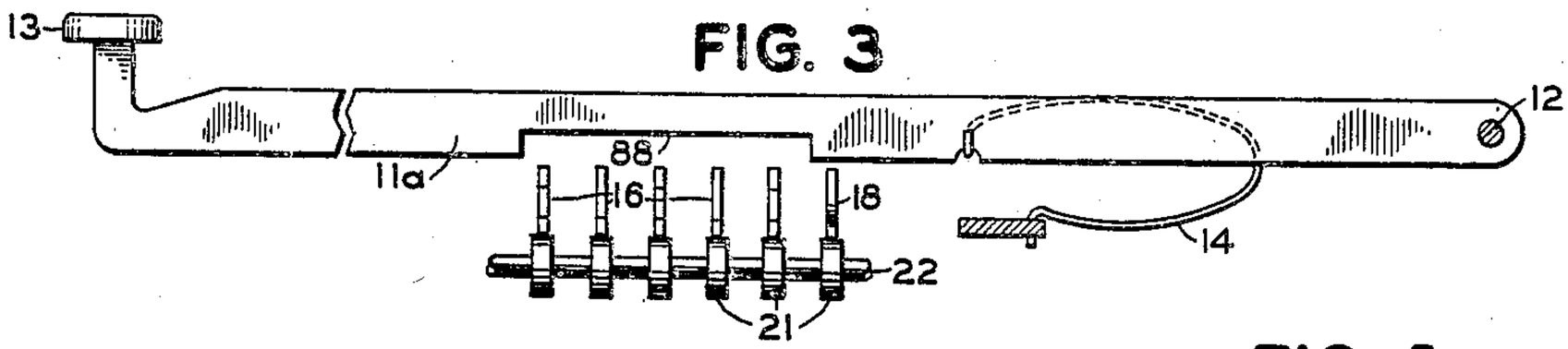


FIG. 4

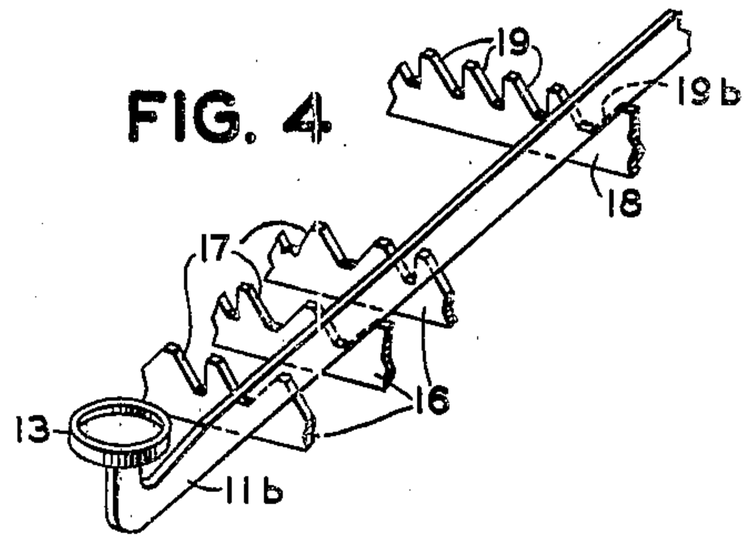
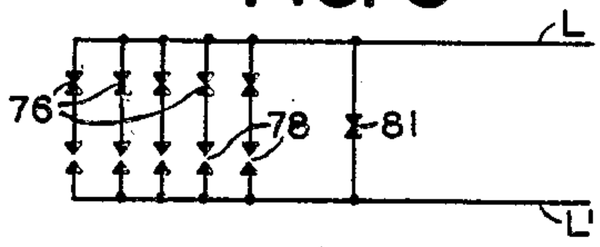


FIG. 5



INVENTORS
G. F. MILLER
F. G. NUXOLL
S. W. ROTHERMEL

BY M. R. Marsh
ATTORNEY

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2,272,420

TELEGRAPH KEYBOARD APPARATUS

George F. Miller, Union, N. J., and Fred G. Nuxoll, Queens Village, and Samuel W. Rothermel, Lynbrook, N. Y., assignors to The Western Union Telegraph Company, New York, N. Y., a corporation of New York

Application July 30, 1940, Serial No. 348,514

11 Claims. (Cl. 178—79)

The present invention relates primarily to telegraph keyboard apparatus and more particularly to such apparatus wherein the actuation of keylevers effects the transmission of representative code groups of impulses.

Telegraph keyboards of the above type usually operate at a relatively high rate of speed and obviously a comparatively short interval of time is required to transmit a representative code group of impulses on the actuation of a keylever. With a keyboard capable of operating at a high rate of speed, the keylevers may be held operated or depressed for a longer interval of time than that required to transmit the representative code group of impulses and, accordingly, most present-day keyboards are equipped with a so-called non-repeat device. The non-repeat device prevents the repetition of the transmission of a code group regardless of how long a keylever is actuated. Thus, when repeat characters are desired, the actuated keylever has to be released and reactuated, in timed relation with an associated distributing mechanism, the necessary number of times to transmit the desired number of code groups. The above arrangement of employing a non-repeat device works satisfactorily in some services, whereas in others such as, for example, in a service where a keyboard is employed to control the transmission to a receiver employed in tabulating, the non-repeat device sometimes is a hindrance to speed of operation as the keylevers cannot be operated in exact synchronism with the distributor mechanism and lost time occurs between cycles of operation thereof.

Accordingly, it is one of the objects of the present invention to provide a device for selectively disabling the non-repeat device on the actuation of predetermined of the keylevers while maintaining the same operative on the actuation of others of the keylevers.

It is a more specific object of the invention to provide a device for temporarily disabling the non-repeat device following the operation of any of the keylevers to enable successive representative code groups to be transmitted without the necessity of repeatedly actuating the keylever.

A still further object of the invention resides in the minimum number of parts required to accomplish the above objects and the ease with which it is attached to operate in conjunction with well-known types of keyboards.

These and further objects of the invention will be apparent hereinafter in the following detailed description thereof taken in conjunction with the accompanying drawing.

The elements of the invention are hereinafter described and shown in the drawing as cooperating with elements of a keyboard such as that disclosed in a copending application of P. A. Noxon et al., Serial No. 159,124, filed August 14, 1937, and although the invention is thus shown and described, it will be obvious that the application of the principles thereof are not limited to this particular keyboard but may be applied to various others.

In the drawing:

Fig. 1 is a perspective view showing the manner in which the elements of the invention cooperate with certain of the elements of a keyboard of the type operating as disclosed in the above-mentioned copending application;

Fig. 2 is a vertical sectional view showing some of the elements of Fig. 1;

Fig. 3 is a vertical sectional view of a keylever and cooperating elements;

Fig. 4 is a perspective view showing a modification of the invention; and

Fig. 5 is a circuit diagram of the keyboard controlled contacts and line conductors.

In general, keyboards of the above-mentioned type comprise a set of keylevers which cooperate directly with a set of longitudinally movable permutation bars to position the latter into combinations or permuted settings of one or the other of two positions in accordance with the actuated keylevers. The settings of the permutation bars in one or the other of their two positions are transferred into representative groups of electrical impulses and distributed to a line circuit by various types of current controlling mechanisms and distributors. In the above-mentioned keyboard, the current controlling mechanism includes two sets of contacts, a primary set which is positioned simultaneously in accordance with the settings of the permutation bars, and a secondary or transmitting set sequentially actuated to distribute or transmit to the line a group of impulses representative of the settings of the primary set. The transmitting set of contacts also includes a rest contact set which is operated to close the line circuit in the rest condition of the distributor. The rest contact set is opened for a predetermined length of time prior to the actuation of the transmitting contacts to transmit the usual open line start impulse as is the general practice in start-stop or simplex type of keyboards. The distributor mechanism for operating the transmit-

ting contacts comprises a frictionally driven shaft or sleeve which is normally released for one revolution at a time in conjunction with the actuation of each keylever. The distributing member, or the transmitting shaft as it is sometimes called, is controlled by a pilot shaft. The pilot shaft is normally released for one revolution in conjunction with the operation of a keylever and on rotation thereof releases the transmitting shaft. The pilot shaft is arranged to rotate at a slightly slower speed than the transmitting shaft and this insures that the transmitting shaft will be stopped for at least a predetermined length of time in conjunction with each revolution thereof to transmit the rest impulse, the rest impulse being transmitted by the closing of the rest contact set following the transmission of each code group.

The above elements are generally well known, and the operation thereof fully given in the above-mentioned copending application, and accordingly the description of the operation thereof will hereinafter be more or less limited to the extent to which such elements cooperate with the elements of the invention.

Referring first to Fig. 1, a set of keylevers, referred to generally by reference numeral **11**, are pivotally mounted on a common pivot rod **12**, Fig. 3, and have adjacent the free ends thereof key designating caps **13**. The keylevers **11** are held in their normal elevated position by individual hairpin springs **14**. Located beneath the keylevers **11** and extending transversely thereof are a set of differently notched permutation bars **16**. The number of permutation bars **16** usually corresponds to the number of variable signaling impulses in the code groups, this number usually being five, although only three such permutation bars are shown in Fig. 1. When a keylever is depressed, the under side thereof engages the sloping surfaces, such as **17**, of the permutation bars **16** to cam the latter either to the right or left in the direction of the length to set the same in a combination representative of the actuated keylever. As the permutation bars **16** all have different arrangements of the sloping surfaces **17**, each keylever cooperates with different surfaces to individually position the permutation bars into representative settings.

Parallel with the permutation bars **16** is a release bar **18**, it having an individual notch or a sloping surface in operative relation with each one of the keylevers. The function of the release bar **18** is to control the rotation of the distributor through mechanisms, hereinafter described in detail, on the operation of any one of the keylevers. In the preferred embodiment of the invention the sloping surfaces **19** on the release bar **18** associated with all but one of the keylevers slope upwardly toward the left, as shown in Figs. 1 and 2, so that the release bar is cammed toward the left on the actuation of all but one of the keylevers. The purpose of sloping one of the surfaces, such as **19***a*, of the release bar **18** upwardly toward the right is to cam the release bar toward the right on the actuation of the predetermined one of the keylevers, such as **11***a*, Figs. 1 and 2, as will hereinafter be pointed out. In order to permit free movement of the permutation bars **16** and the release bar **18** and not require an unduly heavy pressure on the keylevers **11** to position the bars, they are mounted on rollers, such as **21**, Figs. 2 and 3. The rollers **21** are pivotally mounted on rods **22** located adjacent each end of the permutation bars and release bar with suitable brackets (not shown) guiding the bars in their longitudinal movement.

The right hand end of the release bar **18** has a vertical bifurcation or slot **23** therein which engages a pin **24** carried in the lower end of a bell crank **26** pivotally mounted on a shoulder screw **27**. A spring **28** attached to the bell crank **26** normally tends to pivot the same in a counter-clockwise direction to return the release bar **18** and the bell crank **26** to their normal positions following the operation thereof on the actuation of all but the predetermined one of the keylevers **11**. The return of the release bar **18** to its normal position on the release of the actuated ones of the keylevers **11** distinguishes from the operation of the permutation bars **16** which remain in either one or the other of their two operated positions until changed by the actuation of a keylever cooperating with a sloping surface, such as **17**, to move the bars into their other position.

Adjustably attached to the upper arm of the bell crank **26** by a screw **29** extending through a slot **31** is a stop **32**, the left hand side of which normally engages the head of a plunger **33**. The plunger **33** is guided in a sleeve member **34** supported from a section **36** forming a part of the frame structure. A compression spring **37** coiled about the plunger rod normally holds the same toward the right with adjusting nuts **38** on the left hand end against the left hand end of sleeve **34**. The strength of the compression spring **37** is such that it overcomes the effect of spring **28** in tending to rotate the bell crank **26** and stop **32** in a counterclockwise direction.

The upper end **39** of the stop **32** is bent horizontally and normally is in engagement with the bent end of a stop arm **41**. The stop arm **41**, together with an auxiliary or second stop arm **42** are attached to the pilot shaft **43** for rotation therewith. Engagement of the end **39** of the stop **32** with the stop arm **41** holds the pilot shaft **43** at rest in its normal rest position, the pilot shaft **43** normally tending to rotate from power communicated thereto from a shaft **44** through a friction clutch **46**. The shaft **44** is constantly rotating at a substantially constant speed with power applied thereto from a suitable source, such as an electric motor. Fixed to the shaft **44** is a gear **47** which meshes with and drives another gear **48** fixed for rotation therewith to a shaft **49**. A friction clutch **51** on the shaft **49** communicates power therefrom to the transmitting shaft **52**, the transmitting shaft normally being held at rest in its normal rest position by means hereinafter described.

On the operation of any one of the keylevers **11**, with the exception of the special keylever **11***a*, the release bar **18** is moved toward the left and by means of the bifurcation **23** in the right hand end thereof engaging the pin **24** in the bell crank **26** pivots the said bell crank together with the stop **32** a slight amount in a clockwise direction against the action of the attached spring **28**. This pivoting of the stop **32** moves the end **39** thereof radially of the stop arm **41** to disengage the bent end **39** with the bent end of the stop arm **41**. Thereupon the pilot shaft **43** is free to rotate through the action of the friction clutch **46**. As the bent end of the stop **32** moves out of engagement with the end of the stop arm **41** it assumes a position in the path of the bent end of the stop arm **42**. Accordingly, if the stop **32** is maintained in such an operated position by the continued actuation of one of the key-

levers, the stop arm 42 will engage the bent end 39 to stop further rotation of the pilot shaft 43 after the same has completed the major portion of a revolution. With the pilot shaft 43 thus stopped in an off-normal position by the continued actuation of a keylever, the subsequent release thereof allows the spring 28 to return the stop 32 and the associated elements to their normal position where the bent end 39 of the stop is again in the path of the stop arm 41. The movement of the bent end 39 of the stop 32 from out of engagement with the bent end of the stop arm 42 releases the pilot shaft 43 and allows the same to rotate from its off-normal position until the stop arm 41 engages the bent end 39 to stop the pilot shaft 43 in its normal position. Thus, in connection with the operation and release of any one of the keylevers 11, with the exception of the keylever 11*a*, the operation of which will hereinafter be described, the pilot shaft 43 is released for one and only one revolution at a time regardless of the length of time the keylever is held operated.

The major function of the pilot shaft 43 is to release or control the rotation of the transmitting shaft 52 and the elements entering into the control of the transmitting shaft 52 include a cam 53 on the pilot shaft 43, a spring biased trip lever 54 pivotally mounted at 56, and a stop arm 57 fixed to the transmitting shaft 52. Normally the trip lever 54 is held in its right hand position by the cam 53 and in such a position a projection 58 thereon is beneath or in the path of the end of the stop arm 57 on the transmitting shaft 52. Shortly after the pilot shaft 43 is released for rotation as hereinbefore described, the cam 53 thereon permits a spring 59 attached to the trip lever 54 to pivot the latter a slight amount in a counter-clockwise direction. This pivoting of the trip lever 54 withdraws the projection 58 out of engagement with the stop arm 57 whereupon the transmitting shaft 52 is free to rotate through the action of the friction clutch 51. The contour of the cam 53 is such that the trip lever 54 is returned to its normal position after a fractional part of a revolution of the cam 53 to replace the projection 58 in the path of the end of the stop arm 57. As the return of the trip lever 54 to its normal position occurs before the transmitting shaft has had sufficient time to complete a revolution, it insures that the transmitting shaft will be stopped at the end of every revolution. The transmitting shaft 52 is arranged to rotate at a slightly higher speed of rotation than the pilot shaft 43, and therefore the transmitting shaft will have completed a revolution and be stopped in its normal rest position before the pilot shaft 43 has completed a revolution. In this manner the transmitting shaft 52 is sure to be stopped for at least a predetermined length of time regardless of how long the pilot shaft 43 may be stopped.

Located on the transmitting shaft 52 for rotation therewith is a rest impulse contact controlling cam 61, a set of five transmitting contact controlling cams, only one of which 62 is shown, and an operating cam 63. The operating cam 63 has associated therewith one arm of a bell crank 64 pivotally mounted at 66 with an attached spring 67. Extending from one arm of the bell crank 64 is a rod 68 which passes beneath horizontally extending arms 69 of bell cranks such as 71. There are five bell cranks such as 71 and all are pivoted on a common pivot rod 72 with associated individual springs 73 tending to pivot the same in a counter-clockwise direction to hold arms 69 in engagement with the rod 68 in the normal position of the latter. Only one of the bell cranks 71 together with its associated elements are shown for the sake of simplicity of the drawing, the operation of the others of the bell cranks 71 being similar to the operation of the one shown and presently described. Associated with the upwardly extending arm 74 of the bell crank 71 is a contact set 76 and with the bell crank 71 held in its normal position by the rod 68, the contact set 76 is held in a closed condition. One of the terminals of the contact set 76 is connected by a conductor 77 to one of the terminals of an associated transmitting contact set such as 78. The other terminal of the contact set 76 is connected by a conductor 79 to one of the terminals of a rest impulse transmitting contact set 81. The other terminal of the rest impulse transmitting contact set 81 and of the transmitting contact set 78 are connected together by a conductor 82. The two line conductors L, L′ are also connected to the springs of the rest impulse transmitting contact set 81. Fig. 5 shows the manner in which other contact sets similar to the contact sets 76 and 78 are connected in relation to one another and to the rest impulse transmitting contact set 81. Associated with one of the springs of the rest impulse transmitting set 81 is an operating lever 83 in operative relation with the cam 61 while a second operating lever 84 is in operative relation with the cam 62 and the transmitting contact set 78. The levers 83 and 84 are pivotally mounted on a pivot rod 86 and the left hand springs of the contact sets 78 and 81 hold the ends of the levers in engagement with their associated cams.

In the normal stopped position of the transmitting shaft 52, the cam 61 operates the lever 83 to hold the rest impulse contact set 81 in a closed condition while the transmitting contact sets such as 78 are in an open condition. After the transmitting shaft 52 has rotated a small fraction of a revolution from its normal rest position, the cam 63 permits the spring 67 to rock the bell crank 64 a slight amount in a counter-clockwise direction. This pivoting of the bell crank 64 lowers the rod 68 and allows the bell cranks, such as 71, to pivot in a counter-clockwise direction. Associated with the leftwardly extending arms 69 of the bell cranks 71 are projections, such as 87, on the right hand ends of the permutation bars 16. With a permutation bar 16 in its left hand position the projection 87 thereon is out of the path of movement of the left hand end of the arm 69 of an associated bell crank 71 whereas with a permutation bar in its right hand position the projection 87 thereon is beneath and in the path of the associated arm 69. The permutation bars 16 are positioned before the downward movement of the rod 68 occurs and hence the bell cranks 71 associated with permutation bars 16 in their right hand positions are allowed to pivot only a slight amount or until the ends of the arms 69 engage the projections 87, whereas the bell crank 71 associated with permutation bars that happen to be in their left hand position are permitted to pivot to the full extent allowed by the rod 68. The pivoting of the bell cranks 71 to bring the arms 69 into engagement with the projections 87 on permutation bars 16 in their right hand position is only a slight amount and not sufficient to permit opening of associated contact sets such as 76. However, when a bell crank 71 pivots to the full

extent allowed by the movement of the rod 68 it permits its associated contacts such as 76 to assume an open condition. Thus the contact sets 76 which constitute the hereinbefore mentioned primary contacts are positioned in opened and closed conditions in accordance with the left and right hand positions respectively of associated permutation bars 16.

In addition to operating the bell crank 64, the rotation of the transmitting shaft 52 through the cam 61 allows the lever 83 to pivot a slight amount in a counter-clockwise direction to invariably open the rest impulse transmitting contact set 81 at the beginning of each revolution of the transmitting shaft. The opening of the contact set 81 breaks the normal closed circuit between the line conductors L and L', and transmits an open line or start impulse as is the usual practice in start-stop telegraph systems. A predetermined length of time after the opening of the contact set 81, approximately the time required for the shaft 52 to make one-seventh of a revolution, cams, such as 62, on the transmitting shaft 52 operate associated levers 84 in a counter-clockwise direction to sequentially close associated transmitting contact sets, such as 78. The shape of the cams, such as 62, is such that each contact set, such as 78, is maintained in a closed condition during approximately one-seventh of a revolution of the transmitting shaft 52, one contact set closing just before the preceding set opens. Each transmitting contact set 78 has an associated primary contact set 76, as shown in Fig. 5, and the sequential closing of the transmitting contact sets 78 sequentially transmits to the lines L and L' code groups of opened and closed line conditions or impulses in accordance with the setting of the primary contact sets 76. Near the end of a revolution of the transmitting shaft 52, the cam 61 operates the lever 83 to close the contact set 81 to transmit the rest impulse of closed line condition following each code group of impulses. The rest impulse continues to be transmitted until the transmitting shaft 52 is again released, as hereinbefore described in connection with another operation of the trip lever 54. The cam 63 operates the bell crank 64 back into its normal position near the end of a revolution of the transmitting shaft 52 which in turn through the rod 68 rocks the bell cranks 71 back into their normal position with the ends of the arms 69 thereof above and out of horizontal alignment with the projections 87 on the right hand ends of the permutation bars 16. Thus, in conjunction with the operation of any one of the keylevers 11, with the exception of the keylever 11*a*, the permutation bars 16 are positioned in a representative setting and the shafts 43 and 52 released for one revolution to transmit a code group of impulses representative of the actuated keylever.

In accordance with the invention, the release bar 18 has one surface thereon, such as 19*a*, which slopes upwardly toward the right and the same is arranged to cooperate with the special keylever 11*a*. The special keylever 11*a* has a cut-away section or notch 88 therein, Fig. 3, over the permutation bars 16 in order that on the depression of the keylever 11*a* the positions of the permutation bars 16 are not changed. As the surface 19*a* on the release bar 18 in operative relation with the keylever 11*a* slopes upwardly toward the right the operation or depression of the keylever 11*a* cams the release bar toward the right in contrast to the camming thereof toward the left on the actuation of any of the other keylevers 11. The movement of the release bar toward the right pivots the bell crank 26 and stop 32 in a counter-clockwise direction about the shoulder screw 27. This movement of the stop 32 pushes the plunger 33 toward the left against the action of the compression spring 37 and simultaneously withdraws the bent end 39 of the stop 32 from out of engagement with the bent end of the stop arm 41 on the pilot shaft 43. A limiting screw 89 in the plate 36 limits the counter-clockwise pivoting of the stop 32.

The disengagement of the end 39 of the stop 32 from the stop arm 41 releases the pilot shaft for rotation and with the end 39 moved to the left out of engagement with the stop arm 41 and retained in this position by the continued actuation of the keylever 11*a*, it is no longer effective to engage either of the stop arms 41 or 42. Hence the pilot shaft 43 will continue to rotate as long as the keylever 11*a* is held actuated. Each revolution of the pilot shaft 43 releases the transmitting shaft 52 for one revolution, as above described, the transmitting shaft being stopped after each revolution to transmit the rest impulse as it rotates at a slightly higher speed of rotation than the pilot shaft 43. Accordingly whenever it is desired to repeat a character one or more times, the keylever representing this character is depressed, which causes the transmission of one representative code group in the usual manner as described above. Following the operation of the first keylever 11, the special keylever 11*a* is actuated to release the pilot shaft 43 for a variable number of revolutions or until the desired number of code groups have been transmitted. The number of revolutions of the pilot and transmitting shafts 43 and 52 depends upon the length of time the keylever 11*a* is held actuated as the return of the keylever 11*a* to its normal position effects the return of the stop 32 to its normal position to stop rotation of the pilot shaft 43 at the completion of the current revolution thereof. As the positions of the permutation bars 16 are not changed on the operation of the keylever 11*a*, a code group of impulses representing the previously actuated keylever is transmitted on each revolution of the pilot and transmitting shafts 43 and 52, respectively, when initiated into rotation by the keylever 11*a*. Thus, all that is necessary when it is desired to repeat a character is to operate a character key and release the same, then operate the special keylever 11*a* and hold the same operated until the desired number of code combinations representative of the previously actuated keylever has been transmitted. The single operation of the keylever 11*a* is much easier than repeated actuations of one of the other keylevers and, in addition, saves considerable line time in that with the pilot shaft 43 rotating freely the transmitting shaft 52 is stopped between revolutions only the predetermined minimum time to transmit the rest impulse. This is an advantage over releasing the pilot and transmitting shafts once in conjunction with each operation of a keylever, as it is practically impossible to operate the keylevers 11 in exact synchronism with the rotation of the pilot shaft 43. Hence the pilot shaft 43 is likely to be stopped for variable periods of time between revolutions thereof when released by repeated operations of a keylever 11.

In the modification of the invention as shown in Fig. 4, a special keylever 11*b* is employed which is similar in construction to the regular

keylevers 11. The special keylever 11*b* is not cut away or recessed in the section thereof in operative relation with the permutation bars 16, as in the special keylever 11*a*, and accordingly the operation of the keylever 11*b* selectively positions the permutation bars 16. In addition to selectively positioning the permutation bars 16 the keylever 11*b* on operation thereof cooperates with a surface, such as 19*b*, on the release bar 18 sloping upwardly toward the right to cam the release bar to the right. Thus the keylever 11*b* on operation thereof selectively positions the permutation bars 16 and operates the release bar 18 to release the pilot shaft 43 for any number of revolutions and differs from an operation of the keylever 11*a* wherein the selective positions of the permutation bar 16 are not changed. Accordingly, the operation of the keylever 11*b* causes the transmission of a succession of code combinations representative of the keylever 11*b* and continues to effect transmission thereof as long as the said keylever is held actuated.

In operation of the keyboard in accordance with the modification, the code group assigned to the keylever 11*b* is the one that is repeated the most number of times, such as the word space combination. With such an arrangement the operator of the keyboard merely has to actuate the keylever 11*b* and hold the same depressed until the desired number of word space signals or the desired number of code combinations assigned to or representative of the special keylever, such as 11*b*, have been transmitted. Obviously, there may be more than one special keylever, such as 11*b*, in the keyboard which selectively positions the permutation bars 16 in addition to releasing the pilot shaft for continuous rotation where there is more than one code group frequently repeated. To release the pilot shaft 43 for more than one revolution at a time in conjunction with the operation of other keylevers, a change in the associated notches or surfaces of the release bar 18 is all that is required in order to cam the release bar toward the right instead of to the left, as is the usual arrangement.

From the above it is evident that in the first modification any of the code groups assigned to the keylevers 11 may be repeated by following the operation thereof by an operation of the special keylever 11*a*, the code group representative of the first keylever being repeated as long as the special keylever is held depressed. In the modification only the code groups assigned to predetermined keylevers, such as 11*b*, are repeated on the actuation of the same, the others of the keylevers 11 operating to transmit only a single code group on actuation thereof.

It is obvious, of course, that various other modifications of the invention shown and described herein 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 keyboard transmitting mechanism including a set of keylevers operative to transmit a single code group of impulses on the actuation, one at a time, of all but a predetermined one thereof, means operative on a single actuation of said predetermined keylever to transmit one or more code groups and means for transmitting on the actuation of said predetermined keylever one or more code groups corresponding to the code group transmitted on the actuation of the previously actuated keylever, said code groups when more than one being transmitted on the continued actuation of said predetermined keylever.

2. In a keyboard transmitting mechanism including a set of keylevers operative to transmit a single code group of impulses on the depression of all but a predetermined one thereof, one at a time, regardless of the length of time held depressed, means operative on the depression of said predetermined keylever to initiate the transmission of one or more successive code groups representative of the previously actuated keylever, means to continue the transmission of said one or more successive code groups on the continued depression of said predetermined keylever and means controlled by the release of said predetermined keylever to terminate the transmission of said one or more successive code groups.

3. In a transmitting keyboard mechanism including a set of keylevers and adapted to transmit a single representative code group on the actuation, one at a time, of all but a predetermined one thereof regardless of the length of time actuated, means including said predetermined keylever and a single actuation thereof to transmit a succession of one or more similar code groups representative of others of said keylevers and means controlled by the length of time that said predetermined keylever is held actuated for determining the number of code groups in said succession.

4. In a transmitting keyboard mechanism including a set of keylevers and a distributor mechanism, said distributor mechanism being released for one cycle of operation at a time to transmit representative code groups of signals on the actuation, one at a time, of all but a predetermined one of said keylevers regardless of the length of time all but the predetermined one of said keylevers are held actuated, means controlled by said predetermined keylever for releasing said distributor for one or more successive cycles of operation and means controlled by the keylever actuated previously to the actuation of said predetermined keylever for determining the character of the succession of the one or more code groups transmitted on the release of said distributor for a plurality of cycles of operation by said predetermined keylever.

5. In a transmitting keyboard mechanism including a set of keylevers and a distributor mechanism, said distributor mechanism being released for one cycle of operation at a time to transmit a representative code group of signals on the actuation, one at a time, of all but a predetermined one of said keylevers regardless of the length of time all but the predetermined one of said keylevers are held actuated, means controlled by said predetermined keylever for releasing said distributor for one or more successive cycles of operation, means controlled by the keylever actuated previously to the actuation of said predetermined keylever for determining the character of the succession of the one or more code groups transmitted on the release of said distributor for a plurality of cycles of operation by said predetermined keylever and means controlled by the length of time that said predetermined keylever is held actuated for determining the number of cycles of operation of said distributor wherein the succession of the one or more code groups are transmitted.

6. The combination as set forth in claim 5 wherein the release of said distributor by said

keylevers is effected entirely through mechanical means.

7. In a transmitting keyboard mechanism including a set of keylevers and adapted to transmit a single representative code group on the actuation, one at a time, of all but a predetermined one thereof regardless of the length of time actuated, means including said predetermined keylever for automatically repeating code groups representing any one of the others of said keylevers one or more times and means controlled by the order of actuating the others of said keylevers previous to the actuation of said predetermined keylever for determining the code groups automatically repeated on the actuation of said predetermined keylever, said code groups when more than one being transmitted on the continued actuation of said predetermined keylever.

8. In a telegraph transmitting keyboard, a line circuit, a plurality of keylevers, a distributor mechanism for distributing code groups of impulses representative of said keylevers to said line circuit, a release bar movable in a first predetermined direction by the actuation of all but a predetermined one of said keylevers to release said distributor mechanism for one cycle of operation at a time independently of the length of time said keylevers are held actuated, means operative on such releasings of said distributor to transmit a single code group representative of the keylever effecting the release thereof and means operative by said predetermined keylever to move said release bar in a second predetermined direction to release said distributor mechanism for one or more successive cycles of operation to transmit one or more successive code groups.

9. In a telegraph transmitting keyboard, a line circuit, a plurality of keylevers, a distributor mechanism for distributing code groups of impulses representative of said keylevers to said line circuit, a release bar movable in a first predetermined direction by the actuation of all but a predetermined one of said keylevers to release said distributor mechanism for one cycle of operation at a time, means operative on such releasings of said distributor to transmit a single code group representative of the keylever effecting the release thereof, means operative by said predetermined keylever to move said release bar in a second predetermined direction to release said distributor mechanism for one or more successive cycles of operation to transmit one or more successive code groups and means operative on the release of said distributor mechanism for one or more cycles of operation by the movement of said release bar in said second predetermined direction to transmit one or more code groups representative of the keylever actuated preceding the actuation of said predetermined keylever.

10. In a telegraph keyboard transmitter, a plurality of keylevers, a distributor mechanism for transmitting code groups representative of said keylevers, a release bar for controlling the operation of said distributor mechanism, mechanical means controlled by said keylevers for operating said release bar from a normal position into either one or the other of two operated positions, means controlled by said release bar in moving into the first one of said operated positions to release said distributor mechanism for one cycle of operation and means controlled by said release bar in moving into the second of said operated positions for releasing said distributor for one or more successive cycles of operation.

11. In a telegraph keyboard transmitter, a plurality of keylevers, a distributor mechanism for transmiting code groups representative of said keylevers, a release bar for controlling the operation of said distributor mechanism, mechanical means controlled by said keylevers for operating said release bar from a normal position into either one or the other of two operated positions, means controlled by said release bar in moving into the first one of said operated positions to release said distributor mechanism for one cycle of operation, means controlled by said release bar in moving into the second of said operated positions for releasing said distributor for one or more successive cycles of operation and means operative on the movement of said release bar into the operated position to release said distributor for a plurality of one or more successive cycles of operation to transmit in said cycles of operation code groups representing the last actuated keylever effecting the release of said distributor for one cycle of operation by the movement of said release bar into the first of said operated positions.

GEORGE F. MILLER.
FRED G. NUXOLL.
SAMUEL W. ROTHERMEL.