

Jan. 12, 1954

W. G. BREIVOGEL
CALLING DIAL DEVICE

2,666,097

Filed Dec. 7, 1950

2 Sheets-Sheet 1

FIG. 1

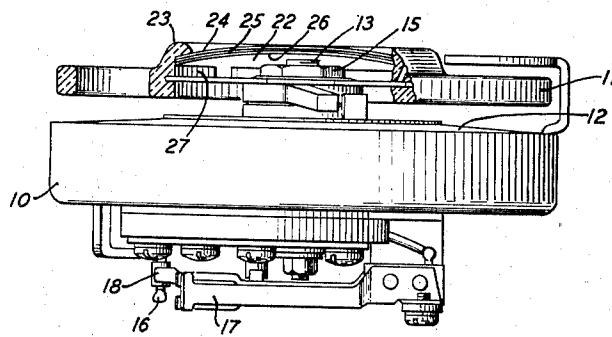
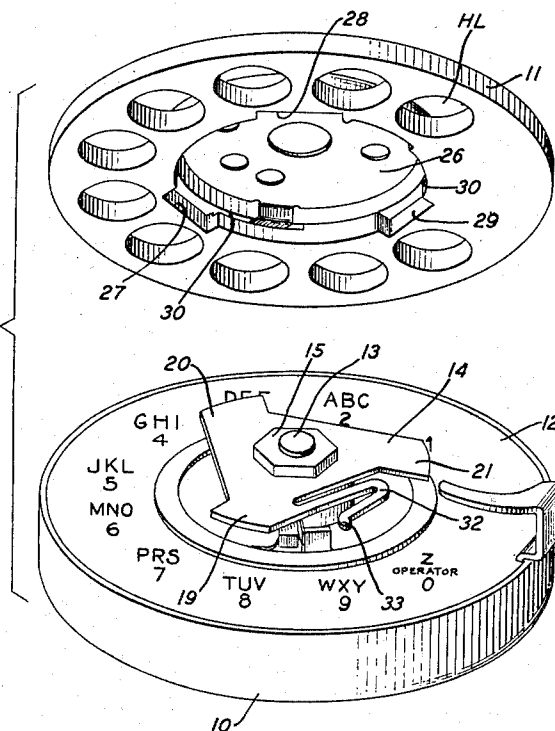


FIG. 2



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FIG. 3

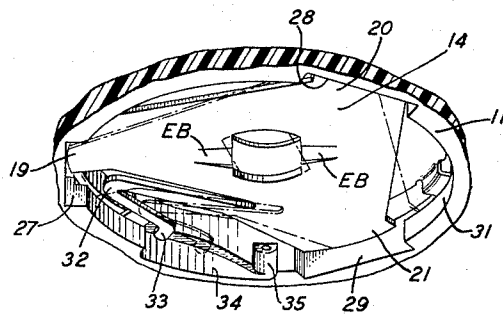


FIG. 4

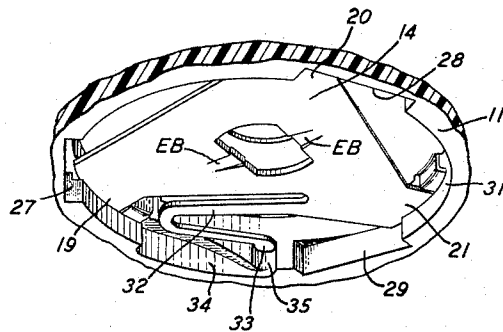


FIG. 5

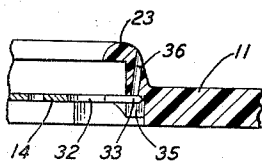
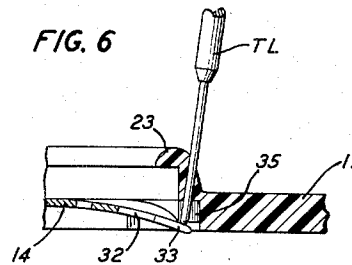


FIG. 6



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CALLING DIAL DEVICE

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3 Claims. (Cl. 179—90)

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This invention relates to telephone calling dials of the rotatable finger wheel type and more particularly to a mounting for removably securing the finger wheel to the operating shaft of the dial.

One object of this invention is the provision of a simple one-piece mounting for molded finger wheels which while readily permitting the assembly and disassembly of the finger wheel by an authorized person is substantially tamper-proof by an unauthorized person.

Another object of the invention is the provision of a finger wheel mounting which comprises a comparatively small number of parts, is efficient in operation and is economic to manufacture.

In the assembly and disassembly of finger wheels of calling dials, and particularly those constructed of plastic or similar molded material, it has been found that the mounting and method of securing metal finger wheels to the dial operating shaft is not practical, since the indicia holder is integral with the molded finger wheel and not a separate item as in the well-known metal type of finger wheel. It is with the securing of the molded type finger wheel to the operating shaft of the dial in a simple, efficient, tamper-proof inexpensive way that this invention is concerned.

In one preferred embodiment of my invention, I provide a flat substantially triangular shaped member which is adapted to be secured to the extending end portion of the dial operating shaft. The extremities of the triangular member are provided with lobes or ears which are adapted to engage circumferential slots or recesses in the inner wall of the indicia holder, upon the rotation of the finger wheel counterclockwise, to position the finger wheel on the triangular member. An extending spring member, integral with the triangular plate, engages a vertical slot on the inner wall of the indicia holder to lock the finger wheel in place. An aperture communicating with the vertical slot permits a tool to be inserted therein to engage and release the spring, thereby permitting the ready removal of the dial by rotating it in a clockwise direction.

The invention will be more clearly understood from the following detailed description when read in conjunction with the following drawings in which:

Fig. 1 is a side elevational view, partly in section, of a calling dial embodying the invention;

Fig. 2 is an exploded perspective view of the calling dial shown in Fig. 1, with the finger wheel removed from its mounting;

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Fig. 3 is a fragmentary perspective view of the underside of the indicia holder, with the mounting plate positioned therein, in its unlocked position;

Fig. 4 is a view similar to Fig. 3 but shows the mounting plate in its locked position;

Fig. 5 is a fragmentary view, in section, showing the locking spring in its locked position; and

Fig. 6 is a view similar to Fig. 5 but shows the locking spring pushed out of its locked position by means of a suitable tool.

The calling dial as shown in Figs. 1 and 2 comprises a casing 10 and a finger wheel 11, and a number plate 12. The finger wheel 11 is constructed of plastic or some similar molded material, is located above and in spaced relation with respect to the number plate 12 and is secured to and supported on the shaft 13 by means of the mounting plate member 14. The mounting plate 14 is provided with a rectangular aperture which engages a flattened portion on the shaft 13 to prevent movement therebetween and is held in place by means of the nut 15. The shaft 13 extends downwardly through the number plate 12 and into the casing 10 and is intended to be operated by the manual rotation of the finger wheel 11 in the wind-up stage, to store energy in the drive spring (not shown). Release of the finger wheel 11 will cause the shaft 13 to rotate and cause the operation of the arm 16 and the contacts 17 and 18 associated therewith to send out signal impulses over the line to obtain the desired connection.

As shown in the drawings, the mounting plate 14 is substantially in the shape of an equilateral triangle and is provided on its extremities with lobes or ears 19, 20 and 21, which have an arcuate profile. As heretofore described, the mounting plate 14 is fitted over the shaft 13 and secured thereto by means of the nut 15 which forces the plate down into engagement with a shoulder on the shaft 13, which maintains said plate in juxtaposition with respect to the number plate 12, and locked in position by means of the embossings EB.

The finger wheel 11 as shown in the various figures, and more in detail in Figs. 1 and 2, is provided with an integral indicia holder, which comprises a central circular aperture 22 having an intumed rim or flange 23 which confines and acts as a frame for the indicia members 24 and 25 and the spring backing plate 26. The inner wall of the indicia holder as shown in Figs. 2, 3, and 4 is provided with spaced recesses 27, 28 and 29 which communicate with circumferential

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grooves 30 on the inner wall 31 of the central aperture 22 and which are adapted to receive the lobes 19, 20 and 21 on the plate member 14. A spring member 32 is formed integral with mounting plate 14 and has its end 33 extending slightly beyond the ends of the lobes 19, 20 and 21 and is slightly off-set with respect to the plane of the plate 14. As shown in Figs. 3 to 6, inclusive, the end 33 of the spring 32, is adapted to engage a tapered recess 34, on the inner wall 31 of the aperture and be positioned in the vertical aperture 35 which passes through flange 23 at point 36 as shown in Fig. 5 and communicates with recess 34 provided with a reduced diameter bore.

As shown in Fig. 3, the plate 14 is in its unlocked position, with the lobes 19, 20 and 21 in register with the recesses 27, 28 and 29, and with the end 33 of the spring 32, in engagement with the tapered portion of the recess 34. The figure shows in dot and dash lines the position assumed by the lobes 19, 20 and 21 and the end 33 of spring 32, when the finger wheel 11 is rotated in a counterclockwise direction to cause the lobes to enter the circumferential grooves 30 and the end of the spring to enter the recess 35.

As shown in Fig. 4, the finger wheel 11 has been rotated counterclockwise until the end 33 of the spring 32 registers with and locks itself in position in the recess 35, with the lobes 19, 20 and 21 in position in the grooves 30, thereby firmly securing the finger wheel 11 to the shaft 13 through the medium of the mounting plate 14.

In practicing the invention herein described, the first step in the application of the finger wheel to its support is to secure the mounting plate 14 to the shaft 13, so that the end 33 of the spring 32 is opposite the letter X on the number plate 12, by means of the nut 15. The next step is to position the finger wheel 11 over the mounting plate 14, so that the recesses 27, 28 and 29, register with the lobes 19, 20, and 21, which is when the last finger wheel hole HL is in alignment with the letters WXY on the number plate 12.

When the finger wheel 11 has been positioned, as described, it is rotated counterclockwise until the end 33 of the spring 32 snaps into the recess 34 and is positioned in the bottom thereof as shown in Fig. 5; thereby securely locking the finger wheel 11 to the mounting plate 14.

As shown in Fig. 6, when it is desired to remove the finger wheel 11, a tool TL is inserted through the aperture 36 into the recess 35 and into engagement with the end 33 of the spring 32. Downward pressure on the tool causes the end 33 of the spring 32 to become disengaged from the recess 34. Holding the end of the spring 32 depressed, as shown, the finger wheel 11 may be rotated clockwise which causes the end 33 of the spring 32 to ride on the wall of the tapered recess 34 and permits the lobes 19, 20 and 21 to slide in the grooves 30 and register with the recesses 27, 28 and 29. The finger wheel 11 then may be lifted off from the mounting plate 14 as shown in Fig. 2.

While I have shown and described the preferred embodiment of my invention it is to be understood that various changes and modifications may be made therein without departing from the spirit of the invention.

What is claimed is:

1. In a telephone calling device, a rotatable shaft, a finger wheel having a recess in one face thereof, said finger wheel having also at the periphery of said recess a plurality of spaced slots extending inwardly from said face, a plurality of circumferential grooves in communication with said slots and a tapered recess terminating in a stop opening, a mounting member coupled to said shaft and having lobes at its periphery insertable into said slots and upon relative rotation between said finger wheel and plate, slidable into said grooves, said mounting member having integral therewith a resilient finger, and said finger having an end portion adapted to fit into said tapered recess and upon said relative rotation to be guided thereby into said stop opening, thereby to lock said finger wheel to said plate member.

2. In a telephone calling device, the combination defined by claim 1 wherein said finger wheel has therein a restricted aperture extending from the opposite face thereof into said stop recess, whereby said resilient finger may be disengaged from said stop recess by insertion of a tool into said restricted aperture.

3. In a telephone calling device, a rotatable shaft, a finger wheel having a circular recess in one face thereof, the peripheral wall of said recess having therein spaced circumferential grooves, three spaced slots communicating with said grooves and a tapered recess terminating in a stop opening, a plate member having a substantially triangular body portion and lobes at the apices of said body portion adapted to fit in said grooves, said slots being spaced in the same relation as and wider than said lobes, whereby said plate member is insertable into said recess and upon relative rotation of said finger wheel and plate member said lobes slide into said grooves, said plate member having integral therewith and extending from said body portion a substantially J shaped finger the outer end of which is adapted to fit into said tapered recess and upon said relative rotation to be guided by said tapered recess into said stop opening.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
2,194,306	Huxham	Mar. 19, 1940
2,307,226	Lum	Jan. 5, 1943
2,307,463	Lum	Jan. 5, 1943
2,312,566	Lum	Mar. 2, 1943
2,327,782	Goff	Aug. 24, 1943
2,571,649	Arthur	Oct. 16, 1951