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Johnson

(54) **CABINET INSTALLATION ASSEMBLY**

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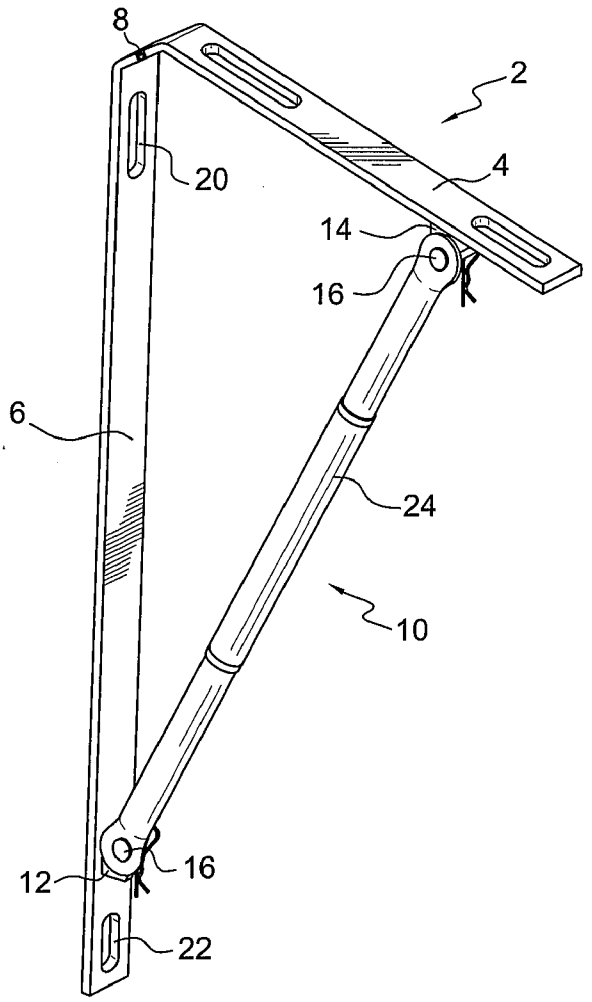
(57) **ABSTRACT**

A cabinet installation system is characterized by the use of adjustable brackets and rails used to align a wall or base cabinet for mounting the cabinets on a wall. The brackets include horizontal and vertical legs which are connected together at one end and by an adjustable device at the other end so that the brackets have a triangular configuration. The adjustable device varies the angle between the legs so that when the vertical leg of a bracket is mounted on a wall, the horizontal leg can be adjusted to a level position. Front and rear rails are adjustably connected with the brackets. With the brackets arranged in spaced relation on a wall and the horizontal legs adjusted to level, the rails are adjusted relative to each bracket, respectively, so that the rails are linear, parallel and spaced according to the depth of the cabinet. When a cabinet is aligned relative to the rails, it can be secured to the wall in a straight and level position.



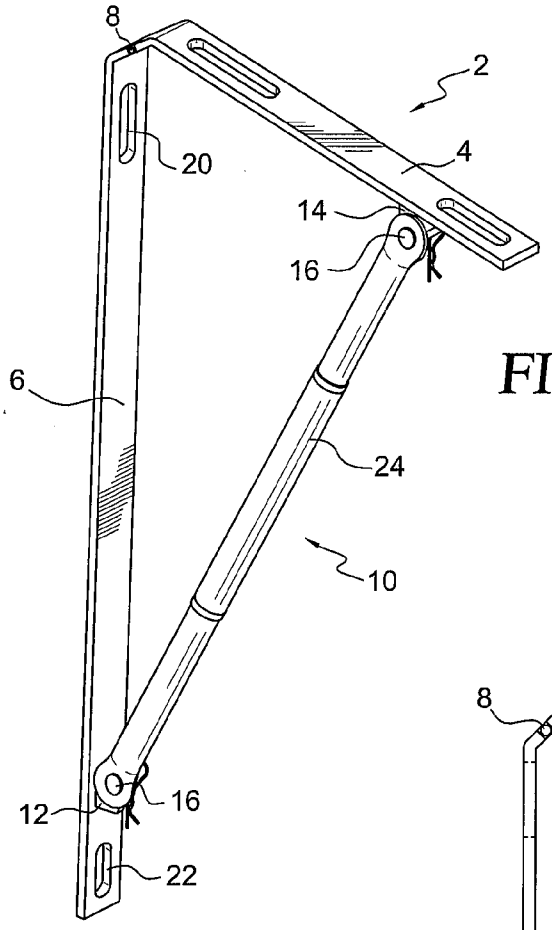


FIG. 1

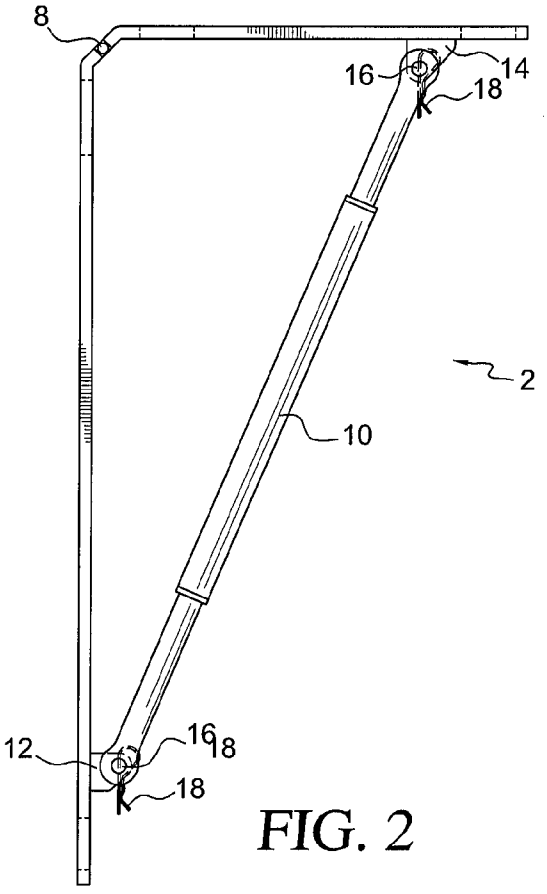


FIG. 2

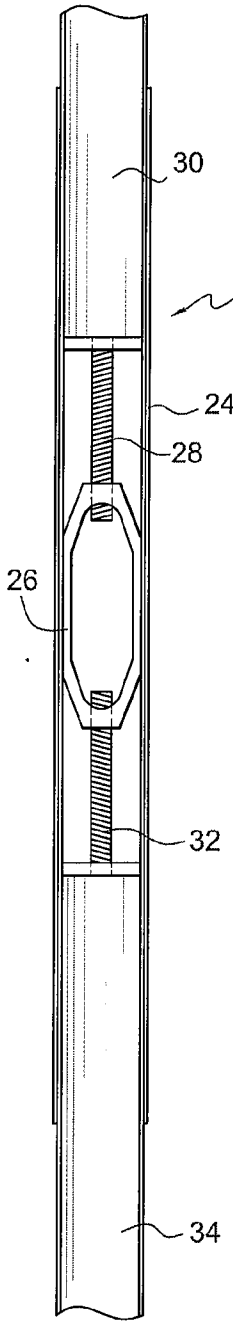


FIG. 3

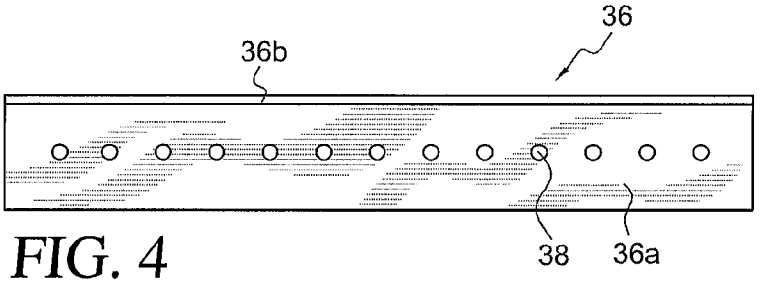


FIG. 4

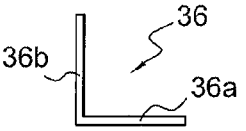


FIG. 5

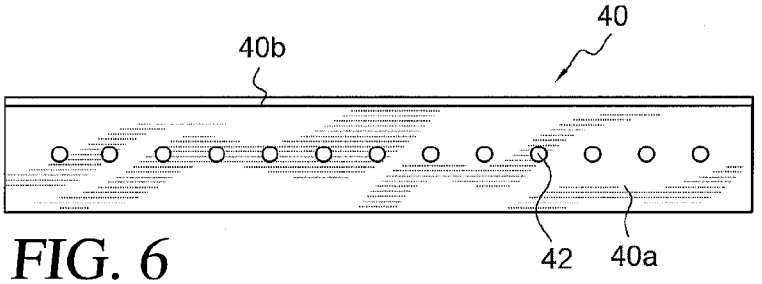


FIG. 6

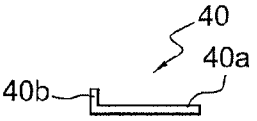


FIG. 7

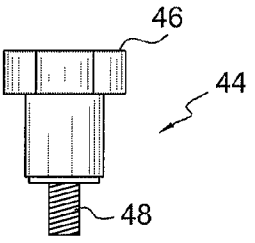


FIG. 8

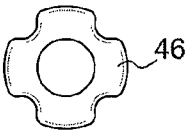


FIG. 9

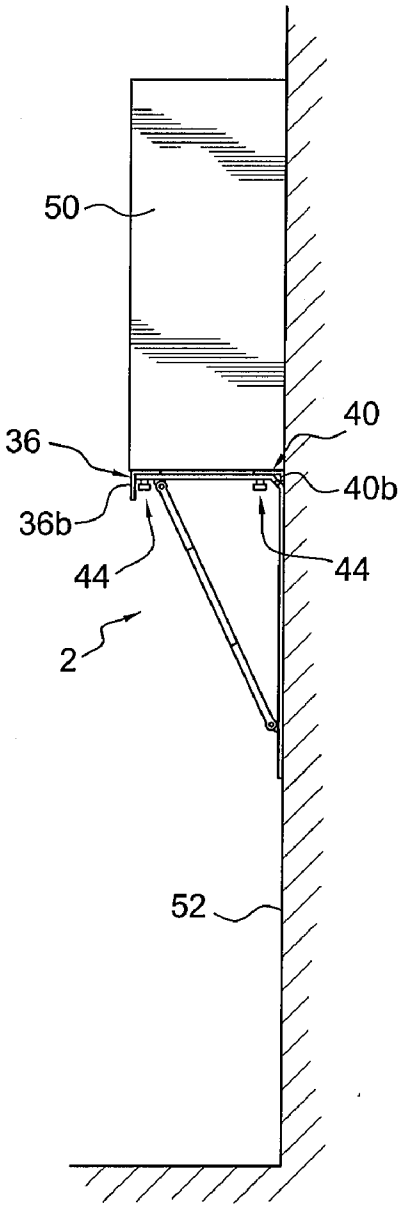


FIG. 10

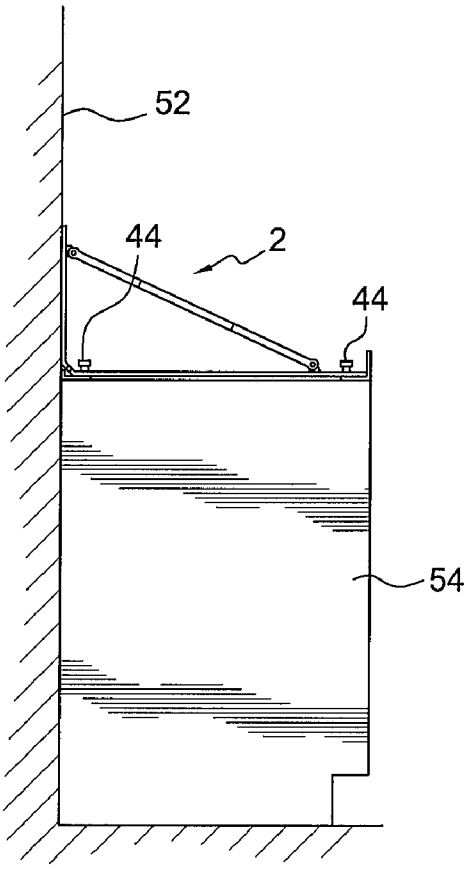


FIG. 11

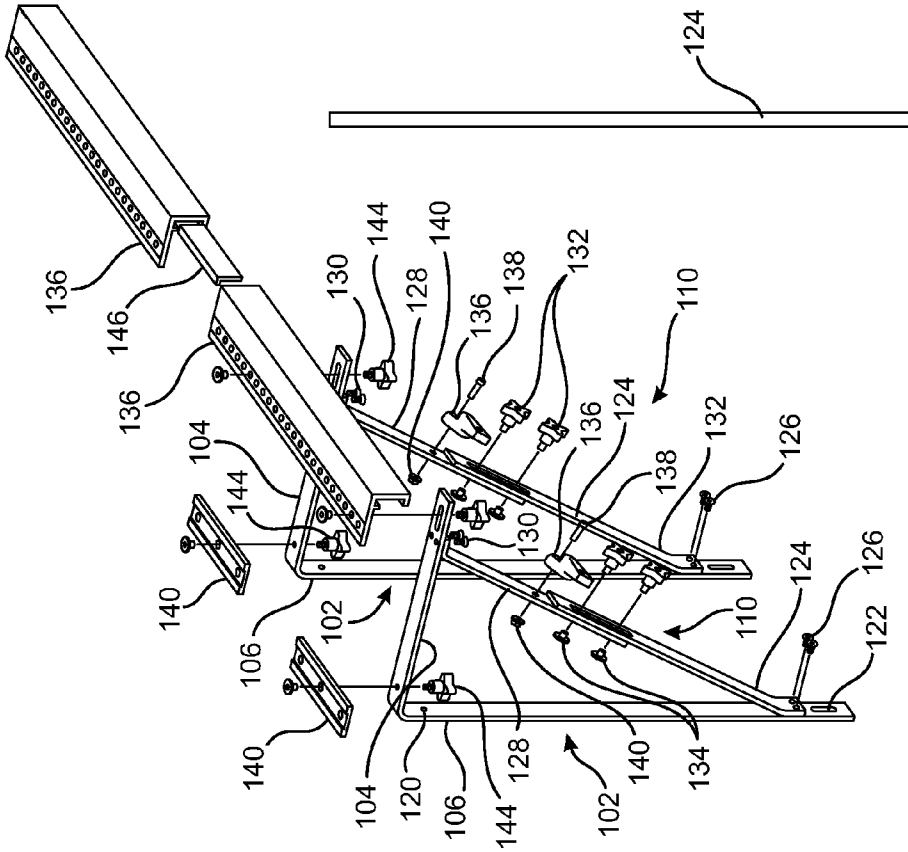


FIG. 12

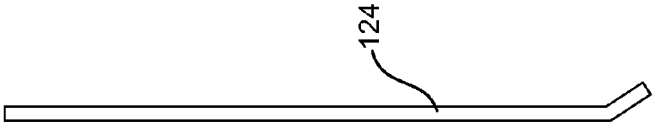


FIG. 13

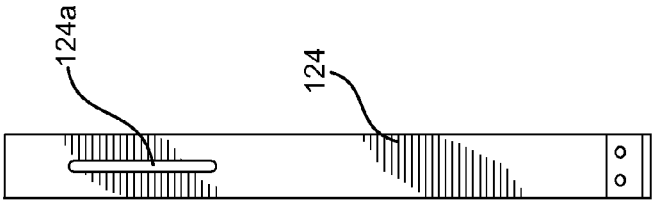


FIG. 14

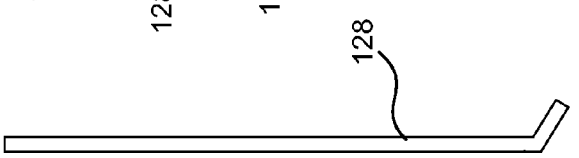


FIG. 15

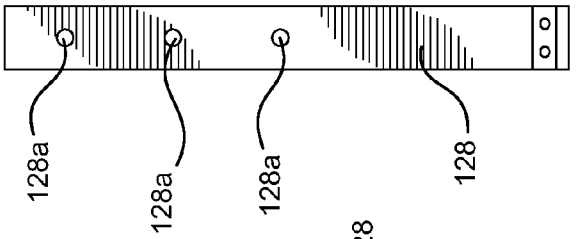


FIG. 16

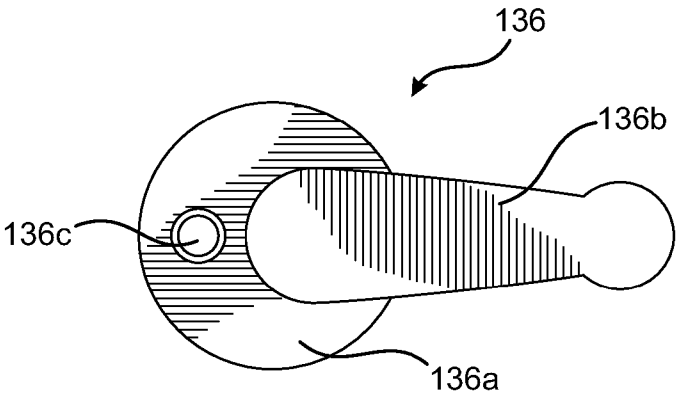


FIG. 17

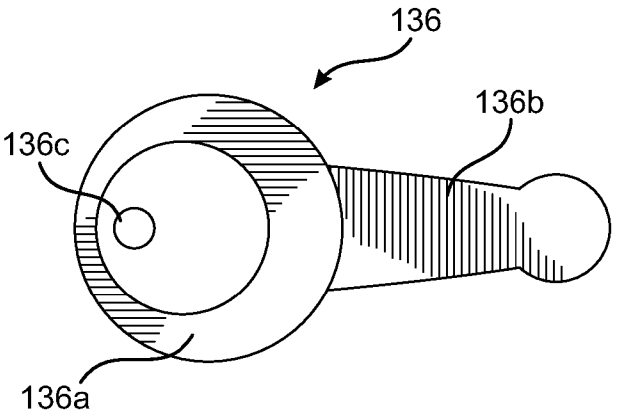


FIG. 18

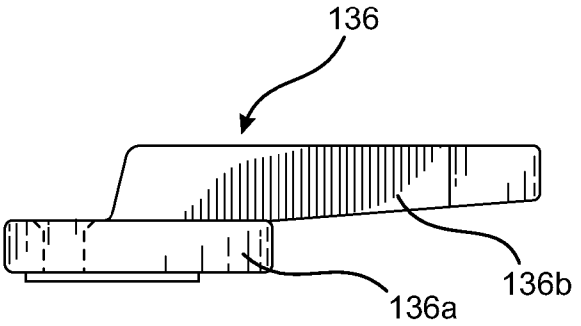


FIG. 19

CABINET INSTALLATION ASSEMBLY

[0001] This application is a continuation-in-part of U.S. patent application Ser. No. 12/420,252 filed Apr. 27, 2009.

BACKGROUND OF THE INVENTION

[0002] The subject invention relates to built-in cabinets and more specifically to an assembly for the installation of wall and base cabinets.

[0003] There are two schools of thought as to where to start the installation of a set of wall and base cabinets. One procedure is to install the base cabinets first and the other is to install the wall cabinets first. Each procedure has its benefits. However, when the base cabinets are installed first, access to the wall cabinets is difficult because the base cabinets protrude from the face of the wall cabinets. Conversely, when wall cabinets are installed first there is nothing to hold them in place while they are leveled, plumbed and set to assure that the cabinet box is not racked or secured to an uneven wall leaving the box twisted. Two installers are generally needed to install wall cabinets so that one can hold the cabinet in place while the other fastens the cabinets to the wall.

BRIEF DESCRIPTION OF THE PRIOR ART

[0004] Various devices for supporting cabinets during mounting are known in the prior art as evidenced by the Goss U.S. Pat. No. 4,981,288 and the Cunningham US patent application publication No. 2009/0008849. These prior devices include brackets for supporting a wall cabinet while it is fastened to the wall, with the Goss device being adjustable. While these prior devices operate satisfactorily, they are rather cumbersome and do not provide both level and depth alignment of a cabinet relative to a wall that is not square or even.

[0005] The present invention was developed in order to overcome these and other drawbacks of the prior cabinet mounting assemblies by providing a mounting assembly that can support and align a cabinet and that allows a cabinet to be mounted with only one installer.

SUMMARY OF THE INVENTION

[0006] Accordingly, it is a primary object of the invention to provide a cabinet installation assembly including a plurality of brackets each of which includes horizontal and vertical legs which are connected at one end so that the angular relation of the legs can be adjusted relative to each other. An adjustment device is connected between the other ends of the legs, so that the brackets have a generally triangular configuration. The adjustment mechanism displaced the horizontal leg relative to the vertical leg to vary the angle between the legs. Front and rear rails are connected with the horizontal leg. More particularly, the horizontal leg contains a spaced pair of slots adjacent to the ends of the leg. Fasteners are provided which pass through the slots and engage threaded openings in the rails so that the rails can be arranged at fixed locations relative to a wall on which the vertical legs of the brackets are mounted. The adjustment mechanisms are operable to level the horizontal legs and the rails are adjusted to a linear configuration to accommodate variations in the wall. A cabinet to be connected with the wall is aligned relative to the front and rear rails and then shimmed and fastened to the wall.

[0007] According to a further object of the invention, the adjustment mechanism comprises a turnbuckle assembly and the rails have two portions defining an L-shaped configuration. The threaded openings are provided in one portion of each rail and the other portion of each rail defines a flange with which the front and rear edges of the cabinet are aligned.

[0008] The horizontal and vertical legs preferably include angled portions at the end where the legs are connected with the hinge. The angled portions define a region for accommodating the flange of the rear rail for alignment with the rear edge of the cabinet.

[0009] According to another object of the invention, the legs are integrally formed as an L-shaped bracket and a cam mechanism is used to adjust the horizontal leg relative to the vertical leg to level a cabinet prior to mounting on a wall.

BRIEF DESCRIPTION OF THE FIGURES

[0010] Other objects and advantages of the invention will become apparent from a study of the following description when viewed in the light of the accompanying drawing, in which:

[0011] FIG. **1** is a perspective view of a mounting bracket of the cabinet installation assembly according to the invention;

[0012] FIG. **2** is a side plan view of the mounting bracket of FIG. **1**;

[0013] FIG. **3** is cut away view of the turnbuckle adjustment mechanism for the mounting bracket of FIG. **1**;

[0014] FIGS. **4** and **5** are top and side plan views, respectively, of a front rail of the cabinet installation assembly according to the invention;

[0015] FIGS. **6** and **7** are top and side plan views, respectively, of a rear rail of the cabinet installation assembly according to the invention;

[0016] FIGS. **8** and **9** are front and top plan views, respectively, of a fastener of the cabinet installation assembly according to the invention;

[0017] FIG. **10** is a side view of the cabinet installation assembly according to the invention used for mounting a wall cabinet;

[0018] FIG. **11** is a side view of the cabinet installation assembly according to the invention used for mounting a base cabinet;

[0019] FIG. **12** is an exploded perspective view of a cabinet mounting bracket assembly according to an alternate embodiment of the invention;

[0020] FIGS. **13** and **14** are side and front plan views, respectively, of a lower adjustment bracket for the mounting bracket assembly of FIG. **12**;

[0021] FIGS. **15** and **16** are side and front plan views, respectively, of an upper adjustment bracket for the mounting bracket assembly of FIG. **12**; and

[0022] FIGS. **17**, **18**, and **19** are top, bottom, and front plan views of an adjustment handle for the mounting bracket assembly of FIG. **12**.

DETAILED DESCRIPTION

[0023] The cabinet installation assembly according to one embodiment of the invention includes a plurality of adjustable brackets, one of which is shown in FIGS. **1-3**. Each bracket **2** includes a horizontal leg **4** and a vertical leg **6** which are connected at one end via a hinge **8** so that the angle between the legs is adjustable. More particularly, an adjustment device **10** is connected between the other ends of the

horizontal and vertical legs so that the bracket has a triangular configuration. The adjustment device **10** is preferably removably connected with the legs. Thus, the vertical leg includes a flange **12** containing an opening and the horizontal leg includes a flange **14** also containing an opening. A clevis pin **16** passes through openings in the ends of the adjustment device and the flanges to connect the ends of the adjustment device with the respective legs. A cotter pin **18** passes through the clevis pin to fasten it in place.

[0024] The vertical leg contains an upper slot **20** and a lower slot **22** for receiving a fastener such as a screw, not shown, to fasten the bracket to a wall by driving the screw into a stud of the wall. A plurality of brackets are mounted along the wall in spaced relation at the same height to assist with support and/or alignment of a cabinet or cabinets as will be developed in greater detail below.

[0025] Referring to FIGS. **2** and **3**, the adjustment device contains a sleeve **24** having a turnbuckle **26** or other similar device allowing for left hand threads on one side and right hand threads on the other connected with an inner surface thereof. The turnbuckle or center of the adjustment arm is connected with an upper right hand threaded rod **28** secured to an upper portion **30** of the adjustment device and a lower left hand threaded rod **32** secured to a lower portion **34** of the adjustment device. Rotation of the sleeve by the user in one direction causes the turnbuckle to rotate which in turn displaces the threaded rods and the upper and lower portions of the adjustment device toward each other and rotation of the sleeve in the opposite direction displaces the threaded rods and the upper and lower portions of the adjustment device away from each other. Because the adjustment device is connected between the ends of the legs, the sleeve is operable to displace the ends of the legs toward and away from each other to vary the angle between the legs. With the vertical leg fastened to a wall, rotation of the sleeve **24** raises or lowers the end of the horizontal leg remote from the wall.

[0026] The cabinet installation system according to the invention further includes front and rear rails connected with the brackets. The front rail **36** is shown in FIGS. **4** and **5** and has an L-shaped configuration including a first portion **36***a* which contains a plurality of spaced threaded openings **38** and a second flange portion **36***b*. The flange portion is arranged generally normal to the first portion. The rear rail **40** is similar to the front rail in that it also has an L-shaped configuration with first and second portions **40***a* and **40***b* and threaded openings **42** in the first portion. The second or flange portion **40***b* is preferably shorter than the flange portion of the front rail. The rails are provided in suitable lengths such as six feet to extend across a plurality of brackets mounted on a wall. The rails are connected with the brackets using fasteners **44** shown in FIGS. **8** and **9**. Each fastener includes a knob **46** and a threaded stem **48**.

[0027] Referring back to FIG. **1**, the horizontal leg **4** includes a first slot **50** adjacent to the end where the adjustment device is connected with the horizontal leg and a second slot **52** adjacent to the hinge **8**. In order to connect the rails with the brackets, the fasteners pass through the slots and into a selected threaded hole in the respective rails. The elongated slots allow the fasteners be positioned laterally relative to the horizontal leg of each bracket. In this manner, the fasteners and thus the rails can be positioned relative to each bracket so that the rails are arranged in a linear fashion and parallel to each other, even though the wall to which the brackets are fastened may not be perfectly flat or square. Moreover, the rails can be spaced according to the depth of the cabinet being installed. Other adjustable fastening devices may be used for connecting the rails with the horizontal legs of each bracket.

[0028] Use of the cabinet installation system for mounting cabinets will be described with reference to FIGS. **10** and **11**. In FIG. **10**, the cabinet installation system is shown for mounting a wall cabinet **50**. A plurality of brackets **2** (of which one is shown in FIG. **10**) are mounted in parallel spaced relation on a wall **52**. The front rail **36** is connected with the bracket via a front fastener **44** with the flange **36***b* extending downwardly. The rear rail **40** is connected with the bracket via a rear fastener **44** with the flange **40***b* extending downwardly into the void defined by the angled portions of the horizontal and vertical legs adjacent to the hinge. The brackets are adjusted by turning their turnbuckles so that the front and rear rails are level. The rails are adjusted relative to the slots in the horizontal legs of each bracket so that the rails are parallel and linear and spaced according to the depth of the cabinet. The cabinet is rested on the front and rear rails with the front edge of the cabinet aligned with the flange of the front rail. Shims are inserted between the cabinet and the wall and the cabinet is then secured to the wall studs in a conventional manner. The mounted cabinet is not twisted or curved in any manner and is also then plumb and level.

[0029] FIG. **11** shows the cabinet installation system for a base cabinet **54**. A plurality of brackets **2** are mounted upside down relative to the brackets of FIG. **10**. The rails are connected with the brackets using fasteners **44** and the rail flanges are directed upwardly. The brackets are adjusted so that the rails are level and the rails are adjusted relative to the horizontal legs so that the rails are parallel and linear and spaced according to the depth of the cabinet. The cabinet is shimmed at the rear and bottom so that its front and rear edges are aligned with the rail flanges. Once properly positioned, the cabinet is fastened to the wall **52**, and preferably the wall studs, in a conventional manner.

[0030] Referring now to FIGS. **12-19**, an alternate and preferred embodiment of the invention will be described. In FIG. **12**, a pair of mounting brackets **102** is shown. Each bracket includes a horizontal leg portion **104** and a vertical leg portion **106**. The leg portions are integrally formed as a unitary member having an L-shaped configuration. Preferably, the member is formed of a lightweight metal such as aluminum which has a limited amount of flexure where the ends of the leg portions meet. The vertical leg portion includes upper **120** and lower **122** slots for mounting the vertical leg portion on a wall in a manner similar to that of the embodiment of FIGS. **1** and **2**.

[0031] An adjustment mechanism **110** is removably connected between the free ends of the horizontal and vertical leg portions so that the bracket has a triangular configuration. The adjustment mechanism includes a lower adjustment bracket **124** connected at its lower end with the lower end of the vertical leg portion by a suitable fastener such as a bolt **126** and an upper adjustment bracket **128** connected at its upper end with the free end of the horizontal leg portion by a similar fastener **130**. As shown in FIGS. **13** and **14**, the lower adjustment bracket **124** contains a slot **124***a* toward its upper end. As shown in FIGS. **15** and **17**, the upper adjustment bracket **128** contains a plurality of spaced openings **128***a* toward its upper end. Referring back to FIG. **12**, the upper and lower adjustment brackets overlap and fasteners such as bolts **132** pass through the slot **124***a* in the lower bracket **124** into the openings **128***a* in the upper bracket **128** for connection with

nuts **134**. When the bolts **132** are loosened, the upper and lower brackets may be slidably displaced relative to one another to raise or lower the end of the horizontal leg portion relative to the vertical leg portion. When the horizontal leg portion is level, the fasteners **132** are tightened to secure the bracket assembly in a given position.

[0032] In order to assist with adjustment of the brackets **124**, **128**, an adjustment handle **136** is provided as shown in FIG. **12**. The handle is shown in greater detail in FIGS. **17-19**. The handle includes a circular base portion **136***a* and a gripping portion **136***b* which extends from the top of the base portion. The base portion includes an opening **136***c* which is offset from the center of the base portion as shown in FIGS. **17** and **18**. A fastener such as a bolt **138** is used to connect the handle with the uppermost opening **128***a* in the upper adjustment bracket **128** and then secured with a nut **140**. The connection affords rotational movement of the handle **136** relative to the bracket **128**. The base portion **136***a* of the handle abuts against the upper edge of the lower adjustment bracket **124** as shown in FIG. **12**. Because the pivot point of the handle base portion **136***a* is at the bolt **138** which is offset from the center of the base portion, the base portion acts as a cam against the upper edge of the bracket **124**. Accordingly, rotation of the handle displaces the lower bracket relative to the upper bracket, effectively extending and retracting the adjustment mechanism to raise and lower the end of the horizontal leg portion **104** of the bracket relative to the vertical leg portion **106**.

[0033] As in the embodiment of FIGS. **1-11**, front rails **136** and rear rails **140** are connected with the horizontal leg portions of a series of spaced brackets via fasteners **144** as shown in FIG. **12** to provide a guide for mounting cabinets in a level and linear position on a wall. An extrusion **146** is provided to connect/align front rail sections.

[0034] The brackets and rails of the cabinet installation system can be formed of any rigid, durable material such as metal or synthetic plastic. In addition, when mounting a series of cabinets, spaces can be provided between cabinets to accommodate appliances, light fixtures, and the like.

[0035] While the preferred embodiment of the invention has been illustrated and described, it will be apparent to those of ordinary skill in the art that various changes and modifications may be made without deviating from the inventive concepts set forth above.

What is claimed is:

1. A cabinet installation bracket, comprising

(a) a generally vertical leg adapted for removable connection with a wall;

(b) a generally horizontal leg connected at one end with an upper end of said vertical leg;

(c) an adjustment mechanism connected with the other ends of said horizontal and vertical legs, said adjustment mechanism being operable to displace said horizontal leg relative to said vertical leg to level said horizontal leg, whereby when a cabinet is placed on said horizontal leg, said cabinet is arranged in a level position for connection with the wall.

2. A cabinet installation bracket as defined in claim **1**, wherein said adjustment mechanism comprises a turnbuckle assembly.

3. A cabinet installation bracket as defined in claim **1**, wherein said adjustment mechanism comprises a pair of brackets which are slidably connected for relative movement along their length.

4. A cabinet installation bracket as defined in claim **3**, wherein said brackets include a first fastener for locking said brackets in a selected position relative to one another, thereby to secure said horizontal leg in a selected position relative to said vertical leg.

5. A cabinet installation bracket as defined in claim **4**, wherein said first fastener comprises at least one bolt and nut assembly which passes through aligned openings and slots in said brackets, respectively.

6. A cabinet installation bracket as defined in claim **4**, and further comprising a handle connected with said brackets for displacing one of said brackets relative to the other bracket.

7. A cabinet installation bracket as defined in claim **6**, wherein said handle includes a cam mechanism abutting against one end of one of said brackets.

8. A cabinet installation bracket as defined in claim **1**, wherein said horizontal and vertical legs are integrally connected.

9. A cabinet installation bracket as defined in claim **1**, and further comprising a hinge for connecting said horizontal and vertical legs.

10. A cabinet installation assembly comprising a plurality of brackets as defined in claim **1** mounted in spaced parallel relation on the wall, and further comprising a first rail adjustably connected with the horizontal legs of said brackets and arranged transversely thereto, whereby said adjustment mechanism of each bracket may be operated to displace said horizontal leg of each bracket until said first rail is level and said first rail is adjusted relative to each horizontal leg until said first rail is linear, and further whereby a cabinet to be installed on the wall is aligned with an edge of said first rail to position the cabinet prior to fastening it to the wall.

11. A cabinet installation assembly as defined in claim **10**, wherein said horizontal leg of each of said brackets contains a slot for receiving a second fastener for adjustably connecting said first rail to said horizontal leg.

12. A cabinet installation assembly as defined in claim **11**, and further comprising a second rail adjustably connected with the horizontal legs of said brackets in spaced relation to said first rail, said first and second rails being arranged at opposite ends of said horizontal legs for supporting a cabinet whose front edge is aligned with said first rail.

13. A cabinet installation assembly as defined in claim **12**, wherein said first and second rails contain a plurality of spaced parallel threaded openings for receiving said fastener.

14. A cabinet installation as defined in claim **13**, wherein said first and second rails have two portions defining an L-shaped configuration, said threaded openings being arranged in one portion of said rails, the other portion defining a flange with which the edges of the cabinet are aligned.

15. A cabinet installation as defined in claim **14**, wherein said one end of said horizontal and vertical legs includes end portions angled toward said hinge, thereby to define a region for accommodating a flange of said second rail for alignment with the rear edge of the cabinet.

* * * * *