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(54) Lock apparatus

(57) The invention relates to an apparatus for locking a closure such as a door, comprising a slidably operable multi-point lock device, characterised by pivotable means (8) operative to lock and unlock the lock device (1) from the inside of a space normally closed by the closure (6).

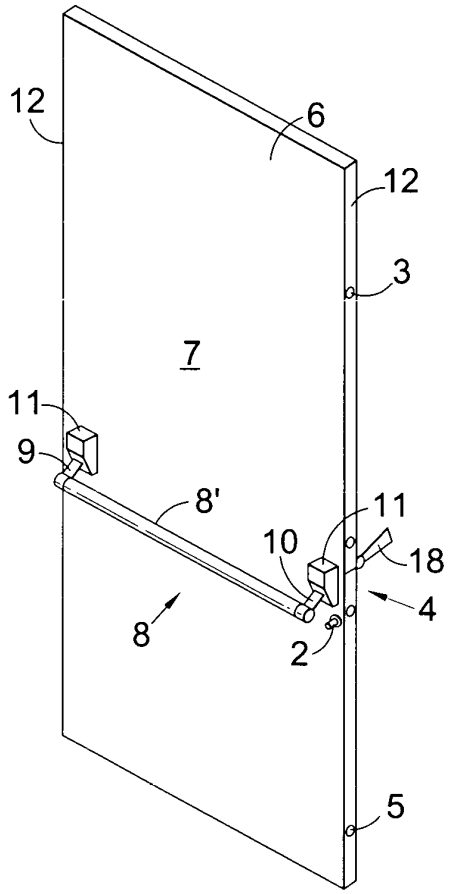

Fig. 3

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Description

[0001] The invention relates to a lock apparatus, particularly to such apparatus as can be used in a multi-tenancy situation, in a theatre, cinema, sports stadium or the like.

[0002] In such situations, including multi-tenancy premises such as a hotel, block of flats, apartments, student accommodation and the like, it is often necessary to provide a lock apparatus for a door or other closure, but which can be opened rapidly in an emergency or otherwise.

[0003] It is an object of the invention to seek to provide such a lock apparatus.

[0004] According to a first aspect of the invention, there is provided an apparatus for locking a closure such as a door, comprising a multi-point lock device, characterised by pivotable means operative to lock and unlock the lock device from the inside of a space normally closed by the closure.

[0005] Thus using the invention it is possible to provide a lock apparatus in which the pivotable member is operable by pushing and on being depressed to unlock the closure, and to lock it on lifting.

[0006] The pivotable means may comprise a push bar, or a pivotable push pad or pads.

[0007] The pivotable means may comprise two spaced pivotable pads connected by a bar. This provides a relatively simple construction, which can be lifted or depressed for operation, particularly when each pad may have a recess in which respective opposite ends of the bar may be received.

[0008] There may be an operating member on the outside (in use) of a closure operative to actuate the apparatus.

[0009] The operating member may comprise a manually operable lever.

[0010] The pivotable means may comprise a body mounted on an inwardly facing (in use) surface of the closure, and by a reciprocably slidable carriage or cassette operable by the bar, pad(s) or lever.

[0011] The carriage or cassette may be mounted under pressure of resilient means to be biased normally to the unlocked condition. This provides a positive action.

[0012] The bar or pad(s) may be pivotable about a pivot axis in a boss of the body.

[0013] There may be a toggle or extrusion which may extends from the bar or pad(s) to operate the carriage or cassette.

[0014] Suitably, the lock apparatus may comprise two multi-point lock devices which in use may be spaced apart across a closure and which are connected by the pivotable or push member. Thus in use when it is desirable or necessary to open the closure in say a 'panic' situation such as a fire, downward pressure on the push, or pad, member can unlock both multi-point lock devices simultaneously, as by the one pushing down or depressing action on the push member, the locking points of the multi-point lock devices are retracted simultaneously from their respective keepers to enable rapid opening of the closure, which could be a fire door, without the need for a key.

[0015] The pad member or push pad may suitably comprise a bar or rod extending between, and connected to, slides of the multi-point lock devices which respectively carry lock members for engagement with, and release from, keepers on locking and unlocking the closure. Thus the push bar or rod will normally be on the inside of the door.

[0016] There may also be means of the apparatus for locking said apparatus from the outside of the closure.

[0017] The means may suitably comprise a lever device of the apparatus. The lever device may be an over-centre lever device which is assisted in passing to an over-centre position when the multi-point lock is locked by resilient means such as a spring which is carried in a slide and operable by the lever for example by a toggle or extension thereof. The slide is also operable by the push member.

[0018] The lock apparatus can also be locked and/or unlocked by means of a key.

[0019] It will be understood that the invention extends to a closure fitted with lock apparatus as hereinbefore defined, and/or a building including at least one such closure as hereinbefore defined.

[0020] Apparatus embodying the invention is hereinafter described, by way of example, with reference to the accompanying drawings.

Figs. 1 and 2 are respective schematic perspective views of a first and second embodiment of multi-point lock devices for use with apparatus according to the invention;

Fig. 3 is a perspective schematic view of a door fitted with apparatus according to the invention;

Figs. 3A and 3B are respectively schematic perspective views to an enlarged scale of the apparatus of Fig. 3, and a push pad for operation of the apparatus, both from inside a closure to which the apparatus is mounted; and

Figs. 4, 4A, 5, 5A, 6 and 6A show to an enlarged scale respective longitudinal sectional views of part of the apparatus according to the invention.

[0021] Referring to the drawings, there is shown in Figs. 1 and 2 respectively, schematic perspective views of quick-release multi point lock systems A, B of lock apparatus 1.

[0022] The system A includes a bolt and hook locking arrangement C, the system B a bolt only locking arrangement D, there being a front plate P for the respective system A or B.

[0023] There is in the embodiment an intermediate lock

M which is key operable in the embodiment.

[0024] The systems A, B are normally operable from the outside of a door 6 to which they are mounted by means in the form of a lever 18 to lock and unlock the closure. In order to provide quick-release of the lock apparatus 1 for a closure such as the door 6 there is on the inside 7 in use pivotable means in the form of a push member or push-bar device 8. The push-bar device 8 is a horizontal bar 8' (Figs. 3, 3A) mounted for upward and downward pivoting motion by pivots 9, 10 mounted in respective bodies 11. The bodies 11 are at the opposite sides of the door 6.

[0025] The keyhole 2 of the lock H is normally covered by the bar 8 and/or pivot 10, the lock M being intermediate the length of the plate P so as to provide a top bolt 3, a central bolt 4 and a bottom bolt 5, as shown in Fig. 2. The plate P with its plate P is mounted in a nose or free edge 12 of the door 6 opposite an edge 13 about which the door 6 pivots for opening and closing on hinges or pivots (not shown). There can be a lock system A or B at both edges of the door.

[0026] Fig. 3B shows a push pad 8", in the embodiment there being two such pads 8" linked by the bar 8' which is received in sockets 8"' in each pad.

[0027] The plate 'P' which is longitudinally reciprocally slidable to effect locking and unlocking of the multi-point lock system 1 is connected by suitable connections 14 to a reciprocably slidable carriage or cassette 15 of the bodies 11 of the push bar device (Figs. 4 to 6A). The carriage or cassette is mounted in the body 11 which is hollowed out at 16 to receive it and which is mountable under pressure of resilient or spring means 17 pressure to be biased to the open or unlocked position, being urged over-centre to lock the lock apparatus 1 either by lifting up the bar 8 or pad(s) 8" (there may be only one) from the inside of the door, or by moving an external operating member such as the lever 18 on the outside of the door. The pad(s) 8" is or are pivoted about a pivot axis 19 in a boss 20 of the body 11, there being a toggle or extension 21 of the bar 8', pad(s) 8" or lever 18 to slide the carriage or cassette.

[0028] As described, the bodies 11 may each have a keyhole for key operation of the apparatus if desired, though a key is not necessary for operation of the apparatus.

[0029] In use, the lock apparatus 1 being mounted with the push bar 8' on the inside of the door 6 and the lever 18 on the outside, on lifting the push bar 8' it slides the plate 'P' of the multi-point lock system to engage their locking points C for example behind respective associated keepers to lock the door. Likewise, operation of the lever from the outside of the door is such that lifting it over-centre also locks the door. When, however, the push bar 8' is depressed on the inside of the locked door 6, all the locking points are instantaneously and simultaneously retracted and the door is openable without recourse to a key.

[0030] It will be understood that the two pads 8" and bar 8' provide what could be termed a panic bar in that on downward pressure on the bar 8' or pad 8" in an emergency, a locked door is unlocked, the locking points C being retracted as the locking action is overridden, thus providing a fast egress multi-point lock.

[0031] Lock apparatus described herein with reference to the drawings thus incorporates the novel feature of having a push bar 8' or push pad or pads 8" which can be operated from inside the door to lock the door on lifting, by actuating the multi-point lock to cause the locking points C to lock the door 6 and to unlock the door 6 on the push bar 8' or pad(s) 8" being depressed. The apparatus may operate left or right-hand opening doors.

Claims

1. An apparatus for locking a closure such as a door, comprising a multi-point lock device, **characterised by** pivotable means (8) operative to lock and unlock the lock device (1) from the inside of a space normally closed by the closure (6).

2. Apparatus according to Claim 1, **characterised by** the pivotable means (8) comprising a push bar (8').

3. Apparatus according to Claim1, **characterised by** the pivotable means (8) comprising a pivotable push pad or pads (8").

4. Apparatus according to Claim 1, **characterised by** the pivotable means (8) comprising two spaced pivotable pads (8") connected by a bar (8').

5. Apparatus according to Claim 4, **characterised by** each pad (8") comprising a recess (8"') in which respective opposite ends of the bar (8') are received.

6. Apparatus according to any preceding claim, **characterised by** an operating member (18) on the outside (in use) of a closure (6) operative to actuate the apparatus (1).

7. Apparatus according to Claim 6, **characterised by** the operating member (18) comprising a manually operable lever.

8. Apparatus according to any of the preceding claims, **characterised by** the pivotable means (8) comprising a body (11) mounted on an inwardly facing (in use) surface of the closure (6), and by a reciprocably slidable carriage or cassette (15) operable by the bar (8'), pad(s) (8") or lever (18).

9. Apparatus according to Claim 8, **characterised by** the carriage or cassette (15) being mounted under pressure of resilient means (17) to be biased normally to the unlocked condition.

10. Apparatus according to Claim 9, **characterised by** the bar (8') or pad(s) (8") being pivotable about a pivot axis (19) in a boss (20) of the body (11).

11. Apparatus according to Claim 10, **characterised by** a toggle or extrusion (21) which extends from the bar (8') or pad(s) (8") to operate the carriage or cassette (15).

12. Apparatus according to any preceding claim, the multi-point lock device being **characterised by** being slidably operated.

13. A closure such as a door, **characterised by** apparatus (1) according to any preceding claim mounted thereon.

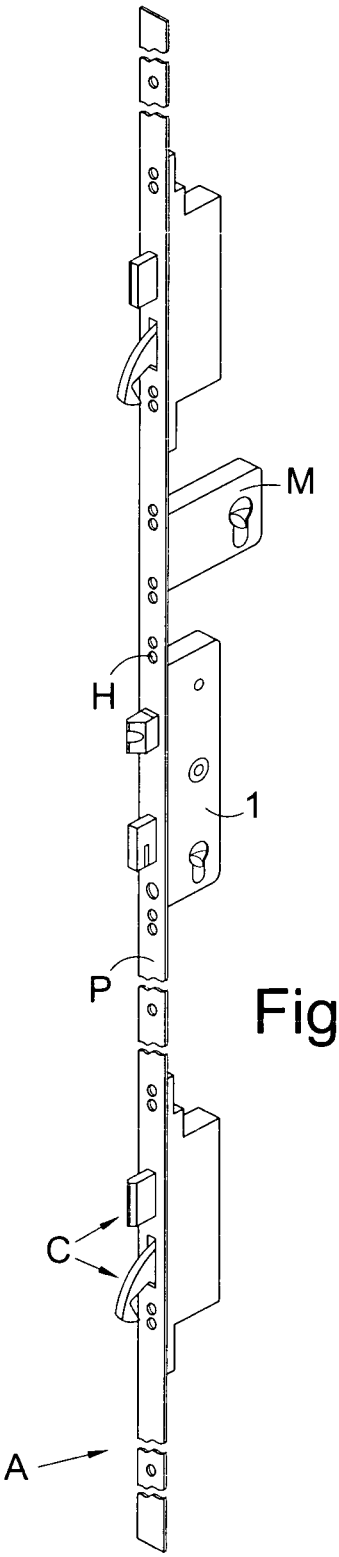

Fig. 1

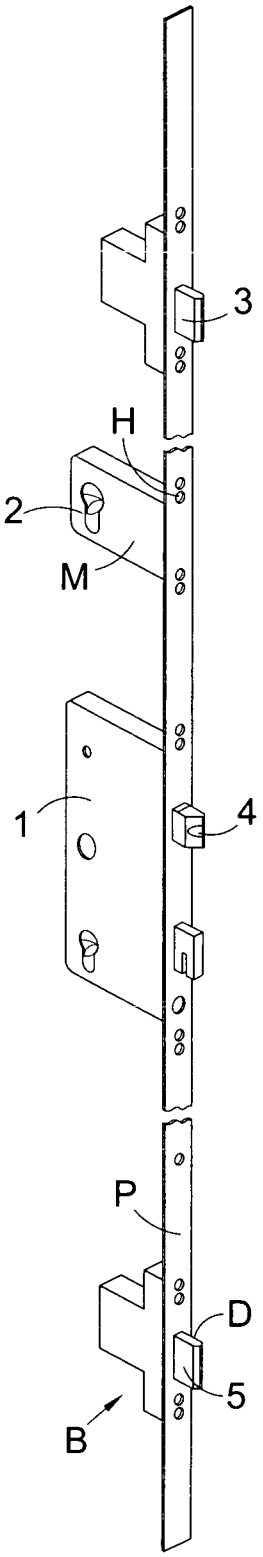

Fig. 2

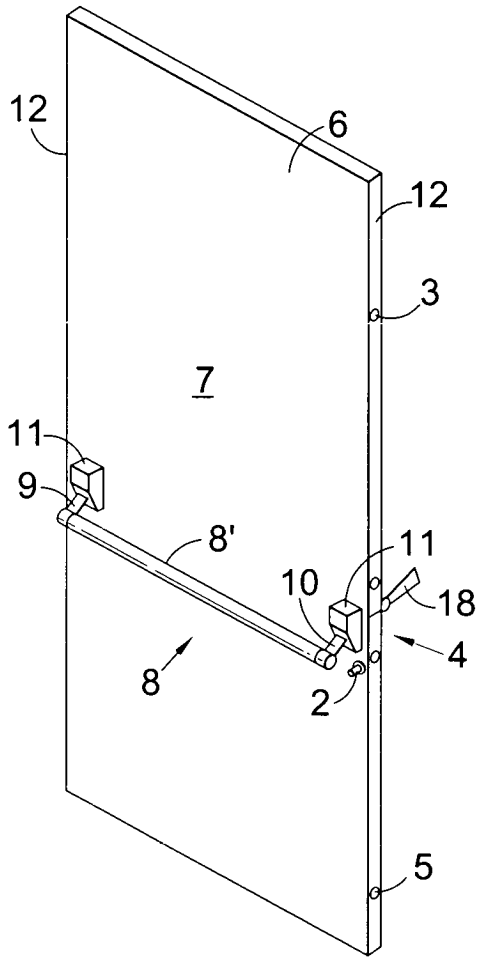

Fig. 3

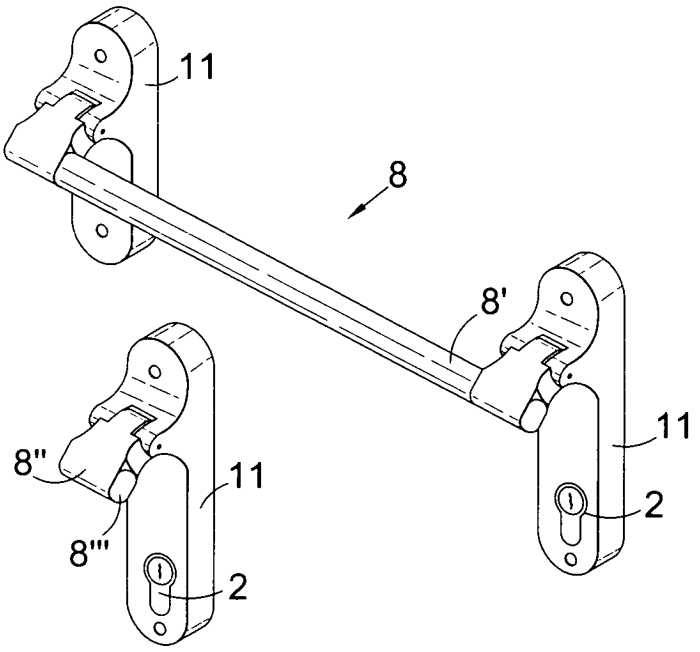

Fig. 3B

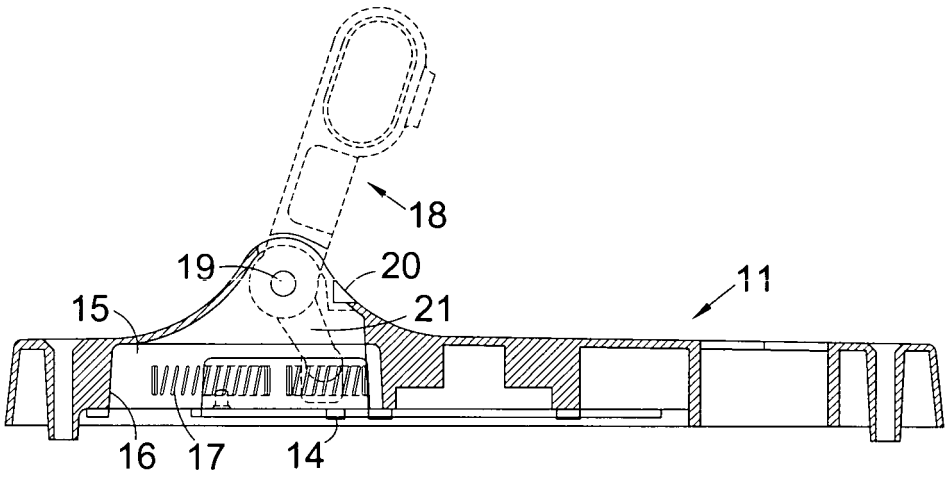

Fig. 4

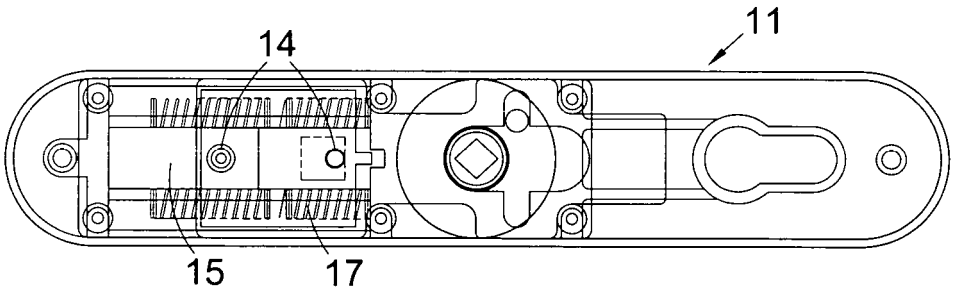

Fig. 4A

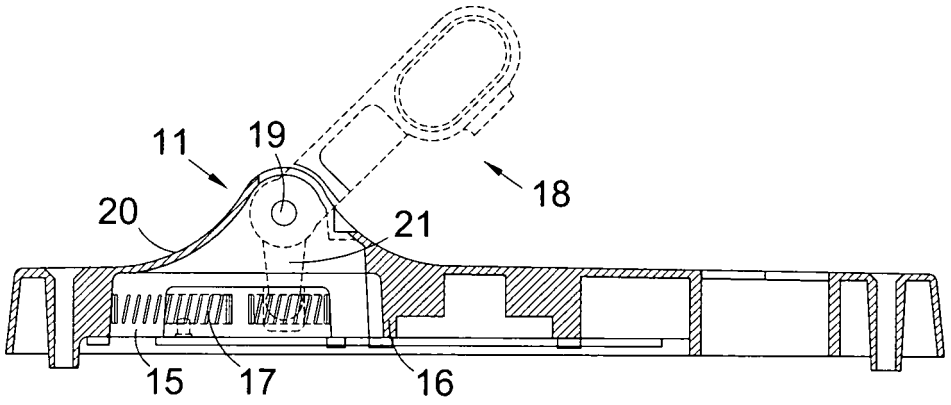

Fig. 5

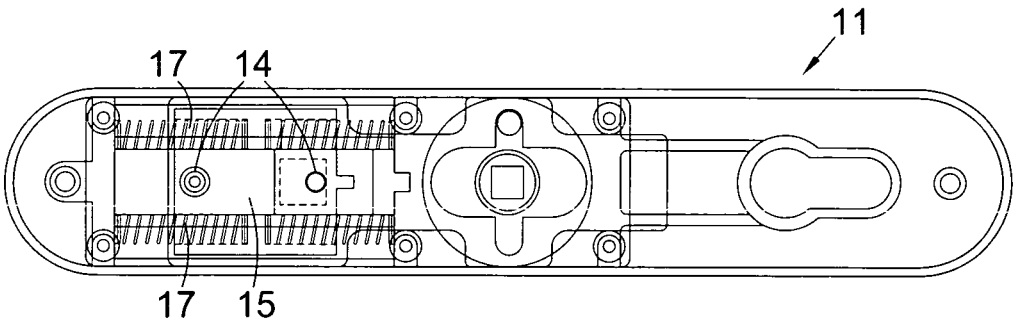

Fig. 5A

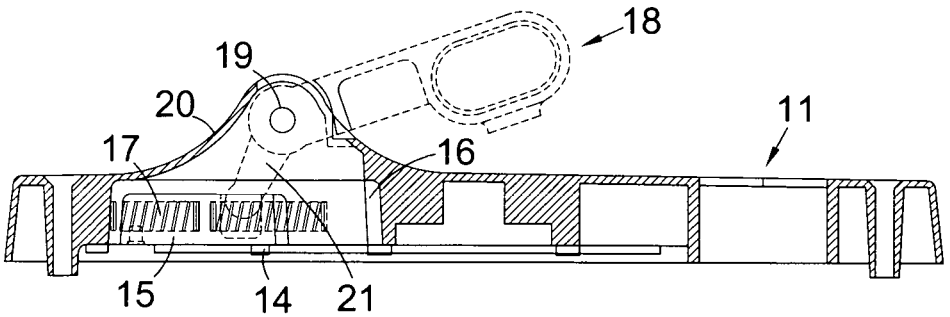

Fig. 6

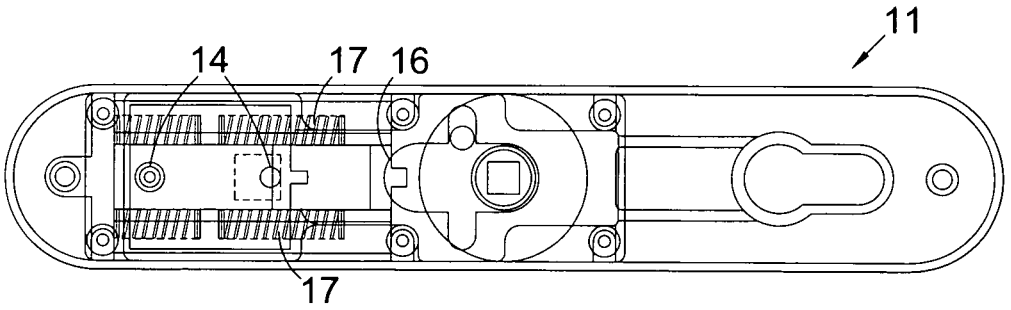

Fig. 6A

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EUROPEAN SEARCH REPORT

Application Number
EP 05 25 5043

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E05B
E05C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	9 December 2005	Van Beurden, J

CATEGORY OF CITED DOCUMENTS

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