

- [54] **EASILY MOUNTED ADJUSTABLE HINGE**
- [75] Inventors: **George D. Read**, Glendora; **Howard B. Gorton**, San Gabriel, both of Calif.
- [73] Assignee: **Ajax Hardware Corporation**, City of Industry, Calif.
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- [52] **U.S. Cl.** **16/130; 16/137; 16/DIG. 40**
- [51] **Int. Cl.²** **E05D 7/04**
- [58] **Field of Search** **16/129, 130, 131, 132, 16/133, 139, DIG. 40, 137**

Primary Examiner—George H. Krizmanich
 Attorney, Agent, or Firm—Mahoney, Schick & Cislo

[57] **ABSTRACT**

A hinge construction for utilization with cabinet doors which provides in one instance, lateral orientation of the door supported by one or more of the hinges, through a slot and retaining member arrangement whereby preferred disposition of the door of the cabinet with respect to the cabinet frame or stile is obtained. In another embodiment wherein the hinge portion, which is attached to the cabinet frame or stile, has a wrap-around portion for securement to the edge of the door frame or stile, an elongated vertically positioned slot in cooperation with a retaining means permits vertical placement of the cabinet door with respect to the stile or cabinet frame so as to obtain preferred aligned positioning of the cabinet door with respect to the cabinet frame or stile or to an adjacent door.

[56] **References Cited**

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15 Claims, 6 Drawing Figures

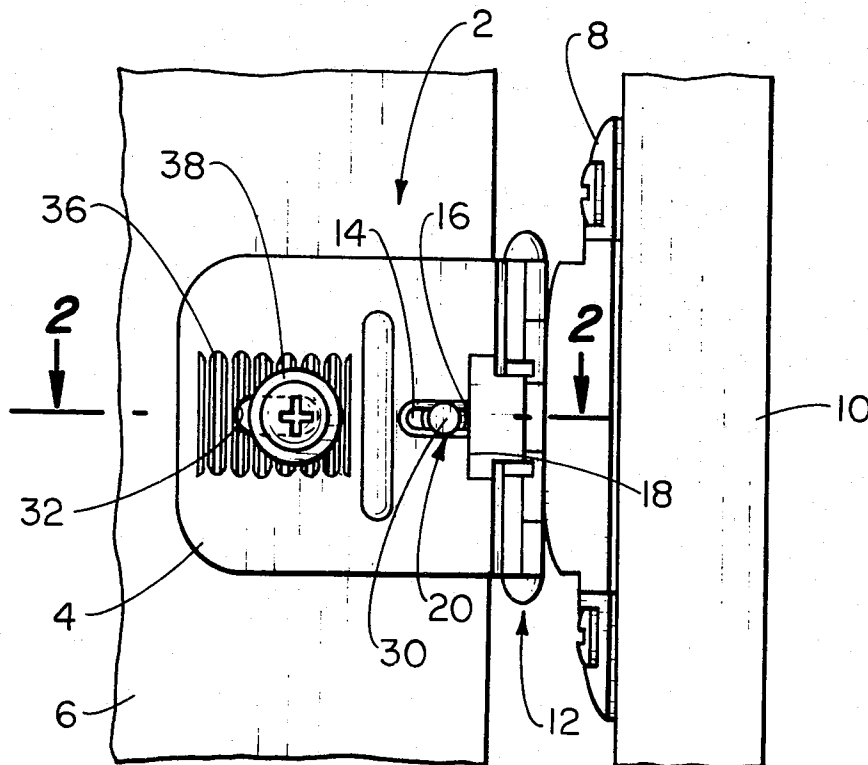


Fig. 1.

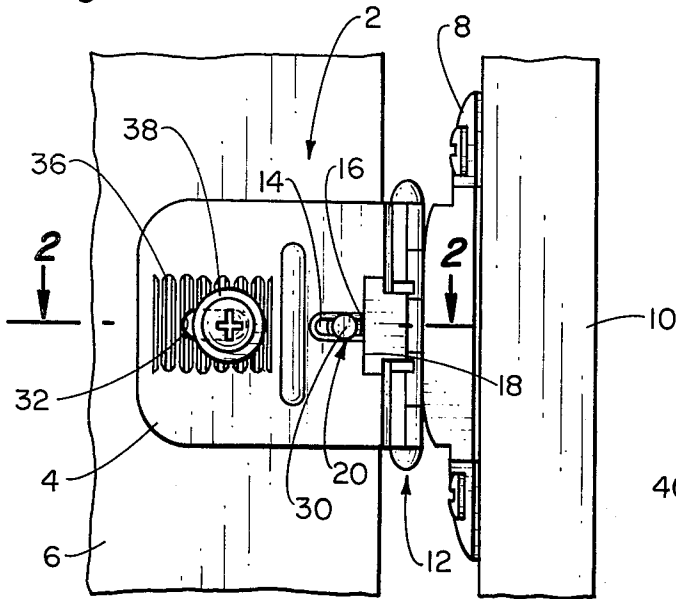


Fig. 2.

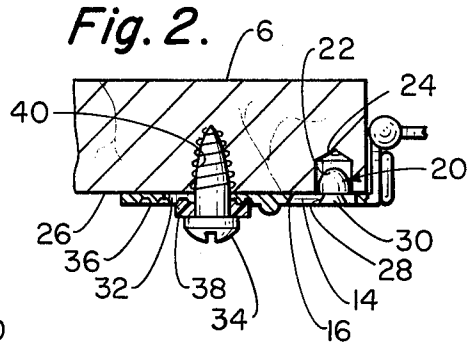


Fig. 3.

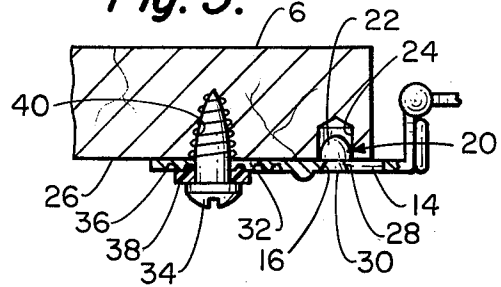


Fig. 4.

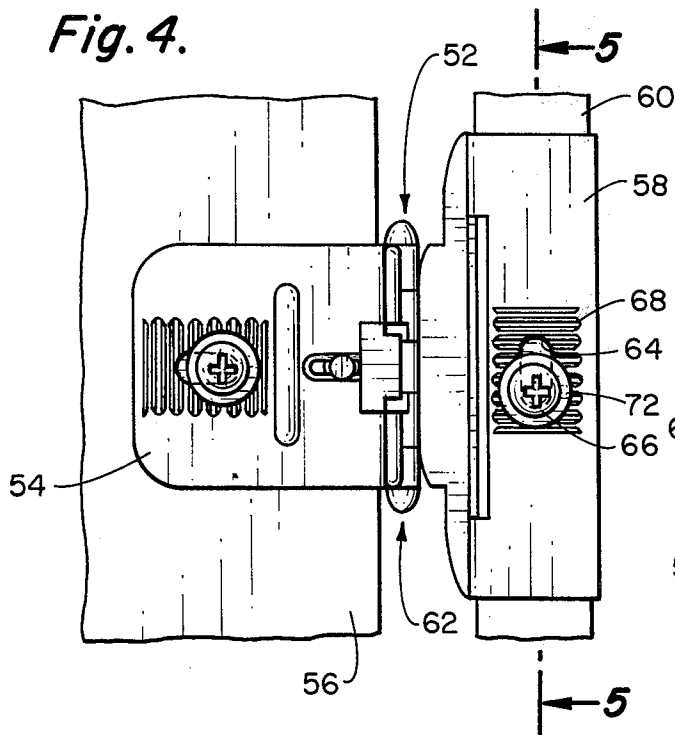


Fig. 5.

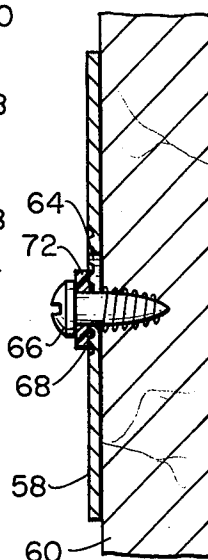
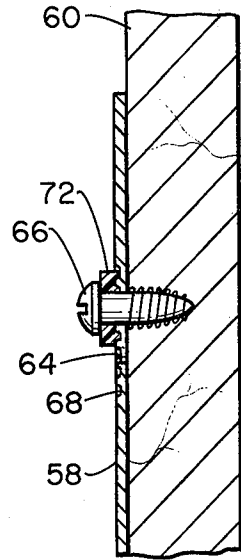


Fig. 6.



EASILY MOUNTED ADJUSTABLE HINGE**BACKGROUND OF THE INVENTION**

Various type hinges for utilization with cabinets and the like, are well known in the art and hinges of the self-latching, self-closing or freely swingable type have been proposed, all of which require installation by means such as bolts, screws or rivets by workmen or installers that are reasonably skilled in the mounting of doors to cabinets. A reasonable amount of skill is required because of the fact that the cabinet door must be associated with the cabinet frame or stile in a manner that will permit the door to satisfactorily cover the cabinet opening.

It is also desirable to have a mounted cabinet door, horizontally and vertically correctly positioned, so that true lines are formed between the door and the cabinet. In other words, it is desirable for obtaining an aesthetically appealing cabinet, to have proper alignment of the cabinet door with the cabinet frame.

The prior art cabinet hinges such as disclosed in Jerila, et al., U.S. Pat. No. 3,381,332 and Jerila U.S. Pat. No. 3,381,333, while satisfactory in meeting requirements of hinges for utilization with cabinets, have necessitated accurate installation and placement of retaining means such as screws in the hinge leaves in order to obtain proper alignment of the cabinet door with the cabinet frame or stile. While hinges disclosed in the aforementioned patents have allowed a certain amount of adjustability, once the hinge leaves have been fastened to the cabinet door and cabinet frame or stile, such degree of adjustment has been somewhat limited and generally requires loosening two or more screws on each hinge member.

With the hereindisclosed invention, a type of hinge as disclosed in the foregoing Jerila patents may now be utilized in cabinet constructions not requiring a high degree of care in the initial placement of the fastening means with respect to either the cabinet door or the cabinet frame because of a range of adjustability in both the horizontal and vertical position; heretofore this has been unavailable in prior art devices or has necessitated extensive millwork to the door and frame members which is not required in the practice of the hereindisclosed invention.

OBJECTS AND SUMMARY OF THE INVENTION

It is an object of the invention to provide a hinge construction which permits selected horizontal placement of a cabinet door with respect to the cabinet frame or stile.

It is another important object of the invention to provide a hinge for utilization with cabinets wherein the door leaf of the hinge is designed so as to make the door horizontally adjustable.

It is still another and further important object of the invention to provide a hinge construction for utilization with cabinets wherein the door leaf of the hinge is provided with elongated slots which, in cooperation with retaining means, permits horizontal adjustment of the door within a wide range.

It is still another important object of the invention to provide a hinge for utilization with cabinets wherein the door leaf of the hinge is provided with a first elongated slot carrying a button member which is utilized in retaining and horizontal positioning of the door of the cabinet in cooperation with securement means used

to rigidly secure the door leaf of the hinge to the door.

It is still another and more specific important object of the invention to provide a hinge construction wherein the door leaf of the hinge is provided with two horizontally extending elongated slots, one of which slots is adapted to have disposed therethrough a securement means wherein horizontal adjustment of the door with respect to the cabinet frame or stile is obtained and wherein the securement means tightly grips gripping surfaces provided on the door leaf of the hinge.

It is still another and further more specific object of the invention to provide a cabinet hinge of the wrap-around type wherein the wrap-around portion of the hinge, which is secured to the cabinet frame or stile, is provided with a vertically oriented elongated slot which permits vertical adjustment of the door with respect to the cabinet frame or stile.

It is still another and further more specific object of the invention to provide a cabinet hinge which is adjustable within selected increments in both the vertical and horizontal directions.

It is another and more further specific object of the invention to provide a cabinet hinge having a cabinet frame or stile leaf of the wrap-around type which is provided with an elongated slot having contiguous gripping surfaces which, when a retaining means is disposed through said slot, provides rigid securement of the stile or frame leaf to the cabinet frame or stile.

It is another, further and more specific object of the invention to provide a cabinet hinge utilizing elongated slots having gripping surfaces contiguous to said slots wherein retaining means comprising a screw and an annular washer of deformable character, which provides gripping rigid securement between the leaves of the hinge and the respective door or stile to which said leaves are mounted.

It is still another and further specific object of the invention to provide a cabinet hinge for utilization with cabinets which does not necessitate a high degree of care with respect to the initial placement of the retaining means for securing the hinge in operative relation with regard to a cabinet stile and a door to be mounted thereon.

These and further objects of the invention will become apparent from the drawing and the hereinafter following commentary.

Basically, in an exemplary embodiment, the invention pertains to an adjustable hinge construction for cabinets and associated cabinet doors comprising a door leaf and a stile or frame leaf wherein the leaves are interconnected by a hinge pin. The door leaf is provided with a first elongate slot and a captively associated retaining member which has an extending portion adapted to be received in a retaining recess in the door to which the hinge is secured and to permit selected lateral movement of said door leaf in relation to said door. A second elongate slot is provided in the door leaf and is adapted to receive a securement means to rigidly secure the door leaf to the door in a selected lateral or horizontal position. The second elongate slot is provided with a plurality of gripping means contiguous thereto for forming gripping surfaces for retention with the securement means used to secure the door leaf of the hinge to the door.

In another embodiment of the invention, the stile or cabinet frame leaf of the hinge construction is provided with a wrap-around portion for securement to the edge

of the stile or cabinet frame and is provided with a vertically oriented slot adapted to receive securement means by which securement is obtained to the cabinet frame or stile in a manner such that vertical adjustability is obtained. Gripping surfaces are provided contiguous to the vertically oriented slot to coact with the securement means to provide rigid and adequate securement of the wrap-around portion of the stile leaf to the edge of the stile or cabinet frame.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a front view illustrating one embodiment of the hinge construction of the invention;

FIG. 2 is a view taken along the line 2—2 of FIG. 1;

FIG. 3 is a view similar to FIG. 2 but showing the horizontal or lateral adjustment of the hinge of this invention;

FIG. 4 is a view of another embodiment of the hinge of this invention showing both horizontal or lateral and vertical positioning capability of the hinge of this invention;

FIG. 5 is a view taken the line 5—5 of FIG. 4; and

FIG. 6 is a view similar to FIG. 5 but illustrating the vertical adjustment capability of the hinge illustrated in FIG. 4.

DESCRIPTION OF THE BEST EMBODIMENTS CONTEMPLATED:

While the inventive concept of the hinges of this invention will be described with specific reference to the types of hinges as illustrated in the afore-mentioned Jerila patents, it is clear that the lateral or horizontal adjustment feature and the vertical adjustment feature of the hinges of this invention where appropriate, may be utilized with various type hinges not necessarily those of the self-closing or self-latching type. Thus, the attributes of the invention may be applied to any type of hinge construction so long as the basic teachings of the invention are followed as those of ordinary skill in the art will recognize. Additionally, while screws of the wood variety are illustrated, the ordinary worker in the art will at once recognize that other securement means may be utilized without departing from the spirit of the invention.

Referring now to FIGS. 1—3 of the drawing, it will be seen that the hinge 2 illustrated therein comprises the door leaf 4 for securement to, for example, the door 6 and the frame or stile leaf 8 of general shape and configuration as is customarily found in the prior art, secured to the cabinet frame or stile 10. The leaves 4 and 8 are connected through a knuckle generally designated 12 and is of the type described, illustrated and claimed in the aforementioned Jerila patents, the disclosure of which is hereby incorporated by reference.

Thus far, the hinge 2 is of prior art construction and the details of which form no part of this invention except as will be hereinafter detailed.

The door leaf 4 is provided with a first elongate slot 14 having a beveled edge portion 16 extending from the edge 18 of leaf 4 inwardly a sufficient distance for lateral or horizontal movement of the door 6 as will become apparent.

Captively received in the first slot 14 is a retaining member or button 20 which has a depending or extending portion 22 adapted to be telescopically received in retaining recess 24 provided in the approximate location of the door 6 and more specifically, the interior

surface 26, to which the hinge 2 is to be secured. The retaining member 20 is of deformable character, in this instance, of nylon and is frictionally held within the slot 14 but permits movement of the door leaf 4 even though the retaining member or button 20 is disposed in the retaining recess 24 provided in door 6. The retaining member 20 may be provided with an interior groove 28 so as to assure friction-fit within the slot 14 and may have a head portion 30 which is flush with the exterior surface of leaf 4 as seen in FIGS. 2 and 3.

Inwardly spaced from first slot 14 is a second elongated slot 32 of sufficient length so as to be compatible with the horizontal adjustment distance permitted by the first slot 14. Additionally, the slot 32 is of sufficient size so as to accommodate a securement means such as wood screw 34. Contiguous to slot 32, a plurality of gripping surfaces 36 is provided, in this instance, parallel grooves of serrated-like configuration as will be hereinafter described, provides assured rigid securement of the door leaf 4 to the door 6. In circling engagement to the head of the screw 34, is annular washer-like member 38, also of deformable character and in this instance, being of nylon or any such material or equivalent thereof, so that rigid securement may be obtained as will be apparent.

Upon positioning of the hinge 2, and more specifically the stile leaf 8, to the stile or cabinet frame 10 by traditional means such as wood screws, the door 6 is ready to be mounted to the door leaf 4 of hinge 2. The door has been prepared by the placement of a recess such as 24 in the approximate position where it is desired to position the door 6 with respect to the stile or cabinet frame 10. If desired, a starting hole such as, for example, 40 may be positionally aligned with recess 24, which starting hole is to receive the threaded portion of wood screw 34. Having thusly prepared the door 6 for mounting, the door is positioned by having the retaining member of button 20 received within the recess 24 which acts to partially retain the door 6 while the screw 34, with accompanying washer 38, is screwed into starting hole 40. However, prior to complete tightening of the screw 34, the door 6 is horizontally or laterally adjustable as shown in the comparison between FIGS. 2 and 3. Thus, prior to complete tightening of the screw 34 into the door 6, lateral positioning of the door is permitted to the extent of the first slot 14 and the second slot 32. Upon proper horizontal positioning, the screw or securement means 34 is tightly fastened which forces the grooves or serrated edges 36 into imbedding contact with annular washer 38, which tightly, rigidly and securely retains door leaf 4 to the door 6.

Thus, the screw 34, in conjunction with the gripping surfaces formed by the grooves 36 being imbedded in the annular washer 38, and in some measure aided by the retaining member 20 being disposed in the retaining hole or recess 24 provided in the door 6, provides a means whereby a hinge construction is possible which permits horizontal or lateral adjustment of the door with respect to the cabinet frame or stile to which it is mounted in an easy and facilitated manner.

Referring now to FIGS. 4, 5 and 6, another embodiment of the invention is depicted as it pertains to cabinet hinges of the wrap-around type as will now be described.

The hinge 52 comprises a door leaf 54 secured to a door 56 as already described and of the same construction as that shown in FIG. 1. In this instance, however,

the stile or frame leaf 58 is provided with a wrap-around configuration which engages the edge of the cabinet frame or stile 60. Again, the stile leaf 58 and the door leaf 54 are interconnected by means of knuckle construction 62.

The stile leaf 58 is of the conventional wrap-around type being provided with a lateral lip or flange, not shown, to firmly grip the edge of the cabinet frame or stile 60. However, in this instance, the wrap-around portion of the hinge is provided with a vertically oriented slot 64 of sufficient length and dimension to provide vertical adjustability of the door 56 with respect to stile or cabinet frame 60 and so as to accommodate the securement means 66 in this instance, of the wood screw type. Contiguous to the slot 64, is a plurality of gripping surfaces 68 formed by the grooves in the stile wrap-around portion 58 of hinge 52, similar to that described earlier for the grooves 36. From FIGS. 5 and 6, it will be noted that the grooves form a somewhat serrated configuration which again, in cooperation with an annular conformable washer 72, encircling wood screw 66, aids in the securement of the stile leaf portion 58 to the edge of the stile or cabinet frame 60.

When utilizing the type of hinge such as 52, it will be noted that the door 56 is both horizontally adjustable as previously described for FIG. 1, and is also vertically adjustable until such time as the screw 66 is tightly fastened or taken up to cause imbedment of the gripping surfaces or grooves 68 into the washer member 72. Thus, the cabinet hinge 52 permits both vertical and horizontal adjustment of the door 56 with relation to the cabinet with which it is associated.

While the invention has been described with reference to specific configurations and the use of specific securement means, such as screws, etc., it is of course, obvious that other alternatives are possible and, in some instances, preferable. This would also apply to the formation of the gripping surfaces as by means of the longitudinal or parallel grooves such as, for example, 36 and 68, but other gripping surfaces can be formed as those of ordinary skill in the art will at once recognize. Additionally, the shape or configuration of the retaining member such as 20, while specifically shown, may be varied depending upon the end results desired, so long as the essence of the invention is adhered to.

Hinges of the type shown and described in the figures of the drawing, have been fabricated and it has been found, for example, that such configuration permits at least three-sixteenths of an inch horizontal adjustment with regard to a door utilizing such hinge, for example, as shown in FIGS. 1-3 inclusive, and that with regard to the type of hinge shown in FIGS. 4-6 inclusive, at least three-sixteenths inch vertical adjustment of the door is obtained. The retaining member, for example, 20 disposed in a seven-thirty-seconds inch drilled hole, approximately one-fourth inch from the edge of a door, such as shown in FIGS. 1-3 inclusive, aids to prevent sagging of the door with respect to the cabinet frame or stile. In each of the hinge constructions of the invention, it has been found that the securement means may be loosened and retightened repeatedly without detrimental effect and thus, there has been disclosed and described hinge constructions which are both horizontally and vertically adjustable with facility which provides means whereby cabinet doors may be easily associated with cabinet frames.

We claim:

1. In an adjustable hinge construction for cabinets and associated cabinet doors, the combination of: a door leaf and a stile leaf, said leaves being interconnected through a hinge pin, said door leaf having a first elongate slot and a captively associated retaining member having an extending portion adapted to be received in a retaining recess in a door to which the hinge is secured and to permit selected lateral movement of said door leaf in relation to said door, a second elongate slot adapted to receive a securement means to rigidly secure said door leaf to said door in a selected lateral position, said second elongate slot having a plurality of gripping means contiguous thereto for forming gripping surfaces for retention of said securement means.

2. An adjustable hinge construction as defined in claim 1 wherein said captively associated retaining member is configured to have a retaining groove for accommodating the lateral edges of said first slot in mating engagement.

3. An adjustable hinge construction as defined in claim 2 wherein said retaining member is frictionally retained in said first elongate slot.

4. An adjustable hinge construction as defined in claim 3 wherein said gripping means comprise parallel grooves in said door leaf.

5. An adjustable hinge construction as defined in claim 4 wherein said retaining member is of deformable material.

6. An adjustable hinge construction as defined in claim 5 including a cabinet door having an accommodating retaining recess aligned to receive said extending portion of said retaining member in telescoping relationship.

7. An adjustable hinge construction as defined in claim 6 wherein said retaining recess has a uniform diameter and said extending portion of said retaining member is conically shaped.

8. An adjustable hinge construction as defined in claim 7 including a securement means comprising a screw having an encircling portion adjacent the head thereof which is deformable.

9. An adjustable hinge construction as defined in claim 8 wherein said screw has an annular washer of deformable material adjacent the head thereof which is engaged by the gripping surfaces adjacent said second elongate slot and the edges thereof when said screw is tightly secured to said door.

10. An adjustable hinge construction as defined in claim 1 wherein said stile leaf has a wrap-around configuration for securement to the edge of the stile of said cabinets.

11. An adjustable hinge construction as defined in claim 10 wherein the wrap-around portion of said stile leaf is provided with a vertically oriented elongated slot extending lengthwise of said wrap-around portion.

12. An adjustable hinge construction as defined in claim 11 wherein said vertically oriented slot has a plurality of gripping means contiguous thereto for forming gripping surfaces for retention of a securement means for retaining said stile leaf to said edge of said stile.

13. An adjustable hinge construction as defined in claim 12 wherein said gripping means comprises parallel grooves in said wrap-around portion.

14. An adjustable hinge construction as defined in claim 13 including a securement means for retaining said stile leaf which comprises a screw having an encir-

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cling portion adjacent the head thereof which is de-
formable.

15. An adjustable hinge construction as defined in
claim 14 wherein said screw has an annular washer of
deformable material adjacent the head thereof which is

engaged by the gripping surfaces adjacent said verti-
cally oriented elongated slot and the edges thereof
when said screw is tightly secured to said stile.

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