June 6, 1939. C. J. FITCH ET AL 2,161,564

TELETYPEWRITER

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FIG. 1.

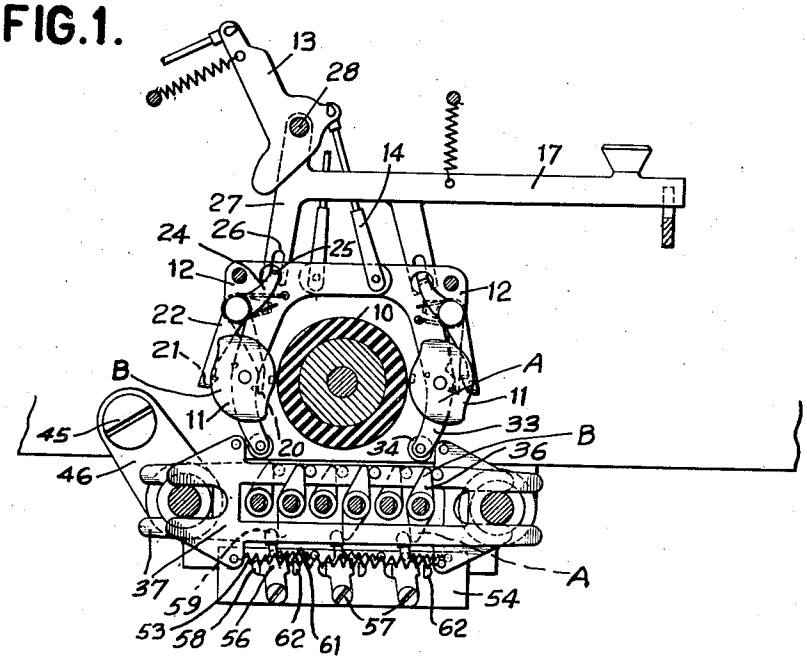


FIG. 2.

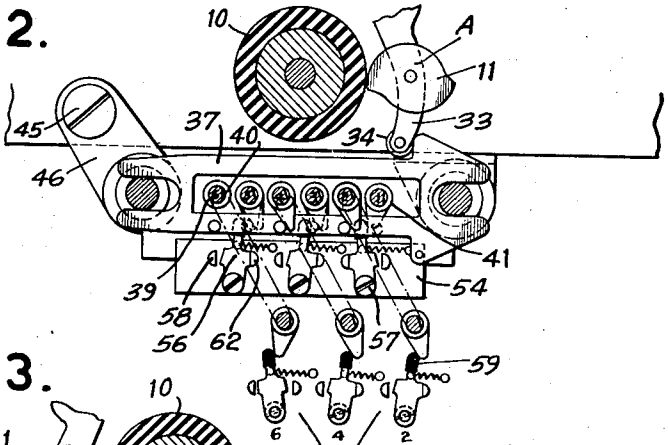
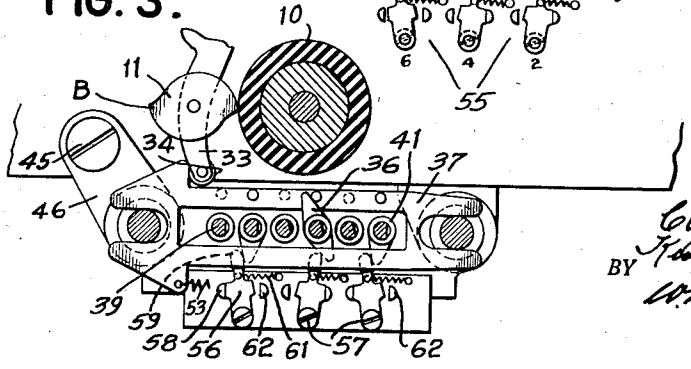


FIG. 3.



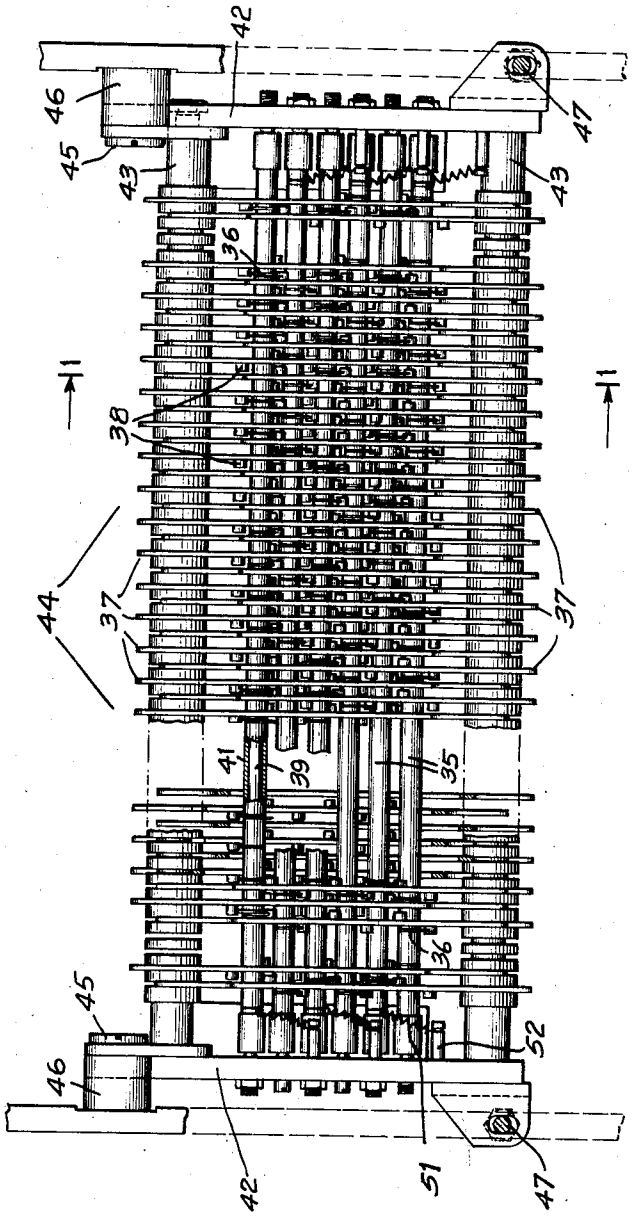
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TELETYPEWRITER

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FIG. 4.



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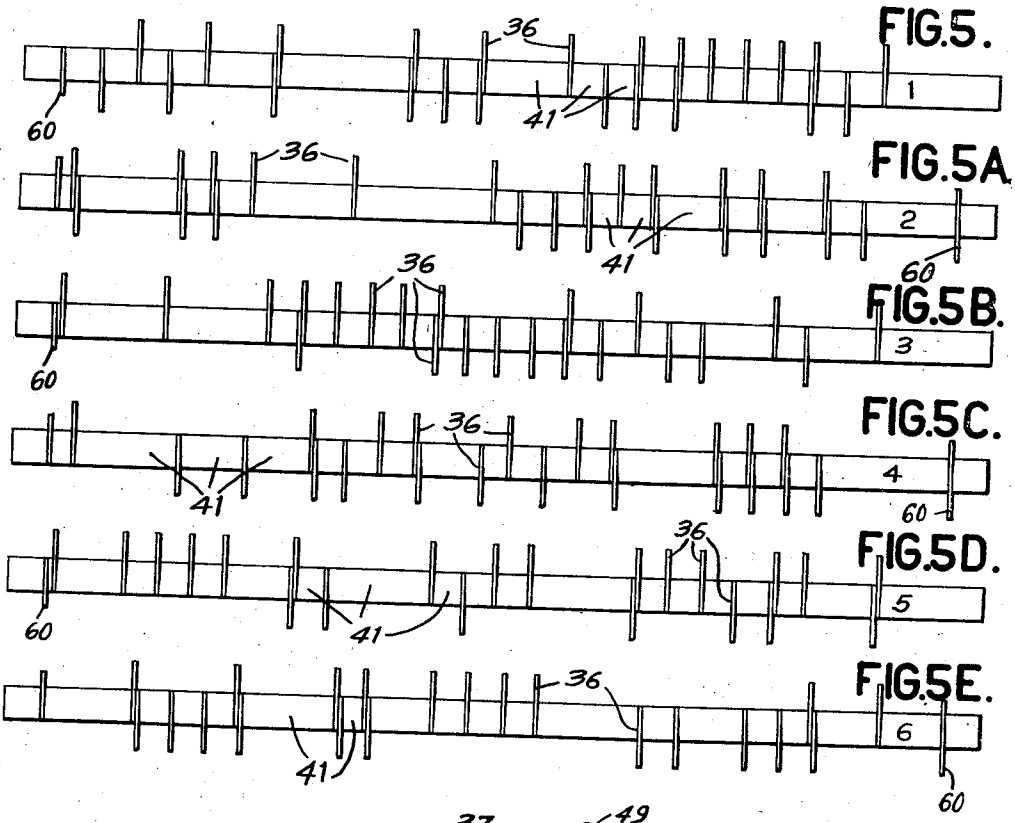


FIG.5.

FIG.5A.

FIG.5B.

FIG.5C.

FIG.5D.

FIG.5E.

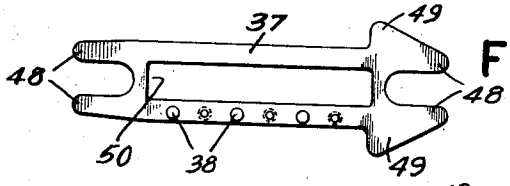


FIG.6.

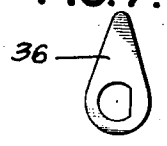


FIG.7.

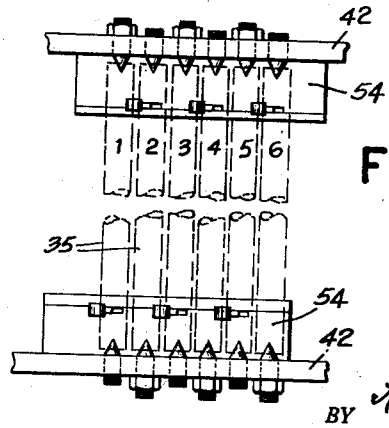


FIG.8.

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2,161,564

TELETYPEWRITER

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Application December 2, 1936, Serial No. 113,798

14 Claims. (Cl. 178—79)

This invention relates to typewriters and more particularly to typewriters used in remote control systems to set up or transmit control signals, as, for example, in printing telegraph systems or the like.

An object of the present invention is to provide a more simplified and positive permutation bar device which is associated with a typewriter keyboard to operate a plurality of transmitting control contacts in accordance with a predetermined permutation or combinational code.

Various other objects and advantages of the invention will be obvious from the following particular description of one form of mechanism embodying the invention or from an inspection of the accompanying drawings; and the invention also constitutes certain new and useful features of construction and combination of parts hereinafter set forth and claimed.

In the drawings:

Fig. 1 shows a sectional view of a well known power operated typewriter and the transmitting permutation bar unit associated therewith.

Figs. 2 and 3 are detail views showing the selectors in operated position.

Fig. 4 is a plan view of the permutation bar unit.

Figs. 5 to 5—E are detailed views of the keyed permutation bars.

Fig. 6 is a detail view of a preferred form of selector unit.

Fig. 7 is a detail view of a key.

Fig. 8 is a detail view to show the arrangement of the transmitting contacts controlled by the permutation bars.

For illustrative purposes, this invention is shown as embodying a well known form of recording unit, namely, the Electromatic typewriter, and hence requires only the following brief description.

Referring to the drawings, and particularly to Fig. 1, in the embodiment illustrated, well known means are provided for actuating the type bars (not shown) by power operated devices comprising a power driven roller 10.

A cam 11 is pivoted on one arm of a bell crank lever 12 pivoted in the frame, the other arm of which is operatively connected with one arm of a bell crank lever 13 by means of link 14. The other arm of lever 13 is connected to the type bars (not shown) in a well known manner.

The lever 12 is actuated by the cam 11 when the latter engages the driven roller 10 to be operated thereby. The engagement of the cam 11 with the power roller is controlled by means of the key lever 17 in a manner which will now be described.

The cam 11 is resiliently engaged by a spring-pressed arm 20 which tends to turn it into engagement with the power driven roller or stop 21 on a lever 22 pivoted on the bell crank 12 and normally arranged in the path of a lug on the cam. When the lever 22 swings to move its stop out of the path of the lug, the arm 20 swings the cam into engagement with the power roller to be actuated thereby to swing the bell crank 12 to actuate its connected mechanism.

The lever 22 has an arm 24 which is provided with an offset projection 25 at its end which projects laterally through an opening in the bell crank 12 and engages the bifurcated lower end 26 of an arm 27 of a key lever 17 pivoted on the common rod 28.

It is obvious then that depression of a key lever 17 releases the revolubly mounted cam 11 to engage and be actuated by power roller 10 in turn operating bell crank 12 and its attached links to cause the associated mechanism, such as the key bars and other operating mechanisms, to be operated.

In addition thereto the bell crank levers 12 are provided with arms 33 depending therefrom and on which are rotatably mounted individual cam rollers 34, which are displaced whenever the associated bell crank levers 12 are actuated by the released cams 11. The cam rollers 34 are positioned so as to be adapted to position or displace control members 37 whenever the said rollers are displaced, for a purpose now to be set forth.

The permutation bar mechanism will now be described and by referring to Fig. 4 is shown to comprise generally a plurality of permutation bars or rods 35 provided with keys or fingers 36 and a plurality of selector members 37 (see Fig. 6) provided with tabs or studs 38. More specifically a permutation rod comprises a shaft 39 flat on one side as shown by reference character 40 so that the tapered keys or fingers 36, having correspondingly shaped openings at the untapered section, (see Fig. 7), may be fitted on the said shaft, so that the keys are positioned or rotated in accordance with the shaft. Tubular spacings 41 are provided for accurately spacing the various keys on the shaft 39. It is to be noted that the keys are selectively arranged on the shafts so that some of the tapered ends extend or protrude above the shaft and some extend below or depend from the shaft, the purpose of which will

be understood as the description progresses (see Figs. 5 to 5—E).

The shafts 39, of which, in the present example, six are shown, are rotatably mounted in the end plates 42, which also support grooved rods 43. This unit just described and generally designated 44 (Fig. 4) is pivotally mounted at 45 to the typewriter frame by members 46 and is adapted to be locked or fixed in an operating position by being secured to the typewriter frame by means of the bolts and nuts shown generally at 47.

It was mentioned that a plurality of selector members 37 are provided and adapted to be engaged by the cam rollers 34 to be positioned thereby. The selectors 37 are shown slidably mounted on the grooved rods 43 and are all identical in structure. A detail of a selector 37 is shown in Fig. 6 and comprises a member provided with similar forked or bifurcated ends 48; at one end thereof extensions 49 are provided and as shown are adapted to be enaged by the cam rollers 34 to be positioned thereby. Each selector is provided with a rectangular opening 50 so as to be able to straddle the permutation bars 35; and also along one section of the selector member equally spaced tabs or studs 38 are fixed thereon, three studs on each side of the member and alternately positioned thereon.

The selectors 37 are slidably mounted on the grooved rods 43 and held in alinement or position by the grooves. Some of the selectors are arranged so that the studded sections of the selectors are above the bars 35 and others are arranged so that the studded sections thereof are below the bars 35; that is, the selectors are positioned so that the studs of some lie in the plane of the lower keys designated A and so that the studs of some lie in the plane of the upper keys designated B.

The purpose of the described arrangement is to permit the studs 38 to engage certain of the keys 36 when the selectors 37 are displaced due to the typewriter cam operation to rotate the engaged keys and thereby rotate the shafts associated with the said keys. The particular keys and shafts rotated upon displacement of the selected selectors depends upon the permutation code selected. The reason for alternating the positions of the studs 38 will now be understood, namely, so that proper clearance is provided for the keys 36 attached to the permutation bars, when the keys are displaced through their angle of rotation, so that during said rotation studs on other selectors are not engaged by the associated keys fixed on the rotated shafts.

It is preferred when the selectors described are used in conjunction with the Electromatic typewriter, that the studded sections are alternately arranged to be positioned above and below the permutation bars, respectively, due to the close spacing of the typewriter cam members; therefore, in accordance with this arrangement, it will be seen that the front typewriter cams which are designated "A" displace selectors 37 which are arranged so that the studs thereof engage the lower keys designated "A" to rotate the said keys and associated shafts in a counterclockwise direction, and that the rear typewriter cams which are designated "B" displace the selectors 37 which are arranged so that the studs thereof engage the upper keys designated "B" to rotate the said keys and associated shafts in a counterclockwise direction. Upon displacement of the associated shafts and selectors provision is made to return them to the normal inoperative position by means of springs 51 attached to the bars 35 and posts 52 mounted on the end plates 42 and the springs 53 interconnecting the adjacent selectors 37.

Attached to each end plate 42 is a switch unit 54 comprising three individual switches 55 which may be of the single pole, double throw type. The switch arms 56 are pivoted at 57 and are normally in position to engage contacts 58. The arms 56 are provided with insulating heads 59 and are engaged by keys 60 (similar to keys 36) depending from the shafts 39 so that normally the switch arms are positioned against the tension of springs 61 which are attached to the switch arms and the housing of the switch unit 54 to engage the contacts 58; however, upon rotation of the bars 35 in a counterclockwise direction the keys 60 also are rotated in a similar direction, thereby permitting the springs 61 to rotate the released switch arms 56 simultaneously in a clockwise direction so that contacts 62 are engaged by said arms. The tensions of springs 51 are greater than the tensions of springs 61, therefore, when the bars 35 are returned to normal position by the associated springs, the keys 60 return the switch arms 56 to the normal position described to engage contacts 58.

Referring now to Fig. 2, one of the front cams 11 designated "A" is shown in an operated position and let it be assumed due to the depression of a certain key bar. The displacement of the bell crank lever 12 causes the cam roller 34 on extension arms 33 to displace the selector 37 to the right and thereby engaging and displacing the keys 36 attached to permutation bars 35 Nos. 2, 3, 4, and 5, causing the shafts to be rotated in a counterclockwise direction and releasing the corresponding switch arms 56 to engage the associated contacts 62.

In Fig. 3, one of the rear cams 11 and designated "B" is shown in an operated position due to depression of the key bar corresponding to a different character, to displace the selector 37 to the left engaging and rotating in a counterclockwise direction the keys 36 fixed to the permutation bars 35 Nos. 2, 3, and 4 to release the associated switch arms 56 to engage the contacts 62.

In this manner, combinations of signal conditions may be initiated in accordance with the chosen permutation code.

While there has been shown and described and pointed out the fundamental novel features of the invention as applied to a single modification, it will be understood that various omissions and substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention. It is the intention therefore to be limited only as indicated by the scope of the following claims.

What is claimed is as follows:

1. A device of the character described comprising, in combination, a keyboard comprising a plurality of operable key bars, a plurality of rotatable permutation members arranged in a normal position associated therewith, said members having selectively positioned means disposed thereon, control means operated by said members, and means associated with the said key bars and controlled upon operation of the key bars to engage the selectively positioned means on the members to control selectively predetermined combinations of said members by positioning said members from the said normal posi-

tion and thereby operating the said control means accordingly and means to return the members to the normal position upon operation of the said control means.

2. A device of the character described comprising, in combination, a keyboard comprising a plurality of operable key bars, a plurality of rotatable permutation members having selectively positioned means disposed thereon associated therewith and positioned in a normal position, control means operated by said members, and individual means associated with the said key bars and controlled upon operation of the key bars to engage the selectively positioned means on the members to control selectively predetermined combinations of said members by positioning said members from normal position and thereby operating the said control means accordingly and means associated with each permutation member to return them to normal position upon operation of the control means.

3. A device of the character described comprising, in combination, a keyboard comprising a plurality of operable key bars, a plurality of rotatable permutation bars, a plurality of extension members provided on each of said bars, means controlled upon operation of the key bars to actuate certain of said extension members on different permutation bars to rotate partially said bars, and means controlled by said rotated bars.

4. A device of the character described comprising, in combination, a keyboard comprising a plurality of operable key bars, a plurality of rotatable permutation bars positioned in the same horizontal plane associated therewith, said bars bearing selectively positioned means thereon, means controlled upon operation of the key bars to engage certain of said means disposed on the bars to rotate partially certain of said permutation bars, and means controlled by said rotated bars.

5. A device of the character described comprising, in combination, a keyboard comprising a plurality of operable key bars, a plurality of rotatable permutation bars positioned in the same horizontal plane associated therewith, said bars having selectively positioned means disposed thereon, means controlled upon operation of the key bars to engage certain of said means positioned on the bars to rotate partially certain of said permutation bars, and signal control means conditioned by said rotated bars.

6. A device of the character described comprising, in combination, a keyboard comprising a plurality of operable key bars, a plurality of rotatable permutation bars, a plurality of selectively positioned members on each of said bars, individual means controlled upon operation of the key bars to actuate certain of said members on different permutation bars to rotate partially said bars, and means controlled by said rotated bars.

7. A device of the character described comprising, in combination, a keyboard comprising a plurality of operable key bars, a plurality of rotatable permutation bars, a plurality of selectively positioned members on each of said bars, and individual slidable control members controlled upon operation of the key bars to actuate certain of said members on the bars to rotate partially certain of said permutation bars.

8. A device of the character described comprising, in combination, a plurality of operable key bars, power operated devices associated therewith to be operated thereby comprising a power roller and cam units cooperating with the roller upon operation of the key bars, a plurality of permutation members positioned in the same horizontal plane, and means controlled by said power operated devices to select predetermined combinations of the said permutation members.

9. A device of the character described comprising, in combination, a plurality of operable key bars, individual power operated devices associated therewith to be operated thereby comprising a power roller and cam units cooperating with the roller upon operation of the key bars, a plurality of permutation members positioned in the same horizontal plane, and individual means associated with each power operated device, and controlled thereby to select predetermined combinations of the said permutation members.

10. A device of the character described comprising, in combination, a plurality of operable key bars, individual power operated devices associated therewith to be operated thereby comprising a power roller and cam units cooperating with the roller upon operation of the key bars, a plurality of rotatable permutation members positioned in the same horizontal plane, and means associated with the power operated devices and controlled thereby to rotate predetermined combinations of the said permutation members.

11. A device of the character described comprising in combination, a plurality of operable key bars, individual power operated devices associated therewith to be operated thereby comprising a power roller and cam units cooperating with the roller upon operation of the key bars, a plurality of rotatable permutation bars in the same horizontal plane, and individual members associated with the power operated devices and controlled thereby to select and rotate certain combinations of the permutation bars.

12. A device of the character described comprising in combination, a plurality of operable key bars, individual power operated devices associated therewith to be operated thereby comprising a power roller and cam units cooperating with the roller upon operation of the key bars, a plurality of rotatable permutation bars, and slidable control members engaged directly by the power operated devices and controlled thereby to select and rotate certain combinations of the permutation bars.

13. In combination, a key bar, and a power operated device associated therewith and controlled upon operation of the key bar, a plurality of permutation members and a single control member interposed between the said device and permutation members adapted to be controlled by the device and means to select a definite combination of the permutation members upon operation of the key bar.

14. A device of the character described comprising, in combination, a keyboard comprising a plurality of operable key bars, a plurality of rotatable permutation bars, a plurality of selectively positioned members on each of said bars, individual means controlled upon operation of the key bars to actuate certain of said members on different permutation bars to rotate partially said bars, signal control means, and additional means disposed on the said permutation bars to control selectively the operation of the said signal control means upon partial rotation of the said bars.

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