

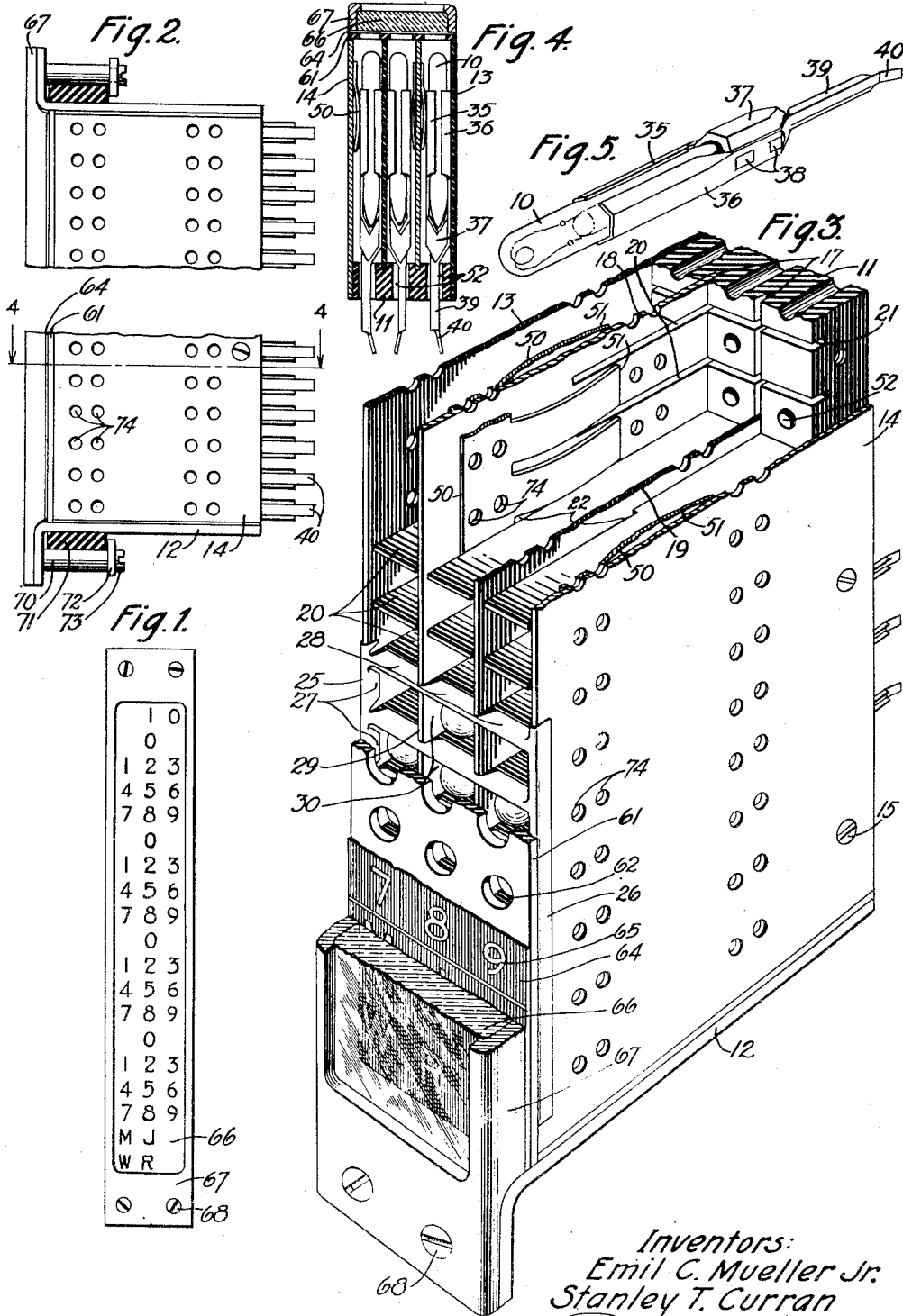
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CALL INDICATOR

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UNITED STATES PATENT OFFICE.

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CALL INDICATOR.

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This invention relates to call indicators and particularly to improvements in the construction structure of telephone number indicators of the type in which numbers and letters are arranged in rows and the telephone numbers wanted are illuminated by means of lamps arranged in a cellular structure.

An object of this invention is to simplify the general construction and decrease the cost of manufacture and reduce the size of indicators of this type.

To attain this and other objects of the invention, there is provided in accordance with one feature thereof a structure that is particularly compact and that fits into the space usually occupied by two ordinary standard key units in the key-shelf of an ordinary standard switchboard.

Another feature is the provision of a cellular structure in which means, in the form of contact strips is provided for connecting one outlet terminal of the lamps together to a common outlet terminal which may be the frame of the structure itself, and in which the other outlet terminals of the lamps are electrically insulated from each other.

Another feature is the provision of a modified rigid construction of the separate outlet terminals of the lamps.

Another feature is the provision of a metal grille easily assembled with the division walls of the cellular structure containing the lamps to hold these walls together at the front end where the cells open up towards the covering plate upon which the numerals and letters appear.

Another feature is the provision of a comparatively thick felt washer or cover over the open ends of the cells, provided with holes for the passage of restricted light beams from the lamps and to prevent light from leaking through from one cell to another.

Another feature is the provision of aperture between the cells to permit the passage of air currents to disperse the heat generated by the lamps when lighted.

Another feature is the provision of a specially constructed covering plate assembly including the felt cover, which may be easily removed from the cellular structure for the replacement of defective or burnt out lamps

without the removal of the cellular structure itself from the keyshelf.

Referring now to the drawing; Fig. 1 is the front view of an indicator constructed in accordance with this invention, showing the arrangement of the numerals and letters on the face thereof; Fig. 2 is a side view of this indicator showing the ventilating apertures and the means for mounting the indicator to the keyshelf in a switchboard and also the individually insulated terminals of the lamps; Fig. 3 is an enlarged perspective view of this indicator with a portion removed to show the inside construction thereof; Fig. 4 is a cross-sectional view of this indicator taken on the line 4—4 of Fig. 2, while Fig. 5 is an enlarged perspective view of one of the lamps used in this indicator.

Referring now in general to the various figures of the drawing, the construction of the indicator is such that a plurality of lamps, such as the one shown in Fig. 5 are arranged in a cellular structure with a lamp in each cell and with a cover plate assembly placed over the open ends of these cells provided with apertures for the passage of beams of light to illuminate individually the transparent numbers and letters formed in the otherwise non-transparent cover plate.

The cellular structure for the lamps comprises a back plate or block 11 of insulating material, end plates 12 of metal secured to the ends of block 11 in any suitable manner and side plate 13 of metal and side plate 14 of insulating material secured to the sides of block 11 by means of screws such as 15. Block 11 is provided with two longitudinal slots 17 in one of which is inserted a division plate 18 of metal and in the other of which is inserted a division plate 19 of insulating material. These division plates form with the side plates 13 and 14 the longitudinal dividing walls of the cellular structure. The transverse division walls of this structure are formed by plates 20 of insulating material having their lower ends inserted in transverse slots 21 cut in the upper surface of block 11. Each division plate 20 is provided with slots 22 extending from the top of the structure to the center of the plates, while the division plates 18 and 19 have similar slots 23 extending from the bottom of the structure up to the center of

the plates, so that these longitudinal and transverse division plates may be interlocked with each other in the manner shown to form the walls of the cells.

5 The side plates 13 and 14 and the division plates 18 and 19 and the transverse division plates 20 are all held together at the top of the structure by means of a metal grille 25 cut and shaped so that its longitudinal bars or sides may be folded over the upper edges of the side plates on both sides thereof with strips 26 on the outside of these plates and the flaps such as 27 on the inside of these plates and with its transverse bars or ribs folded over the edges of the transverse division plates 20 and the flaps such as 28. This grille structure is also provided with longitudinal bars or ribs 29 having flaps such as 30 folded over the top and on opposite sides of the longitudinal division plate 18.

This grille structure 25 has its flaps 30 and one of its side strips 26 soldered to the plates 18 and 14 respectively. In this manner the division plates and the side plates of the cellular structure are held in place at the top in proper relation to each other and this grille therefore serves the same purpose as the slots 17 and 21 at the bottom of the plates in block 11. That is, the grille 25 and the slots in the block 11 and the fact that the side plates 13 and 14 are connected to the block serves to hold the structure shown together in a convenient and simple manner without the provision of any other means. This grille 25 also serves to establish electrical connection between the longitudinal division plates 14 and 18.

Referring now to the arrangement for assembling the lamps 10 with the cellular structure. Each lamp 10 is provided with two terminal plates 35 and 36 secured on opposite sides thereof to a wooden block 37 by means of cutout prongs such as 38 embedded in the wooden block. The terminal 35 is cut off at the end of the block 37 and the terminal 36 is provided with an extension 39 having a U-shaped cross section and a flat tip 40 to which circuit connections may be soldered. It will be noted that division plate 18 on both sides and the side plate 14 on the inner side are connected to comb shaped spring plates 50. The upper portions of these plates are soldered respectively to the sides of these plates, while the cutout spring portions 51 are slightly curved as shown with each spring protruding into a corresponding cell. It should also be noted that the block 11 is provided with apertures 52 drilled in the center of each square portion forming the bottom of a cell. Consequently, when a lamp 10 is inserted in a cell the terminal 35 thereof will come in contact with the corresponding spring portion 51 and the extension 39 of terminal 36 will

pass through a corresponding aperture 52 with a portion thereof extending outside of block 11 as shown in Fig. 2. In this manner, the terminals 35 of all the lamps will be connected together through the plates 18 and 14 to the end plates 12, while the terminals 36 are insulated from each other and may be individually connected to the desired circuits.

After the lamps 10 have been inserted in the cells, a cover plate assembly is secured over the open end of the cells. This assembly consists of a comparatively thick felt pad 61 having apertures 62, each of which is centrally located over a corresponding cell, so that light from the corresponding lamp may illuminate a corresponding portion of a non-transparent plate 64 having transparent figures or letters. Over this plate 64 is placed a comparatively thick glass plate 66 held in place in a metal frame 67 as shown. This frame 67 is secured to the end plates 12 by means of screws 68 so that this cover assembly can be closely fitted over the cellular structure to confine the light from each lamp to the illumination of a corresponding figure or letter and readily removably from the structure without taking the indicator from its place in the key-shelf.

Referring to Fig. 2, it will be noted that the means for mounting the indicator in the keyshelf is similar to the standard connecting means, that is, the side plates 12 are provided with bolts 70 fitted over the usual longitudinally mounted bars 71 and clamped to these bars by means of washers 72 and screws 73.

To insure the proper dispersing of heat produced by the lighted lamps 10 there is provided a series of holes such as 74 in the side plates 13 and 14 and division plates 18 and 19. By means of these holes air currents may freely pass in and around the lamps through the entire structure.

What is claimed is:

1. In a signal indicator, the combination of a plurality of signal lamps arranged in a cellular structure with one lamp in each cell, said cellular structure comprising longitudinal division walls with every other wall of metal and every intervening wall of insulating material, transverse division walls of insulating material, a block of insulating material covering one end of the cells and secured to the outside longitudinal walls of the structure, the intermediate longitudinal walls resting in longitudinal grooves in said block and the transverse walls resting in transverse grooves in said block, a grille structure at the other open end of the cells secured to the longitudinal metal division walls and folded over the edges of all of the division walls to hold these walls together in such a manner as

not to appreciably reduce the size of the opening of the cells at this point.

2. In a signal indicator, the combination of a plurality of signal lamps arranged in a cellular structure with one lamp in each cell, said structure comprising longitudinal division walls alternately of metal and insulating material and transverse division walls of insulating material, a contact spring in each cell attached to the metal longitudinal division walls, transverse end plates of metal connected to the longitudinal metal division

walls, each lamp being adapted to have one of its terminals make electrical contact with the contact spring in the cell where the lamp is inserted so that said terminals of all of the lamps will be electrically connected together through the springs and longitudinal division walls to the metal end plates. 15

In witness whereof, we hereunto subscribe our names this 4th day of December, A. D., 1925. 20

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