Feb. 8, 1966 E. VON WEDEL 3,233,381

SUPPORTING ARRANGEMENT

Filed April 4, 1963

Fig. 1

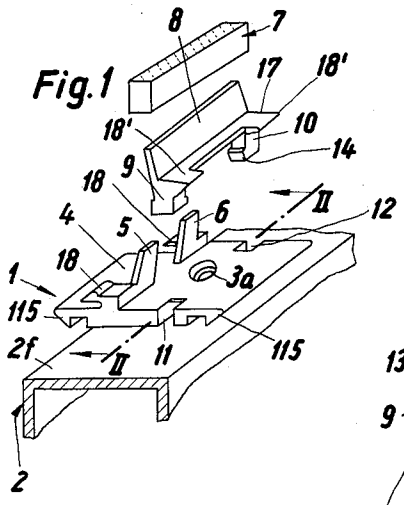


Fig. 2

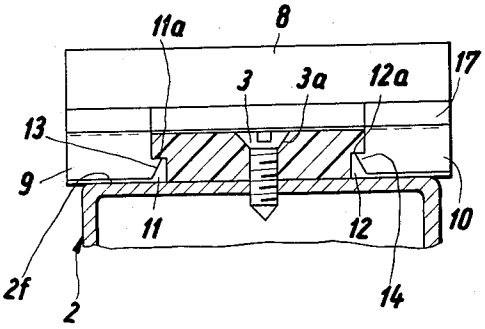


Fig. 3

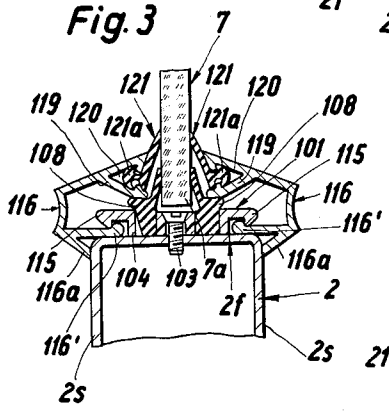


Fig. 4

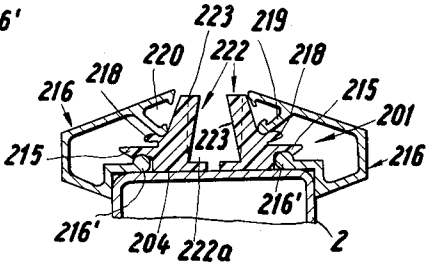
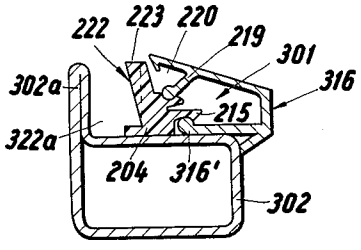


Fig. 5



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1

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SUPPORTING ARRANGEMENT

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4 Claims. (Cl. 52—498)

The present invention relates to supporting arrangements in general, and more particularly to an arrangement which may serve as a fluidtight or dustproof device to hold a glass pane or a similar panel-like structure in its frame.

It is an important object of the invention to provide a very simple and inexpensive supporting arrangement which may be assembled or dismantled by semiskilled or unskilled persons, which may provide a satisfactory support for comparatively thick or for rather thin panels and like supported structures, which provides a very satisfactory dustproof or even fluidtight support and seal for a window pane or the like, and which may be readily mounted on many existing window frames, door frames, cabinets and similar carriers without necessitating any or by necessitating only minimal alterations in the construction and design of such carriers.

Another object of the invention is to provide a supporting arrangement of the just outlined characteristics which may be made entirely or in part of corrosion-resistant material so that it can be put to long-lasting use in all climates.

A further object of the invention is to provide a supporting arrangement of the above outlined characteristics at least some parts of which may be fully concealed from view when the arrangement is put to actual use so that it does not detract from the eye-pleasing appearance of the structure in which the arrangement is installed.

A concomitant object of my invention is to provide a supporting arrangement which embodies the above-outlined advantages and which may be rapidly assembled or taken apart without necessitating any special tools for such work and which, combined with one or more similar arrangements, may safely hold in position not only small but also very large panels of vitreous material without any serious danger that the panel would fall out of its frame in response to shocks or vibrations such as develop in normal use.

Still another object of the instant invention is to provide a supporting arrangement wherein such parts which are subjected to greater wear and tear may be readily detached from the remaining parts for the purpose of being replaced by new parts so that the useful life of the entire arrangement is not terminated just because one of its component parts is damaged or destroyed.

With the above objects in view, one feature of my invention resides in the provision of a supporting arrangement which includes a carrier, such as a window frame or a door frame which defines an opening for reception of a glass pane or another panel-like supported structure, a holder which may be detachably or permanently connected with an edge face of the carrier and which comprises a pair of abutment members defining between themselves a space arranged to receive a marginal portion of a panel so that each of these members abuts against a different side of the panel, and preferably at least one retaining element in the form of a batten or cleat which may be detachably fixed to the holder to conceal a marginal portion of the panel. At least one of the abutment members consists of elastically deformable material so as to provide a yieldable cushion

2

for the respective side of the panel, and such abutment members may be integral with, detachably fixed to or even spaced from the remainder of the holder, i.e., the remainder of the holder may be rigid, flexible or in part rigid and in part elastic.

The novel features which are considered as characteristic of the invention are set forth in particular in the appended claims. The supporting arrangement itself, however, both as to its construction and its method of operation, together with additional features and advantages thereof, will be best understood from the following detailed description of certain specific embodiments with reference to the accompanying drawings, in which:

FIG. 1 is a developed perspective view of a supporting arrangement which embodies one form of my invention;

FIG. 2 is an enlarged longitudinal section as seen in the direction of arrows from the line II—II of FIG. 1, showing the manner in which one abutment member may be detachably secured to the holder and the manner in which the base plate of the holder may be detachably fixed to a frame-like carrier;

FIG. 3 is a transverse vertical section through a fully assembled supporting arrangement of modified construction which comprises a pair of retaining elements in the form of cleats and whose holder comprises two detachable abutment members;

FIG. 4 is a transverse vertical section through another fully assembled supporting arrangement whose holder comprises two independent mirror symmetrical sections; and

FIG. 5 is a transverse vertical section through a fourth supporting arrangement whose holder comprises an elastically deformable abutment member and a rigid abutment member forming a fixed stop on the carrier.

Referring now in greater detail to the illustrated embodiments, and first to FIG. 1, there is shown a supporting arrangement which comprises a carrier 2 here shown as a window or door frame, an elastic holder 1 whose base plate 4 is formed with at least one centrally located bore 3*a* adapted to receive a screw 3 or a similar fastening device (see FIG. 2) by means of which the base plate may be detachably fixed to the edge face 2*f* of the carrier 2, a first abutment member here shown as comprising two aligned lips 5, 6 which are integral with the base plate 4 and which may engage one side of a panel, such as a window pane 7, a plate made of plywood or the like, and a second abutment member 8 which may be detachably fixed to the base plate 4 so that it can engage the other side of the panel 7. The configuration of the bore 3*a* is preferably such that the head of the screw 3 need not extend beyond the exposed surface of the base plate 4 in order to prevent direct contact between the matallic material of the screw and the material of the panel 7, particularly if this panel is made of vitreous material. If desired, a thin web of flexible material may form a connection between the lips 5, 6.

The manner in which the ledge 17 of the abutment member 8 may be detachably secured to the base plate 4 is shown in FIG. 2. Thus, the base plate is formed with a pair of aligned cutouts 11, 12 which extend inwardly from the opposite end faces thereof and which define shoulders 11*a*, 12*a* adapted to be engaged by two projections or noses 13, 14 respectively provided on a pair of spaced legs 9, 10 which may be fitted into the cutouts 11, 12 and which are integral with the ledge 17. The arrangement is such that the noses 13, 14 preferably engage the shoulders 11*a*, 12*a* by snap action, i.e., the member 8 and/or the base plate 4 is slightly deformed at the time the legs 9, 10 are forced into the respective cutouts.

When the supporting arrangement of FIGS. 1 and 2

is assembled, the base plate 4 is fixed to the carrier 2 by the screw 3 and the panel 7 is placed against the right-hand sides of the aligned lips 5, 6, as viewed in FIG. 1. In the next step, the operator forces the legs 9, 10 through the cutouts 11, 12 so that the member 8 abuts against the other side of the panel 7 and holds this panel in position. The edge face of the panel 7 may but need not come to rest on the exposed surface of the base plate 4. It goes without saying that, and particularly if the abutment members 8 and 5, 6 are made of readily deformable elastic material, the member 8, too, may be integral with the base plate so that the outer portions of the members 8 and 5, 6 must be forced apart at the time the panel 7 is introduced into the space which the abutment members define therebetween.

On the other hand, it is equally possible to provide the holder with two detachable abutment members in a manner as shown in FIG. 3. In this embodiment of my invention, the base plate 104 of the modified holder 101 may consist of rigid synthetic plastic or metallic material and may be detachably connected with a pair of elastic abutment members 108 in the same manner as shown in FIG. 2, i.e., each of these members may be provided with one or more projections which engage and which form coupling means with suitable shoulders or the like on the base plate. The base plate 104 is detachably secured to the carrier 2 by means of one or more fastening screws 103. In the embodiment of FIG. 3, the holder 101 further comprises means for detachably holding a pair of retaining elements here shown as specially constructed battens 116, also called cleats, which are of identical construction and which are arranged in mirror symmetry with reference to the plane of the panel 7. This panel again assumes the form of a glass pane in the opening bounded by the edge face 2*f* of a window frame (carrier 2), of a door frame or the like. As shown in FIG. 3, as well as in FIG. 1, the base plate comprises two spaced parallel ribs 115 which are parallel with the longitudinal extensions of the abutment members 8 and 5, 6 or 108 and which are adjacent to the longitudinal edge portions and face downwardly from the respective base plate, i.e., toward the edge face 2*f* of the carrier 2. These ribs 115 are spaced from the edge face 2*f* so that they define with the carrier a pair of narrow gaps adapted to permit entry of similar but oppositely directed ribs 116' on the retaining elements 116 so that these elements may be held by snap action to assume positions shown in FIG. 3 and to bear directly against the respective marginal portions of the panel 7 or to support suitable sealing strips 121 made of rubber or elastic plastic. As shown in FIG. 3, each retaining element may be provided with a bracket-like extension 116*a* which engages the adjacent side face 2*s* of the carrier 2 and with a bifurcated upper portion defining a space 120 for a beaded portion 121*a* of the respective sealing strip. One leg 119 of each bifurcated portion may engage the exposed surface of the adjacent abutment member to hold such abutment member in clamped position (see FIG. 3). Alternatively, and as shown in FIG. 1, the lips 5, 6 may be provided with elastically deformable beaded flaps 18 which may be engaged by the arm 119 of the respective retaining element so that such retaining element actually engages two spaced portions of the holder 1. Additional flaps 18' are provided on the ledge 17 of the abutment member 8, and the abutment members 108 may comprise similar flaps if desired. Attention is further directed to the feature that the free portions of the abutment members 8 and 5,6 or 108 preferably converge toward each other, i.e., in a direction away from the edge face 2*f* of the carrier 2 and toward the respective sides of the panel 7 so as to sealingly engage the panel and to remain in at least slightly deformed condition when the supporting arrangement is fully assembled. The same applies for the sealing strips 121 which form a substantially V-shaped

assembly and which are deformed as a result of direct engagement with the respective sides of the panel to prevent penetration of dust, moisture and other foreign matter into the interior of the supporting arrangement.

Referring again to FIG. 1, it will be noted that the flaps 18 and the left-hand rib 115 together form a bifurcated component of the holder 1, the flap 18 of which may be received between two spaced portions of a cleat, such as the portions 116', 119 of a cleat 116. The other bifurcated component of the holder 1 comprises the flaps 18' and the other rib 115, and this component may be clamped between the portions 116', 119 of the other cleat 116 if such cleats are used in the supporting arrangement of FIG. 1. Owing to the fact that the flaps 18, 18' and the ribs 115 are flexible, the holder is deformed by and holds the cleats 116 in requisite position while permitting detachment of such cleats if it should become necessary to replace a damaged panel 7 or to gain access to the marginal portion 7*a* of the panel for the purposes of cleaning.

FIG. 4 illustrates a further supporting arrangement wherein the holder 201 comprises two independent sections 222 which are mirror symmetrical with reference to the plane of the panel, not shown. Such panel may be inserted into the space 222*a* between the elastically deformable abutment members 223 of the two sections whereby the abutment members are deformed to move their inner sides to the positions indicated by broken lines. In this embodiment of my invention, the base plates 204 of the sections 222 are bonded to the end face of the carrier 2, for example, by means of a suitable metal-to-plastic or metal-to-rubber adhesive substance. The configuration of the cleats 216 is slightly different from that of the cleats 116 in that each thereof is of a configuration substantially complementary to that of the respective edge portion of carrier 2 so that it actually straddles the respective edge portion, whereas the cleats 116 of FIG. 3 are at least partially spaced from the edge portions of the carrier. In addition, each cleat 216 comprises a rib 216' which is detachably held by the rib 215 of the respective section 222, and a leg 219 which engages an elastically deformable flap 218 of the respective section. The spaces 220 may receive the beaded portions of suitable sealing strips (not shown in FIG. 4) which may resemble the sealing strips 121 of FIG. 3.

If desired, a central portion of each of the abutment members 223 may be thinner than the remainder thereof so as to add to the flexibility of these members. For example, the broken lines shown in FIG. 4 may indicate the depth of recesses in the central portions of the members 223. The greater the flexibility of the sections 222, the greater is the versatility of the supporting arrangement which is then capable of being used in connection with very thick or with comparatively thin panels. If the members 223 are provided with such recesses, each thereof resembles the member 5, 6 of FIG. 1 with a web between the two lips.

Referring finally to FIG. 5, there is shown a greatly simplified supporting arrangement whose holder 301 comprises a single section 222 including a base plate 204 and a flexible abutment member 223 which cooperates with a rigid abutment member here shown as a stop or backrest 302*a* forming part of a modified carrier 302. Of course, the stop 302*a* may be detachably secured to the carrier 302 or to the base plate 204 of the section 222. The construction of the single cleat 316 is similar to that of a cleat 116. The section 222 is identical with either one of the sections shown in FIG. 4. In this embodiment of my invention, a window pane or a similar supported structure may be held in position in the space 322*a* between the abutment member 223 of the section 222 and the rigid stop 302*a*, i.e., one of the abutment members may be rigid and the other thereof may be elastic. The section 222 of FIG. 5 may be rigidly or detachably se-

cured to the carrier **302**. The cleat **316** comprises a rib **316'** which engages the rib **215** of the base plate **204**.

The flexibility of the abutment members **5**, **6**, **8**, **108**, **223** is preferably such that the respective supporting arrangement may be utilized to hold panels of different thicknesses. Thus, and referring for example to FIG. 5, the space **322***a* between the rigid abutment member or stop **302***a* and the flexible abutment member **223** may accommodate panels of different thicknesses. If the panel to be supported by the arrangement of FIG. 5 is comparatively thick, the abutment member **223** will undergo substantial deformation and will exert a greater force upon the respective side of the panel to hold it in requisite position. In the arrangement of FIG. 5, the fixed abutment member **302***a* actually forms a component part of the holder **301** even though it is not directly connected with the base plate **204**.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can, by applying current knowledge, readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic and specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be secured by Letters Patent is:

1. An arrangement for supporting window panes and other types of panels, comprising a carrier; a holder including a base plate fixed to said carrier and a pair of spaced abutment members arranged to engage the opposite sides of a panel, at least one of said abutment members consisting of elastically deformable material, and coupling means provided on at least one of said abutment members and on said base plate for detachably securing said one abutment member to the base plate, said coupling means comprising a pair of spaced cutouts provided in said base plate and defining a pair of spaced shoulders facing said carrier, and a pair of projections provided on said one abutment member and extending into said cutouts, each of said projections having a nose engaging the respective shoulder to hold said one abutment member against longitudinal movement and against movement in a direction away from said base plate.

2. An arrangement for supporting window panes and other types of panels, comprising a carrier having a substantially plano edge face; a holder fixed to said carrier and comprising a pair of spaced abutment members extending in a direction away from said edge face and defining between themselves a space adapted to receive a marginal portion of a panel so that the abutment members engage the opposite sides of such panel, at least one of said abutment members consisting of elastically deformable material; coupling means for coupling at least one of said abutment members to said holder and including cooperating male and female coupling members respectively integral with said one abutment member and said holder for securing one to the other against longitudinal movement and against movement away from each other; at least one elongated retaining element arranged to extend along said edge face and along one side of a panel which is received between said abutment members; and connecting means comprising two spaced portions provided on said retaining element, and a bifurcated component including at least one elastic flap provided on said holder and spaced from said edge face, one portion of said connecting means being inserted intermediate said elastic flap and said edge face and engaging said elastic flap for detachably connecting the retaining element with the holder.

3. An arrangement for supporting window panes and other types of panels, comprising a carrier; a holder including a base plate fixed to said carrier; and first and second spaced abutment members arranged to engage the opposite sides of a panel, and coupling means detachably securing at least one of said abutment members to said base plate, said coupling means including cooperating male and female coupling members respectively provided on said one abutment member and said base base plate integrally therewith for holding said one abutment member against longitudinal movement and against movement in a direction away from said base plate.

4. An arrangement as defined in claim **3** wherein at least one of said coupling members consists of elastically deformable material, and wherein said coupling members engage each other with a snap action.

References Cited by the Examiner

UNITED STATES PATENTS

1,892,104	12/1932	Hunter	52—397
2,175,909	10/1939	Nelson	52—212
2,214,222	9/1940	Chaffe	52—172
2,761,535	9/1956	Englehart	52—400
2,934,800	5/1960	Hasbrouck et al.	52—397
2,933,779	4/1960	Delaroche	52—302
3,068,617	12/1962	Borski	52—208
3,123,869	3/1964	May	52—397
3,151,715	10/1964	Hagerty et al.	52—127

FOREIGN PATENTS

547,350	5/1956	Belgium.
1,131,806	2/1957	France.
1,258,489	3/1961	France.
851,448	10/1953	Germany.
1,074,846	2/1960	Germany.
512,383	9/1939	Great Britain.
703,873	2/1954	Great Britain.

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