

PATENT SPECIFICATION (11)

1429150

1429150

- (21) Application No.42095/74 (22) Filed 27 Sep.1974.
(31) Convention Application No.43977 (32) Filed 9 Jan.1974. in
(33) Israel (IL)
(44) Complete Specification published 24 Mar.1976.
(51) INT CL² E05C 1/06 9/12
(52) Index at acceptance E2A 3B B2A



(54) A LOCKING ARRANGEMENT FOR DOORS AND THE LIKE

(71) We, ABRAHAM BAHRY, of 41 Geulim Street, Holon, Israel, and MOSHE DOLEV, of 41 Geulim Street, Holon, Israel, both Israeli citizens, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:-

The present invention concerns a locking arrangement for doors, windows and the like in which at least one elongated locking bolt is adapted to be extended or retracted into locking or unlocked position by means of a cylindrical lock provided in the central region of the door.

Many locking arrangements of this type are known. In general a cam, pawl, or toothed wheel is mounted at the inner end of the cylindrical lock and is adapted by means of a rack or cam to cause a linear movement of one or more bolts. These mechanisms are generally of very complicated construction, see for example, U.S. Patent No. 1041147 and British Patent No. 669066, and they have the disadvantage that they can be operated from one side of the door only.

Other locking means, operating elongated bolts from the centre of the door by means of a handle or the like are known, the construction of the handle being such that it can actuate said bolt or bolts. In this case a lock operable by a key may be provided to prevent the operation of that handle. This type of arrangement is also of complicated construction and does not provide a fool-proof lock.

It is the object of the present invention to provide a locking arrangement for doors and the like which is of simple construction, is adapted to be operated by a known cylindrical lock, and assures an absolutely fool-proof locking position.

The invention consists in a locking arrangement for doors and the like com-

prising at least one elongated locking bolt adapted to be extended and retracted by a key-operable cylinder lock mounted in the central region of the door or the like characterized in that the lock is mounted to extend at both sides of the door for operation by the key and that an actuating gear is keyed on the cylinder of said lock, a wheel being rotatably mounted in a fixed mounting surface for engagement with said gear and pivotally carrying one end of at least one curved link, whose other end is pivotally connected to said bolt and is guided for linear movement in said mounting surface.

In a preferred embodiment of the invention four locking bolts are actuated each by one said link, each bolt extending from substantially the centre of one of the edges of the door or the like.

The invention is illustrated by way of example only in the accompanying drawing in which Figure 1 is a front elevation, partly broken away, of a locking arrangement according to the present invention in the locking position.

Figure 2 is a side elevation thereof partly broken away for the sake of clarity;

Figure 3 is a front elevation similar to that of Figure 1 in the non-locking position.

A cylindrical lock 1 is mounted in the central region of a door (not shown) and is operable from either side by a key 2. The lock is mounted between two plates 3 and 4 and extends therefrom on either side, a plate 5 held to the lock by a screw 5' preventing axial movement of the lock relative to the plates 3 and 4. The cylinder of said lock between plates 3 and 4 has keyed to it, an actuating gear 6 which is in mesh with the toothed section 7' of an operating wheel 7, said wheel being turnably mounted on a sleeve 8 fixed between plates 3 and 4. The toothed section 7' of wheel 7 is of predetermined arcuate length. Four gudgeon

50

55

60

65

70

75

80

85

90

pins 9 extend through wheel 7 at equal angular positions and pivotally carry at the side adjacent plate 4 one end of a curved link 10 whose other end is pivotally attached to pin 11 which extends through an elongated slot 12 in plate 4. The slots 12 are diametrically aligned around sleeve 8 at 90° from each other. The lower end of four locking bolts indicated by reference numeral 13 are pivotally attached to pins 11.

The locking bolts 13 extend preferably in longitudinal bores made between the surface of a door, the other parts of the locking arrangement being housed in its central region in a depression provided for the purpose.

As key 2 turns the cylinder of lock 1, gear wheel 6 actuates operating wheel 7 whereby links 10 cause the linear sliding of pins 11 in slots 12, the extent of said linear movement being limited by the length of the toothed section 7' of wheel 7.

When the locking arrangement is in the position shown in Figure 1, i.e. in the extended or locking position of the bolts 13, the movement of links 10 has passed their dead-centre position so that when pressure is applied in an inward direction on bolts 13 the links will tend to move wheel 7 further and no turning of the wheel in opposite direction, i.e. unlocking of bolts 13 is possible.

It can be seen from the above description that the locking arrangement here described is of extremely simple construction and of simple mechanical operation having a few parts, most of which can be manufactured by stamping and do not require machining. The lock is strong enough to overcome difficulties caused by warping of the door,

because owing to the gear ratio and the leverage of the lock, the power exerted is magnified on the bolts.

WHAT WE CLAIM IS:-

1. A locking arrangement for doors and the like comprising at least one elongated locking bolt adapted to be extended and retracted by a key-operable cylinder lock mounted in the door or the like, characterized in that the lock is mounted to extend at both sides of the door for operation by the key and that an actuating gear is keyed on the cylinder of said lock, a wheel being rotatably mounted in a fixed mounting surface for engagement with said gear and pivotally carrying one end of at least one curved link whose other end is pivotally connected to said bolt and is guided for linear movement in said mounting surface.

2. A locking arrangement as claimed in claim 1, wherein four locking bolts are actuated each by one said link, each bolt extending from substantially the centre of one of the edges of the door or the like.

3. A locking arrangement as claimed in claims 1 or 2, wherein the said lock is mounted between two plates and extends from either side thereof, said gear, said wheel and said link or links being likewise mounted between said plates.

4. A locking arrangement substantially as hereinbefore described and illustrated in the accompanying drawings.

B. FISHER & CO.
Agents for the Applicants,
Chartered Patent Agents,
36 Sydenham Road,
Croydon, Surrey. CRO 2EF.

pins 9 extend through wheel 7 at equal angular positions and pivotally carry at the side adjacent plate 4 one end of a curved link 10 whose other end is pivotally attached to pin 11 which extends through an elongated slot 12 in plate 4. The slots 12 are diametrically aligned around sleeve 8 at 90° from each other. The lower end of four locking bolts indicated by reference numeral 13 are pivotally attached to pins 11.

The locking bolts 13 extend preferably in longitudinal bores made between the surface of a door, the other parts of the locking arrangement being housed in its central region in a depression provided for the purpose.

As key 2 turns the cylinder of lock 1, gear wheel 6 actuates operating wheel 7 whereby links 10 cause the linear sliding of pins 11 in slots 12, the extent of said linear movement being limited by the length of the toothed section 7' of wheel 7.

When the locking arrangement is in the position shown in Figure 1, i.e. in the extended or locking position of the bolts 13, the movement of links 10 has passed their dead-centre position so that when pressure is applied in an inward direction on bolts 13 the links will tend to move wheel 7 further and no turning of the wheel in opposite direction, i.e. unlocking of bolts 13 is possible.

It can be seen from the above description that the locking arrangement here described is of extremely simple construction and of simple mechanical operation having a few parts, most of which can be manufactured by stamping and do not require machining. The lock is strong enough to overcome difficulties caused by warping of the door,

because owing to the gear ratio and the leverage of the lock, the power exerted is magnified on the bolts.

WHAT WE CLAIM IS:-

1. A locking arrangement for doors and the like comprising at least one elongated locking bolt adapted to be extended and retracted by a key-operable cylinder lock mounted in the door or the like, characterized in that the lock is mounted to extend at both sides of the door for operation by the key and that an actuating gear is keyed on the cylinder of said lock, a wheel being rotatably mounted in a fixed mounting surface for engagement with said gear and pivotally carrying one end of at least one curved link whose other end is pivotally connected to said bolt and is guided for linear movement in said mounting surface.
2. A locking arrangement as claimed in claim 1, wherein four locking bolts are actuated each by one said link, each bolt extending from substantially the centre of one of the edges of the door or the like.
3. A locking arrangement as claimed in claims 1 or 2, wherein the said lock is mounted between two plates and extends from either side thereof, said gear, said wheel and said link or links being likewise mounted between said plates.
4. A locking arrangement substantially as hereinbefore described and illustrated in the accompanying drawings.

B. FISHER & CO.
Agents for the Applicants,
Chartered Patent Agents,
36 Sydenham Road,
Croydon, Surrey. CRO 2EF.



* C L M S *