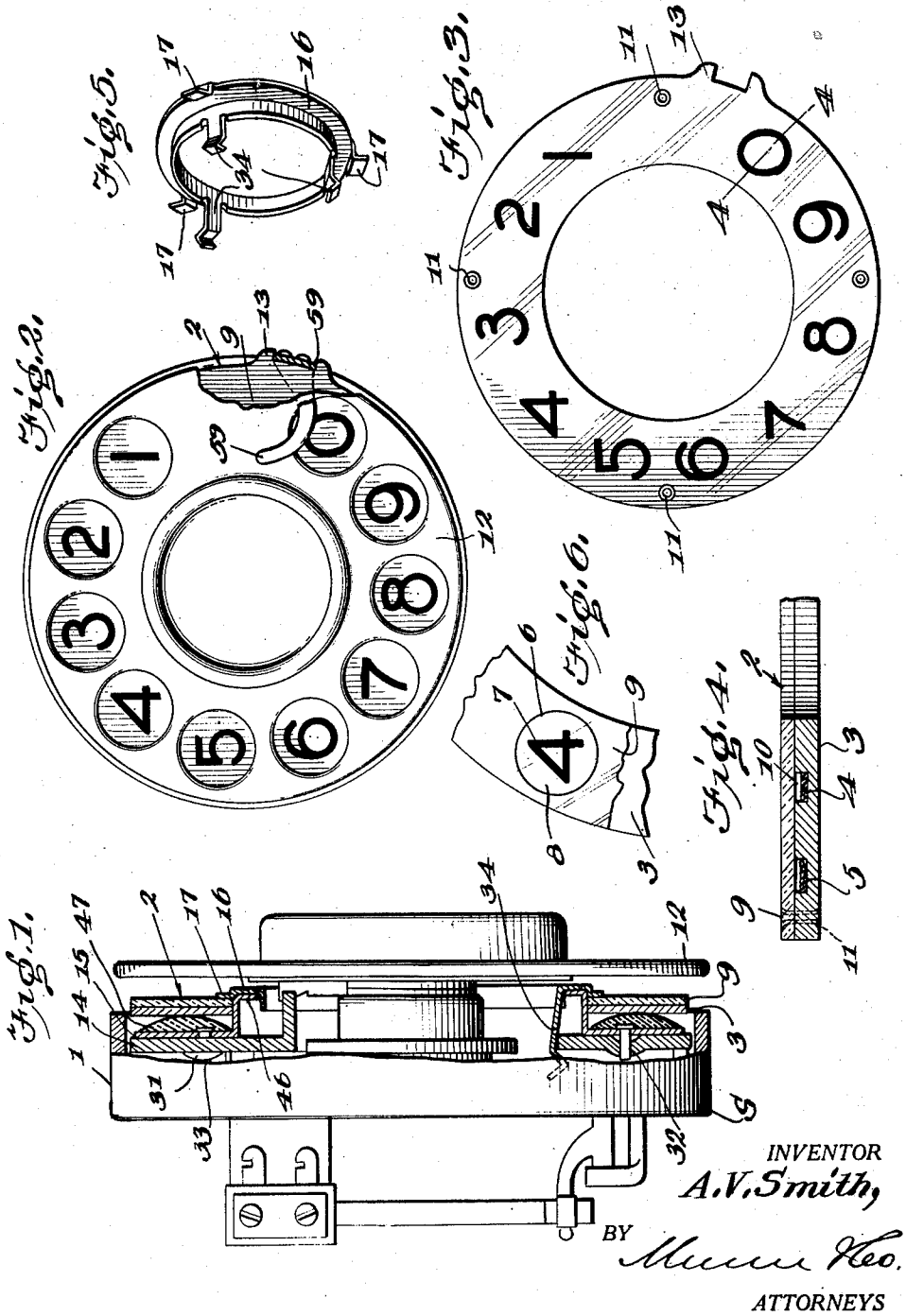
July 21, 1925. 1,546,557

A. V. SMITH

LUMINOUS DIAL OR INDICATOR

Filed Oct. 26, 1923 2 Sheets-Sheet 1



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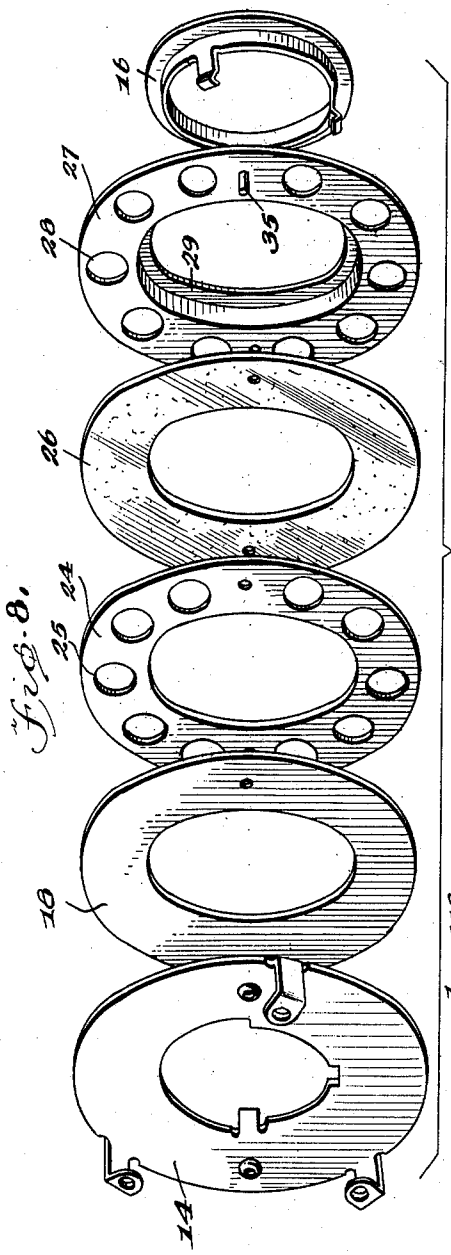

Fig. 8.

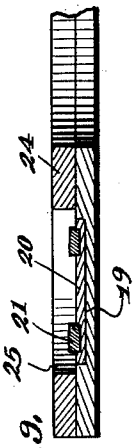

Fig. 9.

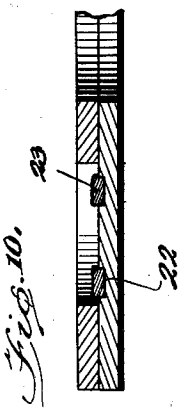

Fig. 10.

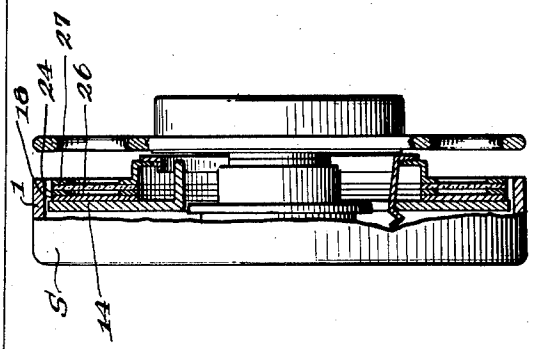

Fig. 7.

WITNESSES

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UNITED STATES PATENT OFFICE.

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LUMINOUS DIAL OR INDICATOR.

Application filed October 26, 1923. Serial No. 671,038.

To all whom it may concern:

Be it known that I, ANDREW V. SMITH, a citizen of the United States, and a resident of Little Rock, in the county of Pulaski and State of Arkansas, have invented certain new and useful Improvements in Luminous Dials or Indicators, of which the following is a specification.

This invention relates in general to luminous dials or indicators and is especially designed and adapted for use on automatic telephones although it possesses a general utility and may be used to advantage in many and various arts.

The object of the invention is to provide a dial of this type wherein the characters of the dial are composed in part at least of luminous paint so as to be visible at night or in dark places and are protected so as to admit of manipulation of the dial without liability of impairing the luminous quality of the characters.

Another object is to provide a dial having the foregoing advantages and capacities and which is also of extremely simple though durable construction and which is adapted to be readily manufactured at a comparatively slight expense from materials and by means of facilities ordinarily available.

A still further object is to provide a dial of this character which may be placed or superimposed on the ordinary dial of the automatic telephone or which may take the place of this ordinary dial after the latter has been removed.

Other objects and advantages of the invention reside in certain novel features of the construction, combination and arrangement of parts which will be hereinafter more fully described and particularly pointed out in the appended claim, reference being had to the accompanying drawings forming part of this specification, and in which:

Figure 1 is a view, partly in diametrical section and partly in side elevation, and showing the preferred embodiment of the invention applied to the selective switch of an automatic telephone;

Figure 2 is a view of the selective switch and luminous dial in front elevation with parts broken away for the sake of illustration;

Figure 3 is a view in elevation of the luminous dial detached from the switch;

Figure 4 is a view in section, on line 4—4 of Figure 3;

Figure 5 is a detail perspective view, showing how the ordinary clip of a selective switch is modified for holding the luminous dial in position;

Figure 6 is a fragmentary view in elevation, showing a slightly modified form of dial;

Figure 7 is a view similar to Figure 1 but showing a modified form of the invention;

Figure 8 is a group view in perspective, showing the elements of the construction of Figure 7 prior to assembly;

Figure 9 is a fragmentary view, in section, illustrating one form of carrier plate which may be employed with the construction of Figure 7; and

Figure 10 is a view similar to Figure 9 but showing a modified form of carrier plate.

Referring to the drawings it will be seen that both embodiments of the invention are shown applied to and organized with the selective switch of an automatic telephone which is designated generally at S. The details of construction of the selective switch are well known to those skilled in the art and need no detail disclosure in this application. For a disclosure of the details of such a switch, reference is made to the patent to Dobbin, et al. No. 1,390,679, Sept. 13, 1921, and the patent to Forsberg, No. 1,161,854, Nov. 30, 1915. For the purposes of the present invention it is sufficient to understand that such selective switches include a housing 1 in which a supporting plate 14 is mounted and secured. On the supporting plate 14 a number plate 15 is arranged. This number plate 15 consists of a disk of copper coated with white enamel and having black numerals and letters applied thereto. The coating of the number plate 15 is designated at 47. In order to hold the plate 15 against turning movement on the supporting plate 14 pins 33 are provided on the plate 15 and are received in apertures 31 and 32 provided in the supporting plate. A retaining ring designated at 16 is provided for holding the number plate against axial displacement, and for this purpose the retaining ring is provided with a number of spring fingers 34 which engage the supporting plate and a collar 46 on the number plate to hold

the number plate against displacement. The arrangement thus described is shown in Figure 1 of the drawings of this application and is more fully set out in the first patent above referred to.

In the preferred embodiment of the present invention as is illustrated in Figures 1 to 6, inclusive, the selective switch structure above described is left intact and is unchanged except to certain additions to the clips or retaining rings 16 which will be hereinafter specifically described.

The luminous dial which constitutes an important feature of the present invention is designated generally at 2 and is superimposed on the ordinary dial constituted by the number plate 15 with its coating 47. This luminous dial includes an annular carrier plate 3 constructed of any suitable material such as paper, fibre or the like and having on one face a series of recesses. These recesses may have the form and contour of the characters or numbers as shown in Figures 3 and 4 and designated by the numeral 4. In the recesses 4 the luminous characters are arranged and are entirely contained in the recesses. Preferably these characters, which are designated at 5 in Figure 4 are composed in part at least of luminous paint. If desired the recesses formed in the carrier plate may all be of circular form as indicated at 6 in Figure 6 and if this construction is used the luminous characters designated at 7 are mounted on a small disk 8 which is received in the recess 6. As before, the recess is made sufficiently large or deep to entirely contain the luminous character as well as the disk on which it is mounted. An annular protective plate 9 which is preferably constituted of celluloid or other suitable transparent substance is disposed on the carrier plate 3 to cover the recesses thereof and to protect the luminous characters. Preferably the recesses in the character plate in which the luminous characters are contained are of such depth that a space or clearance 10 (see Figure 4) is provided between the characters and the portions of the protective plate which overlie the characters and cover the recesses. The protective plate is secured to the carrier plate by eyelets 11 as shown in Figure 3 or it may be cemented or secured to the character plate by an adhesive.

In assembling the luminous dial 2 with the selective switch it is necessary to first remove the finger hold 12. The dial 2 is then superimposed on the ordinary dial of the switch and may be cemented or otherwise suitably secured to this ordinary dial. In order to prevent the luminous dial from rotating relative to the housing 1 and to the ordinary dial the carrier plate 3 and the protective plate 9 are provided with notched lugs 13 on their peripheries. These notched lugs of the plates are alined in assembly and receive a portion of the finger hook 59. After the luminous dial has been assembled as above described the finger hold 12 is of course replaced.

If it is found desirable or if it is preferred to utilize a more positive means for preventing axial displacement of the luminous dial than the expedient above referred to the ordinary clip 16 provided in conjunction with the selective switches now in use may be equipped with additional fingers 17 on its outer peripheral edge, these fingers 17 being deflected outwardly and being adapted to engage the inner peripheral portion of the protective plate 9 of the luminous dial as shown in Figure 1. Of course it is to be understood that when the fingers 17 are used it is necessary before assembling the luminous dial with the selective switch to remove the retaining ring 16 as well as the finger hold 12 and to substitute for the ordinary clip or retaining ring 16 one which is equipped or provided with the fingers 17 as shown in Figure 5.

In lieu of superimposing the luminous dial on the ordinary dial as above described and as shown in Figures 1 to 6, the ordinary dial constituted by the number plate 15 with its coating 47 may be removed and in lieu thereof the arrangement shown in Figures 7 to 10 and now to be described may be substituted therefor. As shown in Figures 7 and 8 a number plate 18 is provided but this number plate may be constituted of paper, fibre or tin. The number plate 18 is of annular form and may have a series of circular recesses 19 (see Figure 10) in which small circular plate 20 are arranged, the plates 20 carrying numerals or characters 21 which are composed of luminous paint or coatings of luminous paint applied to characters constituted of other substances, or the number plate 18 may have a recess or recesses 22 which are of such form as to define the numbers or characters and which contain a body of luminous paint designated at 23 and constituting the luminous characters. In either event a spacing plate 24 is provided and is constituted of paper, fibre or the like cut or otherwise shaped to annular form and having a series of circular openings 25 overlying each of the characters of the number plate 18 in the assembly. An annular protective disk 26 constituted of celluloid or other transparent substance is arranged next to the spacing disk 24. By virture of the provision of the spacing disk 24 and of the formation of the opening 25 therein, the luminous characters are spaced from and do not come into contact with any of the structure of the dial. Thus the plates while protected by the transparent disk 26 are not touched by this disk. An annular metallic disk or plate 27 rests on the

transparent disk 26 and is provided with a series of circular openings 23 through which the numerals or characters of the plate 18 may be viewed. This metallic plate 27 is provided with a collar 29 which corresponds in function to the collar 46 of the number plate of the conventional selective clip in that it coacts with the retaining ring 16 for the purpose of holding the elements of the luminous dial up against the supporting plate 14. With this form of the invention the identical retaining ring 16 employed on the conventional switch is used for holding the parts of the luminous dial in position up against the supporting plate, and this retaining ring 16 has as usual spring fingers 34 coacting with the inner periphery of the supporting plate 14 in carrying out its securing function. In order to hold the parts of the luminous dial against relative rotation pins 35 are provided on the plate 27 and extend through alined openings provided therefor in the plates 14, 25 and 26.

I claim:

A luminous dial for use with the selective switches of automatic telephones including a housing, an ordinary dial in the housing and a finger hook, said luminous dial being superimposed on the ordinary dial and comprising an annular carrier plate having recesses therein, said carrier plate having luminous characters disposed and entirely contained within the carrier plate and an annular transparent protecting plate fixedly secured to the carrier plate and covering said recesses, said plate having notched lugs embracing the finger hook for holding the luminous dial against rotation, and means for holding the luminous dial against accidental movement and comprising a grip mounted on the selective switch and having outwardly deflected fingers engageable with the protective plate to hold the luminous dial assembly up against the ordinary dial.

ANDREW VAN SMITH.