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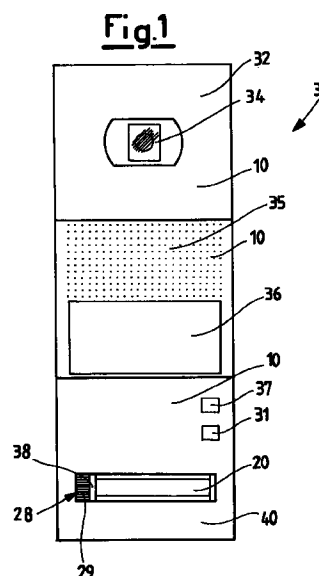
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(54) **Pushbutton unit with a viewing window for cards identifying the users of internal extensions**

(57) A pushbutton unit (30), of flush-mounted or wall-resting type, in particular for external stations of intercom and/or video-intercom systems, comprising a front plate (10) in which a window (20) is provided through which cards (22) identifying the internal extension (P) are visible, and follow each other one by one. For this purpose a rotary drum (25) carrying the cards (22) in positions adjacent to each other is rigidly connected via a pin (26) to an electrical change-over switch (27) and to a knurled or toothed disc (28) having its knurling (29) or teeth projecting outwards from the plate (10), so that the caller by acting on them causes the names or numbers to pass one at a time in front of the viewing window (20) until the required name or number arrives. Only one call button (31) is provided, plus a single light source (33) inside the drum (25), for identifying the name or number.



Description

This invention relates to a pushbutton unit, of flush-mounted or wall-resting type, in particular for external stations of intercom and video-intercom systems.

Pushbutton units for external stations of intercom and video-intercom systems are currently known, consisting of a frame (flush-mounted in the wall or wall-resting), covered with a front plate housing the name-strips and the pushbuttons for calling the various floors.

Pushbutton units of sectional structure are also known consisting of modular elements inserted directly into the frames of flush-mounted boxes; the modular elements are provided with a terminal block, lighting members, a series of pushbuttons, a series of name-strip carriers accessible from the outside, and perspex strips on which to engrave names or for containing cards on which said names are written.

Starting from the modular elements and the relative flush-mounted boxes, different configurations in the horizontal or vertical sense can be obtained.

Although these structures enable the number of intercom and video-intercom appliances installed to be varied by using modular elements identical in dimensions and geometry, they have various drawbacks, the main one being their relative fragility in case of vandalism.

In this respect the pushbutton unit, which is housed in the external station of the system, is divided into various modules, each of which, depending on the version, comprises a variable number of call pushbuttons and relative name-strips.

It is clear that increasing the number of modular elements and extension appliances connected to the pushbutton unit results in a decrease in the overall rigidity of the station in the case of tampering, blows or acts of vandalism.

In addition, the structure of known pushbutton units is complicated and requires the manufacture and storage of a large number of pieces, depending on the system functions and the number of users connected to the system.

This results in a consequent cost increase in terms of material used and manpower, which has to be qualified and specialized in combining several modular elements on the basis of the dimensions of the external station of the system and the number of call pushbuttons and corresponding internal extensions provided.

An object of the present invention is to obviate the aforesaid drawbacks by providing a pushbutton unit, of the flush-mounted or wall-resting type, for external stations of intercom and video-intercom systems, which within one and the same structure combines the advantages deriving from the modularity of the electrical and electronic operating components with substantial simplicity in assembling the circuits, and essentiality in dimensioning the architecture for strength, in order to discourage acts of vandalism or tampering attempts.

A further object of the present invention is to pro-

vide a pushbutton unit having a structure which is of pleasant appearance while at the same time ensuring operability, operating life and reliability.

A further object of the invention is to provide a pushbutton unit which simplifies and facilitates the operations required of the caller in calling the required internal extension appliance.

A further object of the invention is to provide a pushbutton unit of simple and economical construction, without the use of complex or costly techniques.

These and further objects are attained by the pushbutton unit of the present invention, in accordance with claim 1, to which reference should be made for brevity.

Advantageously, the pushbutton unit according to the invention comprises a front plate presenting various functional modules corresponding to the various versions available, such as stations for audio calls and/or telecameras for video filming, modules with a house plate or street number, operating pushbuttons for system resources and phonics with nameplates, and luminous indicating devices.

A single call pushbutton is provided for the various extension devices, together with a rectangular window covered with glass or another transparent material through which the names (or identification numbers) of the users of the internal extensions can be read, and which slide by, one at a time, on operating a portion of a knurled or toothed wheel projecting to the outside of the plate and proceeding snapwise.

The labels carrying the names or identification numbers of the users of the internal extensions connected to the pushbutton unit are located on a rotary drum, rigid with the call pushbutton and with an electrical change-over switch which connects the selected internal extension to the external station.

In the interior of the drum there is a light source for identifying the cards even under poor visibility conditions.

Further characteristics and advantages of the invention will be more apparent from the description of a preferred but not exclusive embodiment of the pushbutton unit, illustrated by way of non-limited example on the accompanying schematic drawings, in which:

Figure 1 is a front view of the pushbutton unit of the present invention;

Figure 2 is a partial schematic view of the electrical circuit for calling the internal extensions from the pushbutton unit, according to the present invention; Figure 3 is a partial perspective view of the drum carrying the cards identifying the users of the internal extensions, according to the present invention.

In the aforesaid figures, the reference numeral 30 indicates overall the pushbutton unit in the modular version for flush-mounting or wall-resting, 10 indicates the front plate and 20 indicates the glass or transparent plastic-covered window through which the name or identification number of the user of the desired internal

extension P is visible.

Said name or number is reproduced on the card 22.

The reference numeral 32 indicates the video module of the pushbutton unit 30, comprising the image filming telecamera 34, the reference numeral 35 indicates the audio module with loudspeaker, and 36 indicates the house plate carrying the street number of the condominium using the video-intercom system.

The reference numeral 37 indicates a hole positioned in correspondence with the microphone and usually protected from the action of atmospheric agents, and 31 indicates a single pushbutton for calling the internal extensions P and illuminated from the interior in the case of insufficient external light.

In the module 40 there are inserted a rotary drum 25, carrying the cards 22 adjacent to each other in the longitudinal direction, on the lateral surface of the drum 25. The drum 25 is rigid, via a pin 26, at one end with an electrical change-over switch 27 connected to each internal extensions P, according to the position assumed, and at the other end with a disc 28 provided with surface knurling 29 or teeth, and which can be operated manually from the outside via the aperture 38 in the plate 10.

Finally, 33 indicates a lamp, or an indicating LED, which illuminates the card 22 via the window 20 in the case of insufficient light, and V indicates a call signal or voltage present between the terminals A and B at the input of the electrical circuit for calling the internal extensions P.

The call pushbuttons and the user identification cards of an intercom and/or video-intercom system comprising a pushbutton unit constructed in accordance with the known art are replaced by the rotary drum 25 of the present invention, which use a manual rotation system.

The drum 25 is rotated from the outside by the caller at the pushbutton unit 30, by acting on the disc 28 via the aperture 38 provided in the plate 10.

The knurling 29 on the surface of the disc 28 enables the finger to act on the disc 28. This action, via the pin 26, results in stepwise snap rotation of the drum 25 (each step corresponds to one name or identification number of each of the internal extensions P) and the simultaneous switching-over of the electrical switch 27, which connects to the pushbutton unit 30 that internal extension P corresponding to the name (or identification number) on the card 22, which appears through the window 20.

The knurling 29 provided on the surface of the disc 28 can be replaced by a series of teeth projecting from the aperture 38, so that the caller can engage with one finger the space between one tooth and the next and hence rotate the drum 25, and with it the cards 22.

With each tooth there corresponds one card 22, so that by rotating the disc 28 the names or numbers carried on the cards 22 move one by one with simultaneous switching-over of the respective electrical circuits.

The number of cards 22 (and hence the number of

internal extensions P which can be connected to the pushbutton unit 30) depends on the measured area of the lateral surface of the cylinder forming the drum 25 (this measurement must take account only of the fact that the drum is housed within the module 40 in the case of flush-mounting, or within the wall in the case of wall-resting) and, obviously, on the width of the card 22.

When the name or the identification element of the desired internal extension P is visible from the outside through the window 20 following manual rotation of the disc 28, the single pushbutton 31 (also located on the plate 10) is pushed to operate the warning bell situated in the apartment of the user specified by the name or number visible through the window 20.

According to the present invention, the pushbutton unit 30 is constructed of metal resistant to impact, to the passage of time and to inclement weather, and has a structure which preserves good appearance, operability and reliability, in that there are only a small number of internal electrical contacts compared with the known art (there is only one call pushbutton for all the internal extensions P connected to the pushbutton unit 30), the electrical contacts relative to the cards 22 being self-cleaning by rotation.

The number of internal extensions P which can be connected to the pushbutton unit 30 depends only on the dimensions of the casing of the module 40, which contains the rotary drum 25.

It is apparent that the materials and the dimensions of the pushbutton unit as heretofore described, illustrated on the accompanying drawings and claimed hereinafter, can be chosen at will according to technical requirements, as it is apparent that all details can be replaced by others technically equivalent, and that numerous modifications can be made by the expert of the art to the pushbutton unit of the present invention without leaving its field of protection.

Claims

1. A pushbutton unit (30) for flush-mounting or wall-resting, in particular of modular type for external stations of intercom and/or video-intercom systems, comprising:
 - a front plate (10), on the inside of which there is provided at least one housing for containing one module (32, 35, 40) comprising the electrical and electronic component modules forming the intercom and/or video-intercom system;
 - at least one pushbutton (31) for calling the internal extensions (P) connected to the system;
 - a plurality of cards (22) on which characters identifying the users of the internal extensions (P) are reproduced;
 - at least one hole (37) positioned in correspondence with the system microphone;

characterised in that only one said pushbutton (31) is provided for calling the internal extensions (P), said cards (22) being situated on the lateral surface of at least one rotary element (25), said element (25) being rigid with at least one operating means (28) connected to said pushbutton (31) and to at least one electrical switching device (27) in such a manner that the pushbutton unit (30) becomes connected to that internal extension (P) corresponding to the identification character present on one of said cards (22).

are names or numbers composed of at least one digit.

2. A pushbutton unit (30) as claimed in claim 1, characterised in that said operating means (28) are discs which comprise surface knurling (29) or are provided with a plurality of teeth.
3. A pushbutton unit (30) as claimed in claim 2, characterised in that in said plate (10) there are provided at least a first aperture (38), from which said disc (28) emerge.
4. A pushbutton unit (30) as claimed in claim 2, characterised in that in said plate (10) there are provided at least a second aperture (20), through which at least one of said cards (22) is visible.
5. A pushbutton unit (30) as claimed in claim 3 or 4, characterised in that said disc (28) is snap-operable from the outside stepwise, so that at each step one of said cards (22) appears through said second aperture (20).
6. A pushbutton unit (30) as claimed in claim 5, characterised in that said second aperture (20) is covered with plates of glass or of transparent plastics material.
7. A pushbutton unit (30) as claimed in claim 1, characterised in that said electrical switching device (27), said operating means (28) and said rotary element (25) are made mutually rigid by means of at least one pin (26).
8. A pushbutton unit (30) as claimed in claim 1, characterised in that within said rotary element (25) there is provided at least one luminous device (33) such as at least one lamp or several LEDs, for identifying the cards (22) and the identification characters of the users of the internal extensions (P) associated with them, in conditions of poor external visibility.
9. A pushbutton unit (30) as claimed in claim 1, characterised in that said rotary element (25) is a cylinder or a drum.
10. A pushbutton unit (30) as claimed in claim 1, characterised in that said identification characters

Fig.1

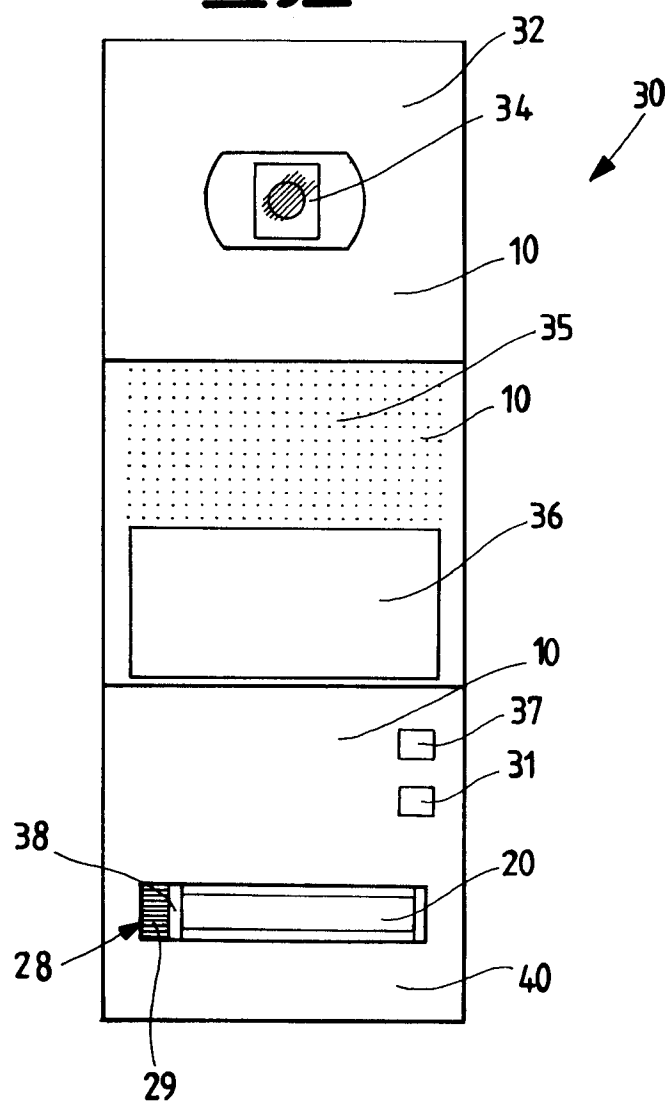


Fig.2

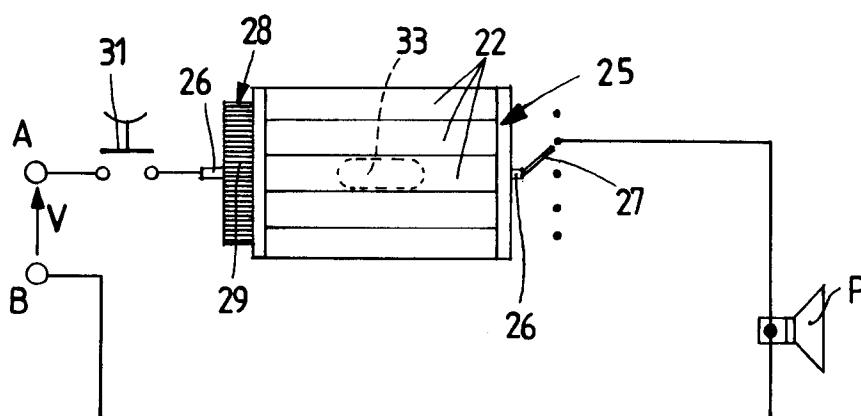
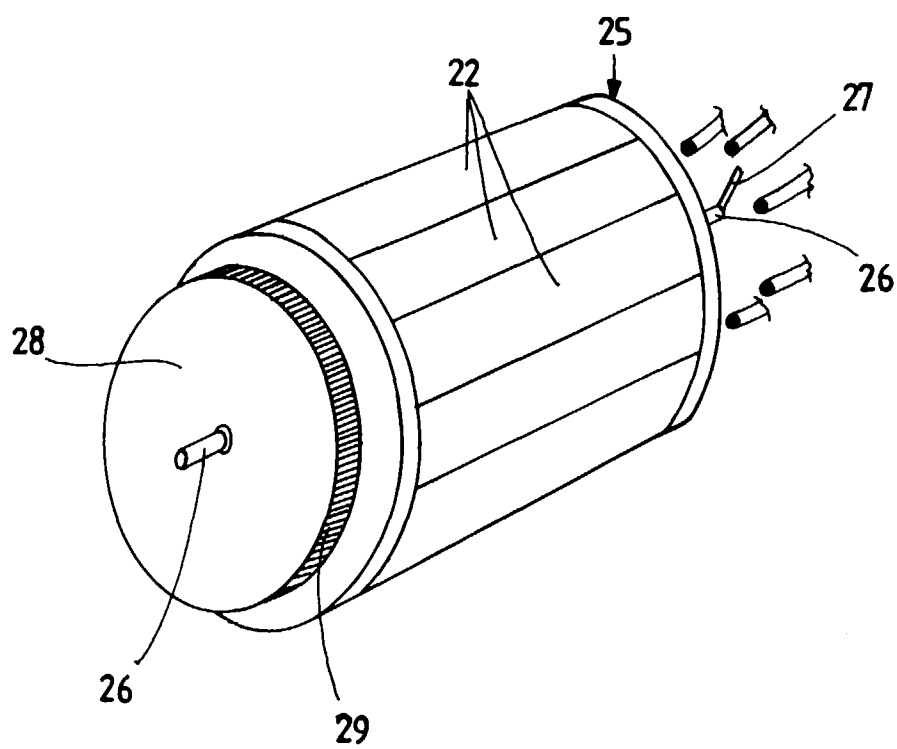


Fig.3





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EUROPEAN SEARCH REPORT

Application Number
EP 96 20 1656

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	US-A-3 978 468 (BOND LELAND R ET AL) 31 August 1976 * column 2, line 27 - line 54 * ---	1-4	H04M11/02 H01H9/18
Y	FR-A-2 590 100 (RHONE ENTREPRISE ANTENNE) 15 May 1987 * page 5, line 1 - page 6, line 12 * ---	1-10	
Y	AU-D-5 333 664 (C.&V. ENTERPRISES) 21 July 1966 * the whole document * ---	1-10	
A	EP-A-0 245 709 (SIEMENS) 19 November 1987 * the whole document * ---	1	
A	EP-A-0 198 411 (DIERAUF ELEKTRONIK GMBH) 22 October 1986 * the whole document * -----	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			H04M H01H G09F
The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 7 November 1996	Examiner Mausser, T
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document			

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