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(54) **Token operable lock**

(57) A token operable lock comprising a lock mechanism, said lock mechanism being connected to an enabling mechanism provided for enabling said lock mechanism upon introduction of a token, said enabling mechanism comprising a setting member provided for being adjusted to at least two different token dimensions, said setting member being connected to a lever connecting said enabling mechanism to said lock mechanism and being operable by said token for enabling said lock mechanism.

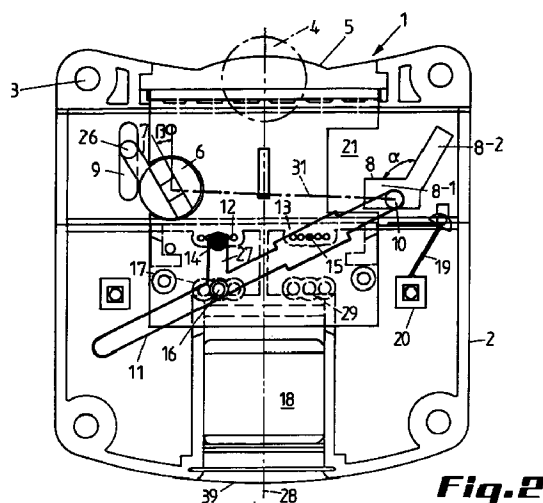


Fig.2

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Description

The invention relates to a token operable lock comprising a lock mechanism, said lock mechanism being connected to an enabling mechanism provided for enabling said lock mechanism upon introduction of a token.

Such a lock is known and is for example used in lockers placed in railway stations, airports, swimming pools or in dispensers. The token used for operating the lock is generally formed by a piece of money which in the example of railway stations or airport lockers is collected in a basket and serves to write down the casts of the locker. The token could also serve as a gage and be rendered to the user when he picks his stored objects up. The lock can only be operated after introduction of the token, which is necessary to operate the enabling mechanism, which enables then the lock mechanism.

A drawback of the known lock mechanisms is that they are only provided to operate on a single type of token, in particular a single coin. When the used token is no longer applicable for example due to a price increase or due to the fact that the used coin has been withdrawn from circulation, the whole lock has to be replaced which is a cumbersome and expensive operation.

It is an object of the present invention to realise a token operable lock, which is provided to be adapted to different tokens and which can easily be modified for receiving a different token.

To this purpose a token operable lock according to the present invention is characterised in that said enabling mechanism comprises a setting member provided for being adjusted to at least two different token dimensions, said setting member being connected to a lever connecting said enabling mechanism to said lock mechanism and being operable by said token for enabling said lock mechanism. The setting member enables to adapt the lock to at least two different token dimensions. In such a manner the lock can be adjusted to a chosen token either at first mounting or at a later stage be modified to receive a different token. The fact that the setting member is connected to a lever provides a connection between the setting member and the lock mechanism to enable the activation of the lock mechanism by the token at which dimension the setting member is adjusted.

A first preferred embodiment of a token operable lock according to the invention is characterised in that said setting member comprises a first and a second series of holes provided for receiving a first and a second pin, said first and second series of holes being applied on the opposite side of a median line through an aperture for receiving said token. The adjustment to a selected token is then realised by applying the first respectively the second pin into an appropriate hole of the first respectively second series.

A second preferred embodiment of a token operable lock according to the invention is characterised in

that said lever has one end fixed to a first peg, which is movable into a first slot, which comprises a first and a second part, said second part being accessible for said peg when said token is into said enabling means, said first part being dimensioned in such a manner as to block said lock mechanism. This provides a reliable solution for enabling or disabling the lock mechanism.

The invention will now be described by means of the drawings showing preferred embodiments of a token operable lock according to the invention. In the drawings :

figure 1 shows an exploded view of a token operable lock according to the invention; -

figure 2 respectively 3 and 4 show the lock before introduction of a token respectively when the token is introduced and when the token has passed the enabling mechanism;

figure 5 shows an embodiment of a lock according to the invention where the token is formed by a card and;

figure 6 shows a detailed view of a card used in the embodiment shown in figure 5.

In the drawings a same reference sign has been assigned to a same or analogous element.

The token operable lock 1 according to the present invention is provided to be installed on a locker for example to be used in a railway station, an airport or a swimming pool or on a dispenser such as a cigarette or ticket dispenser, or in any other device which is operated by the introduction of a token. The token is formed by a coin or a card or even a tag. In the example illustrated in the drawings the lock is provided to be installed on a locker.

The lock 1 illustrated in the drawings comprises a housing 2 provided with perforations 3 in order to fix the lock on a door. The housing is open on the side provided to be applied against the door panel. The housing 2 is further provided with perforations 3 through which screws are applicable for fixing the lock to a door or the like.

The housing of the lock is provided with an aperture 5 into which the token 4 can be inserted. The lock comprises a lock mechanism having a bolt 21, a first slot 8 and a second slot 9 in which a second peg 26 is lodged. The second peg 26 is connected via a rod 7 to a locking member 6 such as for example a key operable locking member. The rod 7 is eccentrically mounted on the locking member 6 such as to enable a movement of the bolt 21 between a projected position where the bolt is partially outside the lock and a retracted position inside the lock. In the shown example the locking member is provided for executing a rotational movement upon activation. It will however be clear that other movements such as a shift movement are also possible.

The first slot 8 comprises a first 8-1 and a second part 8-2. The first part extends in parallel with the direc-

tion of the movement of the bolt 21, whereas the second part is inclined, for example over an angle of $\alpha = 135^\circ$, with respect to the first part. The first and second part communicate with another so as to enable the passage of a first peg 10 from one part to the other. The height of the first part 8-1 is greater than the diameter of the first peg 10 so as to enable an upward movement of the first peg 10 in that first part.

The first peg 10 is fixed at an extremity of a lever 11 which is provided with a slot into which a third peg 16 is slidably applied. The lever 11 comprises an upstanding part 27, which is applied on a first pin 14 applied in a hole of a first series of holes 12. A second series of holes 13 is applied on the other side of the median line 28 in such a manner that the first 12 and second 13 series of holes is symmetrical with respect to that median line 28, which is applied in the middle of the aperture 5 for receiving the token. A second pin 15 is applied into one of the holes of the second series.

The third peg 16 is applied into a third hole of a third series of holes 17. A fourth series of holes 29 is applied on the other side of the median line 28 so that the third and fourth series of holes are symmetrical with respect to line 28. The third and fourth series serve for making the slot left or right operable. The first to fourth series of holes and their corresponding pins form the setting member for setting the lock to different token dimensions as will be described hereinafter.

The bolt 21 is fixed to a spring 19 attached to point 20 to the housing of the lock. The spring calls the bolt back in its retracted position when the latter has been released by the locking member 6.

The lock according to the invention is either provided with a collector basket 18 for collecting the introduced token or with an output 39 for liberating the token which has crossed the lock.

Figure 5 shows an embodiment of the token operable lock according to the invention wherein the token is formed by a card 23 provided with notches 24 and 25. The notches are symmetrically shaped with respect to a median line 30 of the card and preferably provided with an inclined part in order to facilitate the co-operation with the first and second pin 14, 15 as will be described hereafter.

The first 12, second 13, third 16 and fourth 29 series of holes are part of the setting member and serve to adapt the lock, according to the invention, to the dimension of the selected token to be used. This is realised by fixing the first 14 and second 15 pins each time into a selected hole of the first 12 and second series, as well as by fixing the third peg 16 into a selected hole of the third or fourth series of holes 17, 29. The selection of the respective holes wherein the pins and third peg are applied depends on the dimension of the selected token. Upon installation of the lock, the pins and third peg are then applied into the appropriate holes 12, 13 and 17 in order to adjust the lock to the token selected by the proprietor of the locker or device to which the

token operable lock is applied. When the token is formed by a card 23, then the first 14 and second 15 pins are applied in those holes such as to correspond with the notches 24 and 25 of the card. When the lock has to be adapted to another token such as for example another coin or a card with different notches, then the first 14 and second 15 pins as well as the third peg 16 are removed from their actual holes. Thereafter they are again applied in different holes such as to receive the other token. It is thus not necessary to replace the whole lock when a different token has to be used.

Instead of using pins 14, 15, pegs 16 and holes 12, 13, 17 as setting members of the enabling mechanism, other alternatives are possible such as for example cams of different dimensions applied on an axis or tongues provided with a set of notches.

When the lock is at rest, the locking member 6 is in a rotated position, for example over an angle $\beta = 5^\circ$ so that the key can not be pulled out. The locking member 6 is kept in that rotated position by the arm 31 which connects the locking member 6 to the first peg 10. An operation of the lock without having introduced a token is not possible. Indeed an anti-clockwise rotation of the locking member 6 would cause the arm 31 to apply a shift movement to the first peg 10 in the first part 8-1 of the first slot 8, causing the first peg to abut against the upstanding right wall of the slot 8. On the other hand, a clock-wise rotation of the locking member 6 would cause the first peg 10 to abut against the upstanding left wall of the slot. The rotational movement of the locking member 6 is thus limited by the dimension of the first part of the first slot 8, disabling in such a manner the operation of the locking member 6.

When a token 4, 23 is now introduced into the aperture 5 of the token operable lock 1, the gravity will cause the token to fall down into the lock until the token contacts the first 12 and second 15 pin such as illustrated in figure 3. The downward movement of the token 5, 23 is thus stopped by the presence of the first and second pin as well as by the lever 11. If the inserted token would not have the appropriate dimension, the lock will not be enabled as the enabling mechanism will not be activated. A too small token will not be retained by the first 14 and second 15 pin and fall through the lock. A too large token will on the other hand be stopped by the upper side of the first and second pin and never reach the lever 11 so that the latter can not be operated to enable the locking member 6. According to another embodiment of the token operable lock, it would also be possible to have the lock operable with a too large token. In the latter case the token would remain on the first and second pin and the lever, and would have to be moved from that position by a movement of the locking member.

The force applied by the token 4, due to his weight, on the lever 11, will cause the latter to hinge around the third peg 16 causing the first peg 10 to be lifted into the first slot 8 (figure 3). When a card 23 is used as token,

the force applied on the lever is obtained by the user applying a downward force on the card. Because the first peg 10 has now reached the upper side of the first slot 8, it is no longer blocked by the upstanding right wall of the first part 8-1 and it can reach the second part 8-2 of the first slot. The locking member 6 is thus enabled allowing a rotation thereof. When the user now applies an anti-clockwise rotation on the locking member 6, the arm 31 will apply a shift movement on the first peg 10 which can now freely move into the second part 8-2 of the first slot 8 (figure 4), thus enabling the movement of the locking member 6.

Bolt 21, which is connected to the locking member 6 by means of second peg 26 and the rod 7, will be shifted outside the housing of the lock due to the rotation of the locking member. The eccentric mount of the rod 7 to the locking member 6 causes the rotation of the locking member 6 to be transformed into a downwards shift of the second peg 26 into the second slot 9, causing on his turn an outward shift of the bolt 21, and thus a locking operation. The movement of the bolt 21 is limited by the height of the second slot 9.

The upward movement of the first peg 10 into the second part 8-2 of the first slot 8 causes a further hinged movement of the slotted lever 11 around the third peg 16 and the first pin 14, causing on his turn to free the token 4 which will then fall down and either be returned to the user or collected in the basket.

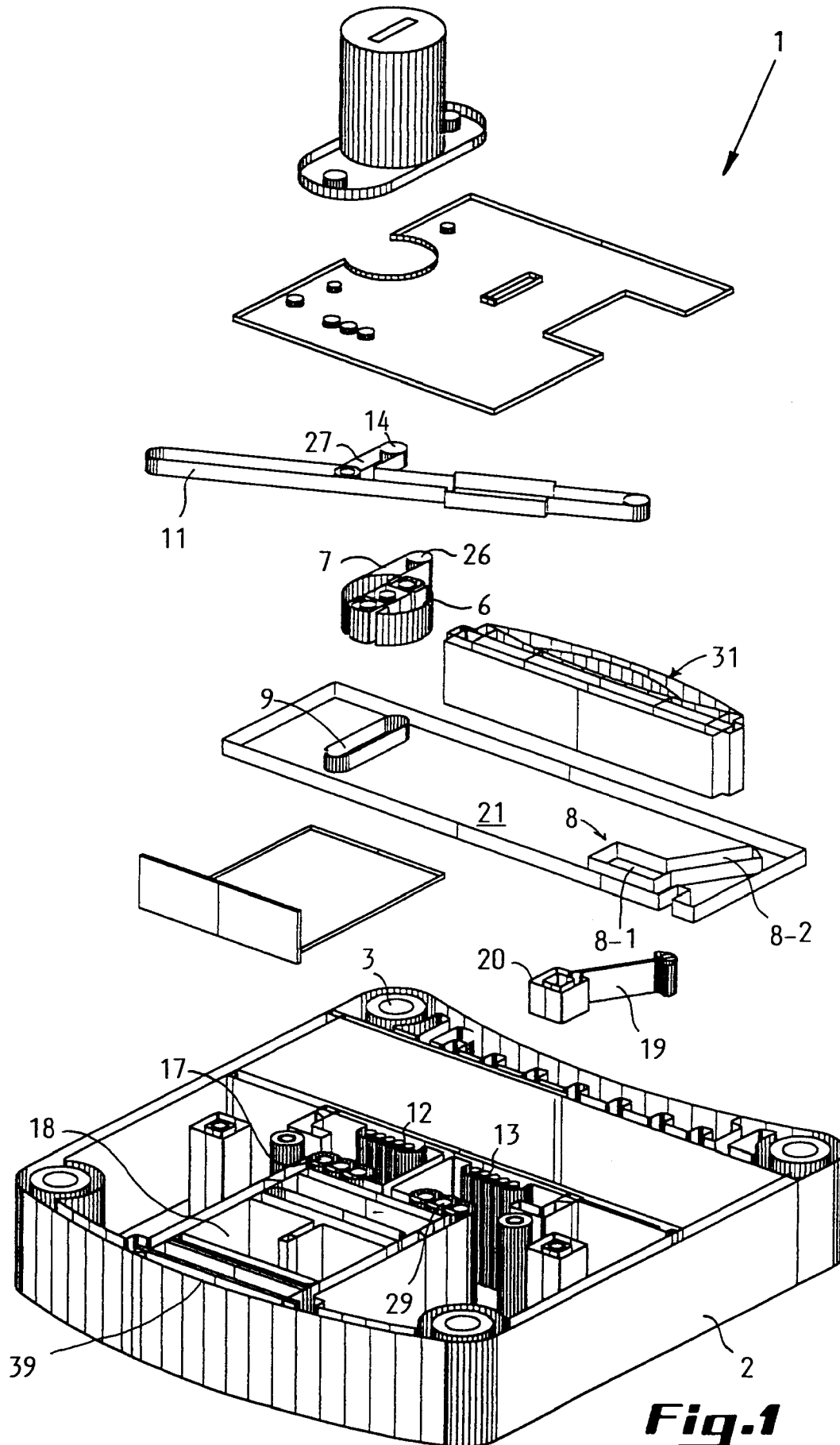
When the locker is locked, the user pulls the key out of the locking member. To reopen the locker the key has to be inserted again in the locking member.

Claims

1. A token operable lock comprising a lock mechanism, said lock mechanism being connected to an enabling mechanism provided for enabling said lock mechanism upon introduction of a token, characterised in that said enabling mechanism comprises a setting member provided for being adjusted to at least two different token dimensions, said setting member being connected to a lever connecting said enabling mechanism to said lock mechanism and being operable by said token for enabling said lock mechanism.
2. A token operable lock as claimed in claim 1, characterised in that said setting member comprises a first and a second series of holes provided for receiving a first and a second pin, said first and second series of holes being applied on the opposite side of a median line through an aperture for receiving said token.
3. A token operable lock as claimed in claim 1 or 2, characterised in that said lever has one end fixed to a first peg which is movable into a first slot which comprises a first and a second part, said second

part being accessible for said peg when said token is into said enabling means, said first part being dimensioned in such a manner as to block said lock mechanism.

4. A token operable lock as claimed in claim 2 and 3, characterised in that said lever is provided with a slot wherein a second peg is lodged and said lever being pivotal around said second peg.
5. A token operable lock as claimed in claim 4, characterised in that said third peg is applied into a hole belonging to a third series of holes of said setting member.
6. A token operable lock as claimed in claim 3, 4 or 5, characterised in that said lever is mounted in such a manner as to describe a pivoting movement upon receipt of said token in order to get access to said second part of said first slot.



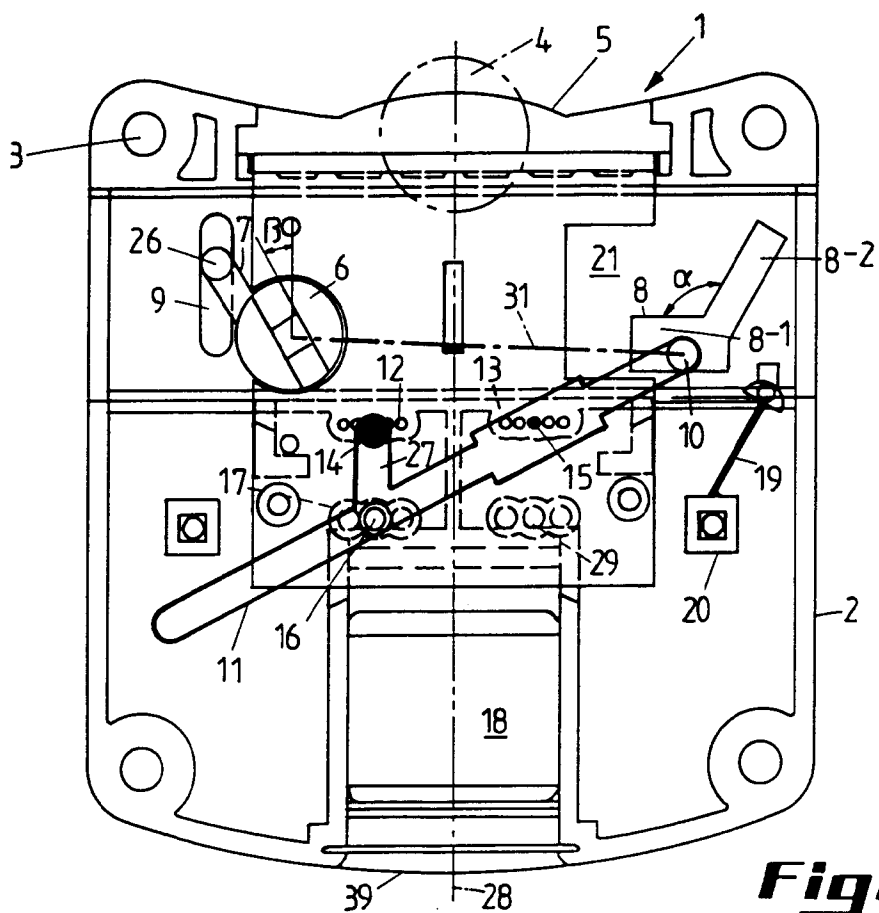


Fig. 2

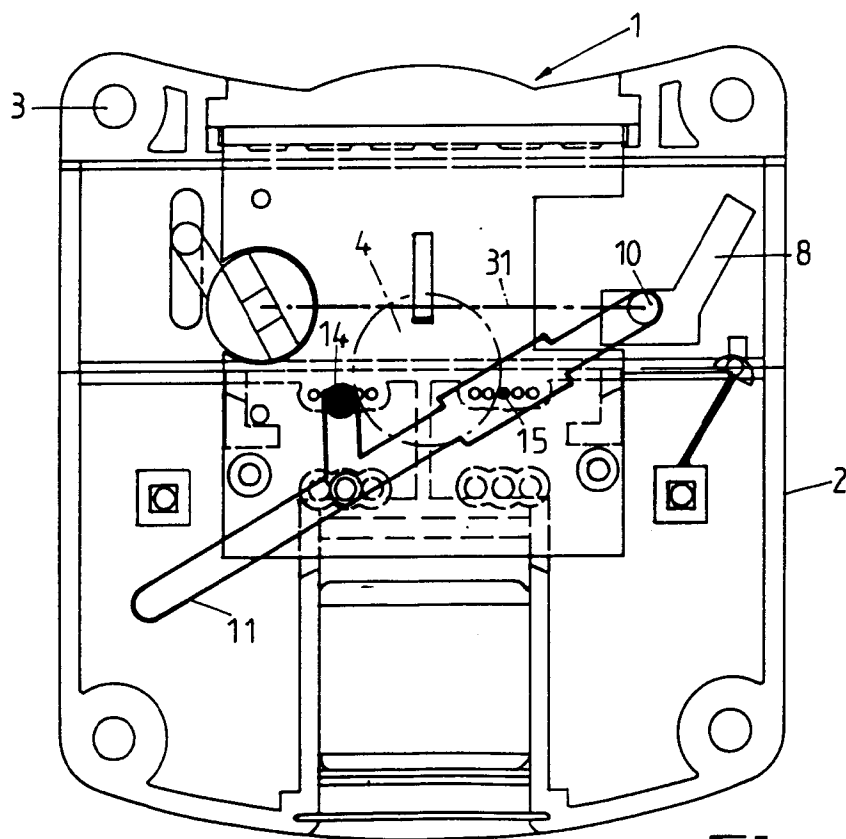
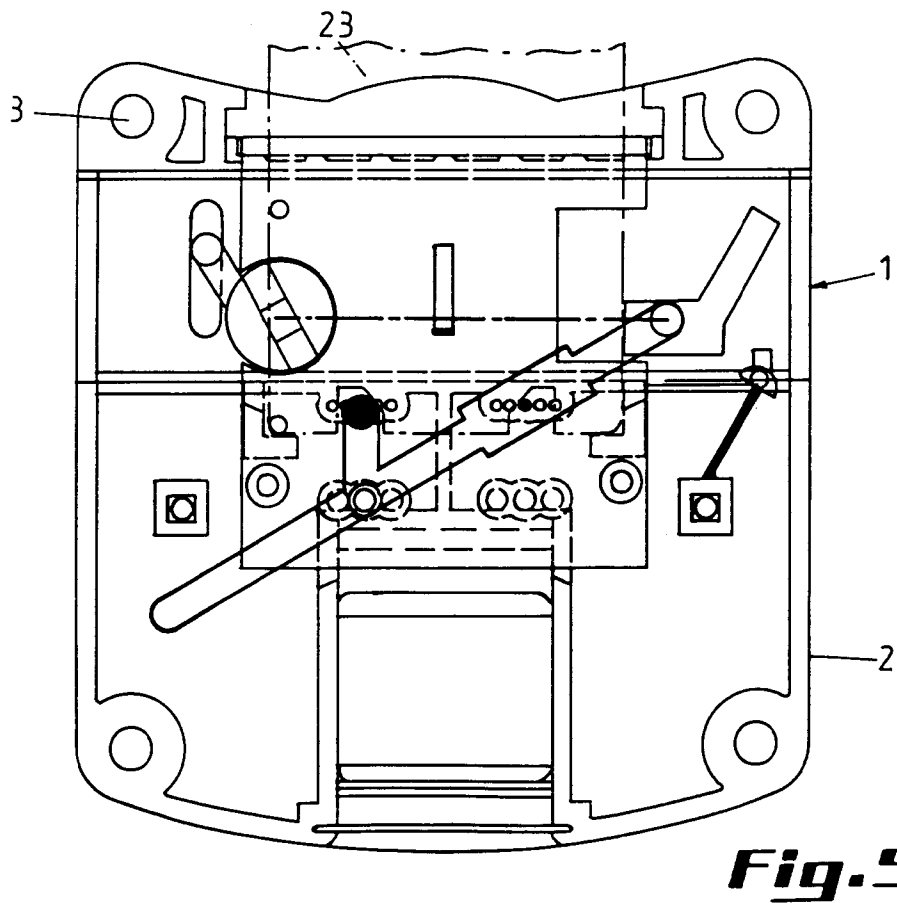
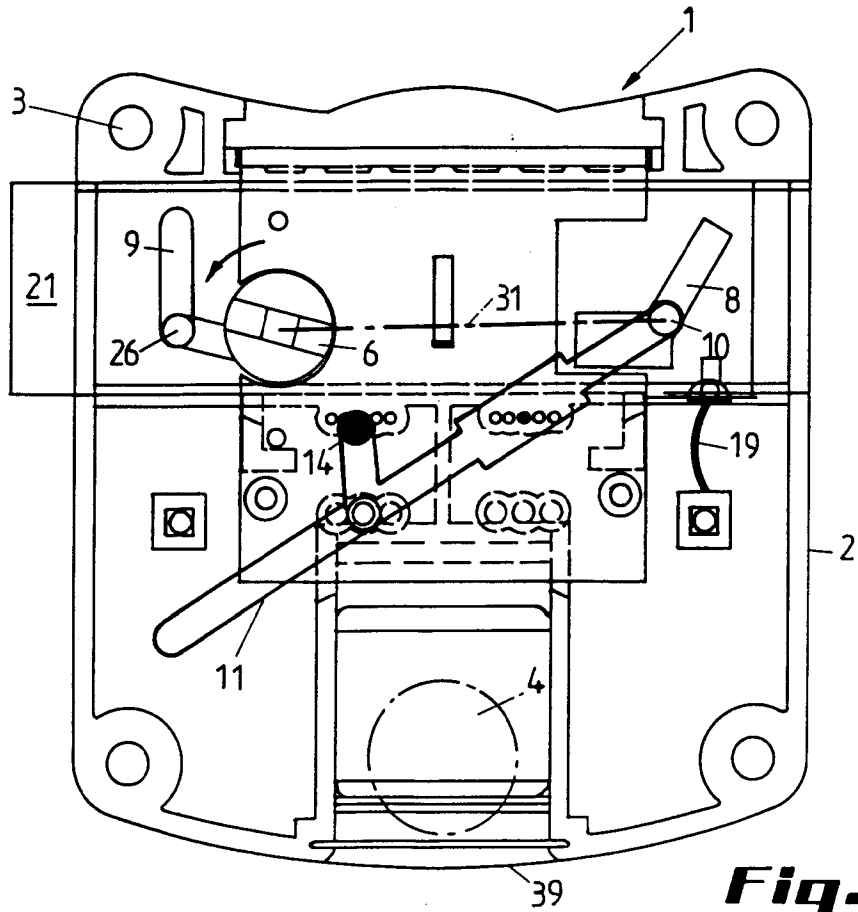


Fig.3



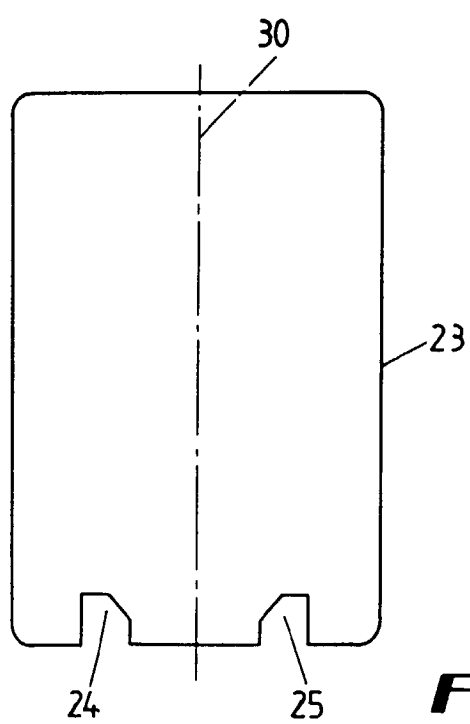


Fig. 6



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EUROPEAN SEARCH REPORT

Application Number
EP 97 87 0105

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 A	DE 28 36 486 A (SCHULTE-SCHLAGBAUM) * page 8, last paragraph - page 9, line 4 * * page 11, line 8 - line 12 * * page 11, last paragraph; figures 4,5 * ---	1 2-6	G07F17/14
X A	DE 32 42 045 A (SCHULTE-SCHLAGBAUM) * page 12, line 1 - line 7; figures 4,5 * ---	1 2-6	
X A	EP 0 026 745 A (K.SCHWIZER AG) * page 10, line 10 - page 12, line 32; figures 1-3 * ---	1 6	
X A	CH 631 022 A (DOM AG SICHERHEITSTECHNIK) * page 2, right-hand column, line 45 - line 57; figures 1-4 * ---	1 6	
A	BE 754 933 A (SCHWIZER) * page 6, line 3 - page 7, line 9; figures 2,5,6 * -----		
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			G07F
Place of search		Date of completion of the search	Examiner
THE HAGUE		12 December 1997	Neville, D
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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