July 27, 1926. 1,593,992

P. C. SMITH

CALLING DEVICE

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Fig. 1

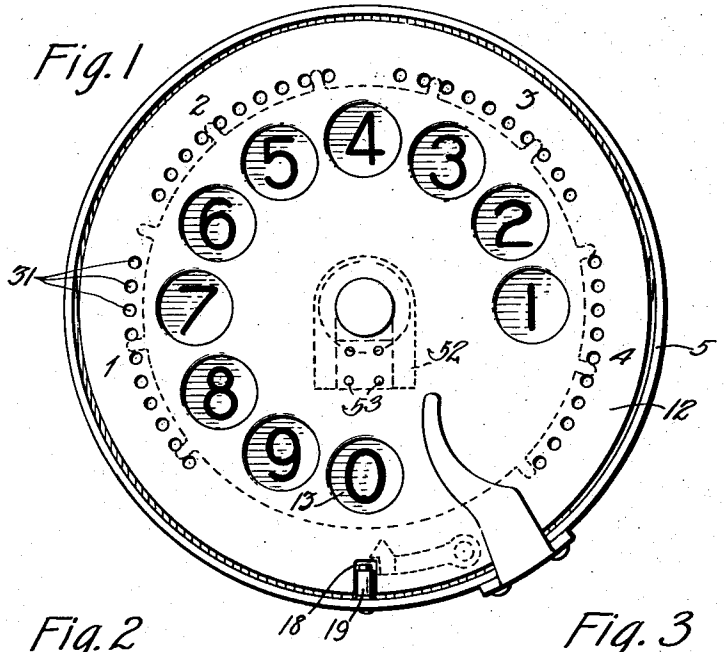


Fig. 2

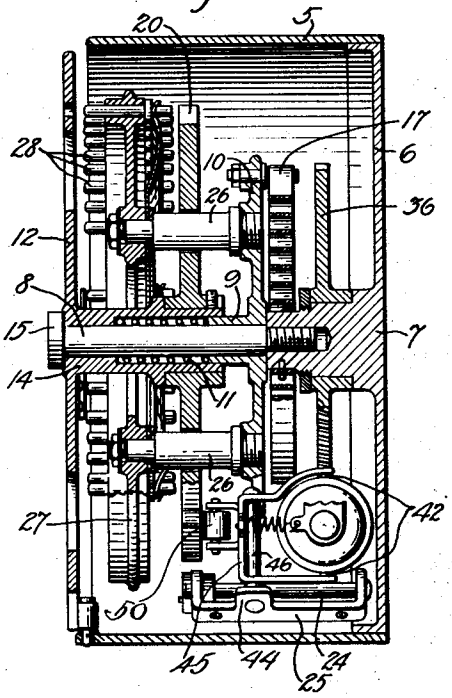
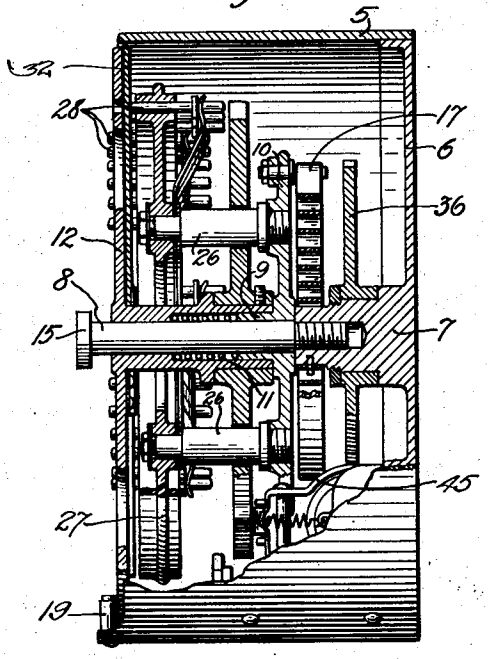


Fig. 3



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Fig. 4

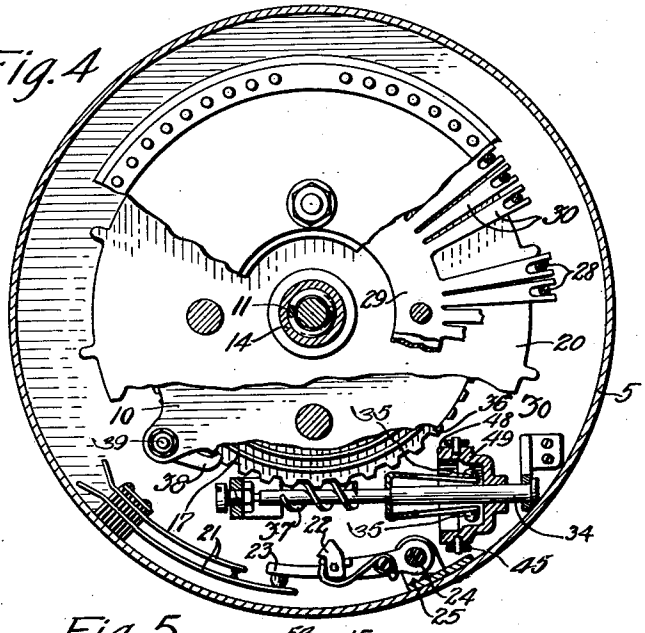


Fig. 5

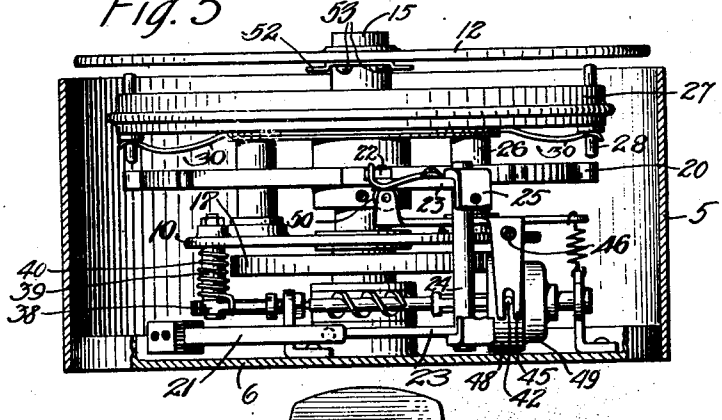
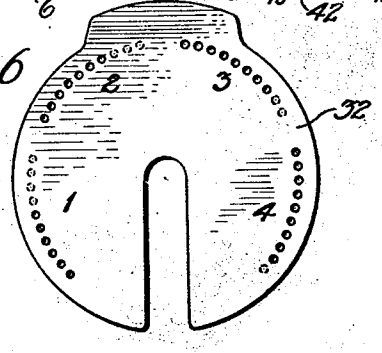


Fig. 6



Inventor:
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Patented July 27, 1926. 1,593,992

UNITED STATES PATENT OFFICE.

PERCY C. SMITH, OF EAST ORANGE, NEW JERSEY, ASSIGNOR TO WESTERN ELECTRIC COMPANY, INCORPORATED, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

CALLING DEVICE.

Application filed December 29, 1922. Serial No. 609,576.

This invention relates to calling devices, and more particularly to impulse senders for automatic or semi-automatic telephone systems in which the selector switches used for the building up of a connection are directively controlled by current impulses sent from a subscriber's station or from an operator's position.

A subscriber often finds it necessary to call certain other subscribers quite frequently. For example, a broker may wish to call a large number of his customers each morning, following the opening of the market, to apprise them of market conditions. To call each of these regular customers daily by the usual manipulation of the finger wheel of his calling dial entails a considerable effort, since it is necessary to operate the dial separately for each digit of each line designation.

It is therefore the object of this invention to provide a new and improved calling device which may be employed in the customary manner for dialing line designations and which may be employed to send the complete designation of certain lines by a single actuation.

This object is attained by the employment of a card which is perforated in accordance with the several digits of a particular line designation to be called, and which is adapted for insertion behind the finger wheel of a calling device such as the "calling dials" at present in use in various cities of this country. When the finger wheel is then depressed and rotated to its full extent, certain pulsing pins arranged in a plurality of digital groups are forced by the card, in accordance with the perforations therein, into the path of impulse transmitting springs, so that during the return of the dial to its normal position the operated pulsing pins cause the transmission of a set of impulses corresponding to each digit of the line designation as perforated in the card. The calling dial is employed in the customary manner to send a single set of impulses upon each actuation of the finger wheel when no card is used.

One embodiment of the invention is shown in the accompanying drawings.

Fig. 1 is a top view of a calling dial.

Fig. 2 is a cross-sectional view of the dial when adjusted to call a line designation by successive rotations of the finger wheel.

Fig. 3 is a cross-sectional side view of the dial when adjusted to call a line designation by a single rotation of the finger wheel.

Fig. 4 is a top view of the dial mechanism with a portion thereof cut away.

Fig. 5 is a front view of the dial mechanism with a portion of the casing cut away.

Fig. 6 shows a card adapted for use with the dial.

The dial comprises a cylindrical casing 5, set upon a base 6, in the central portion of which is formed a boss 7 into which a central rod 8 is threaded. A sleeve 9 integral with a supporting disc 10 is rotatably mounted about rod 8. A finger wheel 12 having ten finger holds 13 is carried by a shaft 14 which is rotatably and depressibly mounted on rod 8 and extends downwardly over the top of sleeve 9. A coil spring 11 contained within the shaft 14 surrounding rod 8, engages the end of the sleeve 9 and normally holds the finger wheel 12 in its outer position against the head 15 of rod 8. A motor spring 17 with its outer end attached to disc 10 and its inner end fastened to boss 7, is provided to restore the dial mechanism after it has been rotated by the actuation of the finger wheel 12. A notch 18 is formed in the periphery of the finger wheel 12 which allows it to be depressed below a roller 19, attached to the casing 5, and which is adapted to maintain the finger wheel in a depressed condition against the action of spring 11 during rotation of the finger wheel and until the notch again registers with the roller 19.

Mounted on shaft 14 and movable therewith is a pulsing cam 20 having ten projections thereon which actuate contact springs 21 by means of latch and pressure members 22 and 23. The members 23 are carried by the rod 24 pivoted in the bracket 25, the bracket 25 being attached in any suitable manner to the casing 5. Mounted between finger wheel 12 and cam 20, and supported by posts 26 on supporting disc 10, is an auxiliary pulsing member 27. This member 27 comprises a number of sets of depressible pulsing pins 28;—in the drawing four groups (1, 2, 3, 4) of ten pins each are shown. These pins are held in their normal positions by a spring spider 29 attached to the member 27 and having a plurality of bifurcated arms 30 engaging the inner ends of the pins respectively. The finger wheel

has forty holes 31 therein through which these pins may project when the finger wheel is depressed (as shown in Fig. 3). In the space between the finger wheel and the outer ends of the pins there may be inserted a card 32 having perforations therein corresponding to only certain ones of the pulsing pins 28 so as to depress one or more pins in each group when it is inserted in the dial and pressed against the pins. The card 32 shown in Fig. 6 has six perforations in group 1, seven in group 2, eight in group 3, and nine in group 4. This card is held in an adjusted position on the dial by means of a bracket 52 secured on the under surface of the finger wheel by means of screws 53.

A two-speed governor comprising a governor shaft 34 and fly-weights 35, is operated by a worm wheel 36 through the medium of a worm 37 on shaft 34. The worm wheel 36 is operated by a ratchet member 38 attached to a pin 39 on disc 10 and tensioned against wheel 36 by a coil spring 40. By this mechanism, the worm wheel 36 is rotated only upon a counter-clockwise movement of the finger wheel. An angled lever 45 is pivoted on a pin 46 extending from an ear 44 of bracket 25 and carries at one end portion a roller 50 which bears against the inner surface of cam 20. The other arm of lever 45 is slidably attached to the governor drum by pins 42. This lever operates to shift the governor drum on the shaft 34 upon the depression of finger wheel 12. Two annular bearing surfaces 48 and 49 are provided for the fly-weights. These weights bear normally against bearing surface 49 having a comparatively small diameter, but bear against bearing surface 48 having a comparatively large diameter upon the shifting of the drum; so that in the latter case the speed of the return of the finger wheel will be considerably retarded. It will be understood that the springs on which the flyweights are mounted should be light springs such as are ordinarily used in commercial dials. With such springs the braking action increases as the square of the radius from the shaft to the braking surfaces.

When, in the normal operation of the dial, a line designation is called by sucessive rotations of the finger wheel, the governor drum will be in its normal position with the fly-weights bearing against bearing surface 49 thereof, and the pulsing cam 20 will operate the contact springs 21 generally at the rate of 10 pulses per second through the medium of latch and pressure members 22 and 23. In case, however, it is desired to repeatedly call a certain line designation a card similar to the one shown in Fig. 6 is prepared. This card is inserted in the guide 52 and the finger wheel is depressed and rotates to its full extent beneath roller 19. On the depression of the finger wheel, shaft 14 moves inwardly on rod 8 and carries the pulsing cam 20 out of engagement with the latch and pressure members 22 and 23 so that the rotation of this cam will not be effective. At the same time, certain of the pins which do not project through openings on card 32, are pushed inwardly by the card so that they are in the plane formerly occupied by the pulsing cam 20. By the operation of lever 45, the governor drum is now shifted to a position such that the fly-weights engage the bearing surface 48 so as to retard the speed of the finger wheel and thereby the impulse pins 28 during its return movement. If the card shown in Fig. 6 is used, this single actuation of the finger wheel will call the line designation 4321, as four pins in the first group, three in the second, two in the third, and one in the fourth group will be depressed so that as the finger wheel slowly rotates on its return movement, these pins will actuate contact springs 21 in the same manner that pulsing cam 20 would have done if this number had been dialed in the normal manner by four rotations of the finger wheel.

The invention, of course, is not limited to the specific apparatus shown but only by the scope of the appended claims.

The invention claimed is:

1. A calling device comprising a finger wheel, means for normally transmitting impulses corresponding to the several digits of a line designation in response to a plurality of selective actuations of the finger wheel, and means to render the before mentioned means ineffective and to cause the transmission of impulses corresponding to the digits of a complete line designation in response to a single actuation of the finger wheel.

2. In a calling device, a finger wheel, means for normally transmitting impulses corresponding to the several digits of a line designation in response to a plurality of selective actuations of the finger wheel, a member upon which the complete line designation is recorded, and means cooperating with said member to render the said first means ineffective, and to cause the transmission of impulses corresponding to the designation recorded upon said member in response to a single actuation of the finger wheel.

3. A calling device comprising means for normally calling a line designation by a number of selective actions, a perforated card adapted to be inserted in said calling advice, and means cooperating with the perforated card for rendering ineffective said normal calling means and for calling the line designation by a single selective action.

4. In a telephone system in which normally a number of selective actions have to

be performed by a calling party to effect a connection, calling apparatus, a card to be inserted therein, and means positioned by said card for effecting a connection by a single selective action on the part of the calling party.

5. In an impulse sender, actuating means, contact springs, a perforated card, and means adapted to be set according to the perforations of said card for actuating the contact springs by a single operation of the actuating means.

6. In a calling device contact springs, an impulse cam for operating said contact springs, means to actuate said cam to transmit any one of a series of groups of impulses, a card to be inserted in said calling device, and means cooperating with the card to operate said springs to transmit said series of impulse groups independently of the operation of said cam.

7. In a calling device contact springs, a plurality of sets of pulsing pins normally movable ineffectively with respect to said springs, a card having perforations thereon corresponding to certain of the pulsing pins, and means to move said card to render said pins effective with respect to said contact springs.

8. In a calling dial, a finger wheel, contact springs, pulsing means to normally operate the contact springs to transmit a single group of impulses by a single operation of the finger wheel, pulsing means comprising depressible pins to operate the contact springs to transmit a number of groups of impulses by a single operation of the finger wheel, and means comprising the finger wheel for bringing either of said pulsing means into operation.

9. In a calling dial, a finger wheel, contact springs, a pulsing cam to normally operate the contact springs upon the rotation of the finger wheel so as to transmit a single group of impulses, depressible pins to operate the contact springs upon the rotation of the finger wheel to transmit a number of groups of impulses, a card to be inserted between said finger wheel and the depressible pins, perforations in the card corresponding to certain of the pins, means comprising the finger wheel to render the pulsing cam inoperative and to cooperate with said card to depress certain of said pins whereby those of the pins for which there are no perforations on the card will be rendered operative, and means for maintaining said last mentioned means operative until said groups of impulses have been completely transmitted.

10. In a calling dial, a finger wheel, contact springs, pulsing means to operate the contact springs so as to transmit a series of impulses by successive operations of the finger wheel, a perforated card capable of being inserted in the dial, and a second pulsing means cooperating with the perforated card to transmit said series of impulses by a single operation of the finger wheel.

11. In a calling dial, a finger wheel, contact springs, pulsing means to operate the contact springs so as to transmit a series of impulses by successive operations of the finger wheel, a perforated card capable of being inserted in the dial, a second pulsing means cooperating with the perforated card to transmit said series of impulses by a single operation of the finger wheel, and a two-speed governor associated with each of said pulsing means.

12. In a calling dial, a finger wheel, contact springs, a pulsing cam to normally operate the contact springs upon the rotation of the finger wheel so as to transmit a single group of impulses, depressible pins to operate the contact springs upon the rotation of the finger wheel so as to transmit a number of groups of impulses, a card to be inserted between the finger wheel and the depressible pins, perforations in the card corresponding to certain of the pins, means comprising a finger wheel for depressing the pulsing cam and the card so that the pulsing cam will be rendered inoperative while those of the pins for which there are no perforations on the card will be rendered operative, means for maintaining these members depressed until said groups of impulses have been completely transmitted by said contact springs, a governor member comprising fly-weights and bearing surfaces therefor, and means for causing the fly-weights to bear upon one of said surfaces when the pulsing cam is operative and upon the other of said surfaces when the pulsing pins are operative.

In witness whereof I hereunto subscribe my name this 26th day of December A. D., 1922.

PERCY C. SMITH.