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(54) Automobile vehicle window drive and securing device.

(57) A drive and securing device for the window glass in automobile vehicles, with a support part (A) which is in turn a guide in the track (B) and a support for the glass (C). This support (A) has an upper U-shaped portion with two facing projections (9) and (10) with their divergent faces downwards. The upper straight portion of the projection (9) includes a pivot (3) which is housed in the hole (2) in the glass and is offset in relation to the front of the projection (10). The advantage of the invention is that it is easy to assemble the glass onto the support and also to dismantle it.

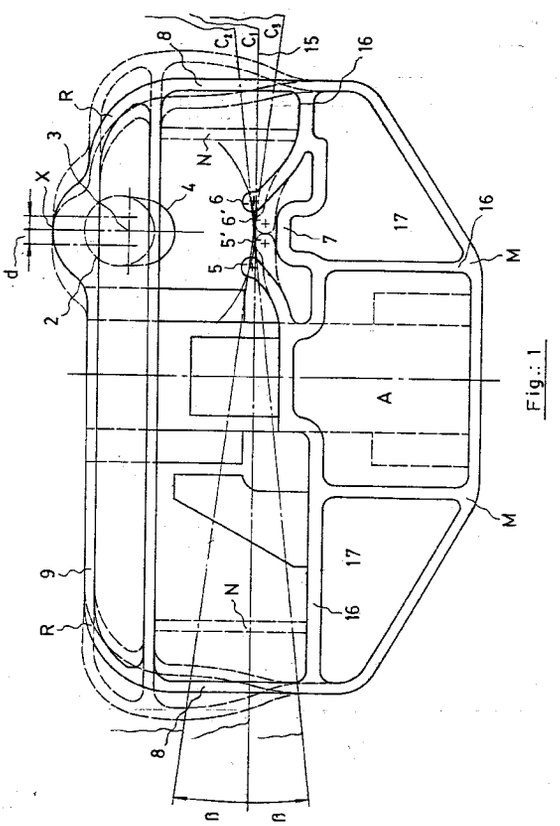

Fig.: 1

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This invention relates to a drive and securing device for the glass in a vehicle window and, more specifically, to an improved solution for housing the window glass onto a part, which in turn is the drive element for the said window, by its sliding along a guide fixed to the interior of the vehicle door.

Already known, through the German publication DE-A-3243123, is an assembly according to which the glass is provided with a drill hole near its lower edge and the support for the said glass has a lower U-shaped part, in which the said lower edge of the glass is housed. In this solution, a pin, connected to the support, engages in the hole in the glass in such a way that the movements of the window in a direction perpendicular to its side surface are prevented by means of a flange on the pin and a ring-shaped spacer placed between the glass and the support.

The assembly of the glass into the support is quite complicated, as it first requires the lower edge of the glass to be inserted into the U-shaped recess before the pin can be fitted.

Also known, through publication EP. 0208237, is a combination of a window glass and a support to connect this said glass to its corresponding drive device. The glass is provided with a drill hole near its lower edge, and the support has a pin which engages in this drill hole. In this assembly, a main support tongue is provided, together with a set of auxiliary tongues situated parallel to the main one, thus forming a "staggered" arrangement.

The pin is supported by the main tongue and at least one of the auxiliary tongues is elastically deformable in a direction perpendicular to the side surfaces of the glass.

The disadvantage of this assembly is that all the tongues are elastically deformable and short in height, with which the seating of the glass in the support is limited. Moreover, the pin is centred in relation to the window track, which makes it difficult to reach the said pin when so desired, for instance, in order to change the glass. On the other hand, we wish to emphasise that a window winder device is a part which is closely related to the volumes and shapes adopted by automobile vehicles throughout their evolution, during which the window winder has developed from a device with a simple vertical movement to the present models which have rake angles of 15º or even more.

In those window winders in which the drive mechanism travels along cylindrical rails, different alternatives are adopted in order to make this drive mechanism follow the helicoidal path taken by the fixing point of the glass during its movement, all of which acts either on the drive mechanism or on the rail, or on both in a combined manner. Also, on occasions, the area around the glass fixing point is available for the drive mechanism, thus minimizing this effect.

At present, the use of the new concept of multirail window winders has brought as a consequence new technical difficulties which add to and worsen the effect described above

In this case of multirail window winders, the problems which have arisen have been in relation to the dispersion of position between the rails which support and act as a guide for the drive system, by an unwanted relative mobility between the drive elements that hold the glass.

As a result of the differences between the real and the theoretically paths of the rails, caused by the abovementioned dispersions, and by these being hindered, because the distances between the fixing points to the glass are fixed, unwanted frictions appear, which increase the operating torques of the window winder and which, logically, have to be reduced.

Several alternatives have been adopted to tackle these problems, such as adjustment of the glass or drive systems provided with relative mobility, which are made up of a large number of component parts, requiring labour-intensive assemblies, and which involve a device for fixing to the glass which requires a large number of operations in line.

A first object of the invention is to provide a device which facilitates the assembly and dismantling of the window glass, providing all degrees of freedom required so that no force is placed on the glass in the guide rails and making the use of this device possible in single or double-rail window winders.

A second object of the invention is a device which has a more favourable relation between the offsetting of the glass fixing point and the added overload as the result of the variation in the original path to be followed by the drive mechanism, based on a two-part drive device, whose assembly is most simple as it only involves an insertion and its corresponding clipping together, two actions which can be carried out at any stage in the assembly of the window winder. At the same time, the device is capable of absorbing position variations greater than ±5 mm. without the operation of the window winder being affected in any significant manner.

A third object of the invention is a device with a clippable window lug which allows the double functionality of being able to be fixed to a pane of glass or to a drive slide, either with or without sidewards movement.

The invention only requires a slight pressure to be placed on the upper edge of the glass and for the said glass to be turned slightly until its side guide become locked onto the slide or runner, in the case of a single-rail window winder, or for the same operation to be carried out on the support of one of the rails and the glass to be guided until it becomes locked into the second support, in the case of a double-rail window winder. Fitting the glass becomes as easy as the sliding of the glass on the outer surface of the rail.

The contour or rib is provided with a reinforcing

wall which supplies the necessary strength to the whole of the support assembly and more specifically to the two lugs whose purpose is the receive the lower edge of the glass, between and below which is situated a stop that limits the deformation of the said lugs. In particular, the stop coincides with the central point between the two lugs and is also arranged vertical to the protruding pivot of the bridge. In this way, the lower edge of the glass can form an angle with the inner base of the support in order to make certain assemblies easier.

The branches that jut out from the contour or rib are elastically deformable in a horizontal plane parallel to the surface of the glass, in order to allow any angular divergence that might occur between the movement rail or rails and the door guides to be absorbed.

The edge which takes up the upper part of the branches is logically continuous, so that all its surface is supported on the surface of the glass once that the pivot with which it is provided has become housed in the drill hole in the glass.

The facing sides of the edge and of the rigid projection are divergent with each other, starting from their upper edges, opening out towards the rib or contour, so the two elements maintain a constant pressure on the glass. This ensures the penetration of the pivot into the drill hole and at the same time noises caused by a rattling effect are avoided. Therefore, the distance between the upper points of the bridge or edge and of the rigid projection is noticeably inferior to the thickness of the glass. At the same time, the base of the rib on which the lower edge of the glass rests is slightly superior to the thickness of the glass.

The branches which form the bridge or edge are usually provided with a certain flexibility in a perpendicular direction, at least, to the surface of the glass and in a parallel direction to these surfaces.

The glass is always supported on a rigid projection of the support, whose upper edge is gently rounded, on the upper edge of the bridge and on the branches which form the said edge.

On the exterior of the rigid projection the support has a series of recesses capable of receiving the guide for the profile of a rail along which the support slides. At the same time, its front outer edge has a flexible lug, through which contact between the support and the rail is ensured at all times.

The bridge or edge includes the pivot which will become housed in the drill hole in the glass, as was explained previously, with the particularity that this pivot is offset in relation to the centre of the bridge and outside the position occupied by the rigid projection of the support, so that it can be reached in order to release the support from the glass.

This pivot has a special geometric shape with an upper bevel edge that facilitates the sliding of the lower edge of the glass, converging side surfaces towards its most outward part, a forward frontal projection that extends downwards and a blind front recess.

Therefore, the pivot is not intercepted by the shape of the rail and in this way, its penetration into the drill hole in the glass can be clearly seen. Moreover, access to it is made easier, so the end of a tool can be housed in its blind front recess in order to make it easier to withdraw the pivot.

The lower front projection on the pivot is a certain distance from its base, a distance which is slightly greater than the thickness of the glass, with which, once this has been inserted, the glass is perfectly controlled.

The diameter of the drill hole in the glass must be slightly greater than the diameter or biggest cross-section of the pivot, plus the dimension of its lower projection,to make the appropriate withdrawal of the pivot easier to perform.

To achieve the second object, the invention presents an assembly made up of two parts, one of which will be called fixed and the other mobile. The structure of both parts is nearly flat and the fixed part is provided with one central elevation and two others separated a certain distance from the central one and parallel to it.

The fixed part is also provided with a lower edge which forms a longitudinal recess in the form of a rail, which has a partial outer edge upwards, forming a upwardly open U-shaped housing.

The body of the fixed part has two horizontal windows through it, which receive two projections from the mobile part. In the same way, one of the elevations and the central elevation are each provided with upwardly open L-shaped projections, whose bases are opposite the base of the previously-mentioned rail, so that the mobile part can slide between both bases through areas which are adapted for this purpose.

The fixed part also has a seating for the lower edge of the glass and two lugs on which this lower edge rests, as described earlier.

One of the ends of the base of the fixed part that is situated above the rail has a horizontal ledge, which will make contact with the sliding portion of the mobile part.

The mobile part is also essentially flat, with a central elevation on which a projection juts out to be received in the hole in the glass, and a base on which it slides along the base of the fixed part.

The base of this mobile part is equipped with some horizontal cylindrical supports which fit into the slots in the base of the fixed part, as well as another ledge parallel and close to one of those already mentioned. The cylindrical supports are separated from each other as much as possible.

The mobile part is in turn provided with two elevations on its base, whose height corresponds to the distance between the lower rail and the base of the L-shaped lugs on the fixed part. These elevations fa-

vour the horizontal movement of this mobile part on the fixed part and are in turn the ones which are housed in its L-shaped lugs.

The mobile part is attached to the fixed part by means of the sides provided with cylindrical projections and ledges on the said mobile part, which fit into the slots in the fixed part, at the same time as the side elevations on the mobile part are housed in one or in both of the lugs that jut out downwards from the fixed part.

To facilitate the insertion and prior accommodation of the mobile part in the fixed one, the latter is provided with a protruding rib on the opposite side to where the mobile part enters; this rib is L-shaped, with its opening downwards, and extends behind one of the longitudinal slots in the fixed part. This rib is essential for the prior positioning of the mobile part on the fixed one, as will be appreciated later.

The mobile part is capable of moving in relation to the fixed part or drive mechanism; this capacity is only limited by the above-mentioned rib, whose sole purpose is the autocentration of the said mobile body in the window assembling operation.

The mobile part is submitted to minimal loads during all operations of the window winder and does not bear weights nor receive the striking energy caused by closing the door and is also free from transmitting power during the upward movement of the glass. This mobile part is only portative in the downward movement of the glass, in which the power to be transmitted in order to achieve this movement is much lower than in the operations considered above.

The previously-mentioned cylindrical supports of the mobile part are positioned as far as possible from the fixing axis for the glass in order to lower the tilting torques caused on this part by the action of the glass, thus achieving its favourable movement-load ratio.

As so little is required mechanically of the mobile part, it can be sized in such a way that it possesses great flexibility, which facilitates the glass assembly operation,as the insertion load is minimal.

To develop the third object of the invention, a clip-fitted window lug is used, a U-shaped transversal section made of plastic. This part has two wings joined to a weakened portion of the same material, allowing the said wings to be clipped easily onto the glass. One of these wings is provided with a outwardly cylindrical female projection with a hollow interior on the side facing the other wing, with this projection being received in the drill hole cut near the edge of the vehicle window.

In a similar manner, the other wing has a male projection facing the above-mentioned female one, into which it can penetrate and become housed once that the vehicle window has been inserted between the two wings.

To facilitate the mutual connection between the two facing projections on the wings, the exterior of the male projection and the interior of the female projection, which together hold the glass, are made to correspond to each other, so that once they are connected, this connection between the two wings is stable and holds the glass permanently between both wings unless the male projection is extracted by force.

The outer face of the female projection has another projection or lug, made in the shape considered most convenient to be adapted to another fixing or movement item of the clip-fitted window lug together with the vehicle window. A recess could be used instead of this projection on the outer face, as long as it can be fixed shifted or moved as convenient.

The described clip-fitted window lug, together with the vehicle window housed in the way described can be incorporated onto a window fixing drive device without any sidewards movement.

The drive device or slide in this application is provided with a central portion in which the edge of the clip-fitted window lug is received, with tongues jutting out on both sides of the said central portion in order to secure the whole assembly.

In this particular case, two elastic tongues are set up, one on each side of the central portion, and another two rigid tongues, also one on each side of the central portion. Of the two flexible tongues, one of them is provided with a groove and the other with a projection, whereas the two rigid tongues are flat. The upper ends of all these tongues are provided with curved areas to allow easy insertion of the clip-fitted window lug and the window itself.

In this case, after being specially studied in single-rail window winders, the glass is provided with two drill holes. One of these drill holes receives the U-shaped part, while the other, which is a certain distance from the first,remains free to be connected with the projection on one of the tongues on the slide.

The clip-fitted window lug is housed in the groove of one of the flexible tongues, whereas the projection on the other flexible tongue is housed in the other drill hole in the glass. The housing of the lug on the U-shaped part into the groove allows any dispersion to be absorbed which might have been produced between the distance of the drill hole cut in the window.

The window glass, therefore, is retained or held between the flexible and the rigid tongues, and its immovability is ensured by means of the said pairs of tongues and by the effect of the pressure exerted on the lower edge of the glass by the other two elastic tongues arranged at the ends of the central portion of the drive device or slide. In this way, as the window glass is perfectly fitted and fastened, it is possible to eliminate the lower guidance from the window.

The clip-fitted window lug can also be fitted on a drive slide with sidewards movement of the window in both directions. In this case, the window is provided with one single drill hole, which receives the U-shap-

ed part, and the drive slide is provided with a flexible tongue on one side of its central portion, which includes a groove in which the lug on the said U-shaped part is housed and can move in its interior.

The lower portion of the clip-fitted window lug rests on the central portion above some tongues which exert pressure on the edge of this lower portion. The drive slide is also provided with another two rigid tongues located at the other side of the central portion of the slide, which, together with the flexible tongue, control and hold the window.

All these and other details of the invention will be understood more clearly by referring to the attached sheets of drawings, which are of a non-restrictive nature and included for guidance only.

- Figure 1 is a front elevation which refers to the device in accordance with the first object.
- Figure 2 is a top view of Fig. 1.
- Figure 3 is a view of Fig. 1 from the left with a detail, in perspective, of the pivot for insertion in the drill hole in the glass.
- Figures 4 and 5, referring to the second object of the invention, represent two general views of the insertion of the mobile part onto the fixed one.
- Figure 6 is a plan view of the whole of the above mechanism in its assembly position.
- Figure 7 is a profile view of the finished assembly, ready for the insertion of the glass.
- Figures 8 and 9 are two details corresponding to the clipping operation of the centreing tongue.
- Figure 10 is a perspective which shows the third object of the invention in an assembly of the U-shaped part or clip-fitted window lug.
- Figures 11 and 12 are two view of the assembly shown in Fig. 10.
- Figure 13 is a perspective of the drive device or slide which receives the glass and the clip-fitted window lug without sidewards movement of the glass.
- Figure 14 is another perspective of the drive slide with sidewards movement of the glass.

Referring now to Fig. 1 of the drawings, the glass securing and drive support (1) is structured by means of a rib (16) which is the base of the facing projections or branches (8) at the sides and which are connected by means of the upper edge or bridge (9) which runs superficially. The rib is provided with a reinforcing wall (17), which strengthens the support.

Two facing lugs (5, 6) rise from the rib (16) and protrude upwards, with the lower edge (15) of the glass (C) being supported on the ends of these lugs, which flex due to the weight of the glass until they adopt the positions (5', 6'), with this deformation being controlled and limited by the lower stop (7).

The bridge or upper edge (9) has a protruding pivot (3) which is housed in the drill hole (2) in the glass, which, as shown in Fig. 1, is offset in relation to the centre of the support and is just above the position of the stop (7).

The support is also provided with a rigid projection (10) which rises centrally as shown specifically in Figs. 2 and 3. The pivot (3) and the lugs (5, 6) are clear of the front of the projection (10), so access to the pivot is perfectly possible from the exterior.

When the pivot (3) is housed in the drill hole (2) in the glass (C) and this has been received in the support (1), the glass can adopt any of the positions (C1, C2, C3), with angles (B) displaced upwards or downwards in relation to the horizontal, to make the said assemblies easier.

The centre of the engaging pivot (3), thanks to the elastic deformation of the branches (8), can be displaced ($\pm d$) in a plane parallel to the surface of the glass (C), Fig. 1, in order to absorb any angular divergence which might be present between the movement rail(s) and the door guides.

For reasons of tensile strength, the cross section or the number of the branches (8) can be increased, for example, by arranging other branches (N) parallel to those mentioned (8).

The support (1) has the means (19) in its portion (A) in the form of recesses in which the profile guide (B) is received, by which the support with the glass is guided. In accordance with Fig. 3, we can see the elastic lug (11) of the portion (A), through which continuous contact is ensured between the support and the said guide (B).

Looking now at Fig. 3, it can be appreciated how the facing walls of the edge (9) and of the rigid projection are divergent from the point where they meet. The distance (e) between both points is less than the thickness of the glass (C). In the same way, in this same Figure, we can see how the width (E2) of the rib (16) in the support is in turn greater than the thickness (E) of the glass.

As regards the pivot (3) shown in detail in Fig. 3a, its special geometry can be observed, with the upper chamfer or bevel (18), in which the lower edge (15) of the glass will slide in order to insert the pivot into the drill hole (2) in this glass for a fast assembly.

The side surfaces (12) are convergent with each other, as can be seen, in order to make it easy to insert the pivot into the drill hole.

The upper surface (18) is provided with a blind recess (14), to which access can be easily obtained from the exterior in order to release the pivot from its position in the drill hole in the glass when wishing to discontinue the connection between the support and the glass.

The lower projection (13), whose internal wall takes in the thickness of the glass, as shown; the distance from this internal wall to the start of the pivot (3), which has been marked with (E2), is in turn slightly greater than the thickness of the glass.

The assembly of the support is quite simple, given that it is sufficient to situate it over the guide (B), on one side, securing the channel or slot (19) in the guide, while, on the other side, the glass is inserted under pressure by forcing the bridge (9) and the pivot (3), until it becomes positioned between the bridge (9) and the branches (8), and the rigid projection (10).

In Fig. 4 we can appreciate the fixed body (37) provided with a base (not numbered), a drive portion (20) and two fingers (39, 39') essentially parallel to the said portion (20), which act as a support for the surface of the glass. A pair of upwardly projecting lugs or ribs, between the finger (39) and the portion (20) act as a seating base for the lower edge of the glass.

At the lower end of the fixed part (37) we can observe a housing (36) in the form of a track or rail to receive the lower end of the mobile part (38).

This track (36) is limited by the upward portion (24), forming a U-shaped housing, with this portion (24) also being close to a cylindrical ledge (32).

In the same Fig. 4, we can observe the mobile part (38) indicated by the dotted line, which is presented with its surface against the fixed part (37), making it possible to appreciate how the lugs (23, 23') are not in contact with the said mobile part (38).

Figure 5 allows us to check this insertion of the mobile part (38) into the fixed part (37), according to which the lower edge of the mobile part (38) is received in the track or rail (36), and a rear cylindrical support (28) on the mobile part is to become housed in a slot (30) in the fixed part (37). In Fig. 5 we can also observe the portion of the lower edge of the mobile part (38) in relation to the projection (24) and the ledge (32) on the fixed part (37), one of the lugs (23) and the area (33) of the mobile part (38)which slides on the fixed part.

With the part previously housed in accordance with (D) and its lower edge seated in the track, the cylindrical support (28) and another two supports, which will be observed later, become houosed in the slots (30, 31). Also in accordance with Fig. 7, it can be appreciated how this insertion does not interfere with the two lugs (23, 23') and therefore turning can be carried out in accordance with (F) for the mobile part to become attached to the fixed part.

Once this operation has been carried out, the mobile part (38) is moved manually towards the right, as shown in Fig. 6. In this operation, the sliding ends (33, 33') of the mobile part (38) are received inside the lugs (23, 23') and at the same time the lower portion of the end (33) is controlled by the projection (24) and the ledge (32) on the fixed part (37). A pair of lower supports (35, 35') help in the sliding of the mobile part (38) in accordance with the direction (P) shown in Fig. 6, since they prevent friction during the movement.

Fig. 7 also allows the assembled unit to be appreciated, with the mobile part (38) perfectly fitted onto the fixed part.

The rear rib (26) which appears in Figs. 4, 5 and 7 and forms part of the fixed part (37) is worth special attention. Its purpose can be observed in greater detail by also checking Figs. 8 and 9.

Looking now at Fig. 8, we can appreciate clearly the shape of the mobile part (38) with its two sliding ends (33, 33') in the form of moderate elevations, as well as the cylindrical supports (27, 28) which become housed in the slots in the fixed part. These slots have been illustrated with dotted lines, as has the position (26) that corresponds to the rear or dead rib that was mentioned earlier.

The cylindrical support (28) also forms a ramp (29) which opens out towards the right and can be seen clearly in Fig. 9. This ramp (29) allows that when the mobile part (38) is moved towards the left during assembly (Fig. 9), the rear or dead rib (26) slides along the ramp through the different positions until it occupies the space between the ramp (29) and the adjoining ledge (34).

These positions can be seen clearly in Fig. 9, as can the final stage with the cylindrical ledge (27) housed in the slot (31) in the fixed part (37) and the projections (28, 34) received in the slot (30) in the same part.

The purpose of the rib (26) is to autocentre the mobile part (38) in the glass assembly operation and it does not presuppose any limitation of the movement capacity of the said mobile part, which clips the glass onto the drive mechanism or fixed part (37) by means of the upper connection (25).

The mobile part is submitted to minimum loads during all the operations of the window winder, with the peculiarity that it does not bear nor receive the striking energy generated in closing the door.

As can be observed, the cylindrical supports (27, 28) are situated as far as possible from the fixing axis of the glass (22), with which the tilting torques generated in the mobile part (38) are reduced when the glass acts on it and a favourable movement-load ratio is achieved.

The cylindrical supports (27, 28) of the mobile part (38) bear the tensile stress of the glass during its descending movement, when the said glass is driven by the ledge (25).

The supports (35, 35') of the mobile part (38), at the same time as they minimize the frictions by movement of the said part (38) taking place according to (P) in the ascending movement of the glass, do it in such a way that the dispersion of the position of the rails is compensated.

In accordance with Fig. 10, we can observe the clipfitted window lug (40), which is a part made of flexible plastic with a U-shaped cross section, with two wings (41, 42) conected to each other by means of a weakened area which allows the mutual closing together of the said wings.

The wing (42) has the hollow cylindrical projec-

tion (45) and the wing (41) includes another projection (44), both projections being on facing sides and corresponding to each other.

The window glass (46), which is provided with a drill hole-close to its lower edge, receives the cylindrical projection (45) on the wing (42) into this drill hole, so that once it is housed, the wing (41) can be turned for the projection (44) to be inserted under pressure into the hollow interior of the projection (45). The rear side of the clip-fitted window lug is provided with the protruding lug (47), responsible for being adapted to any other fixing or moving element.

Fig. 11 illustrates perfectly the arrangement of the already performed assembly in the clearly marked part, showing from the position (41') of the wing to its final position (41), as well as the final and initial positions (44) and (44') of the projection which is housed under pressure in the interior of the receiving projection (45), which in turn is received in the drill hole in the glass (46), which becomes perfectly housed and controlled.

We can also appreciate in Fig. 11, illustrated by the dotted line, the projection (47) on the outer face (42) of the part (40). This projection, which could alternatively be a recess, will be provided with the shape necessary so that it can be fixed, moved or displaced according to the needs of the assembly and located where most convenient.

Fig. 12 allows the position of the projection (47) to be appreciated, in a specific solution, at the end of the wing (42).

Fig. 13 shows the drive device or slide (48) for fixing the window without sidewards movement, in whose central portion (56) is situated the clip-fitted window lug (40) that includes the window (46). At both sides of this portion (56) we can see the flexible tongues (49, 51), of which one of these is equipped with the groove (50) that receives the projection (47) of the clip-fitted window lug (40) and the other projection of the lug (52) that is received in another drill hole cut in the window (46).

On this slide (48) it is also possible to appreciate the other two rigid tongues (53, 54) which hold and immobilize the window (46), with it being secured between these tongues by the effect of the pressure exerted on the edge of the glass by the two end tongues (55).

In the case of Fig. 14, the slide (57), designed for sidewards movement of the window, has the flexible tongue (58) and the groove (59), which receives the projection (47) of the clip-fitted window lug (40), which moves in its interior and rests on the small tongues (62). The window glass is held by means of this arrangement, together with the assistance of the two rigid tongues (60, 61) on the other side of the central portion.

Claims

1.- Automobile vehicle window drive and securing device, with a sliding support (A) in a rail profile (B) and a glass window (C) with a drill hole (2) through it near its lower edge (15), with the support having a U-shaped portion in which the said lower edge (15) of the glass (C) is received,with a pivot (3) connected to the upper profile or edge (9) of the support (A) that engages into the drill hole (2), which is characterized in that the support (A), which is at the same time the slide that travels along the guide rail (B), is provided with a contour or rib (16) that acts as a base for two facing projections or branches (8) which are joined to the profile of the edge (9), forming an inverted U or bridge that allows its sidewards movement (±d), in that the contour or rib (16) is provided with a reinforcing wall (17) to provide strength to the whole of the assembly of the part (A) and in particular to a pair of lugs (5, 6) and a stop (7) that are used to receive the lower end of the glass, in that another rigid projection (10) integrated into the slide (A) is established facing the edge (9), in that this edge (9) is provided with flexibility due to the special shape of its profile and in that the rigid projection is centrally arranged in relation to the flexible projection or edge (9), in that the facing sides of both projections (9) and (10) are divergent from their upper ends and towards the ribbing of the support, in that the straight portion of the profile or edge (9) forms part of a pivot (3) that juts out towards the projection (10), with this pivot being housed in the hole (2) in the glass (C) and located in a position distant from the vertical centre of the support (A), which is outside the frontal axis occupied by the projection (10), so that it is not intercepted by the profile of the rail and its penetration into the glass can be observed visually, or made easier to extract when necessary, without any interruption, in that on the rib (16) and just below the pivot (3), a pair of facing lugs (5, 6) project upwards so as to support the lower edge (15) of the glass (C), thus allowing this to turn (±B) in relation to the centre of the pivot, with the portion (7) of the edge (16) being raised below these lugs in the form of a stop, and with the front of the pivot (3) having a blind recess (14) which allow it to be manipulated from the exterior by means of the end of a tool in order to release the glass.

2.- Automobile vehicle window drive and securing device, in accordance with claim 1, characterized in that the distance (e) between the projections formed by the edge (9) and by the upper part of (10) is appreciably smaller than the thickness (E) of the glass.

3.- Automobile vehicle window drive and securing device, in accordance with claim 1, characterized in that the width (E2) between the beginnings of the support (A) and the branches (8) of the support bridge for the pivot (3) is slightly greater than the thickness (E) of the glass (C).

4.- Automobile vehicle window drive and securing device,in accordance with claim 1, characterized in that the branches (8) and the profile of the edge (9) have a suitable cross section so as to allow the flexibility of the projection in a perpendicular direction, at the least, and parallel in relation to the surfaces of the glass.

5.- Automobile vehicle window drive and securing device, in accordance with claim 1, characterized in that the front outer side or face of the support (A) is provided with a flexible lug (11) which ensures the contact between the said support and the rail (B).

6.- Automobile vehicle window drive and securing device, in accordance with claim 1, characterized in that the pivot (3) is provided with a forward front projection (13) at a distance (E1) slightly greater than the thickness (E) of the glass, so that it takes in the glass, and an upper offset or chamber (18) and sides (12) in a convergent direction towards its forward part that facilitate insertion into the drill hole in the glass.

7.- Automobile vehicle window drive and securing device, in accordance with claim 1, characterized in that the projection (10) on the support (A) has means, in the form of recesses (19), to receive the guide of the rail profile (B).

8.- Automobile vehicle window drive and securing device, in accordance with claim 1, characterized in that the support (A) is produced by a moulding operation.

9.- Automobile vehicle window drive and securing device, in accordance with claim 1, characterized in that the support (A) is made of thermoplastic material.

10.- Automobile vehicle window drive and securing device, in accordance with claim 1, characterized in that if the branches (8) are doubled, forming a rigid bridge with the upper edge (9), the slide can be considered as such.

11.- Automobile vehicle window drive and securing device, with a drive element (20) itself, in which the glass (22) is seated, which has a flexible portion (21) provided with an engaging part (25) to be housed in a hole in the glass close to its lower edge, which is characterized by:

- a fixed flat body (37) provided, on the lower part of one of its faces, with a housing in the form of a rail (36) which in a small portion is outwardly closed by an upward projection (24), with two horizontal end slots (30, 31) above the said rail and a horizontal cylindrical ledge (32) between one of the slots (30) and the rail, with a drive device (20) jutting out vertically upwards from the said body and two fingers (39, 39') parallel to this drive device, in that the drive portion (20) and one of the fingers (39) are each provided with L-shaped upwardy open lugs (23, 23') with an internal recess similar to that of the above-mentioned rail, and with this fixed body also having, on its rear outer face, a downward dead rib (26) which extends beyond the open horizontal slot (30) in this side, and with this rib starting from a similar height to the point where the lugs (23, 23') start from and taking an L-shape.
- a mobile part (38), with a lower edge from which two supports (35) jut out and rest on the rail (36) of the previous part (37) and two side elevations (33, 33') which pass below the lugs, as well as a greater central elevation (38) provided with an engaging part (25) jutting out towards the fixed part for insertion in the hole in the glass, with these parts including two cylindrical ledges (27, 28) at the same level and separated from each other, which jut out from the face of the side of the mobile part and become housed in the slots (30, 31), as well as a ledge (34) close to one of the said cylindrical ledges, with the dead rib (26) of the fixed part becoming housed between one of the cylindrical ledges and the ledge close to one of them, since the said cylindrical ledge is provided with an integral ramp (29) along which the rib (26) slides during the assembly and which opens out horizontally starting from the said cylindrical ledge (28) and towards the other ledge.

12.- Automobile vehicle window drive and securing device, for fixed or movable use, which is characterized by:

- a longitudinal part (40) with a U-shaped cross section, made of flexible plastic material, which has a weakened area (43) at its base, that allows the opening and/or closing of its two arms or wings (41, 42), with one of the said arms (42) having a hollow cylindrical projection (45) which receives a cylindrical projection (44) from the other arm which becomes housed into it, thus creating a space between the two facing sides or faces of the arms in which the glass or window (46) is arranged and as this glass has a drill hole in which the above-mentioned hollow cylindrical projection has been housed, in that this U-shaped part can have projections and/or recesses on its exterior for later fixing,
- a drive slide (48) for fixing the window without sidewards movement, with a central portion in which the clip-fitted window lug or U-shaped part is received, together with the window glass, in that this slide is provided with a flexible upward tongue (49) at one side of the said central portion, which includes a groove (50) in which the projection from the U-shaped part is received, as well as another flexible tongue (51), also upwards, at the other side of the central portion, which is provided with a lug (52) which becomes housed in another drill hole cut in the glass, with two other rigid upward tongues (53, 54) also being arrangued, one at

each side of the said central portion,

- a drive slide (57) with sidewards movement of the glass, with a central portion in which the clip-fitted window lug or U-shaped part is received, together with the window glass, in that this slide includes, at one side of its central portion, a flexible upward tongue (58) provided with a groove (59) in which the projection from the U-shaped part is housed, while on the other side of the said central portion, two rigid upward tongues (60, 61) jut out.

13.- Automobile vehicle window drive and securing device, in accordance with claim 12, characterized in that the drive slide (48) without sidewards movement of the glass is provided with two horizontal flexible tongues (55), one at each end of the central portion, on which the lower edge of the glass is supported.

14.- Automobile vehicle window drive and securing device, in accordance with claim 12, characterized in that the drive slide (57) with sidewards movement of the glass is provided with two facing horizontal flexible tongues (62), in the central portion of the area from which the flexible tongue (58) that includes the groove (59) starts, and that these facing horizontal flexible tongues support the lower edge of the U-shaped part.

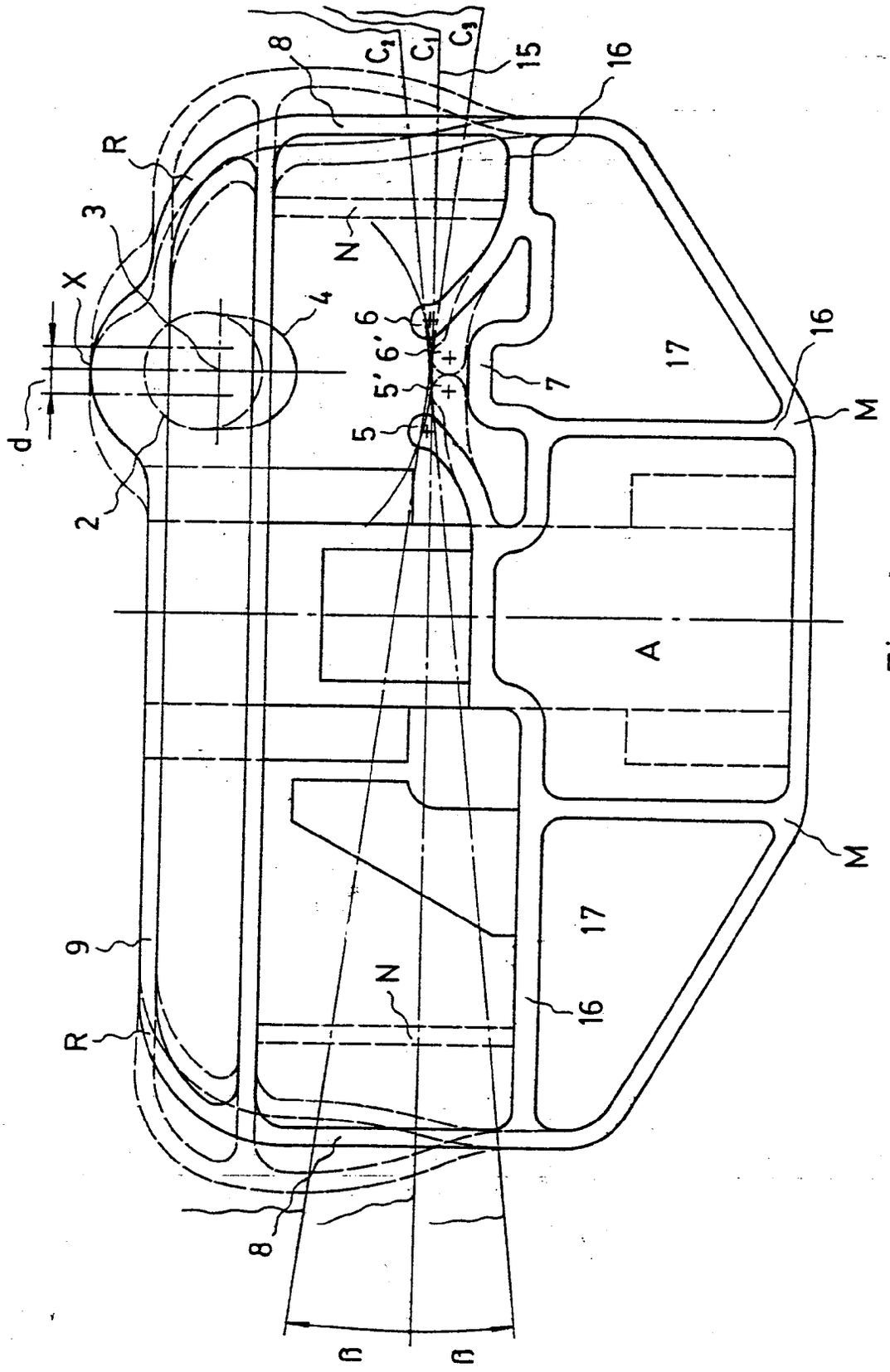


Fig.: 1

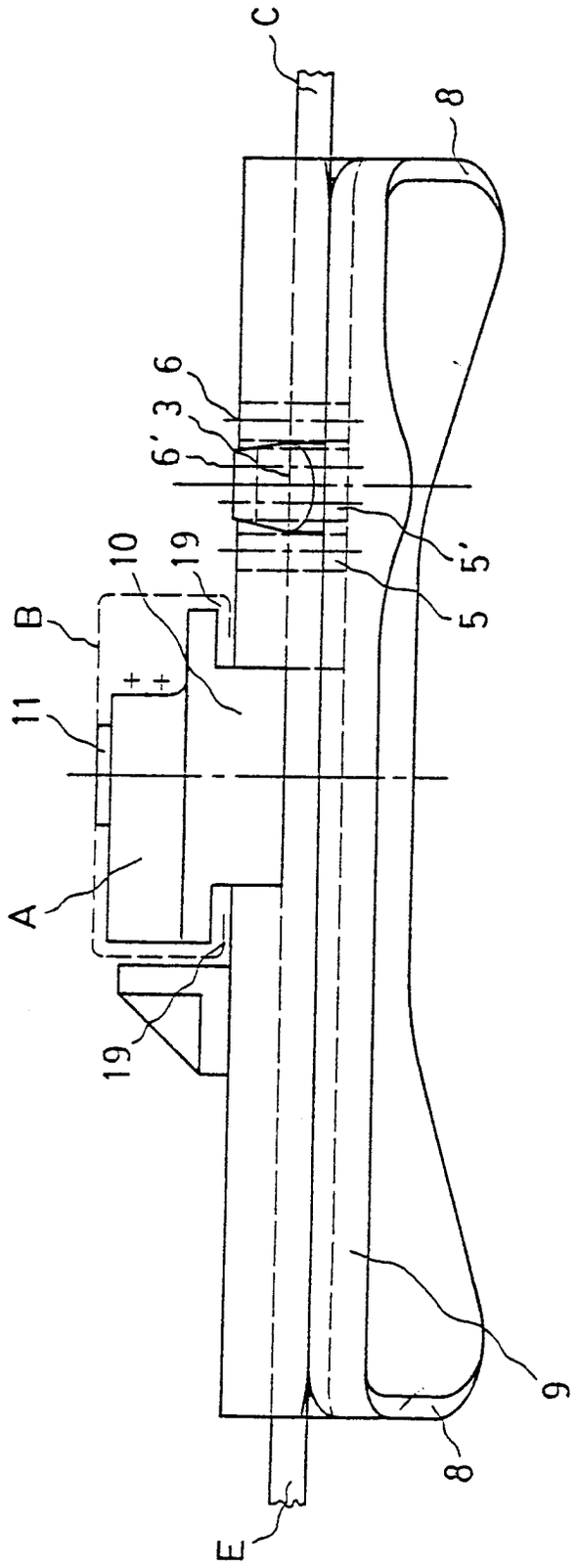


Fig.: 2

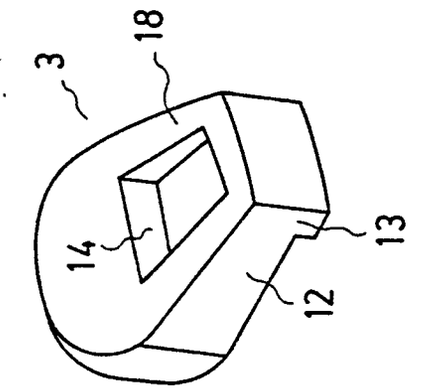
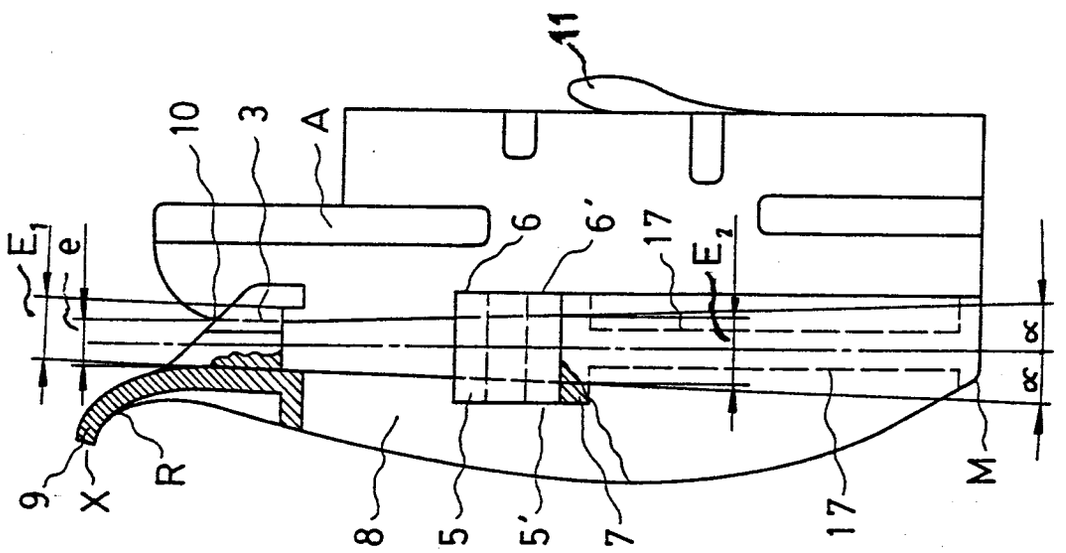


Fig.: 3



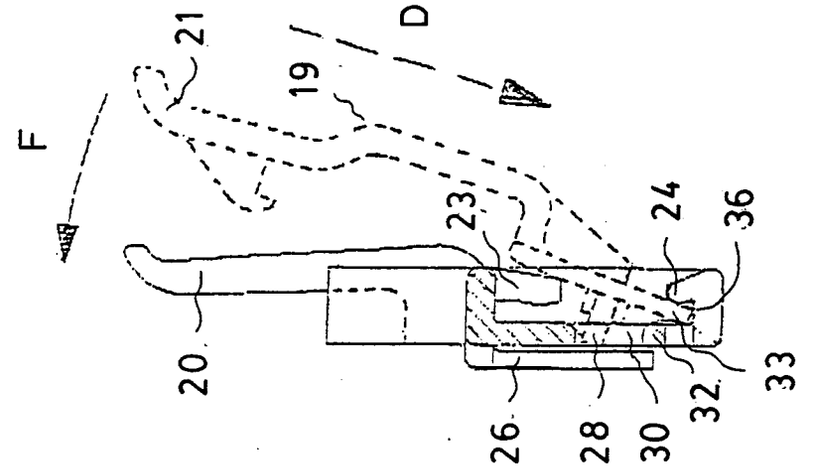

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Fig.: 5

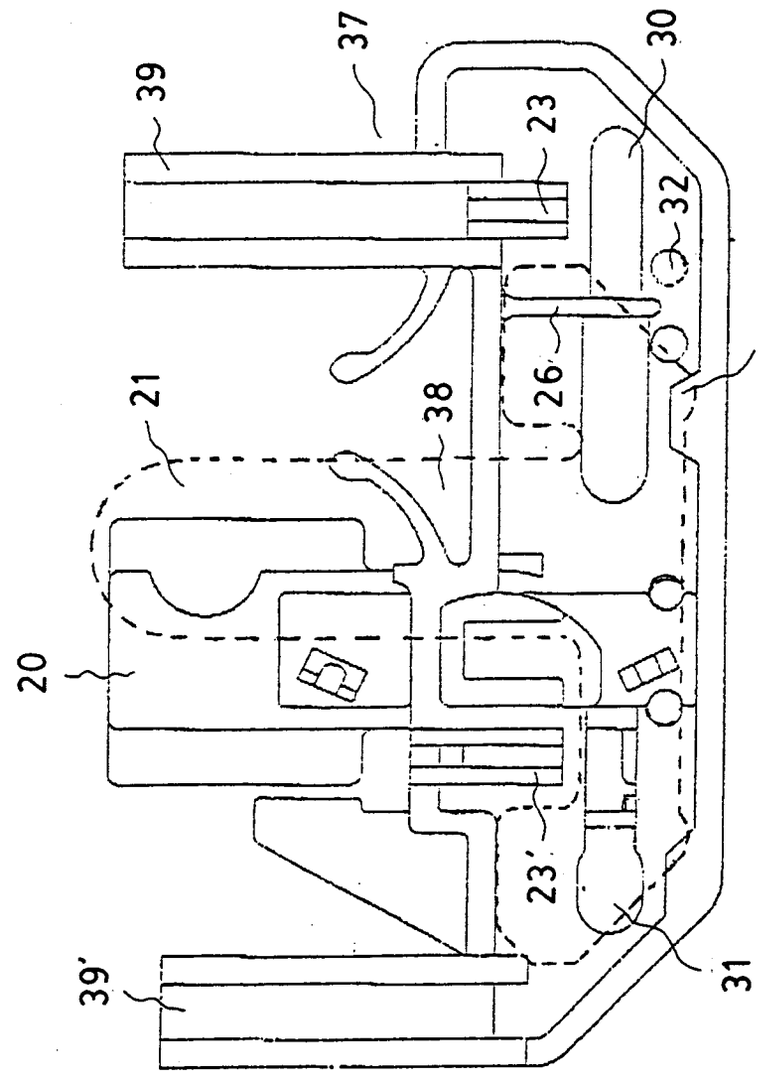
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Fig.: 4

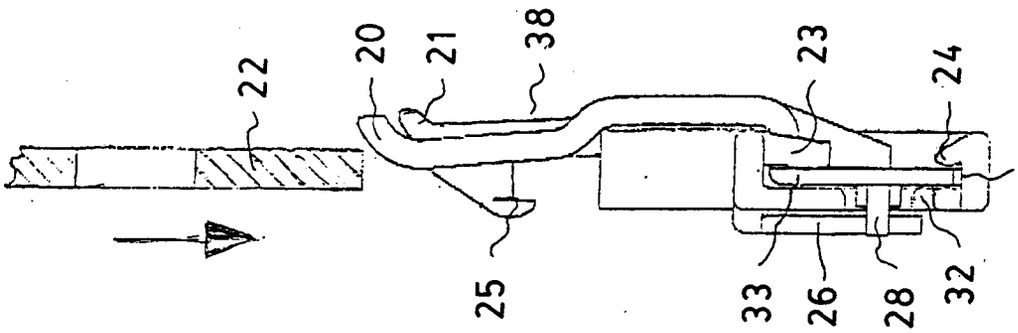


Fig.:7

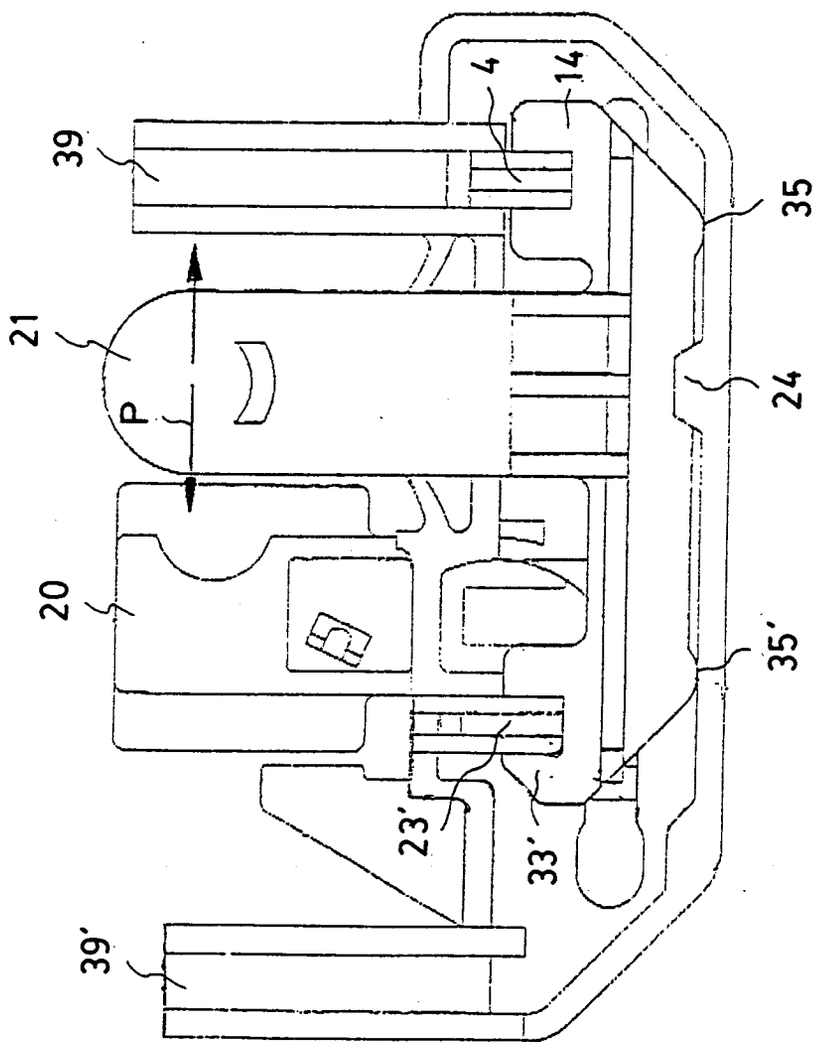
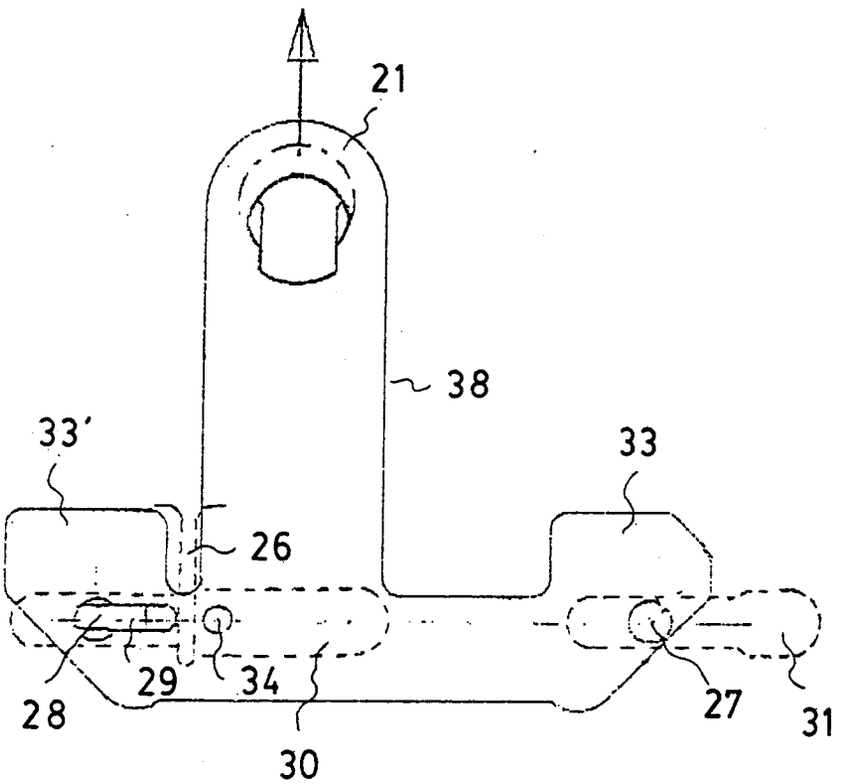


Fig.:6



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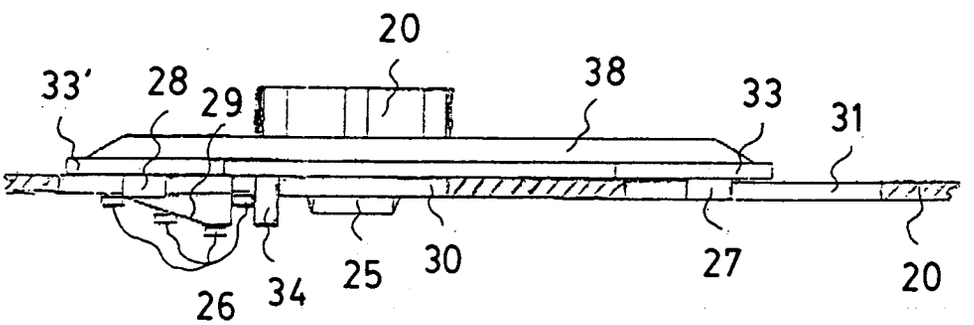

Fig.: 9

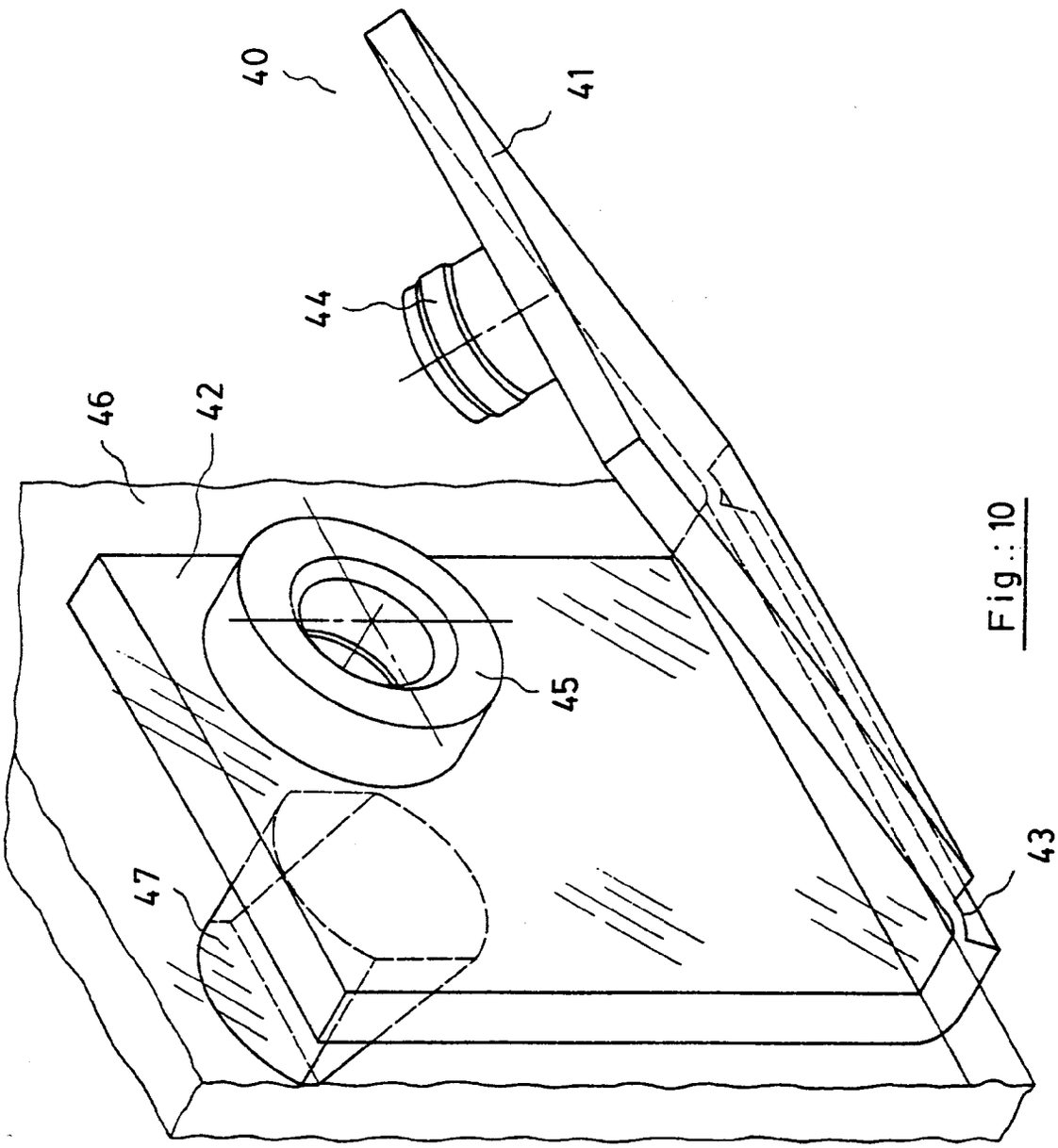

Fig.: 10

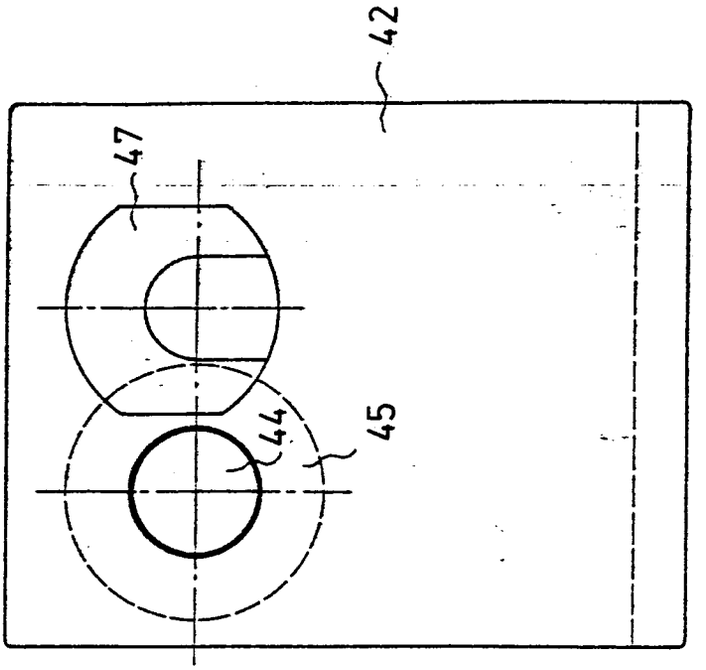

Fig.:12

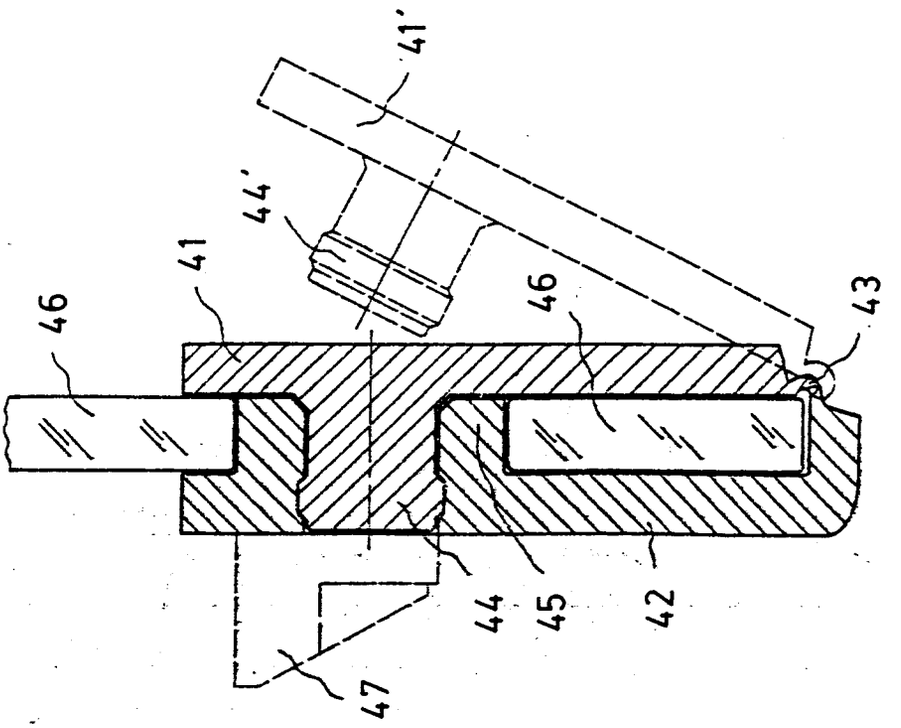

Fig.:11

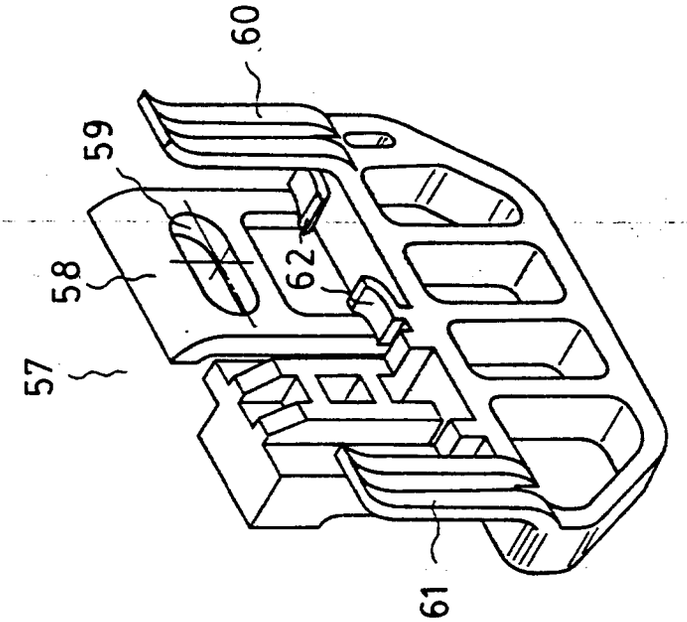

Fig.:14

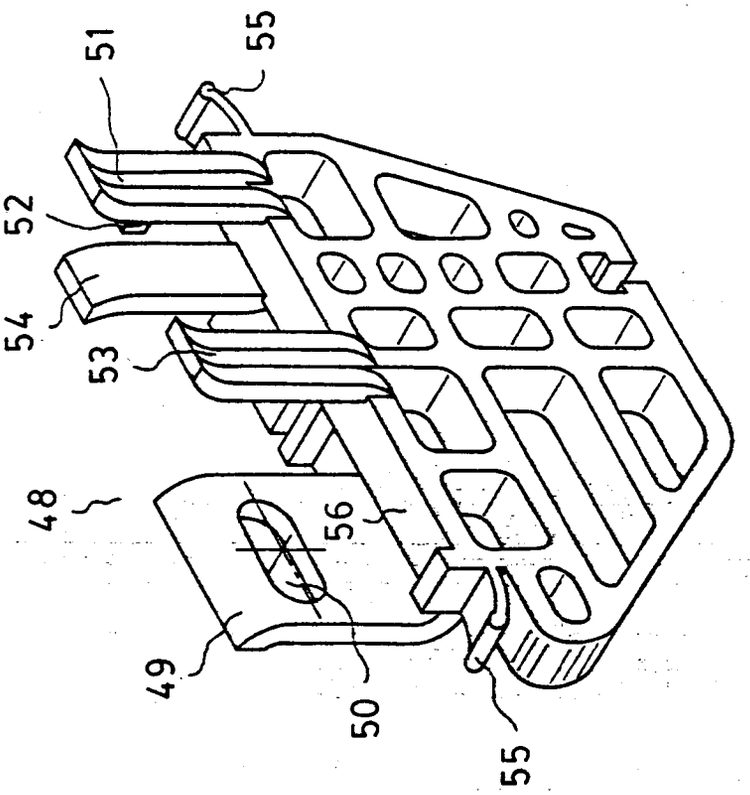

Fig.:13

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 94 50 0153

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.6)
D,A	EP-A-0 208 237 (IVECO FIATS S.P.A.) * page 3 - page 6, line 7; figures 1-4 *	1,11	E05F11/48
A	EP-A-0 304 583 (KÜSTER & CO. GMBH) * column 2, line 32 - column 3, line 50; figures 1-4 *	1,11,12	
A	DE-A-28 36 038 (GOFRA ENTWICKLUNGS- U. FERTIGUNGSTECHNIK GMBH) * page 8, paragraph 2; figures 3-5 *	12	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)
E05F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	2 December 1994	Van Kessel, J

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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