Jan. 5, 1971 J. B. TAVANO 3,552,783

SUPPORT BRACKET

Filed Feb. 14, 1969

FIG. 1

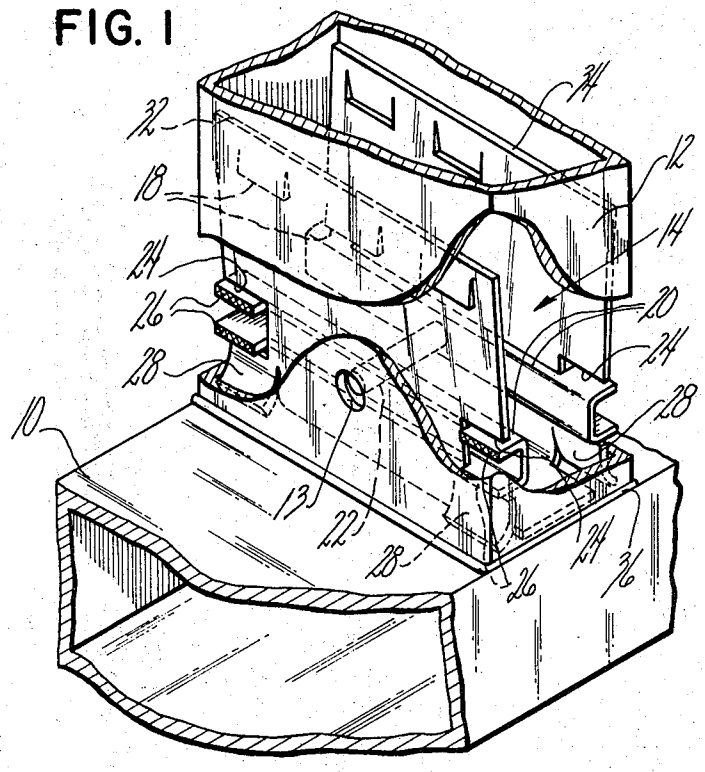
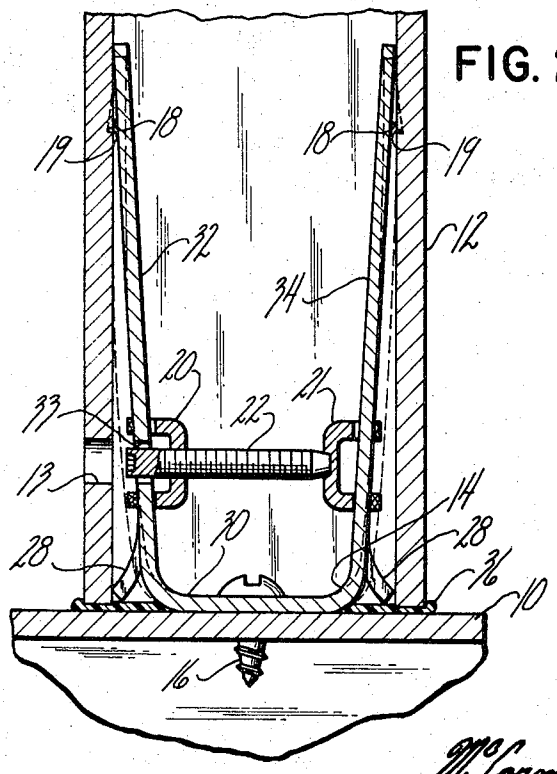


FIG. 2



INVENTOR.
JOHN B. TAVANO

BY

McCormick, Paulding & Huber
ATTORNEYS

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SUPPORT BRACKET

John B. Tavano, 28 Edgewood Ave.,
Torrington, Conn. 06790

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ABSTRACT OF THE DISCLOSURE

A tubular upright is assembled with a horizontal support member or sill by a U-shaped support bracket having its legs located in the open end of the upright, and having its web portion attached to the upper surface of the support or sill. A single hole in the upright provides access to an Allen screw which is threadably received in one of two jaws located between these legs. The Allen screw abuts the other jaw so that they serve to bow the legs of the U-shaped member outwardly to anchor the upright by drawing it downwardly against the sill. The web portion of the bracket is somewhat narrower than the width of the open end of the tubular upright to permit this bowing action, and locating tabs in the legs help to position the upright vertically during assembly.

SUMMARY OF THE INVENTION

This invention relates to brackets for assembling tubular structural members to other support members, and deals more particularly with a bracket which requires a minimum amount of work to be done to these members at the assembly site.

A general object of the present invention is to provide a bracket for supporting a tubular member transversely with respect to a support member so that only one hole need be drilled in the tubular member once the bracket has been attached to the support member.

Another object of the present invention is to provide a bracket of the foregoing character wherein a single screw, accessible through the single hole in the tubular member, serves to anchor the tubular member to the support.

A still further object of the present invention is to provide a bracket of the foregoing character wherein the tubular member is drawn downwardly toward the support as the single screw so anchors these components, a feature of particular advantage when a gasket or seal is provided between the tubular member and the support member.

A still further object of the present invention is to provide a bracket of the foregoing character wherein locating means is provided on the bracket for properly orienting the tubular member with respect to the support member during assembly.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a U-shaped bracket constructed in accordance with the present invention, and showing the bracket attached to a support member with its leg portions extending upwardly into the open end of a tubular upright, portions of the tubular member being shown broken away to reveal the various parts associated with the U-shaped bracket.

FIG. 2 is a vertical sectional view through the bracket assembly of FIG. 1.

DETAILED DESCRIPTION

Turning now to the drawings in greater detail, FIG. 1 shows a support member, in the form of a generally horizontally extending sill of the type commonly used in the construction of present day store front windows,

and an upright of similar section. More particularly, the support member or sill comprises a tubular aluminum structural member of hollow rectangular cross section. The tubular upright member **12** is of similar cross section and is to be assembled with the sill in a vertical position wherein it is adapted to support another member similar to the sill **10** at its upper end portion.

In accordance with the present invention, a generally U-shaped bracket member **14** is provided for attachment to the upper surface of the support member **10** by a pair of screws **16**, **16** at the particular location along the support member **10** where the upright member **12** is to be assembled. The U-shaped bracket **14** has upstanding leg portions **32**, **34** and a web portion **30**, the latter of which is provided with openings for receiving the screws **16**, **16**. Thus, the screws provide a convenient attachment means for securing the web portion of the bracket to the support member. As best shown in FIG. 2, this web portion **30** is of slightly narrower width than the width of the open end of the tubular upright member **12**. Thus, the leg portions **32** and **34** of the U-shaped bracket **14** extend upwardly and slightly outwardly from the web portion **30** so as to be snuggly received in the open end of the tubular member **12** upon initial assembly therewith. The upper end portions of these legs **32** and **34** define outwardly protruding tabs or teeth **18**, **18** for engaging the inner surface of the tubular member **12** in response to a spreading or bowing action of the resilient legs **32** and **34** from the solid line positions shown in FIG. 2 to the broken line positions shown by suitable means to be described. It will be apparent that as the resilient legs **32** and **34** are so deformed the teeth defining means **18**, **18** will move downwardly as a result of the foreshortening of these legs so as to cause notches to be formed in the inner wall of the member **12** as indicated generally at **19**, **19** in FIG. 2. Preferably, the U-shaped bracket is constructed of steel, and the tubular upright member **12** of aluminum so as to facilitate the notches being formed in the upright by the steel teeth **18**, **18** in the legs **32** and **34**. However, as long as the U-shaped support bracket is constructed of a slightly harder material than the structural member **12** the advantages to the present invention can be realized.

Turning now to a description of the means for spreading or bowing the legs **32** and **34** so as to achieve the above-described foreshortening of these legs, a pair of generally channel-shaped jaw elements, **20** and **21**, are provided between the legs **32** and **34** with one jaw element being adapted to engage one leg of the U-shaped bracket and the other jaw element to engage the other leg in response to rotation of an Allen screw **22**. As best shown in FIG. 2, the socket end of the Allen screw **22** is accessible through an opening **13** defined in the upright **12**, said opening being the only one required to be formed in the upright for assembly of the members **10** and **12** at the particular job site. Similarly, an opening **33** is provided in the U-shaped support bracket and more particularly in the leg **32** thereof with the socket end of the Allen screw **22** protruding through this opening **33** as shown. This opening **33** can, of course, be provided in the bracket and need not be drilled in the field.

As best shown in FIG. 1, the resilient leg portions **32** and **34** of the U-shaped bracket **14** are notched as indicated generally at **24**, **24** to receive off-set end portions **26**, **26** of the channel-shaped jaw elements **20** and **21**, which off-set end portions prevent rotation of the jaw elements in response to rotation of the Allen screw **22**. In addition, these end portions have knurled or otherwise roughened faces which are adapted to ultimately engage the inner surfaces of the upright **12** to securely anchor the upright in position with respect to the mem-

ber **10** after a predetermined degree of bowing or spreading of the resilient leg portions **32** and **34**. As so arranged the jaw elements **20** and **21** are located between the legs **32** and **34**, and have leg engaging intermediate portions for bowing said legs outwardly in response to rotation of the Allen screw **22** in one direction. As a result of the resiliency of the leg portions, **32** and **34**, rotation of the Allen screw in the opposite direction tends to straighten the leg portions permitting removal of the upright **12** if disassembly of the apparatus is required for any reason.

In further accordance with the present invention, locating means is provided on the U-shaped bracket adjacent the bend line between the legs, **32** and **34**, the web portion **30** for accurately locating the tubular member **12** in a normal position with respect to the support member **10** during assembly. Preferably said locating means comprises the tabs **28**, **28** formed in the leg portions and the lower edges of the tab engage the inner surface of the upright **12** to accurately locate the same prior to and during the spreading of the resilient legs **32** and **34**.

Finally, a rectangular seal, or gasket **36**, may be provided between the members, **10** and **12**, and this seal may be resiliently deformed as a result of the downward movement of the upright **12** caused by the spreading of the legs, **32** and **34**, so as to provide a positive moisture seal between the outside atmosphere and the interior of the tubular member **12**. The single exposed opening **33** provided in the tubular member **12**, would usually be covered by the mechanism for supporting a glass panel normally provided midway between the front and rear edges of the sill **10** and upright **12**. As so constructed and arranged, the U-shaped bracket shown achieves all of the foregoing objects, thus providing an improved device for assembling the tubular structural members so popular in present-day store fronts or the like.

I claim:

1. A support bracket for assembling a tubular member of rectangular cross section at an angle to a support member, said bracket comprising a U-shaped member having spaced resilient legs which have a depth approximately equal to the length of the rectangular open end of the tubular member, said U-shaped member having a web portion of slightly narrower width than the width of the rectangular open end of said tubular member so that said bracket can be snugly received in said tubular member, attachment means for securing said web portion to the support member, leg spreading means between said spaced legs and including a threaded member oriented at right angles to said resilient legs and accessible from outside said tubular member, teeth defining means adjacent the ends of said legs for engaging the inner surface of said tubular member and drawing that member against the support member as a result of the resilient bowing action of said legs caused by said leg spreading means.

2. A support bracket as defined in claim **1** wherein said leg spreading means comprises a pair of jaw elements one of which is adapted to engage one leg of the U-shaped member and the other element to engage the other leg of said member, and said threaded member being threadably received in at least one of said jaw elements to permit said elements to be moved toward and away from one another in response to rotation of said threaded member.

3. A support bracket as defined in claim **2** wherein said jaw elements are located between said legs and have leg engaging intermediate portions for bowing said legs outwardly in response to rotation of said threaded member in one direction.

4. A support bracket as defined in claim **3** wherein each of said jaw elements have a length corresponding to the depth of said legs, said jaw elements having offset end portions which protrude through openings provided therefor in said legs to engage portions of the inner surface of said tubular member following a predetermined degree of bowing deformation of said legs.

5. A support bracket as defined in claim **1** wherein said U-shaped member is further characterized by locating tab means adjacent the bend lines between the legs and the web portion thereof for accurately locating the tubular member angularly with respect to the support member during assembly.

6. A support bracket as defined in claim **5** wherein said leg spreading means comprises a pair of jaw elements one of which is adapted to engage one leg of the U-shaped member and the other element to engage the other leg of said member, and said threaded member being threadedly received in at least one of said jaw elements to permit said elements to be moved toward and away from one another in response to rotation of said threaded member.

7. A support bracket as defined in claim **6** wherein said jaw elements are located between said legs and have leg engaging intermediate portions for bowing said legs outwardly in response to rotation of said threaded member in one direction.

8. A support bracket as defined in claim **7** wherein each of said jaw elements have a length corresponding to the depth of said legs, said jaw elements having off-set end portions which protrude through openings provided therefor in said legs to engage portions of the inner surface of said tubular member following a predetermined degree of bowing deformation of said legs.

References Cited

UNITED STATES PATENTS

579,267	3/1897	Harthan	287—20
658,493	9/1900	Trigwell	287—126X
1,032,970	7/1912	Vandervelt	287—20
2,108,398	2/1938	Allen	287—20
2,691,552	10/1954	Bouman et al.	85—36X

REINALDO P. MACHADO, Primary Examiner

W. L. SHEDD, Assistant Examiner

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