

July 4, 1933.

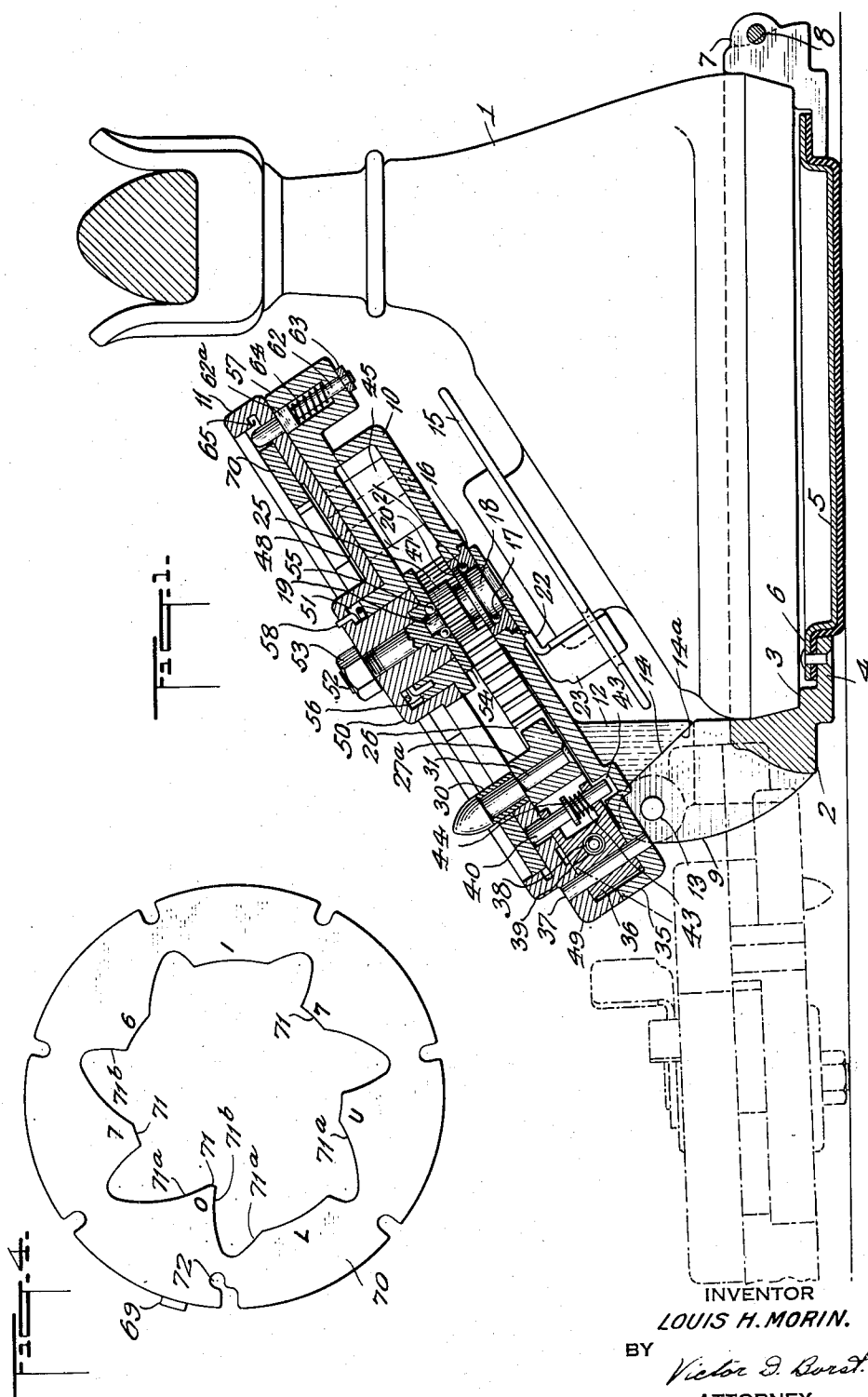
L. H. MORIN

1,917,049

DIAL OPERATING MECHANISM

Filed Jan. 15, 1932

2 Sheets-Sheet 1



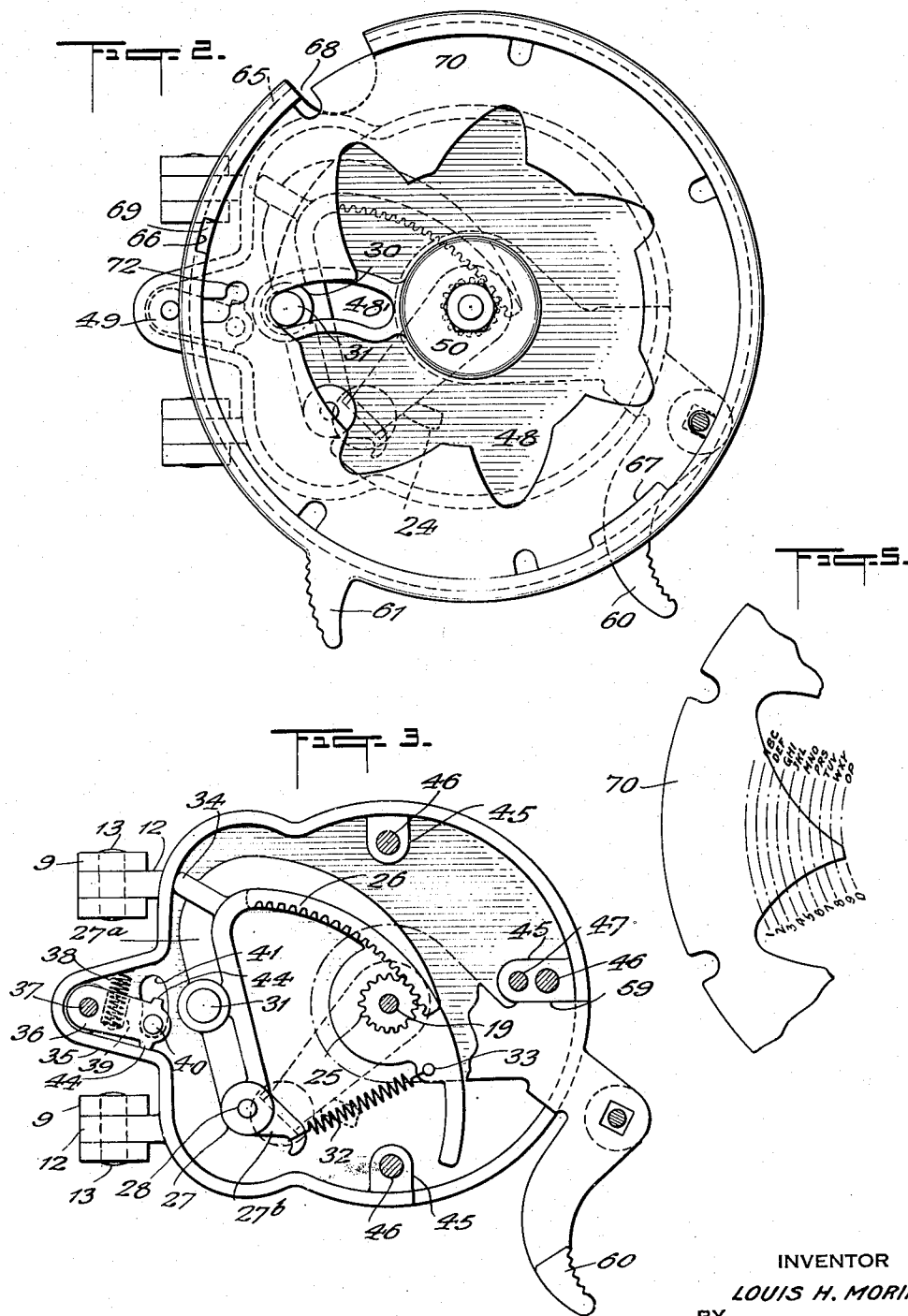
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DIAL OPERATING MECHANISM

Application filed January 15, 1932. Serial No. 586,901.

In automatic telephone systems, the call number selecting mechanism is actuated in accordance with electrical impulses set up by control mechanism. The control mechanism for this purpose consists of a dial which is mounted upon the telephone or switchboard with which it is associated. Such dials include a base in which the mechanism for setting up the actuating impulses for the selecting mechanism is located, and on the upper surface of the base the items of call numbers are printed; the items are printed on an annular section of the base and are divided into ten groups, each group including several letters and a number. Rotatably mounted on the base, there is a disk which extends over the annular section of the base on which the letters and numbers are printed and which is operatively related to the mechanism within the base. The section of the disk extending over the aforementioned annular portion of the base has a series of openings there-through, ten in number, through which the various groups of characters printed on the base may be seen. To dial an item of a call number, the operator inserts his finger or some implement into the opening in the dial above the group of characters which includes the particular item he wishes to dial and rotates the dial until the finger or implement abuts against a stop member at which point he releases the dial. Upon releasing the dial it is returned to its initial position by a spring and on its return actuates the mechanism which sets up the actuating impulses. This operation must be repeated for each item in the call number. Commonly, and particularly in large communities where there are several telephone stations, telephone call numbers aggregate seven items, the first three representing a station, and the last four a line in that station. In such cases the dial must be actuated seven times in order to secure a particular line.

A prerequisite to learning to dial a telephone number has been the ability to distinguish the characters in the language employed and the ability to recognize the first two or three letters of the name of the station in which a line is desired. Even when

this ability is present, it is necessary to search the face of the dial for each item of the number to be dialed unless the location of the characters printed on the face of the dial are memorized. Under such circumstances, the dialing of a call number having seven items is an involved and particular operation, and because of the closeness of the openings in the rotatable disk to one another, it is very easy to make a mistake.

In order to eliminate these difficulties encountered in the use of the automatic telephone, I have invented a device for mechanically actuating the dial of an automatic telephone to progressively dial the items of a call number. By using the device of my invention any call number may be dialed even though the person making the call does not know the items of the call number of the line to which he desires to be connected. In accordance with my invention, I provide a device which includes dial actuating means which is adapted to rotate the dial of a telephone. This dial actuating means is connectible to the dial of a telephone and movement is imparted thereto through a power receiving element. The movement imparted to the dial actuating means from the power receiving element is transmitted through a translating element which translates the power into successive, predetermined movements of the dial actuating means to progressively dial the items of a particular call number. The translating element is readily and easily removed and replaced, there being a translating element for each call number for which it is desired to use the dialing device.

An advantage of the dialing device of my invention is the fact that it does not prevent the use of the dial as it is now actuated. To enable the dial to be used as it has been used heretofore, the dialing device of my invention is pivotally mounted upon a base which receives the telephone and may be swung about its pivotal connection to expose the face of the dial.

Specifically, I provide a base or standard which receives the telephone base and serves to position the dialing mechanism with re-

spect to the telephone. This base has a pair of upstanding bifurcated brackets to which the telephone dialing device is pivotally secured so that it may be swung away from the telephone to expose the face of the dial for the purpose of operating the dial in the usual manner. The dialing device consists of a frame or casing in which the mechanism for actuating the dial is mounted. This mechanism includes a shaft which is rotatably mounted in the casing and extends through the bottom of the casing. On the outer end of this shaft, there is secured an arm which has a flange that is adapted to extend into one of the openings in the dial. In the normal position of the dialing mechanism, this arm is so located that when the dialing mechanism is swung about its pivot into operating position, the flange extends into the opening in the dial which corresponds to the numeral zero. On the inner end of the aforementioned shaft there is a pinion secured to the shaft which meshes with an arcuate rack that is pivotally secured to the casing. This arcuate rack actuates the pinion which in turn rotates the shaft, and through the aforementioned arm on the end of the shaft actuates the dial, the amount the arcuate rack is moved about its pivot determining the item which is dialed. Above the rack there is a circular dish-shaped section which is adapted to receive a translating element which controls the movement of the rack.

This translating element is in the form of a sheet metal annulus and has a plurality of cam sections, one for each item in a call number, which engage a cam follower on the arcuate rack. Each cam section includes an inwardly extending cam of a length sufficient to move the arcuate rack about its pivot through an annular distance such that the dial is actuated to dial a particular item. For each call number for which it is desired to use the dialing device, there is one of these translating elements, and the amount the cams extend inwardly is determined by the items in the call number which they represent. A lever is provided for rotating the translating element when it is placed in the dialing device. This lever has a pawl thereon which engages equally spaced ratchet openings at the edge of the translating element. There are as many such ratchet openings as there are cam sections and each actuation of the lever rotates the translating element through an angular distance equivalent to one cam section, carrying the cam follower on the aforementioned arcuate rack over one of the cam sections of the translating element and thereby dialing the item to which that particular cam corresponds. The dialing device is so constructed that the translating element can be placed in the device only in one position and after the disk has been

rotated through one complete revolution, further rotation is prevented.

The translating elements or disks may be stamped from sheet metal, all disks being stamped with all cam projections corresponding to the maximum movement of the dial. These projections may then be pared down to correspond to any particular item.

The invention will be more clearly understood from the following particular description of one embodiment thereof which is shown on the accompanying drawings in which:

Fig. 1 is a side elevation of a telephone with the dialing mechanism secured thereto, the dialing mechanism being in section;

Fig. 2 is a plan of the dialing device;

Fig. 3 is a plan of the dialing device with the upper section removed;

Fig. 4 is a plan of a translating element to be used with the dialing device; and

Fig. 5 is an enlarged fragmentary section of a translating element illustrating the relation of the cams thereon to the items of telephone call numbers.

The telephone 1 illustrated in the drawings is of the hand type and is shown mounted in a base. The base consists of a split ring 2 of the configuration of the telephone base and having an internal shoulder 3 on which the base of the telephone rests and an inwardly extending, circumferential flange 4. To this split ring there is secured a sheet metal bottom 5 which has an offset circumferential flange 6 engaging the upper surface of the flange 4 and a pad 6 of flexible material. At the point at which the base ring is split, there is a bracket 7 formed on each end of the ring through which there are aligned openings. One of these brackets is internally threaded and a machine screw 8 secures the ends of the ring together and serves to contract the ring and clamp the telephone therein. At the front of the telephone, there are a pair of parallel, upstanding, bifurcated brackets 9 formed integral with the base ring. These brackets have aligned openings therethrough to receive pivot pins for securing the dialing device to the base ring.

The dialing device comprises a frame or casing which is made in two sections, a lower section 10 and an upper section 11. The lower section of the casing of the dialing device is dish-shaped and has a configuration as shown in Fig. 3. On the bottom of this section, there is a pair of depending brackets 12 formed integral therewith. These brackets 12 extend between the bifurcated brackets 9 of the base ring and are pivotally secured thereto by pivot pins 13. The brackets 12 have inclined faces or edges 14 which form abutment surfaces that abut against similar surfaces 14a on the brackets 9 extending

from the base ring to accurately position the dialing mechanism over the dial 15 of the telephone. At substantially the center of the lower section of the casing, there is an opening 5 formed through the bottom of the casing, the axis of which opening, in the operative position of the dialing device, is coaxial with the dial of the telephone. In this opening, there is a bushing 16 which has an internal 10 shoulder 17 formed thereon. Journaled in this bushing, is a shaft 18 the inner end 19 of which is reduced in diameter and the outer end of which extends through the bottom of the casing. Near the outer end of the 15 shaft, there is formed on the shaft a flange 20. Between this flange and the aforementioned internal shoulder 17 formed on the bushing 16, there are ball bearings 21, the flange constituting a thrust collar and together with the shoulder on the bushing and the ball bearings constitutes a thrust bearing 20 for the shaft 18. The end of the shaft extending through the casing is squared and there is secured thereon a radial arm 22 25 which has a downwardly extending flange 23 that extends in to the opening in the telephone dial corresponding to the item which requires the maximum movement of the dial. Through this arm rotation of the shaft 18 is transmitted to the dial. On the lower surface of the bottom of the casing, a projection or abutment 24 is formed against which the arm 22 abuts in the normal position of the dialing mechanism. The shaft 18 is rotated 35 to actuate the dial through a pinion 25 formed on the shaft near the inner end thereof which pinion meshes with an arcuate rack 26.

The arcuate rack meshing with the pinion 40 is an arcuate continuation of one arm 27a of a bell crank lever 27 that is pivotally mounted on a pin 28 secured in the bottom of the casing. This same arm of the bell crank lever carries a cam follower 30 that is rotatably 45 mounted upon a pin 31 which extends through the arm. The other arm 27b of the bell crank lever is of hook-shape and it is secured to one end of a spring 32. The other end of the spring 32 is fastened to a pin 33 that is embedded in the casing. The spring acts upon the bell crank lever in such a direction as to move the rack to the inoperative position of the telephone dial. The arm 27a 50 of the bell crank lever on which the rack is mounted is provided with an abutting projection 34 that is adapted to abut against the side of the casing to limit movement of the rack in response to the force exerted by the 60 spring 32.

Between the brackets 12 formed on the lower section of the casing, the casing extends outwardly forming a substantially triangular-shaped extension 35. In this extension a 65 lever 36 is pivotally mounted on a pivot pin

37 and is spring-pressed, by means of a spring 38 fitting in a recess 39 in the lever and abutting against the side wall of the extension, against one side wall of the extended portion of the casing. This lever is bifurcated at its radially outer end and carries a 70 slidably mounted pin 40 which extends through the lever and a groove 41 formed in the bottom of the casing. The pin has a 75 flange 42 formed thereon between the arms of the bifurcated portion of the lever and it is spring-pressed towards the top of the casing by a spring 43 acting between the flange and one arm of the bifurcated portion of the lever. The lever is also provided with abutment projections 44 to limit its movement 80 about its pivot.

Around the lower section of the casing, there is a series of inwardly extending lugs 45, shown as three in number, through which machine screws 46 pass to secure the two sections of the casing together. One of these lugs has an additional opening therethrough in which a dowel-pin 47 is secured which is adapted to secure and position an abutment plate 47', the purpose of which will hereinafter appear. 90

The upper section 11 of the casing of the dialing device is substantially circular in plan and is concentric with the shaft 18. 95 This section is dish-shaped, the bottom thereof forming a partition wall 48 and having an arcuate slot 48' formed therein for the cam follower 30 secured to the rack. It is also provided with an extension 49 covering the triangular extension 35 between the brackets on the lower section. At the center of the partition 48 of this section of the casing, there is formed a hub 50 which has an 105 annular downwardly opening groove 51 formed therein. The hub is bored through the center thereof to receive a stationary shaft 52, a limiting shoulder being provided on the shaft and the hub to position the shaft 110 in the hub in which it is secured by a nut 53 threaded on the upper or outer end thereof. The inner end of this shaft has a circular flange 54 formed thereon at the center of which there is formed a depression in which 115 the inner end 19 of the shaft 18 is received. There is also an internal shoulder formed in this depression between which and the aforementioned pinion there are ball bearings 55.

In the annular groove formed in the hub 50, 120 there is fitted the hub 56 of a lever 57 which is pivotally mounted in the casing. The lower edge of this lever rests upon the flange 54 at the inner end of the shaft 52 which secures the hub in the groove. Between the 125 inner end of the hub on the lever and the end wall of the annular groove 51 there is left a space in which there is fitted a convolute spring 58, one end of the spring passing through the hub on the casing and the other 130

end being secured in the hub of the lever. This spring exerts a force upon the lever tending to rotate the lever in a counter-clockwise direction as shown in Fig. 2. The lever is limited in its movement in a counter-clockwise direction by an abutting shoulder 59 formed on the casing lever which abuts against the stop plate 47' on one of the lugs 45. The outer end of the lever is curved and a portion 60 thereof extends beyond the casing. That portion of the lever extending beyond the casing is knurled as is a projection 61 formed on the casing. The knurled section of the lever and the knurled projection on the casing constitute finger pieces which are used in actuating the lever about its pivot. For instance, the thumb may be pressed against the projection on the casing and the first finger used to actuate the lever, drawing the lever towards the thumb. Near the outer end of the casing, the lever carries a pawl which comprises a pin 62 that has a squared section 62a which is received in a square slot in the lever. Below this squared section the pin is circular in cross section and extends through the bottom of the slot, the end of the pin having a limiting washer 63 thereon to limit the outward movement of the pin which is urged outwardly by a spring 64. Above the squared section, the pin is also circular in cross section and has an inclined cam surface which faces in the direction in which the spring 58 tends to move the lever.

The side walls of the upper section of the casing have an undercut groove 65 formed therein adjacent the partition. This undercut groove communicates with a perpendicular slot 66 in the side wall. Substantially opposite this slot in the side wall, there is an overhanging projection 67 formed on the upper edge of the casing and adjacent the slot a portion of the upper section of the casing is cut away as at 68. The undercut groove formed in the side walls of the upper section of the casing is adapted to receive a projection 69 on a translating element 70 which is received in the upper section of the casing, the projection passing through the slot 66 to the groove. The translating element which is held in place by the overhanging projection 68 and may be removed from the casing when the projection 69 is aligned with the slot 66 by placing a finger under the translating element at the cut-out portion 68 of the casing.

The translating element 70 consists of a sheet metal annulus which is divided into as many angular sections as there are characters in the call numbers of the telephone system with which the dialing device is to be associated. In the embodiment shown the annulus is divided into seven sections. Each section includes an inwardly extending projection 71 that constitutes a cam. These cams cooperate with the cam follower 30 on

the rack and move the rack about its pivot to a greater or lesser extent as the translating element is rotated depending upon the length of the cam projection. The approaching surfaces 71a of the cam sections are curved in accordance with the path of the cam follower of the rack in its motion about its pivot. The aforementioned outwardly extending projection 69 on the translating element, which is received in the slot 66 in the side wall of the casing, and the undercut groove with which the slot communicates, together with the overhanging projection 67 on the casing, serve to hold the translating element from moving laterally while being rotated. The slot 66 and the projection 69 also serve to position the translating element when it is inserted in the dialing device. Around the edge of the translating element, there are seven radial slots, one for each cam section of the disk. These slots in the edge of the translating element cooperate with the pawl on the lever 57 by means of which the translating element is rotated. Movement of the lever rotates the disk one-seventh of a turn, carrying the cam follower on the rack over one cam section of the disk. Movement of the lever seven times, therefore, in the embodiment shown, rotates the translating element through one revolution and carries the cam follower of the rack over the seven cam projections of the element. Each cam section is of a length to move the rack a distance that will actuate the dial to a particular character. As shown in Fig. 4 the cam which is illustrated in the dialing device has cam sections which correspond to the following call number: Lu-7-1670. The receding side 71b of each cam section is so curved that the disk can not be rotated in the reverse direction. In this way, the cam follower acts as a stop, while the lever 57 moves backward under the action of the spring 58 to engage the next succeeding slot in the edge of the disk after the disk has been moved through one-seventh of a revolution. When the lever is released after actuating the disk the inclined face of the pawl causes the pawl to recede in its slot in the lever until it reaches the next slot in the translating element.

The last slot in the translating element, relative to the direction of rotation of the translating element, which would be in a clockwise direction as shown in Fig. 4, communicates with an offset opening 72 through the element. This opening through the translating element lies in a circle that includes the center of the pin 40 carried by the lever 36. When this opening arrives in alignment with the pin 40, the pin enters the opening and the lever is moved against the action of the spring 38 with the translating element to the position in which the projection 69 on the translating element is in alignment with the

slot 66 in the side wall of the casing. In this position, the disk can not be further rotated, and the operator is prevented from dialing the first number over again. It will be apparent that when the disk is placed in the dialing device the pin 40 will not be in alignment with the opening as the lever 36 will be held in the position as shown in Fig. 2 in which the pin is out of alignment with the opening 72 by the action of the spring 38. The pin will not, therefore, prevent initial rotation of the translating element. After the number has been dialed or when it is desired to dial another number, the translating element may be removed, and for this purpose a finger may be inserted beneath the translating element at the cut-out portion 68 of the casing.

In making the translating elements they will be stamped from sheet metal with as many cam sections as there are items in the telephone call numbers of the community in which the disk is to be used. All of the cam sections will be of a length to dial the item requiring maximum movement of the dial and may be cut to any particular item at any time. In this way, the translating elements may be economically manufactured and the cutting of the cam sections to correspond to particular items can be readily accomplished because the element is of sheet metal. It will be obvious that these translating elements may be used as advertising medium by business houses. For example, a translating element may have the name and character of a business printed thereon and be distributed like business cards to customers.

When the dialing mechanism is to be used, it is in the position shown in Fig. 1. If, however, a number is desired to be called for which the operator has no translating element, the dialing mechanism may be swung between its pivotal connection to the position shown in broken lines in Fig. 1. In this position, the face of the dial is exposed and the dial may be actuated in the usual way.

From the above description of my invention, it will be apparent that with my dialing device, a telephone dial may be actuated to progressively dial the items of a particular number even though that call number is not known to the operator. Also any possibility of making a mistake on the dialing of a particular number is eliminated when this dialing device is used.

It will be obvious that various changes may be made in the details of the embodiment illustrated in the drawings and above particularly described by those skilled in the art within the scope of my invention as expressed in the appended claims.

I claim:

1. A telephone dialing device for selectively actuating the dial of an automatic tele-

phone comprising means for actuating the dial of a telephone, an operating member for the dial actuating means, and a translating element between said actuating means and operating member for converting movement of the operating member into successive, predetermined movements of the actuating means to progressively dial the items of a particular call number.

2. A telephone dialing device for selectively actuating the dial of an automatic telephone comprising dial operating means connectable to the dial of a telephone, and means for selectively controlling movement of the dial operating means including a series of control members each operative to control the dial operating means and shiftable into operative position relative to the operating means.

3. A telephone dialing device for selectively actuating the dial of an automatic telephone comprising dial operating means adapted to be operatively connected to a telephone dial, and a translating element having a series of control members for the dial operating means thereon and being shiftable upon each actuation of the dial to bring the several control members in sequence into operative relation to the operating means.

4. A telephone dialing device for selectively actuating the dial of an automatic telephone comprising means for actuating the dial of a telephone, an operating member for the dial actuating means, and a replaceable translating element between said actuating means and operating member for converting movement of the operating member into successive, predetermined movements of the actuating means to progressively dial the items of a particular call number.

5. A telephone dialing device for selectively actuating the dial of an automatic telephone comprising means for actuating the dial of a telephone, means for imparting movement to the dial actuating means, and a translating element linking the movement imparting means and the dial actuating means for converting movement of the movement imparting means into successive, predetermined movements of the actuating means to progressively dial the items of a particular call number.

6. A telephone dialing device for selectively actuating the dial of an automatic telephone comprising a rotatably mounted member adapted to be connected to a dial, means for rotating said member, operating means for said rotating means, and a translating element between said operating and rotating means for converting movement of the operating means into movement of the rotatable member through successive, predetermined angular distances to progressively dial the items of a particular call number.

7. A telephone dialing device for selective-

ly actuating the dial of an automatic telephone comprising a rotatably mounted member adapted to be connected to a dial, a pinion on the member, a gear engaging the pinion and adapted to rotate the same, means for operating the gear, and a translating element connecting said gear operating means and the gear for translating movement of the operating means into movement of the rotatable member through successive predetermined angular distances to progressively dial the items of a particular call number.

8. A telephone dialing device for selectively actuating the dial of an automatic telephone comprising a rotatably mounted member adapted to be connected to a dial, a pinion on the member, a rack engaging the pinion, means for operating the rack, and a translating element connecting the rack operating means and the rack for translating movement of the rack operating means into successive predetermined movements of the rack to actuate the rotatable member through successive angular distances and progressively dial the items of a particular call number.

9. A telephone dialing device for selectively actuating the dial of an automatic telephone comprising a rotatably mounted shaft, a lever on said shaft having a projection adapted to extend into an opening in a telephone dial, a pinion secured to the shaft, a pivotally mounted arcuate rack meshing with the pinion, means for operating the rack to actuate the rotatable member, and means for translating movement of the operating means into successive predetermined movements of the rack.

10. A telephone dialing device for selectively actuating the dial of an automatic telephone comprising means for actuating the dial of a telephone, operating means movable a predetermined amount in a definite direction, and translating means mechanically connecting said operating means to said actuating means for converting the movement of the operating member into successive, predetermined movements of the actuating means to progressively dial the items of a particular call number.

11. A telephone dialing device for selectively actuating the dial of an automatic telephone comprising dial actuating means, rotatable operating means for said actuating means, means for causing a step by step operation of the operating means, and translating means for converting the step by step movement of the operating means into successive, predetermined movements of the dial actuating means to progressively dial a particular call number.

12. A telephone dialing device for selectively actuating the dial of an automatic telephone comprising dial actuating means, a translating element operatively related to the dial actuating means for converting move-

ment imparted thereto into successive predetermined movements of the dial actuating means, and means for moving said translating element upon each actuation of the dial.

13. A telephone dialing device for selectively actuating the dial of an automatic telephone comprising dial actuating means, a translating element rotatably mounted in operative relation to the dial actuating means, and operating means for rotating the translating element, said translating element converting rotational movement imparted thereto into successive, predetermined movements of the dial actuating means to progressively dial the items of a particular call number.

14. A telephone dialing device for selectively actuating the dial of an automatic telephone comprising dial actuating means, a translating element rotatably mounted in operative relation to the actuating means for converting rotational movement imparted thereto into successive, predetermined movements of the dial actuating means, and manually operative means for rotating the translating element.

15. A telephone dialing device for selectively actuating the dial of an automatic telephone comprising dial actuating means, a translating element rotatably mounted in operative relation to the actuating means for converting rotational movement imparted thereto into successive, predetermined movements of the dial actuating means, and a manually operative ratchet for rotating said translating element.

16. A telephone dialing device for selectively actuating the dial of an automatic telephone comprising a rotatably mounted shaft, a lever on said shaft having a projection adapted to extend into an opening in a telephone dial, a pivotally mounted arcuate rack meshing with the pinion, a cam follower associated with the rack, a rotatable translating element having a series of substantial radial projections thereon for engaging the cam follower to convert rotational movement of the translating element into successive, predetermined movements of the rack, and means for rotating the translating element.

17. A telephone dialing device for selectively actuating the dial of an automatic telephone comprising a rotatably mounted shaft, a lever on said shaft having a projection adapted to extend into an opening in a telephone dial, a pivotally mounted arcuate rack meshing with the pinion, a cam follower associated with the rack, a rotatable translating element having a series of substantial radial projections thereon for engaging the cam follower to convert rotational movement of the translating element into successive, predetermined movements of the rack, and a manually operative ratchet for rotating the translating element.

18. A telephone dialing device for selectively actuating the dial of an automatic telephone comprising dial operating means adapted to be operatively connected to a telephone dial, and a translating element having a series of control members each operative control the dial operating means, and the translating element being shiftable upon each actuation of the dial to bring the several control members into operative position relative to the dial operating means.

19. In combination, a base for an automatic telephone having a dial mounted thereon, said base being adapted to receive the telephone, and a dial actuating device pivotally mounted on said base and positioned thereby in one limit of its pivotal movement in operative relation to the dial of the telephone.

20. In combination, a base for an automatic telephone having a dial mounted thereon, said base being adapted to receive the telephone, and a dial actuating device pivotally mounted on said base and operatively positioned thereby over the dial of the telephone in one limit of its pivotal movement.

21. A telephone dialing device for selectively actuating the dial of an automatic telephone comprising means for actuating the dial of a telephone, operating means mechanically connected to said dial actuating means for imparting movement thereto, and a translating element having a series of control elements thereon for selectively limiting the movement of the actuating means, said translating element being movable to bring the several control elements into operative relation to the actuating means.

22. A telephone dialing device for selectively actuating the dial of an automatic telephone comprising means for actuating the dial of a telephone, operating means mechanically connected to said dial actuating means for imparting movement thereto, a translating element having a series of control elements thereon for selectively limiting the movement of the actuating means, said translating element being movable to bring the

several control elements into operative relation to the actuating means, and means for shifting said translating element upon actuation of the dial.

23. A telephone dialing device for selectively actuating the dial of an automatic telephone comprising means for actuating the dial of a telephone, operating means mechanically connected to said dial actuating means for imparting movement thereto, a translating element having a series of control elements thereon for selectively limiting the movement of the actuating means, said translating element being movable to bring the several control elements into operative relation to the actuating means, means for shifting the translating element upon actuation of the dial, and means for locking the dialing device after the dial has been actuated a predetermined number of times.

24. A translating element for a dialing device adapted to selectively actuate the dial of an automatic telephone and having dial actuating means which translating element comprises a plate having means for converting movement applied to the dialing device into successive, predetermined movements of the dial actuating means.

25. A translating element for a dialing device adapted to selectively actuate the dial of an automatic telephone and having a dial actuating means, which translating element comprises a plate having means for selectively limiting successive movements of the dial actuating means.

26. A translating element for a dialing device adapted to selectively actuate the dial of an automatic telephone and having dial actuating means, which translating element comprises a plate, and a plurality of cams on said plate, one for each item in a telephone call number and each cam representing a particular item of the call number.

In witness whereof, I hereunto subscribe my signature.

LOUIS H. MORIN.