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(54) **UNDERMOUNT SLIDE DRAWER  
ADJUSTMENT AND SECURING APPARATUS**

(52) **U.S. Cl. .... 312/334.1; 312/352**

(76) **Inventors: Gus Frousiakis, Huntington Beach,  
CA (US); Frank J. Clausen,  
Brabrand (DK)**

(57) **ABSTRACT**

Correspondence Address:  
**DENNIS W. BEECH (LAW OFFICE OF DENNIS  
W. BEECH)  
P.O. BOX 519  
MURRIETA, CA 92564-0519 (US)**

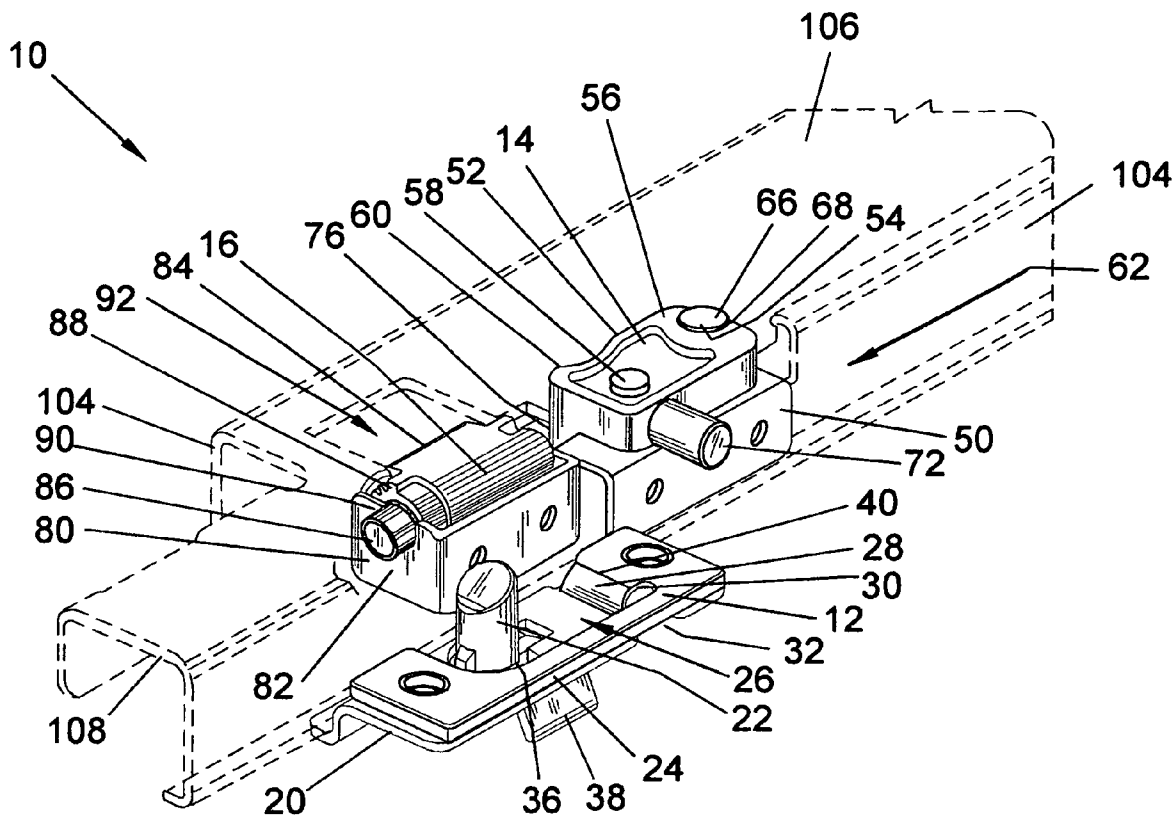
The present invention may be used for positioning and securing a drawer on a drawer slide member of a cabinet. There may be a positioning pin retained on a side wall of the drawer slide element. The positioning pin may have a pin attached to a springy projecting arm for positioning the pin in a hole in the bottom of the drawer. There may be a securing pin attached interior to the drawer slide member that may be rotated about a rotating end of a housing to position a slot pin through a pin slot in a side wall of the drawer slide member. The slot pin may engage an elongated aperture formed in the drawer to inhibit removal of the drawer from the drawer slide member. There may also be an adjustment cam rotatably retained in an adjustment bracket attached interior to the drawer slide member. The adjustment cam may have a protruding portion that may be rotated upwardly through a cam aperture in the top wall of the drawer slide member to raise the drawer height.

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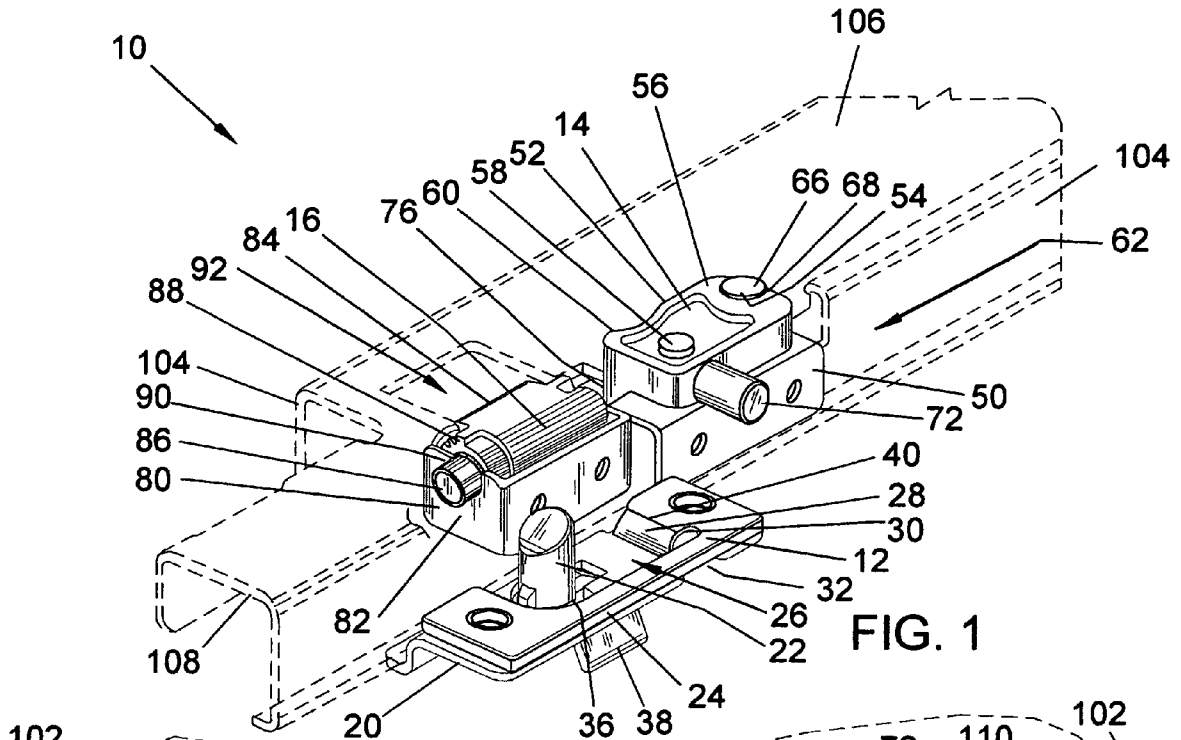


FIG. 1

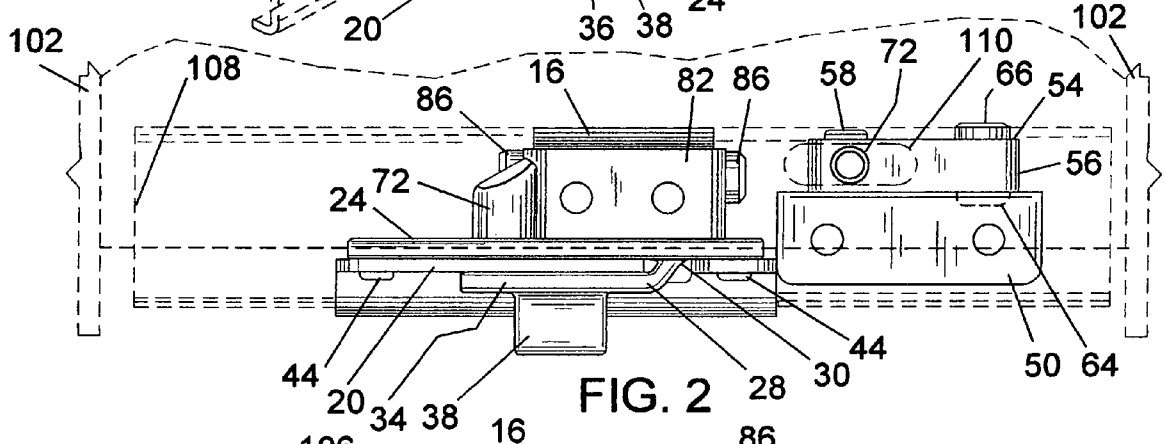


FIG. 2

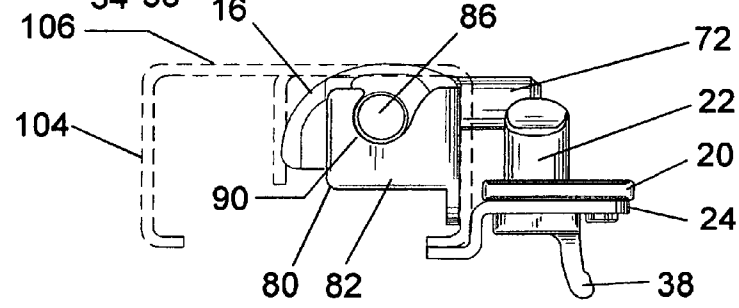
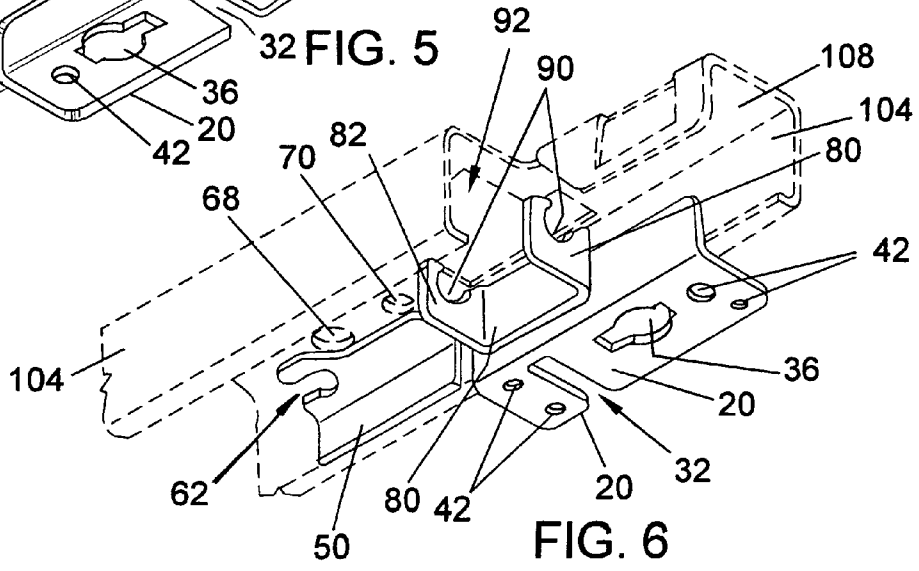
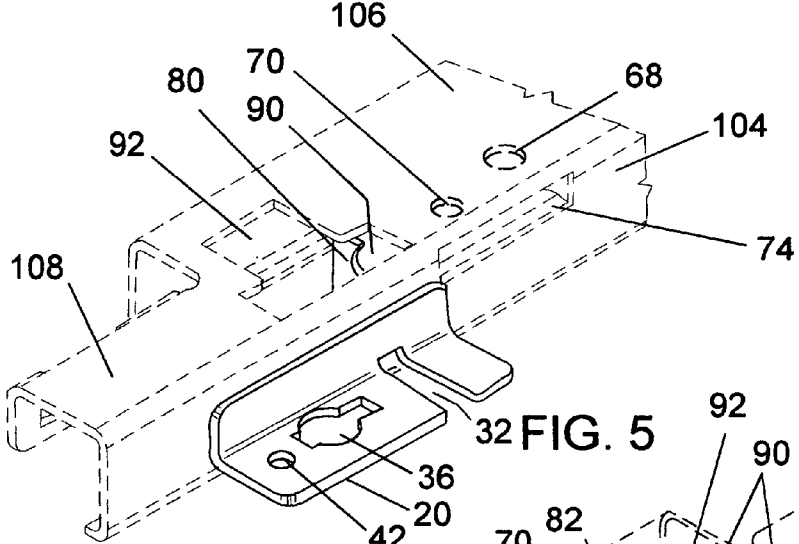
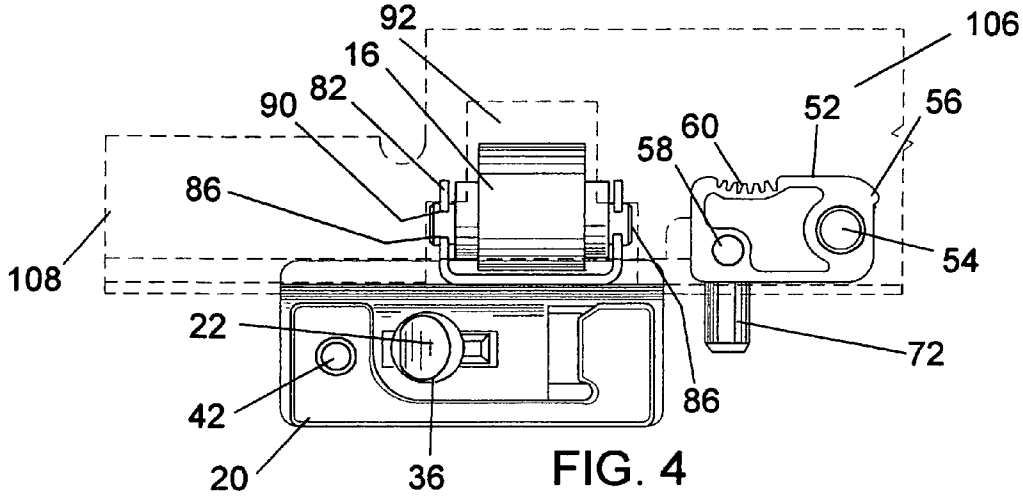


FIG. 3



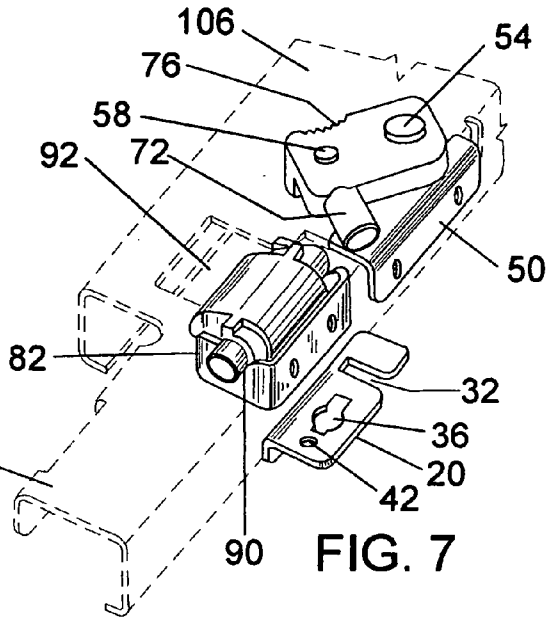


FIG. 7

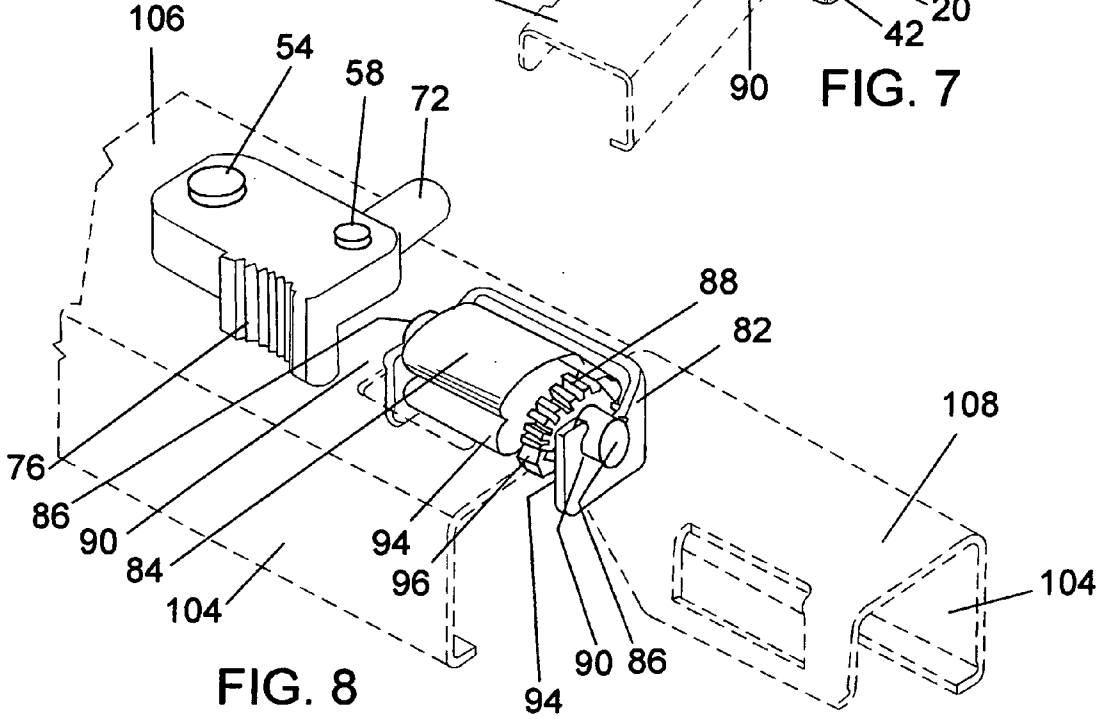


FIG. 8

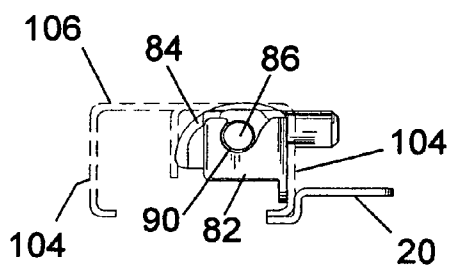


FIG. 8A

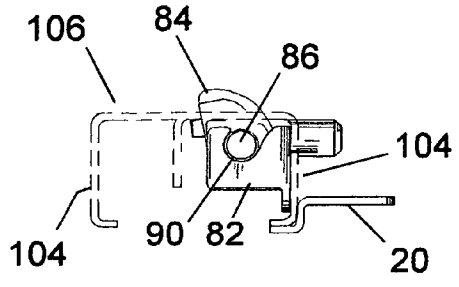


FIG. 8B

**UNDERMOUNT SLIDE DRAWER  
ADJUSTMENT AND SECURING APPARATUS**

**BACKGROUND OF THE INVENTION**

[0001] This invention relates to devices used to position and secure a drawer element that may be an open top drawer box on an undermount drawer slide member. The new apparatus may have a spring biased positioning pin, a rotating height adjustment cam and a drawer securing pin to position and secure a drawer to a drawer slide.

[0002] Drawer positioning pins that may be rigidly attached to a drawer slide element to engage a hole or bore in a drawer box may be known for use in retaining a drawer box on a slide. Screw type positioning bolts may currently be used to elevate a drawer box relative to a drawer slide element to position a drawer box on a drawer slide. A drawer box may be positioned on a pair of cabinet drawer slides for positioning holes in the drawer on the rigidly attached pins. This type of positioning can be difficult due to the necessity to position the holes over a protruding pin. Using a threaded type bolt or screw to adjust a drawer height can also be a tedious procedure.

**SUMMARY OF THE INVENTION**

[0003] The present invention is directed to devices and apparatus for use in positioning and securing a drawer on a drawer slide member of a cabinet. There may be a positioning pin retained on a side wall of the drawer slide element. The positioning pin may have a pin attached to a springy projecting arm for positioning the pin in a hole in the bottom of the drawer. There may be a securing pin attached interior to the drawer slide member that may be rotated about a rotating end of a housing to position a slot pin through a pin slot in a side wall of the drawer slide member. The slot pin may engage an elongated aperture formed in the drawer to inhibit removal of the drawer from the drawer slide member. There may also be an adjustment cam rotatably retained in an adjustment bracket attached interior to the drawer slide member. The adjustment cam may have a protruding portion that may be rotated upwardly through a cam aperture in the top wall of the drawer slide member to raise the drawer height.

[0004] These and other features, aspects and advantages of the present invention will become better understood with reference to the following drawings, description and claims.

**BRIEF DESCRIPTION OF THE DRAWINGS**

[0005] FIG. 1 illustrates a perspective view of an end portion of a drawer slide element with an apparatus having a positioning pin, an adjustment cam and a securing pin according to an embodiment of the invention;

[0006] FIG. 2 illustrates a side elevation view of an apparatus according to an embodiment of the invention;

[0007] FIG. 3 illustrates an end elevation view of an apparatus according to an embodiment of the invention;

[0008] FIG. 4 illustrates a top view of an apparatus according to an embodiment of the invention;

[0009] FIG. 5 illustrates a top perspective view of an end portion of a right hand drawer slide member with attached apparatus brackets according to an embodiment of the invention;

[0010] FIG. 6 illustrates a bottom perspective view of an end portion of a right hand drawer slide member with attached apparatus brackets according to an embodiment of the invention;

[0011] FIG. 7 illustrates a top perspective view of a portion of an apparatus with a securing pin retracted into a slide element according to an embodiment of the invention;

[0012] FIG. 8 illustrates a top perspective and end elevation view of a portion of an apparatus with adjustment cam positions according to an embodiment of the invention.

**DETAILED DESCRIPTION**

[0013] The following detailed description represents the best currently contemplated modes for carrying out the invention. The description is not to be taken in a limiting sense, but is made merely for the purpose of illustrating the general principles of the invention.

[0014] Referring to FIGS. 1 through 6, an undermount slide drawer adjustment and securing apparatus 10 may have a positioning pin 12, a securing pin 14 and an adjustment cam 16 attached to drawer slide member 100 positioned to engage a drawer 102. The drawer 102 may be a box with open top drawer type. The drawer slide member 100 may have a "U" channel shape with two side walls 104 and a top wall 106. The drawer slide member 100 may be shaped to operate as a part of an underdrawer slide assembly with the drawer slide member 100 being the element on which a drawer 102 is positioned.

[0015] The positioning pin 12 may be retained on a positioning bracket 20 attached adjacent a proximal end 108 of a drawer slide member 100. The positioning bracket 20 may be attached to a side wall 104 to position a pin 22 of the positioning pin 12 to engage a hole or bore in a bottom side of a drawer 102. The position pin 12 may have a base plate 24 for attachment to the positioning bracket 20. The base plate 24 may have a generally rectangular open portion 26 with a flexible, resilient, projecting arm 28 attached at a first end 30 to an edge 40 of the open portion 26. The projecting arm 28 may be shaped to pass through a slot 32 in the positioning bracket 20 to position the pin 22 attached at a free or second end 34 through an aperture 36 in the positioning bracket 20 for the pin 22 to project upwardly to engage a drawer 102. The base plate 24 and positioning bracket 20 may have apertures 42 or protruding pegs 44 to be used to retain the positioning pin 12 on the positioning bracket 20. Screws may be used to fasten the base plate 24 to the positioning bracket 20.

[0016] The pin 22 and second end 34 may be forced downwardly against the spring force of the projecting arm 28, for example, when a drawer 102 may be placed on the drawer slide member 100. When a drawer 102 that may have a hole in a bottom has the hole positioned over the pin 22 the projecting arm 28 may move the pin 22 upwardly into the hole. The projecting arm 28 adjacent the second end 34 may have a tab 38 for gripping and pulling the projecting arm 28 downwardly to retract the pin 22 from a drawer 102 hole for ease in removing a drawer 102 from a drawer slide member 100.

[0017] The securing pin 14 may be retained on a securing bracket 50 that may be attached interior to the drawer slide member 100 on a side wall 104. The securing bracket 50 may be positioned adjacent to the positioning bracket 20. The securing pin 14 may have a housing 52 of generally rectangular box form with a spring biased fastening pin 54 slidably

disposed in and adjacent to a rotating end **56** and a spring biased locating pin **58** slidably disposed in and adjacent to a securing end **60**.

[0018] The pins **54, 58** may be oriented generally vertically when the securing pin **12** may be positioned on the securing bracket **50**. The securing bracket **50** may have a slot **62** for receipt of a bottom end **64** of fastening pin **54** that may have a top end **66** inserted through a fastening aperture **68** in the top wall **106** of the drawer slide member **100**. The locating pin **58** may be positioned in a locating aperture **70** in the top wall **106** when the housing **52** is rotated to position a generally horizontally oriented slot pin **72** attached adjacent the securing end **60** through a pin slot **74** in the side wall **104**.

[0019] In operation the securing pin **14** may have the securing end **52** rotated away from the side wall **104** to retract the slot pin **72** interior to the drawer slide member **100**, as best viewed in FIG. 7. When a drawer **102** that may have an elongated aperture **110** formed therein is properly positioned on the drawer slide member **100**, the housing **52** may be rotated about fastening pin **54** to cause the slot pin **72** to pass through pin slot **74** to engage the elongated aperture **110** in the drawer **102**. Positioning the slot pin **72** may inhibit removal of the drawer **102** from the drawer slide member **100**. There may be a finger tab **76** on the housing **52** to aid in rotating the housing **52**.

[0020] The adjustment cam **16** may be retained on an adjustment bracket **80** that may be attached interior to the drawer slide member **100** on a side wall **104**. The adjustment bracket **80** may be positioned adjacent the positioning bracket **20** or the securing bracket **50**. The adjustment cam **16** may have a generally cylindrical shape cam body **82** with a raised portion **84** relative to the circular surface of the cam body **82**. The cam body **82** may have mounting pins **86** attached at each end and a toothed gear **88** may be attached to one of the mounting pins **86**.

[0021] The adjustment cam **16** may be rotatably inserted in opposed slots **90** of the securing bracket **80** with the raised portion **84** oriented upwardly to abut a drawer **102** that may be positioned on the drawer slide member **100**. There may be a cam aperture **92** in the top wall **106** with an opening to allow rotating the raised portion **84** upwardly and outwardly against a drawer **102** bottom. There may be a ratchet arm **94** that engages the teeth of the gear **88** to retain the cam body **82** in a particular position. The adjustment cam **16** may be structured to allow elevation of a drawer **102** portion between 0 mm and 3 mm in height, as best viewed in FIG. 8. A cam tab **96** may be attached to the cam body **82** to aid in rotating the cam body **82**.

[0022] While the apparatus **10** has been described with three devices in combination for adjusting and securing a drawer **102** on a drawer slide member **100**, the device **12, 14, 16** may be also used singly or in combinations of two.

[0023] While the invention has been particularly shown and described with respect to the illustrated embodiments thereof, it will be understood by those skilled in the art that the foregoing and other changes in form and details may be made therein without departing from the spirit and scope of the invention.

I claim:

1. An apparatus to position and secure a drawer element on a drawer slide member comprising:

a positioning pin retained on a positioning bracket attached to a side wall of a drawer slide member wherein a pin of said positioning pin is oriented upwardly;

a base plate of said positioning pin has a generally rectangular open portion with a projecting arm that is springy attached at a first end to an edge of said generally rectangular open portion; and

said projecting arm is shaped to pass through a slot in said positioning bracket to position said pin attached at a second end of said projecting arm through said positioning bracket having an aperture therein.

2. The apparatus as in claim 1 further comprising:

a securing pin rotatably retained on a securing bracket attached interior to said drawer slide member on said side wall;

a housing of said securing pin has a fastening pin slidable disposed therein adjacent a rotating end with said securing pin spring biased axially wherein said fastening pin has a bottom end disposed in a slot of said securing bracket and a top end disposed in said drawer slide member having a fastening aperture in a top wall thereof;

a locating pin is slidably disposed in said housing adjacent a securing end with said securing pin spring biased axially;

a slot pin attached adjacent said rotating end positioned to protrude generally horizontally and outwardly through said side wall having a pin slot therein when said securing end is rotated adjacent to said side wall; and

said top wall having a locating aperture therein for receipt of said locating pin when said securing end is rotated adjacent to said side wall.

3. The apparatus as in claim 1 further comprising:

an adjustment cam rotatably retained in an adjustment bracket attached interior to said drawer slide member on said side wall;

said adjustment cam has a cam body that is generally cylindrical shaped with a raised portion relative to the circular surface of said cam body;

a mounting pin attached at each end of said cam body and a toothed gear attached to one of said mounting pins;

said adjustment bracket having two opposed slots with a ratchet arm attached adjacent one of said opposed slots to engage said toothed gear when said mounting pins are disposed in said opposed slots; and

said top wall having a cam aperture therein for said raised portion to pass therethrough when said cam body is rotated.

4. The apparatus as in claim 1 wherein said projecting arm has a tab attached adjacent said second end.

5. The apparatus as in claim 2 wherein said housing has a finger tab attached adjacent to said securing end.

6. The apparatus as in claim 2 wherein said adjustment bracket is attached adjacent said positioning bracket.

7. The apparatus as in claim 3 wherein said cam body has a cam tab attached.

8. The apparatus as in claim 3 wherein said adjustment bracket is attached adjacent said positioning bracket.

9. An apparatus to position and secure a drawer element on a drawer slide member comprising:

a securing pin rotatably retained on a securing bracket attached interior to a drawer slide member on a side wall;

a housing of said securing pin has a fastening pin slidable disposed therein adjacent a rotating end with said secur-

ing pin spring biased axially wherein said fastening pin has a bottom end disposed in a slot of said securing bracket and a top end disposed in said drawer slide member having a fastening aperture in a top wall thereof;

a locating pin is slidably disposed in said housing adjacent a securing end with said locating pin spring biased axially;

a slot pin attached adjacent said rotating end positioned to protrude generally horizontally and outwardly through said side wall having a pin slot therein when said securing end is rotated adjacent to said side wall; and

said top wall having a locating aperture therein for receipt of said locating pin when said securing end is rotated adjacent to said side wall.

10. An apparatus to position a drawer element on a drawer slide member comprising:

an adjustment cam rotatably retained in an adjustment bracket attached interior to a drawer slide member on a side wall;

said adjustment cam has a cam body that is generally cylindrical shaped with a raised portion relative to the circular surface of said cam body;

a mounting pin attached at each end of said cam body and a toothed gear attached to one of said mounting pins;

said adjustment bracket having two opposed slots with a ratchet arm attached adjacent one of said opposed slots to engage said toothed gear when said mounting pins are disposed in said opposed slots; and

a top wall having a cam aperture therein for said raised portion to pass therethrough when said cam body is rotated.

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