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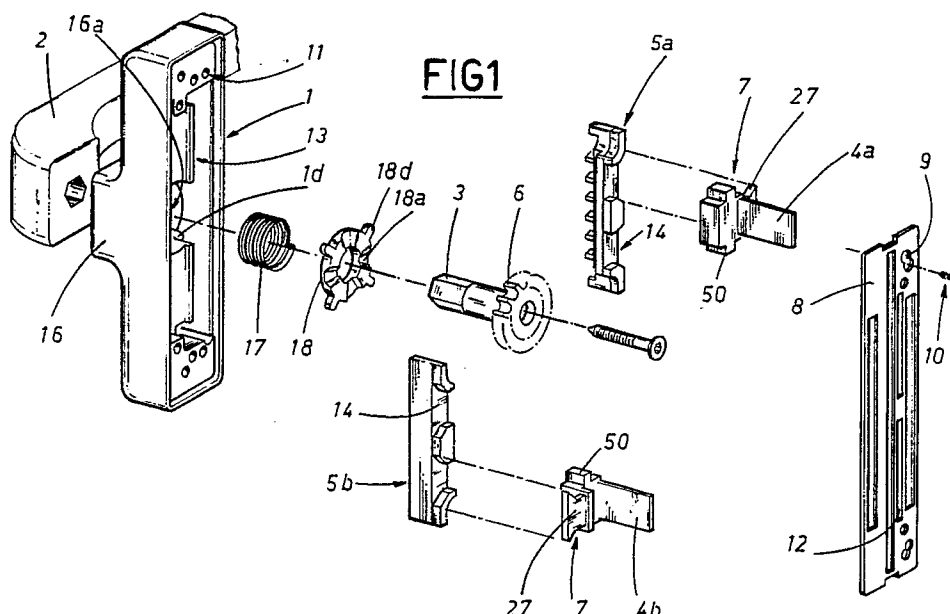
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**A universal espagnolette handle for door and window fixtures.**

The handle features a flange or casing (1) in which the screw holes (11) enabling attachment to the sash of a door/window fixture are arranged in pairs of dissimilar distance between centres either side of a transverse axis (x) and ordered asymmetrically in relation to the longitudinal median axis (y) of the handle according to their spacing and

diameter; the casing (1) also affords a pair of slots (13) disposed mutually parallel on either side of the usual centre pinion (6), serving to accommodate sliding racks (5a, 5b) of which the reverse sides offer pairs of flat seatings (14) shaped to receive a matching lug (7) integral with each of the two pins (4a, 4b) that operate the espagnolette catch rods.



The invention relates to an espagnolette handle of universal design for door and window fixtures, of the type comprising an escutcheon flange or casing (usually of quadrangular shape), from which a hand grip projects on the one side, and a mechanism for the operation of the sash fastener on the other.

Conventionally, espagnolette handles of the type in question are designed for use in conjunction with either a right-hand opening or a left-hand opening sash; clearly, handles designed for the one type of sash cannot be adapted for use with the other.

Such a situation brings distinct economical and practical disadvantages, inasmuch as two different designs of handle must be manufactured to meet the commercial demand for one or other type.

A newer espagnolette handle invented and patented by the same applicant (see IT 1146524) is rendered suitable for use with right- and left-hand opening sashes alike, simply by an appropriate positioning of its internal parts (in particular, the mechanism engaging with the sash fastener) prior to ultimate fitment of the handle to the sash. Nonetheless, it is often difficult to adapt such a handle for use with sashes of which the fastening arrangement and functional purpose may differ from those envisaged when designing the handle.

With this problem in mind, and given the widespread use of these handles in conjunction with different types of door/window fixture and for significantly diverse requirements, the applicant now proposes an espagnolette handle comprising the same essential parts (casing, handgrip and internal mechanism) but with enhanced technical features that will allow of its adaptation to the different fixtures currently in demand, for example with lock-and-key handles, horizontally hung sashes etc., and again, suitable both for right-hand and for left-hand operation.

Accordingly, the object of the present invention is to overcome the aforementioned drawbacks by setting forth an espagnolette handle capable of responding comprehensively to the demands of the market, in which the basic elements of the conventional handle are retained unaltered and simply supplemented prior to fitment, according to contingencies, with accessory parts specific to the single application; neither, according to the invention, does the use of such accessories require any modification to the basic elements of the handle.

The stated object is realized in an espagnolette handle as characterized in the appended claims, wherein the escutcheon flange or casing offered to a relative fixture affords securing holes arranged in pairs on opposite sides of a transverse axis, which exhibit dissimilar distances between centres and are distributed asymmetrically relative to the lon-

gitudinal median axis of the casing, according to the distance between centres and the diameter of the single holes; the casing also affords a pair of parallel guide slots by which the two racks of the espagnolette rod operating mechanism are simply and slidably accommodated, one on either side of the single central pinion, whilst the face of each rack opposite from the tooth face affords a pair of flat seatings in which the supporting lug of a relative flat connecting pin is stably insertable.

Advantageously, according to the present invention, with securing holes ordered in pairs of dissimilar centre spacing and distributed asymmetrically in relation to the longitudinal median axis of the casing, it becomes possible to use the same flange or casing for diverse applications, inasmuch as the hole layout permits of adapting the diameters of the fixing centres swiftly to suit the particular sash, without any need for modification to the general structure of the handle.

The invention will now be described in detail, by way of example, with the aid of the accompanying drawings, in which:

- fig 1 is an exploded view of the espagnolette handle according to the present invention, seen in perspective with certain parts omitted;
- figs 1a and 1b illustrate a detail of the handle of fig 1, seen in elevation and in plan from above, respectively;
- fig 2 illustrates a grip, in plan from above with certain parts omitted, incorporating a key-operated locking mechanism that might be used in conjunction with the handle of fig 1;
- fig 3 is the side elevation of a grip as in fig 2, in which certain parts are omitted;
- fig 4 illustrates an internal detail of the grip of figs 2 and 3, in plan from above;
- fig 5 illustrates an alternative embodiment of the handle of fig 1, seen in elevation and with certain parts omitted;
- fig 6 is an elevation of the handle of fig 1, seen from the rear and with certain parts omitted;
- figs 7a, 7b and 7c are the elevation, plan and longitudinal section, respectively, of a pinion and spindle assembly as fitted to the handle of fig 1.

With reference to the drawings, the espagnolette handle according to the invention is universal in design, suitable for use with a variety of door and window fixtures. Such a handle basically comprises an escutcheon flange or casing 1 (figs 1 and 6), a hand grip 2 projecting on one side from a boss 16 integral with the casing, a spindle 3 accommodated internally of the casing 1 and rotatable by means of the grip between a first position and a second position, and two pins 4a and 4b

issuing from the side of the casing opposite to the grip, of which the projecting ends engage with an espagnolette fastener incorporated into the door or window sash (incidental to the description and therefore not illustrated).

Also accommodated internally of the casing 1 is a pair of racks 5a and 5b, disposed parallel with one another, of which the teeth are engaged in meshing contact by those of a pinion 6 rotated as one with the spindle 3; these same racks 5a and 5b serve to support the pins 4a and 4b, by way of elements 7 to be described in detail in due course, and traverse them between a first position and a second position corresponding to the first and the second position of the grip 2 mentioned previously, in which the sash is fastened and released, respectively.

8 denotes a snap-fitting cover plate located over the rear of the casing 1, affording a set of first holes 9 at each end through which threaded means 10 (consisting in screws, in the example illustrated) are inserted to the end of securing the casing 1 to the sash; these same means 10 also screw into the casing itself, and more exactly into pairs of screw holes 11 aligned coaxially with the first holes 9.

As discernible from fig 1, the cover plate 8 also affords a pair of first guide slots 12 from which the respective pins 4a and 5a are able to project.

In an espagnolette handle according to the present invention, the pairs of securing screw holes 11 are positioned at varying distances between centres on either side of a transverse median axis 'x' of the casing 1 (see fig 6); the same pairs of holes 11 are also distributed asymmetrically in relation to the longitudinal median axis 'y' of the casing 1, according to their centre distances and diameters.

The casing 1 also affords a pair of second guide slots 13, disposed parallel with one another on either side of the pinion 6, by which the racks 5a and 5b are slidably accommodated and kept mutually parallel when moving between the first and second positions.

14 denotes one of a pair of flat seatings afforded by each rack 5a and 5b on the face not occupied by teeth, in which the matching support element 7 of a corresponding pin 4a and 4b is stably accommodated, each pin being embodied integrally with its support element. More exactly, each rack 5a and 5b exhibits two flat seatings 14, top and bottom, of which the shape is dovetailed in such a way as to accept the matching, freely insertable dovetail profile of a lug 27 issuing at right angles from the respective pin 4a or 4b; this lug, accordingly, constitutes the support element 7.

As illustrated in figs 1a and 1b, the lug 27 is rigidly associated with the pin 4a or 4b by way of a

prismatic element 50 designed to occupy a central channel C afforded by the casing 1 once the handle is assembled; it will be observed that the pins 4a and 4b are embodied in such a way as to suit both left-hand and right-hand opening sashes.

The boss 16 of the casing 1 (which is quadrangular in the example illustrated) affords a socket 16a (see fig 1) stably accommodating spring means 17 coaxially ensheathing the spindle 3, the purpose of which is to urge a centreless disk 18 into contact with the pinion 6; the disk 18 affords a number of indented radial surfaces 18a (appearing as distinct recesses in the example of fig 1) that are matched to corresponding teeth 6d offered by the breasted surface of the pinion 6 (see fig 7) in such a way that the grip 2 is detented in the first and second positions aforementioned. The disk 18 also affords a plurality of small lugs 18d around its outermost circumference, which engage in matching notches 1d afforded by the casing 1 and thus inhibit rotation of the disk when the handle is operated.

In an espagnolette handle thus embodied, the option exists of modifying certain of the parts without modifying the basic structure. For example, figs 2 and 3 illustrate key-operated and interchangeable interference means 15 incorporated into the grip 2, which in the case in point is shaped in such a way as to overlap the boss 16 in part; such means 15 are designed to interact with the casing 1 at the area of the boss 16, which will afford a plurality of non-cylindrical external surface areas (at least two, allowing reversibility of the grip) centred on the axis of rotation of the grip 2, in such a way that the grip can be locked stably in relation to the casing 1 in at least the first position or the second position (in the example illustrated, the quadrangular shape of the boss 16 enables a locking action on all sides).

More exactly, key-operated means 15 consist in a barrel 19 horizontally and slidably insertable into a through bore afforded by the grip, offset from the axis of the spindle 3 (the bore naturally will be proportioned to accept any standard production locking barrel on general sale, clamped in place with a grub screw). Accessible thus and manipulated from externally of the grip, the inserted barrel 19 locates against and impinges on a slide 20 capable of shifting horizontally along a pair of tracks 21a and 21b forming part of a bifurcated element (see fig 4), fastened internally to that part of the grip 2 which overlaps the boss 16; the barrel 19 is thus designed to produce movement in the direction of the arrow denoted F in fig 3, between a position of release in which the slide 20 is retracted and accommodated entirely within the grip 2, and a locking position in which the slide 20 is extended (phantom line, figs 2 and 3) and projects from the

bore, located between the grip 2 and the external surface of the boss 16 in such a way as to occasion mutual interference of the two components and thus disallow rotation of the grip 2 between the first and second positions.

The slide 20 is retained in the extended locking position by a rotatable central cam 22 forming part of the barrel 19, of which the laterally projecting profile 23 is designed to engage an inward facing appendage 24 associated with each of the tracks 21a and 21b at the end located innermost in the grip.

The slide 20 is returned to the release position, following disengagement of the cam profile 23 and the appendage 24, naturally enough, by a spring 25 located between the slide 20 itself and the end of the tracks 21a and 21b nearest the casing 1.

Fig 5 illustrates a further variation on the handle in which the part of the casing 1 incorporating the boss 16 is furnished with an element in the form of a cap 28, applied to the exposed face of the boss itself and affording a through hole to accommodate the spindle 3, the spindle in this instance being fastened coaxially to a nut 29 by means of a pin 30 passing transversely through the cap 28; thus, the nut 29 and the spindle 3 are coupled permanently together in such a manner as to permit of inserting and removing the grip 2 for the purpose of opening or closing the sash. In this way, the grip 2 of the handle can be separated normally from the casing 1, and associated with the espagnolette mechanism by insertion into the cap 28 when effectively required to operate; as long as the handle remains inactive, the cap 28 is protected by a side-hinged cover 28a that can be rotated by hand whenever necessary to expose the nut and enable insertion of the grip.

A first step in the assembly of the handle and its subsequent fitment to the sash, is to locate the racks 5a and 5b in the second slots 13 afforded by the casing 1, making certain of a satisfactory mesh with the pinion 6, the pinion itself being already fastened to the grip together with the spindle 3, by means of a screw; next, the lugs 27 are inserted into the flat seatings 14 in such a way that the corresponding pins and racks 4a-5a and 5a-5b become rigidly associated and the prismatic elements 50 are accommodated by the centre channel C. The racks and the pins will of course be positioned according to the type of sash to which the handle is fitted (left-hand or right-hand opening). Thereafter, the rear cover 8 is offered to the exposed back of the casing 1 in such a way that the first slots 12 slip over the two pins 4a and 4b. Finally, the assembled handle is offered to the sash and made secure by inserting the screws 10 through the first holes 9 and into the corresponding screw holes 11.

As regards the alternative options described above, i.e. with lockable or removable grip, the assembly procedure clearly remains the same.

It will be observed that a handle thus embodied can be rendered equally suitable for use with top or bottom hung sashes by replacing the espagnolette racks with a single rack connected to the arm of a fanlight catch, and changing the rear cover shown in fig 1 for a type suitable for the application, leaving the remainder of the handle unmodified (the alternative parts are conventional in embodiment and therefore not illustrated).

The advantages of the handle disclosed are easily discernible from the foregoing description -viz, the use of a single casing provided with sets of securing holes affording a variety of distances between centres and positioned asymmetrically in relation to the longitudinal median axis of the handle, which permits of retaining the same basic handle regardless of the type of sash, simply by utilizing the set of holes best placed for that particular sash; also, the asymmetrical layout of the holes, which permits of adapting their diameter where necessary, without damaging or modifying the remainder of the casing.

Further advantage is recognizable in the embodiment of the racks, which can be positioned by the user or installer before the grip is ultimately fitted for right-hand or left-hand operation; similarly, interchangeability is favoured by the simple and swift manner of obtaining their meshed engagement with the pinion.

Additional advantage derives from the particular arrangement of the racks and the support elements of the pins, and namely, that the handle can be switched from left-hand to right-hand operation, and viceversa, without the need to turn the casing through 180°, but simply by drawing the racks into mutual opposition at the centre of the casing 1 and transferring the pins from one flat seating to the other.

## Claims

1. A universal espagnolette handle for door and window fixtures, comprising: an escutcheon flange or casing (1); a handgrip (2) projecting on the one side from a boss (16) integral with the casing (1), by which a spindle (3) accommodated internally of the casing is rotated between a first position and a second position; two pins (4a, 4b) projecting from the side opposite to the grip (2), of which the unattached ends connect with a fastener built into the fixture; a pair of racks (5a, 5b) disposed mutually parallel internally of the casing (1), their tooth faces engaged in meshing contact with the teeth of a pinion (6) rotatable as one with

the spindle (3), and associated with elements (7) by which the pins (4a, 4b) are supported and traversed between a first position and a second position coinciding with the first and second positions of the handgrip (2) and corresponding to the fastened and unfastened states of the fixture; a cover plate (8) applied to the exposed rear side of the casing, exhibiting a set of first holes (9) at each end affording passage to threaded means (10) for securing the casing (1), which are positioned to correspond with screw holes (11) afforded by the casing (1), and at least one pair of first guide slots (12) through and from which the respective pins (4a, 4b) are caused to project, characterized

- in that the securing holes (11) afforded by the flange or casing (1) are arranged in pairs, one on either side of a transverse axis (x), exhibiting dissimilar distances between centres and ordered asymmetrically relative to the longitudinal median axis (y) of the casing according to the distance between centres and the diameter of the single holes; and
- in that the casing (1) affords a pair of second parallel guide slots (13) by which the two racks (5a, 5b) are simply and slidably accommodated, one on either side of the pinion (6), and the face of each rack opposite from the tooth face affords a pair of flat seatings (14) in which the rigidly associated support element (7) of a respective pin (4a, 4b) is stably insertable.

2. A universal espagnolette handle for door and window fixtures, comprising: an escutcheon flange or casing (1); a handgrip (2) projecting on the one side from a boss (16) integral with the casing (1), by which a spindle (3) accommodated internally of the casing is rotated between a first position and a second position; two pins (4a, 4b) projecting from the side opposite to the grip (2), of which the unattached ends connect with a fastener built into the fixture; a pair of racks (5a, 5b) disposed mutually parallel internally of the casing (1), their tooth faces engaged in meshing contact with the teeth of a pinion (6) rotatable as one with the spindle (3), and associated with elements (7) by which the pins (4a, 4b) are supported and traversed between a first position and a second position coinciding with the first and second positions of the handgrip (2) and corresponding to the fastened and unfastened states of the fixture; a cover plate (8) applied to the exposed rear side of the casing, exhibit-

ing a set of first holes (9) at each end affording passage to threaded means (10) for securing the casing (1), which are positioned to correspond with screw holes (11) afforded by the casing (1), and at least one pair of first guide slots (12) through and from which the respective pins (4a, 4b) are caused to project, characterized

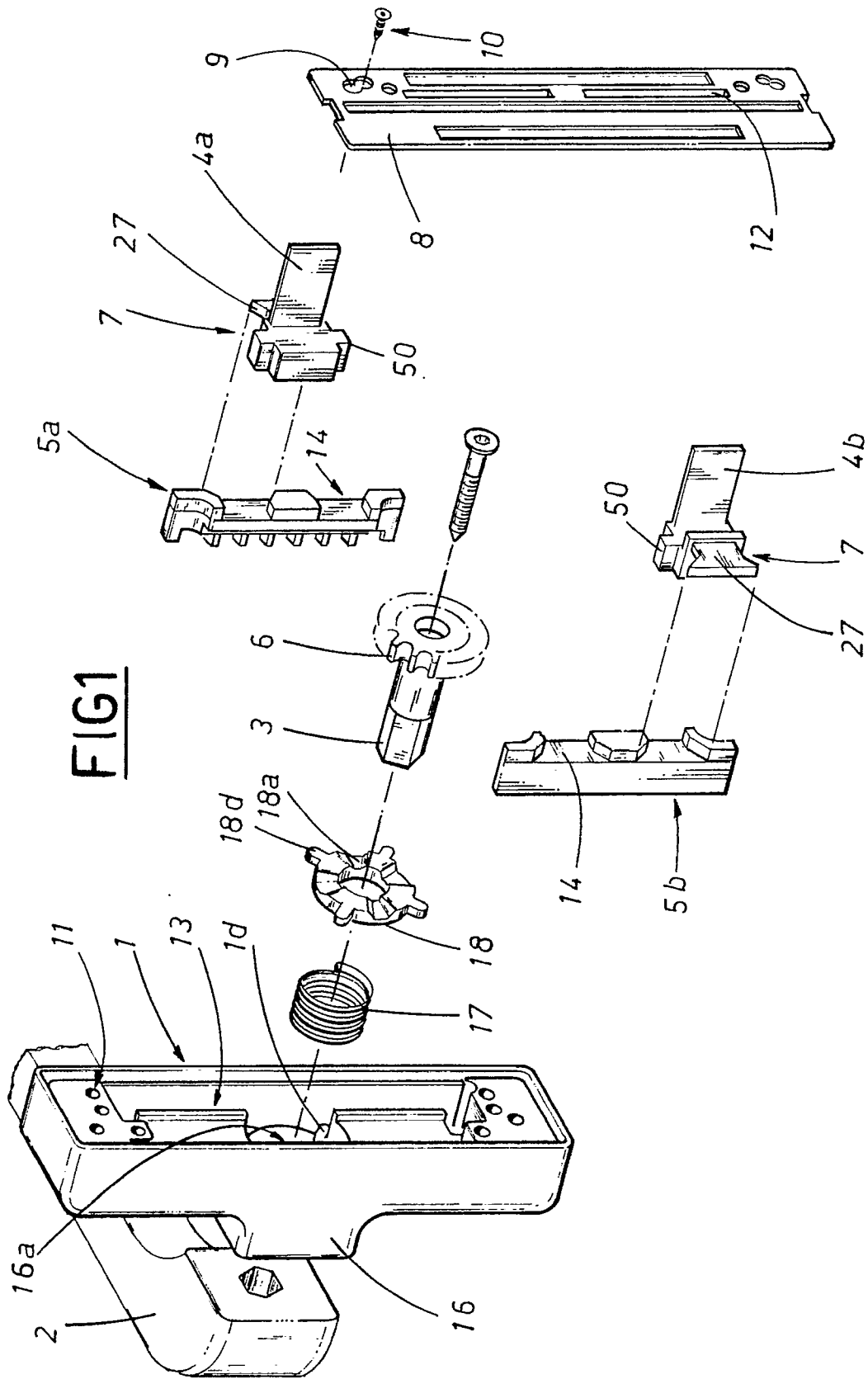
- in that the securing holes (11) afforded by the flange or casing (1) are arranged in pairs, one on either side of a transverse axis (x), exhibiting dissimilar distances between centres and ordered asymmetrically relative to the longitudinal median axis (y) of the casing according to the distance between centres and the diameter of the single holes;
- in that the casing (1) affords a pair of second parallel guide slots (13) by which the two racks (5a, 5b) are simply and slidably accommodated, one on either side of the pinion (6), and the face of each rack opposite from the tooth face affords a pair of flat seatings (14) in which the rigidly associated support element (7) of a respective pin (4a, 4b) is stably insertable; and
- in that it comprises interchangeable key-operated interference means (15) incorporated into the grip (2), designed to interact with the casing (1) at the area of the boss (16), and a boss affording at least two external surface areas of non-cylindrical geometry disposed symmetrically in relation to and on opposite sides of the axis of rotation of the grip (2), in such a way that the grip can be locked stably in relation to the casing (1) in at least the first position or the second position.

3. A handle as in claim 1 or 2, wherein the boss (16) of the flange or casing (1) affords a socket (16a) permanently occupied by spring means (17) coaxially ensheathing the spindle (3) and impinging upon a disk (18), breasted frontally with the pinion (6) and embodied with indented radial surfaces (18a) matched to corresponding teeth (6d) offered by the breasted surface of the pinion (6) in such a way that the grip (2) is detented flexibly in the first and second positions, and at least one lug (18d) projecting from its outermost circumference and engaging in a matching notch (1d) afforded by the casing (1).
4. A handle as in claim 2, wherein the key-operated interference means (15) consist in a

barrel (19) horizontally and slidably insertable into a through bore afforded by the grip (2) and overlapping with the boss (16) at least in part, in such a manner as to allow operation from externally of the grip, of which one end locates against and impinges on a slide (20) capable of horizontal movement along a pair of tracks (21a, 21b) constituting part of a bifurcated element and fastened internally to the part of the grip (2) adjacent to the boss (16), between a position of release in which the slide (20) is retracted and accommodated entirely within the grip (2), and a locking position in which the slide is extended and projects from the bore to occupy space between the grip (2) and the external surface of the boss (16) in such a manner as to occasion mutual interference of the former and the latter and thus disallow rotation of the grip (2) between the first and second positions.

together in such a manner as to permit of fitting and removing a detachable grip (2) inserted and withdrawn through an external opening afforded by the cap (28).

5. A handle as in claim 4, wherein the interference means (15) further comprise:
  - a rotatable central cam (22), associated with the barrel (19), of which the laterally projecting profile (23) engages an appendage (24) issuing from each track (21a, 21b) at the end located innermost in the grip (2) in such a way as to hold the slide (20) stably in the extended locking position;
  - a spring (25), located between the slide (20) and the internal part of the grip (2) adjacent to the boss (16), by which the slide is returned to the release position following disengagement of the cam profile (23) from one of the appendages (24).
6. A handle as in claim 1 or 2, wherein each rack (5a, 5b) exhibits two flat seatings (14), located at the top end and the bottom end respectively, of which the shape is dovetailed in such a way as to accept the matching and freely insertable dovetail profile of a corresponding lug (27) issuing at right angles from the respective pin (4a, 4b) and constituting the relative support element (7).
7. A handle as in claim 1 or 2, wherein the part of the casing (1) incorporating the boss (16) is furnished with an element embodied as a cap (28), applied to the exposed face of the boss (16) and affording an internal through hole to accommodate a spindle (3) fastened coaxially to a nut (29) by means of a pin (30) passing transversely through the cap (28) and coupling the nut (29) and the spindle (3) permanently



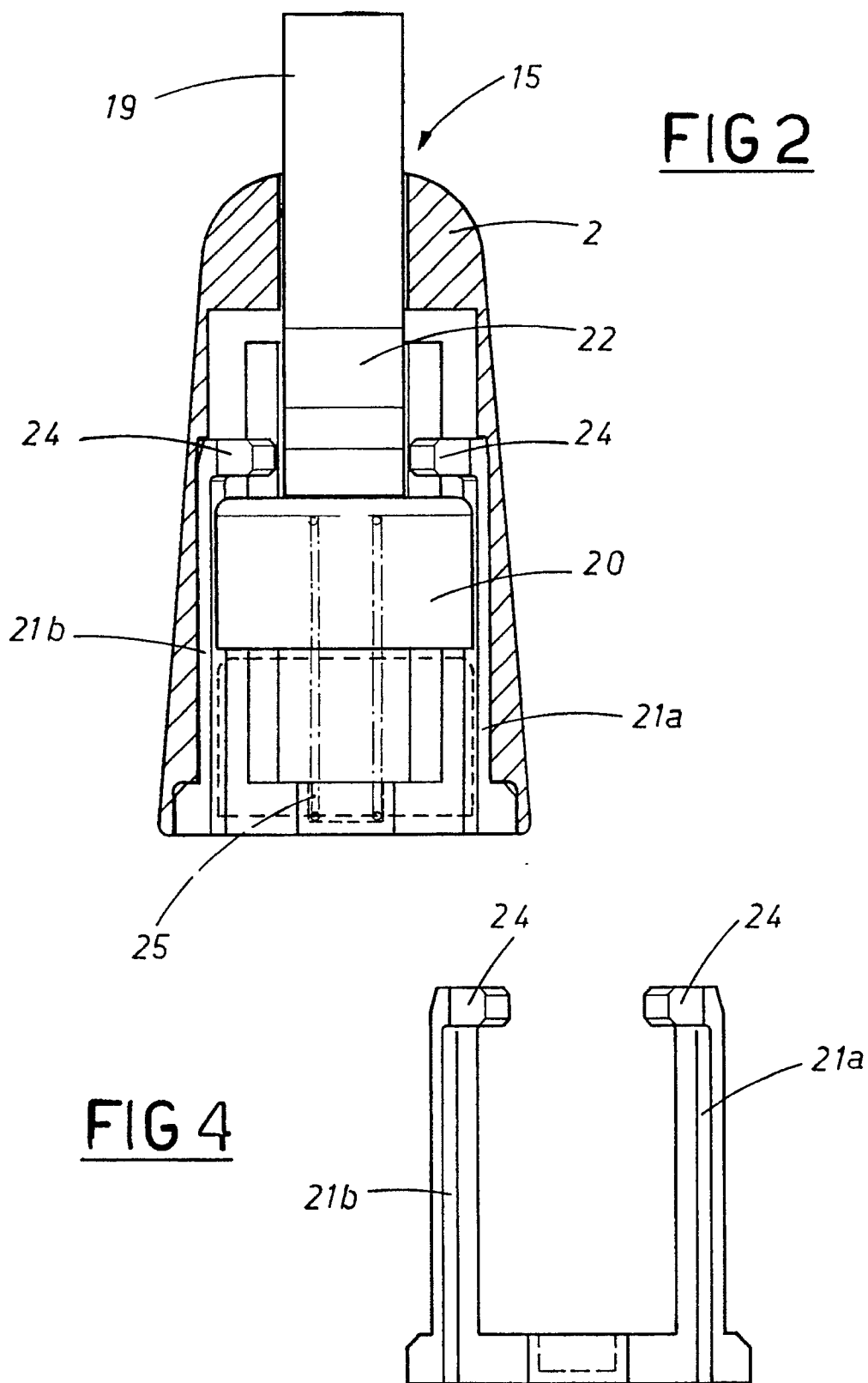




FIG 5

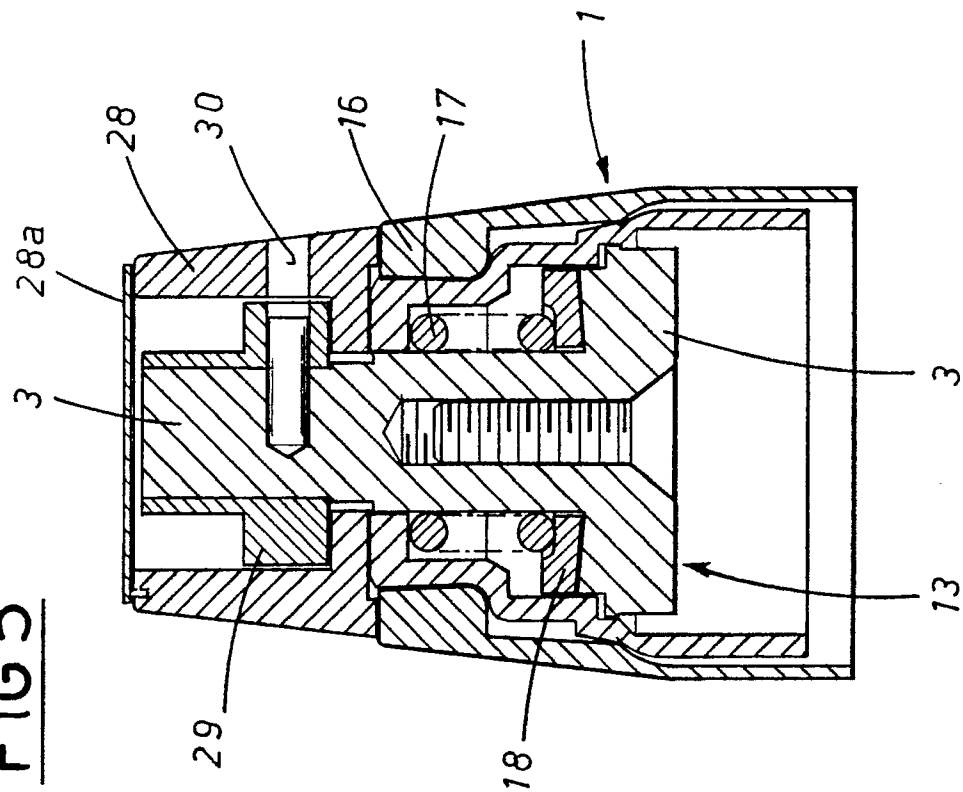


FIG1a

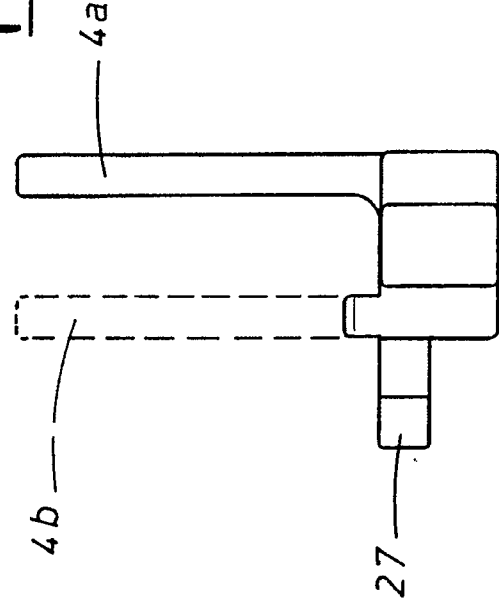
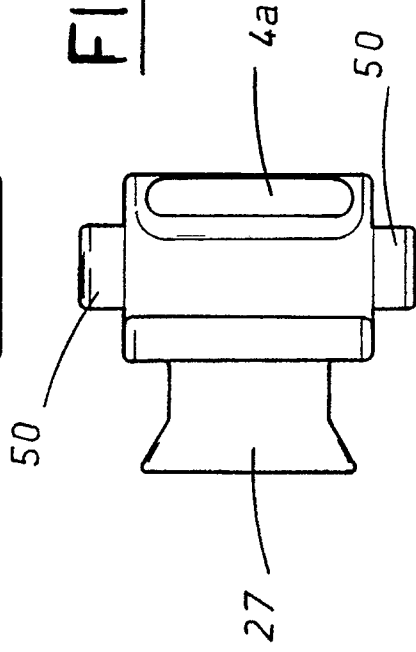


FIG1b



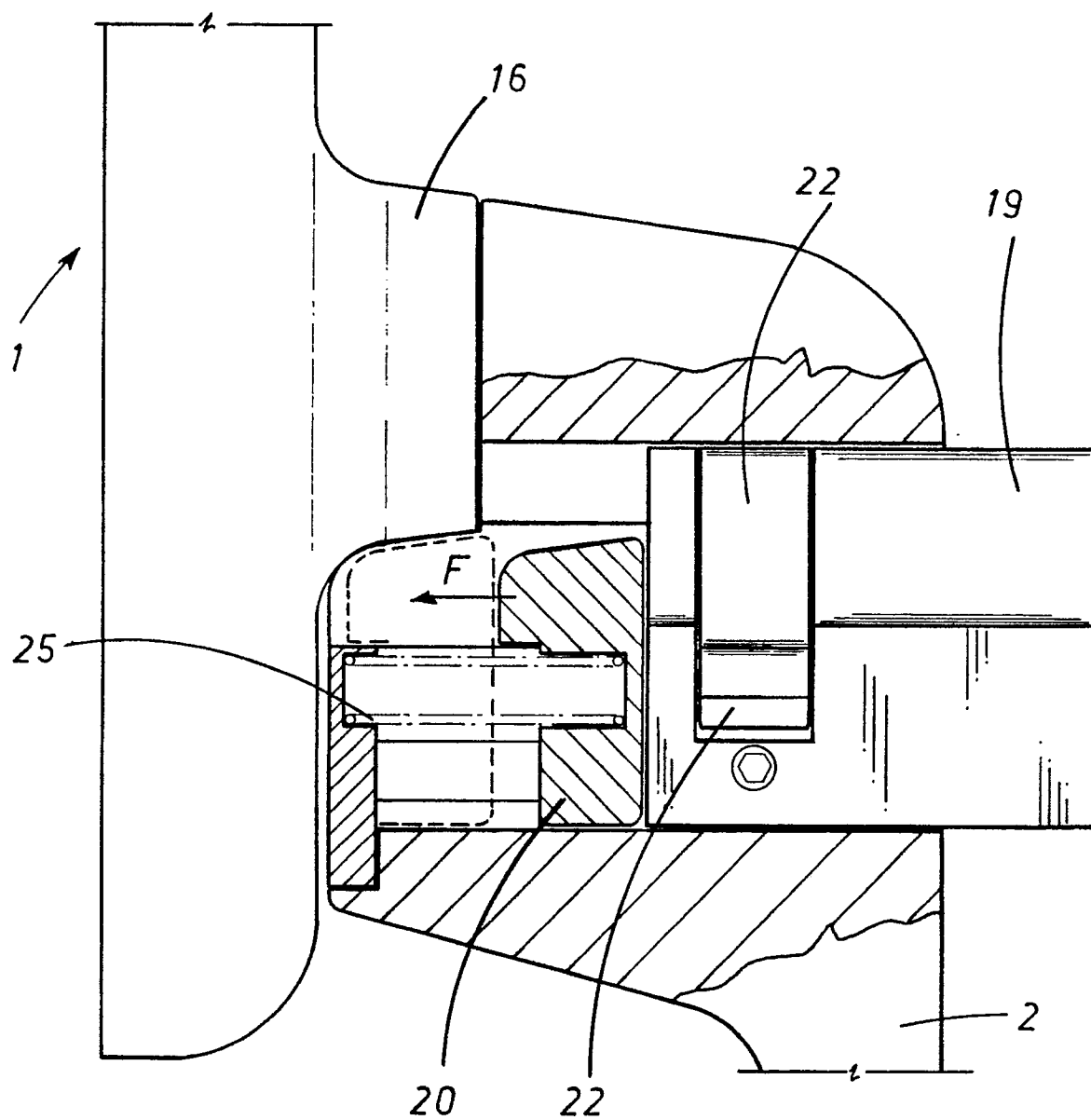


FIG 3

FIG 7b

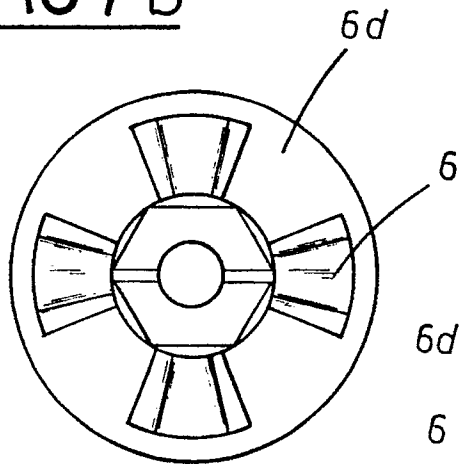


FIG 7a

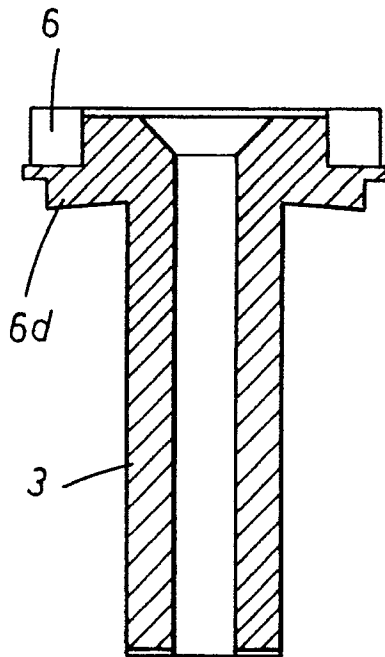
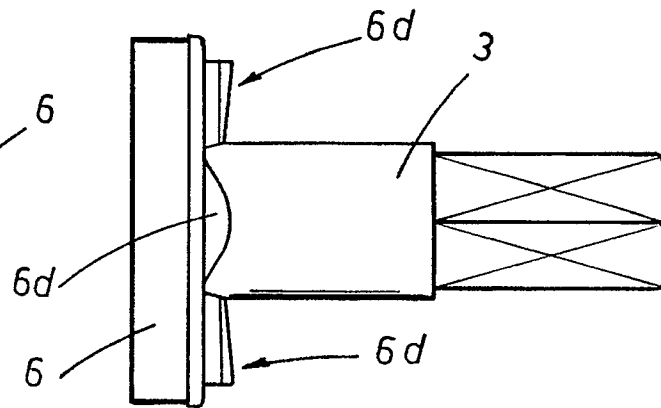
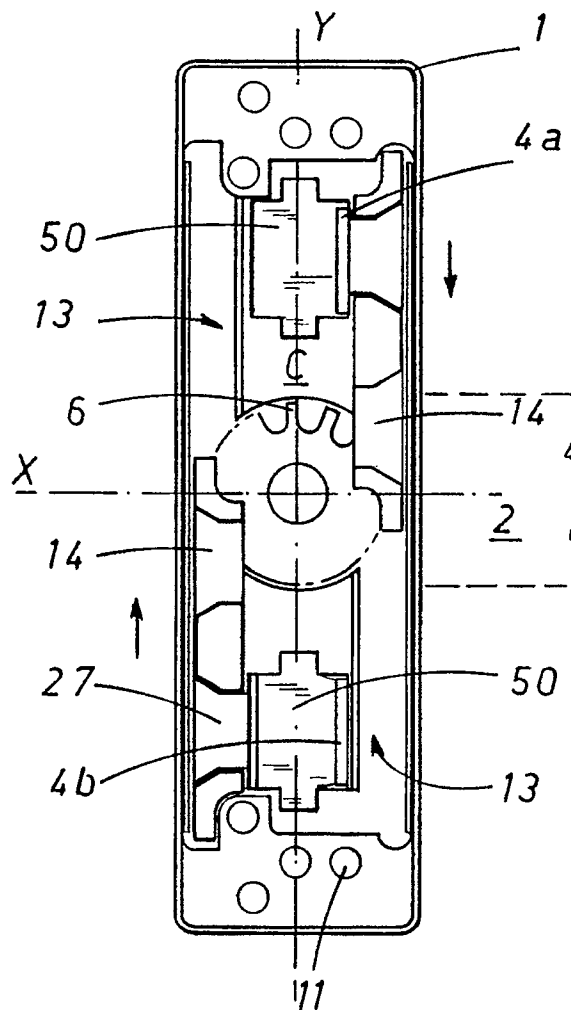


FIG 7c

FIG 6





European  
Patent Office

## EUROPEAN SEARCH REPORT

Application Number

**EP 90 83 0573**

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.5)
A	DE-A-3 445 170 (ERRETI S.R.L.) * claims 1,9; figures 1,5,7 * -----	1,2	E 05 C 9/04
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			E 05 C
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of search 21 June 91	Examiner GERARD B.E.
<div>CATEGORY OF CITED DOCUMENTS</div> <div>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</div> <div>E: earlier patent document, but published on, or after the filing date D: document cited in the application L: document cited for other reasons ----- &amp;: member of the same patent family, corresponding document</div>			