

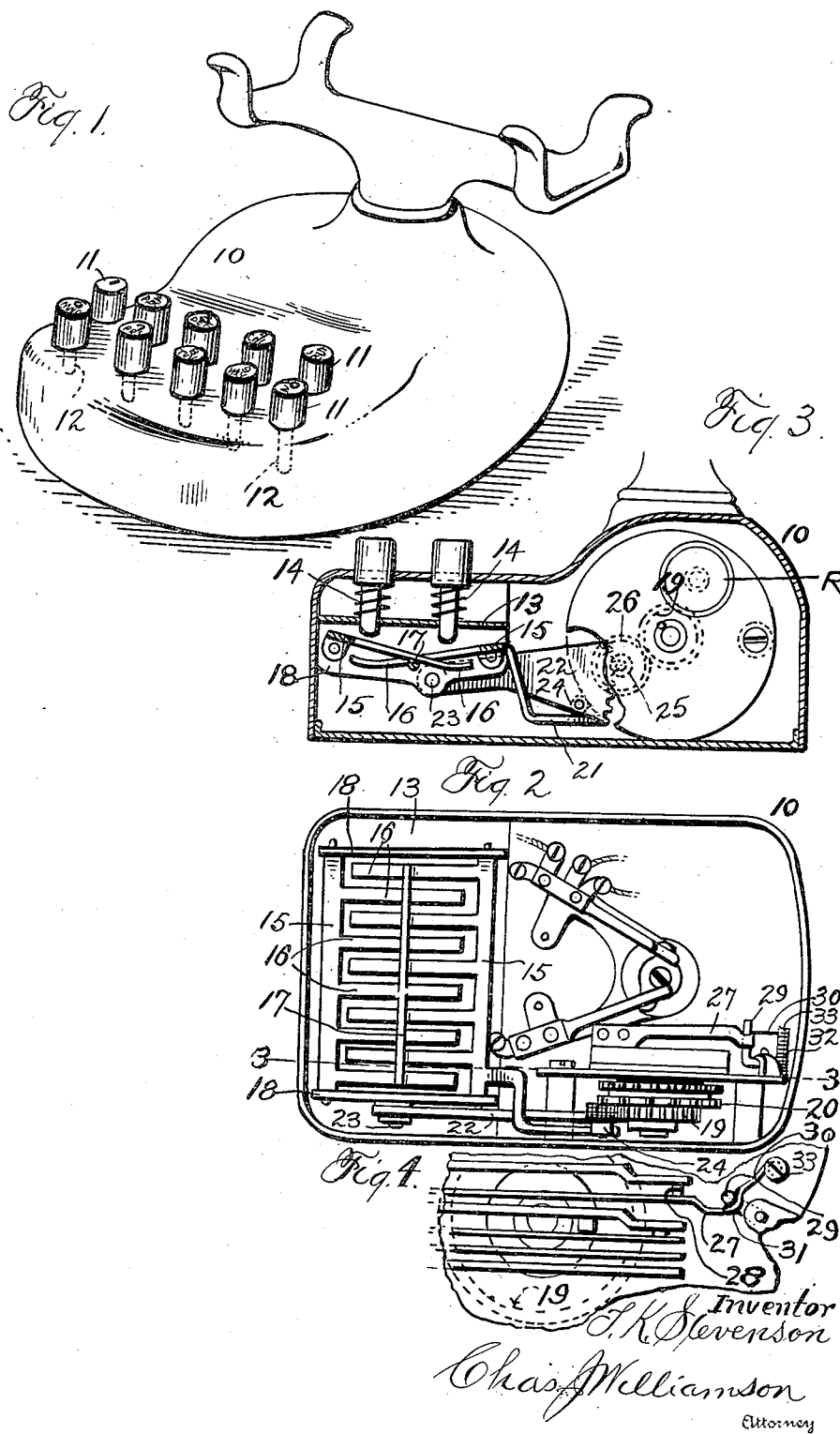
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TELEPHONE CALL APPARATUS

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TELEPHONE CALL APPARATUS

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4 Claims. (Cl. 179—90)

My invention relates to the call mechanism of automatic telephones. That mechanism in common use includes a rotatable dialing device in the form of a disc with holes through which the call letters and digits are displayed and for the insertion of the forefinger for rotating the disc in putting in the call. The unavoidably slow motions of the disc consume time in putting in the call and the arrangement is otherwise objectionable in that for example the user is apt to make errors in the call and thus further loss of time ensued, and the extent of movement required for some calls, about nine inches in the movement in one direction is objectionably great. The object of my invention is to provide a call device which will be free from the objections just mentioned and be otherwise advantageous.

My invention consists in whatever is described by or is included within the terms or scope of the appended claims.

In the accompanying drawing:—

Fig. 1 is a perspective view showing an embodiment of my invention arranged for use with a telephone instrument;

Fig. 2 is a bottom plan view of such embodiment;

Fig. 3 is a section on the line 3—3 of Fig. 2; and

Fig. 4 is a plan view of the dial-controlled switch mechanism of conventional form, with my rotating gearing, and my silencing device for the noise-producing contact members.

The fundamental idea entering into my invention in what I now consider its best embodiment is the use of simple straight line movement of push pins or buttons each of which is independently operable and each carrying or representing a digit or number and each associated with a letter or a group of letters identified or associated with the name of the telephone exchange where the connection is to be made automatically with the called phone, the device including the necessary switches appropriate to an automatic exchange which are actuated by the movement of the buttons. The buttons, of course, are pressed or pushed in succession and hence no time is lost by the necessity for awaiting the return to normal position as in the case of the familiar rotary dial operating device and the motion may be less than half an inch,—in marked contrast with the great angular travel of the common dial. Evidently very speedy operation is possible and the distraction is eliminated which may lead to mistake in numbers dialed possible where one awaits the slow return movement of the operating device as in the rotary dial.

Describing in detail the mechanism shown in Figs. 1 to 4, a compact casing 10, is provided which is of a size and form for mounting upon or attachment to or being a part of the base of the conventional telephone transmitter or stand. Passing through guide holes in the casing top are push pins or buttons 11, ten in number arranged compactly in two parallel rows and each bearing on its top one of the digits beginning with the numeral "1". On the top of the buttons (or if preferred on the casing contiguous to each of the buttons excepting the first and last of the series) is a group of letters in alphabetical order. Thus by pressing downward appropriate buttons in succession the letters giving the desired exchange and the numbers giving the desired phone are selected.

Each of the buttons 11 on its underside has a vertical stem 12 that passes through a hole in a guide plate 13 spaced below the casing top and between the underside of the button and the guide plate 13 is a coil spring 14, which normally acts to hold the button yieldingly in a raised position. The buttons, of course, are kept from turning, as by a key on the stem, or the stem may have a flat side to engage a flat surface in the guide hole.

Beneath the lower ends of the push button stems 12 of each transverse row of buttons is a vertical member of a two-part swinging frame, the two members being virtual duplicates and each being of comb-form and comprising a shank or shaft 15, from which project spaced apart parallel horizontally extending fingers 16, the fingers of one member extending into the spaces between the fingers of the other member. The fingers of one member are connected by a horizontal cross bar 17, that lies below the fingers of the other member so that when the member without the cross bar is depressed by the action of any one of the buttons associated therewith, movement will be transmitted to the other member to rock it upon its pivotal connection. Thus either by the direct action of the push buttons of one row, the member having the cross bar may be swung downward on its pivot and by the downward pressure on said cross bar 17 of any finger or fingers of the other member when depressed by any one of the push buttons of a row associated therewith, such downward swing can be effected. Each member at the end of the shaft or shank has a pivotal connection with a side frame bar 18. The downward swinging action of the two comb-form frames actuates the switches such as are commonly employed in the

dialing equipment of the telephones now generally used such as are sufficiently illustrated in Figs. 2 and 4, and which, of course, require no particular description as to details of construction and method of operation.

Said dialing mechanism in general use includes a central gear 19, concentric with which is the impulse-giving disc 20, that actuates in succession a pivoted finger or lever for giving the desired number of impulses for the call. And the gear 19 by a gear train not necessary to be described is in operative connection with the rotating slowing down or retarding device, R. A driving or operating connection between the swinging member which has the cross rod 17 is provided that includes a crank arm 21, attached to the shaft or shank 15, of that swinging member and a gear segment 22, having a pivotal connection 23, with one of the frame plates 18, from the side of which segment is a projection preferably in the form of a roller 24, adapted to be engaged on the underside by the free end of the crank arm 21, when the latter swings upward following the downward pushing of one of the push buttons and thereby swinging motion is imparted to the gear segment 22. The teeth of said rack mesh with a pinion 25, fixed to the side of an idler gear 26, that meshes with the gear 19. The simple speed-up gear connections described enable a comparatively short downward movement of each push button to be employed to effect the maximum rotation of the impulse-giving disc 20, and the whole range of angular movement thereof that is required.

Since there must be graduated movement of the swinging comb-form members, I accomplish that by regularly graduating the length of the push button stems 12, (shown in dotted lines in Fig. 1) so that the lower ends of those of one row are successively higher.

As is well-known, the operation of the dialing device is accompanied by a clicking noise due to the striking together of the contact points of the switch mechanism and when a number of dialed telephones are in the same room and all are operated at one time, the noise or confusion is considerable. I provide means to silence that noise.

As best shown in Fig. 4, the spring switch finger or contacts 27, whose contact point in striking the opposing contact 28 produces the noise described, is vibrated by the action of a pivoted finger 29, which first separates the two contacts by stressing the spring contact 27 and then allows the latter to swing back into contact-making position.

I have found that by the application of a brake or retarding device to the finger 29, the striking together of the two contacts with such force as to produce the disagreeable noise may be prevented. I provide such a device in the form of a light spring finger 30, with a curve or bend 31, at its free end which contacts with the finger 29, when the latter moves and exerts the desired retarding or braking effect thereon. Said spring finger 30, is the extremity of a coil spring 32, mounted conveniently upon a screw 33.

The push buttons shown in Figs. 1 and 3 are also lifted by coil springs on the stems 12 when they are released from finger pressure.

What I claim is:

1. A telephone calling device comprising a conventional stand having a base with a phone support, a casing mounted on the top of the base on the outside thereof, parallel rows of straight line moving push buttons, with finger-engaging tops exposed above the top of said casing, a two-part to-and-fro moving member, and means for actuating one member part from the buttons of one row and for actuating the other member part from the buttons of another row, and circuit making and breaking means operatively connected with said to-and-fro moving member.

2. A phone dialing mechanism that includes switch means having circuit opening and closing contacts at least one of which is a spring actuated finger, means to increase the tension of the latter and to release it, and a noise-silencing device that acts to control the striking force of said spring member in producing contact.

3. A phone dialing mechanism that includes switch means having circuit opening and closing contacts at least one of which is a spring actuated finger, means to increase the tension of the latter and to release it, and a noise-silencing device that acts to control the striking force of said spring member in producing contact and comprising a yieldable brake finger.

4. A telephone calling device comprising two groups of push buttons, electrical impulse mechanism, and button-actuated means to operate said impulse mechanism comprising two pivoted members each having spaced apart fingers and the fingers of one member extending into the spaces between the fingers of the other member and a part carried by one member that extends across the spaces between the fingers thereof in position to be engaged by the fingers of the other member.

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