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G. D. COX ET AL

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TELEPHONE INSTRUMENT DIAL

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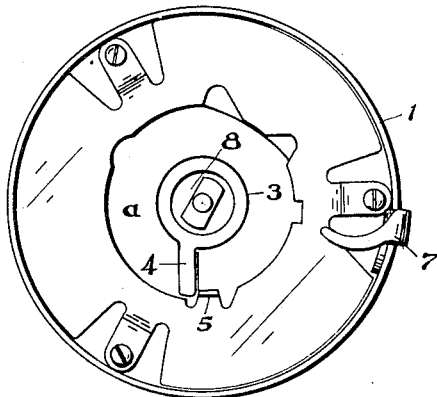


Fig. 1

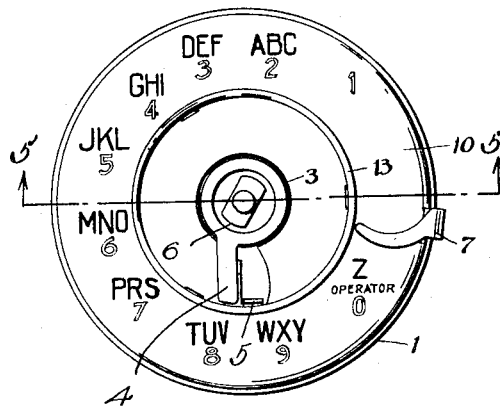


Fig. 2

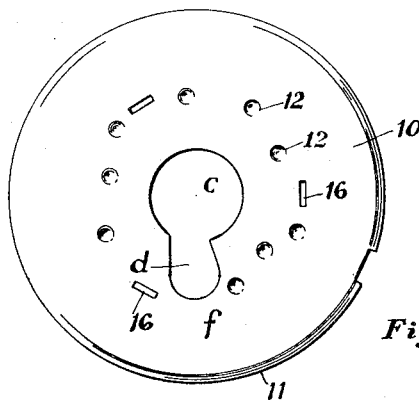


Fig. 3

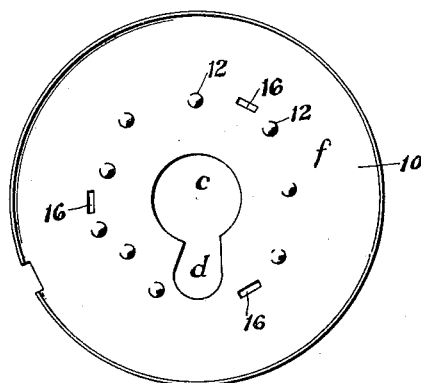


Fig. 4

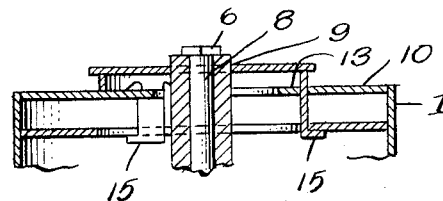


Fig. 5

INVENTORS  
George D. Cox and  
Charles J. Gutberlet  
BY Mark W. Collet  
their ATTORNEYS.

## UNITED STATES PATENT OFFICE

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## TELEPHONE INSTRUMENT DIAL

George D. Cox and Charles J. Gutberlet,  
Philadelphia, Pa.

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7 Claims. (Cl. 40—10.5)

Telephone dials have been made heretofore in a number of different forms. Gradually they have been standardized, one of the principal forms being a metal disc fitting around a hub and having a porcelain coating on which were the various letters and digits required for "dialing". This disc fitted inside the box that contained a portion of the operating mechanism, that was positioned at the instrument. It was curved upwards towards the centre to give the movable parts under it a sufficient space to move. This construction had many objectionable features; the porcelain cracked and the hub which was hollow, left a large space for the entrance of dust and other objections were made to it.

We have made a much more satisfactory dial by changing the material to cellulose acetate, and making it flat and supporting it at points between the circumference and the center so that this less rigid material would not bend downward, and making these supports of a construction that would not impair the strength of the dial to remain flat and not bend at the place of support, thus avoiding the supposed necessity for the upward curve. We also use a fastening ring, that replaces the hub for holding the dial in place, and which rests on top of the dial allowing the latter to cover nearly all of the space between the center pillar and the edges of the box so that the construction of the device enables it to cover almost entirely the mechanism of the instrument. Our device also has a number of other advantageous features that are described below, in the detailed portion of this specification. The use of cellulose acetate or a similar material, makes this construction commercially practical, and enables the figures and digits to be inscribed on a backing of opaque, (preferably white) material and a sheet of transparent cellulose acetate or like material to be cemented over them rendering them absolutely permanent.

Fig. 1 is a plan view of the relevant portion of the operative mechanism of the telephone instrument, and of the box containing it as it appears before the dial is set in position in the box. Fig. 2 is a top plan view of the dial and retaining means, set in the box. Fig. 3 is a top plan view of the dial by itself. Fig. 4 is a view of the dial looked at from beneath. Fig. 5 is a section as far down as the crosswise running plate 2 on line 5—5 of Fig. 2.

As a preliminary to the description of our dial, a brief description of a part of the usual mechanism of a dial telephone is inserted here. The box 1 contains a crosswise running plate 2 with a central opening *a* through which projects the pillar 3, which contains a rotating spindle 8 that rotates with the finger hole plate, and that carries an arm 4 that rotates with the catch 6 and engages with the stop 5 set in the plate 1. The

pillar 3 has also a catch 6 for engagement with the finger hole disc, which is not relevant to the present improvement and is not shown, and the box 1 has the finger stop 7 which, usually for appearance, is riveted to the inside of the box 1. The cross plate 2 is usually held in position in the box 1 by the lugs 9 that are depressed below the general level of the plate 2. This plate 2 extends crosswise of the box 1, and has its inner side at a distance from the pillar leaving a space between it and the pillar. These are standard parts that are those generally used in dial telephones.

It may be noted that in the form of telephone described above (see especially Fig. 1) there is a large space between the pillar and the plate 2. Into this space, if not closed, dust will sift, and that this space usually is closed by washers or other devices, which may be dispensed with, by the use of our device.

Describing now our invention; the dial 10 is flat but has a depressed rim 11; that fits snugly into the box 1 and rests on the plate 2. Generally it is cut out at *b* to fit around the finger stop 7. This dial 10 has a circular cut out portion *c* that fits snugly around the middle pillar 3, and an oblong cut out portion *d* that permits the passage through the dial of the arm 4 and stop 5. This construction almost entirely covers the mechanism in the box 1.

The rim 11 necessarily raises the flat surface *f* of the dial 10 as it rests on the top of the plate 2 adjacent to the edges of this plate. The flat area of the dial 10 can be pushed down readily unless supported, when it is made of a readily bent material like cellulose acetate. We provide as supports for the flat area of the dial the beads 12, 12, 12, that are formed by pressing down the flat area of the dial material at irregular places but substantially at about equal distances from the centre of the dial, preferably in an arrangement that brings these beads about midway between the centre and the rim 11. These beads leave the dial with sufficient undisturbed material between them to keep the material from bending, as it would do if a continuous depression were made. These beads 12, 12, rest on the upper surface of the cross plate 2, and project downward from the under surface of the flat portion of the dial, substantially to the same extent that the rim 11 does.

The dial is held in place by the circular retainer 13. This is formed of sheet material that preferably has its upper edges turned over. It is provided with the springing arms 14, 14, that engage the plate 2 being provided with catches 15, 15, formed preferably by bending the arms 14 outward and then inward, so that these arms can be pressed downward and engage the crosswise plate 2 at the edges of its central opening *c*. The

length of the arms 14, between the top surface of the dial 10, and the bent portion above referred to is regulated so that the catch 15 will hold the beads firmly against the plate 2, and hence position the dial firmly. The dial is provided with the slots 16 through which the arms 14, 14, can be passed.

The dial is made of a foundation of cellulose acetate, preferably white and opaque. On the face of the dial are inscribed the required figures and digits and letters. By the use of a suitable cement (preferably a cement having as a base ethyl acetate) there is cemented over this foundation so as to cover the letters, a thin sheet of transparent material such as cellulose acetate. This layer extends preferably over the entire surface of the dial and rim and covers the letters. This compound material is extremely satisfactory, provided the beads 12, 12, are used and no attempt is made to use a depressed ring or other continuous depression, which would make it likely to bend or even crack if tried to replace them.

The device may be assembled by slipping the dial carrying the letters and numerals over and around the pillar and passing the arm 4 and stop 5 through the slot *d*. The retainer 13 may then be placed over the dial with the prongs passing through the slots 16, 16, 16, 16 and catching around the edges of the plate 3 hold the dial in place without the need for any washers to close the opening around the pillar.

While the device is intended for a very special form and assemblage of instrumentalities, and consequently very specially contrived for particular purposes, considerable variation from the specific form described minutely above will come within our invention, and hence this specific form is not to be taken as defining the limits of our invention.

We claim:

1. In a dial telephone box, a dial plate made of a cellulose material, having a central opening, a radial slot extending outward from this central

opening, a rim extending downwards from the plate and slots therein between the central opening and the rim.

2. The dial plate defined in claim 1, in combination with a retainer consisting of a ring resting on the face of said plate and catching prongs extending through the said slots.

3. In a dial telephone box equipment, a dial plate made of a cellulose material, having a central hole and a downwardly projecting rim and downwardly extending projections from the lower side of the dial.

4. In a dial telephone box equipment, a flat dial plate having a central hole and made of two layers of a cellulose material superposed upon each other, the lower being of a light color and bearing the requisite markings and the upper being of a transparent material cemented to and covering the markings on the lower, the said dial plate between its circumference and central hole having portions of its constituent material depressed, forming hollows in the upper face and projections from the lower face.

5. The device as defined in claim 4, in combination with a rim formed of the same material as the dial, and extending in the same direction and distance as the projections.

6. A flat dial plate for dial telephone boxes made of an upper and lower layer of cellulose acetate, the lower layer containing the requisite markings and the upper being of transparent material, said dial plate having a downwardly extending circumferential rim, a central opening with a radial slot extending therefrom and a series of irregularly placed depressions of the material of the dial between the circumference and the central opening.

7. The device as defined in claim 4 wherein the layers therein referred to are cemented together by a cement having as its base ethyl acetate.

GEORGE D. COX.  
CHARLES J. GUTBERLET.

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