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E2A AARH ALX A103
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(56) Documents Cited
GB 2305965 A **GB 2006315 A** **GB 0872276 A**
GB 0708097 A **US 4920773 A**

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UK CL (Edition P) **E2A AARH ALT ALX**
INT CL^6 **E05B 13/00 17/04 55/06 63/00**
Online: WPI

(54) Abstract Title
Lock cylinder with drive disconnection

(57) It is often desirable that the device controlling the operation of a lock cylinder from the inside of a door should have a separate function, or be disconnected from the corresponding device controlling that cylinder and located on the outside of that door, whether the device in question be a key, thumb-turn or any other such device. As shown an extension of the key disconnects a thumb-turn A from a thrower B. In other embodiments the cylinder can be turned to a position to effect such disconnection, or a clutch arrangement can provide priority to cylinder operation.

FIG 4A

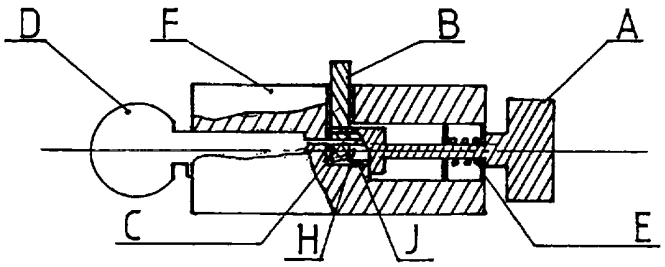

FIG 4B

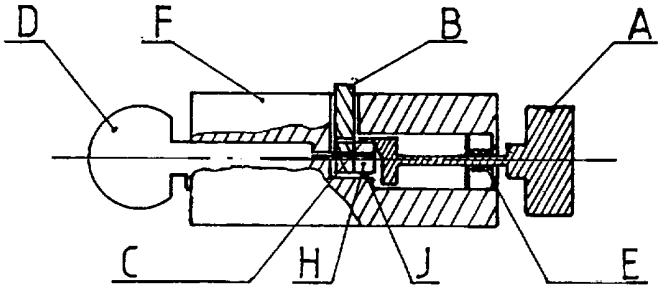

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FIG 1

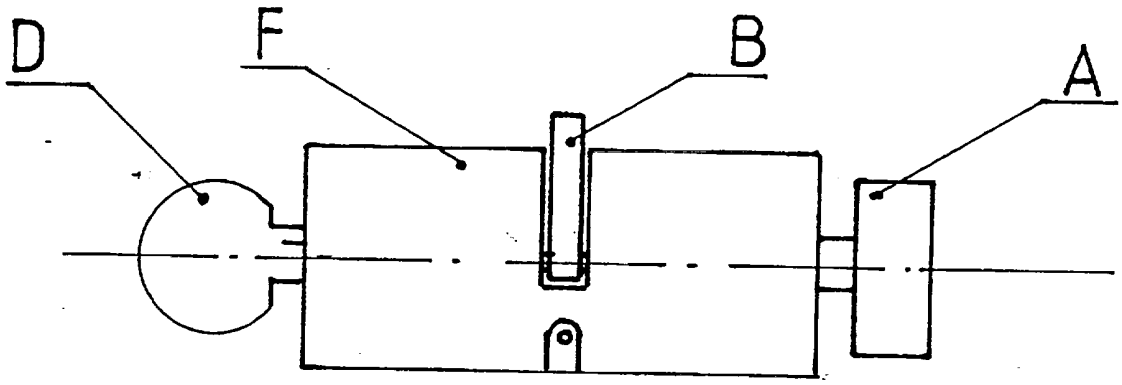


FIG 2

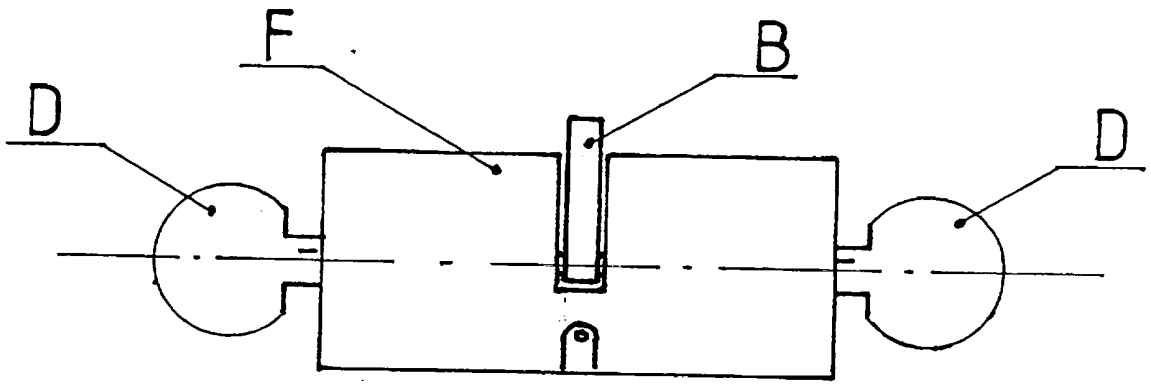


FIG 3A

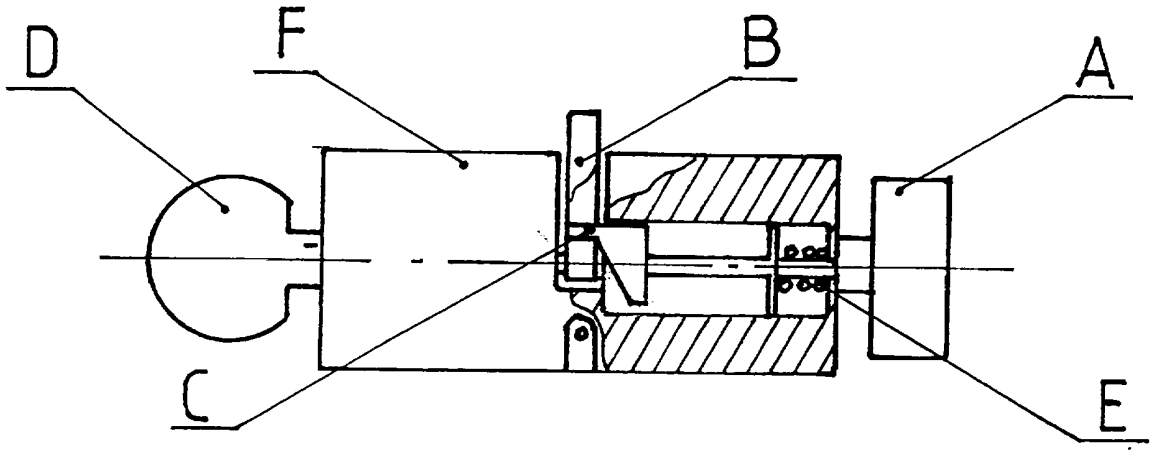


FIG 3B

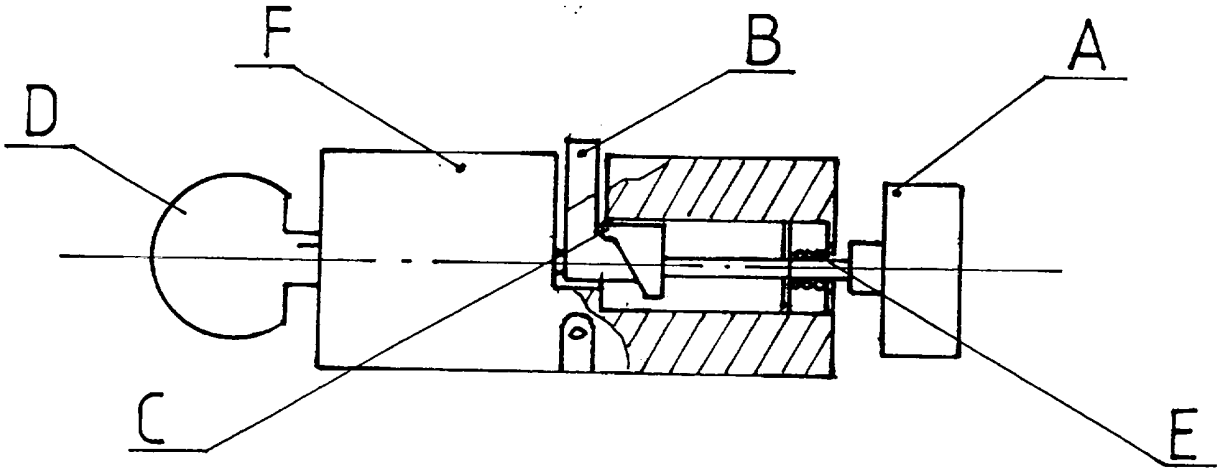


FIG 4A

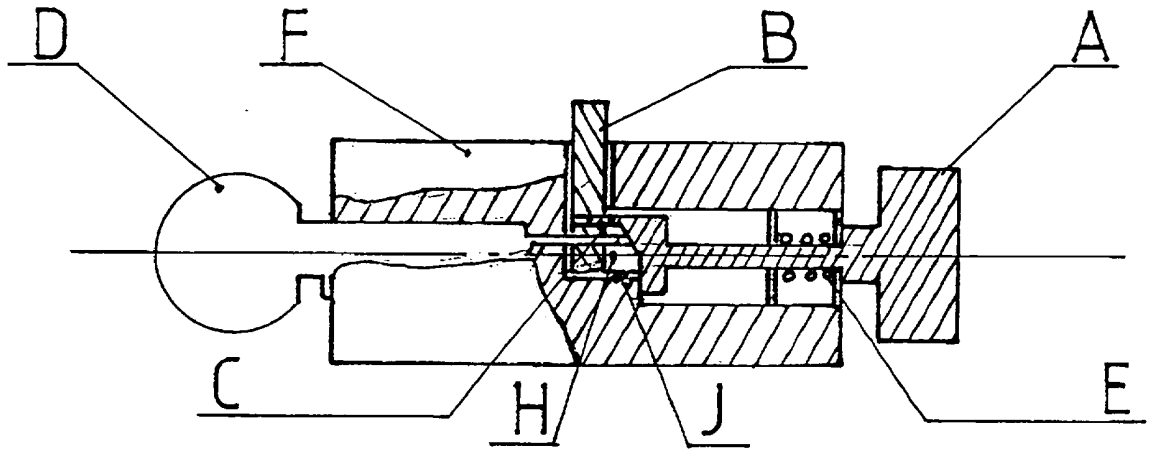


FIG 4B

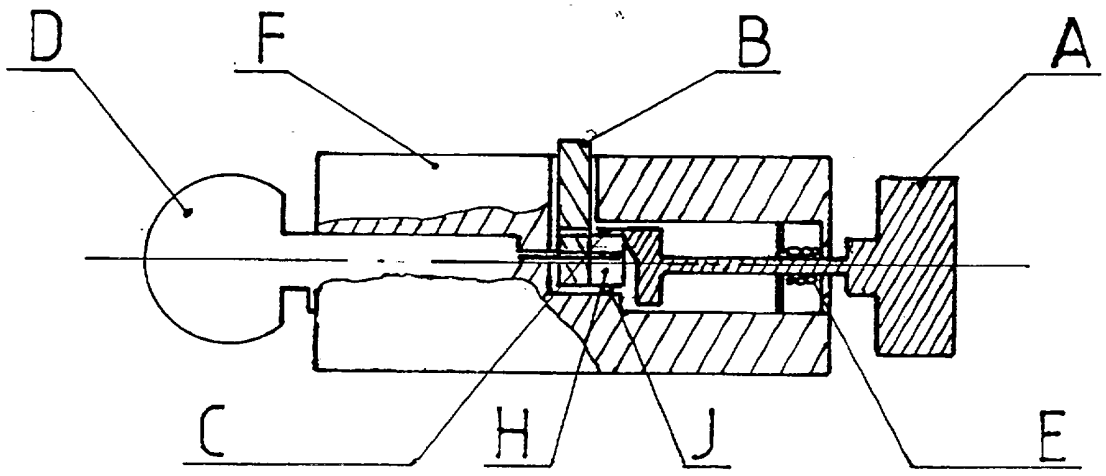


FIG 4C

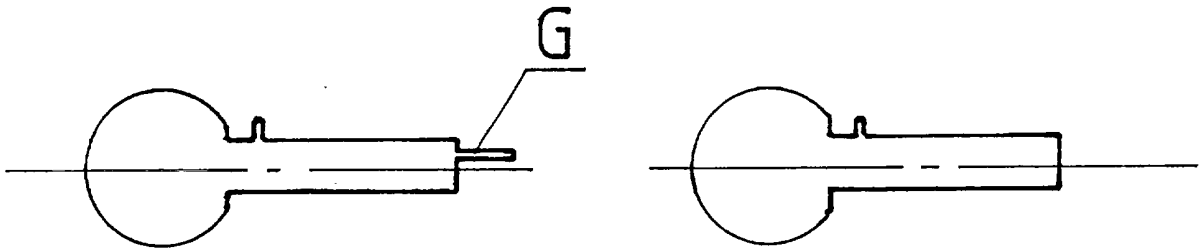
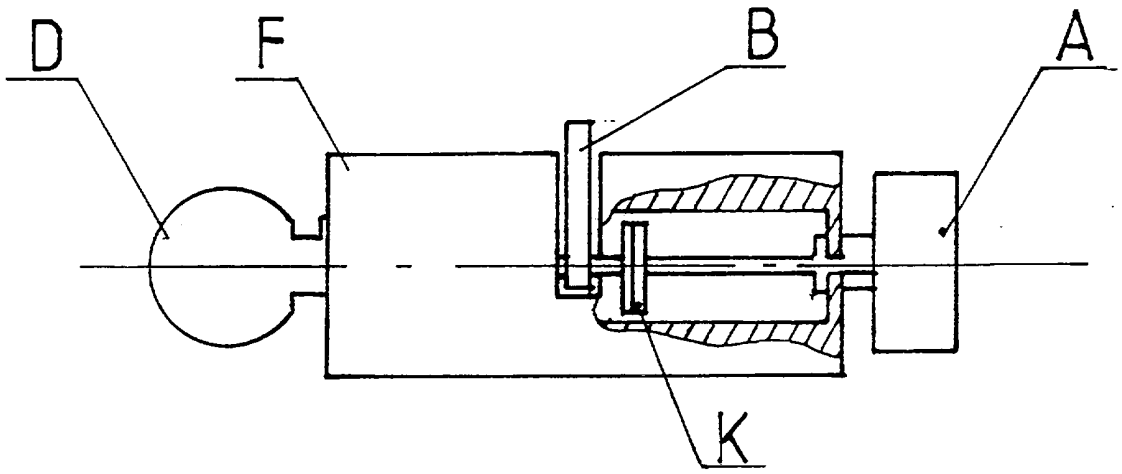


FIG 5



Independent Acting Lock Cylinders

This invention relates to independent acting lock cylinders.

At present some locks are operated by cylinders which are employed to lock or unlock an object, such as a door, from one or both sides, either by means of a key or a thumb-turn. In the case where cylinders have a key on one side and a thumb-turn on the other side both the key side of the lock and that on the thumb-turn side thereof are mechanically connected, so that when the key is in the "locked" position so is the thumb-turn and vice versa, as shown in fig 1. The object of this invention is to enable the two to be disconnected when desired so that they can be operated separately when desired. Such a facility would, for instance, be valuable in a classroom situation where at present if the cylinder in the door is unlocked from the outside by a key, the students are able to relock the door from the inside by the thumb-turn, and so prevent authorised persons from entering the room. If, however, that thumb-turn on the inside was mechanically disconnected when the key on the outside was operated to open the lock, then the door could not be relocked by any non key holding person. However if the door had been locked from the outside, but someone was left inside the room, then that person could still open the door by turning the thumb-turn which would have been reconnected by the relocking of the cylinder.

This principle could also be applied to a lock cylinder having a key control on both sides when the "outside" keyholder may not want the "inside" keyholder to change the state of the lock cylinder, or vice versa. This could apply, for instance, when a door is to remain unlocked in the lunch hour, but should be capable of being locked or unlocked by the "inside" keyholder at other times, see fig 2.

One method of achieving the desired end is shown schematically in figs 3a and 3b. In fig 3a the cylinder is in the locked condition, and the thumb-turn (A) can turn the main cam (B) by means of the drive pin (C). In fig 3b the main cam (B) has been turned by the key (D) sufficiently to disengage the lock. It has then been turned still further to disconnect the drive pin (C) thus also disconnecting the thumb-turn (A) which is now free to turn without affecting the main cam (B) which therefore cannot operate the cylinder or lock. The springs (S) will then push the drive pin (C) back into the main cam (B) when the key (D) is again rotated to its original position as in fig 3a.

In this simple description the terms "key", "thumb-turn", and "cam" are only employed for ease of explanation and should not be taken to exclude any other appropriate devices known to those skilled in the art.

The shape of the outer case (F) can be designed to fit any desired lockcase or other appropriate mechanism, to which it may be secured by a screw or

screws, or by any other means known to those skilled in the art. A door has been used in this example, but it is clear that the principles described can be applied to any other object for which this facility is desired.

To prevent unauthorised entry through a door by braking a panel or partition close to the lock, and thus permitting access to the thumb-turn at the other side of the lock cylinder and which could then be turned so that the door could be opened, calls for another variation of the principle previously cited, and is illustrated in figs 4a and 4b. This variation would now allow the cylinder to be locked by a key as shown in fig 4c, this key having an additional part (G) such that when the key is inserted into the cylinder (fig 4a) and moved by the appropriate degree, it will operate both the main cam (B) and a secondary cam or cams (H) thus displacing the drive pin (C) so disconnecting the thumb-turn (A) from driving the main cam (B) and thus from operating the cylinder; see fig 4b. When the key, fig 4c, is reinserted and returned to its original position, spring(s) (E) allow the drive pin (C) to be reconnected and thus operate the cylinder freely, for the cam (H) will no longer prevent it from doing so.

This new variation possesses the further advantage that a second key could now be provided, without the additional part (G) of fig 4c. This then would permit the cylinder to be operated by this second key holder, either with the thumb-turn in use or out of use, at the discretion of the primary keyholder for

the primary key of fig 4c would be the only one capable of locking the thumb-turn in use or out of use.

It is sometimes necessary to have a cylinder which can be operated from outside in spite of a determined effort by someone on the inside to prevent such entry either by holding on to or jamming the thumb-turn (A) or other inside device. Such a condition might arise when the room occupant is actively disturbed, is forcibly detained, or refuses to pay the rent. To prevent such a possibility, the cylinder modification illustrated schematically in fig 5 has been designed. The key (D) is always able to turn the cylinder and thus work the lock. If however there is a strong enough opposing force on the thumb-turn or other device (A), then the clutch (K) will slip allowing the key (D) to turn as desired and thus operate the lock. The clutch (K) could be, for example, a friction operated device, or employ a detent action, or any other method known to those skilled in the art. When that opposing force is removed, then the inside thumb-turn, or other device, (A) can be operated again in the usual manner.

Claims

1 A device to permit the two ends of the mechanical drive in a lock cylinder to be disconnected from each other.

2 A device according to claim 1, and shown schematically in figs 1 and 2 which has either a "key" (D) on the one side and a device such as a "thumb-turn" (A) on the other side or a key (D) on both sides.

3 A device according to claims 1 and 2, and shown schematically in figs 3a and 3b, such that when the cylinder is in the unlocked position manipulation of the thumb-turn (A), or any other device there situated, will not cause the cylinder to return to the locked position.

4 A device according to claims 1 to 3 inclusive, and as shown schematically in figs 4a and 4b such that when the cylinder is locked by the key (G), manipulation by the thumb-turn (A), or any other device there situated, cannot cause the cylinder to return to the unlocked position.

5 A device according to claims 1 to 4 inclusive, and shown schematically in figs 4a and 4b, which is so designed that when the cylinder is unlocked by the key (G) manipulation of the thumb-turn (A), or any

other device there situated, will not cause the cylinder to relock or to unlock.

6 A device according to claims 1 to 5 inclusive in which a secondary key for use with the device described in claim 5 is such that when operating the cylinder will neither connect or disconnect the drive to the thumb-turn (A), or other device there situated.

7 A device according to claims 1 to 6 inclusive, and shown schematically in fig 5, is such that when the thumb-turn (A) or other device there situated, is prevented from operating, then the key or other device at the other side of the cylinder can still lock or unlock the cylinder.

8 A device according to claims 1 to 7 inclusive is such that when the thumb-turn or other device in claim 7 is preventing operation of the lock is released, the cylinder may then be freely operated from either end.

The Patent Office

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Claims searched: all

Examiner: Philip Silvie
Date of search: 7 April 1998

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.P): E2A (AARH, ALT, ALX)

Int Cl (Ed.6): E05B (13/00, 17/04, 55/06, 63/00)

Other: Online: WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X	GB 2 305 965 A	(TAYLOR) see page 6, para. 3	1,2 at least
A	GB 2 006 315 A	(NORRIS) see page 2, lines 96-126	1,2 at least
X	GB 0 872 276 A	(PARKES) see page 2, para. 2	1,2 at least
X	GB 0 708 097 A	(PARKES) see page 1, lines 29-44	1,2 at least
X	US 4 920 773 A	(YALE) see column 7, lines 42-47	1,2 at least

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