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Brents

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[54] **ANCHOR DEVICE FOR DOOR FRAMES**

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[51] **Int. Cl.**.....**E06b 1/18,** E06b 1/60

[58] **Field of Search**.....52/211, 217, 213–215, 52/287, 377, 455, 717, 700, 701; 49/504, 480, 505; 248/205 R, 27; 292/207, 228

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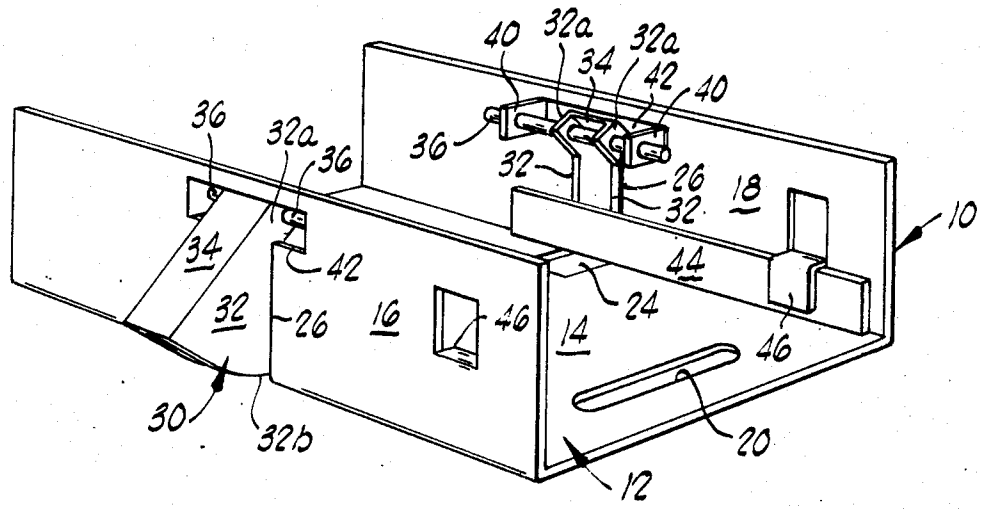
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[57] **ABSTRACT**

An anchoring device for anchoring door frames which includes a base bracket of generally U-shaped configuration having an apertured web portion and a pair of legs extending therefrom. The legs are slotted, and a pair of retainer latches are pivotally mounted on each of the legs adjacent the slots therein for pivoting through the slots into the path of flanges carried by a door frame to be secured in the opening in a wall by means of the anchor device. The retainer latches are biased through the slots in the legs of the base bracket by means of springs extended along the inside surface of the legs, and bearing against one side of each of the retainer latches.

8 Claims, 4 Drawing Figures



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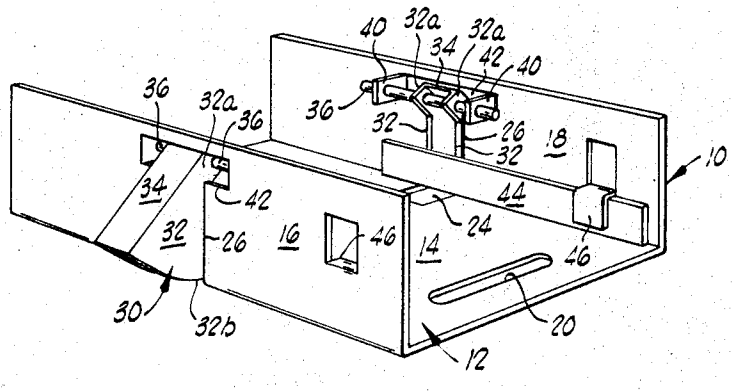


FIG. 1

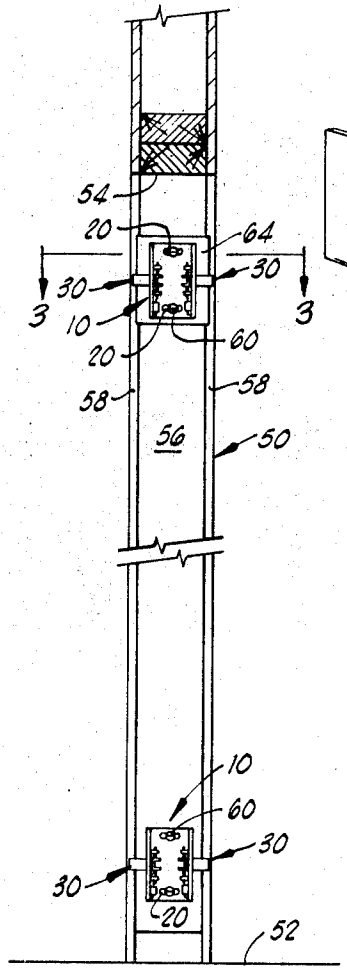


FIG. 2

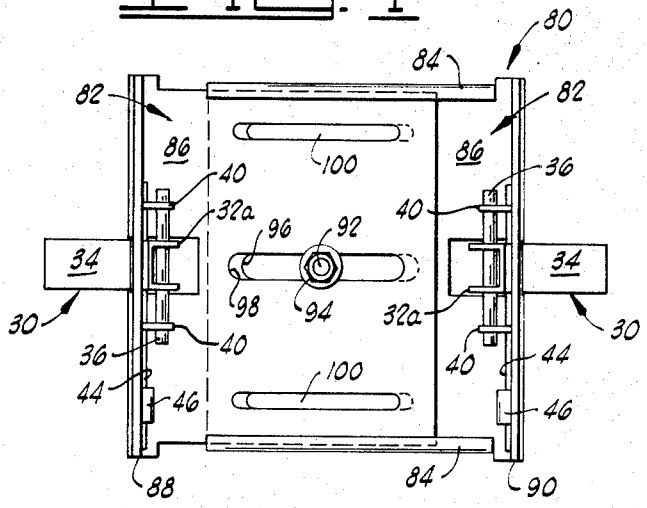


FIG. 4

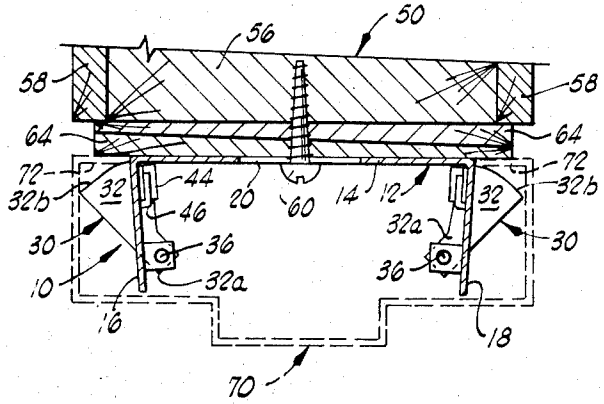


FIG. 3

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ANCHOR DEVICE FOR DOOR FRAMES

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to brackets and anchor devices for securing door frames to walls.

2. Brief Description of the Prior Art

Various brackets and anchoring structures have heretofore been proposed for securing frames for doors in door openings formed in walls. It is also desirable at times to have anchoring devices which will function to permit the door frame to be secured at right angles to a wall, where another wall is to be extended in such direction and the door is to be located at the intersection between the two walls. Devices of the type described as heretofore provided have frequently been complicated and difficult to install, and in most cases, have not been able to accommodate, by the use of simple adjustments, door frames of varying sizes and thicknesses.

BRIEF DESCRIPTION OF THE PRESENT INVENTION

The present invention is a simple, mechanically strong, anchoring device which may be quickly and easily secured to a wall adjacent a door opening, and which will function to permit a door frame to be quickly snapped in position in the door opening ready for the accommodation of a door.

Broadly described, the anchor device of the present invention comprises a base bracket which is of generally U-shaped configuration and has a web portion interconnecting a pair of slightly convergent legs. The web portion has one or more apertures to permit the anchor device to be secured to a wall in a position to receive a door frame. The legs of the base bracket are slotted to permit a pair of swing locks or retainer latches pivotally mounted on each leg to be swung through the slots to a position to interlock with the flanges of a door frame to retain the door frame in position. A pair of spring elements are provided on the base bracket and function to resiliently bias the retainer latches outwardly through their respective slots in the legs of the base bracket to a door frame engaging position.

An object of the invention is to provide an anchor device for securing door frames in position in a door opening or at right angles to a wall in a quick and expeditious manner.

Another object of the invention is to provide an anchor device for securing door frames to walls, which anchor device is adjustable in its physical dimensions to permit it to accommodate door frames of varying sizes.

A further object of the invention is to provide an anchor device which has relatively few moving parts, is simple and economical to manufacture, is easy to use and which effectively provides an anchor point for the securement of a door frame in a door opening.

Additional objects and advantages of the invention will become apparent as the following detailed description of the invention is considered in conjunction with the accompanying drawings which illustrate the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the anchor device of the present invention.

FIG. 2 is a view in elevation of one side of a door opening showing a pair of the anchor devices of the present invention secured to the edge of a wall which defines the door opening.

FIG. 3 is a sectional view taken along line 3—3 of FIG. 2.

FIG. 4 is a plan view of an alternate embodiment of the invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS OF THE INVENTION

Referring initially to FIG. 1, the anchor device of the invention is designated generally by reference numeral **10** and includes a base bracket designated generally by reference numeral **12**. The base bracket **12** includes a web portion **14** which extends between, and interconnects, a pair of opposed, substantially parallel legs **16** and **18**. In referring to FIG. 3 of the drawings, it will be perceived that the legs are slightly convergent; that is, they are inclined slightly toward each other and the purpose of such convergence will be hereinafter explained.

The web portion **14** is provided with a pair of spaced slots **20** therein for the purpose of receiving the screws, bolts, nails or other fastening elements used to secure the anchor device to a wall in a manner hereinafter described. The web portion **14** of the anchor device **10** further includes at a medial portion thereof, and adjacent the outer or side edges of the web portion, a pair of slots **24** which are aligned transversely across the web portion, and which each communicate with registering slots **26** formed in the legs **16** and **18**. The registering slots **24** and **26** disposed on opposite sides of the anchor device **10** and partially in the web portion **14** and partially in the legs **16** and **18** function to accommodate a pair of swing locks or retainer latches designated generally by reference numeral **30**.

The retainer latches **30** each include a pair of parallel side plates **32** joined by a web plate **34**. The side plates **32** each have a neck portion **32*a*** formed at the upper portion thereof, with the neck portions being apertured to accommodate a pivot pin **36** for a purpose hereinafter described. The lower edge of each of the side plates **32** is arcuate in configuration, with the curvature of this edge tapering to a substantially flat portion of very large radius of curvature adjacent the inner side of each side plate. This relatively flat portion of the lower edge is designated by reference numeral **32*b*** in the drawings, and its function in the operation of the device will be hereinafter described.

A pivot pin **36** which is extended through the apertures in the neck portions **32*a*** of the side plates of each retainer latch **30** is used to pivotally support the respective retainer latch on a pair of hanger lugs **40**. The hanger lugs **40** are formed by pressing out a portion of each of the legs **16** and **18** of the base bracket **12** to form an elongated slot **42** at the top of the slots **26** formed in these legs. Thus, the slots **26** and **42** in each of the legs **16** and **18** form together a T-shaped opening in the leg, and the formation of the slot **42** in each of these legs results in the inward extension from each of

the legs of the pair of hanger lugs **40** which function to receive and support the pivot pin **36**. It will be perceived from what has been described that each of the retainer latches **30** is pivotally supported on the legs **16** and **18** of the base bracket **12** for pivotation through the slots **24** and **26** formed in the base bracket.

In FIG. **1** of the drawings, the retainer latches **30** are shown pivoted to their fully outwardly extended positions. The retainer latches **30** are retained in this outwardly extended position by a pair of bar springs **44**. Each of the bar springs **44** extends along one of the legs **16** or **18** of the base bracket **12** at a location adjacent the intersection of the respective leg with the web portion **14**. It will be perceived in referring to FIG. **1** that each bar spring **44** extends across the slot **26** in its respective adjacent leg, and exerts a resilient bias against the inner edges of the side plates **32** of each of the retainer latches **30**. Stated differently, each bar spring **44** resiliently urges the respective retainer latch **30** with which it cooperates outwardly through the slot **26** in the adjacent leg of the base bracket **12**.

Each of the bar springs **44** is retained in position by an in-turned toe portion **46** which is formed by slotting the respective leg **16** or **18** of the base bracket **12** and turning the toe portion thus formed inwardly and downwardly to engage the respective bar spring. Should it be desirable for any reason to do so, each bar spring **44** may be released from engagement with the base bracket **12**, and its resilient biasing effect upon the retainer latches **30** terminated by driving the bar spring in an axial direction along the adjacent leg of the base bracket **12** until it has passed free of the respective toe portion **46**. The bar spring **44** will then fall free, and the respective retainer latch with which it has been in engagement will be released and can pivot freely back through its respective slot **26**.

The manner of usage of the anchor devices **10** of the invention is best illustrated in FIGS. **2** and **3** of the drawings. A wall designated generally by reference numeral **50** is shown, and the wall has been constructed to provide a door opening therein extending from a floor **52** upwardly to a horizontally extending overhead member **54** forming a part of the wall. In FIG. **2**, one edge of the wall adjacent the door opening is shown, and this edge of the wall, as thus exposed, includes a central door facing member **56** which has secured to the outer edges thereof, a pair of wall panels **58**.

It is within the door opening in the wall **50** as thus described in which a frame for receiving and hanging a door is to be mounted. To facilitate the mounting of the door frame within the opening, the anchoring devices **10** of the present invention are employed in the manner illustrated in FIG. **2**. Although the use of two of these devices along one side of the door opening has been illustrated for purposes of description, it will be understood that a number of such devices exceeding two may be utilized if desired, provided only that the anchor devices are not employed at a location where the door is to be hinged to the door frame, or at a location where the latch of the door is to pass through the frame into proximity to the wall.

The two anchoring devices **10** being utilized for purposes of mounting the door frame are secured to the edge of the wall **50** by extending screws **60**, bolts, nails or other securing members through the openings **20** formed in the web portions **14** of each base bracket **12** as hereinbefore described. For purposes of illustrating the use of the anchor device **10** of the invention in a situation frequently encountered, it will be presumed that the edge of the wall **50** shown in FIG. **2** is not precisely plumb or vertical, and that it is therefore necessary to shim the upper portion of a frame to be mounted in the door opening outwardly slightly from the upper portion of the vertical edge of the wall **50** depicted in FIG. **2**.

To the end of accommodating the frame to the existing opening in which the edge of the wall **50** is out of plumb, a pair of shim blocks **64** are secured to the face or edge of the wall **50** at the location where the uppermost of the anchor devices **10** is to be secured. The screws **60** are then extended through the openings **20** in the web portion **14** of the base bracket **12** of the upper anchor device **10**, and are passed through the shim blocks **64** into the facing member **56** (see FIG. **3**). It will be noted in referring to this figure that the size of the shim blocks **64** utilized is such that they project or extend a slight distance beyond the legs **16** and **18** of the base bracket **12**. Stated differently, the shim blocks **64** are each slightly wider in their transverse dimension than is the web portion **14** of the base bracket **12** of the anchor device **10**.

The lower anchor device **10** is secured to the edge of the wall **50** by the use of screws **60** extended through the slots **20** in the web portion **14**. In the case of the lower anchor device **10**, however, no shim blocks are utilized, since without the use of shimming at this location, the outward face of the outermost shim block **64** used at the upper portion of the door opening is in vertical alignment with the face of the member **56** adjacent the lower portion of the door opening. As in the case of the anchor device **10** used in the upper portion of the door opening, securement of an anchoring device **10** near the lower end of the edge of the door **50** mounts the anchor device in the door opening with the retainer latches **30** pivoted to their outwardly extending positions.

Having secured a pair of the anchoring devices **10** to the face of the edge of the wall **50** which bounds the door opening in which the door is to be mounted, the next step in the use of the anchor devices is the securement of the door frame thereto. The door frame in use has a conventional cross-sectional appearance of the type shown by dashed lines in FIG. **3**. Here the door frame is designated generally by reference numeral **70** and includes a pair of in-turned abutment flanges **72** which are located on the side of the door frame most remote from the center of the door opening or, stated differently, most remote from the door which is to be mounted in the door frame. The door frame **70** is placed in position and engaged with the anchor devices **10** of the present invention by moving the door frame toward the wall **50** so that the in-turned flanges **52** pass around the outwardly extending, slightly convergent legs **16** and **18** of the base brackets **12** of the two anchoring devices. The clearance of the legs **16** and **18** by these in-turned flanges **72** is assured by the convergence of these legs.

As the door frame **70** is moved toward the wall **50**, the in-turned flanges **72** come in contact with the pivotally mounted retainer latches **30**. At this time, the

retainer latches 30 are biased to their outwardly extending positions by the spring bars 44, and the web plate 34 of each retainer latch presents an inclined plane for contact with the inner edges of the in-turned flanges 72. As the door frame 70 is forced further toward the wall 50, the retainer latches 30 are forced back into the slots 26 in the legs 16 and 18 and up through the slots 24 in the web portion 14 of the base bracket 12 of each anchor device 10. The bar springs 44 will yield sufficiently to permit retraction of the retainer latches into their respective slots so as to pass the in-turned flanges 72 on the frame 70.

At some point, the in-turned flanges 72 of the door frame 70 clear the retainer latches 30 and these latches then snap outwardly under the resilient bias of the bar springs 44 to resume their outwardly extended position. They remain in this outwardly extended position after the in-turned flanges 72 of the door frame 70 come into abutting contact with the edge of the wall 50, or with any shim blocks which may be used for mounting the anchor devices 10 thereon. Thus, as shown in FIG. 3, the in-turned flanges 72 of the door frame 70 bear flatly against the outermost of the two shim blocks 64. At the lower portion of the door frame 70, the in-turned flanges 72 bear against the facing member 56 forming a portion of the wall 50 since no shim blocks have been used for the purpose of mounting the anchoring device 10 in the lower portion of the door opening.

When the door frame 70 has been pressed into position in the manner shown, the retainer latches 30 function to lock the frame in place. It cannot be withdrawn and no looseness or play is present. An attempt to withdraw the door frame 70 outwardly from the anchor devices 10 is resisted by the retainer latches 30, since the force transmitted to these latches is transmitted directly through the latches to the pivot pins 36 in a direction which is substantially normal to the axis thereof.

As a final step in the securement of the door frame in position, it will sometimes be desirable to pour mortar into the hollow upper end of the door frame until it has been completely filled with mortar. The mortar then sets up and functions to permanently retain the retainer latches 30 in their outwardly extending position.

An alternate embodiment of the invention is depicted in FIG. 4. Here, the anchoring device of the invention is designated generally by reference numeral 80 and differs from the anchoring device 10 shown in FIG. 1 primarily in being adjustable in its dimensions so as to accommodate door frames of differing sizes. In the context of this discussion, the difference in sizes of door frames to which reference is made refers to a difference in the transverse dimension of the frame as measured between the side flanges of the frames to which the in-turned flanges 72 are secured, and from which they extend perpendicularly in an inward direction.

To accommodate variations in this dimension of door frames which may be utilized at different times, the anchoring device 80 is made in a two-part construction in which, instead of having a U-shaped base bracket of the type hereinbefore described, a pair of generally L-shaped brackets, designated generally by reference numeral 82, are slidingly engaged. The two L-shaped base brackets are thus engaged by means of an over-turned flange 84 provided at each of the longitudinal edges of one of the brackets, with such flanges forming channels in which the longitudinal side edges of the other L-shaped bracket 82 may be slidingly received. This permits a web portion 86 forming a part of one of the L-shaped brackets to be superimposed upon the corresponding web portion of the other of the two L-shaped brackets, and to slide over the web portion of the other bracket so that the distance which separates a pair of legs 88 and 90 carried by the respective brackets can be varied. Stated differently, by applying oppositely acting forces to the leg 88 carried by the left-hand L-shaped bracket 82 shown in FIG. 4, and to the leg 90 of the right-hand L-shaped bracket 82 also shown in this figure, the anchor device may be enlarged in the sense of providing a greater distance of separation between the legs 88 and 90. In this way, the size of the anchoring device 80 is adjusted to accommodate a relatively larger door frame to assure that when the frame has been placed in position in the manner hereinbefore described with its in-turned flanges 72 in locking engagement with the retainer latches 30, positive locking engagement will obtain and the in-turned flanges 72 of the door frame will not slip off of the retainer latches and permit the frame to come loose from the anchoring devices.

A locking bolt 92 carrying a suitable nut 94 is extended through registering slots 96 and 98 formed in the web portions 86 of the two L-shaped brackets 82 used in the embodiment of the invention depicted in FIG. 4. This permits the two L-shaped brackets 82 to be locked in a selected relative position after they have been slidingly manipulated relative to each other to adjust the size of the anchor device 80. Registering slots 100 are also provided in the web portions 86 of the two L-shaped brackets 82 to accommodate screws, nails or other fastening devices used to secure the anchoring device to the edge of the wall facing the door opening in the manner hereinbefore described.

The retainer latches 30, pivot pins 36 and bar springs 44 utilized in the adjustable anchoring device depicted in FIG. 4 are of identical construction to those which have been previously described as used in the embodiment of the invention shown in FIG. 1, and the same reference numerals have been used to identify these structural elements. Moreover, the slots which are provided for the accommodation of the retainer latches 30 and the structural elements used to retain the pivot pins 36 and the bar springs 44 in position are also identical to the corresponding elements depicted in FIG. 1, and identical reference numerals have also been utilized to identify these structures.

Although certain preferred embodiments of the invention have been herein described in order to illustrate the manner in which the invention may be practiced to derive the benefit of the principles upon which it is based, it is to be understood that various changes and innovations can be effected in the described structures of the preferred embodiments without departure from these basic principles of the invention. Changes and innovations of this type which continue to rely upon the basic principles of the invention are therefore deemed to be circumscribed by the spirit and scope of the invention except as the same way be necessarily limited by the appended claims or reasonable equivalents thereof.

What is claimed is:

1. An anchoring device for door frames comprising:
a rigid web portion adapted for securement to a wall adjacent, and defining, a door opening in which a frame is to be mounted;
a pair of spaced legs secured to, and extending in substantially the same direction from, said web portion;
a retainer latch pivotally mounted on each of said legs and each pivotable through the plane of the respective leg from a first position on that side of the leg on which it is mounted which is opposite the side thereof upon which the other said leg is located, to a second position more nearly adjacent the other leg than said first position; and
means resiliently biasing said retainer latches toward said first positions.

2. An anchoring device as defined in claim 1 wherein said web portion is flat and substantially monoplanar, and in which each of said retainer latches comprises at least one plate pivotally supported on one of said legs for pivotation about an axis spaced from, and extending substantially parallel to said web portion, said plate having an arcuate edge remote from said pivotal axis and lying substantially tangentially with respect to the plane of said web portion whereby said arcuate edge may be pivoted upon pivotation of said retainer latch into the plane of said web portion and a door frame flange may be retained flush with said web portion when anchored to a door frame by said anchoring device.

3. An anchoring device as defined in claim 1 wherein said web portion and legs are integrally formed as a single unit, and said legs converge toward each other and are connected to said web portion along substantially parallel lines.

4. An anchoring device as defined in claim 1 wherein said web portion is of two-part construction, each of said parts having one of said legs secured thereto, with said legs extending substantially parallel to each other, said two parts being slidingly interconnected to each other to vary the distance separating said legs as said two parts undergo relative sliding movement.

5. An anchoring device as defined in claim 1 wherein each of said legs is slotted to accommodate pivotal movement of the retainer latch mounted thereon through the slot in the respective leg as the retainer latch thereon moves between said first and second positions.

6. An anchoring device for door frames comprising:
a rigid web portion adapted for securement to a wall adjacent, and defining, a door opening in which a frame is to be mounted;
a pair of spaced legs secured to, and extending in substantially the same direction from, said web portion;
a retainer latch pivotally mounted on each of said legs and each pivotable from a first position on that side of the leg on which it is mounted which is opposite the side thereof upon which the other leg is located, to a second position more nearly adjacent the other leg than said first position; and
a pair of bar springs secured to the side of said legs which face each other across said web portion for resiliently biasing said retainer latches toward said first position, each of said bar springs bearing against one of said retainer latches to bias said one retainer latch toward said first position.

7. An anchoring device for door frames comprising:
a flat, substantially monoplanar web portion adapted for securement to a wall adjacent, and defining, a door opening in which a frame is to be mounted;
a pair of spaced legs secured to, and extending in substantially the same direction from, said web portion;
a retainer latch pivotally mounted on each of said legs and each pivotable from a first position on that side of the leg on which it is mounted which is opposite the side thereof upon which the other said leg is located, to a second position more nearly adjacent the other leg than said first position, each of said retainer latches comprising:
a pair of plates extending substantially parallel to each other and each pivotably supported on one of said legs for pivotation about an axis spaced from, and extending substantially parallel to said web portion, said plates each having an arcuate edge remote from said pivotal axis and lying substantially tangentially with respect to the plane of said web portion; and
a web plate interconnecting said pair of plates and pivotal into co-planar alignment with the leg on which its respective retainer latch is pivotally mounted; and
means resiliently biasing said retainer latches toward said first position.

8. An anchoring device for securing a door frame to a wall comprising:
a base bracket means including:
substantially monoplanar web means adapted for securement to a wall; and
a pair of legs extending from said web means in substantially the same direction and joined to said web means along substantially parallel lines, each of said legs having slots formed therein;
a retainer latch mounted on each leg for pivotation through the slot therein between positions on opposite sides thereof; and
bar springs yieldingly biasing each of said retainer latches to a position on the opposite side of the leg on which it is mounted from the other of said legs, each of said bar springs being detachably secured to one of said legs and extending across the slot therein in yielding contact with the retainer latch mounted thereon.

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