Sept. 19, 1950 R. DEMEULENAERE ET AL 2,523,256

AUTOMATIC DIAL OPERATOR

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Fig. 1.

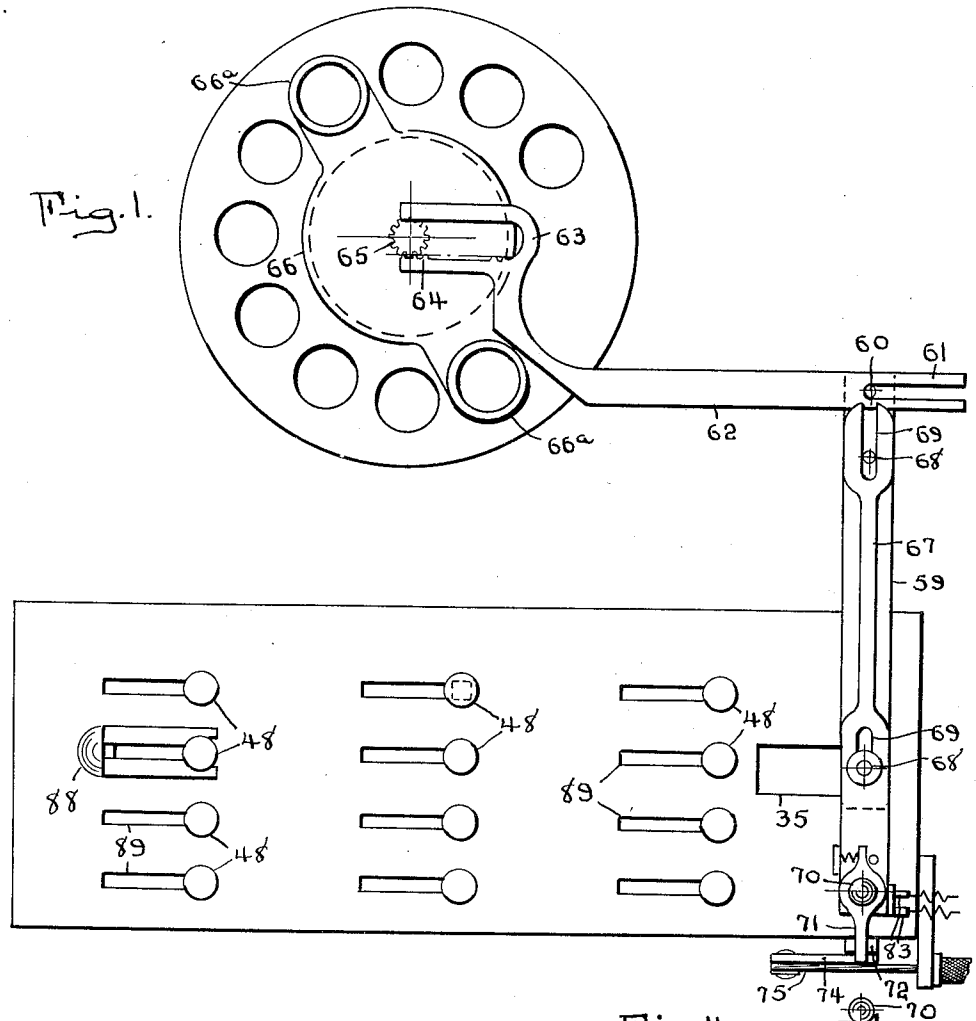


Fig. 4.

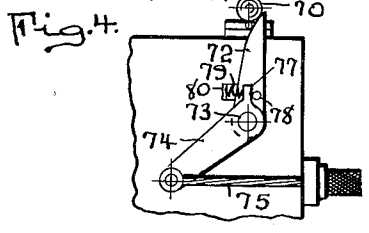
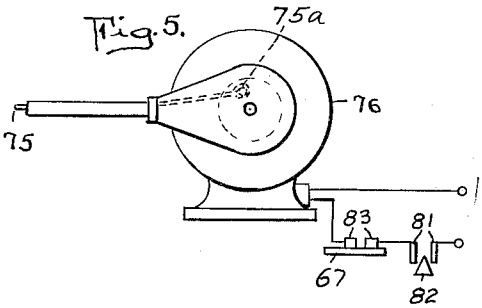


Fig. 5.



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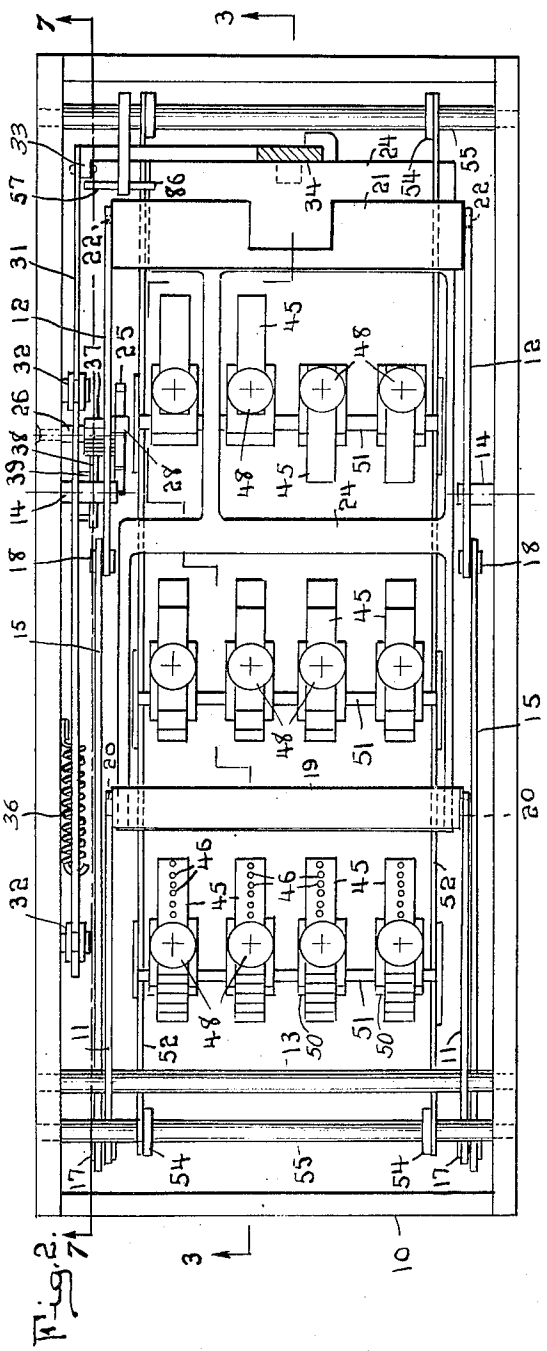


Fig. 2.

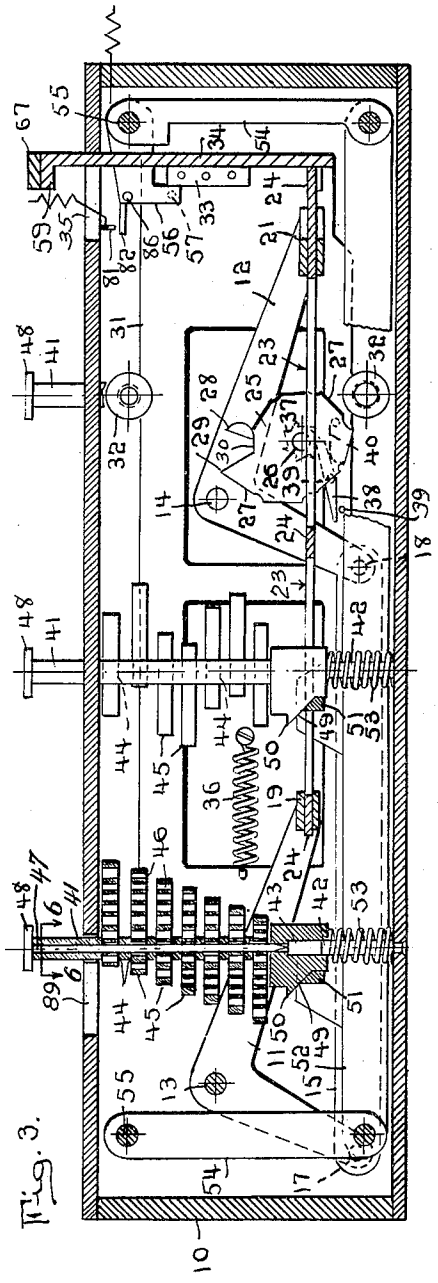


Fig. 3.

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Filed March 26, 1948 3 Sheets-Sheet 3

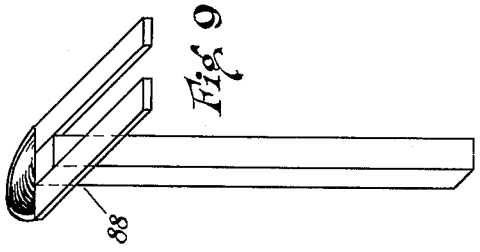


Fig. 9

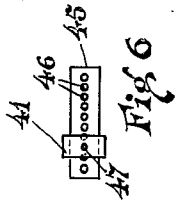


Fig. 6

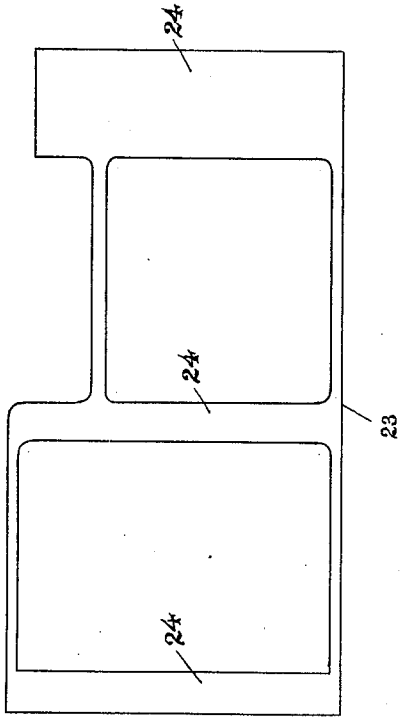


Fig. 8

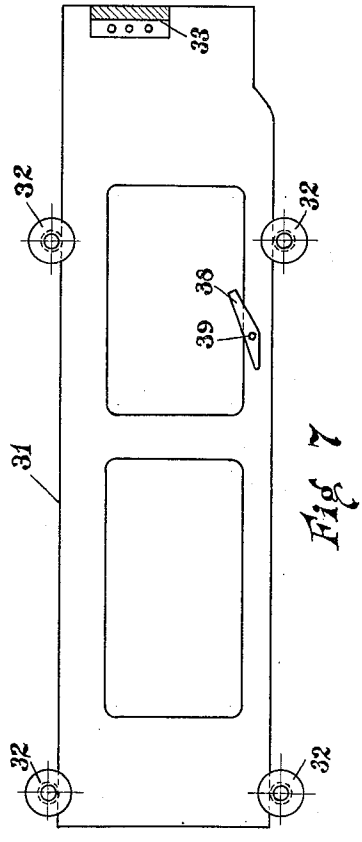


Fig. 7

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UNITED STATES PATENT OFFICE

2,523,256

AUTOMATIC DIAL OPERATOR

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New York, N. Y.

Application March 26, 1948, Serial No. 17,166

32 Claims. (Cl. 179—90)

1

This is a continuation of our application, Serial No. 529,980, filed April 7, 1944, now abandoned.

This invention relates to improvements in devices for automtically operating dial telephones and has for its primary object to provide an arrangement which will enable each individual telephone subscriber to quickly and conveniently make the adjustments required to initially set or subsequently change the dialing control element so that, without the assistance of a skilled attendant the device may be maintained in condition to dial telephone numbers according to the initial and changing requirements of the user.

A further object of the invention is to provide a device of this character in which the desired adjustments enabling the subsequent automatic dialing of selected numbers may be effected simply by the manual operation of the conventional telephone dial in the usual manner to dial the items of the selected number.

A still further object is to provide an operating device in which the dial at all times is exposed to full view and freely accessible for manipulation in the usual manner independently of and without transmitting motion to the operating mechanism.

In the accompanying drawings wherein an approved embodiment of the invention is illustrated;

Figure 1 is a top plan view of the automatic dial operator.

Figure 2 is an enlarged plan view of the casing enclosing a part of the mechanism, the cover being removed.

Figure 3 is a section on the line 3—3 of Figure 2.

Figure 4 is a detail of Figure 1.

Figure 5 is a detail of the motor drive.

Figure 6 is a horizontal sectional view taken along the lines 6—6 of Figure 3 with portions removed to illustrate the details of construction of the keys.

Figure 7 is a vertical sectional view taken along the lines 7—7 of Figure 2 with portions removed to more clearly illustrate the details of construction of the roller-mounted carriage.

Figure 8 is a plan view of the shiftable slide removed from the dial operator.

Figure 9 is an isometric view on an enlarged scale of the setting member by which the stop plates are moved to initial position before one of the keys is set to dial a particular number.

Referring to the drawings in detail the numeral 10 indicates a casing preferably mounted

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upon a base suitably positioned with respect to the base of a telephone, having a dial or other manually operable calling means or mechanism, to be actuated by the automatic dialing device. Two pairs of angular levers 11 and 12 are pivotally mounted at 13 and 14, respectively, on the opposed sides of the casing 10 diagrammatically showing the motor circuit. The short arms of the levers of one pair are connected with the corresponding arms of the other pair by a link 15 and pins 17 and 18 carried by the levers 11 and 12, respectively.

A guide 19 is pivotally mounted on pins 20 in the long arms of the angular levers 11 and a similar guide 21 is pivotally mounted on pins 22 engaging in the long arms of the levers 12. A differentially movable slide 23 is mounted for reciprocating movement in the guides 19 and 21 and is in the form of an open frame including three cross members 24 extending transversely of the casing.

During reciprocating movement of the slide 23 it is moved upwardly from its lowermost position at intervals by a cam 25 rotably mounted on a shaft 26 secured in one side wall of the casing 10 and provided with external cam faces 27 of appropriate number. A lug 28 on one of the levers 12 rests on the face of the cam 27 and the contour of the latter is such that during rotation of the cam the levers 12 and 11 are oscillated so as to progressively raise the guides 19 and 21 stepwise thereby moving the slide 23 successively through a plurality of vertically spaced positions. When the cam 27 completes one revolution, the lug 28 disengaging the highest point 29 of the cam descends until it engages the lowest point 30, as shown in Figure 3, and in so doing both pairs of levers 11 and 12 turn rapidly in a clockwise direction and permit the slide 23 to assume its lowermost position. As will be understood, the link 15 and pins 17 and 18 serve to transmit motion of the levers 12 to the levers 11 and in this manner the slide 23 is maintained in horizontal position during all stages of its vertical stepwise movement.

A carriage 31 is mounted to slide longitudinally in the casing 10 between pairs of rollers 32 and is provided with an angular plate 33 carrying an actuating bar 34 for imparting motion to the slide 23. For this purpose the bar 34 is located at approximately the longitudinal center of the casing 10 and extends upwardly through a slot 35 in the top of the casing. As will be understood, the vertical extension of the bar 34

is such that it remains in engagement with the slide 23 in all vertical positions of the latter.

Furthermore the spring 36 is connected at one end with the carriage 31 and at its other end with the casing and yieldably maintains the actuating bar 34 in engagement with the outermost wall of the slot 35.

A ratchet wheel 37 is rigidly secured to the rotatable cam 25 and at each stroke of the carriage 31 is engaged by a pawl 38 pivotally secured at 39 to the carriage and normally held in active position by a spring 40, thus at each stroke of the carriage 31 the ratchet wheel 37 and cam 25 are rotated through an angle sufficient to present the next succeeding cam surface 27 to the lug 28 whereby the levers 11 and 12 are actuated and the slide 23 is elevated.

A plurality of control keys 41 are mounted for sliding movement through openings in the top of the casing 10 and the lower ends thereof are engaged by guide pins 42 fixed in the bottom of the casing 10 and movable in recesses 43. Each key is formed with a series of spaced horizontal slots 44 corresponding in number to the number of items in the telephone numbers to be dialed. Stop plates 45 of elongated form are arranged in superposed relation in the slots 44. Each stop plate is formed with a plurality of vertical apertures 46 preferably ten in number to correspond with figures 0 to 9 in accordance with the indications on conventional dial telephones. These stop plates 45 are relatively adjustable with respect to one another and when properly adjusted are held in place by a retaining pin 47 which passes longitudinally through a bore in each key 41 and through the aligned apertures in the plates 45 and terminates in a head 48 for convenience in withdrawing the pin from the key.

The lower end of each key 41 is enlarged and provided with an inclined cam face 49 terminating at its upper end in a shoulder 50. The keys 41 are preferably arranged in rows extending transversely across the top of the casing 10 and the cam faces 49 of the keys of each row cooperate with one of the cross members 51 of a shiftable frame mounted in the lower part of the casing and which also includes longitudinal members 52. The keys 41 are normally held in raised position by springs 53 in which position the cross members 51 are situated below the cam surfaces 49. Thus, when any one of the keys is depressed in the act of initiating an automatic dialing operation, the frame constituted by the cross and longitudinal members 51 and 52 is shifted longitudinally of the casing by action of the cam 49. The opposite ends of the longitudinal members 52 are connected with links 54 pivotally mounted at 55 in the casing. When, during the depression of one of the keys, the shoulder 50 descends below the related cross member 51, the latter moves laterally and engages over said shoulder thereby locking the key in depressed position.

One of the links 54 at the end of the casing adjacent the actuating bar 34 is provided with a hook shaped locking member 56 carrying a pin 57 normally engageable with the plate 33 on the carriage 31 whereby the latter is held in position during periods of inoperation of the dialing device. When the frame 51—52 is moved longitudinally incident to depression of a key, the rocking movement imparted to the links 54 lifts the locking member 56 and the pin 57 thereby releasing the carriage 31 for operation.

The actuating bar 34 is rigidly connected with an actuating arm 59 which projects laterally from the casing 10 of Figure 1 and is provided terminally with a pin 60 engaging in a slot 61 in a rack member 62. The opposite end of the rack member 62 is in the form of a yoke 63 provided on one leg with teeth 64 engaging a pinion 65, the purpose of the yoke 63 being to maintain the rack member in operative position with respect to the pinion. The pinion 65 is located centrally of an attaching member 66 having a central portion adapted to overlie the hub-like part of the conventional telephone dial and also having opposed extensions 66 terminally formed to engage in two opposed openings in the telephone dial, the entire attaching member being situated in a plane below the stop member cooperating with the rotatable telephone dial and forming parts of conventional dial telephone equipment.

An adjustable member 67 is slidably secured in position on top of the actuating arm 59 by pins 68 engaging in slots 69 and for convenience in manipulating the adjustable member 67 a knob 70 is provided thereon. In the operative position of the adjustable member 67 the reduced end 71 thereof opposite the rack member 62 is disposed in the path of and engageable by a pivoted arm 72 mounted for swinging movement on a pivot 73 attached to the casing 10. A second arm 74 arranged in opposed relation to the arm 72 is also mounted on the pivot 73 and is oscillated by a flexible cable 75 operated by a crank pin 75a on a drive motor 76. A lug 77 is attached to the pivoted end of the arm 74 and is normally held against a stop 78 on the arm 72 by a spring 79 confined between the lug 77 and an extension 80 on the arm 72. Thus as the flexible member 75 is moved in one direction the arm 74 is rocked and the motion thereof is transmitted to the arm 72 through the spring 79 which thus forms a yieldable coupling between the arms 72 and 74.

A pair of contacts 81, Figures 3 and 5, is interposed in the circuit of the motor 76 and when the links 54 are rocked incident to the depression of one of the keys 41, a member 82 on the locking member 56 bridges the contacts 81 and conditions the motor for operation. A second pair of contacts 83 is also interposed in the motor circuit and is controlled by the adjustable member 67 in such manner that when the latter is shifted to withdraw the end 71 from the path of the pivoted arm 72 the motor circuit is opened across the contacts 83.

Also in this inoperative position of the adjustable member 67 in which the motor drive for the dial operator is disabled the slotted end 69 embraces the pin 60 and thereby prevents displacement of the latter in the slot 61 and forms a coupling between the arms 59 and the rack member 62.

In operation, the slide 23 normally occupies a position below the groups of stop plates 45 but when one of the keys 41 is depressed and held in this position by the cross member 51 engaging the shoulder 50, the lowermost stop plate of the related group is disposed directly in the path of the slide. The motion imparted to the frame 51—52 by the cam face 49 upon the depression of the key disengages the pin 57 from the plate 33 and at the same time causes the member 82 to bridge the contacts 81 thereby closing the circuit of the motor 76 and initiating operation of the device. The motion of the arms 72 and 74

is transmitted through the adjustable member 67 to the arm 59 thereby shifting the actuating bar 34 and moving the slide 23 longitudinally until it is arrested by engagement with the lowermost stop plate 45. In case the setting of the plate 45 does not permit the slide 23 to perform the full stroke imparted thereto by the rocking movement of the arms 72 and 74 this is accommodated owing to the yieldable connection between the arms 72 and 74 provided by the spring 79 which, under such conditions is compressed. The motion of the arm 59 limited in dependence upon the adjustment of the plate 45 is transmitted to the telephone dial through the rack member 62, teeth 64 and pinion 65. When the flexible drive member 75 is moved in the opposite direction by the crank pin 75*a*, the carriage 31 is restored to its initial position by the spring 36 and the slide 23 is restored therewith. During the latter motion of the carriage 31, the pawl 38 cooperating with the ratchet wheel 37 turns the cam 25 through an angle which engages the next succeeding cam face 27 with the lug 28 and thereby lifts the slide 23 into position to engage the stop plate 45 next to the bottom. On the next succeeding stroke of the slide 23 effected by actuation of the arms 72 and 74 the movement thereof is limited by the second stop plate 45 and the second item of the selected telephone number is thereby dialed. These operations are continued until all the items of the telephone number are dialed and the cam wheel 25 is revolved to a position where the lug 28 is engaged by the cam surface 29. At this point the slide 23 engages a pin 86 on the locking member 56 thereby lifting the latter slightly and turning the links 54 to such extent that the frame 51—52 is shifted longitudinally to disengage the cross member 51 from the shoulder 50 and thereby release the depressed key 41 which is raised by the key spring 53. During the final angular movement of the cam 25 the lug 28 disengages the cam surface 29 and falls with the lever 12 upon the cam surface 30. Both levers 11 and 12 participate in this movement and the slide 23 thus assumes its original position. The links 54 as well as the frame 51—52 also assume their original position and in so doing the member 62 is disengaged from the contacts 81 and the circuit of the motor 76 is thereby interrupted.

To enable the user at will to change the telephone number automatically dialed in response to the depression of any of the keys 41, the adjustable member 67 is moved longitudinally by means of the knob 70 to displace the terminal 71 from the path of the arm 72, disabling the motor circuit by opening the contacts 83 and engaging the pin 60 in the slot 69. The selected key is depressed and locked by engagement of the member 51 with the shoulder 50 and the retaining pin 47 of the depressed key is withdrawn thereby releasing all of the stop plates 45. A setting member 88 is then introduced in a slot 89 in the top of the casing 10 adjacent each key and manipulated so as to move all of the stop plates toward the end of the casing in which the actuating arm 34 is located. The telephone dial is then manipulated in the usual way to dial the desired number and in so doing the slide 23 is first moved in degree proportional to the first item of the telephone number, the motion of the dial being transmitted to the slide through the pinion 65, rack member 62, pin 60, arm 59, and actuating arm 34. When the telephone dial is returned to initial position preparatory to dialing the second item of the selected telephone number, the slide 23 is also restored to initial position and the movement of the carriage 31 effects an upward stopwise movement of the slide through the pawl 38, ratchet wheel 37, cam 25, lug 28 and levers 11 and 12. Thus, when the telephone dial is moved to an extent depending upon the second item of the selected telephone number, the slide is positioned to engage and set the second stop plate 45. These operations are repeated until all of the stop plates 45 have been adjusted to positions corresponding with the items of the selected telephone number whereupon they are locked by introducing the pin 47 into position in the bore of the key. Finally, the adjustable member 67 is restored to its initial position in which the end 71 is disposed in the path of the arm 72 for operation when the motor 76 is again energized.

Due to the provision of the pin and slot connection 60 and 61 between the rack member 62 and the actuating arm 59, complete freedom of movement of the telephone dial independently of the automatic actuating means is afforded and consequently the dial may be freely manipulated in the usual manner when preferred or for dialing numbers other than those corresponding with the keys 41.

As will be understood, the stop plates 45 are disposed in position to be engaged by the slide 23 only when keys are depressed. The stop members which remain in raised position with the related keys are so disposed as to afford freedom of movement of the slide.

From the above detailed description it will be apparent that there has been provided an improved device for automatically dialing a telephone having manually operable calling means wherein the numbers automatically obtainable may be set and changed at will without special skill or resort to precut cams, prepunched cards or other extraneous devices. It should be understood that the described and disclosed embodiments are merely exemplary of the invention and that all modifications are intended to be included which do not depart either from the spirit of the invention or the scope of the appended claims.

Having described our invention, we claim:

1. In an automatic dial operator, a dial operating member, actuating means for imparting a succession of dialing movements to said member, a plurality of relatively settable stop members, means whereby said stop members are individually settable in relative positions corresponding with an item of a telephone number to be dialed for selectively limiting the successive movements of said operating member, and common means for locking the several stop members in set position.

2. In an automatic dial operator, a dial operating member, actuating means for imparting a succession of dialing movements to said member, and a plurality of relatively settable stop members, means whereby said stop members are individually settable by said actuating means in relative positions corresponding with an item of the telephone number to be dialed, said stop members being operable, when set, to selectively limit the successive movements of said operating member.

3. In an automatic dial operator, a dial operating member, actuating means for imparting a succession of dialing movements to said member, a plurality of relatively settable stop members, means whereby said stop members are indi-

vidually settable by said actuating means in relative positions corresponding with an item of the telephone number to be dialed, said stop members being operable, when set, to selectively limit the successive movements of said operating member, and means for securing the stop members in set position.

4. In an automatic dial operator, a dial operating member, actuating means for imparting a succession of dialing movements to said member, and a plurality of relatively settable stop members, means whereby said stop members are individually settable by said actuating means in relative positions corresponding with an item of the telephone number to be dialed, said stop members being operable, when set, to selectively limit the successive movements of said operating member, the setting of said stop members by the actuating means being effected by normal manual operation of the related telephone dial.

5. In an automatic dial operator, a dial operating member, a mechanism for performing a succession of movements each proportional in magnitude to the items of a telephone number to be dialed, and a one-way drive effective to transmit the movements of said mechanism to said member but ineffective to transmit motion of the operating member to said mechanism thereby affording freedom of movement of the related dial independently of said mechanism.

6. In an automatic dial operator, a dial operating member, a movable member mounted to perform a succession of movements, a plurality of relatively settable stop members, means whereby said stop members are individually settable by said movable member in relative positions corresponding with an item of the telephone number to be dialed and operative, when set, to selectively limit the successive movements of said movable member, means effective to transmit movement of the movable member to said dial operating member but normally ineffective to transmit movement of said dial operating member to said movable member, and means for rendering said means effective to transmit motion from the dial operating member to the movable member whereby the stop members may be set in selected positions through operation of the related telephone dial.

7. In an automatic dial operator, a dial operating member, a movable member mounted to perform a succession of movements, a plurality of relatively settable stop members, means whereby said stop members are individually settable by said movable member in relative positions corresponding with an item of the telephone number to be dialed, said stop members being operable, when set, to selectively limit the successive movements of said movable member, means effective to transmit movement of the movable member to said dial operating member but normally ineffective to transmit movement of said dial operating member to said movable member, means for rendering said means effective to transmit motion from the dial operating member to the movable member whereby the stop members may be set in selected positions through operation of the related telephone dial, and means for retaining the stop members in set position.

8. In an automatic dial operator, a dial operating member, a movable member for imparting a succession of dialing movements to said operating member, a plurality of groups of relatively settable stop members, means whereby said stop

members are individually settable in relative positions corresponding with an item of a telephone number to be dialed, manually operable means to establish an operative relationship between a selected group of said stop members and said movable member whereby the stop members of said group are rendered effective to selectively limit the successive movements of said movable member, and means common to the stop member of each group to lock said members in set position.

9. In an automatic dial operator, a dial operating member, a movable member for imparting a succession of dialing movements to said operating member, a plurality of groups of relatively settable stop members, means whereby said stop members are individually settable in relative positions corresponding with an item of a telephone number to be dialed, manually operable means to establish an operative relationship between a selected group of stop members and said movable member whereby the stop members of said group are rendered effective to selectively limit the successive movements of said movable member, a motor for driving said movable member conditioned for operation by said manually operable means, and means for rendering said motor inoperative whereby the movable member may be utilized to selectively set the stop members of the group having operative relationship thereto.

10. An automatic dial operator, as claimed in claim 8 wherein said manually operable means includes keys and releasable means carried by each key for retaining the related group of stop members in selected set positions.

11. An automatic dial operator as claimed in claim 9 wherein said manually operable means includes keys and means carried by each key for retaining the related stop members in the positions in which they are selectively set by said movable member.

12. In an automatic dial operator, a dial operating member, actuating means for imparting a succession of dialing movements to said member, a movable key member, and a normally inoperative group of relatively settable stop members, means whereby said stop members are individually settable in relative positions corresponding with the items of a telephone number to be dialed and movable by the key member into operative position for selectively limiting the successive movements of said actuating means and said operating member.

13. An automatic dial operator, as claimed in claim 12 wherein means is provided to retain the stop members in set position.

14. An automatic dial operator, as claimed in claim 12 wherein the stop members are arranged in spaced superposed relation.

15. An automatic dial operator as claimed in claim 12 wherein a retaining pin carried by the key member is passed through apertures in said stop members.

16. An automatic dial operator as claimed in claim 12 wherein stop members are provided with apertures arranged in dependence upon the positions in which said stop members are to be set, and a retaining member carried by said key member and passing through aligned apertures in said stop members.

17. An automatic dial operator as claimed in claim 12 wherein said stop members are in the form of superposed flat plates successively en-

gageable by said actuating means during successive movements thereof.

18. In combination with a telephone having a dial, an automatic dial operator comprising a member attachable to and movable with a conventional telephone dial by engagement in a dial opening, a pinion carried by said member, a rack engaging said pinion, and means for imparting a succession of dialing movements to said member through said rack and pinion.

19. In an automatic dial operator, a dial operating member, an actuating mechanism, and a pin and slot connection between said operating member and said mechanism whereby motion may be transmitted from said mechanism to said member and the dial operated independently of said mechanism.

20. In an automatic dial operator, a plurality of groups of stop members individually settable in relative positions corresponding with the items of a telephone number to be dialed, manually operable means for selectively moving one of the groups of stop members into operative position, a reciprocable member, means for progressively moving said reciprocable member into engagement with the stop members of the operative group, and means for imparting movement of the reciprocable member to a telephone dial.

21. In an automatic dial operator, a dial operating member, actuating means for imparting a succession of dialing movements to said member, a stop mechanism and means whereby said stop mechanism is settable by said actuating means in accordance with the items of the telephone number to be dialed and operable, when set, to selectively limit the successive movements of said operating member.

22. In combination with a telephone having a dial, an automatic dial operator comprising, a dial operating member engageable with said dial, a mechanism for performing a succession of movements, each proportional in magnitude to the items of a telephone number to be dialed, and means effective to transmit the movements of said mechanism to said operating member, said means being normally ineffective to transmit motion of the operating member to said mechanism thereby affording freedom of movement of the related dial independently of said mechanism without disengagement of said dial operating member.

23. In an automatic dial operator, a dial operating member, a movable member for imparting a succession of dialing movements to said operating member, a plurality of groups of relatively settable stop members, means whereby said stop members are individually settable in relative positions corresponding with the items of a telephone number to be dialed, manually operable means to establish an operative relationship between a selected group of said stop members and said movable member whereby the stop members of said group are rendered effective to selectively limit the successive movements of said movable member, means for locking said group in operative relationship, and means for automatically releasing said group to inoperative position on completion of the dialing movements of said operating member.

24. In an automatic dial operator, a dial operating member, a movable member for imparting a succession of dialing movements to said operating member, a plurality of groups of relatively settable stop members, means whereby said stop members are individually settable in relative positions corresponding with the items of a telephone number to be dialed, manually operable means to establish an operative relationship between a selected group of said stop members and said movable member whereby the stop members of said group are rendered effective to selectively limit the successive movements of said movable member, and a motor for driving said movable member conditioned for operation by said manually operable means.

25. In an automatic dial operator, a dial operating member, movable means for imparting a succession of dialing movements to said member, a stop mechanism, means whereby said mechanism is settable in accordance with the items of a telephone number to be dialed, means for establishing an operative relationship between said stop mechanism and said movable means whereby said stop mechanism is rendered effective to selectively limit the successive movements of said movable means, means for locking said stop mechanism in operative relationship, and means for automatically releasing said mechanism to inoperative position on completion of the dialing movements of said operating member.

26. In an automatic dial operator, a group of relatively settable stop members, means whereby said stop members are individually settable in relative positions corresponding with the items of the telephone number to be dialed, means for selectively moving said group into operative position, a reciprocable member, a carriage connected to said reciprocable member, a motor for progressively moving said reciprocable member into engagement with the stop members of said group through said carriage, and means for transmitting movement of the reciprocable member to a telephone dial.

27. In an automatic dial operator, a dial operating member, a group of spaced stop members individually settable in relative positions corresponding with the items of the telephone number to be dialed, reciprocable means, a cam for successively moving said reciprocable means into position to be engaged and limited in its reciprocable movement by said stop members, and means for transmitting movement of said reciprocable means to said dial operating member.

28. In an automatic dial operator, a dial operating member, a reciprocable member, a carriage connected to said reciprocable member, means for transmitting reciprocable movement to said reciprocable member through said carriage, a group of relatively settable stop members, means whereby said stop members are individually settable in relative positions corresponding with the items of the telephone number to be dialed and operable, when set, to successively limit the extent of movement of said reciprocable member, and means associated with said reciprocable member for engaging said dial operating member and transmitting movement of said reciprocable member thereto.

29. In combination with a telephone operated through a dial shaft, a dial connected to said shaft, a group of stop members individually settable in relative positions corresponding with the items of a telephone number to be dialed, manually operable means for moving said group of stop members into operative position, an actuating member, means for progressively moving said actuating member into engagement with the stop members of said operative group, and means for imparting movement of the actuating member to said dial.

30. In combination with a telephone operated

through a dial shaft, a dial connected to said shaft, actuating means for imparting a succession of dialing movements to said dial, a stop mechanism and means whereby said mechanism is settable by said actuating means in accordance with the items of the telephone number to be dialed and operable, when set, to selectively limit the successive movements of said dial.

31. In an automatic operator for a telephone having a calling device, a group of stop members individually settable in relative positions corresponding with the items of a telephone number to be called, manually operable means for moving said group of stop members into operative position, an actuating member, means for progressively moving said actuating member into engagement with the stop members of said operative group, and means for imparting movement of the actuating member to said calling device.

32. In an automatic operator for a telephone having a calling device, an operating member, actuating means for imparting a succession of calling movements to said member, a stop mechanism and means whereby said mechanism is settable by said actuating means in accordance with the items of the telephone number to be called and operable, when set, to selectively limit the successive movements of said operating member.

ROBERT DEMEULENAERE.
MARCEL DEMEULENAERE.

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