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(54) A security device for a coin lock and a method for activating and releasing the same

(57) A coin lock (1) includes a housing or casing (2) having a coin opening (3), a pivotal hooked catch member (5), a lock cylinder (6) mounted adjacent the outside of the housing (2) for rotating the hooked catch member (5) when a coin inserted through the coin opening so permits, an intermediate member (10) connected to the hooked catch member (5) via a pin (9), a hook (11) which coacts with the intermediate member (10), the hooked catch member (5) and the coin (7) and which restricts movement of the intermediate member and the hooked catch member until a coin has been inserted, and further includes a latching device in the form of a plastic wire or plastic rod (13) which is connected to the hook (11) such as to maintain the hook in a free state that permits the hooked catch member (5) to pivot even without a coin being inserted. The invention also relates to a method of activating and releasing such a latching device.

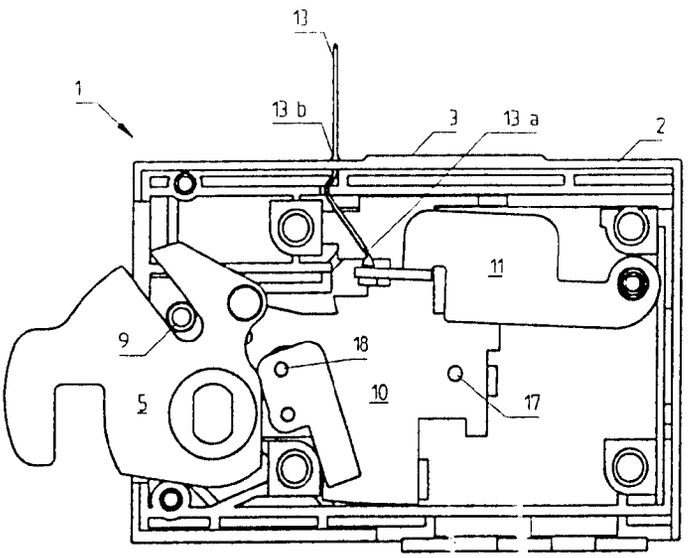

Fig. 6

EP 0 821 327 A1

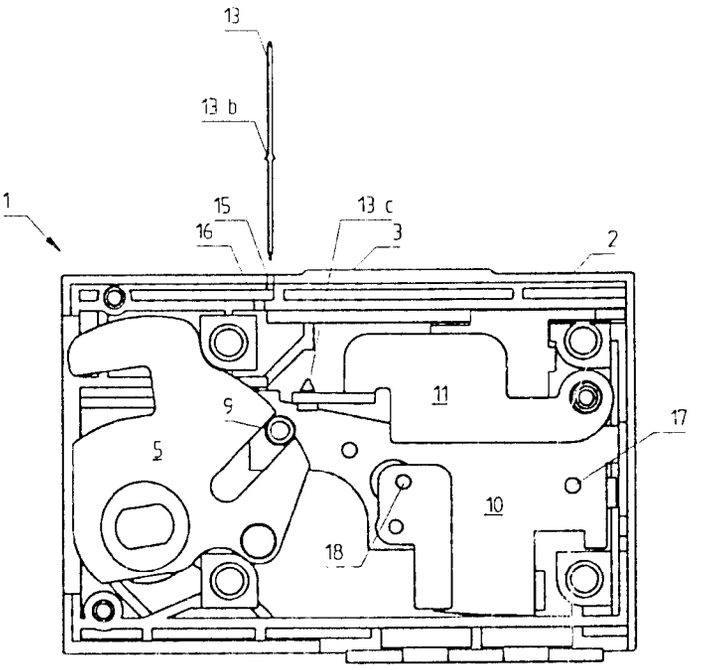

Fig 7

Description

FIELD OF INVENTION

The present invention relates to a security device and more specifically to a latching device for coin locks of the kind defined in the preamble of Claim 1.

According to another aspect, the invention relates to a method of activating and releasing a latching device used in such coin locks.

DESCRIPTION OF THE BACKGROUND ART

Because locks of this kind are delivered from the factory with the key fitted in the lock, there bulk presents a delivery packaging problem. The keys can only be removed from these locks when the correct coin is inserted into the coin slot. This enables a hooked arm to be swung out to a latching position. When preparing the lock for delivery, the lock mechanism is adapted to the size of the coin for which the lock is intended, whereafter the lock is tested to ensure that it operates in the correct. This test is carried out either with the aid of a correct coin or with the aid of a dummy coin.

The manufacturer of cabinets, lockers, etc., fitted with coin locks also experiences problems in delivering the cabinets. If the cabinets are transported with the keys fitted in the locks, the cabinet doors will be unlocked and the keys will project out, and therewith take up space, and are at risk of being bent or broken. The keys are also liable to damage adjacent cabinets. The doors must be kept closed, for instance with the aid of adhesive tape. If the doors are locked with the use of an appropriate coin, the coin must accompany the cabinets during their transportation.

OBJECTS OF THE INVENTION

One object of the invention is to eliminate these drawbacks, so that after being finally tested in the factory, the coin lock can be delivered in a thinner and more convenient package without the key of the lock cylinder being held in the key slot and projecting therefrom.

Another object is to enable the manufacturers of cabinets, or lockers, fitted with a coin lock to be delivered in a simpler and less expensive manner. It shall be possible to lock the doors without the aid of a coin, i.e. the coin shall no longer accompany the cabinet during its transportation.

Another object is to ensure that the coin locks of cabinets installed in a user location will function reliably when using a prescribed coin.

According to another aspect, an object of the invention is to provide a method of activating a coin lock latching device which enables the lock latching device to be fitted in the factory in conjunction with the manufacture of the lock, and which enables the coin lock to be finally tested prior to delivery with the latching device in a resting mode, and to activate the latching device such as to enable the lock to be packaged and delivered without its key projecting out from the lock cylinder.

SUMMARY OF THE INVENTION

The aforesaid objects and other objects are fulfilled with a latching device for a coin lock of the aforesaid kind and having the characteristic features set forth in the characterizing clause of Claim 1.

The inventive latching device may have a very simple construction and, in practice, will conveniently comprise a hooked rod, preferably a plastic rod.

The cost of the latching device is very small, and in fact the cost of the latching device is far less than the cost entailed by the additional coin-lock packaging material that is required when the key is fitted in the lock upon delivery and projects out from the cylinder lock. Added to this latter cost is the cost entailed by transporting cabinets fitted with such locks.

When the lock is fitted and the lock-fitted cabinet is placed in the user location, functioning of the lock will require the use of a coin of the aforedescribed kind. The inventive latching device shall therewith be released.

The latching device will, in practice, preferably include a fracture weakening or like means at which said device will break as a result of the application of force when the lock is prepared for use in the location in which the cabinet shall be used.

It is also preferred that the rod or wire includes a preferably hook-like protrusion for coaction with the lock housing in the region of the rod accommodating hole, so as to determine the position of the lock-mechanism hook in which the hooked catch member can be swung, i.e. when the latching device is activated.

According to one embodiment of the invention, the latching device protrudes from the lock housing through two or more labyrinth-forming holes or openings. This makes it much more difficult for unauthorized persons to manipulate the lock mechanism when the coin lock is unlocked with the key in the lock.

According to another aspect, the invention relates to a method of activating a latching device of the aforesaid kind that has the characteristic features set forth in the characterizing clause of Claim 6.

A further development of this method of releasing the latching device at the place of use has the characteristic features set forth in Claim 7.

Further characteristic features of the invention and advantages afforded thereby will be evident from the following description of a number of exemplifying embodiments of the invention, made with reference to the accompanying drawings.

The expressions "latching device at rest", "latching device activated" and "latching device released" used in the following description have the following meanings:

"Latching device at rest" means that the latching device is fitted to the lock housing. The lock functions with

the appropriate coin.

"Latching device activated" means that the latching device is extended to a latching position. The lock functions without a coin.

"Latching device released" means that the latching device is withdrawn from the lock housing, wherewith the device has fractured at its fracture weakening or, alternatively, has overcome the requisite frictional force. The lock functions with the appropriate coin.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a side view of a conventional coin lock which an is to be fitted with an inventive latching device. When fitting the lock, the side of the lock shown in the Figure is pressed against the object to be secured, e.g. the door of a cabinet or locker.

Fig. 2 is an end view of the coin lock shown in Fig. 1.

Fig. 3 is a side view of the exterior side of the coin lock.

Fig. 4 shows the coin lock of Figs. 1-3 from above.

Fig. 5 is a side view of a coin lock according to Figs. 1-4 with the outer side wall removed so as to show an inventive latching device fitted to the lock mechanism. The latching device is therewith mounted at rest so as to enable the lock to be finally tested prior to delivery.

Fig. 6 is a view corresponding to Fig. 5 and shows the latching device in an active position and the hook of the lock mechanism in a free position, with the hooked catch member swung outwardly so as to enable the key to be removed from the lock.

Fig. 7 is a view corresponding to Figs. 5 and 6 and shows the latching device extended and the hooked catch member swung inwardly to a free position so as to release the latching device.

Fig. 8 is a view corresponding to Fig. 7 and shows the lock subsequent to the insertion of a coin, wherein the hook has been omitted for the sake of clarity.

Fig. 9 is a side view of a preferred embodiment of an inventive latching device.

Fig. 10 is a modified version of the latching device shown in Fig. 9.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

Figs. 1-4 illustrate a coin lock 1 of conventional design from different aspects. The coin lock comprises a housing or casing 2 that includes an upper coin slot 3, a coin collection cup 4, a pivotal hooked catch member 5, and a cylinder lock 6 whose key (not shown) can be removed by inserting the correct coin (not shown in Figs. 1-4) into the coin slot and turning the key so as to bring the hooked catch member to its illustrated locking position.

The hooked catch member cannot be held in an inwardly swung position when the coin lock is delivered from the factory without including an appropriate coin. It is therefore not possible to remove the key from the cylinder lock. The lock package is therefore unnecessarily bulky and awkward.

Fig. 5-8 show the interior of the lock housing 2 with the lock mechanism in different operational states, with the outer side of the lock housing having been omitted for the sake of illustration. Fig. 5 and 6 show the lock with an inventive latching device fitted, wherein Fig. 5 shows the latching device in its rest state in which the lock mechanism can be finally tested prior to delivery from the factory. Fig. 6 shows the inventive latching device in an activated position in which the coin lock can be packaged and delivered with the key removed without requiring a coin to be inserted through the coin slot.

In addition to the aforesaid lock components referenced 1-6, Fig. 5-8 illustrate further components of the lock mechanism, among other things.

An intermediate member 10 includes a pin 9 by means of which the member 10 is coupled to a hooked catch member 5. Pivotal movement of the hooked catch member in different directions effected through the medium of dogs (not shown) on the lock cylinder 6 is converted to generally rectilinear movement so as to move the intermediate member 10 forwards and backwards between a rear end position (shown in Fig. 7) and a forward end position (shown in Fig. 6).

The mechanism also includes a hook 11 which coacts with the intermediate member 10, the hooked catch member 5 and a coin 7 shown in Fig. 8. When the intermediate member occupies an intermediate position (Fig. 5), the hook 11 functions to limit movement of the intermediate member, and therewith also movement of the hooked catch member 5, until a coin 7 is inserted (Fig. 8), whereupon the latching effect of the hook 11 ceases and the hooked catch member 5 can be swung by the dogging member. The intermediate member 10 is herewith moved to its forward position.

In order to enable this function to be installed in conjunction with assembling the coin lock in accordance with one object of the invention, there is fitted a latching device in the form of a wire or a plastic rod 13 of comparatively small diameter whose one end is provided with a hook 11 and whose other end projects out through a hole provided in the lock housing 2, as explained in more detail herebelow and as shown in Fig. 5.

The latching device 13 is at rest in the Fig. 5 illustration. The final manufacturing stage includes adapting the lock mechanism to the required coin size, and testing the function of the latching device. Adaptation of the lock mechanism to the required coin size includes, among other things, determining the relative position of the illustrated pin 17 in relation to the pin 18 and mounting the pin 17 in said position, i.e. a position in which an inserted coin 7 will rest against the pins 17 and 18 in the manner desired and carry out the intended function (c. f. Fig. 8).

When these and other necessary measures have been completed, the coin lock is subjected to a final test

prior to delivery, with the latching device 13 in its rest state (Fig. 5).

The latching device is activated before packaging and delivering the coin lock. The latching device is activated by applying tension to the rod 13, such that a hook-like protuberance 13b located a short distance from the end of the rod 13 can be inserted in the hole provided in the lock housing 2 herefor, i.e. the latching device is pulled-out to a device latching point. The protuberance prevents the latching device 13 from moving back into the lock housing.

As evident from Fig. 6, the hook 11 is therewith swung up from the position shown in Fig. 5, therewith enabling the hooked catch member 5 to be swung outwards and the lock key to be removed from its slot.

The coin lock can now be packaged for delivery.

Fig. 7 illustrates the process of releasing the latching device at the place of use. The latching device 13 is again pulled-out with the aid of a suitable tool (not shown), the force applied being sufficiently great to cause the latching device to break at a fracture weakening 13a provided on its other end carrying the hook 11.

The coin lock is then ready for use.

As shown in Figs. 5 and 6, the latching device 13 extends from the housing 2 through two openings 15 and 16 which are out of alignment with one another. These two openings can be said to form a labyrinth passageway which makes it more difficult for an unauthorized person to manipulate the lock mechanism from outside the lock, with regard to conventional use of the coin lock.

Fig. 9 illustrates in side view an inventive latching device in the form of a plastic rod 13 that includes a fracture weakening 13a and hook-like protuberances 13b. The latching device also includes on one end an anchor 13c for coaction with the hook 11. The anchor thus remains on the hook 11 subsequent to breaking the device at the fracture weakening 13a.

Fig. 10 illustrates a modified version of the latching device 13 which lacks the provision of a fracture weakening. When the latching device is subjected to a sufficiently high pulling force, the part 13c will be pulled loose through attachment holes intended to this end.

Claims

1. A latching device for a coin lock (1) of the kind which includes:

   a) a housing or casing (2) that includes a coin slot (3) on its upper side;
   b) a hooked catch member (5) pivotally mounted in the housing (2);
   c) a lock cylinder (6) which is mounted adjacent the outside of the housing (2) and whose cylinder plug includes dogging means for rotating the hooked catch member (5) when so permitted by a coin (7) inserted through the coin slot;
   d) an intermediate member (10) to which the hooked catch member (5) is coupled through the medium of a pin (9) such as to convert pivotal movement of the hooked catch member in different directions to respective generally rectilinear movement for moving the intermediate member forwards and backwards between a rearward and a forward end position;
   e) a hook (11) which coacts with the intermediate member (10), the hooked catch member (5) and the coin (7) to restrict movement of the intermediate member, and therewith also movement of the hooked catch member, until a coin has been inserted, whereupon the latching effect of the hook is negated and the hooked catch member (5) can be swung by the dogging means and the intermediate member so as to be moved to said forward position,

   characterized in that
   f) the lock housing (2) has fitted therein a latching device (13) which projects out from the lock housing and which is connected to the hook (11) in a manner to maintain said hook in a free state that permits the hooked catch member (5) to pivot without a coin being inserted.

2. A device according to Claim 1, **characterized** in that the latching device comprises a rod or a wire (13), preferably a plastic rod or wire, which is connected to the hook (11).

3. A device according to Claim 2, **characterized** in that the latching device (13) includes a fracture weakening (13a) or the like which breaks or loosens upon application of a force in conjunction with preparing the lock for use.

4. A device according to Claim 2 or 3, **characterized** in that the latching device includes one or more protrusions (13b), preferably hook-like protrusions, for coaction with the lock housing in the proximity of the hole receiving said latching device, so as to define the hook position in which the hooked catch member (5) is able to pivot.

5. A device according to any one of Claims 2-4, **characterized** in that the latching device projects out of the lock through two or more labyrinth-forming openings (15, 16) which make manipulation of the lock mechanism difficult to achieve from outside the lock.

6. A method of activating a latching device incorporated in a coin lock of the kind that includes a housing or casing (2) which includes a coin slot (3) and one or more small openings (15, 16) and which accom-

modates a hooked catch member (5) that can be pivoted by dogging means on a lock cylinder (6), a generally rectilinearly movable intermediate member (10) connected to the hooked catch member (5), and a hook (11) which coacts with the hooked catch member (5), the intermediate member (10) and an inserted coin (7),
characterized in that

a) the latching device has the form of a wire or rod (13), preferably a plastic wire or rod, and includes a protrusion (13b) spaced from one end thereof and is connected to the rod (11); and in that the other end of the wire or rod is passed out through the opening or openings (15, 16) in conjunction with the manufacture of the coin lock;
b) in that the coin lock is tested with the latching device in a rest state in conjunction with adapting the mechanism to a desired coin size; and
c) in that a force is applied via the latching device to move the protrusion (13b) thereon out through the hole in the housing while entraining the hook (11) to a position in which the hooked catch member (5) can be swung by the lock cylinder without the insertion of a coin.

7. A method according to Claim 6, **characterized** in that the latching device is released, preferably at the place of use, by exerting a further force on the latching device (13) such as to break said latching device, preferably at the location of a fracture weakening (13a) in the vicinity of the end at which the latching device is connected to the hook (11).

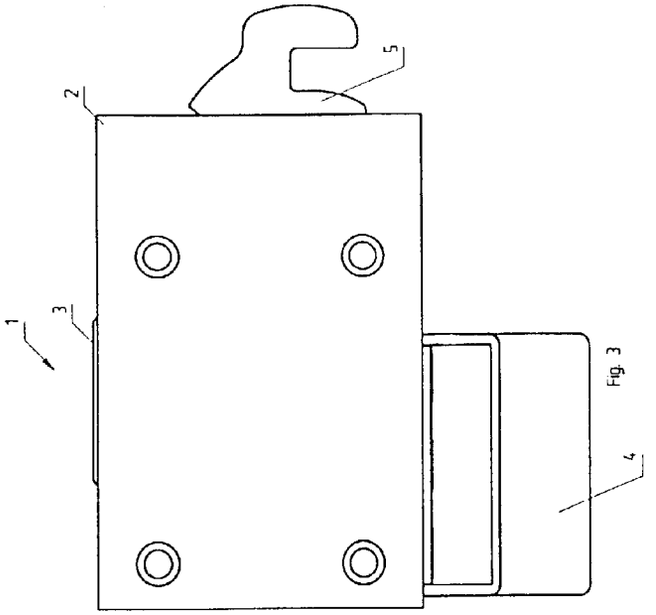

Fig. 3

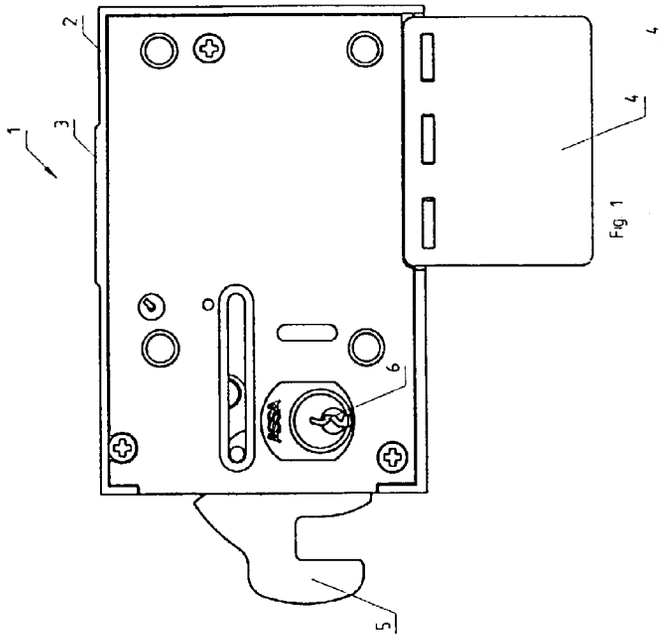

Fig. 1

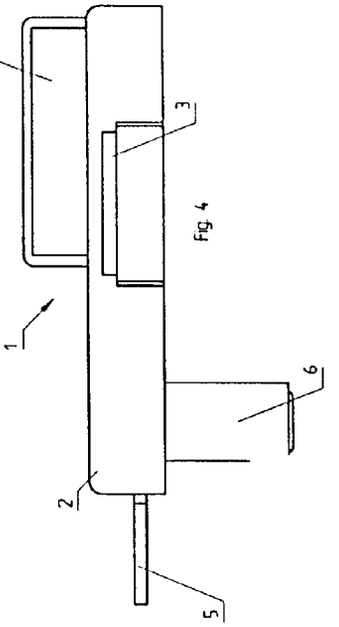

Fig. 4

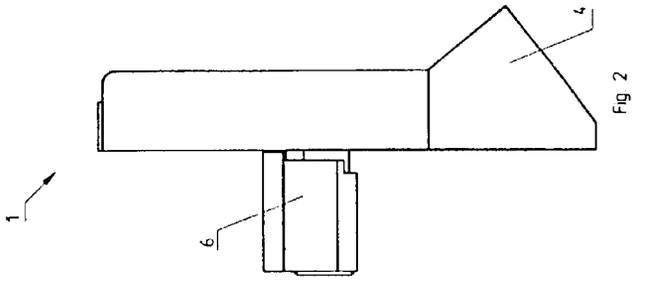

Fig. 2

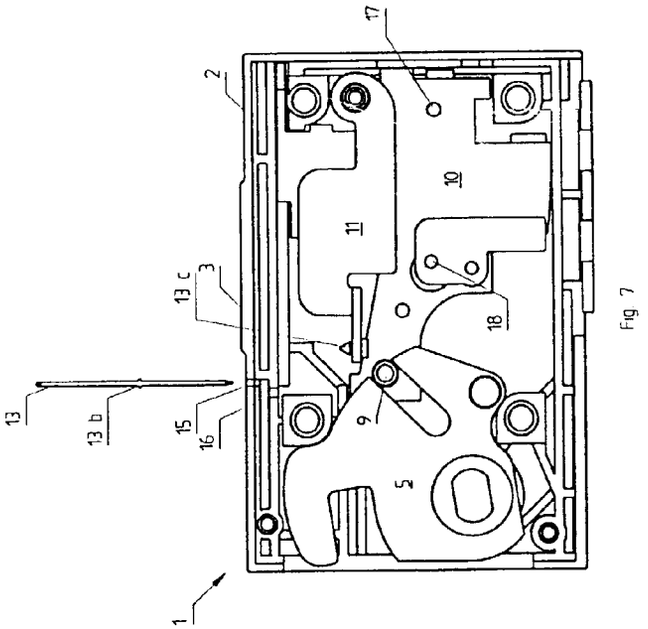

Fig. 7

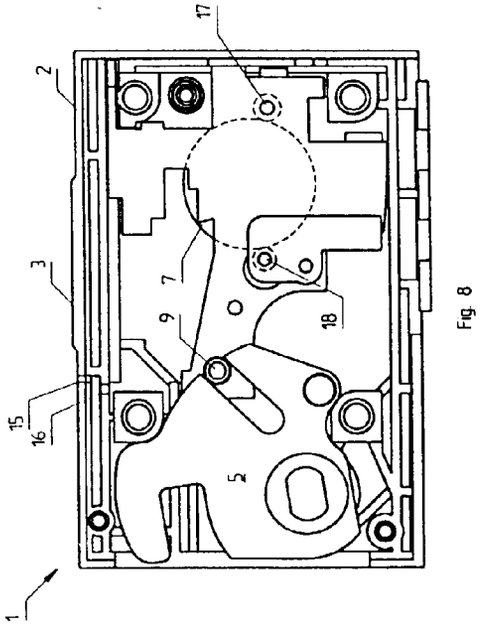

Fig. 8

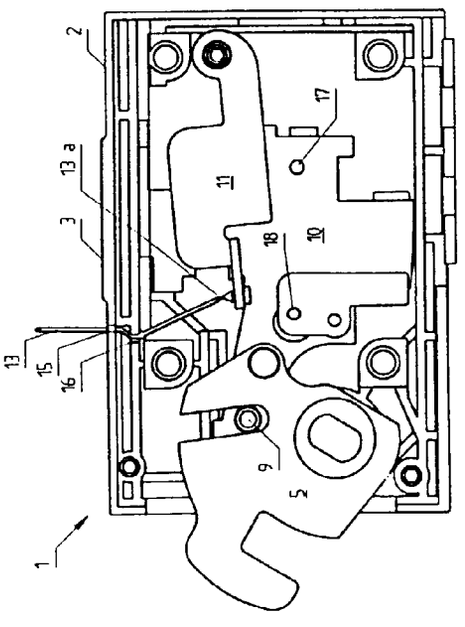

Fig. 5

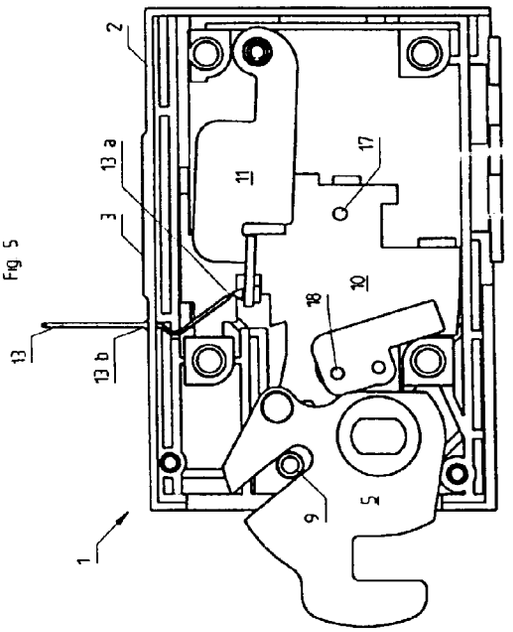

Fig. 6

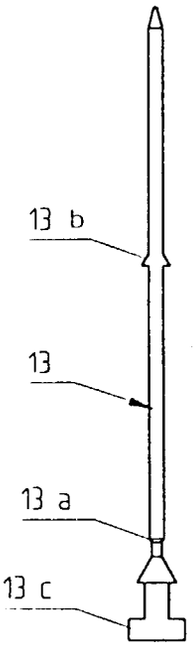

Fig. 9

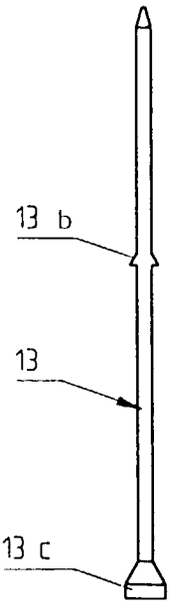

Fig. 10

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 97 85 0119

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)
A	FR 2 089 582 A (SCHLOSSFABRIEK SCGHULTE-SCHLAGBAUM) * page 5, line 8 - line 23; figures 2,3 * * page 6, line 7 - line 24; figure 7 * ---		G07F17/14 E05B17/00
A	EP 0 096 229 A (GRETSCH-UNITAS) * abstract; figures 1-3 * -----		

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

G07F
E05B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	4 November 1997	Neville, D

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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