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(54) Title: WINDOW HANDLE WITH LOCKING MECHANISM

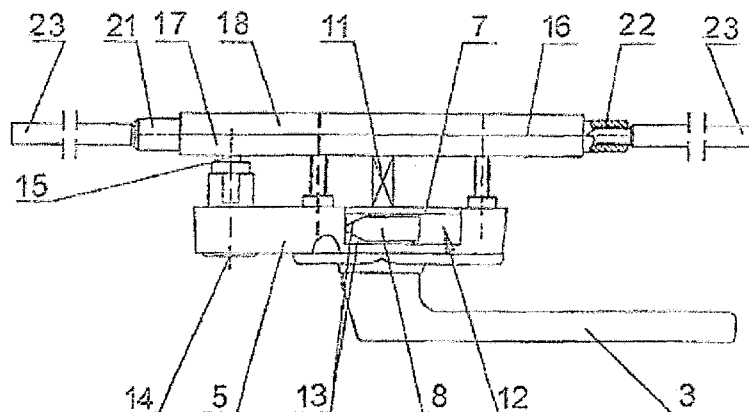


Fig. 2

(57) **Abstract:** The invention resolves the problem of obtaining a structure which would allow the achievement of a permanent, effective and versatile structure of the locking of skylights, as well as extra wide windows with triple-point support, which preferably improves burglar proof safety, ergonomic characteristics and functional parameters. The invention discloses a window handle with a locking mechanism. The handle (3) is provided with a stem (4) which is rotatably mounted in a bearing-supported disc (5) provided with an alignment plate (6) and a thrust/slide insert (7), between which a rotating bolt (8) is located, and additionally a lock (14) with a blocking member (15) is mounted in the disc (5), which together with the stem (11) of handle (3) constitutes a system of coupling with the lateral bolts (23) of an inset locking mechanism provided with a latch (16) comprising a lower body (17) and upper body (18), a gear wheel (19) with drive bars (20) permanently connected to sliders (21) provided with threaded openings (21) for the installation of lateral bolts (23). The disc (5) has a profiled recess (12) in its external side wall, and the rotating bolt (8) is provided with two grooves (9) spaced apart at an angle of 90° along its perimeter.

EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,
MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM,
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Window handle with locking mechanism

The present invention relates to a window handle with locking mechanism suitable especially for roof windows as well as for extra wide windows.

We are currently witnessing rapid changes in architectural styles in the building industry and many new windows are introduced in new standards, for example windows bigger in width than in height. Therefore, in the case of wider windows, in order to ensure their stability, tightness as well as to prevent them being accessed by unauthorized persons, additional fittings are introduced for two or more handles.

A lock for tilted windows which includes a body with two grip elements pivotally mounted therein is known from the description of invention PL 226858. The first grip element abuts the surface of the arms of two bolts seated in the body, while the second grip element covers the bolt of the safety mechanism that passes through an opening in the body plate and through the spacing sleeve. The free end of the bolt of the safety mechanism located on the side of the distancing sleeve is connected with a bolting latch. The surfaces of bolt arms facing the places of abutment of sections of the surface of the first grip element are supported on first springs which are seated in the body. Both grip elements are connected via a rod which is led through openings, and the sections of internal surfaces situated at the ends of the grip elements are adjacent to the ends of second springs, wherein a rod passes through the openings of the second springs, and wherein the opposite ends of second springs are seated in the keys in the body.

The description of the disclosed invention P.378883 reveals a bolt for doors and windows which includes a body in the shape of an elongated, narrow cuboid, the lower base of which has a rectangular recess and an elongated

opening to accommodate the stem. The upper base has a recess which forms a chamber in the shape of a channel, to incorporate the springs and the grip element. The end of the stem is connected to the side walls of the body via an axle. The lower base of the body has grooves running along both longer side walls, wherein the walls of these grooves are adapted to the side walls of door profiles. The relation between the width of the upper base and the width of the longer side wall above the ridge is not higher than 5 and not lower than 1.5, while the lower surface of the chamber is situated below the upper surface of the door ridge.

The surface of the upper base is flat when the grip element is closed. Two mounting holes are located at the end of the body, on both sides of the stem.

The description of invention PL 198221 discloses a locking window fitting situated between the panel and the stationary window or door frame. The panel and the stationary frame are joined together via locking elements in the form of locking ridges and a closing element, wherein the locking ridge or closing element may cooperate with each other via their relative movement, and the locking ridge hooks onto the locking element. In order to prevent their direct contact and any superficial damage that may occur as a result, on the locking ridge or on the closing element the crosswise active surfaces of the closing element and the locking ridge that are perpendicular to the direction of the relative movement are, at least on some sections, spaced away from each other by a special contact edge.

The description of invention PL 220641 discloses a locking mechanism, wherein a component of the mechanism which holds the locking stud in a releasing or locking position is entirely enclosed within the body of the handle. The component of the mechanism which holds the locking stud in a releasing position comprises a flat, rotating disc with a recess, that is mounted inside the body and is rigidly connected with the stud which constitutes a part of the grip element.

The description of invention PL 214410 discloses a handle, especially a window handle, which comprises a grip element and a body with covered

openings for fixing bolts. The body comprises openings for the stud of the grip element and fixing bolts, and two masking covers which cover the entire external surface of the body, or only the part which includes the openings for fixing bolts, wherein the masking covers slide onto the body from two opposite sides.

The description of invention PL 228468 discloses a window with lateral locking comprising a multifunctional socket system, which enables the locking of the window in a fully closed position, or the trickle ventilation of an attic by way of its cooperation with the ends of the window's casement bolts and allows the locking of the window in a position for the cleaning of the external pane by way of the cooperation of the system with a latch, wherein the system also enables the centering of the window panel within the window frame and the installation of the covers of lateral stiles of the frame.

The description of invention PL 224420 discloses a fixing mechanism with a burglar proof safety system, which is used for the fixing of thin elements in windows or skylights, for example, equipped with a rotating bolt with a single- or double-sided protrusion locked within a recess with an elongated opening, which has a turning knob operated from outside using a key mounted inside a key socket in a direction parallel to the axis of rotation of the rotating bolt, wherein the key-key socket set has at least two coupling units in the form of opening-stem pairings. One opening-stem pairing consisting of a blind hole in the key and a stem in the key socket, is located coaxially in relation to the shaft of the rotating bolt and the second opening-stem pairing which comprises a blind hole in the key socket and a stem in the key is offset from the axis of the rotating bolt. Additionally the fixing mechanism with the burglar-proof safety system has a screw mechanism for the changing of the length of the rotating bolt, which comprises a threaded nut mounted fixedly in the turning knob and a threaded shaft with a length that is at least equal to the range of regulation of the length of the rotating bolt plus the height of the nut, wherein the threaded shaft constitutes a part of the rotating bolt.

The aim of the invention is to achieve a permanent, effective and versatile structure of the locking of skylights, as well as extra wide windows with triple-

point support, which preferably improves burglar proof safety, ergonomic characteristics and functional parameters.

The main feature of the window handle with the locking mechanism is that the stem of the handle is mounted rotatably in the bearing-supported disc equipped with an alignment plate and a thrust/slide insert, between which a rotating bolt is located, and additionally a lock with a locking member is mounted in the disc, which together with the handle's stem constitutes a system of coupling with the lateral bolts of the inset locking mechanism equipped with a latch comprising a lower body and upper body, a gear wheel with drive bars permanently connected to sliders provided with threaded openings for the installation of lateral bolts. The disc has a profiled recess in its external side wall.

The rotating bolt has two grooves spaced apart at an angle of 90° on its perimeter. The bolt's approach surface has double sided chamfers. The lower body has a mounting seat for the gear wheel with an opening for the stem, and an opening for the mounting of the lock blocking member. The lower body has two sets of mounting openings. The upper body has an opening for the mounting of the rounded end of the stem.

The solution according to the invention is advantageous due to the simplicity of its structure, which allows the achievement of a permanent, effective and versatile structure of the locking of skylights, as well as extra wide windows with triple-point support, which preferably improves burglar proof safety, ergonomic characteristics and functional parameters. It is also advantageous because of its effective protection against being opened both from the outside as well as from the inside, for example by small children. The present solution is versatile, because the bolting system can be mounted in windows with bottom-sided locking, as well as in windows with top-sided locking. The bolting system is suitable for use in all types of skylights, such as rotatable skylights with bottom-sided and top-sided locking, or tilted skylights which open upwards or sideways.

The solution according to the invention has been explained in more detail using drawings, in which Fig. 1 presents a longitudinal section of the window handle with locking mechanism mounted in a window frame, Fig. 2 presents a

general view of the window handle with locking mechanism, Fig. 3 presents a longitudinal section of the window handle with locking mechanism, Fig. 4 presents a view of the window handle with locking mechanism from the disc side, and Fig. 5 presents a general view of the locking mechanism, while Fig. 6 presents a general view of the upper body.

The window handle with locking mechanism according to the invention has a superficial locking mechanism and an inset locking mechanism for the blocking of window panel 1 in a closed position in relation to frame 2.

The superficial locking mechanism has a handle 3 rotatably mounted via the handle stem 4 in the bearing-mounted disc 5 which is equipped with an alignment plate 6 and a thrust/slide insert 7, between which the rotating bolt 8 is situated and is permanently mounted on the handle stem 4, wherein the rotating bolt has two grooves 9 spaced apart at an angle of 90° along its perimeter, wherein the grooves are parallel to the axis of rotation of the handle stem 4. Grooves 9, together with the spring element 10 of the alignment plate 6, define the extreme positions of the rotating bolt 8. Handle stem 4 comprises stem 11 of handle 3, which is mounted therein. The external wall of disc 5 has a recess 12 on the side of the window frame, which enables the movement of rotating bolt 8 by 90°, wherein the approach surface of this bolt has double-sided chamfers 13, which facilitate the locking and simultaneously enable the window panel 1 to press against the window frame 2. Disc 5 comprises lock 14 with a blocking member 15, which is mounted therein.

The inset locking mechanism consists of latch 16 comprising a lower body 17 and upper body 18, a gear wheel 19 with drive bars 20 permanently connected to sliders 21 provided with threaded openings 22 for the installation of lateral bolts 23.

Lower body 17 has two sets of threaded fixing holes 24 for the mounting of latch 16 in panel 1 and for its connection with disc 5, as well as a mounting seat 25 for gear wheel 19 with an opening 26 for stem 11, and an opening 27 for the mounting of the blocking member 15 of lock 14, while the upper body 18 is provided with an opening 28 for the mounting of the rounded end 29 of stem 11.

The superficial locking mechanism and the inset locking mechanism are coupled together via stem 11 mounted within handle 3, and via blocking member 15 of lock 14 used for the simultaneous blocking of both locking mechanisms.

Claims

1. Window handle with a locking mechanism provided with a stem body, handle with a rotating bolt and lock and a masking disc, characterised in that the stem (4) of handle (3) is rotatably mounted in the bearing-supported disc (5) provided with an alignment plate (6) and a thrust/slide insert (7), between which a rotating bolt (8) is located, and additionally a lock (14) with a blocking member (15) is mounted in the disc (5), which together with the stem (11) of handle (3) constitutes a system of coupling with the lateral bolts (23) of the inset locking mechanism provided with a latch (16) comprising a lower body (17) and upper body (18), a gear wheel (19) with drive bars (20) permanently connected to sliders (21) provided with threaded openings (21) for the installation of lateral bolts (23).
2. Handle according to claim 1, characterised in that disc Q has a profiled recess (12) in its external side wall.
3. Handle according to claim 1, characterised in that the rotating bolt (8) is provided with two grooves (9) spaced apart at an angle of 90° along its perimeter.
4. Handle according to claim 1, characterised in that the approach surface of bolt (8) has double-sided chamfers (13).
5. Handle according to claim 1, characterised in that the lower body (17) is provided with a mounting seat (25) for gear wheel (26) with an opening (27) for stem (11), and an opening (28) for the mounting of the blocking member (15) of lock (14),
6. Handle according to claim 1, characterised in that the lower body (17) has two sets of fixing holes (24),
7. Handle according to claim 1, characterised in that the upper body (18) is provided with an opening (28) for the mounting of the rounded end (29) of stem (11).

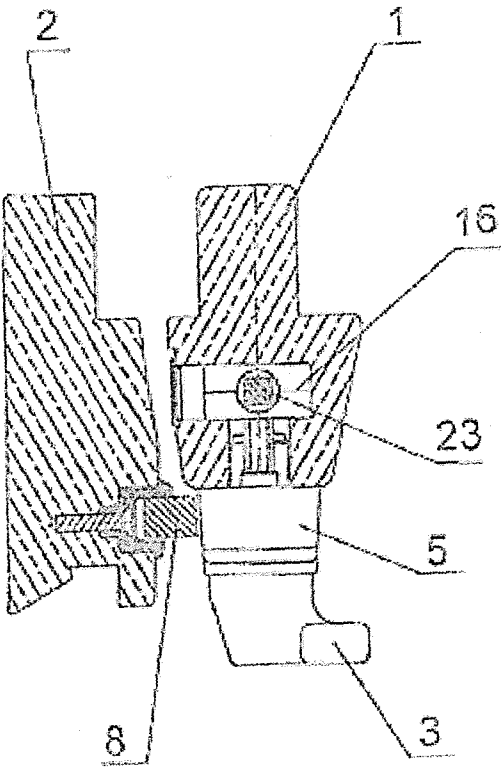


Fig. 1

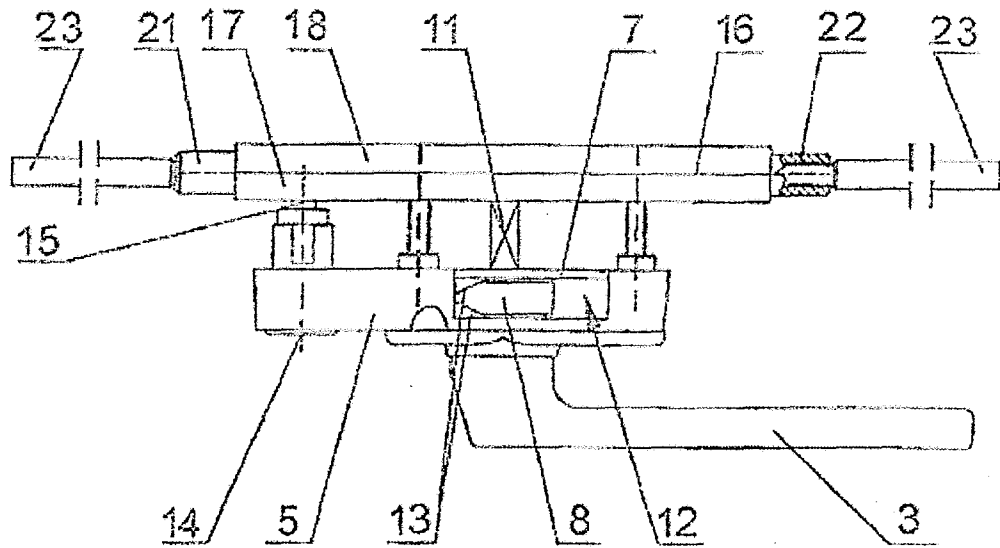


Fig. 2

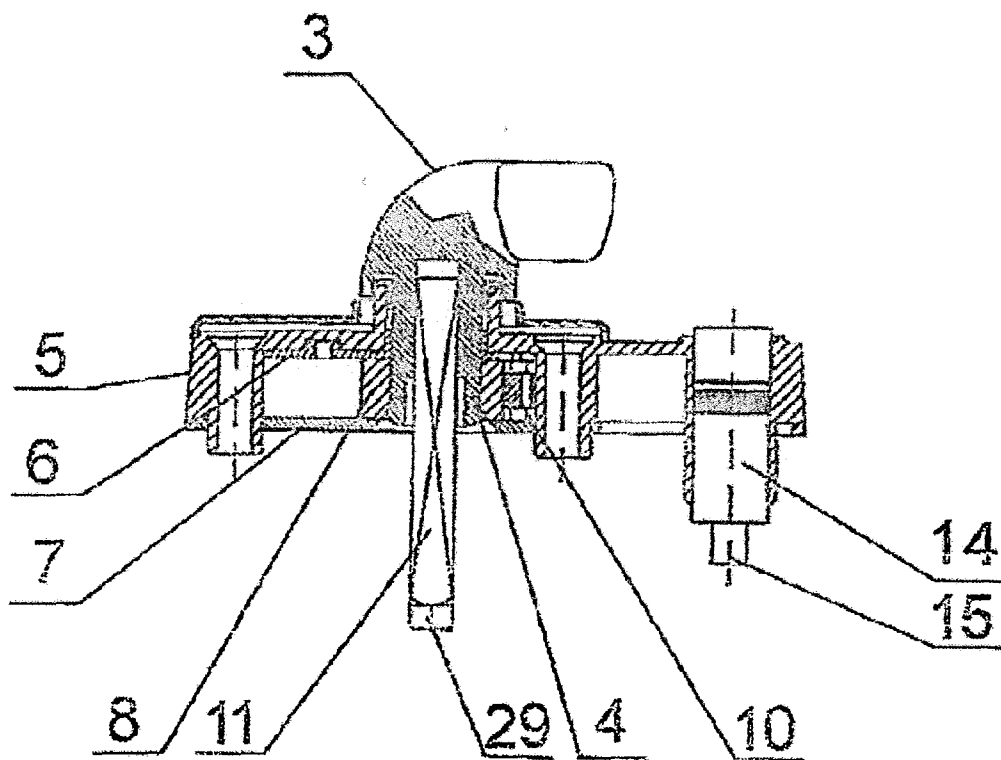


Fig. 3

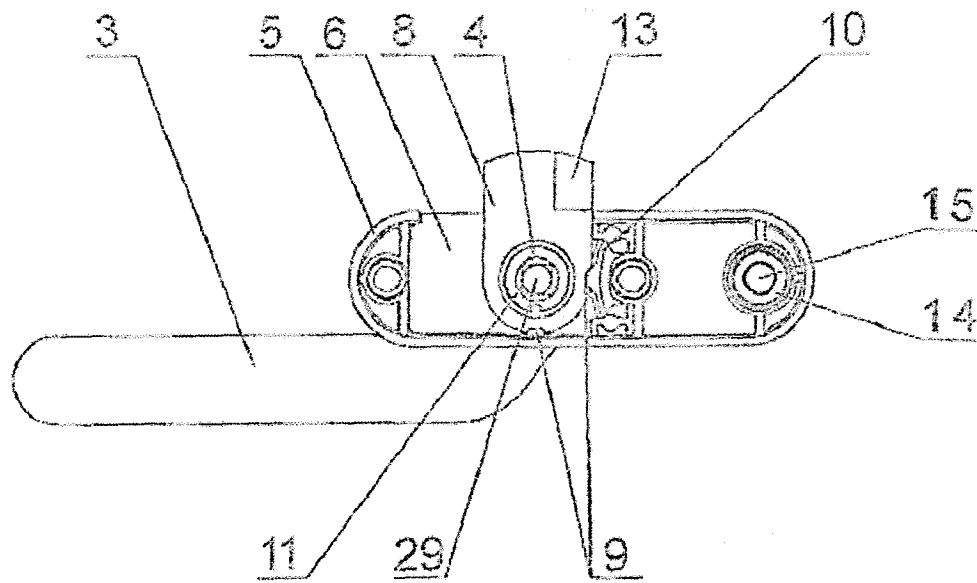


Fig. 4

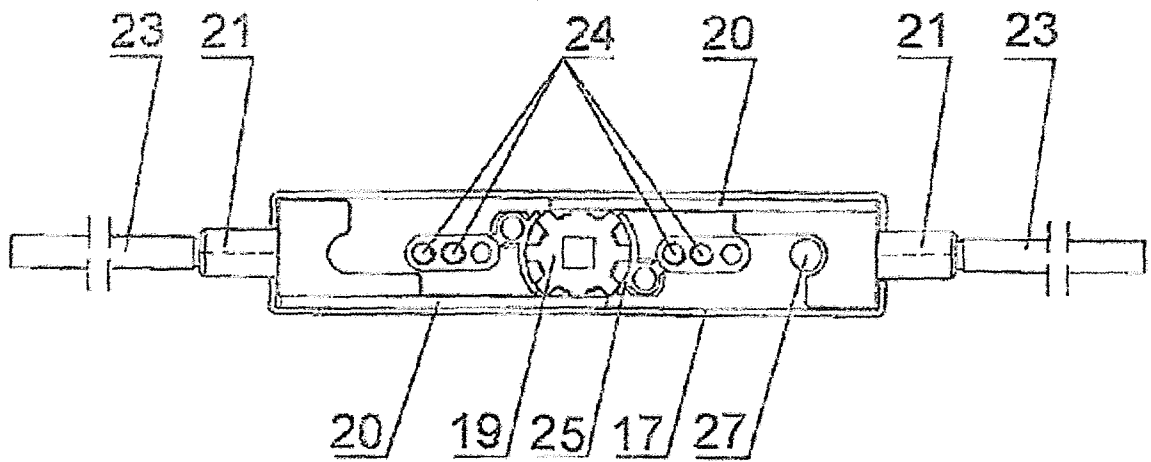


Fig. 5

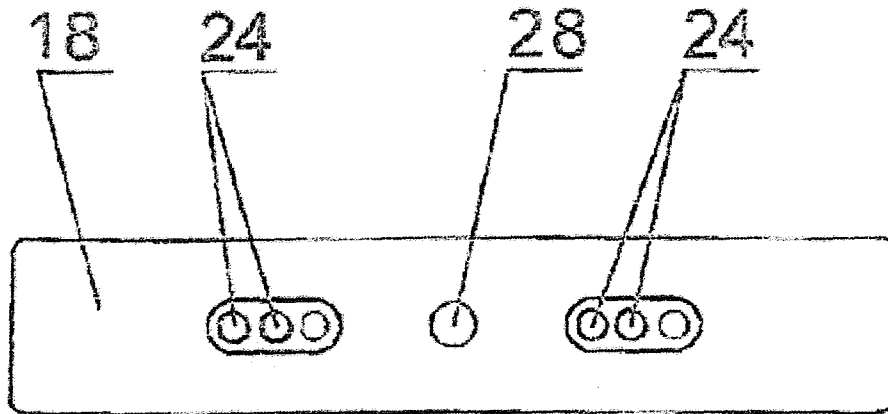


Fig. 6

INTERNATIONAL SEARCH REPORT

International application No
PCT/PL2020/000032

A. CLASSIFICATION OF SUBJECT MATTER

INV. E05C9/04 E05C3/04 E05B17/20 E05B13/00
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

E05C E05B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB 2 499 802 A (MIGHTON PRODUCTS LTD [GB]) 4 September 2013 (2013-09-04) page 11, line 15 - page 16, line 18; figures 1-14 -----	1,2,4-7
A	US 2 166 535 A (EINAR SARENHOLM ET AL) 18 July 1939 (1939-07-18) page 3, column 1, line 7 - page 4, column 1, line 72; figures 1-18 -----	1,2,5-7
A	FR 2 570 744 A1 (CROISEES & PROFILS SA [FR]) 28 March 1986 (1986-03-28) page 7, line 31 - page 8, line 28; figures 4a,4b -----	1,5
A	GB 2 386 393 A (SURELOCK MCGILL LTD [GB]) 17 September 2003 (2003-09-17) page 17, line 14 - line 33; figures 1,8 ----- -/-	1,4



Further documents are listed in the continuation of Box C.



See patent family annex.

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Date of the actual completion of the international search

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01/07/2020

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INTERNATIONAL SEARCH REPORT

International application No
PCT/PL2020/000032

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB 02783 A A.D. 1909 (BUNN CHARLES WILLIAM) 6 January 1910 (1910-01-06) page 3, line 17 - line 26; figures 1-6 -----	1,3

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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