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(54) **EMERGENCY EXIT ASSEMBLY**

NOTÖFFNUNGSANORDNUNG

ENSEMBLE DE SORTIE DE SECOURS

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(56) References cited:
EP-A2- 2 418 343
DE-A1-102004 029 666
GB-A- 2 441 176
US-A- 3 125 875
WO-A1-2014/108680
GB-A- 2 407 615
US-A- 546 102

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Description

[0001] This invention relates to an emergency exit assembly, for example to allow restricted access to an area, such as access by staff to a resident's room in a care home, and unrestricted exit from that area.

[0002] There is a problem in care homes or the like where access to a resident's room may be required by staff while in an emergency the occupant requires unrestricted ability to exit the room. In this way, unauthorised access to the room by other residents can be restricted, but the occupant is at all times able to leave the room. This can be helpful, for example, for preventing other residents entering the room uninvited.

[0003] It is not straightforward to provide such an assembly. Electrically powered assemblies are unsuitable because there could be a power failure in the event of an emergency. Key-based assemblies are too intricate for use by residents of care homes and require all staff members to be in possession of a key for all rooms, which can be difficult to organise.

[0004] It is therefore an object of the present invention to provide an emergency exit assembly which overcomes, or at least ameliorates, the above problems.

[0005] According to the present invention there is provided an emergency exit assembly comprising first and second push-button units and an elongate flexible connecting means to connect the push-button units, wherein the first push-button unit is adapted on operation to release a first end of the connecting means to allow the connecting means to be withdrawn from the first push-button unit when released, and wherein the second push-button unit is adapted on operation to release and eject a second end of the connecting means from the second push-button unit.

[0006] The second push-button unit may comprise a body into which a substantially cylindrical operating member is secured. The operating member may be maintained in a first opening in the body by way of a cover plate. The operating member may be formed with a reduced-diameter portion which extends through an aperture in the cover plate and is secured externally of the body, for example by a threaded connection, to a push-button. The push-button of the second push-button unit may have a diameter greater than a diameter of the body. Biasing means may be provided to urge the push-button in a direction out of the body.

[0007] The end of the operating member within the body may engage directly or indirectly with a release member for the second end of the connecting means. The release member may slide within the body. For example, the end of the operating member may engage with a pivotably mounted, part-cylindrical toggle member which transmits the movement of the operating member through 90 degrees. Alternatively, the end of the operating member may be tapered and may engage with an aperture in the release member. The tapered end of the operating member may cause movement of the release member in a direction at 90 degrees to the direction of movement of the operating member. The release member may be in the form of a plate.

[0008] The release member may be mounted in a recess formed in the body. The recess may additionally containing biasing means, such as a leaf spring. The biasing means may urge the release member against the toggle member. Alternatively, the biasing means may urge the release member to a position in which it extends partially into the first opening in the body in which the operating member is received. The release member may be retained in the body by means of a cover.

[0009] The release member may be formed with an aperture and may be biased by the biasing means such that the edge of the aperture partly obscures a second opening within the body. The aperture may be substantially pear shaped, that is with a larger radius portion and a smaller radius portion. The second opening may be substantially cylindrical and dimensioned to receive the second end of the connecting means. For example, the second plug of the connecting means may be retained in the second opening by engagement of an edge of the release member defining the aperture within the peripheral recess formed on the second plug.

[0010] A biasing member, for example in the form of a coil spring, may be positioned within the body, for example within the second opening in the body, to eject the connecting means from of the second push-button unit when released. For example, the biasing member may engage with the end of the second plug of the connecting means.

[0011] The second push-button unit may include a tube which is adapted in use to pass through a door or the like.

[0012] The elongate flexible connecting means may comprise, for example, a cable or a chain. Where the connecting means comprises a cable, the cable may comprise a length of flexible steel cable provided with a covering of plastics material. A first plug may be provided at the first end of the connecting means and a second plug may be provided at the second end of the connecting means. Each plug may have a rounded or chamfered free end and/or an annular peripheral recess spaced from the free end.

[0013] The first push-button unit may be formed with a lateral opening dimensioned to receive the first end of the connecting means.

[0014] A securing lever may be pivotably mounted within the unit and may extend across an opening in which the push-button of the first push-button unit is received. The securing lever may be formed with an aperture in one end region thereof for mounting the lever in a pivotable manner by way of a securing pin, and may be formed at the other end thereof with an engaging portion for engaging with the first end of the connecting means, for example in the peripheral recess of the first plug. An outer edge of the engaging portion may be formed with a chamfer such that insertion of the first end of the connecting means causes the lever to pivot from

a first position to a second position and to allow the end of the connecting means into the lateral opening.

[0015] A biasing spring may be provided to return the lever to its first position so as to lock the first plug in the first push-button unit. The biasing spring may comprise a sheet of resilient material, such as spring steel, formed with a tongue at an angle to the remainder of the sheet and directed towards the securing lever so as to bias the engaging portion of the securing lever into engagement with the first end of the connecting means, for example into the peripheral recess of the first plug of the connecting means.

[0016] For a better understanding of the present invention and to show more clearly how it may be carried into effect reference will now be made, by way of example, to the accompanying drawings in which:

Figure 1 is a side elevational view of one embodiment of an emergency exit assembly according to the present invention;

Figure 2 is a side elevational view of an elongate flexible connecting means, in the form of a cable, forming part of the emergency exit assembly shown in Figure 1;

Figure 3 is a cross-sectional view of a first push-button unit forming part of the emergency exit assembly shown in Figure 1;

Figure 4 is a side elevational view of a second push-button unit forming part of the emergency exit assembly shown in Figure 1;

Figure 5 is a cross-sectional view through the line A-A shown in Figure 4;

Figure 6 is a plan view of a sliding release member forming part of the emergency exit assembly shown in Figure 1;

Figure 7 is an end view of part of the second push-button unit forming part of the emergency exit assembly shown in Figure 1;

Figure 8 is a side elevational view of an alternative embodiment of a second push-button unit forming part of the emergency exit assembly shown in Figure 1;

Figure 9 is a cross-sectional view through a body forming part of the second push-button unit of Figure 8;

Figure 10 is a view of the body of Figure 9 from below;

Figure 11 is a side view of a plunger forming part of the second push-button unit of Figure 8;

Figure 12 is a side view of the plunger taken at 90 degrees to the view of Figure 11;

Figure 13 is a plan view of a cover plate forming part of the second push-button unit of Figure 8;

Figure 14 is a perspective view of a toggle member forming part of the second push-button unit of Figure 8;

Figure 15 is a plan view from below of a cover for the base of a body of the second push-button unit of Figure 8;

Figure 16 is a cross-sectional view of the cover shown in Figure 15; and

Figure 17 is a plan view of a release member forming part of the second push-button unit of Figure 8.

[0017] The emergency exit system shown in Figure 1 comprises a finger or thumb operable first push-button unit 1 to be provided externally of a door to a room, for example on or adjacent to the door frame but not on the door itself, and which is readily operable (e.g., depressed) by a member of staff to initiate release of one end of an elongate flexible connecting means in the form of a cable 3. Completion of the release of the cable 3 requires the member of staff to maintain the push-button depressed with one hand and simultaneously to withdraw the end of the cable 3 from the first unit 1 with the other hand. Such a two-handed operation is impractical for an infirm or disabled resident to effect, so access to the room is effectively restricted to members of staff who know how to operate the first push-button unit and to remove the cable. The emergency exit system shown in Figure 1 further comprises a hand operable second push-button unit 5 to be mounted internally of a door (i.e. on the door itself), that is, a push button that can be operated solely, for example, by a finger, thumb or palm of the user's hand and which does not require simultaneous use of the person's other hand to effect removal of the cable as will be explained in detail hereinafter.

[0018] The second push-button unit 5 is operable to release the other end of the cable 3 so as to allow the door to open and a person within the room to exit at any time, for example in the event of an emergency.

[0019] As shown in more detail in Figure 2, the cable 3 includes a length of conventional flexible steel cable provided with a covering of plastics material. A first plug 9 is secured, for example by crimping, at one and of the cable and may be made of stainless steel, and a similar second plug 11 is secured at the other end of the cable. It will be noted the second plug 11 has a greater axial length than the first plug 9 in order to pass through the thickness of a door. Each plug has a rounded or chamfered free end and an annular peripheral recess 10 spaced from the free end.

[0020] The cable 3 is located in use externally of the door with one end of the cable removably received in the first push-button unit 1 and the other end of the cable received in a tube 7 which passes through the door and which forms part of the second push-button unit 5.

[0021] The first push-button unit 1 is described in EP2418343 and shown in Figure 3 in more detail than in Figure 1. The first push-button unit 1 comprises a body 13, for example of die-cast aluminium, into which a push-button 15 is secured (as contrasted with the lock in EP2418343). The push-button 15 is dimensioned to be operated by a finger or thumb. The body 13 is formed with two openings 17, 19 for receiving conventional fasteners (not shown), such as threaded fasteners, for securing the body to a door frame or to another location

adjacent to the door. The outer ends of the openings 17, 19 are provided with caps 21, 23, for example of Nylon, which ideally are profiled to match the profile of the body. The caps 21, 23 inhibit access to the fasteners and prevent tampering therewith.

[0022] The body 13 is also formed in one end thereof with a lateral opening 25 dimensioned to receive the first plug 9 of the cable 3. A securing lever 27 is pivotably mounted within the body 13 and extends across an opening 29 in which the push-button 15 is received. The securing lever is formed with an aperture in one end region thereof for mounting the lever in a pivotable manner by way of a securing pin 31, and is formed at the other end thereof with an engaging portion 33 for engaging with the peripheral recess 10 of the first plug 9. An outer edge of the engaging portion 33 is formed with a chamfer such that insertion of the rounded end of the first plug 9 causes the lever to pivot from a first position to a second position and to allow the plug 9 into the lateral opening 25. The lever 27 then returns to its first position under the influence of a biasing spring 35 with the engaging portion 33 received in the peripheral recess 10 of the first plug 9 so as to lock the first plug in the body 13.

[0023] The biasing spring 35 comprises a sheet of resilient material, such as spring steel, formed with a tongue at an angle to the remainder of the sheet and directed towards the securing lever 27 so as to bias the engaging portion 33 of the securing lever into the peripheral recess 10 of the first plug 9 of the cable 3. The biasing spring 35 is maintained in position in the body 13 by means of a back plate 37 which is secured in place by two hollow cylindrical screw fasteners 39, 41 which engage in the openings 17, 19, while allowing screw fasteners for securing the body 13 to a door frame to pass therethrough.

[0024] In use of the first push-button unit 1, the push-button 15 can be depressed into the body 13 and is biased by spring 35 to return to an extended position. When the push-button 15 is depressed into the body 13, the securing lever 27 is pivoted to displace the engaging portion 33 out of the lateral opening 25 so as to disengage from the peripheral recess 10 of the first plug 9 and therefore to release the first plug (and the cable). This allows the first plug 9 of the cable 3 to be withdrawn from the lateral opening 25 of the body 13 and allows the door to be opened from outside the room, but only if a two-handed operation is effected to simultaneously depress the push-button 15 to release the first plug 9 of the cable 3 and to withdraw the first plug of the cable from the body.

[0025] First push-button unit 1 can be reset simply by closing the door and inserting the plug 9 of the cable 3 into the body 13 such that the chamfered end of the plug moves the engaging portion 33 to one side until the engaging portion is able to enter the peripheral recess 10 of the first plug so as to lock the first plug 9 in the body 13.

[0026] Figures 4 and 5 show the second push-button unit 5 in more detail. The second push-button unit 5 comprises a body 43, for example of die-cast aluminium, into which a substantially cylindrical operating member 45 is secured. The operating member is maintained in a first opening in the body 43 by way of a cover plate 47, the operating member 45 being formed with a reduced-diameter portion which extends through an aperture in the cover plate 47 and is secured externally of the body 43, for example by a threaded connection, to a push-button 49 of substantial dimensions, for example having a diameter greater than a diameter of the body 43, to facilitate hand operation by a user. That end of the operating member 45 within the body 43 is tapered and engages with an aperture 51 in a sliding release member 53, which is in the form of a plate. The release member is mounted in a recess 55 formed in the body 43. The release member 53 is shown in more detail in Figure 6. As can be seen, the aperture 51 is substantially pear-shaped, having portions with two different radii. The effect of the two different radii is that the larger radius portion allows passage of the second plug 11 of the cable 3 through the aperture, while the edge of the smaller radius portion engages in the peripheral recess 10 of the second plug 11 to retain the end of the cable in the second push-button unit.

[0027] Figure 7 shows that the recess 55 is also provided with biasing means 61, such as a leaf spring, which urges the release member 53 to a position in which it extends partially into the first opening in the body 43 in which the operating member 45 is received. The release member 53 is retained in the body 43 by means of a cover 63. The tapered end of the operating member 54 engages with an edge of the release member 53 so as to cause the release member to slide within the body 43 against the biasing force of the biasing means 61 as the push button 49 is depressed by a user. That is, the tapered end of the operating member 54 causes movement of the release member 53 in a direction at substantially 90 degrees to the direction of movement of the operating member.

[0028] When the edge of the release member 53 protrudes into the first opening in the body 43, the edge of the aperture 51 additionally partly obscures a second opening within the body. The second opening is substantially cylindrical and is dimensioned to receive the second plug 11 of the cable 3, the second plug being retained in the second opening by virtue of engagement of the edge of the release member 53 defining the aperture 51 within the peripheral recess 10 formed on the second plug 11 as explained above. In order to enter the second opening of the body 43, the second plug 11 first passes through tube 7 which is threaded into the cover 63.

[0029] In use, the second push-button unit 5 is mounted on a door or the like (not shown) by the tube 7 passing through a hole formed through the door and secured in position by means of a retainer 69 threaded onto the free end of the tube 7. Further apertures are formed through the body 43 to received threaded fasteners if desired. A biasing member 71, for example in the form of a coil spring, is positioned within the second opening in the body 43 and engages with the end of the second plug 11 when the plug is retained in the body by engagement of

the release member 53 in the peripheral recess 10 of the second plug 11.

[0030] When the push button 49 is depressed, the tapered end of the operating member 45 moves relative to the release member 53 and the taper causes release member to move within the body 43 such that the edge of the aperture 65 is released from the peripheral recess 10 and the second plug 11 is then ejected from the tube 7 by the biasing member 71. The second plug 11 of the cable is therefore simultaneously released and ejected from the second push-button unit 5, allowing the door or the like to be opened.

[0031] The second push-button unit 5 can be reset by inserting the free end of the second plug 11 into the tube 7 until it enters the body 43 and the rounded or chamfered end of the second plug enters the aperture 51 and moves the release member 53 to one side against the force of the biasing member 61 until the release member is able to move in the opposite direction and enter the peripheral recess 10 of the second plug 11 so as to lock the second plug of the cable 3 in place within the body 43.

[0032] Figures 8 to 17 show a further embodiment of the second push-button unit 105 which is operable to release the other end of the cable so as to allow the door to open and a person within the room to exit at any time, for example in the event of an emergency. For convenience, the cable is not shown, but in practice it is arranged substantially as in Figures 1, 4 and 5.

[0033] In more detail, the second push-button unit 105 comprises a body 143 (Figures 9 and 10), for example of die-cast aluminium, into which a substantially cylindrical operating member, in the form of a plunger 145 (Figures 11 and 12), is secured. The plunger is maintained in a first opening in the body 143 by way of a cover plate 147 (Figure 13), a first end portion of the plunger being formed as a reduced cross-sectional portion which extends through an aperture in the cover plate 147. The reduced cross-sectional portion and the corresponding opening in the cover plate 147 are preferably not circular so as to inhibit rotation of the plunger about its axis. The plunger 145 is secured externally of the body 143, for example by a threaded connection, to a push-button 149 of substantial diameter, for example having a diameter greater than the diameter of the body 143, to facilitate hand operation by a user. The plunger is formed adjacent to the reduced-diameter portion with an outwardly-extending flange and a coil spring 151 extends around the plunger and engages against the flange to urge the plunger in the direction of the push-button 149, the other end of the coil spring bearing against a base of the first opening in the body 143.

[0034] A second end portion of the plunger 145 opposite the first end portion is also formed as a reduced-diameter portion which extends through an aperture formed in the body 143 and into a recess 153 formed therein. A toggle member 155 (Figure 14), in the form of an elongate member having a cross-section substantially in the form of a quadrant of a circle (for example, extending over about 85 degrees), is mounted in the recess 153 by way of a cylindrical hinge pin 157 which passes through a cylindrical aperture formed through the toggle member in the elongate direction thereof, the cylindrical aperture being formed in the region of the apex of the toggle member. Opposing ends of the cylindrical hinge are received in substantially U-shaped recesses formed in walls of the body 143 to receive opposing end regions of the hinge pin 157 such that the hinge pin, and more particularly the toggle member, is able to rotate about its axis. That is, the toggle member is substantially part cylindrical and transmits the movement of the plunger 145 through 90 degrees. The base of the body 143 is closed by a cover 159 (Figures 15 and 16), which is secured to the body for example with the aid of screw fastenings. The cover 159 is formed with projections 161 which extend into the U-shaped recesses formed in the walls of the body so as to maintain the hinge pin in position within the body.

[0035] The cover 159 is also formed with a threaded opening which receives a threaded end of a tube 107 which passes through the door, the tube having a flange portion 109 at the free end thereof. The flange portion 109 may be formed as a separate component and threadingly connected to the free end of the tube 107.

[0036] The second end portion of the plunger bears against a first elongate free edge of the toggle member 155, that is, in the axial direction of the cylindrical aperture, and a second elongate free edge of the toggle member bears against an edge of a sliding release member 163 in the form of a plate (Figure 17). Release member 163 is positioned within a shallow recess formed in the body 143 and retained in position by the cover 159. The release member 163 is formed with an aperture 165 which is substantially pear-shaped, having portions with two different radii. The effect of the two different radii is that the larger radius portion allows passage of the second plug 11 of the cable 3 through the aperture, while the edge of the smaller radius portion engages with the peripheral recess 10 of the second plug 11 to retain the end of the cable in the second push-button unit. Alternatively, the aperture 165 may be circular or may have an alternative configuration which allows engagement with the peripheral recess 10 of the second plug 11. Biasing means 171, such as a leaf spring, is positioned at that side of the release member remote from the toggle member 155 to urge the release member towards the toggle member and into a position in which the edge of the aperture 165 partly obscures a relatively deep recess 167 in the body as will be explained in more detail hereinafter.

[0037] The shallow recess containing the release member 163 communicates with the deeper recess 167 which contains a coil spring 169. One end of coil spring 169 is secured between the body 143 and the cover plate 147, while the other end of the coil spring is dimensioned to engage with the end of the second plug 11 of the cable 3.

[0038] In use of the apparatus, the cable 3 is engaged

with the second push-button unit by inserting the second plug 11 into the free end of the tube 107. The second plug passes into the larger radius portion of the aperture 165 in the release member 163 and engages the edge of the aperture 165, urging the release member away from the toggle member 155 until the plug is able to pass through the aperture. At the same time, the coil spring 169 is also compressed. As the second plug passes through the aperture 165, the peripheral recess 10 of the second plug allows the release member to move towards the toggle member under the biasing effect of the biasing means 171 and to engage with the peripheral recess in order to maintain the second plug 11 of the cable 3 in the second push-button unit.

[0039] In use of the apparatus, the cable 3 is disengaged with the second push-button unit by depressing the push-button 149 which causes the second end portion of the plunger 145 to bear against the first elongate free edge of the toggle member 155 and to cause the toggle member to rotate about the hinge pin 157. As a consequence, the second elongate free edge of the toggle member bears against the edge of the plate-like release member 163 to cause the release member to slide laterally against the effect of the biasing means 171. Movement of the release member frees the edge of the aperture 165 from the peripheral recess 10 of the second plug 11 and the second plug is ejected from the tube 107 by the coil spring 169. Ejection of the second plug 11 of the cable 3 from the tube 107, and therefore from the second push-button unit 105, allows the door or the like to be opened. When the push-button 149 is released, the coil spring 151 returns the push-button and plunger to their normal positions, while the biasing means 171 returns the release member 163 and toggle member 155 to their normal positions.

Claims

1. An emergency exit assembly comprising first (1) and second (5, 105) push-button units and an elongate flexible connecting means (3) to connect the push-button units, **characterised in that** the first push-button unit (1) is adapted on operation to release a first end (9) of the connecting means (3) to allow the connecting means to be withdrawn from the first push-button unit when released, and **in that** the second push-button unit (5, 105) is adapted on operation to release and eject a second end (11) of the connecting means from the second push-button unit.

2. An assembly as claimed in claim 1, wherein the second push-button unit (5, 105) comprises a body (43, 143) into which a substantially cylindrical operating member (45, 145) is secured, the operating member (45, 145) optionally being maintained in a first opening in the body (43, 143) by way of a cover plate (47, 147).

3. An assembly as claimed in claim 2, wherein the operating member (45, 145) is formed with a reduced-diameter portion which extends through an aperture in the cover plate (47, 147) and is secured externally of the body (43, 143), for example by a threaded connection, to a push-button (49, 149), the push-button (49, 149) of the second push-button unit (5, 105) for example having a diameter greater than a diameter of the body (43, 143), biasing means (151) optionally being provided to urge the push-button (149) in a direction out of the body (143).

4. An assembly as claimed in claim 2 or 3, wherein the end of the operating member (45, 145) within the body (43, 143) engages directly or indirectly with a release member (53, 163) for the second end (11) of the connecting means (3), the release member (53, 163) being, for example, slidable within the body (43, 143) and optionally being retained in the body (43, 143) by means of a cover (63, 159).

5. An assembly as claimed in claim 4, wherein the end of the operating member (145) engages with a pivotably mounted, part-cylindrical toggle member (155) which transmits the movement of the operating member through 90 degrees.

6. An assembly as claimed in claim 4, wherein the end of the operating member (45) is tapered and engages with an aperture (51) in the release member (53), the tapered end of the operating member (45) for example causing movement of the release member (53) in a direction at 90 degrees to the direction of movement of the operating member.

7. An assembly as claimed in any one of claims 4 to 6, wherein the release member (53, 163) is in the form of a plate.

8. An assembly as claimed in any one of claims 4 to 7, wherein the release member (53, 163) is mounted in a recess (55) formed in the body (43, 143), the recess (55) optionally additionally contains biasing means (61, 171), such as a leaf spring.

9. An assembly as claimed in claim 8 when dependent on claim 5, wherein the biasing means (171) urges the release member (163) against the toggle member (155).

10. An assembly as claimed in claim 8 when dependent on claim 6, wherein the biasing means (61) urges the release member (53) to a position in which it extends partially into the first opening in the body (43) in which the operating member (45) is received.

11. An assembly as claimed in any one of claims 4 to 10, wherein the release member (53, 163) is formed

with an aperture (51, 165) and is biased by the biasing means (61, 171) such that the edge of the aperture partly obscures a second opening (167) within the body (43, 143).

12. An assembly as claimed in claim 11, wherein the aperture (51, 165) is substantially pear shaped, that is with a larger radius portion and a smaller radius portion.

13. An assembly as claimed in claim 11 or 12, wherein the second opening (167) is substantially cylindrical and dimensioned to receive the second end (11) of the connecting means (3).

14. An assembly as claimed in claim 11, 12 or 13, wherein a biasing member (71, 169), for example in the form of a coil spring, is positioned within the body (43, 143), for example within the second opening (167) in the body, to eject the connecting means (3) from of the second push-button unit (5, 105) when released.

15. An assembly as claimed in any preceding claim, wherein the second push-button unit (5, 105) includes a tube (7, 107) which is adapted in use to pass through a door or the like.

Patentansprüche

1. Notausgangsbaugruppe, die eine erste (1) und eine zweite (5, 105) Drucktasteneinheit und ein längliches flexibles Verbindungsmittel (3) zum Verbinden der Drucktasteneinheiten umfasst, **dadurch gekennzeichnet, dass** die erste Drucktasteneinheit (1) so ausgelegt ist, dass sie bei Betätigung ein erstes Ende (9) des Verbindungsmittels (3) löst, um ein Zurückziehen des Verbindungsmittels von der ersten Drucktasteneinheit nach dem Lösen zuzulassen, und dadurch, dass die zweite Drucktasteneinheit (5, 105) so ausgelegt ist, dass sie bei Betätigung ein zweites Ende (11) des Verbindungsmittels von der zweiten Drucktasteneinheit löst und auswirft.

2. Baugruppe nach Anspruch 1, wobei die zweite Drucktasteneinheit (5, 105) ein Gehäuse (43, 143) umfasst, in dem ein im Wesentlichen zylindrisches Betätigungselement (45, 145) befestigt ist, wobei das Betätigungselement (45, 145) optional mittels einer Abdeckplatte (47, 147) in einer ersten Öffnung im Gehäuse (43, 143) gehalten wird.

3. Baugruppe nach Anspruch 2, wobei das Betätigungselement (45, 145) mit einem Abschnitt mit reduziertem Durchmesser ausgebildet ist, der durch ein Loch in der Abdeckplatte (47, 147) verläuft und außerhalb des Gehäuses (43, 143), zum Beispiel durch eine Schraubverbindung, an einer Drucktaste (49, 149) befestigt ist, wobei die Drucktaste (49, 149) der zweiten Drucktasteneinheit (5, 105) zum Beispiel einen Durchmesser hat, der größer ist als ein Durchmesser des Gehäuses (43, 143), wobei optional Vorspannmittel (151) zum Drücken der Drucktaste (149) in einer Richtung aus dem Gehäuse (143) vorgesehen sind.

4. Baugruppe nach Anspruch 2 oder 3, wobei das Ende des Betätigungselements (45, 145) in dem Gehäuse (43, 143) direkt oder indirekt in ein Löseelement (53, 163) für das zweite Ende (11) des Verbindungsmittels (3) eingreift, wobei das Löseelement (53, 163) beispielsweise in dem Gehäuse (43, 143) gleiten kann und optional mittels einer Abdeckung (63, 159) in dem Gehäuse (43, 143) gehalten wird.

5. Baugruppe nach Anspruch 4, wobei das Ende des Betätigungselements (145) in ein schwenkbar montiertes, teilzylindrisches Schaltelement (155) eingreift, das die Bewegung des Betätigungselements um 90 Grad überträgt.

6. Baugruppe nach Anspruch 4, wobei das Ende des Betätigungselements (45) konisch ist und in ein Loch (51) in dem Löseelement (53) eingreift, wobei das konische Ende des Betätigungselements (45) beispielsweise eine Bewegung des Löseelements (53) in einer Richtung 90 Grad zur Bewegungsrichtung des Betätigungselements bewirkt.

7. Baugruppe nach einem der Ansprüche 4 bis 6, wobei das Löseelement (53, 163) in Form einer Platte vorliegt.

8. Baugruppe nach einem der Ansprüche 4 bis 7, wobei das Löseelement (53, 163) in einer im Gehäuse (43, 143) ausgebildeten Aussparung (55) montiert ist, wobei die Aussparung (55) optional zusätzlich Vorspannmittel (61, 171) wie eine Blattfeder enthält.

9. Baugruppe nach Anspruch 8 in Abhängigkeit von Anspruch 5, wobei das Vorspannmittel (171) das Lösemittel (163) gegen das Schaltelement (155) drückt.

10. Baugruppe nach Anspruch 8 in Abhängigkeit von Anspruch 6, wobei das Vorspannmittel (61) das Löseelement (53) in eine Position drückt, in der es teilweise in die erste Öffnung im Gehäuse (43) verläuft, in der das Betätigungselement (45) aufgenommen wird.

11. Baugruppe nach einem der Ansprüche 4 bis 10, wobei das Löseelement (53, 163) mit einem Loch (51, 165) ausgebildet ist und von dem Vorspannmittel (61, 171) so vorgespannt wird, dass der Rand des Lochs eine zweite Öffnung (167) in dem Gehäuse

(43, 143) teilweise verdeckt.

12. Baugruppe nach Anspruch 11, wobei das Loch (51, 165) im Wesentlichen birnenförmig ist, das heißt mit einem Abschnitt mit größerem Radius und einem Abschnitt mit kleinerem Radius.

13. Baugruppe nach Anspruch 11 oder 12, wobei die zweite Öffnung (167) im Wesentlichen zylindrisch und zum Aufnehmen des zweiten Endes (11) des Verbindungsmittels (3) dimensioniert ist.

14. Baugruppe nach Anspruch 11, 12 oder 13, wobei ein Vorspannelement (71, 169), zum Beispiel in Form einer Spiralfeder, im Gehäuse (43, 143), zum Beispiel in der zweiten Öffnung (167) im Gehäuse, positioniert ist, um das Verbindungsmittel (3) aus der zweiten Drucktasteneinheit (5, 105) nach dem Lösen auszuwerfen.

15. Baugruppe nach einem vorherigen Anspruch, wobei die zweite Drucktasteneinheit (5, 105) eine Hülse (7, 107) aufweist, die so ausgelegt ist, dass sie beim Gebrauch durch eine Tür oder dergleichen passiert.

Revendications

1. Ensemble de sortie de secours comprenant des premier (1) et second (5, 105) modules de bouton-poussoir et un moyen de connexion flexible allongé (3) pour connecter les modules de bouton-poussoir, **caractérisé en ce que** le premier module de bouton-poussoir (1) est adapté lors de son opération à libérer une première extrémité (9) du moyen de connexion (3) pour permettre au moyen de connexion d'être retiré du premier module de bouton-poussoir lors de sa libération et **en ce que** le second module de bouton-poussoir (5, 105) est adapté lors de son opération à libérer et éjecter une seconde extrémité (11) du moyen de connexion du second module de bouton-poussoir.

2. Ensemble selon la revendication 1, dans lequel le second module de bouton-poussoir (5, 105) comprend un corps (43, 143) dans lequel un élément d'opération essentiellement cylindrique (45, 145) est fixé, l'élément d'opération (45, 145) étant en option maintenu dans une première ouverture dans le corps (43, 143) au moyen d'une plaque de recouvrement (47, 147).

3. Ensemble selon la revendication 2, dans lequel l'élément d'opération (45, 145) est formé d'une portion à diamètre réduit qui s'étend à travers une ouverture dans la plaque de recouvrement (47, 147) et est fixée de manière externe au corps (43, 143), par exemple par une connexion filetée, à un bouton-poussoir (49, 149), le bouton-poussoir (49, 149) du second module de bouton-poussoir (5, 105) ayant par exemple un diamètre supérieur à un diamètre du corps (43, 143), des moyens d'inclinaison (151) étant prévus en option pour pousser le bouton-poussoir (149) dans une direction hors du corps (143).

4. Ensemble selon la revendication 2 ou 3, dans lequel l'extrémité de l'élément d'opération (45, 145) au sein du corps (43, 143) s'engage directement ou indirectement avec un élément de libération (53, 163) pour la seconde extrémité (11) du moyen de connexion (3), l'élément de libération (53, 163) pouvant par exemple être coulissé au sein du corps (43, 143) et étant en option retenu dans le corps (43, 143) au moyen d'un recouvrement (63, 159).

5. Ensemble selon la revendication 4, dans lequel l'extrémité de l'élément d'opération (145) s'engage avec un élément d'articulation partiellement cylindre (155), monté à pivotement, qui transmet le mouvement de l'élément d'opération sur 90 degrés.

6. Ensemble selon la revendication 4, dans lequel l'extrémité de l'élément d'opération (45) est conique et s'engage avec une ouverture (51) dans l'élément de libération (53), l'extrémité conique de l'élément d'opération (45) provoquant par exemple un mouvement de l'élément de libération (53) dans une direction à 90 degrés par rapport à la direction de mouvement de l'élément d'opération.

7. Ensemble selon l'une quelconque des revendications 4 à 6, dans lequel l'élément de libération (53, 163) est sous la forme d'une plaque.

8. Ensemble selon l'une quelconque des revendications 4 à 7, dans lequel l'élément de libération (53, 163) est monté dans un retrait (55) formé dans le corps (43, 143), le retrait (55) contient en option en outre des moyens d'inclinaison (61, 171) tels qu'un ressort à lames.

9. Ensemble selon la revendication 8 lorsqu'elle dépend de la revendication 5, dans lequel le moyen d'inclinaison (171) pousse l'élément de libération (163) contre l'élément d'articulation (155).

10. Ensemble selon la revendication 8 lorsqu'elle dépend de la revendication 6, dans lequel le moyen d'inclinaison (61) pousse l'élément de libération (53) vers une position dans laquelle il s'étend partiellement dans la première ouverture dans le corps (43) dans laquelle l'élément d'opération (45) est reçu.

11. Ensemble selon l'une quelconque des revendications 4 à 10, dans lequel l'élément de libération (53, 163) est formé d'une ouverture (51, 165) et est incliné

par les moyens d'inclinaison (61, 171) de sorte que le bord de l'ouverture obscurcit partiellement une seconde ouverture (167) au sein du corps (43, 143).

12. Ensemble selon la revendication 11, dans lequel l'ouverture (51, 165) est essentiellement en forme de poire, c'est-à-dire avec une portion de rayon plus grande et une portion de rayon plus petite.

13. Ensemble selon la revendication 11 ou 12, dans lequel la seconde ouverture (167) est essentiellement cylindrique et dimensionnée pour recevoir la seconde extrémité (11) du moyen de connexion (3).

14. Ensemble selon la revendication 11, 12 ou 13, dans lequel un élément d'inclinaison (71, 169), par exemple sous la forme d'un ressort hélicoïdal, est positionné au sein du corps (43, 143), par exemple au sein de la seconde ouverture (167) dans le corps, pour éjecter le moyen de connexion (3) du second module de bouton-poussoir (5, 105) lors de sa libération.

15. Ensemble selon l'une quelconque des revendications précédentes, dans lequel le second module de bouton-poussoir (5, 105) inclut un tube (7, 107) qui est adapté lors de son utilisation à passer à travers une porte ou similaire.

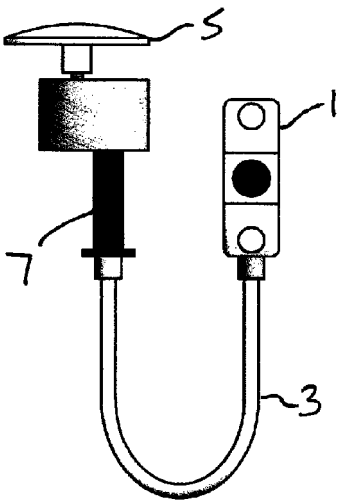


Fig. 1

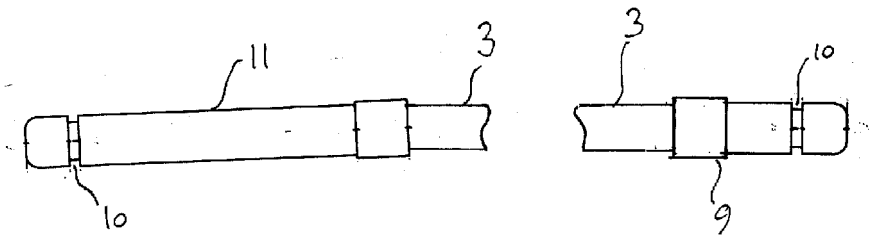


Fig. 2

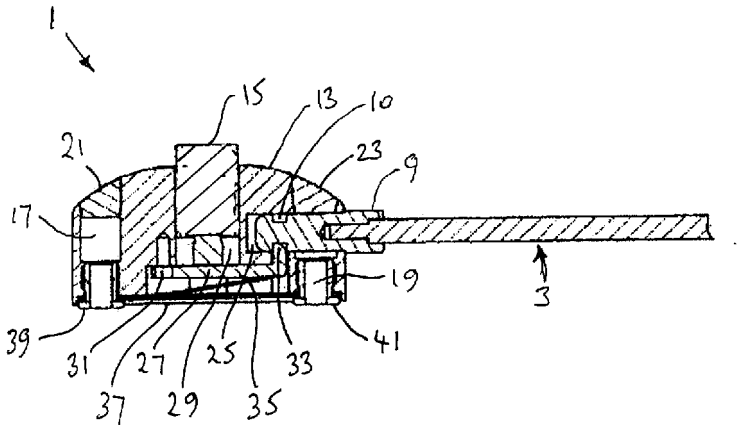


Fig. 3

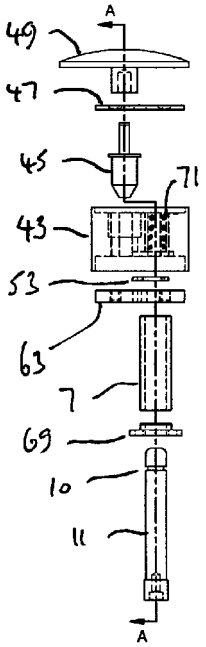


Fig. 4

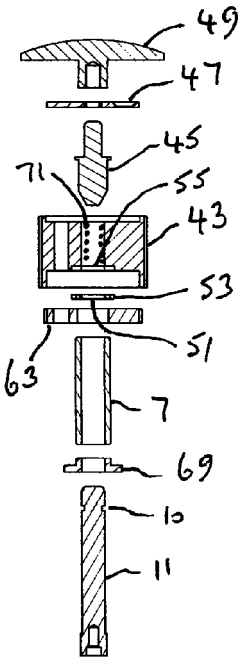


Fig. 5

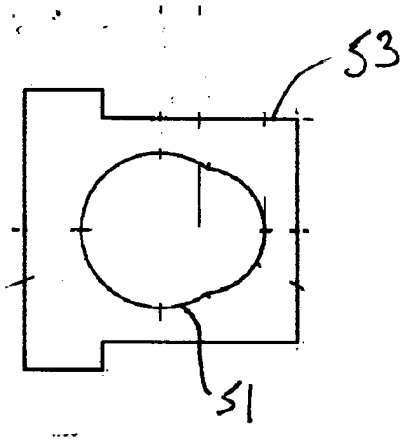


Fig. 6

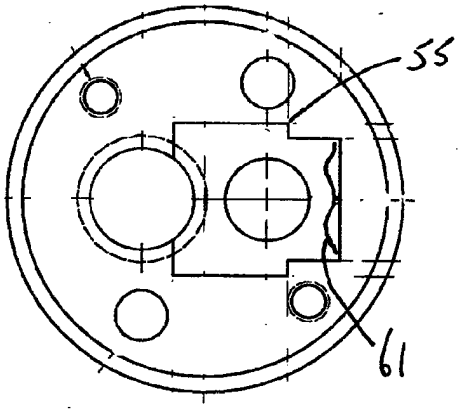


Fig. 7

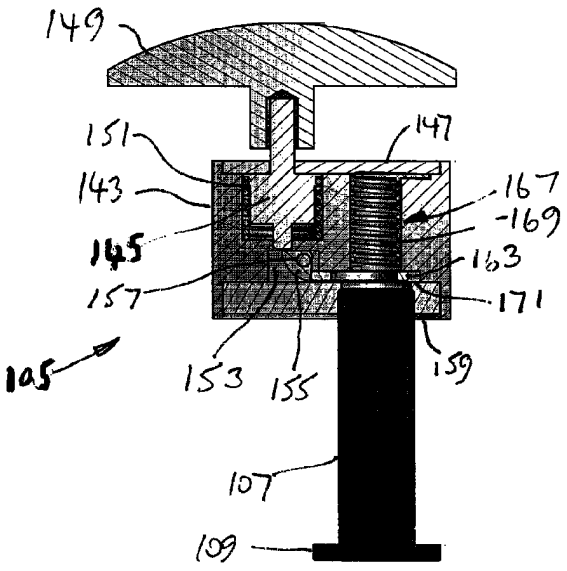


Fig. 8

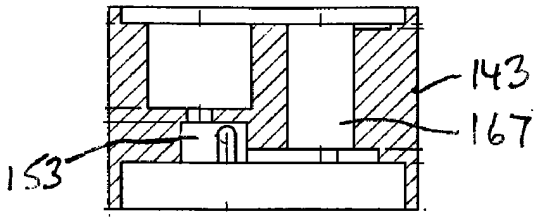


Fig. 9

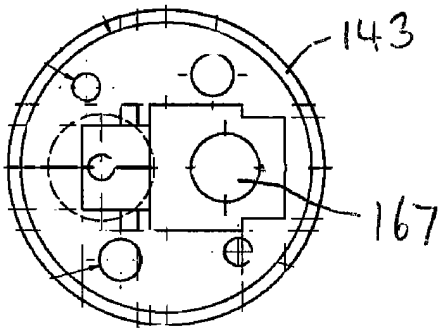


Fig. 10

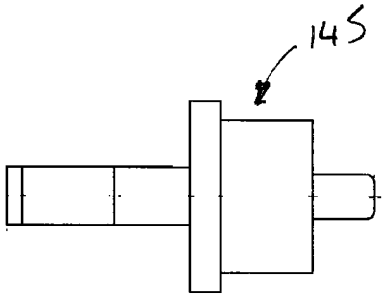


Fig. 11

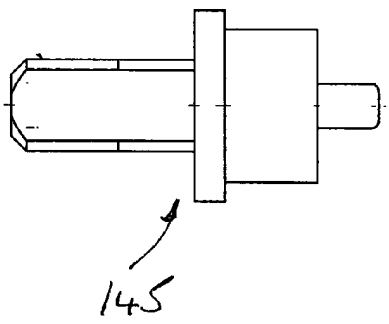


Fig. 12

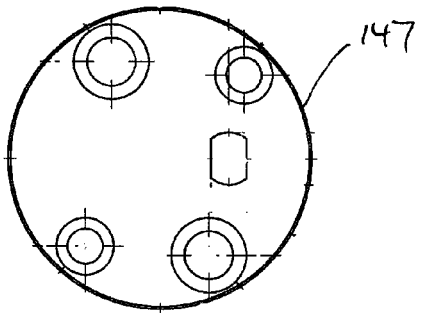


Fig. 13

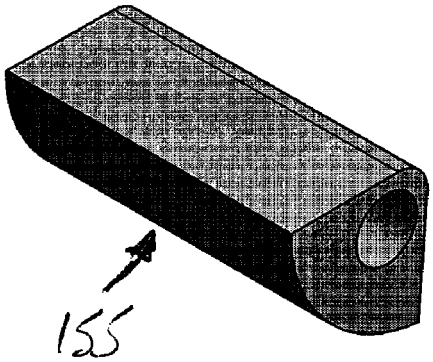


Fig. 14

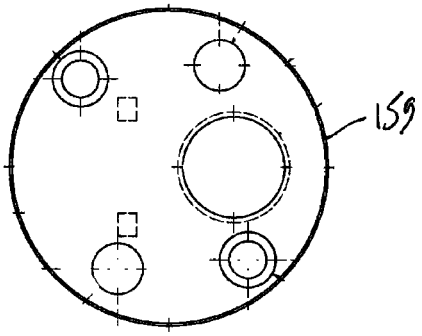


Fig. 15

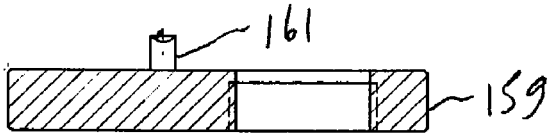


Fig. 16

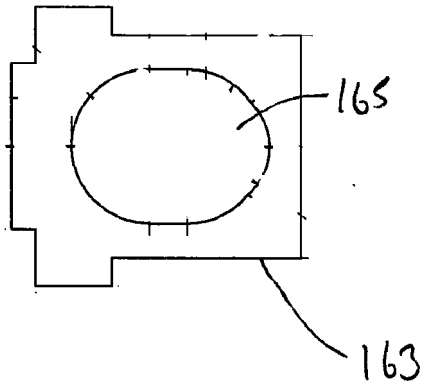


Fig. 17

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP 2418343 A **[0021]**