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54 **A locking means.**

57 A locking mechanism for hinged or sliding doors, windows or gates, formed by a single or twin door leaf (10, 11) to close a frame opening. The door leaf (11), at the edge (14) remote from the hinged edge, is provided with a metallic border (15) bridging the gap (12) between said edge (14) and neighboring frame or door element. At least two female locking means (21a) are placed along a line which is parallel to the longitudinal direction of the border (15), said female locking means being adapted to cooperate with a corresponding number of male locking means (19), so that a mutual locking engagement can be affected through a mutual displacement in the longitudinal direction of the border (15), via a displaceable rail (21).

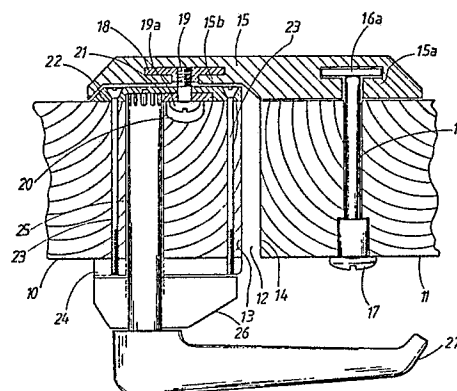


FIG. 1

Description

A LOCKING MEANS

This invention relates to a locking mechanism for hinged or sliding doors, windows or gates, formed by a single or twin door leaf to close a frame opening, and wherein the door leaf, at the edge remote from the hinged edge, is provided with a metallic border bridging the gap between said edge and neighboring frame or door element.

When a burglar breaks into a house, the entry is often made through a terrace door or window which has been locked by means of an espagnolette lock. Normally the entry is done by removal of the border fillet which bridges the gap between the doors/windows or the corresponding frame, and insertion of a crow bar or the like into said gap, whereafter the door or window is forced open.

One object of the invention is to provide a better protection for these kinds of doors and windows, making entry considerably more difficult.

The invention is characterized in at least two female locking means placed along a line which is parallel to the longitudinal direction of the border, said female locking means being adapted to cooperate with a corresponding number of male locking means, so that a mutual locking engagement can be affected through a mutual displacement in the longitudinal direction of the border, via a displaceable rail. This embodiment of the invention provides for an efficient grip between the bridging border and the neighboring door or frame element, enabling an advantageous distribution of possible breaking force.

Preferably each of the male lock means comprise a dowel pin with a head, and each of the female locking means comprise a key-hole opening. By these simple means, a good cooperation is ensured between the bridging border and the neighboring door or frame element.

Preferably a part of the rail forms a rack, which engages a cog axle and is operable by means of a door handle and latchable in a position where said rail engages the dowel pins. This provides for a simple and enduring operation.

According to still another preferable embodiment of the invention, the rail is displaceably mounted within the border and provided with the female locking means. Alternatively, the rail is displaceably mounted within the border and provided with the male locking means. According to still another embodiment of the invention, the rail is displaceably mounted within the door or frame element neighboring to the border.

Embodiments of the invention will now be described in detail with reference to the accompanying drawings, in which

Fig. 1 is a section through a pair of doors including the mechanism according to the invention,

Fig. 2 is an exploded view showing the details of the mechanism,

Fig. 3 shows a second embodiment of the invention,

Fig. 4 shows a further modification of the invention, and

Fig. 5 shows the invention in a fourth embodiment.

In the figures, the invention is shown applied on a twin door, wherein the locking mechanism either is mounted in the door to be closed first or the partly overlapping door to be closed last. However, the invention may just as well be applied to a single door, a single window or an inwardly or outwardly opening gate, or to a lattice gate of a type that can be pulled up or down vertically and often is used at shops.

The twin doors shown in Fig. 1 comprises a first leaf 10, which may be opened by turning in the anticlockwise direction about an axis, not shown in the drawings, which is perpendicular to the plane of the drawing, and a second partly overlapping leaf 11, which is correspondingly hinged in the reverse direction.

The gap 12 between the two adjacent leaf edges 13, 14 are bridged by a border 15, which is fastened by means of round head bolts 16 being secured on the inside of the leaf, by means of barrel nuts 17. The border 15 is preferably manufactured by extrusion of aluminum with a longitudinal groove 15a for the heads 16a of the bolts, and a further longitudinal groove 15b for a steel rail 18. This rail 18 supports a suitable number of dowel pins 19 of steel, each being provided with a head 19a.

In the closed position shown in Fig. 1, each of the heads 19a is resting in an aperture 20 in the first leaf 10. In this case the heads 19a extends through key-hole shaped openings (21a) (well known in the art) in a locking rail 21. The locking rail 21 is axially displaceable between the first door leaf 10 and an outer retainer 22, which also is manufactured by extrusion of aluminum and mounted at the first leaf by means of through bolts 23 who are fastened in threads in an inside rail 24.

The locking rail 21 is axially maneuverable by means of a shaft 25 which is geared in the end and grips into a rack in the locking rail. The shaft 25 reaches through a lock housing 26 at the inside of the first leaf 10 and is connected to a handle 27.

The handle 27 which provides for the maneuverability of the locking rail 21 is lockable by means of the lock housing 26.

The embodiment shown in Fig. 1 and 2 can easily be adapted high or low windows of single or twin leaf design. Herein the border 15 and the rails 18, 22 and 24 are cut to the same length, whereas the locking rail is made slightly shorter, enabling its axial displacement. The respective distances between the round head bolts 16, the dowel pins 19 and the bolts 23, and their number may easily be varied in relation to the design strength which is deemed to be required.

Fig. 3 shows the invention in a different embodiment wherein the first and second leaf 10, 11 are made from extruded profiles. In this case the locking rail is journaled in a channel 28 in the first leaf profile 10. A latch bolt 30 is displaceable in a second

channel 29, in and out of engagement with an aperture in the locking rail 21. Additionally, the bolts 23 through the first leaf have been eliminated, since the border 15 may be riveted, welded to the second leaf or form an integral part of the same.

Fig. 4 shows a further embodiment of the invention, wherein the dowel pins 19 are provided in the first leaf 10 and the locking rail 21 is axially displaceable within a channel 15c in the border 15. Consequently, the cog axle 25 is journaled in the second leaf 11.

Fig. 5 shows the invention mounted on a twin leaf gate of a type that e.g. is common on containers. In this case, a detachable handle 27 is placed at the outside of the border 15 and the displaceable rail 15 is provided with the male locking means 19. The rail 21 is L-shaped with a leg protruding into the gap 12 between the twin door leaves 10, 11 which can be locked by means of a lock 30 which is operable by a key 31.

The invention is not limited to the above described embodiments, but several modifications are possible within the scope of the accompanying claims. For example, other latch means may be used for latching the pins 19. The border 15 may be provided with teathed slots 15a, 15b, enabling adjustable mounting of the bolts 16 and the rail 18. The cooperating male and female locking means can either be placed on the displaceable rail or fixed on the neighboring frame or door element. The rail 21 may either be placed within the border 15 or at the neighboring frame or door element.

Claims

1. A locking mechanism for hinged or sliding doors, windows or gates, formed by a single or twin door leaf (10, 11) to close a frame opening, and wherein the door leaf (11), at the edge (14) remote from the hinged edge, is provided with a metallic border (15) bridging the gap (12) between said edge (14) and neighboring frame or door element, **characterized** in at least two female locking means (21a) placed along a line which is parallel to the longitudinal direction of the border (15), said female locking means being adapted to cooperate with a corresponding number of male locking means (19), so that a mutual locking engagement can be affected through a mutual displacement in the longitudinal direction of the border (15), via a displaceable rail (21).

2. A locking mechanism according to claim 1, **characterized** in, that each of the male locking means comprise a dowel pin (19) with a head (19a), and that each of the female locking means (21a) comprise a key-hole shaped opening.

3. A locking mechanism according to claim 1 or 2, **characterized** in, that a part of the rail (21) forms a rack, which engages a cog axle (25) and is operable by means of a door handle (27).

4. A locking mechanism according to any of claims 1 to 3, **characterized** in, that the rail (21) can be latched in the position of engagement between male and female locking means, by means of a lock (30).

5. A locking mechanism according to any of the previous claims, **characterized** in, that the rail (21) is displaceably mounted within the border (15) and provided with the female locking means (21a).

6. A locking mechanism according to any of claims 1 to 4, **characterized** in, that the rail (21) is displaceably mounted within the border (15) and provided with the male locking means (19).

7. A locking mechanism according to any of claims 1 to 4, **characterized** in, that the rail (21) is displaceably mounted within the door or frame element (10) neighboring to the border (15).

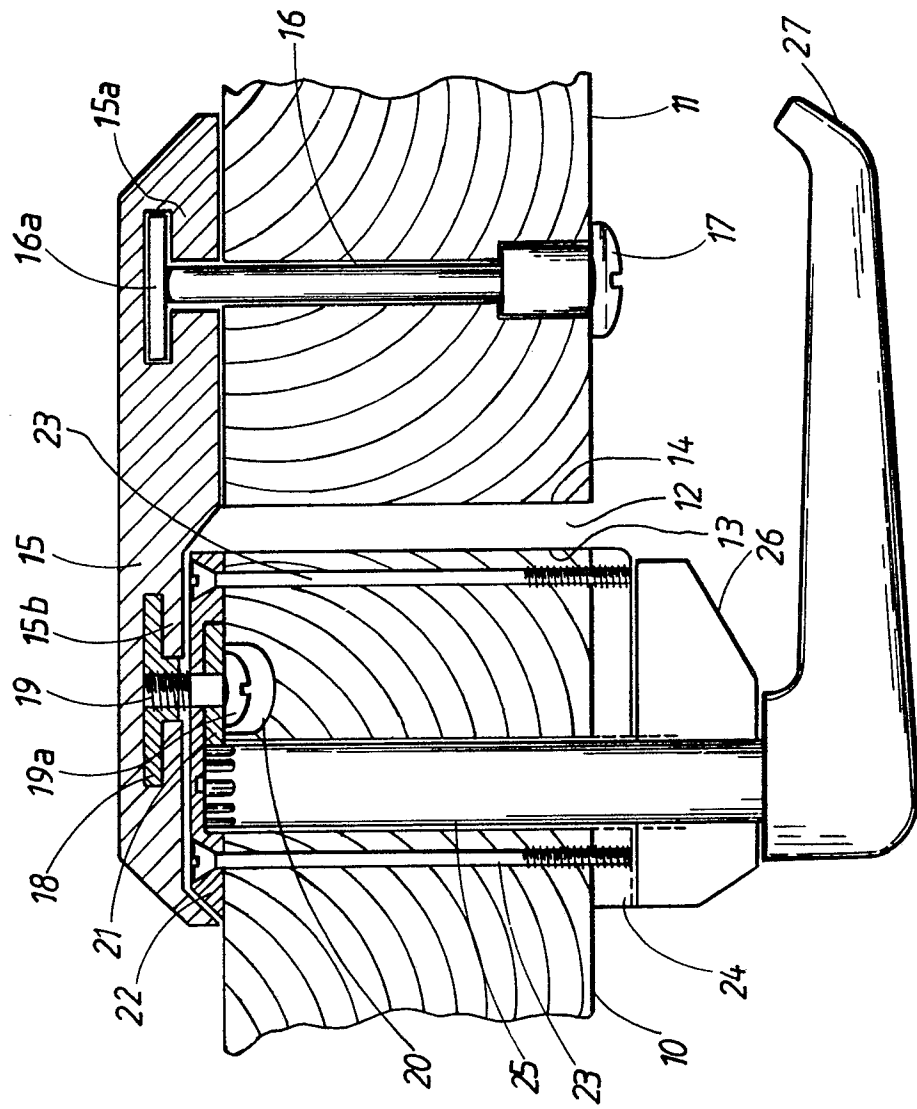


FIG. 1

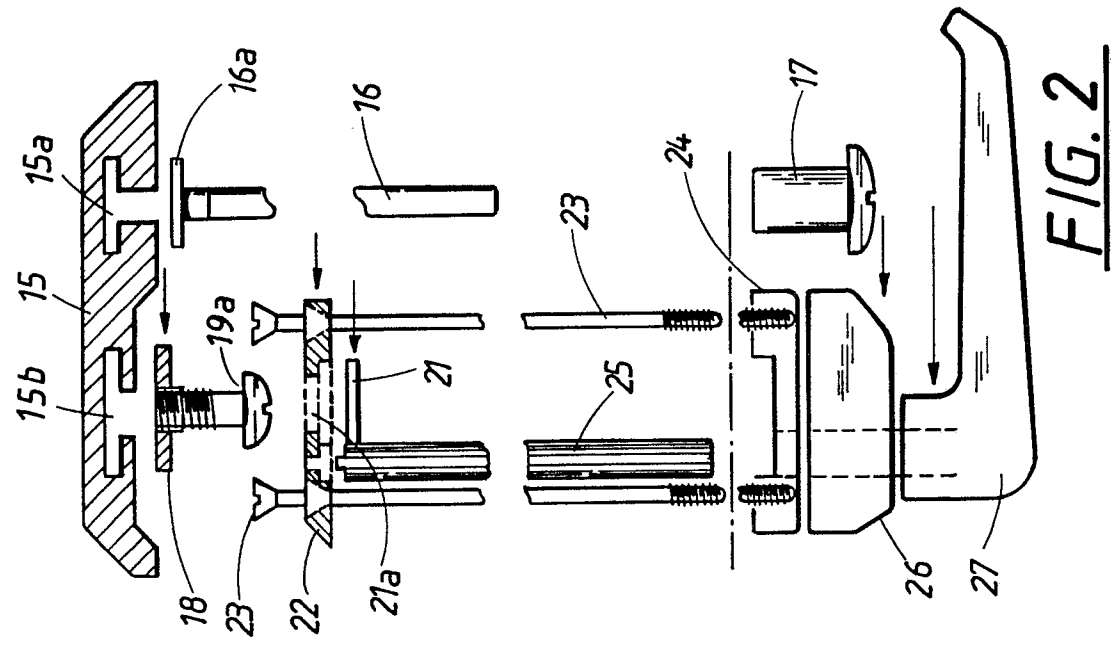


FIG. 2

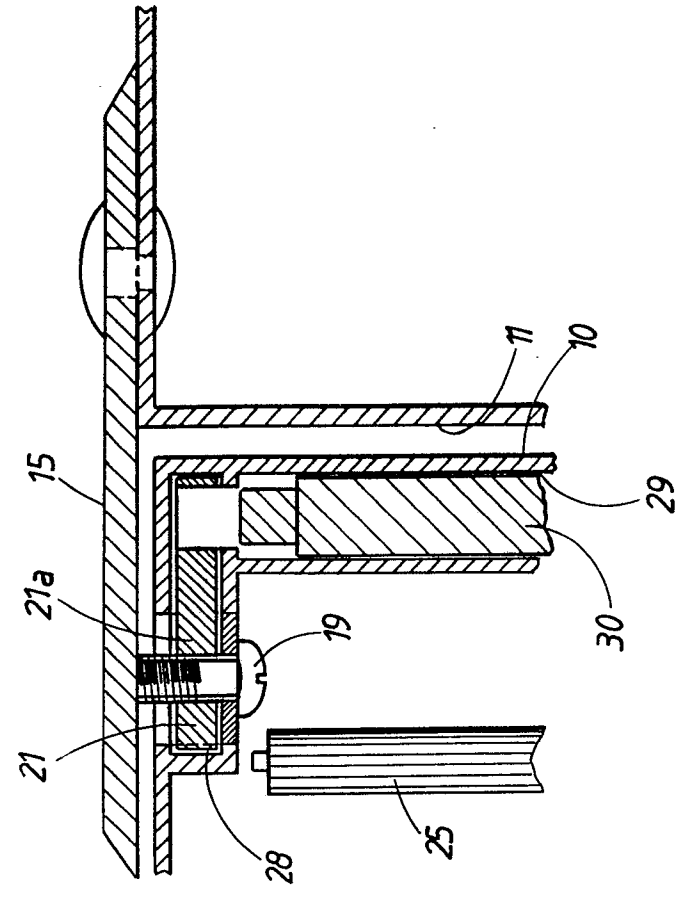


FIG. 3

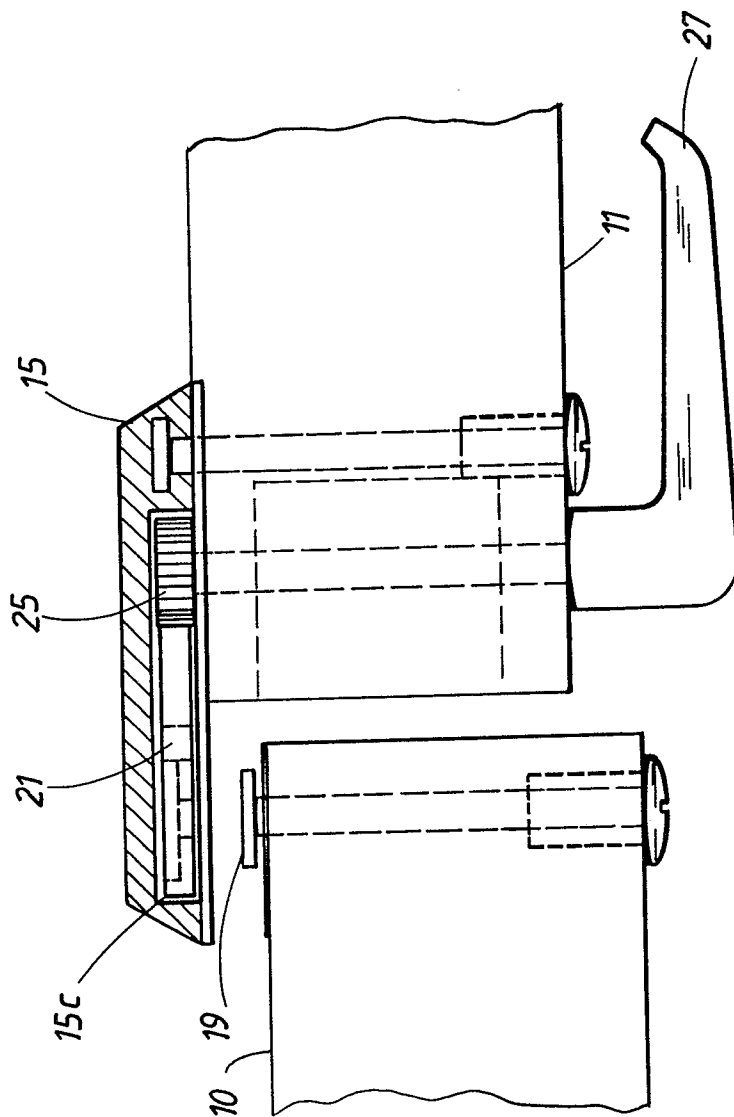
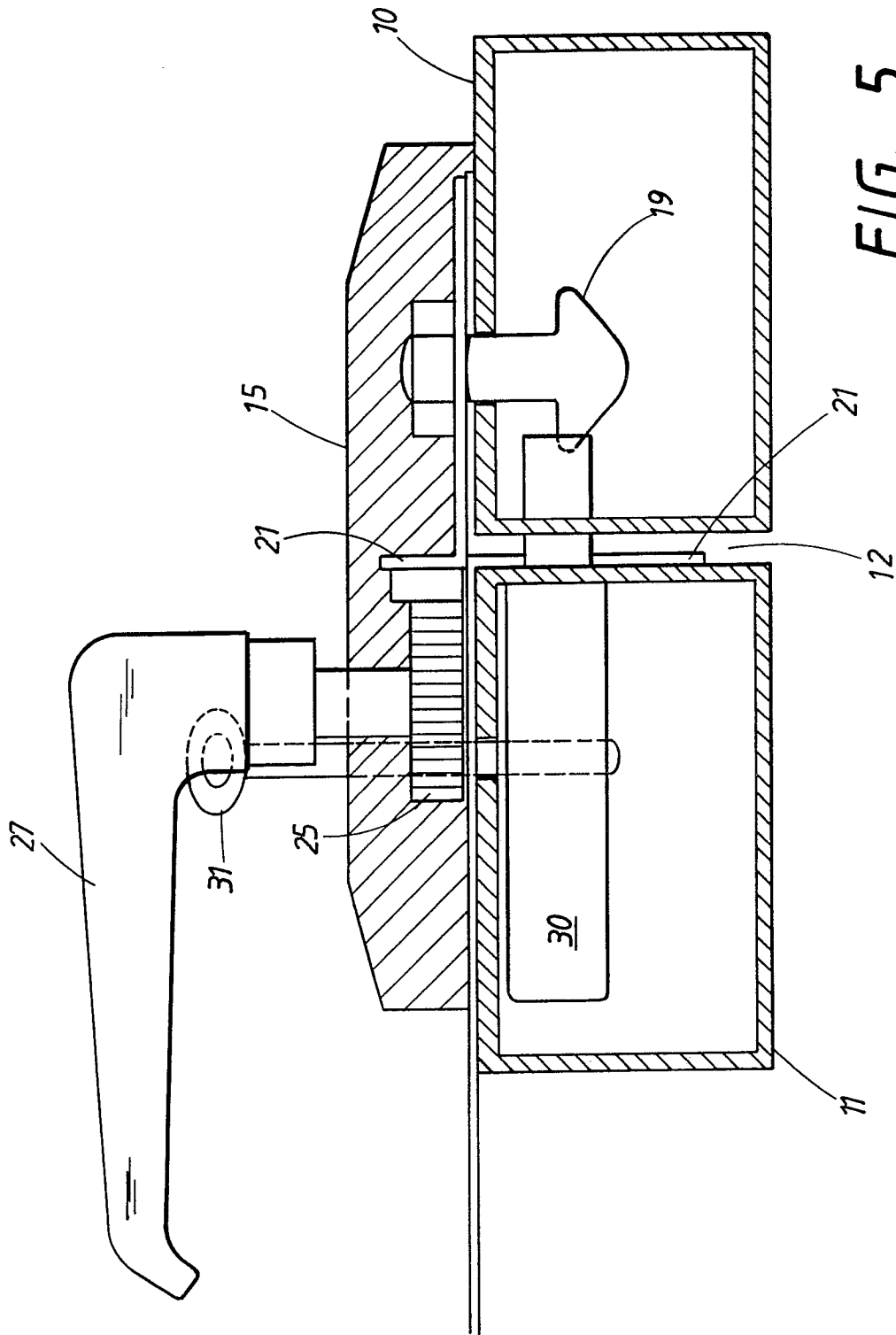


FIG 4





DOCUMENTS CONSIDERED TO BE RELEVANT			EP 88850199.6
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
A	GB - A - 2 150 972 (DEREK KING) * Fig. 1-12; claims 1-12 * --	1-7	E 05 B 1/00
A	DE - A - 1 926 397 (FA.W. WEIDT-MANN) * Fig. 1-5; page 2 * --	1-6	
A	DE - B - 1 266 173 (JÄGER-FRANK KG) * Fig. 1-6; claims 1-6 * --	1	
A	GB - A - 2 130 628 (SCHOLLES ERNEST MALCOLM) * Fig.; claims 1-6 * --	1	
A	DE - B2 - 1 559 721 (W.FRANK GMBH) * Fig. 1-2; claim * ----	1, 4-7	TECHNICAL FIELDS SEARCHED (Int. Cl.4) E 05 B E 05 C
The present search report has been drawn up for all claims			
Place of search VIENNA		Date of completion of the search 25-11-1988	Examiner CZASTKA
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			