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Sullivan

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[54] **PANEL FASTENING DEVICE**

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[21] Appl. No.: **526,597**

Related U.S. Application Data

[63] Continuation of Ser. No. 329,704, Feb. 5, 1973, abandoned, which is a continuation of Ser. No. 111,060, Jan. 29, 1971.

[52] **U.S. Cl.** **108/64;** 403/407; 108/89

[51] **Int. Cl.**[2] **A47B 37/00**

[58] **Field of Search** ..... 108/64, 114, 89, 69, 65; 403/20, 406, 102, 407, 409; 24/68, 68 FP, 68 BT

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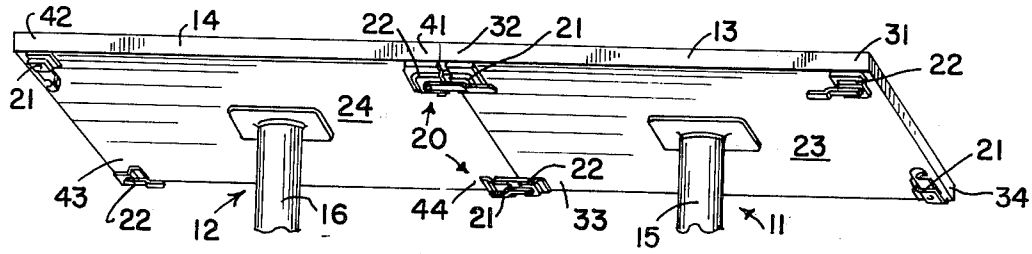
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[57] **ABSTRACT**

A device for fastening together two table panels in abutting relationship to each other. The device includes a first member having a pivotally connected latch, which is mounted to the underside of a first panel adjacent an edge of the panel. A second member having an offset portion which defines an opening adapted to receive a catch means on the latch is mounted to the underside of a second panel adjacent to the edge thereof. The second member includes a lever having a cam at one end thereof which cam engages the catch means when the catch means is positioned in the opening. Rotation of the lever turns the cam and draws the first member toward the second member, thereby bringing the table panels into tight mating engagement.

2 Claims, 5 Drawing Figures



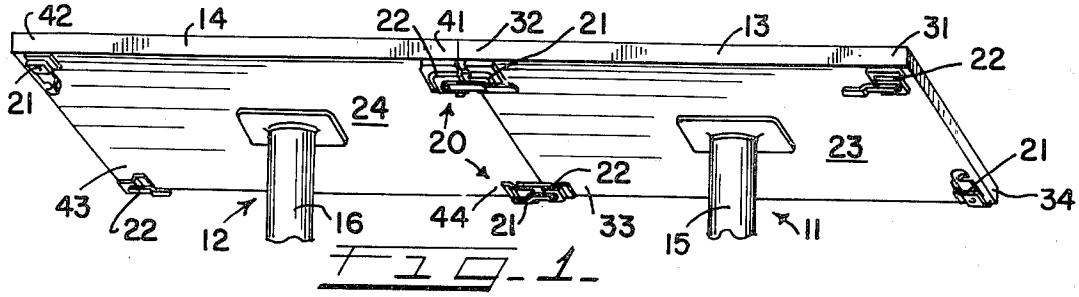


FIG. 1

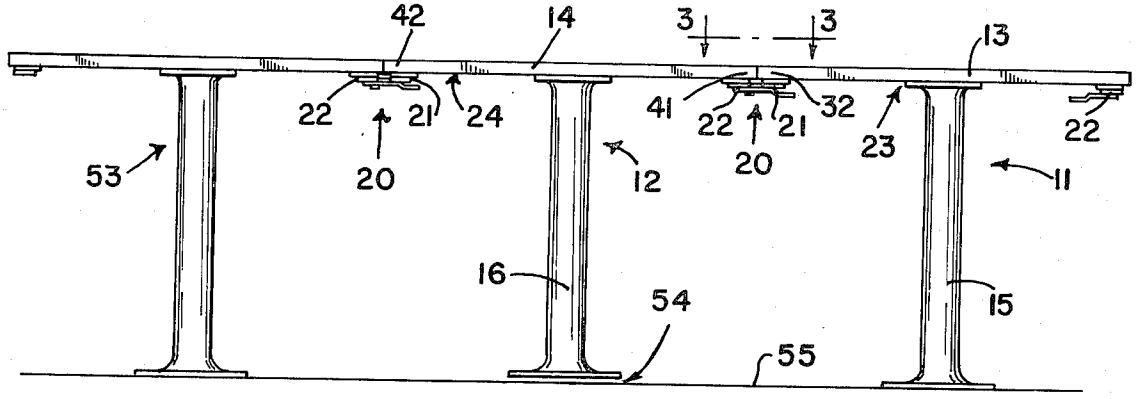


FIG. 2

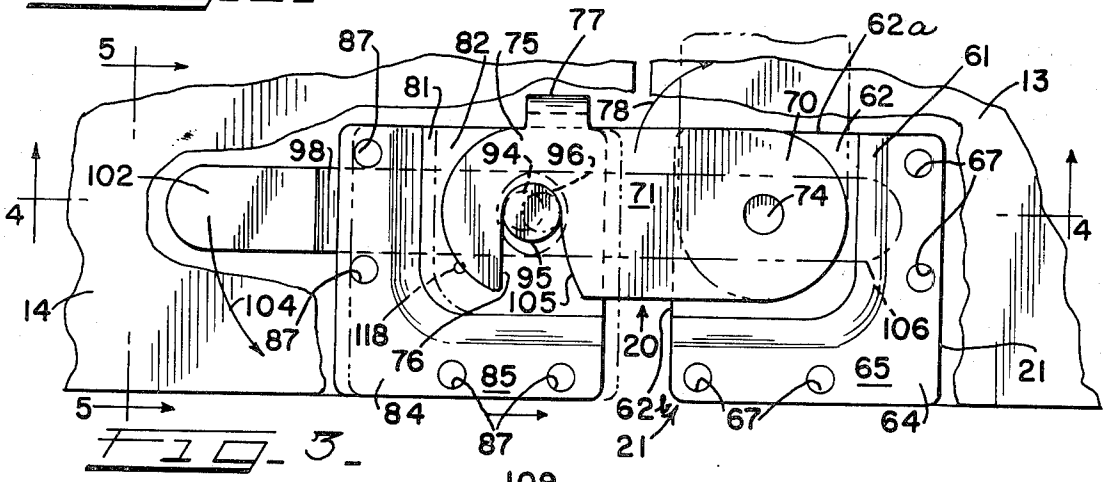


FIG. 3

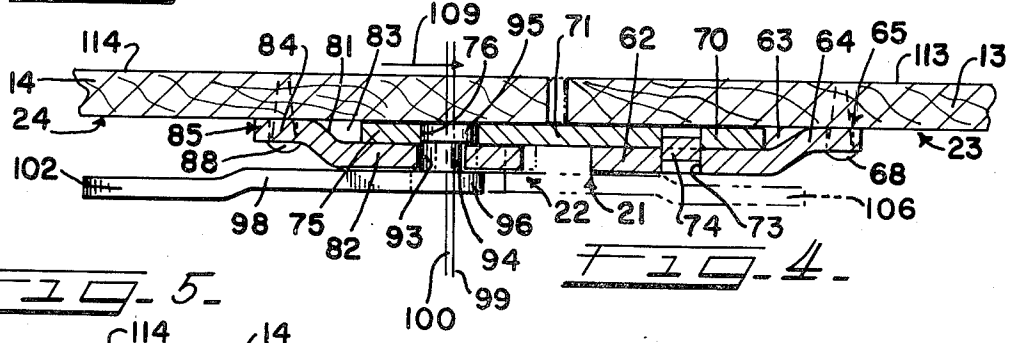
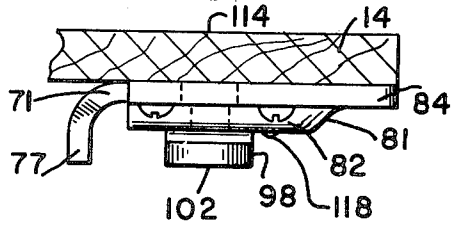


FIG. 4

FIG. 5



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PANEL FASTENING DEVICE

This is a continuation of application Ser. No. 329,704, filed Feb. 5, 1973, now abandoned, which is a continuation of Ser. No. 111,060, filed Jan. 29, 1971.

This invention generally relates to a device for detachably connecting two panels to each other. An important embodiment of the present invention specifically relates to an improved device which detachably secures and supportively connects together table tops and/or table leaves in a manner wherein the top surfaces thereof are substantially in a common plane.

It is a primary object of the present invention to provide an improved device for detachably fastening panels, such as table tops and/or table leaves, to each other.

Another object of the present invention is to provide a device for fastening together two table top panels in a manner wherein the upper surfaces thereof substantially lie in a common plane.

Another object of the present invention is to provide a device for clamping together two table tops which device includes a camming means for drawing the table tops into tight mating engagement with each other.

Another object of the present invention is to provide a device for securing together juxtaposed abutting table tops and/or table leaves which device also functions to support said table tops or table leaves.

Still another object of the present invention is to provide an improved low profile table fastening device which when either in use, or in a self-storing position, extends a minimum distance from the bottom surface of the table top panel and thereby substantially reduces, if not totally eliminates, tearing of clothing caused by the accidental snaging thereof on the device.

In accordance with the present invention, a novel panel fastening device is provided which includes a first member having a pivotally connected latch, which member is mounted to the underside of a first table panel adjacent an edge thereof. A second member having an opening adapted to receive a catch means on the latch is mounted to the underside of a second table panel adjacent an edge of the second table panel adjacent an edge of the second table panel. The second member includes a lever having a cam at one end thereof which cam engages the catch means when the catch means is positioned in the opening. Rotation of the lever turns the cam and draws the first member toward the second member, thereby bringing the table panels into tight mating engagement.

For a more complete understanding of the nature and scope of the present invention, reference may now be had to the following detailed description of a preferred embodiment of the invention taken in conjunction with the accompanying drawings wherein:

FIG. 1 is a perspective view of the underside of two table tops fastened together in abutting relationship with two fastening devices of the present invention;

FIG. 2 is a side elevational view of three table tops fastened together with fastening devices of the present invention and showing the intermediate table supported through the fastening devices of the present invention by the two outer tables of the three tables;

FIG. 3 is a fragmentary top plan view with portions thereof broken away and in phantom taken along line 3—3 of FIG. 2 showing one of the fastening devices of the present invention;

FIG. 4 is a sectional view taken along the line 4—4 of FIG. 3; and

FIG. 5 is a sectional view taken along line 5—5 of FIG. 3.

Referring now to the drawings in greater detail, two identical conventional tables are generally indicated at 11 and 12 in FIG. 1. Each of the tables 11 and 12 is of the type which respectively includes a table top 13, 14 supported by a pedestal 15, 16 only part of which is shown in FIG. 1. These tables are of the type used in restaurants, cocktail lounges, lodge halls or the like where it is often times desirable to join several tables together to form a larger table or counter.

In accordance with the present invention, tables 11 and 12 are provided with table fastening or connecting devices which are generally indicated at 20 in FIG. 1. Each of the devices 20 is formed of two members which are generally designated by reference numerals 21 and 22. Members 21 and 22 are respectively secured to the undersides 23 and 24 of the table tops 13 and 14 adjacent the edge portions thereof which are placed in abutting juxtaposed position when these tables are connected to each other. As is best shown in FIG. 3, the undersides 23 and 24 of the respective table tops 13 and 14 are brought into generally planar alignment with each other when the tables are connected together by the fastening devices of the present invention. In this manner, if the table tops 13 and 14 are of equal thickness, use of the fastening devices 20 to fasten the table tops 13 and 14 together also functions to bring the upper surfaces thereof into a common plane even though the respective table tops have upper surfaces which lie in slightly different planes when the tables are not connected together.

To facilitate fastening of the tables 11 and 12 to each other and to other tables, the members 21 and 22 of the fastening devices 20 are alternately positioned along one pair of oppositely facing edges of each of table tops 13 and 14 about the underside margin thereof. For example, table top 13 has a member 22 mounted at a first corner 31, a member 21 located at a second corner 32, the member 22 located at a third corner 33 and the member 21 located at a fourth corner 34. In like manner, the members 22, 21, 22 and 21 are located respectively at corners 41, 42, 43 and 44 on the underside 24 of the table top 14. In this way, and as shown in FIG. 1, the member 21 at the corner 32 is in position to be cooperatively joined with the member 22 at the corner 41 while, at the same time, the member 22 at the corner 33 is in position to mate with the member 21 at the corner 44.

Referring now to FIG. 2, a third table, generally indicated at 53, is connected to the table 12 for the purpose of illustrating one of the advantages of the fastening devices 20 of the present invention. Here, the table 12 is shown with the pedestal 16 thereof supported a short distance 54 above ground level 55 by the fastening devices 20 of the adjacent tables 11 and 53. As will be more fully understood from the following description, the fastening devices 20 are so constructed and arranged that they are capable of not only fastening and leveling adjacent table tops such as the table tops 13 and 14 shown in FIG. 1, but are also capable of supporting a table top panel or table leaf between and from two adjacent tables such as the tables 11 and 53.

Referring now to FIG. 3, in the illustrated embodiment the member 21 secured to the underside surface

23 of the table top 13 adjacent corner 32 thereof includes a generally square base 61. The base 61 includes a generally offset portion 62 which has two sides 62a and 62b which are spaced away from the bottom surface 23 of table top 13 to define a latch-receiving slot 63 therewith. The remaining two sides of the offset portion 62 extend into a generally L-shaped mounting flange 64 for facilitating attachment of the member 21 to underside 23 of the table top 13. In this respect, and as best shown in FIG. 3, the L-shaped flange 64 of the base 61 includes attachment surface 65 adapted for face-to-face contact with the bottom surface 23 of the table top 13. As shown in FIG. 3, the portion 64 of the base 61 has four bores 67 therein for receiving fasteners such as rivets, screws, pins or the like for securing the base 61 to the underside 23 of the table top 13. One such fastener is shown at 68 in FIG. 4.

As shown in FIGS. 3 and 4, a first end section 70 of an elongated generally planar latch 71 is received in the slot 63. To pivotally mount the first end section 70 of the latch 71 to the base 61, and within the slot 63, the offset portion 62 of the base 61 is provided with an aperture 73 (FIG. 4) which receives a boss or pin 74 on the first end section 70. Typically the boss or pin 74 can be formed on the latch 71 by a stamping or equivalent operation.

The latch 71 includes a second end section 75 having a laterally extending recess 76 therein which forms the second end section 75 with a generally hook shaped formation defining a catch means for securing the latch 71 to the second member 22. Also, to facilitate manipulation of the latch 71, it is provided with a tab 77 which in the illustrated embodiment extends downwardly and generally normal to the plane of the latch 71 and which can be easily gripped for moving the catch means defined at the second end section 75 of the latch 71 into and out of operative engagement with the member 22 of the fastening device 20 as indicated by the arrow 78.

It will be apparent from FIGS. 3 and 4 that the member 22 includes a base 81 generally identical in shape to the base 61. In this respect, the base 81 has an offset portion 82 which forms a latch receiving slot or opening 83 with the underside 24 of the table top 14, an L-shaped flange 64 having an attachment surface 85, a plurality of bores 87 for receiving fasteners 88 (FIGS. 4 and 5) and an aperture 93 (FIG. 4) in the offset portion 82.

As best shown in FIG. 4, a pin 94 is received in the aperture 93 and is secured at one end to a circular cam 95 positioned within the latch-receiving opening or slot 83 and connected at the other end to one end 96 of a lever arm 98. As shown in FIG. 4, the circular cam 95 is eccentrically connected to the pin 94 such that the axis 99 of the cam 95 is spaced from, or eccentric with respect to, the pivot axis 100 of the pin 94. In this way, when the free end 102 of the lever arm 98 is rotated in the direction indicated by the arrow 104 in FIG. 3, the pin 94 is rotated about its pivot axis 100 and the circular cam 95 is displaced laterally of the pivot axis 100 so as to move the cam 95 inwardly from the edge of the table top to which the member 22 is connected.

As shown in FIGS. 3 and 4, the recess 75 in the end section 75 of the latch 71 will fit around the cam 95. Furthermore, as best shown in FIG. 3, the recess 76 has a curved or arcuate side 105 to facilitate reception of the cam 95 within the recess 76 as the second end section 75 of the latch 71 is moved into the latch-receiving slot 83. Accordingly, after the end section 75 has been moved into the latch-receiving slot 83 and is in the position shown in FIG. 3, the free end 102 of the lever arm 98 can be moved in the direction indicated by arrow 104 from an unlatched position to a latching position shown by phantom lines at 106 in FIGS. 3 and 4. When this is done, the cam 95 is laterally displaced relative to the pivot axis 100 of the pin 94 such that the second base 81 is moved toward the first base 61 or vice versa to bring, draw, or force the edges of the table tops 13 and 14 into tight mating engagement, that is to say, to draw table top 13 toward table top 14 as indicated by the arrow 109 in FIG. 4.

As best shown in FIG. 4, the offset portions 62 and 82 of the first and second bases 61 and 81, respectively, are offset from the attachment surfaces 65 and 85 a predetermined distance essentially equal to the thickness of the latch 71. Stated otherwise, the thickness of the latch 71 is essentially the same as the width of each of the slots 63 and 83. In this way, a close, if not snug, fit of the latch 71 within the slots 63 and 83 is obtained so that when juxtaposed edges of the table tops 13 and 14 are drawn into tight mating engagement, the undersides 23 and 24 of the table tops 13 and 14 are drawn into generally planar alignment. As a result, if the table tops 13 and 14 have the same thickness, as is the case for the table tops 13 and 14 illustrated in the drawings, movement of the second section 75 of the latch 71 into the latch-receiving opening 83 of the second member 22, followed by rotation of the lever arm 98 to move the base 61 and 81 toward each other, will serve or function to level the upper surfaces 113 and 114 of the table tops 13 and 14.

Preferably, and as best shown in FIG. 2, base 81 has a small projection or protuberance 118 extending from the outer face of the offset portion 82. This protuberance 118 on the base 81 obstructs slightly the movement of the lever arm 98 which must be forced past the protuberance 118 when it is moved in the direction indicated by the arrow 104. As a result, the protuberance 118 serves as a means for retaining the lever arm 98 in its unlatched position shown in FIGS. 3 and 4.

As shown in FIGS. 4 and 5, the fasteners 68 and 88 received in the openings 67 and 87, respectively, serve to securely fasten the bases 61 and 81 to the respective undersides 23, 24 of the table tops 13, 14. Also, it will be apparent that the fastening and leveling device 20 of the present invention is of simple construction including (a) two generally identical bases 61 and 81, (b) the latch 71 which is connected in a simple manner to the base 61 merely by being placed in the slot 63 prior to the fastening of the base 61 to the underside of a table top, and (c) the cam 95 operated by the lever arm 98 pivotally mounted to the base 81. The cam 95 and pin 94 can be integrally formed. Then the pin can be inserted through the aperture 93 and into an opening in the end 96 of the lever arm 98 where it is welded in place. Preferably, the above mentioned parts of the device 20 are made of metal although other materials exhibiting suitable strength may be used in place thereof.

The fastening device 20 of the present invention can be utilized in other applications besides the primary application of fastening two table top panels. For example, the fastening device 20 of the present invention can be utilized for fastening plywood panels of cement forming structures which need to be fastened in tight

mating engagement and leveled or aligned to provide smooth continuous side walls in a cement form between which cement is poured and then allowed to set when forming the foundation for a building.

From the foregoing description, it will be apparent that the fastening device of the present invention has numerous advantages and applications, some of which have been described above and others of which are inherent in the invention. Accordingly, the scope of the invention is only to be limited as necessitated by the accompanying claims.

I claim:

1. The combination comprising:

a first table panel,

a second table panel intended to be placed in abutting relationship with said first table panel,

a first base member secured to the underside and adjacent an edge of said first table panel, said first base member having an inside surface which defines a first latch-receiving slot with and between the underside of said first table panel,

an elongated latch pivotally secured adjacent one end thereof to said first base member in said first latch-receiving slot and having a catch means formed along one lateral edge thereof adjacent a second end thereof,

a second base member secured to the underside and adjacent an edge of said second table panel, said second base member having an inside surface which defines a second latch-receiving slot with and between the underside of said second table panel for receiving said second end of said latch,

said first and second base members being positioned at respective locations adjacent the edges of said table panels such that when said edges are in intimate surface-to-surface engagement with each other said base members are in spaced-apart relationship to each other,

cam means rotatably mounted within said second latch-receiving slot and engageable with said catch means,

a pin extending through an aperture in said second base member having a first end which is eccentrically fixed to said cam means,

a lever arm having one end fixed to said pin and pivotally movable about the axis thereof for selectively laterally displacing said cam means to urge the edges of the table top panels in intimate surface-to-surface engagement with each other when said cam means is received in said catch means, and

each of said base members including a bore, each of said bores having a planar attachment surface for face-to-face contact with, and attachment to, the underside of the respective table panel to which it is attached, and having an offset portion which is offset from said planar surface and away from the underside of the respective table panel to form between said offset portion and the underside of the respective table panel, a latch-receiving slot having a depth substantially equal to the thickness of said latch whereby, when said catch means at said second end of said latch is received in said second slot and is then drawn into said second slot by said cam means, the table panels are aligned and leveled by reason of the close fit of said latch member in said slot.

2. The combination of claim **1** wherein said latch is a generally flat elongated member having a sufficient structural strength to rigidly support said table panels.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 3,915,100

DATED : October 28, 1975

INVENTOR(S) : Henry F. Sullivan

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

The name of the inventor listed as "Henry E. Sullivan" should read --Henry F. Sullivan--

Signed and Sealed this

Fourteenth Day of December 1976

[SEAL]

Attest:

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents and Trademarks