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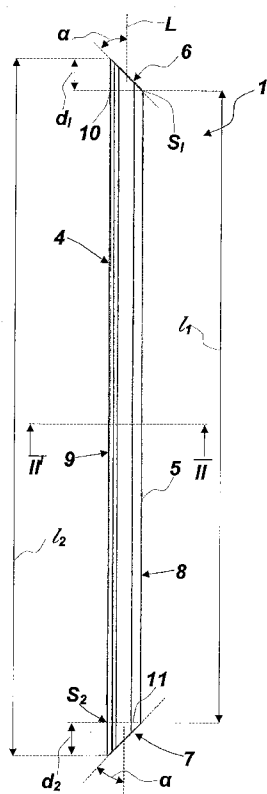


FIG. 1

(57) Abstract: A standard post for making reversible door and window frames comprises an elongate body (4) with a longitudinal axis (L), an inner edge (5) and an outer edge (9) substantially parallel to said longitudinal axis (L) and end edges (6, 7) substantially transverse to said longitudinal axis (L). The end edges (6, 7) are both inclined to the longitudinal axis (L), with substantially identical angles of inclination (α), one of said inclined edges (6, 7) being designed to be removed upon installation by a cut substantially at right angles to the longitudinal axis (L) to define the lower end of the post, whereas the other one of said inclined edges (J, 6) is designed for connection with the lintel (3).

**STANDARD POST FOR MAKING REVERSIBLE DOOR AND WINDOW
FRAMES, FRAME ASSEMBLY USING SUCH POST AND METHOD OF
ASSEMBLING SAME**

5

Field of the invention

The present invention generally finds application in the field of door and window frames and doors and windows for residential and industrial buildings and particularly relates to a standard post for making reversible door and window frames for both left and right opening doors. The invention further relates to a frame assembly comprising such post and a method of assembling same.

Background art

15 Door and window frames for residential and industrial buildings are known to have a structure composed of vertical and horizontal sections which are designed to be joined together and mounted to a wall to form a frame for a door or window to be hinged thereto.

20 Typically, the sections are appropriately shaped at each end for proper connection with connection with the contiguous sections. Particularly, the vertical sections are fed to the assembly station with the lower end pre-cut at right angles and the upper end shaped for connection to a complementarily shaped end of a horizontal section.

25

One drawback of prior art solutions is that the vertical sections so fabricated are configured for use on the right or left side of a frame only, and cannot be interchangeable.

30 As a result, two different production lines and separate stocks are required for two different products, which increases the overall manufacturing and stock management costs. Particularly, two separate stocks of sections shall be maintained, with a large total number of products.

Furthermore, the assembly operator is required to be aware of the opening side of the door or window to be mounted before purchasing the sections suitable for such opening side. Therefore, should the opening side be changed, the whole
5 frame would have to be replaced.

In an attempt to obviate these drawbacks, reversible casing frames have been developed for both right and left opening doors.

10 US 3,889,423 discloses a door frame in which the vertical elements are interchangeable to receive both right and left opening doors. Nevertheless, this solution also requires two different types of sections, and two different products have to be stocked.

15 Disclosure of the invention

The object of this invention is to overcome the above drawbacks, by providing a standard post for making door or window frames that is highly efficient and relatively cost-effective.

20 A particular object is to provide a post for door or window frames that may be used as either a right or a left post of a frame thereby allowing reversible assembly.

25 A further object is to provide a standard post for door or window frames which affords considerable savings in production and stock management.

Another object of the invention is to provide a highly cost effective frame assembly.

30 Yet another important object is to provide a method for assembling a reversible frame assembly, that is simple and comparatively cost-effective.

These and other objects, as better explained hereafter, are fulfilled by a standard post for making door or window frames as claimed in claim 1, which comprises an elongate body consisting of a profile length with a longitudinal axis, and designed to be mounted to a substantially vertical pier, said elongate
5 body having an inner edge and an outer edge (9) substantially parallel to said longitudinal axis (L) and end edges substantially transverse to said longitudinal axis.

The post is characterized in that the end edges are both inclined to said
10 longitudinal axis, with substantially identical angles of inclination, one of said inclined edges being designed to be removed upon installation by a cut substantially at right angles to the longitudinal axis to define the lower end of the post, whereas the other one of said inclined edges is designed for connection with the lintel.

15

In this particular configuration, the post may be fixed to the wall as either a right or left post. Thus, there will no longer be the need to decide the opening side of the door to be associated with the frame before purchasing the sections.

20 Furthermore, there will be no need to fabricate left and right posts, a single type of standard post being sufficient, which will thus afford the typical advantages of large scale production, as well as simpler and less expensive stock management.

25 Advantageously, the elongate body may have a pair of notches formed in the proximity of each of the end edges, each pair comprising a proximal notch and a distal notch longitudinally offset to each other to define a pair of cut sections, for the elongate body to be cut at one of such sections during assembly of the frame.

30

Thus the section finishing step to form the post may be carried out simply and quickly immediately before mounting the section to the wall.

In one aspect, the present invention provides a frame assembly as defined in claim 10, which comprises a frame structure having a lintel adapted to be mounted in a substantially horizontal position and a pair of posts, each having an elongate body with lateral edges defining a longitudinal axis and upper and lower end edges substantially transverse to said longitudinal axis, said posts being designed to be mounted to a wall in a substantially vertical position, and transversely offset to each other and joined to said lintel.

The assembly is characterized in that the end edges of each of said posts are inclined at identical angles to the corresponding longitudinal axis, to allow said posts to act as either the right or left post of said frame structure.

Due to this additional feature, the assembly so obtained may be used for both right opening and left opening doors, and there will be no need to decide the opening side before purchasing the assembly.

Furthermore, the assembly of the invention is of reversible type and the opening side may be simply reversed any time.

In another aspect, the invention provides a method for assembling a frame assembly as defined in claim 16.

The method of the invention allows very quick and simple assembly of a reversible frame assembly.

Brief description of the drawings

Further characteristics and advantages of the invention will be more apparent upon reading of the detailed description of a preferred, non-exclusive embodiment of a standard post, a door or window frame assembly comprising such post and a method for assembling the assembly, which are described as a non-limiting example with the help of the annexed drawings, in which:

FIG. 1 is a front view of a standard post of the invention;

FIG. 2 is a cross sectional view of the post of Fig. 1;

FIG. 3 is a front view of a door or window frame structure comprising a post of the invention in a first assembled configuration;

FIG. 4 is a front view of the frame structure in a second assembled
5 configuration;

Figure 5 is a cross sectional view of a detail of an assembly of the invention with a right opening door;

Figure 6 is a cross sectional view of a detail of an assembly of the invention with a left opening door;

10 FIG. 7 shows a flowchart of a method of assembly of a frame assembly of the invention.

Detailed description of a preferred embodiment

15 Referring to the above figures, a standard post of the invention, generally designated by numeral 1, may be used for making a casing frame composed of a pair of vertical lateral posts 1, 1' joined by a horizontal lintel 3 to delimit a doorway, or the opening of a door or window. Particular configurations of a frame structure 2 for assembly of a casing frame comprising a pair of posts 1, 1'
20 of the invention are shown in Figs. 3 and 4.

As shown in Fig. 1, a post 1 of the invention comprises an elongate body 4 designed to be fixed to a wall in a substantially vertical position to define a frame post, and consisting of a profile length having a longitudinal axis L, inner
25 8 and outer 9 lateral edges substantially parallel to the longitudinal axis L and upper and lower end edges 6, 7 substantially transverse to the longitudinal axis L.

According to a peculiar feature of the invention, the end edges 6 and 7 of the
30 elongate body 4 are inclined to the longitudinal axis L at identical angles α .

Furthermore, one of the end edges 6, 7 is designed to be removed upon installation by a cut substantially at right angles to the longitudinal axis L to

define the lower end of the post 1, whereas the other inclined end edge 7, 6 is designed for connection with the lintel 3.

Thus, the elongate body 4 may be fixed to the wall either as a right post or as a left post of the casing frame. Therefore, during fabrication of the post 1, there will be no need to differentiate between the posts designed for right opening and left opening doors or windows, a single standard post 1 being capable of being adapted to each particular opening side, directly by the assembly operator.

10

Advantages will apparently result both for section manufacturers, who are required to fabricate and manage a single type of post, thereby considerably reducing stocks, and for frame assemblers.

These may purchase and hold on stock one type of post only, thereby possibly reducing their stocks to a half. Also, the door opening side may be chosen upon mounting of the frame and possibly changed at a later time, without requiring any structural operation and without having to purchase a new frame.

The lateral edges 8, 9 of the elongate body 4 may have different lengths l_1 , l_2 , with the shorter side edge 8 designed to face towards the interior space delimited by the frame, when the post 1 is fixed to the wall.

The end edges 6, 7 may be inclined to converge towards a point of a center line π substantially transverse to the elongate body 4 and on the side of the inner lateral edge 8.

Advantageously, their angle of inclination α may be of 20° to 70° and will be probably about 45° .

30

The selection of materials is not critical and the post 1 may be made of wood, metal, plastic or a composite material.

In a preferred, non exclusive embodiment of the invention, the elongate body 4 may have a notch, pre-cut or similar reference mark 10, 11, indicated by a broken line in Fig. 1, at each of the end edges 6, 7. The notches 10, 11 will be adapted to define respective cut sections S_1 , S_2 orthogonal to the longitudinal axis L at one of which the elongate body 4 will be cut upon assembly of the frame.

Preferably, the notches 10, 11 may be formed on the lateral surface 5 of the elongate body 4 at the lateral edge 9 designed to face outwards when the frame is mounted to the wall, to be concealed after mounting.

Furthermore, the notches 10, 11 may be arranged symmetrically with respect to the center line π' of the elongate body 4, so that their maximum longitudinal distances d_1 , d_2 from the corresponding end edges 6, 7 are substantially coincident.

In a preferred, non exclusive embodiment of the invention, more clearly visible in Fig. 2, the inner lateral edge 8 of the elongate body 4 may have a first longitudinal portion 12 with an at least partially curved inner transverse profile and a second longitudinal portion 13 having a straight inner transverse profile, connected to the other portion by an intermediate longitudinal portion 14 which defines a rebate 15 for a door 16 hinged to the section 1.

The lateral surface 5 of the elongate body 4 may also have a pair of transverse recesses 17, 18 extending all along the longitudinal length of the post 1, which may be formed at the outer lateral edge 9, from opposite sides relative to the longitudinal axis L, for the post 1 to be mounted to the other parts of the casing frame, such as the cover strips 19, 19'.

At the intermediate portion 14 a housing 20 may be formed for an insert 21 to be snap-fitted therein to absorb the shock of the door 16 as it is shut, thereby preserving the structural integrity of the post 1.

If the post 1 is designed to be used as a support post for the door 16, its lateral surface 5 may have hinge means 23 at one of its front faces 22, for pivotal connection of the door 16 or the like.

- 5 For instance, the hinge connection means 23 may include, as is substantially known, a plurality of transverse housings, one of which is shown in Figures 5 and 6 by hatching and designated by numeral 24, which will be longitudinally offset, for receiving and retaining respective joints or hinges 25.
- 10 Each joint 25 may be composed of a male member 26 with a first pin 27 possibly threaded, which is designed to be fitted into a corresponding transverse seat 24, with a hinge pivot 28 attached thereto, and a female member 29 designed to be attached to a door 16 or the like, and to pivotally receive the hinge pivot 28 of a corresponding male member 26, for the door 16
- 15 to pivot.

As shown in Figs. 3 and 4, the above described post 1 may be used for the assembly of a door or window frame 2 comprising first and second sections 1, 1' as described above, which are designed to be mounted to the wall in vertical

20 and transversely offset positions, to define the support post and the shutting post of a door 16 or the like.

For clarity, unless otherwise stated, non-indexed reference numerals will designate homologous parts of both posts 1, 1'.

25

Each post 1, 1' will have an elongate body 4, with a profile length having a longitudinal axis L and upper 5 and lower 7 end edges substantially transverse to the longitudinal axis L and inclined at identical angles α to such axis, for the posts 1, 1' to be capable of being mounted both as right posts and as left posts

30 of the frame structure 2.

The two profile or posts 1, 1' may be joined at their top to a lintel 3, which is designed to be fixed in a substantially horizontal position, and has end portions

30, 31 delimited by inclined edges having an angle of inclination identical to that of the end edges 6, 7 of the sections or posts 1, 1', for simplified assembly of the frame structure 2 and a pleasant aesthetic effect.

5 Conveniently, the standard posts 1, 1' may have different maximum lengths, with the post 1 designed to be used as a support post 1 having an initial maximum longitudinal extension l_2 greater than the extension l_2' of the other post 1' designed to define the shutting post. The door or window frame structure 2 may also include hinge connection means 23 comprising a plurality of joints or
10 hinges 25 as described above, which are designed to be mounted to the first section 1.

In a further aspect, the present invention relates to a semifinished frame assembly 32, particularly for making reversible doors or the like, comprising a
15 frame structure 2 as described above.

The assembly 32 may also include a door or window structure 16, e.g. a door structure, designed to be removably connected to one of the sections or posts, in the case as shown herein to the post designated by numeral 1, via hinge
20 connection means 23.

Advantageously, the door or window structure 16 may be substantially symmetric to a transverse center line π' of the frame structure 2 to allow the door or window structure 16 to be connected either to the right post or to the left
25 post, possible in a reversible manner.

For example, the door or window structure 16 to be connected to the frame structure 2 may be designed to hold a lock mechanism, not shown and known per se, of the type commonly known as "central lock".
30

This particular configuration will afford the additional apparent advantage that the same type of door or window structure may be mounted either in either right opening or left opening arrangement, as shown in the two configurations of Fig.

5 and Fig. 6.

Also, the opening side may be also chosen upon assembly, i.e. once the frame assembly 32 has already been purchased.

5

Fig. 7 is a schematic view of a method for assembling a frame assembly 32 as described above, wherein the assembly 32 comprises a frame structure 2, having a lintel 4 and first and second posts 1, 1' as described above, and designed to be mounted to a wall at a doorway or opening, and a door or window structure 16 designed for closing the doorway or opening.

10

The method of the invention includes a step a) in which the frame structure 2 is mounted to the wall, with the first and second posts 1, 1' in substantially parallel, vertical and transversely offset positions, to define a support post and a shutting post respectively for the door or window structure 16, each having upper 33 and lower 34 end portions, delimited by the inclined end edges 6 and 7. The lintel 3 will be in turn fixed in a substantially horizontal position to join the upper end portions 33 of the vertical sections or posts 1, 1'.

15

This step is followed by a step b) in which a plurality of joints or hinges 25 are provided, each having a male element 26 designed to be attached to the support post 1 and a female element 29 designed to be attached to the door or window structure 16 and by a step c) in which the male elements 26 of the joints 25 are attached to the support post 1 in longitudinally offset positions to define an axis of rotation X of the door or window structure 16.

20

25

In accordance with a peculiar feature of the invention, the method includes a step d) in which the lower ends 34 of both profile 1, 1' are cut at right angles to define new lower end edges 7 substantially orthogonal to their respective longitudinal axes L which will be substantially parallel to the floor after attachment a) of the frame structure 2. Advantageously, the cutting step d) may be carried out upstream from the step a) of attachment of the frame structure 2.

30

Furthermore, the posts 1, 1' may have different initial maximum lengths l_2 , l_2' and the cutting step d) may be aimed at forming a support post 1 having a maximum longitudinal length l_3 substantially equal to that of the shutting post 1'.

- 5 Particularly, the first and second posts 1, 1' may be cut level with the notches 11 formed in the proximity of the lower end portions 34 of each of the posts 1, 1'.

The method of the invention may also include a step e) in which the female elements 29 of the joints 25 may be fixed to the door or window structure 16 at
10 longitudinal offset positions in such a manner as to be in line with corresponding male elements 26.

Finally, a step f) may be carried out, in which the door or window structure 16 is attached to the support post 1 by introducing male elements 26 into
15 corresponding aligned female elements 29 in a substantially known manner.

The above disclosure clearly shows that the invention fulfills the intended objects and particularly meets the requirement of providing a standard post for making door and window frame structures that affords considerable cost
20 savings and simplification of production and stock management.

The particular configuration of the post will provide frame assemblies of quick and simple assembly.

25 The standard post, the door or window frame assembly and the method of assembling same according to the present invention are susceptible to a number of changes or variants, within the inventive concept disclosed in the annexed claims. All the details thereof may be replaced by other technically equivalent parts, and the materials may vary depending on different needs,
30 without departure from the scope of the invention.

While the semifinished section, the frame/door or window assembly and the method of assembling same have been described with particular reference to

the accompanying figures, the numerals referred to in the disclosure and claims are only used for the sake of a better intelligibility of the invention and shall not be intended to limit the claimed scope in any manner.

CLAIMS

1. A standard post for making reversible door or window frames, of either right or left opening type, designed to be joined to another post (1') of the same type by a horizontal lintel (3) to define a door frame or the like, which post
5 comprises an elongate body (4) consisting of a profile length having a longitudinal axis (L), designed to be mounted to a substantially vertical pier, said elongate body (4) having inner (8) and outer (9) edges substantially parallel to said longitudinal axis (L) and end edges (6, 7) substantially transverse to said
10 longitudinal axis (L),

characterized in that said end edges (6, 7) are both inclined to said longitudinal axis (L), with substantially identical angles of inclination (α), one of said inclined edges (6, 7) being designed to be removed upon installation by a cut substantially at right angles to said longitudinal axis (L) to define the lower
15 end of the post, whereas the other one of said inclined edges (7, 6) is designed for connection with the lintel (3), allowing said elongate body (4) to be mounted to the wall either as a right post or as a left post.

2. Semifinished section as claimed in claim 1, characterized in that said
20 angle of inclination (α) is of 20° to 70°, and is preferably of about 45°.

3. Semifinished section as claimed in claim 1 or 2, characterized in that said end edges (6, 7) converge towards a point of a center line substantially transverse to said elongate body on the side of said inner lateral edge.

25

4. Semifinished section as claimed in one or more of the preceding claims, characterized in that said elongate body (4) has a pair of notches (10, 11) formed in the proximity of respective end edges (6, 7), each defining a cut section (S1, S2) orthogonal to said longitudinal axis (L), at one of which
30 notches said elongate body (4) has to be cut during assembly of the frame.

5. Semifinished section as claimed in claim 4, characterized in that said notches (10, 11) have substantially identical maximum longitudinal distances

(d1, d2) from their respective end faces (6, 7).

6. Semifinished section as claimed in claim 4 or 5, characterized in that said notches (10, 11) have formed on said outer lateral edge (9) of said elongate
5 body (4).

7. Semifinished section as claimed in one or more of the preceding claims, characterized in that said inner lateral edge (8) has a first portion (12) with one at least partially curved transverse profile and a second portion 13 having a
10 straight profile and connected to said first curved portion (12) by an intermediate portion (14) that defines a transverse abutment surface (15) for a door hinged to the frame.

8. Semifinished section as claimed in one or more of the preceding claims,
15 characterized in that said elongate body (4) has hinge means (23) for connection of a door or the like.

9. Semifinished section as claimed in claim 8, characterized in that said hinge connection means (23) include a plurality of longitudinally offset seats
20 (24) which are adapted to receive and retain respective joints or hinges (25) for hinging a door or the like.

10. A frame assembly, particularly for doors or windows of reversible type, comprising a frame structure (2) with a lintel (3) adapted to be mounted in a
25 substantially horizontal position, first and second posts (1, 1'), each having an elongate body (4) with a section having a predetermined maximum length (l2, l2') defining a longitudinal axis (L), an inner edge (8) and an outer edge (9) substantially parallel to said longitudinal axis and end edges (6, 7) substantially transverse to said longitudinal axis (L), said first and second posts (1, 1') being
30 designed to be mounted to a wall in a substantially vertical position, and transversely offset to each other and joined to said lintel (3) to define a support post and a shutting post for a door or the like respectively, characterized in that the end edges (6, 7) of each of said posts (1, 1') are

inclined at identical angles (α) to the corresponding longitudinal axis (L) of the respective elongate body (4), to allow said posts (1, 1') to act as either the right or left post of said frame structure (2).

5 11. Assembly as claimed in claim 10, characterized in that said first post (1) has a maximum length (l2) greater than said second post (1').

10 12. Assembly as claimed in claim 11, characterized in that said first and said second posts (1, 1') have each one notch (10, 11) in the proximity of each end edge (6, 7) of each of said posts (1, 1'), one of the notches (10) having a maximum longitudinal distance (d1) from its respective end edge (6) equal to the maximum longitudinal distance (d2) of the other notch (11) of the same post (1, 1') from the other of said end edges (7).

15 13. Assembly as claimed in claim 12, characterized in that said maximum longitudinal distance (d1, d2) of the notches (10, 11) of said first post (1) is greater than said maximum longitudinal distance (d1, d2) of the notches (10, 11) of said second post (1').

20 14. Assembly as claimed in one or more of the preceding claims, characterized in that it comprises a door or window structure (16) designed to be connected to said first post (1), hinge connection means (23) being further provided for connecting said door or window structure (23) to said first post (1).

25 15. Assembly as claimed in claim 14, characterized in that said door or window structure (16) is substantially symmetric to a substantially transverse center line (π) for reversible connection to said frame structure (2).

30 16. A method of assembling a door or window frame assembly, wherein said assembly comprises a frame structure (2) having a lintel (3), first and second posts (1, 1') and being designed to be fixed to a wall at a doorway or opening, and a door or window structure (16) designed for closing said doorway or opening, wherein the method includes the steps of:

a) mounting said frame structure (2) to the wall, with said first and second posts (1, 1') in substantially parallel, vertical and transversely offset positions, to define a support post and a shutting post respectively for said door or window structure (16), with said lintel (3) in a substantially horizontal position to join said vertical sections (1, 1');
5

b) providing a plurality of joints or hinges (25) each having a male element (26) designed to be fixed to said first post (1) and a female element (29) designed to be fixed to said door or window structure (16);

c) fixing said male elements (26) of said joints (25) to said first post (1) in longitudinally offset positions to define an axis of rotation (X) for said door or window structure (16);
10

wherein said first and second posts (1, 1') comprise each a section length having a longitudinal axis (L) and end edges (6, 7) inclined to said longitudinal axis (L) with substantially identical angles of inclination (α), said posts being fixed in such an arrangement as to define for each of them upper and lower ends (33, 34) delimited by said inclined end edges (6, 7),
15

the method being further characterized in that it includes a step (d) in which said lower end portions (34) of said first and second sections (1, 1') are cut to define lower end edges (7) substantially orthogonal to said longitudinal axes (L).
20

17. Method as claimed in claim 16, characterized in that said first and said second posts (1, 1') have different maximum lengths (l2, l2'), said cutting step (d) being carried out in such a manner as to obtain support and shutting posts having substantially the same final maximum length (l3).
25

18. Method as claimed in claim 16 or 17, characterized in that said first and said second sections (1, 1') are cut at the notches (10) proximate said lower end portions (34).
30

19. Method as claimed in one or more of the preceding claims, characterized in that it includes a step e) in which said female elements (29) of said joints (25) are fixed to said door or window structure (16) at longitudinal offset positions in

such a manner as to be in line with corresponding male elements (26).

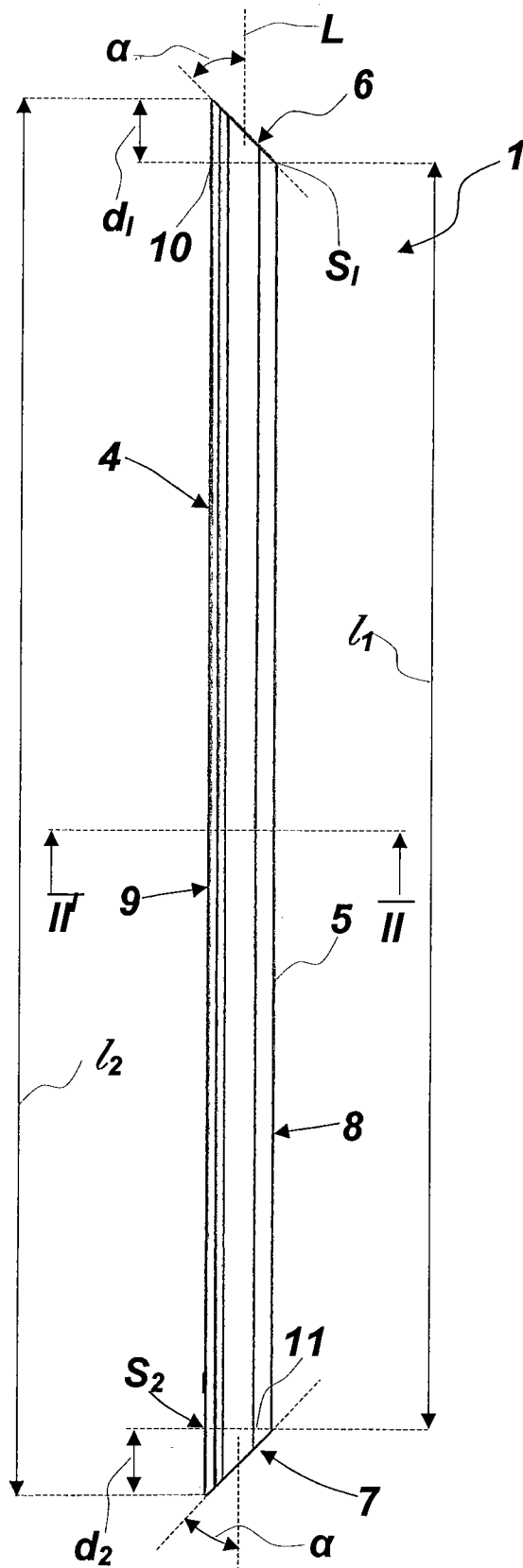


FIG. 1

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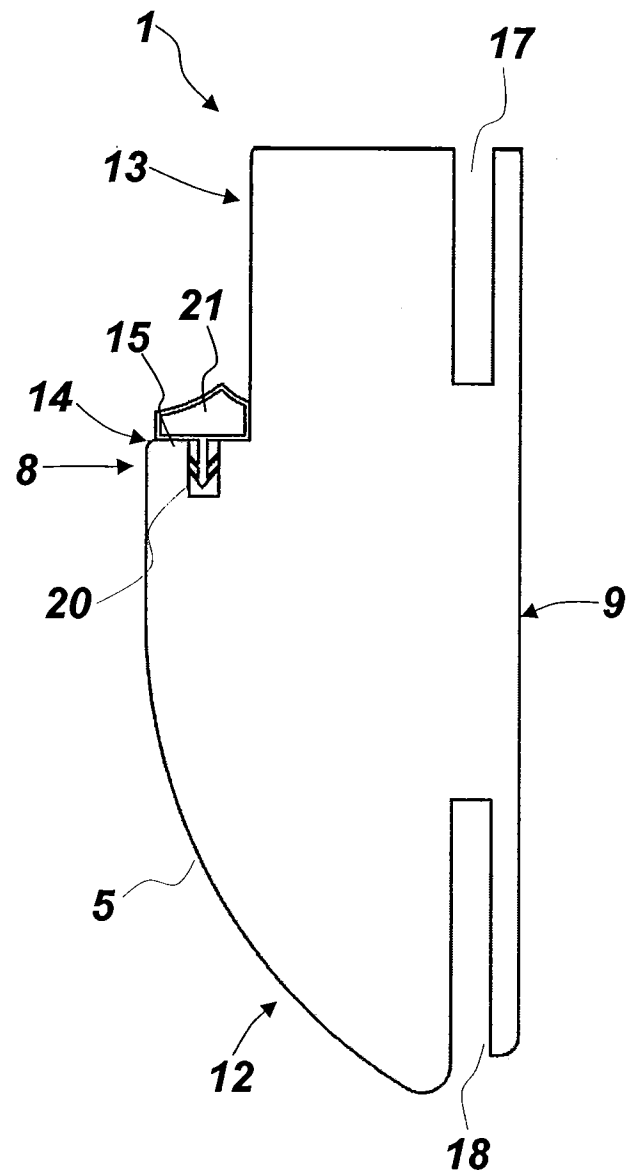


FIG. 2

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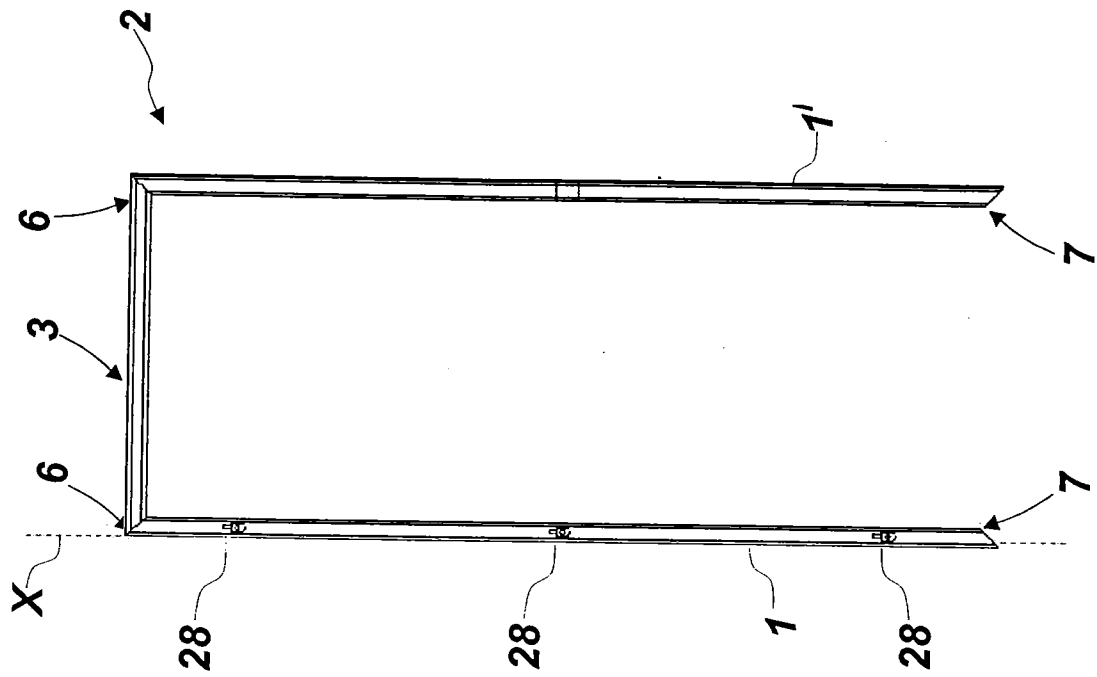


FIG. 4

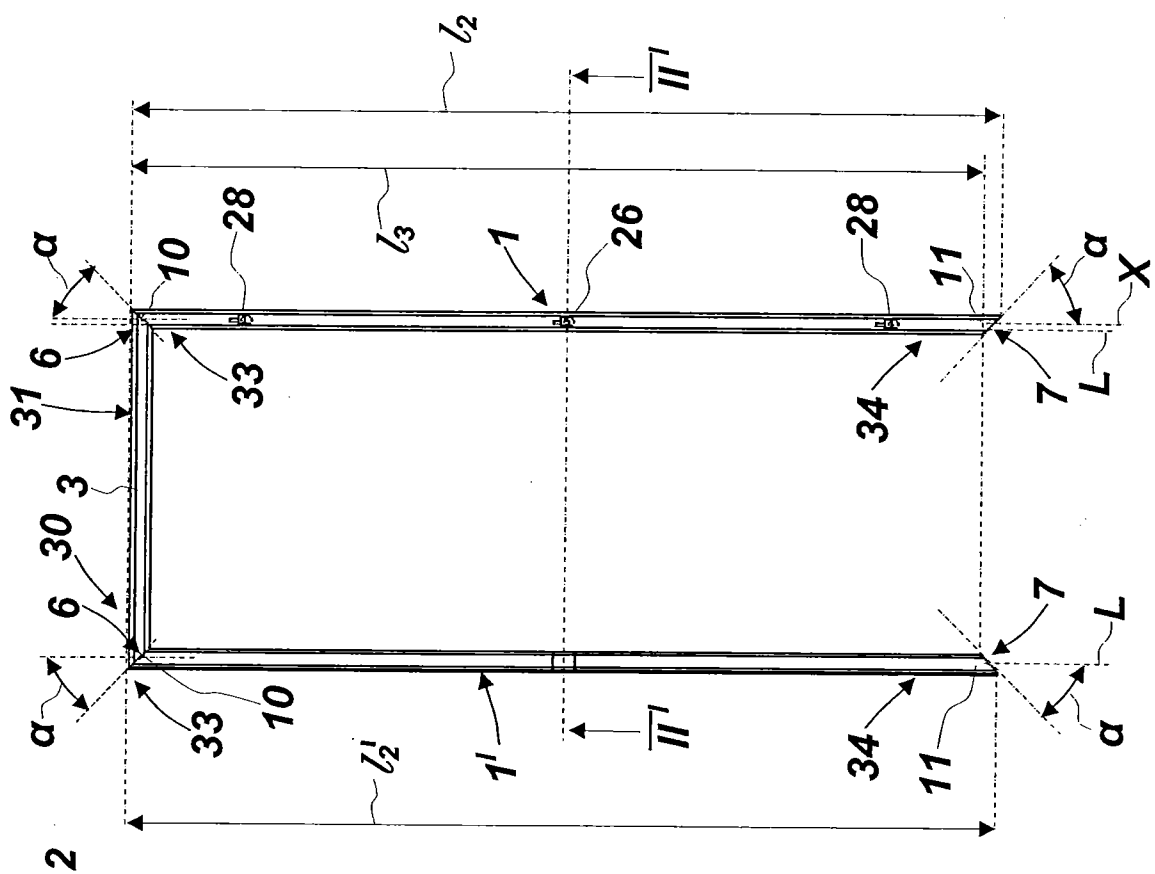


FIG. 3

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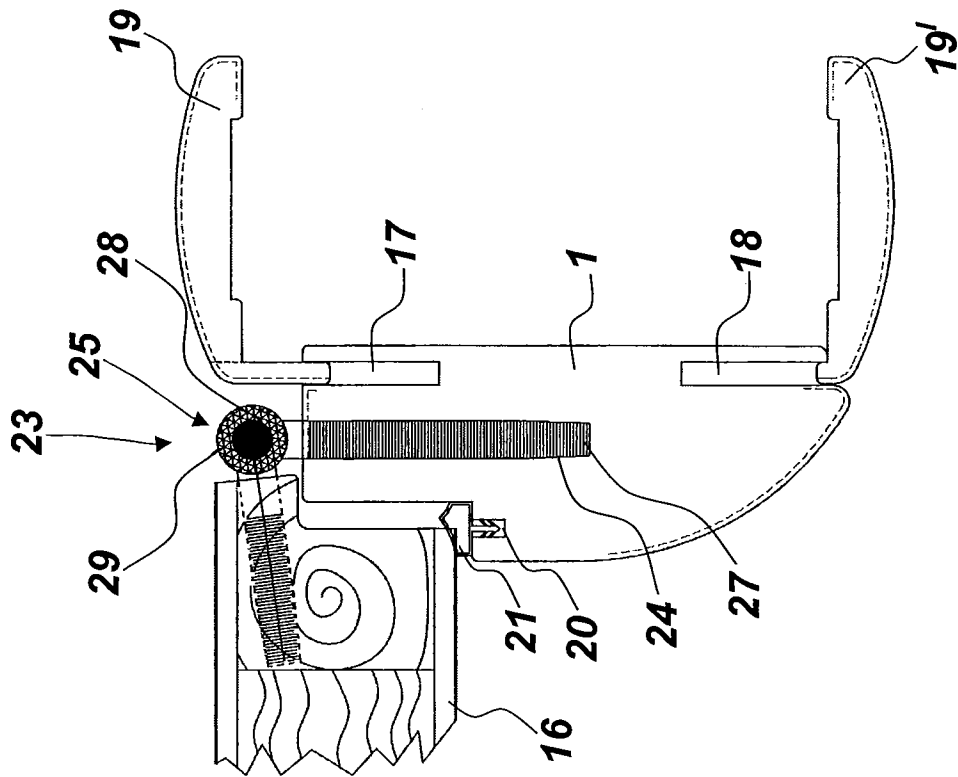


FIG. 5

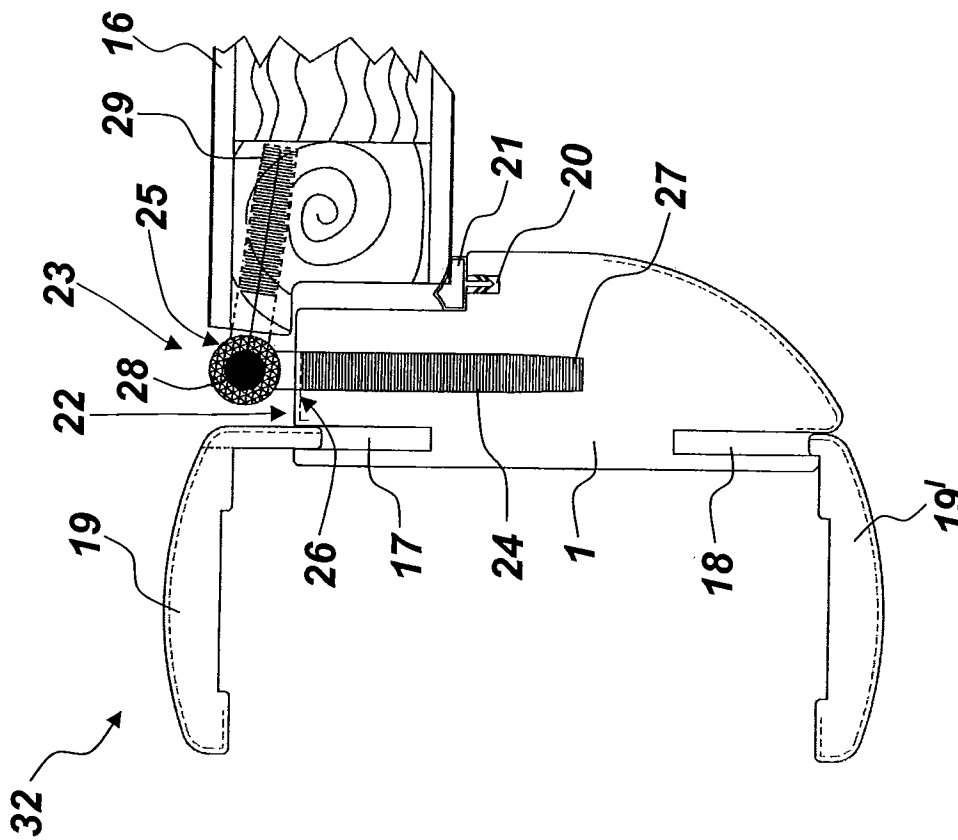


FIG. 6

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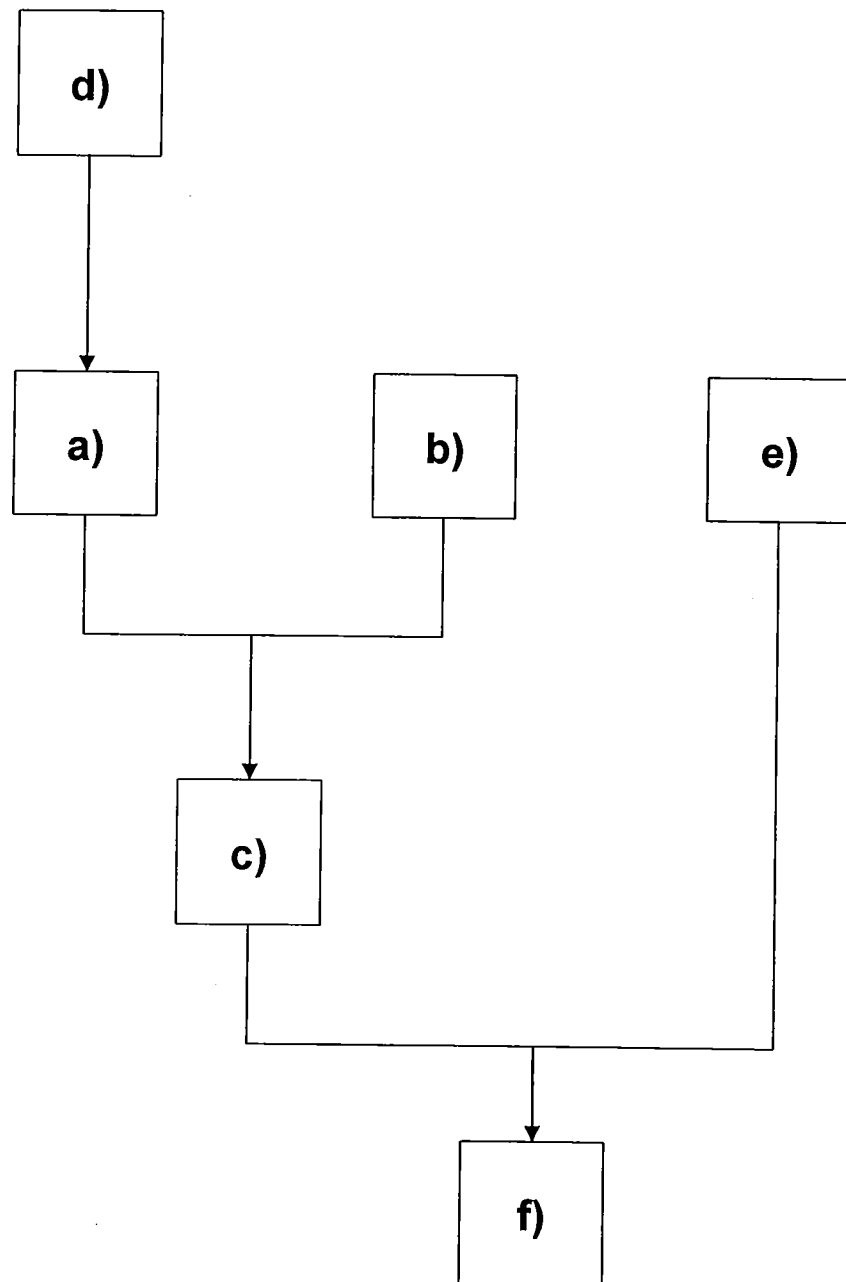


FIG. 7