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(54) Device for the protected storage of objects.

(57) Wallet safe protected storage of objects, with a housing (2,80) closing element (20,82) and locking means controlled by an electric signalprocessing and control circuit (70) provided with an electrically conductive screening (14) for providing an actuation signal for destructing means (26,106) when the screening is acted upon, the closing element operates a contact (40,40e;86,88) which marks the closed position thereof, and an auxiliary contact (60,62;60',62') which is operated during the closing movement to deactivate the activation function of the signal processing circuit (70) and which reverts to the inoperative state after the locking means have become active.

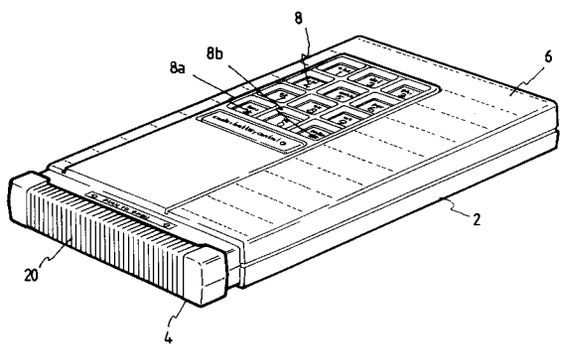

Fig. 1.

EP 0 492 717 A1

The invention relates to a device for the protected storage of objects, comprising a housing with a closing element interacting with locking means controlled by an electric signalprocessing and control circuit for releasing the locking means, which housing and closing element are provided with an electrically conductive screening which interacts with the electric circuit and which in the closed position is connected to the electric circuit which provides an actuation signal for a destructive component when the screening is acted upon, while furthermore the closing element operates a contact which marks the closed position thereof.

Such a device, which can be regarded as a kind of "pocket safe", is known from EP-A-0,277,679 (= US-A-4,942,831) in the name of the applicant.

In such a "pocket safe", which is intended particularly for the storage of cheques and/or credit cards, the closing element must interact with a contact which signals to the signal processing and control circuit that the closing element is in the closed position in order for these circuits to be activated. Only by using such a contact that can be operated by the closing element can it be ensured that the activation circuits are always switched on when necessary. Such a contact can, for example, also be used to connect the electrically conductive screening of the closing element to the circuits in question.

Closure of this contact after the closing element has been locked is, of course, totally unacceptable, because the intended aim is not achieved. Closure of this contact exactly at the instant when the locking is effected is not feasible technically, because this places particularly high demands on the accuracy and stability of the mechanical means used. The only possibility remaining is thus the use of a contact which closes shortly before the actual locking is effected. An embodiment of this kind is always selected in practice.

However, it has the considerable disadvantage that when the user, after almost closing the pocket safe, which activates the signalprocessing andcontrol circuits, re-opens the closing element a little, the circuits interpret this opening as an action on the screening and in response thereto activate the destructive component, thereby unintentionally rendering the entire contents of the pocket safe useless.

The object of the invention is to avoid this disadvantage, and this is achieved, according to the invention, in that the closing element interacts with an auxiliary contact which is operated during the closing movement to deactivate the activation function of the signal processing circuit and which reverts to the inoperative state after the locking means have become active.

Through this measure it is ensured that the signal processing circuit is inactive during the entire closing operation and is only reactivated when the pocket safe has actually been closed. The situation mentioned above can therefore never occur.

Preferred embodiments of the invention are described in the sub-claims. Regarding the measure described in Claim 2, it may be remarked that this leads to an appreciable reduction in the batteries' power consumption, since the batteries only have to provide the hold current for the electromagnetic element, and not the attraction current.

The embodiment according to Claims 3 and 4 is particularly suitable for storing cheques or bank notes with a relatively large surface area, whereas the embodiment to Claims 5 and 6 is particularly suitable for storing credit cards.

With the measure according to Claim 9 an additional saving in the battery's power consumption is achieved, as by this measure the electromagnetic hold contact is only energised when the user actually carries out the opening operation. A "playful" pressing of the keypad and entering of the correct code without the pocket safe being opened does not immediately lead to the energising of the electromagnetic hold element.

The invention will be explained in greater detail with reference to the drawing, in which:

Figure 1 shows a perspective view of a first embodiment of the pocket safe according to the invention in the closed state and in particular intended for storing cheques;

Figure 2 shows said pocket safe with the drawer pulled out and the lid of the battery compartment folded up;

Figure 3 shows an exploded view of the construction of the housing of the pocket safe with the protective film;

Figure 4 shows an exploded view of the construction of the drawer with different components;

Figure 5 shows a perspective view of the complete drawer;

Figure 6 shows a perspective view of the printed circuit board and the battery holder to be fitted in the drawer;

Figure 7 shows a perspective view of the locking mechanism according to the invention;

Figure 8 shows a diagrammatic representation of the contact circuitry, the keypad and the processing electronics;

Figures 9a-9d show the different positions of the locking mechanism;

Figure 10 shows a partially cut-away perspective view of a second embodiment according to the invention;

Figure 11 shows the locking mechanism used therein;

Figures 12a-12d show the different positions of the locking mechanism.

The pocket safe according to the invention, which is shown completely in the perspective view of Figure 1, is based on the principles as described in EP-A-0,277,679 (= US-A-4,942,831), to the content of which are herein referred by reference. The pocket safe comprises a housing 2 having a drawer 4, fitted displaceably therein, for the storage of valuables such as bank notes or cheques. The housing 2 has a keypad 8 on the front side 6; after a preset numerical code has been keyed in a specific order and the special keys 8a, 8b have been operated, the locking of the drawer 4 is released so that said drawer can be opened.

Figure 2 shows the drawer 4 pulled out and also how the battery compartment 10 becomes accessible by removing the lid 12 thereof, so that the batteries 14 can be changed.

Figure 3 shows how the housing 2 is constructed from the two housing halves 2a, 2b, between which an electric screen 14 is accommodated which consists of a film provided with electrically conductive tracks lying close to one another and which film interacts with a special electronic circuit of the kind described in EP-A-0,277,679 (US-A-4,942,831) which at every attempt to pierce through or destroy the housing - which would certainly affect the tracks - supplies an operation command to a damaging capsule which renders the contents of the drawer 4 useless. At its front, said film has a print 16 consisting of the symbols on the keypad 8.

Some details of the drawer 4 are visible in the exploded view of Figure 4. With the insertion of the protective film part 18, the drawer carries the handle 20 and has on one side the locking blade 22 which has been secured thereto with the end 22a thereof. The blade 22 interacts with the electromagnet 24. In addition, Figure 4 shows the damaging or destructive capsule 26 accommodated in the drawer and the two compression springs 28 bearing against the drawer on the one hand and the rear inner wall of the housing on the other hand. Two projections 30 which interact with counter-projections (not shown) mounted on the inner side edges of the housing 2 ensure that after assembly the drawer can only be pulled out of the housing over a specific distance (cf. Figure 2) while the projections 32 are used to hold a carrier 34 (shown separately in Figure 6) which contains the battery compartment 36 and carries the printed circuit board 38 with the keypad switches 8a. Spring contacts 40 at the end of the printed circuit board 38 provide for establishing the necessary electric connections to the other parts of the electronic circuit and to the conductive tracks of the protective films 14 and 18 and interact with the counter-contacts 40a (not shown) mounted on the rear inner edge of the housing 2 (cf. Figures 9a-9e).

The locking blade 22 interacts with a locking projection 42, mounted on the inner longitudinal side of the housing and visible in Figures 3, 7 and 9a-9e and provided with a run-on face 42a.

This locking blade 22, shown in more detail in Figure 7, is securely clamped at its one end 22a while the other end 22b interacts with the magnetic cores 54a, 54b of the electromagnet 24. At a short distance from this end 52, a locking recess 56 having a straight end 57 is formed in the blade 22, upstream of which recess seen in the direction of the end 22a there is a run-on projection 58 consisting of a part bent outwards from the plane of the blade. Close to the end 22a the blade bears against a first contact 60 made of a conductive elastomer; halfway between the ends 50 and 52 a similar second contact 62 is arranged with which the blade 22 makes contact when the end 22b is moved in the direction of the arrow 64. This is the case if the blade end 22b runs onto the run-on face 42 a of the locking projection 42 or if the run-on projection 58 runs onto the run-on face 42a of the projection 42. The contacts 60 and 62 are connected to the electronic processing circuit in such a way that the operation thereof for the activation of the destructive or damaging capsule 26 is blocked if the contacts 60 and 62 are connected.

Figure 8 shows diagrammatically the circuits used, of the kind as used in the device according to EP-A-277,679 and US-A-4.942,831. The central electronics 70 are connected to the protective screen 14, the keypad switches 8a, the battery 14, the electromagnet 24 and the two contacts 60, 62. When the contacts 60, 62 are not connected to each other - e.g. as in the situation according to Figure 8 - the central electronics 70 function normally so that any attempt to force the pocket safe - which would certainly affect the electric screen 14 - results in the activation of the damaging or destructive capsule 26. An interruption in one of the connections to said screen will likewise lead to this result. However, when the contacts 60, 62 are closed, the electronics 70 are inactive.

A description of the working of the different parts is made with reference to the Figures 9a-9e which represent the position of the locking mechanism during the different stages of the closing and opening procedure of the drawer 4, respectively. Figure 9a shows the situation when the drawer which is in the open position is closed: the end edge 22b of the blade 22 runs onto the run-on face 42a which presses the blade in the direction of the magnet 24 - and thus in the direction of the arrow 64 in Figure 7 - whereby the bar 22 moves to the

left and establishes a conductive connection between the contacts 60 and 62. The contacts 40 are not yet in contact with the countercontact 40a and because the contacts 60, 62 are closed, the processing electronics 70 are blocked.

Figure 9b shows the situation when the drawer 4 is pushed in a little further, against the action of the springs 28. Every contact 40 has come into contact with the corresponding countercontact 40a, which means that the electronic screen 14 is connected to the electronics 70. The face 42a still presses against the end 22b of the blade 22 and thus is not yet in the locking recess 56.

The importance of the contacts 60, 62 now becomes clear. Normally, if the contacts 40 came into contact with the countercontacts 40a this would activate the processing electronics 70, since for safe operation it must be ensured that the processing electronics 70 are switched on before the locking of the drawer is effected. Switching on the electronics after the locking has been effected is of course impossible, while activating the electronics at the same instant as the locking is effected would make the entire device very critical and sensitive. If, however, the user allows the drawer to spring back a little, the - switched on - processing electronics will detect an interruption of the electric screen and activate the destructive capsule 26. "Playful operation" of this kind can by no means be completely ruled out.

The measures according to the invention give a solution to this problem. In the situation according to Figure 9b, where the contacts 40-40a are already interacting, the contacts 60, 62 have also been connected and the processing electronics have been blocked. Only when the drawer is pushed on further to the position according to Figure 9c, in which position the projection 42 drops into the locking recess 56 and behind the edge 57, does the blade spring back into the position shown in Figure 9c, the connection between the contacts 60, 62 is interrupted and the electronics 70 are activated.

To open the pocket safe, first of all the correct code has to be keyed in on the keypad 8, whereby the electromagnet 24 is energised. In order to ensure a power consumption which is as low as possible. The invention does not choose for a solution whereby the magnet 24 is energised with such a current that the magnet in the position shown in Figure 9c can attract the blade 22 and therefore move it out of its locking position but adopts a solution whereby the magnet 24 is energised with a current which is so small that the blade 22 is only held in position when it has made contact with the cores 54a, 54b. This is effected by the run-on projection 58 interacting with run-on face 42a of the locking projection 42 when the handle 20 of the drawer 4 is pressed in against the action of the springs 28; the run-on projection 58 then runs onto the locking projection and presses the end 52 against the armature parts 54a, 54b. The blade 22 remains attracted, the projection 42 is clear from the locking opening 56 and the drawer 4 can be opened completely via the intermediate position shown in Figure 9e.

The circuit to be completed by means of the contacts 60-62 can be used with advantage to achieve a further specific saving in the power consumption by arranging the processing electronics 70 in such a way that after the correct code has been keyed in, the energising current for the magnet 24 is only released when the contacts 60, 62 have been closed, i.e. when the position shown in Figure 9d is reached. It is conceivable that a user, having keyed in the correct code, takes some time before he pushes the drawer in to initiate the opening and of course the current used during that time is wasted. This is prevented by the abovementioned measure.

The invention may also be used to advantage in a small pocket safe which is intended particularly for safe storage of credit cards. This application will be described with reference to the Figures 10, 11 and 12a to 12d inclusive.

This embodiment comprises a housing 80 which can be locked by means of a hinged lid 82 connected thereto and having, at the end facing away from the hinge, a locking bolt 84 and a contact 86 which interacts with the countercontact 88 on the housing 80. The contacts 86 and 88 are active for signalling to the electronics - which are of the kind as described above - that the lid 82 is closed. The remarks made above in connection with the locking of the drawer apply likewise to the interaction of the contacts 86, 88 on the one hand and the locking of the lid 82 on the other hand. Of course, a screen (not shown) is also present in this case.

The locking, although of slightly different design mechanically, is based on the same principle. The rigid locking bar 90 can be turned around the pivots 92a, 92b and with the flanged end 94 interacts with the cores 96a, 96b of the electromagnet 100. At the opposite end 90a, there is the locking recess 102 with the locking edge 104 which interacts with the locking catch 84 and with a run-on lip 106, bent outwards from the plane of the bar 90. In addition, there are the contacts 60', 62' made of electrically conductive elastomer material, the function and operation of which corresponds to the contacts 60 and 62 of the embodiment described above, which contacts are connected to the processing electronics in the manner shown in Figure 8.

Said embodiment operates as follows:

When closing the lid 82 from the open position - the situation according to Figure 12 - the bevelled side 84a of the locking catch 84 runs onto the end edge 90a of the bar 90 and pushes it aside; the other end 94 turns to the right until it makes contact with the cores 96a, 96b while the bar interconnects the contacts 60', 62'. Thereby the processing electronics 70 are blocked and when the user allows the lid 82 to spring back, the processing electronics will not be able to activate the damaging capsule 106.

When the lid 82 is pushed on further, the situation as shown in Figure 12b occurs: the catch 84 is located in the locking recess 102 and the lid 82 is locked. The contacts 84 and 88 are closed, the processing electronics have been activated and unblocked because the contacts 60', 62' are no longer interconnected.

In order to open the lid 82, the correct code is keyed into the keypad 80, whereby the electromagnet 100 is energised. In this case, too, this energising is effected by means of a weak current which suffices to hold the bar in its position pressed against the armature but is insufficient to attract the bar from the position shown in Figure 12b. By pressing in the lid 82 further, the catch 84, via the run-on lip 106, runs onto the body of the bar 90 , as a result of which the bar 90 which tilts to the right and the flanged end 94 is pressed against the armature parts 96a, 96b. This is the situation according to Figure 12c and in this situation the armature 94 will remain attracted so that the lid 82 can be opened into the position shown in Figure 12d.

In this case also, the contacts 60', 62' can be used to switch on the energising current for the magnet 100 only when said contacts have been closed, as has been described above, which leads to an additional saving in power consumption.

It should be noted that the embodiments described above are only given by way of example and that in particular the housing may be of a different construction than is indicated in the exemplary embodiments.

Claims

1. Device for the protected storage of objects, comprising a housing (2,80) with a closing element (20,82) interacting with locking means controlled by an electric signalprocessing and control circuit (70) for releasing the locking means (22,42;90,84), which housing (2,80) and closing element (20,82) are provided with an electrically conductive screening (14) which interacts with the electric circuit (70) and which in the closed position is connected to the electric circuit which provides an actuation signal for a destructive component (26,106) when the screening is acted upon, while furthermore the closing element operates a contact (40,40e;86,88) which marks the closed position thereof, characterised in that the closing element interacts with an auxiliary contact (60,62;60',62') which is operated during the closing movement to deactivate the activation function of the signal processing circuit (70) and which reverts to the inoperative state after the locking means have become active.

2. Device according to Claim 1, characterised in that the closing element (20,82) can be moved resiliently beyond the closing position, so that the locking means (22,42;90,84) are being brought into the unlocking position and into engagement with an electromagnetic holding element (24,100) which can be energised under the control of the electric circuit and thereby keeps the locking means unlocked.

3. Device according to Claim 1 or 2, characterised in that the locking means (22,42) comprise an elongated blade (22) coupled to the closing element (20) and clamped at a first end (22a), which blade executes movement in the longitudinal direction when it is brought into the closing position and has a recess (56) near the second end (22b), which recess (56) interacts with a run-on face (42a) which is at an acute angle to the blade and is connected to the housing, and with a locking face (42) which runs transversely to the blade (22), interacts with an edge (57) of the recess (56) and is connected to the housing, which second end (22b) interacts with the armature of an electromagnet (24) and with the auxiliary contact in such a manner that said contact is operated when the blade end (22b) runs onto the run-on face (42a) and is released when the edge (57) of the recess (56) drops behind the locking face (42).

4. Device according to Claim 3, characterised in that the blade (22) carries a run-on projection (58) which is located behind the recess (56) seen in the direction of the locking movement and interacts with the run-on face.

5. Device according to Claim 1 or 2, characterised in that the locking means comprise a hinge lever (90) which is supported in a hinged manner (92a,92b) between the ends (90a,90b) thereof and transverse to the longitudinal axle thereof, with at the first end (90a) a locking recess (102) interacting with a locking catch (84a) which is carried by the closing element

(82) and with the second end (94) interacting with the armature (96a,96b) of an electromagnet (100) on the one hand and the auxiliary contact (60',62') on the other hand, in a manner such that said contact (60',62') is operated when the locking catch (84a) runs onto the lever end (90a) and is released in the locking position.

6. Device according to Claims 2 and 3, characterised in that the hinge lever (90) is provided with a run-on face (106) behind the locking recess (102), which face (106) interacts with the locking catch (84a).

7. Device according to Claims 1-6, characterised in that the contact parts of the auxiliary contact (60,62,60',62') are made of an electrically conductive, resilient polymer.

8. Device according to Claims 1-7, characterised by a switch keypad (8) which acts on the signal processing and control means.

9. Device according to Claims 3-8, characterised in that the auxiliary contact (60,62,60',62') interacts actively with the control circuit (70) in such a manner that the energising current for the electro-magnetic hold element (24,100) can only be supplied in the operative state of this contact.

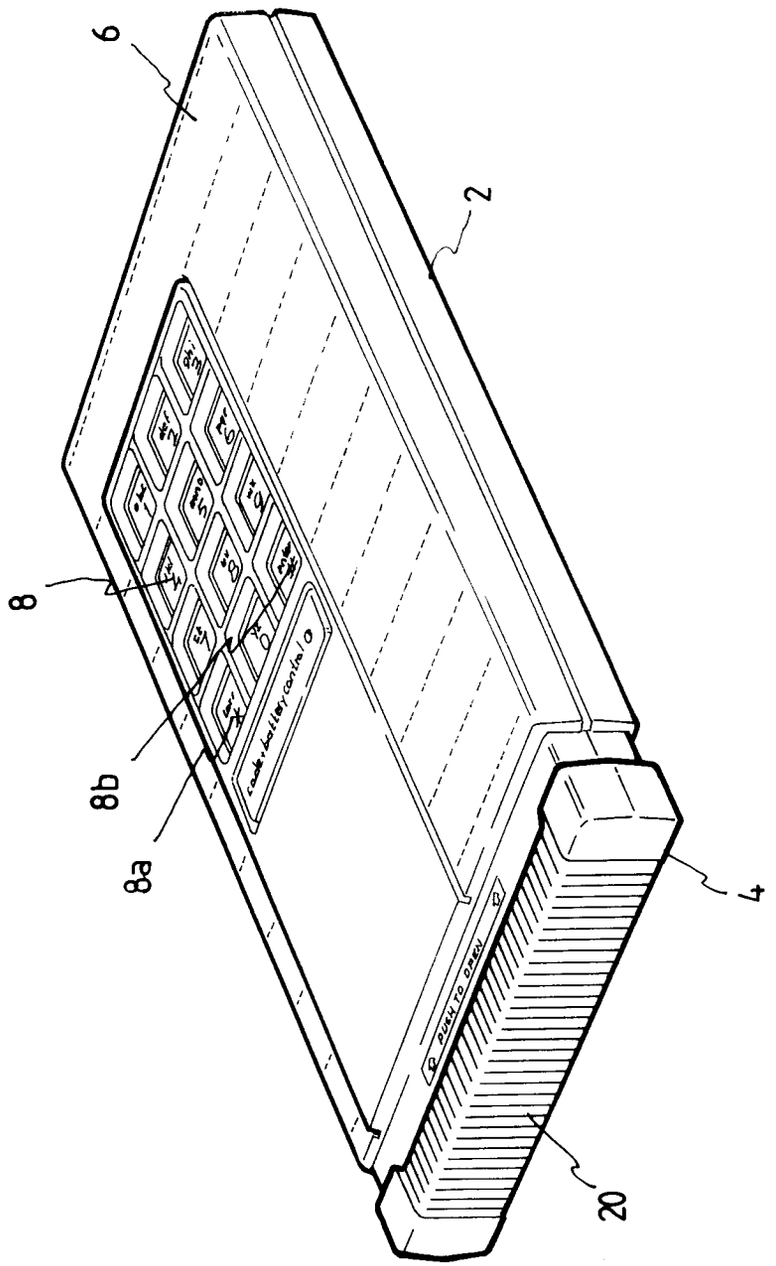

Fig. 1.

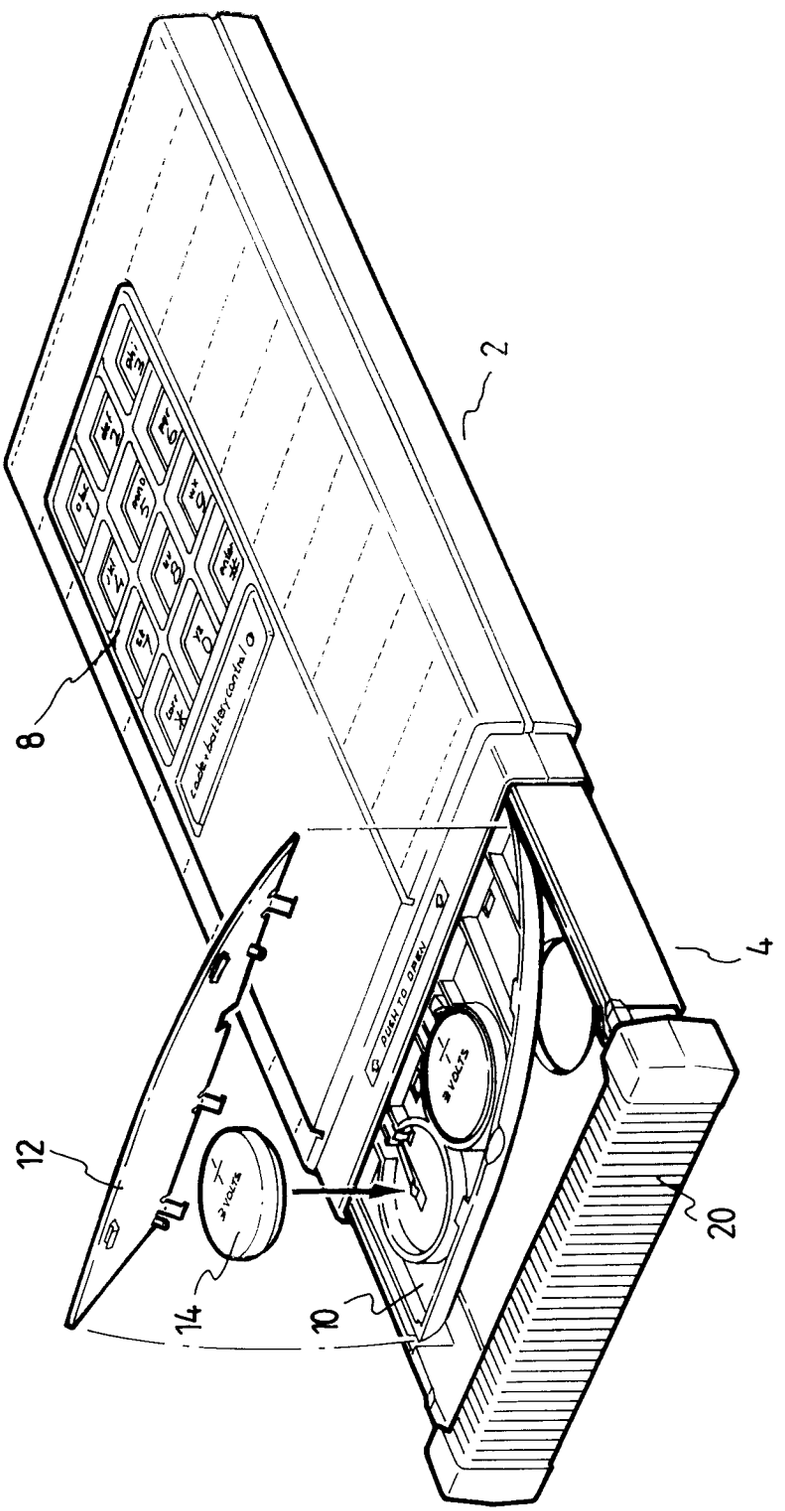

FIG. 2.

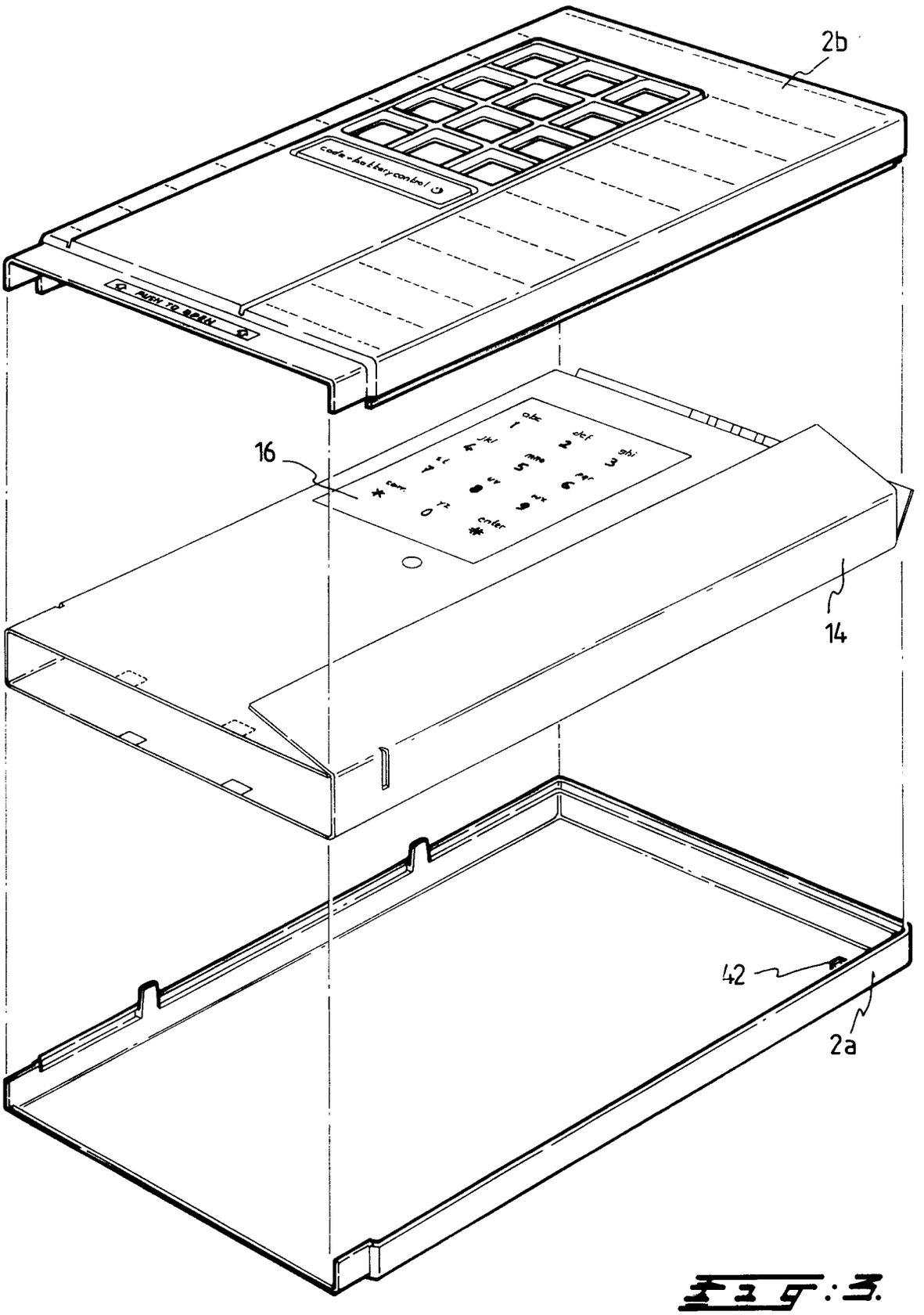

Fig. 3.

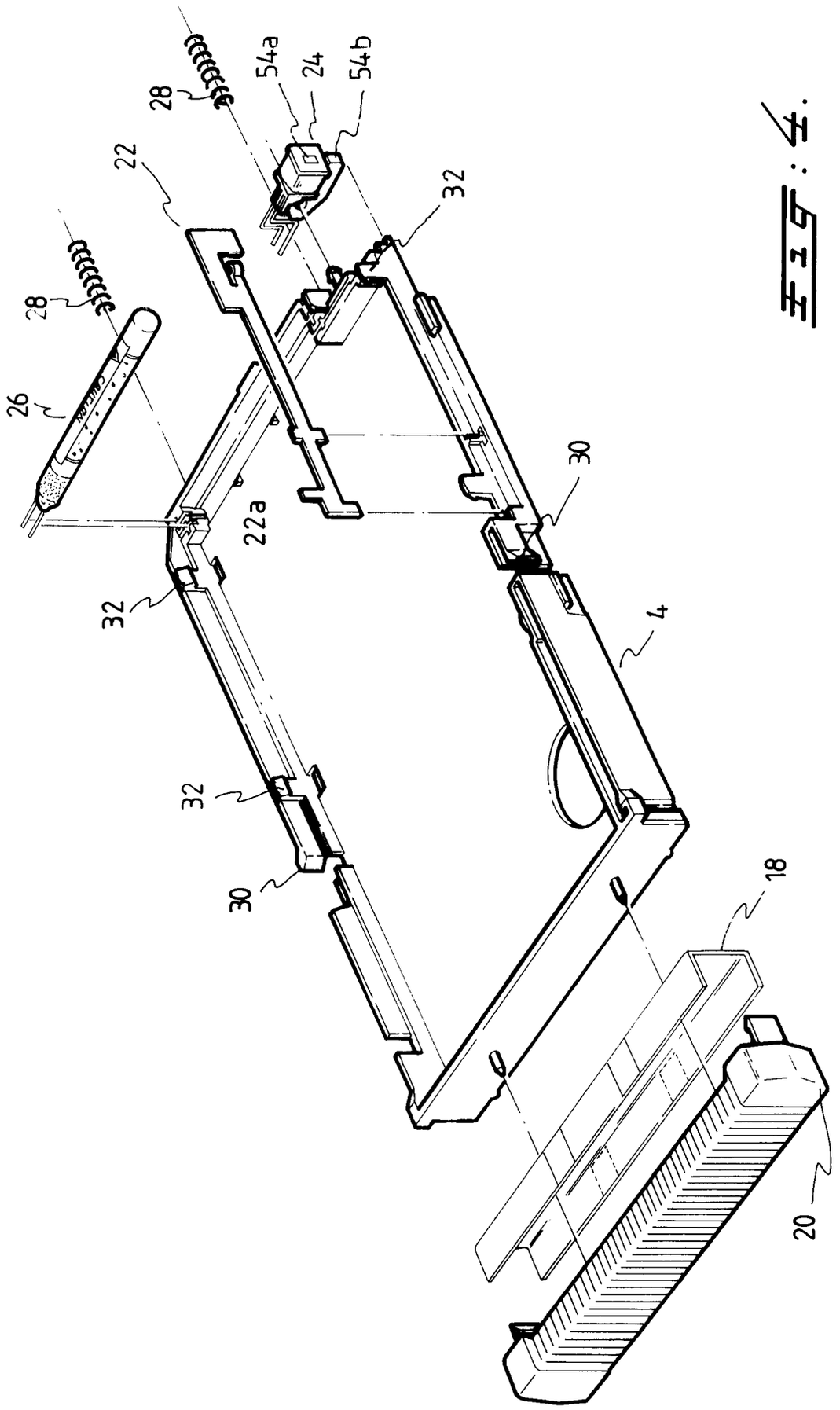

Fig. 4.

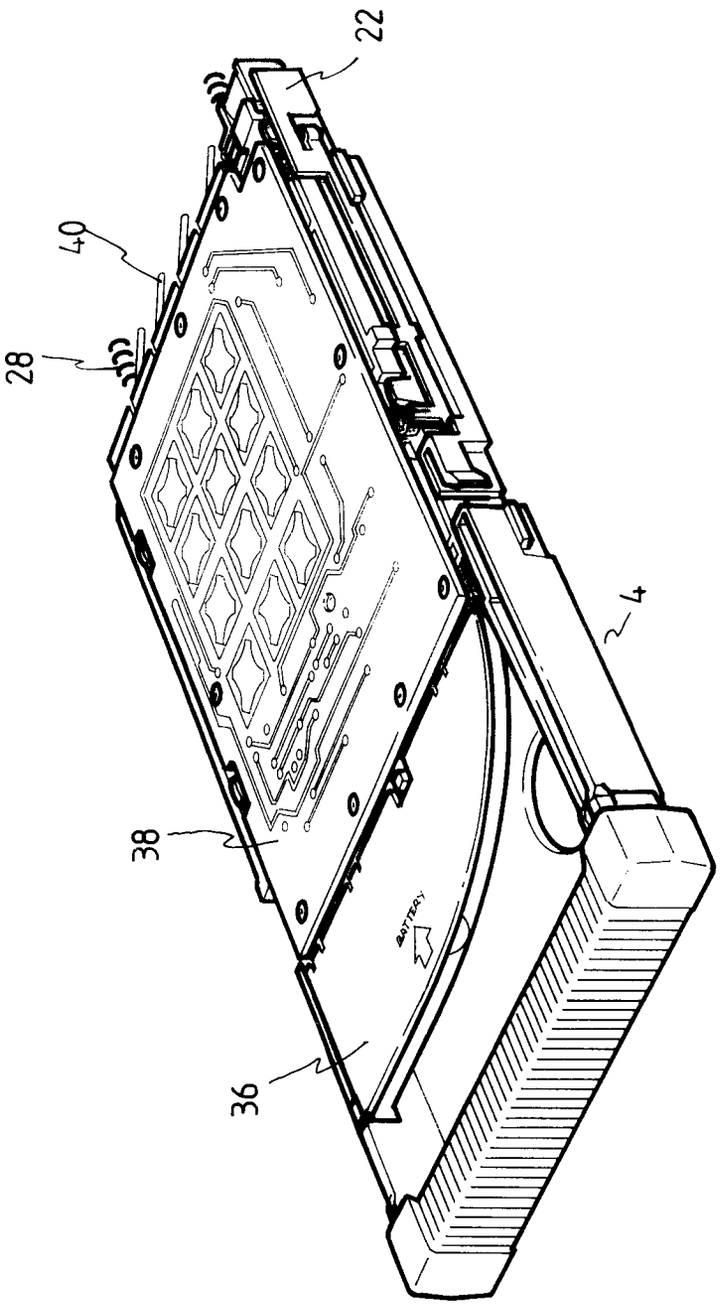

FIG. 5.

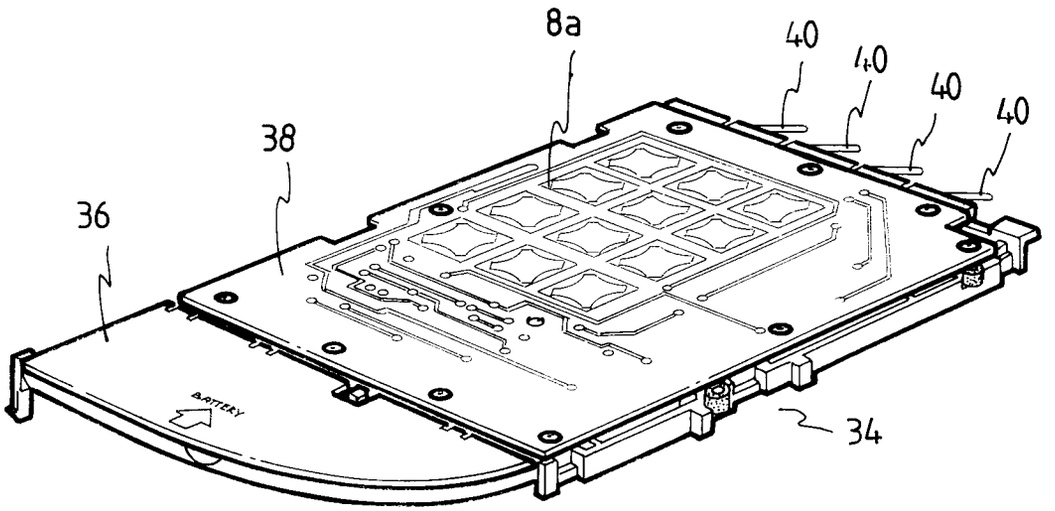

Fig: 6

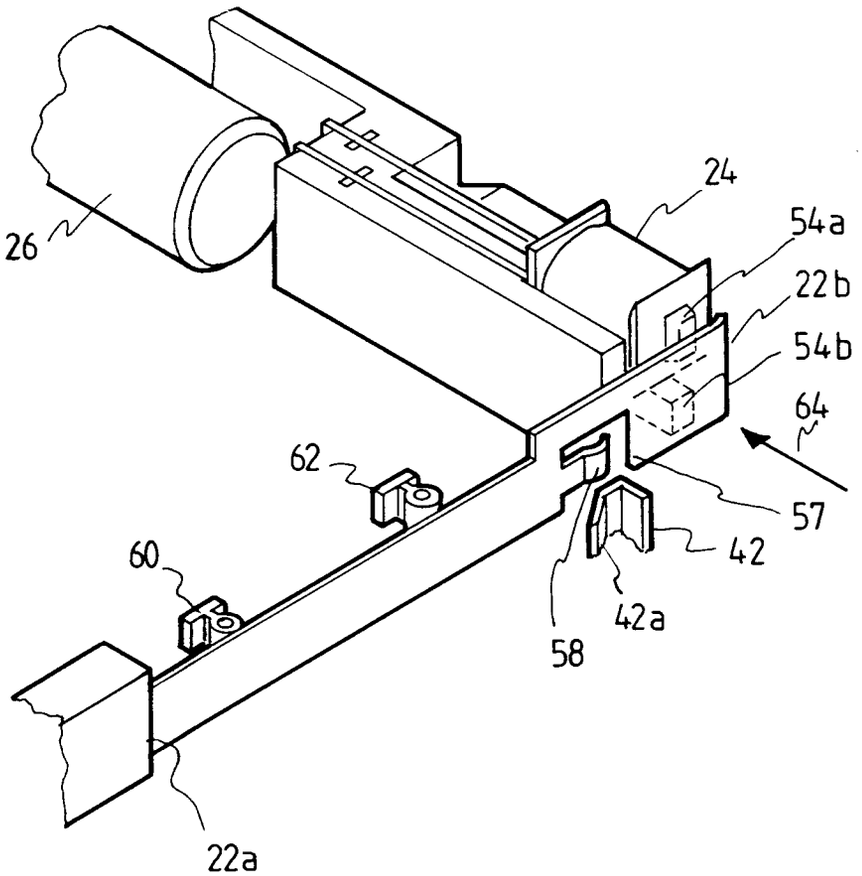

Fig. 7

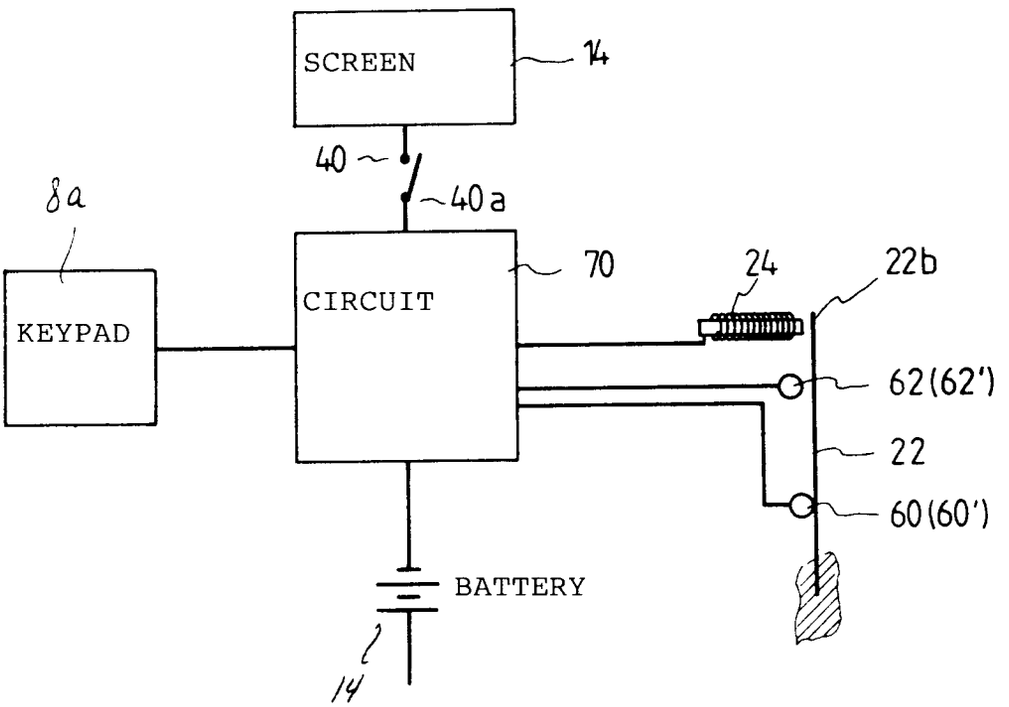
SCREEN
14
40
40a
8a
KEYPAD
CIRCUIT
70
24
22b
62(62')
22
60(60')
BATTERY
14

Fig. 8.

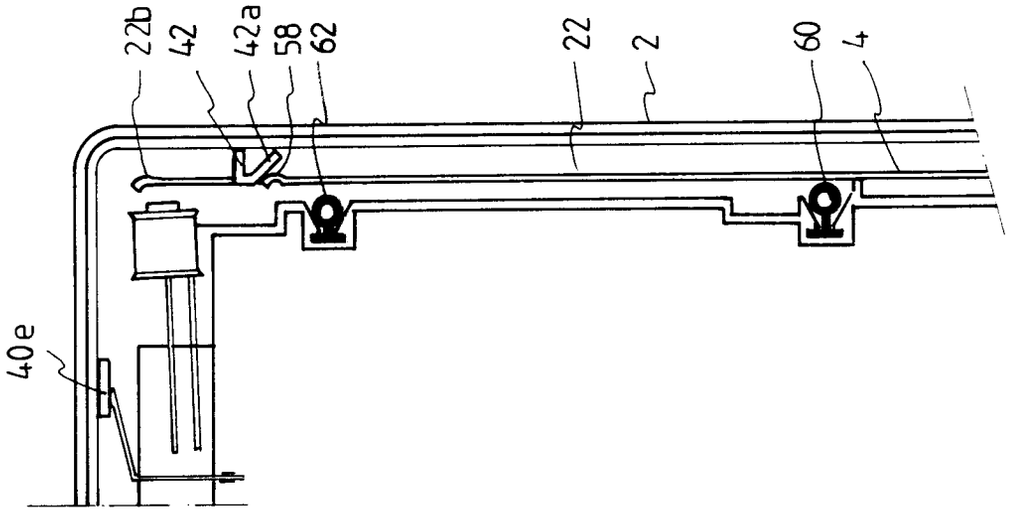

Fig. 9c.

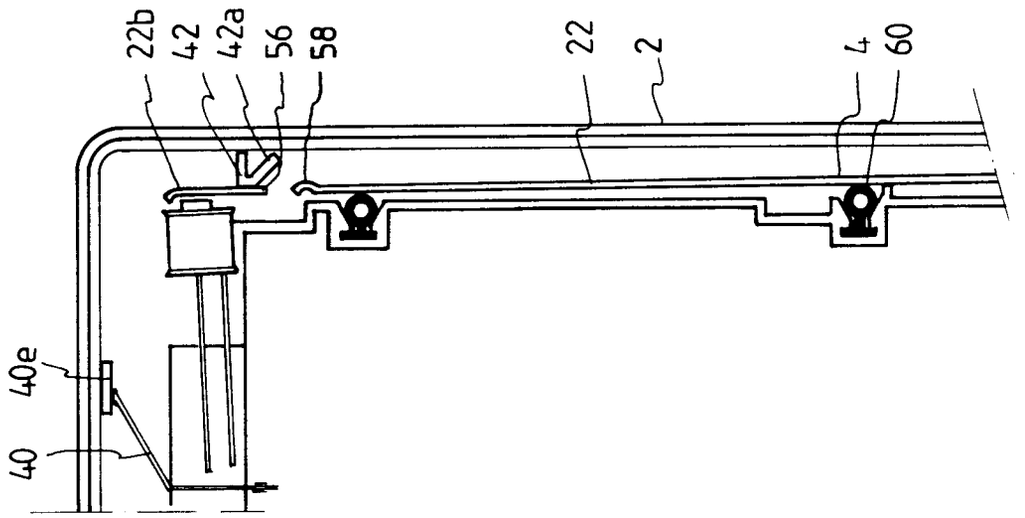

Fig. 9b.

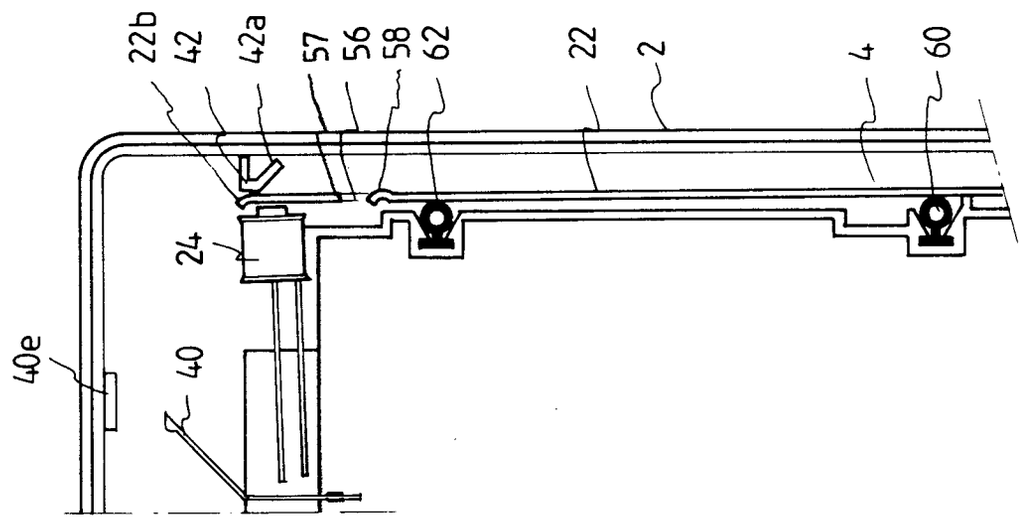

Fig. 9a.

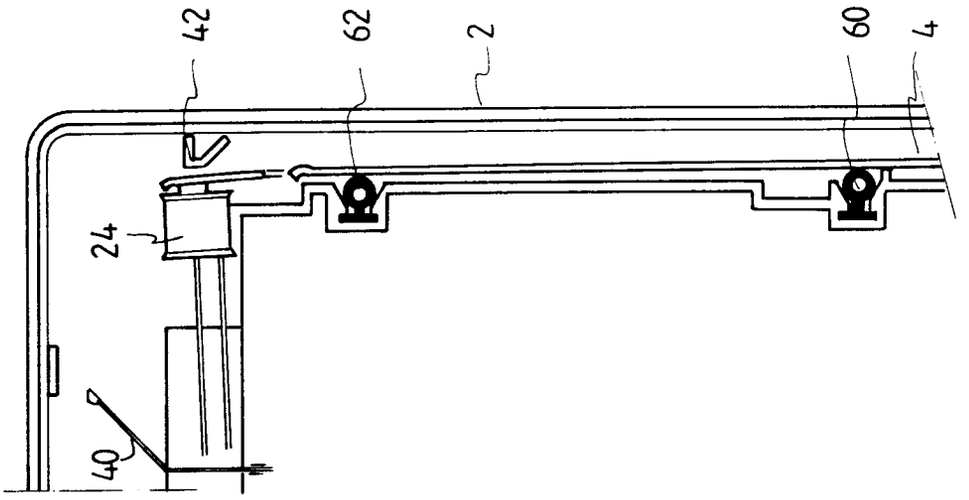

Fig. 9b.

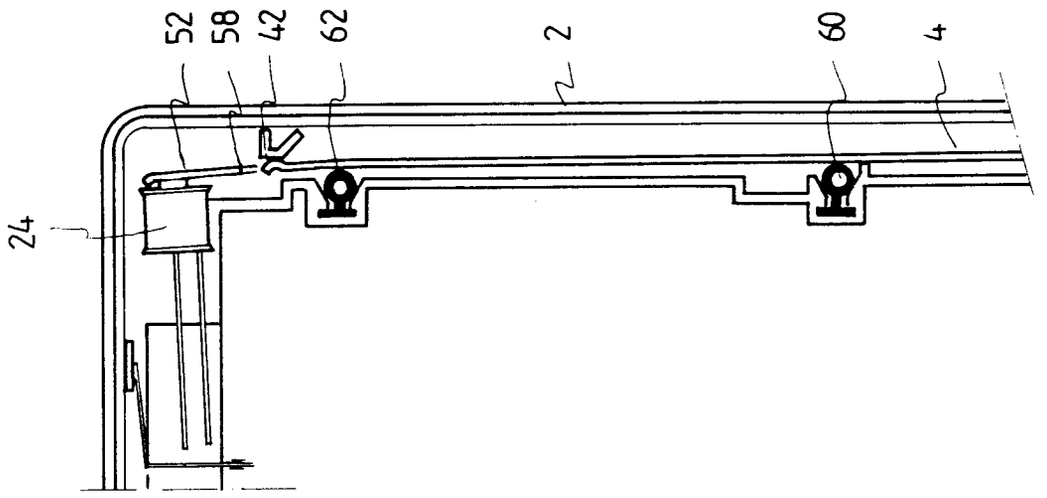

Fig. 9d.

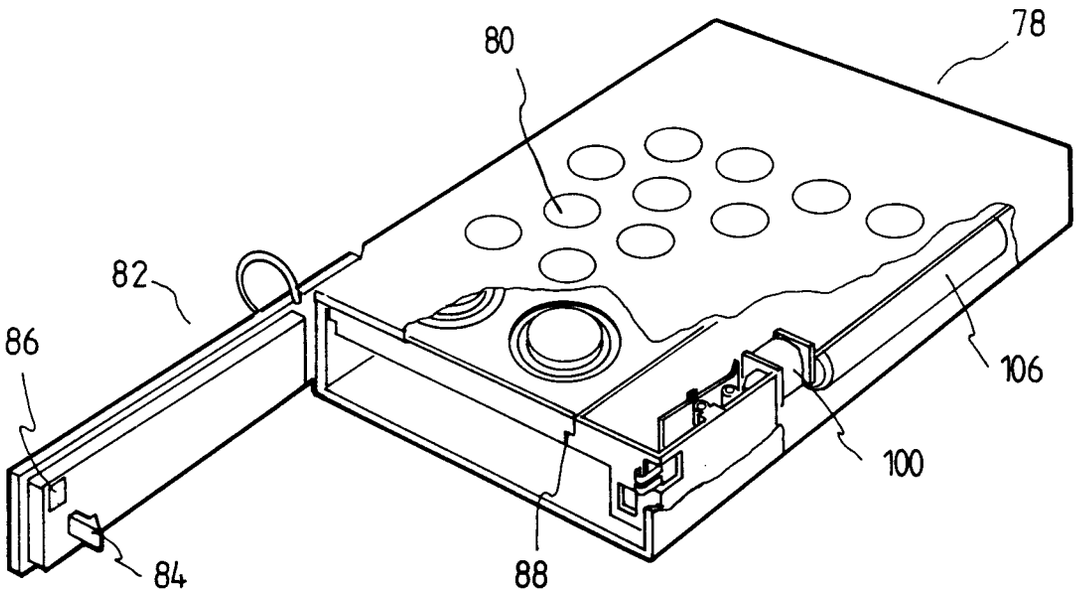
78
80
82
86
106
100
84
88

Fig.10.

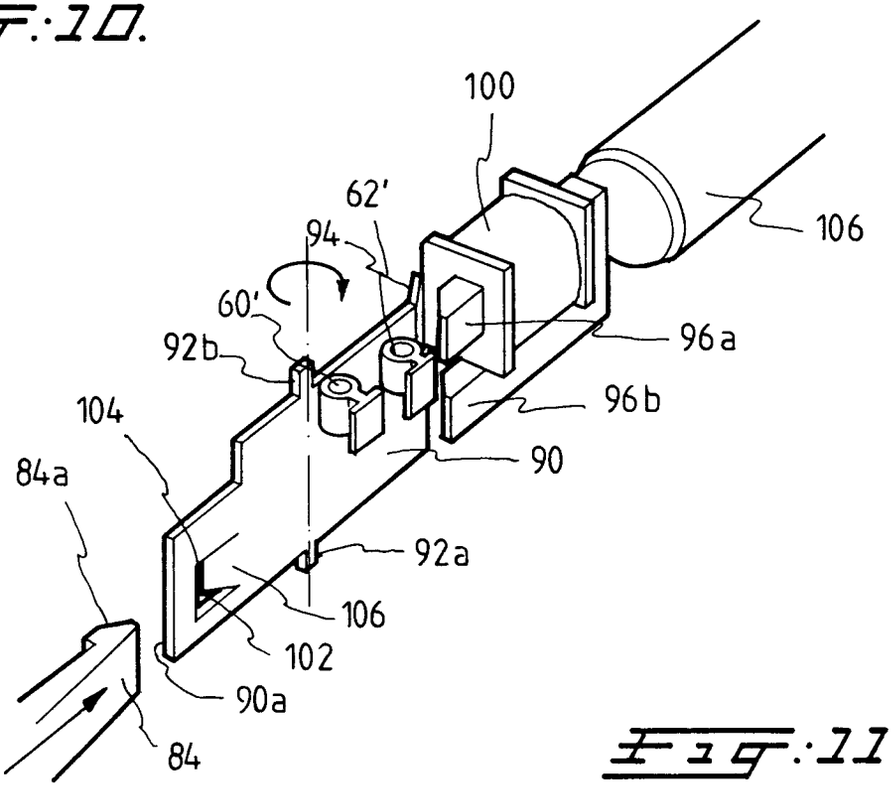
100
62'
106
94
60'
96a
92b
96b
104
90
84a
92a
106
102
90a
84

Fig.11.

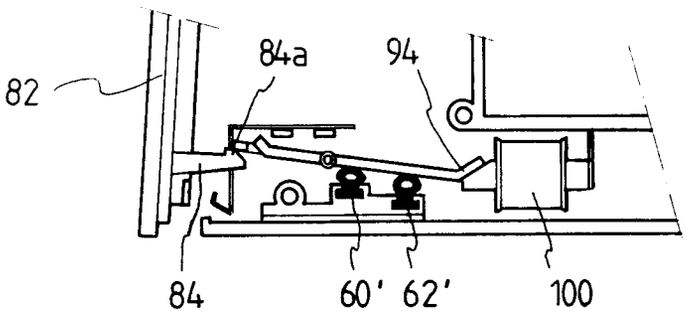

Fig. 12d.

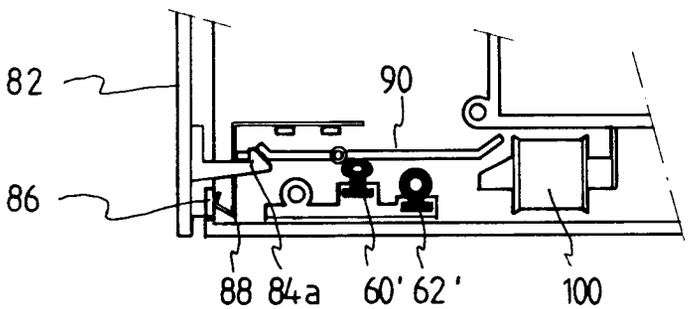

Fig. 12b.

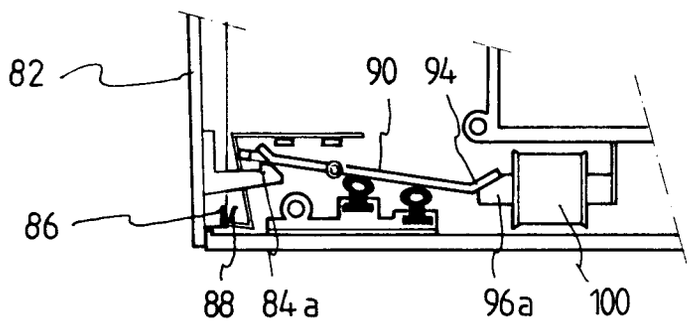

Fig. 12c.

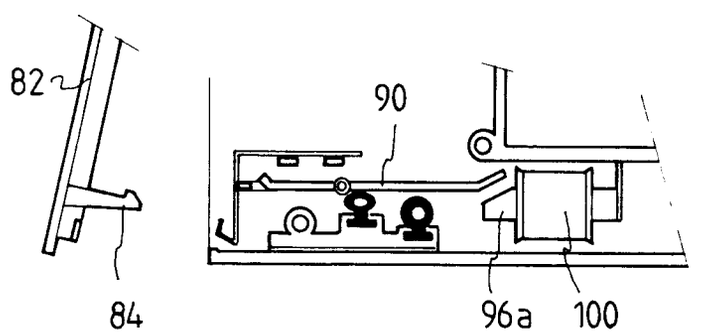

Fig. 12d.

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 91 20 3332

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.5)
D,A	EP-A-0 277 679 (SECULOCK B.V.) * column 3, line 37 - column 8, line 50 * * figures 1-4 * -----	1	E05G1/00

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

E05G
G07F
G08B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	20 JANUARY 1992	VAN KESSEL J.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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