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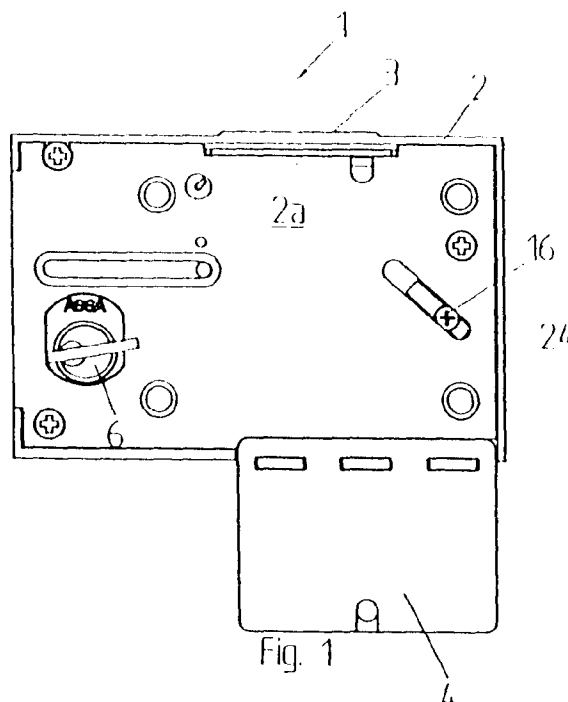
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AL LT LV MK RO SI(30) Priority: **10.03.1998 SE 9800777**(71) Applicant: **ASSA AB****S-631 05 Eskilstuna (SE)**(72) Inventor: **Häggström, Ake****921 42 Lycksele (SE)**(74) Representative: **Wennborg, Göte et al****Kransell & Wennborg AB****Box 27834****115 93 Stockholm (SE)**(54) **Coin lock**

(57) A coin operated lock having a coin insertion aperture (3) permits a catch hook (5) to pivot when a coin (7) has been inserted through said aperture. This results in the displacement of an intermediate member (10) that includes two coin support means (17, 18). To enable the lock to be adjusted to operate with coins of different sizes, one support means (17) can be releasably fixed in an elongate aperture (20) with the aid of a screw (16),

said aperture (20) being angled to the movement direction of the intermediate member. Adjustment of the support means to correspond to a coin of another size is effected from outside the lock with the aid of a screwdriver inserted through an elongate aperture (20) corresponding to the elongate aperture in the cover plate (2a) of the lock housing. One end position of the support device (17) in the elongate aperture (20) corresponds suitably to a coin of given size, e.g. a euro coin.

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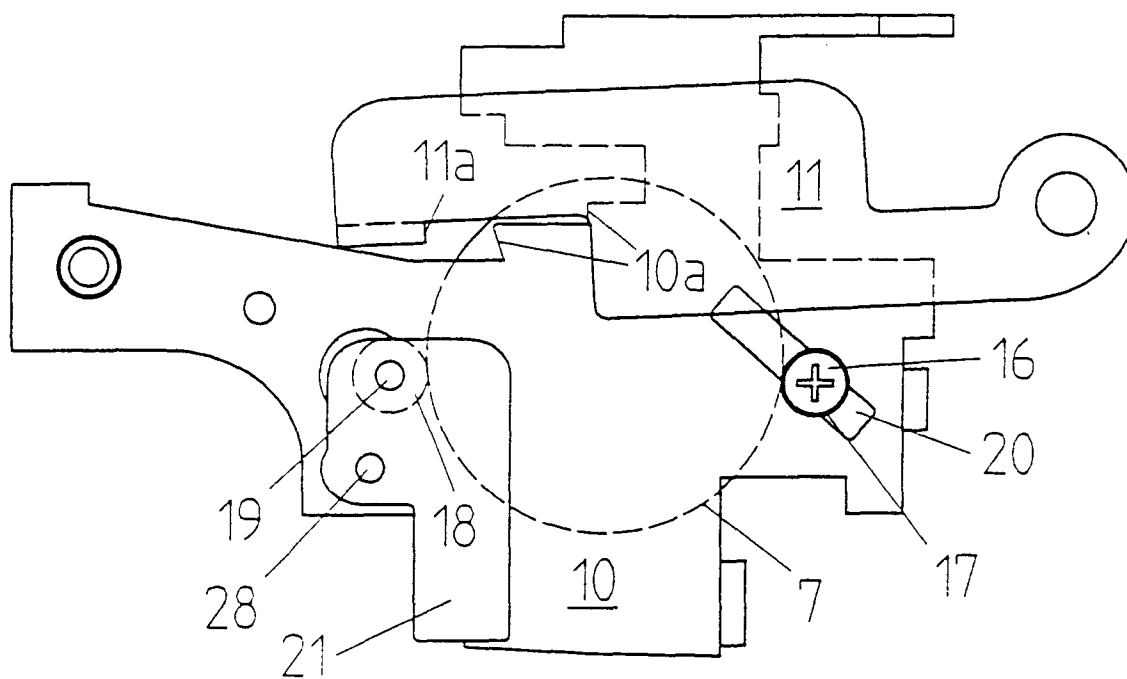


Fig. 7.

Description

FIELD OF INVENTION

[0001] The present invention relates to a coin operated lock and more particularly to a coin operated lock of the kind defined in the preamble of Claim 1.

[0002] One problem encountered in the manufacture of coin operated locks is one of adapting the lock mechanism to the size of coin used to operate the lock mechanism. It will be understood that this problem is particularly troublesome in respect of the export of coin operated locks to different countries and not least in those cases where there is an imminent risk of the coin size being changed.

DESCRIPTION OF THE BACKGROUND ART

[0003] One example of a coin operated lock that can be adapted to adjustably receive and accommodate coins of mutually different diameters is described in U.S. 4,433,722 (Eisermann, et al). This lock construction, however, is comparatively complicated and requires the rear wall of the lock housing to be removed when wishing to make an adjustment. The construction only enables an adjustment to be made from one coin size to another and gives no indication of enabling given settings to be made that correspond to given coin sizes.

[0004] Another coin operated lock that includes adjustable coin supporting means is described in U.S. 4,332,315 (Ward). This lock construction is also complicated, and lacks both a catch hook and an intermediate member. Adjustments between different coin sizes cannot be effected readily from outside the lock.

[0005] SE-B 9602857-6 (ASSA) teaches a coin operated lock of the kind defined in the preamble of Claim 1. This lock also lacks the possibility of making adjustments between different coin sizes from outside the lock.

OBJECT OF THE INVENTION

[0006] Accordingly, it is an object of the present invention to provide a coin operated lock of the aforescribed kind that has a simple and reliable construction and that can be readily adapted to accommodate several different coin sizes without requiring comprehensive modification of the lock mechanism.

[0007] Another object is to provide a coin operated lock of the aforesaid kind that can be reset or adjusted to accept one or more given coin sizes, from outside the lock housing in a simple manner.

SUMMARY OF THE INVENTION

[0008] These and other objects are achieved with an inventive coin operated lock of the aforescribed kind that includes the characterising features set forth in the

characterising clause of Claim 1.

[0009] Because the position of a coin supporting element in an elongate aperture or slot of the aforesaid kind can be fixed with the aid of a screw that can be reached from outside the lock housing, the position of the supporting element can be adjusted from outside the housing without needing to dismantle the lock, and also enables the support element to be adjusted to a position in which a coin or coins of a given size will be accepted by the lock, namely in one or both ends of the elongate aperture.

[0010] A particularly simple and advantageous lock adjustment can be made when the cover plate of the lock housing includes a corresponding elongate aperture or slot that is in register with the first-mentioned elongate aperture.

[0011] Particular advantages are gained when the coin insertion aperture of the lock mechanism accommodates a reversible coin-limiting means of the kind defined in Claim 4.

[0012] The invention will now be described in more detail with reference to an exemplifying embodiment thereof and also with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] Fig. 1 is a side view of a coin operated lock constructed in accordance with the invention, and shows that side of the lock that rests against the door when the lock is fitted.

[0014] Fig. 2 is an end view of the lock illustrated in Fig. 1.

[0015] Fig. 3 is a side view of the lock, shown from its outer side.

[0016] Fig. 4 is a view from above of the lock illustrated in Figs. 1-3.

[0017] Fig. 5 is a side view of the lock mechanism housed in the lock housing, with the rear wall of the housing removed and with the catch hook shown in an inwardly swung position.

[0018] Fig. 6 is a view corresponding to Fig. 5 showing the state of the lock mechanism after having inserted a coin. The catch hook has not been shown in Fig. 6 for the sake of clarity.

[0019] Fig. 7 illustrates in larger scale the intermediate member and catch hook of the lock mechanism subsequent to having inserted a coin, said coin being shown in a broken-line circle.

[0020] Fig. 8 is a detailed view of the intermediate member as seen from the upper side in relation to the Fig. 7 illustration.

[0021] Fig. 9 is a side view of a coin limiting device inserted in the coin insertion aperture of the lock.

[0022] Fig. 10 is a front view of the coin limiting device shown in Fig. 9.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0023] Figs. 1-4 illustrate an inventive coin operated lock from respective different directions or from respective different sides thereof. The illustrated lock comprises a casing or housing 2 having an upper coin insertion slot (3), a coin collecting chamber 4, a pivotal catch hook 5 (see Figs. 5-6) and a cylinder lock 6 whose key can be removed subsequent to having inserted a coin (not shown in Figs. 1-4) into the coin slot and the catch hook having been swung outwardly in response to turning of the key.

[0024] Fig. 5 illustrates the interior of the lock housing 2 accommodating the lock mechanism. The outer side wall of the housing 2 has been removed in the Fig. 5 illustration, and the catch hook 5 is shown in an inwardly swung position.

[0025] Fig. 5 also shows the presence of further lock mechanism elements in addition to the lock elements referenced 1-6: An intermediate member 10 is coupled together with the catch hook 5 by means of a pin 9 such that pivotal movement of the catch hook in different directions will be converted through the action of dogging means (not shown) on the lock cylinder to essentially rectilinear movement of the intermediate member 10 reciprocatingly between a rear end position (shown in Fig. 5) and a forward end position when the catch hook is swung outwards.

[0026] The mechanism also includes a hook 11 which co-acts with the intermediate member 10, the catch hook 5 and a coin 7 (shown in a broken circle in Fig. 6), said hook 11 delimiting movement of the intermediate member in an intermediate position (not shown), and therewith also movement of the catch hook 5, until a coin 7 has been inserted (Fig. 6), whereupon the latching effect of the hook 11 ceases to take effect and the catch hook 5 can be swung by the dogging means. The intermediate member 10 is therewith displaced to its forward position.

[0027] As shown in Figs. 7-8, the intermediate member 10 carries two mutually co-acting coin supporting means or devices in the form of pins or tubular sleeves 17, 18 which are spaced apart at a distance which is slightly smaller than the diameter of the coin 7 concerned.

[0028] The supporting means 18 is stationarily mounted on a rivet 19 fixed to a lever arm 21 that can swing about a pivot point 28. The supporting device has the form of a pin or a tubular sleeve 18.

[0029] The opposing coin supporting sleeve 17, also preferably in the form of a pin or a tubular sleeve, can be releasably fixed in an elongate aperture 20 on the intermediate member 10, by means of a screw 16. The elongate aperture or slot 20 is orientated at an angle to the displacement direction of the intermediate member 10 such that regardless of the size of the coin located between the two supporting means 17 and 18, the pe-

ripheral surface of the coin will prevent the hook element 11a of the pivotal hook 11 from engaging any of the steps 10a in a stepped formation on member 10.

[0030] In the absence of a coin 7 between the supporting devices 17, 18, the hook element 11a will engage one of the steps 10a in said stepped formation, therewith preventing displacement of the intermediate member 10 and also preventing the catch hook from being swung out in response to turning the key. However, this is not so when a coin 7 is supported between the coin supporting devices 17, 18 (as shown in Fig. 7), since the hook element 11a is able to slide on the peripheral surface of the coin 7 as the intermediate member 10 is displaced.

[0031] As will be seen from Fig. 1, the cover plate 2a of the lock housing 2 includes an elongated aperture or slot 24 that corresponds to the elongated aperture or slot 20 in the intermediate member 10. Thus, all that is required to adjust the coin operated lock mechanism so that it will operate with a coin of a different size is to insert a screw driver (not shown) through the slot 24, loosen the screw 16 and move the pin or tubular sleeve 17 to a position corresponding to the coin of said different size and then re-tighten the screw 16.

[0032] In order to facilitate adjustment of the lock mechanism to a given coin size, e.g. to the size of a euro coin, the length and orientation, i.e. direction, of the slot 20, are such that one end position of the supporting means 17 in the slot 20 will correspond to one such given coin. The other end position may correspond to another given coin, for instance a coin corresponding to half the value of the coin in the first end position. A gauge is used to make a pin-adjustment to a position other than an end position.

[0033] The position of the coin supporting means is set with the aid of a gauge prior to delivering the lock from its place of manufacture.

[0034] As shown in Figs. 9 and 10, a coin selector device may be inserted in the upper coin insertion slot 3 of the lock in conjunction with its manufacture. This coin selector device, referenced 25 in said Figures, has two recesses 26, 27 of mutually different lengths and depths, or widths, which allow coins of corresponding dimensions to pass through.

[0035] The coin selector device is mounted in the lock housing in means suitable to this end immediately beneath the coin insertion aperture 3 and therewith functions to allow a coin of the denomination for which the supporting device 17 positioned in the slot 20 has been set to pass through the slot.

[0036] The lock is adapted to a different given coin size, e.g. to the size of a euro coin, that corresponds to the aforesaid end position of the coin supporting means 17 in the slot 20, by loosening said screw, displacing the supporting means to its other position and fixing said means 17 in its adjusted position in the aforescribed manner. In conjunction herewith, the coin selector device 25 is removed from the coin insertion aperture or

slot 3 and is either reversed or replaced with another coin selector device, wherewith the coin operated lock is ready for use with coins of this different size. The coin selector device shown in Figs. 9 and 10 will conveniently have two apertures 30 for alternative engagement with the aid of a tool when reversing or substituting said device. In this regard, the coin selector device is displaced axially and tilted onto one edge, so as to enable it to be removed easily without jamming. The bottom surface of the coin selector device will conveniently include four bosses or lugs 29 to assist in defining the use position thereof.

[0037] One particularly advantage afforded by the invention is that when the catch hook 5 is in its locked state, the intermediate member 10 will be displaced generally rectilinearly to the left in Fig. 1, i.e. the screw 16 can no longer be reached from the slot 24 in the cover plate 2a.

[0038] Thus, the coin operated lock can only be adjusted to operate with a coin of a different size when the lock is in its released state, which provides an additional security measure against undesired manipulation of the lock.

[0039] It will be understood that the invention can be varied in many ways within the scope of the following Claims.

Claims

1. A coin operated lock comprising:

- a) a housing or casing (2) having a coin insertion aperture (3) on the upper side of said housing;
- b) a catch hook (5) pivotally mounted in the housing (2);
- c) a lock cylinder (6) mounted on the outside of the housing (2) and having on its cylinder plug dogging means functioning to swing the catch hook (5) when so permitted by a coin (7) inserted through the coin insertion aperture;
- d) an intermediate member (7) coupled with the catch hook (5) by a pin (9) such that pivotal movement of the catch hook in different directions will be translated to essentially rectilinear movement of the intermediate member forwards and backwards between a rear and a front end position;
- e) a hook (11) which co-acts with the intermediate member (10), the catch hook (5) and the coin (7) and which limits movement of the intermediate member, and therewith also of the catch hook, until a coin has been inserted, whereupon the latching effect of the hook ceases and the catch hook (5) can be swung by the dogging means and the intermediate member and therewith displaced to said forward position, wherein

tion, wherein

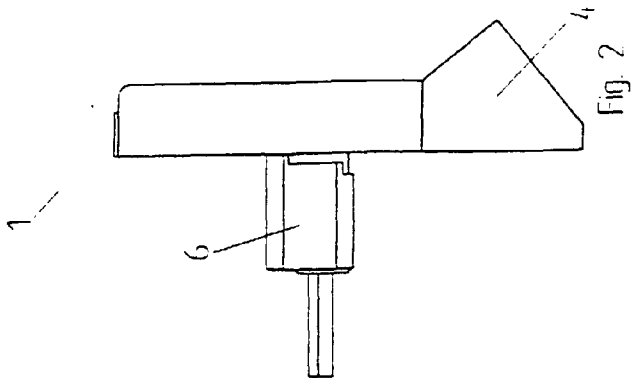
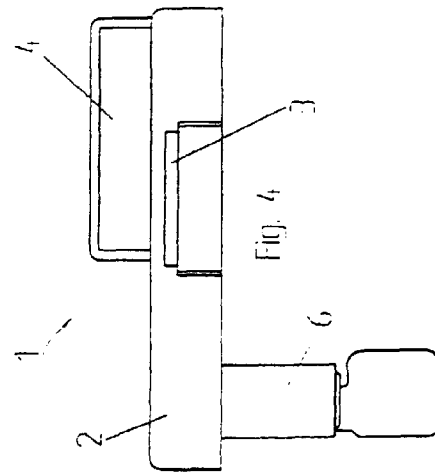
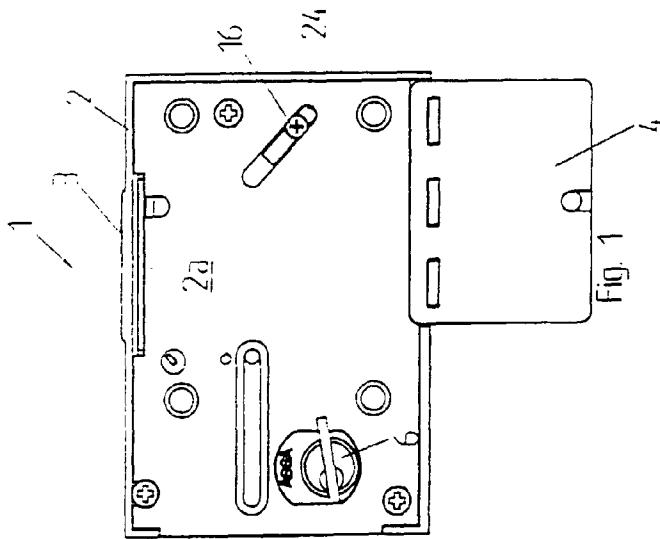
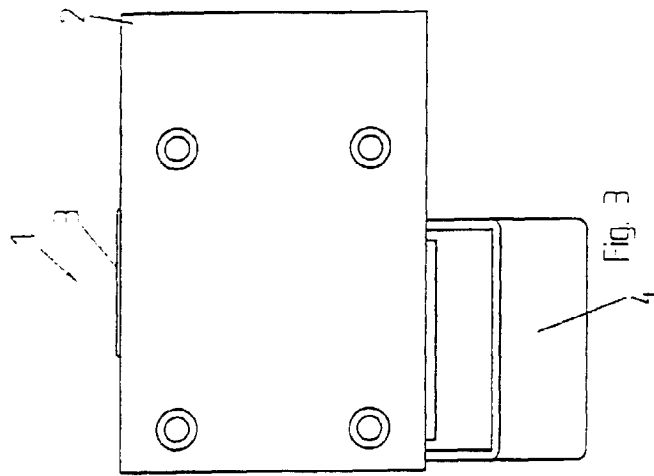
f) the intermediate member (10) includes two mutually co-acting coin supporting means, e.g. pins or tubular sleeves (17, 18) spaced apart at a distance that is slightly smaller than the diameter of coin (7), and a stepped formation (10a) which co-acts with the hook (11) and which is adapted so that when a coin is supported between the two supporting means (17, 18) the hook element (11a) of said hook will slide on the peripheral surface of said coin and therewith enable displacement of the intermediate member to take place,

characterised in that

g) the coin supporting means (17) that lies distal from the catch hook (15) can be releasably fixed in an elongate aperture or slot (20) which extends at an angle to the movement direction of the intermediate member (10), and in that said angle is so chosen in relation to said stepped formation (10a) that a coin supported between said two supporting means (17, 18) will prevent engagement between the hook element and a step in said stepped formation (10a) regardless of the size of the coin; and in that

h) the device for fixing the position of said supporting means (17) has the form of a screw (11) that can be reached with a screwdriver via an elongate aperture or slot (20) corresponding to the elongate aperture or slot (24) in the housing cover plate (2a).

- 2. A coin operated lock according to Claim 1, **characterised in** that at least one end position of the moveable supporting means (17) in the elongate aperture (20) corresponds to a given coin, e.g. a euro coin.
- 3. A coin operated lock according to Claim 2, **characterised in** that the other end position also corresponds to a given coin, e.g. to half the coin value represented by the former end position.
- 4. A coin operated lock according to any one of Claims 1-3, wherein the coin insertion aperture (3) on the upper side of the lock housing (2) accommodates a reversible coin selector device (22) which has two recesses (26, 27) of mutually different lengths and depths, or widths, for allowing a coin of corresponding dimensions to pass through, **characterised in** that at least one recess corresponds to the coin size in one end position of the elongate aperture.



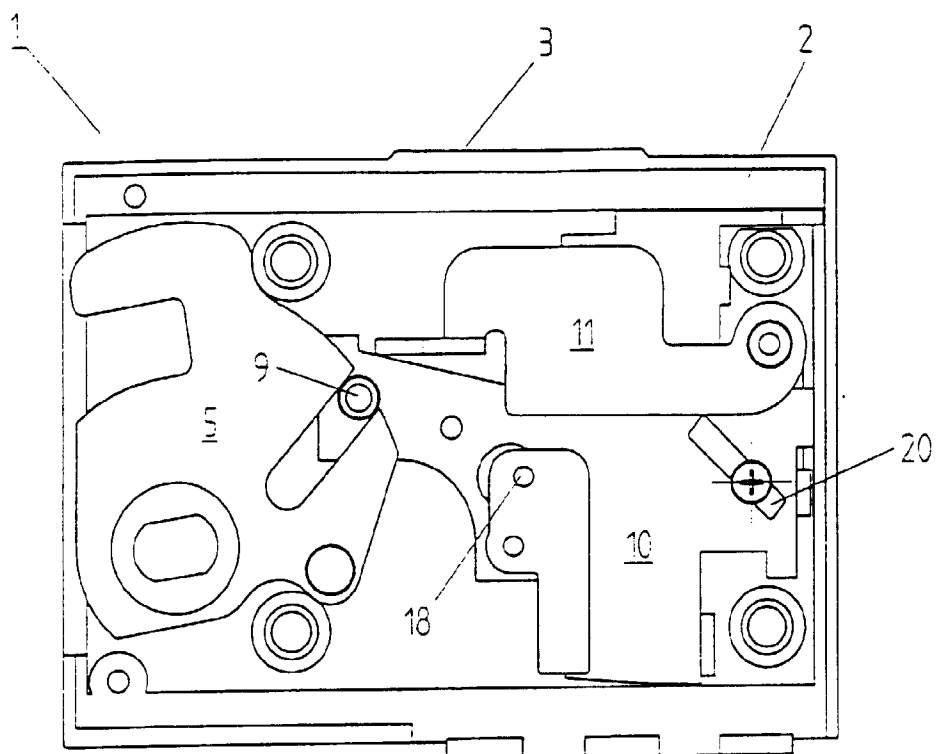


Fig. 5

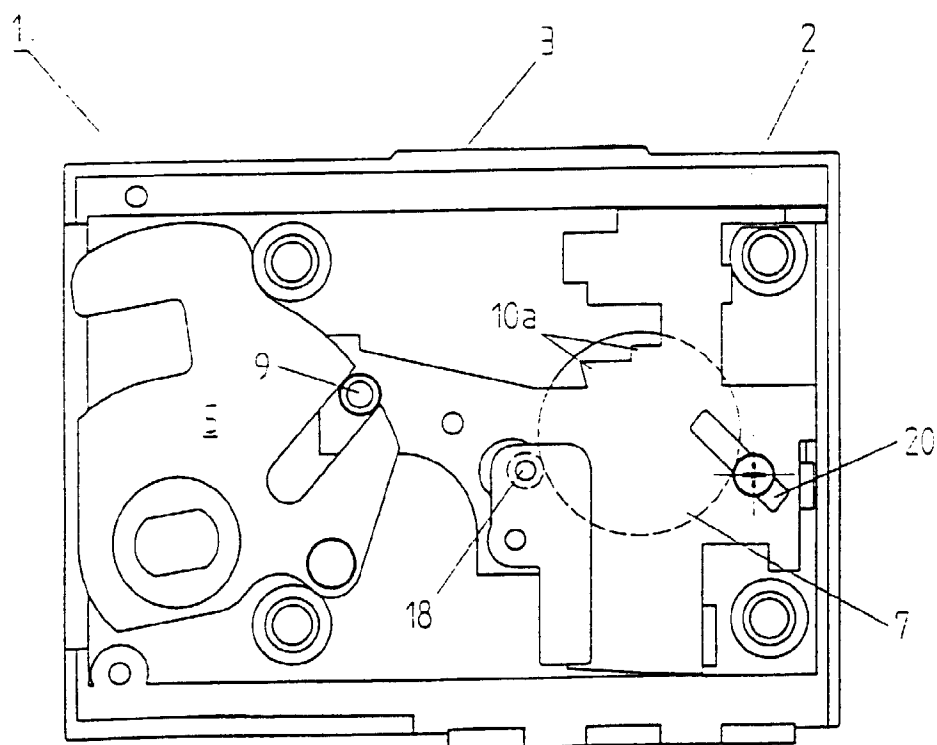


Fig. 6

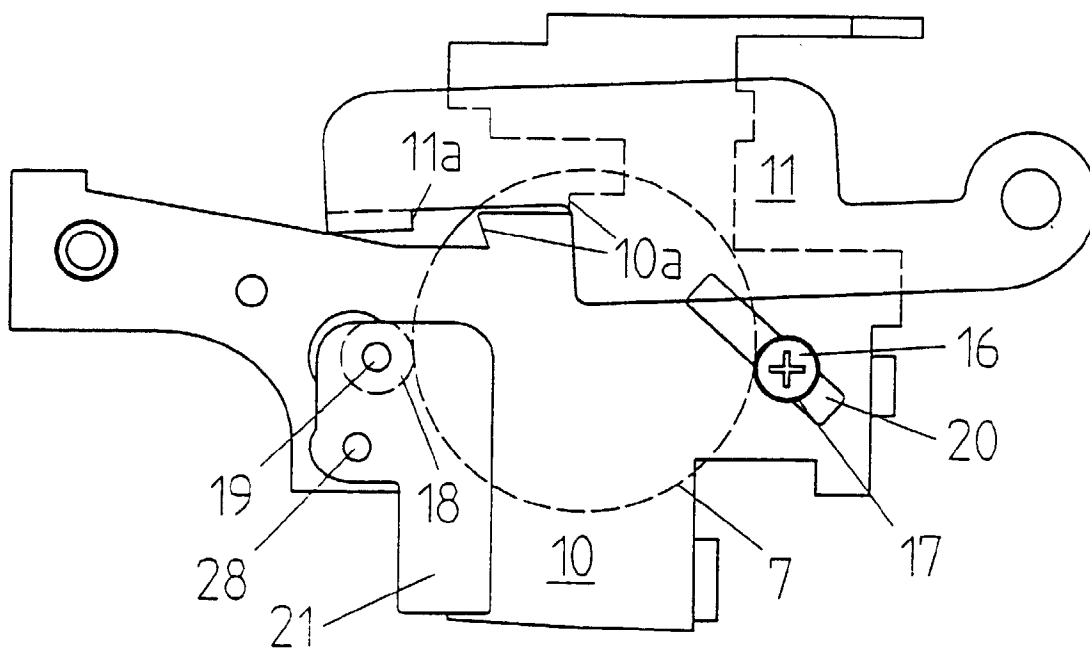


Fig. 7.

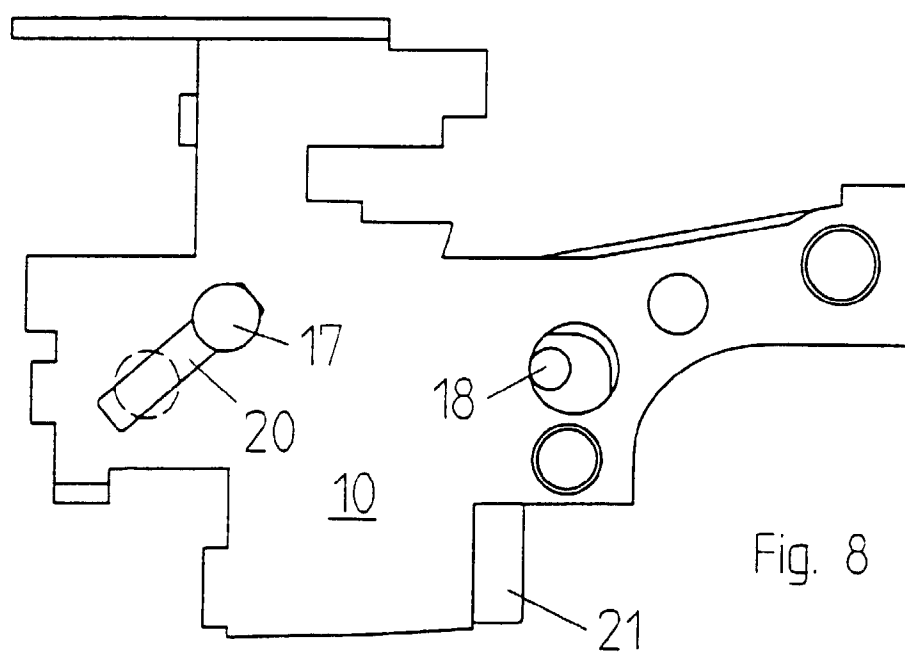


Fig. 8

