Sept. 3, 1963 W. SIMPKINS 3,102,616

SUPPORT CONSTRUCTION

Filed Aug. 31, 1961

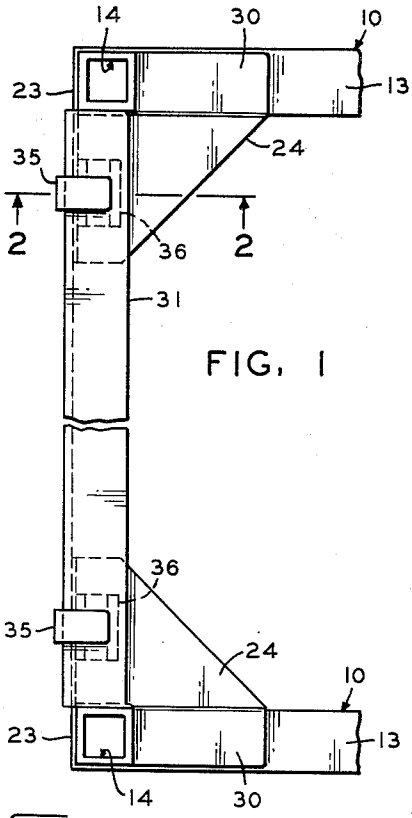


FIG. 1

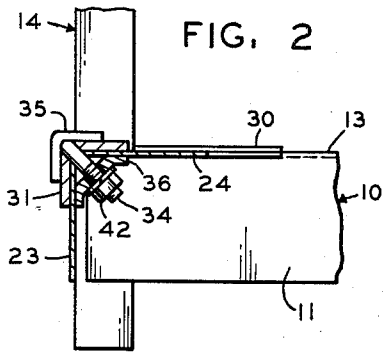


FIG. 2

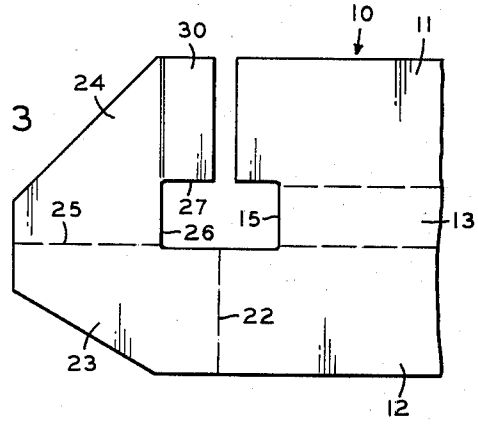


FIG. 3

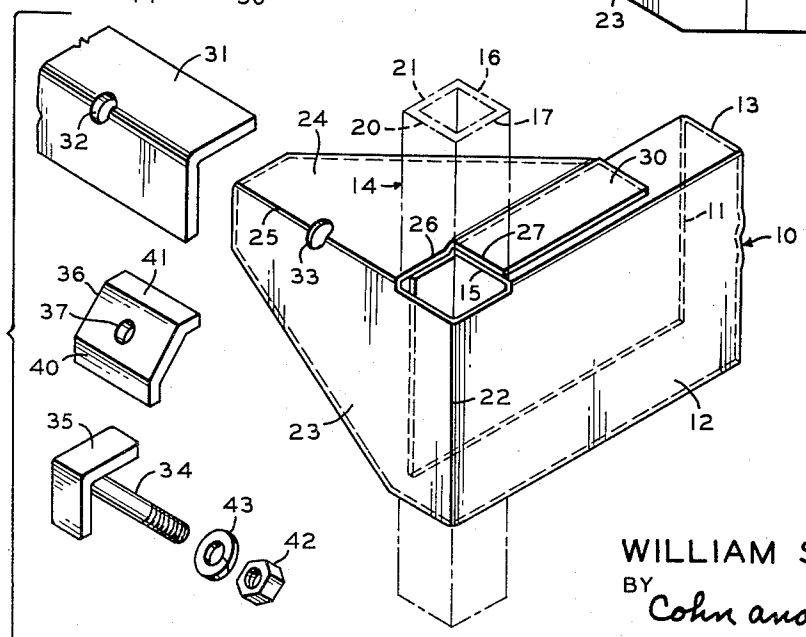


FIG. 4

INVENTOR
WILLIAM SIMPKINS
BY Cohn and Powell
ATTORNEYS

United States Patent Office 3,102,616
Patented Sept. 3, 1963

3,102,616

SUPPORT CONSTRUCTION

William Simpkins, St. Louis, Mo., assignor to Tiffany Stand Company, Clayton, Mo., a corporation of Missouri

Filed Aug. 31, 1961, Ser. No. 135,255
14 Claims. (Cl. 189—36)

This invention relates generally to improvements in a support construction, and more particularly to improvements in the structural arrangement of a leg with connecting braces.

It is an important object to provide a simplified construction in a support that is especially adapted for use in items of office and household furniture such as stands, chairs and tables. Of course, the support could have a wide variety of applications. The structure of the support includes a novel and advantageous manner of connecting various braces and struts to the legs so as to afford an extremely rigid and precise attachment of great strength.

An important objective is to achieve a support in which the sheet material of a brace is utilized to position, hold and secure a leg, and also is utilized to form an integral gusset between the brace and a connected strut.

Another important object is realized by the provision of a support of the type described in which a brace is provided which has spaced side walls and an interconnecting transverse wall, and a leg is disposed between the side walls and adjacent one end of the transverse wall, one of the side walls including a portion wrapped partially about the leg and folded to provide a gusset margin about the remainder of the leg.

Still another important object is provided by the fact that the one side wall includes a first portion extending laterally beyond the other side wall at the opposite side of the brace, and a second portion folded back from the first portion to lap the transverse wall, the second portion having margins that embrace the leg. The first and second portions are angularly related to provide a mounting for a strut extending between a pair of such legs and to provide a rigid gusset between the connected strut and brace immediately adjacent the leg positioned in the brace.

Yet another important object is achieved by the specific juxtaposition of the angularly related portions discussed above that form a holder for a leg, a mounting for a strut, and a rigid gusset between the brace, strut and leg.

The structure includes a brace that has one side wall bent laterally to provide a substantially vertical portion partially embracing the leg and extending beyond the other side wall of the brace, and then bent back angularly relative to the substantially vertical portion to provide a substantially horizontal portion having margins that embrace the leg, the substantially horizontal portion lapping the transverse wall of the brace.

Another important object is to provide a fastening means for securing the strut to the angularly related portions, the means cooperating with the particular structural arrangement of the various parts to afford a compact, extremely rigid connection.

An important objective is to provide a support that is simple and durable in construction, economical to manufacture and assemble, efficient in its connection, and which can be conveniently and advantageously utilized in many items, and being particularly useful in office furniture such as typewriter stands to give but one example.

The foregoing and numerous other objects and advantages of the invention will more clearly appear from the following detailed description of a preferred embodiment, particularly when considered in connection with the accompanying drawing, in which:

FIG. 1 is a fragmentary top plan view of a support utilized in a stand;

FIG. 2 is a cross sectional view as seen along line 2—2 of FIG. 1;

FIG. 3 is a fragmentary top plan view of a sheet layout of the brace, and

FIG. 4 is a perspective view of the brace and its connected leg, but showing the strut and fastening means exploded for reasons of clarity.

Referring now by characters of reference to the drawing, and first to FIG. 4, it is seen that the brace generally indicated at **10** is constructed of a sheet metal and is formed in a channel or U-shape. The brace **10** includes laterally spaced, substantially vertical side walls **11** and **12** interconnected at the top integrally by a bridging, transverse wall **13**.

A leg generally referred to at **14** is disposed adjacent one end of brace **10**, and is particularly located between the side walls **11** and **12** immediately adjacent an end margin **15** of the transverse wall **13**. It will be noted that the leg **14** extends through the open bottom of brace **10** so that it can rest upon a supporting subjacent surface such as a floor if desired. While the leg **14** can be of any external configuration, in the preferred embodiment illustrated, the leg **14** has generally four sides, i.e., a first side **16**, a second side **17**, a third side **20** and a fourth side **21** to which reference will be made in relating the position of the various folded portions of the brace **10** to the leg.

For example, when the leg **14** is positioned between the side walls **11** and **12**, the end margin **15** of the transverse wall **13** is located closely adjacent and contiguous to the first wall **16** of leg **14**. Each of the side walls **11** and **12** is extended beyond the end margin **15** of transverse wall **13** so as to embrace the opposite sides **21** and **17** respectively of the leg **14**.

One of the side walls **12** is bent laterally about a substantially vertical fold line **22** to provide a substantially vertical plate portion **23** that embraces the third side **20** of leg **14**. The plate portion **23** extends toward and beyond the other side wall **11** for a considerable distance at the opposite side of the brace **10**.

A second plate portion **24**, formed integrally with the first plate portion **23**, is folded back about a substantially horizontal fold line **25** to provide a sustantially horizontal gusset. The substantially horizontal plate portion **24** includes margins **26** and **27** that embrace the fourth leg side **21** and the first leg side **16** respectively. A part **30** of the gusset plate portion **24** overlaps and seats on the transverse wall **13**.

After the leg **14** is inserted into the top opening provided by the folded disposition of the angularly related plate portions **23** and **24**, the leg **14** is automatically positioned between the side walls **11** and **12** and is secured to the brace **10** as by spot welding.

The structure of the brace end is shown in sheet layout in FIG. 3. The various integral parts of the brace structure are given reference characters corresponding to those utilized in FIG. 4 so that it can be easily determined just how the brace **10** is constructed and folded to achieve the end connection shown in FIG. 4.

As will appear upon later detailed description of parts, the stand will usually include another corner and leg connection of the type previously described, and as shown in FIG. 1. To connect these corner connections, a strut **31** is used. The strut **31** is a right angle member that is disposed over the angularly related plate portions **23** and **24**, the fold line **25** aligning itself with the apex of the angle strut. The strut **31** is provided with a small aperture **32** that is in register with a corresponding aperture **33** formed in the apex or juncture of the plate portions **23** and **24**, when the strut **31** is assembled.

A bolt 34 is inserted through the aligned apertures 32 and 33 incident to fastening the strut 31 to the brace 10. The bolt 34 is provided with a right angular head 35 adapted to seat on and conform to the configuration of angle strut 31.

A thrust plate 36 is provided with a center opening 37 adapted to receive the shank of bolt 34. When positioned, the thrust plate 36 bridges the angularly related plate portions 23 and 24. To facilitate clamping engagement, the thrust plate 36 is provided with angularly related flat surfaces 40 and 41 adapted to seat on the underside of the plate portions 23 and 24 respectively.

A nut 42 and washer 43 are adapted to be fitted over the free end of bolt 34. When the nut 42 is threadedly attached, the strut 31 is clamped rigidly to the angularly related plate portions 23 and 24 between the angle head 35 and thrust plate 36.

From FIG. 1 it is seen how the strut 31 is utilized to interconnect a pair of corner leg structures. The other corner structures constituting a part of the support construction may be the same or different depending solely upon the desires and requirement for the particular item in which the support is used.

It is thought that the functional advantages of the support construction have become fully apparent from the foregoing detailed description of parts, but for completeness of disclosure the assembly will be briefly described.

It will be assumed that the sheet material comprising the brace 10 is in flat form as is illustrated in FIG. 3. First, the side walls 11 and 12 are bent downwardly along the fold line defining transverse wall 13. Then, the plate portion 23 is folded laterally about the fold line 22 to form a substantially right angular formation. The plate portion 24 is bent or folded back about the fold line 25 so that the part 30 overlaps and seats on transverse wall 13. The part 30 is then spot welded to wall 13. When shaped in this manner, the brace 10 provides a top opening through which the leg 14 is inserted. When leg 14 is positioned, the leg 14 is secured in place by spot welding to either the plate portion 23 or the side walls 11 and 12.

After a pair of corner structures are assembled in the manner outlined above, they are disposed with their angularly related plate portions 23 and 24 extending toward each other as is illustrated in FIG. 1. These corner structures are then interconnected by a strut 31. Each end of strut 31 is fitted over the angularly related plate portions 23 and 24 of one of the corner structures. Each end of the strut 31 is fixed in position by inserting a bolt 34 through aligned apertures 32 and 33, slipping a thrust plate 36 over the free end of bolt 34, and threadedly attaching a nut 42 to the bolt 34. As explained previously, upon tightening the nut 42, the strut 31 and the plate portions 23 and 24 are clamped between the angle bolt head 35 and the thrust plate 36.

Although the invention has been described by making detailed reference to a single preferred embodiment, such detail is to be understood in an instructive, rather than in any restrictive sense, many variants being possible within the scope of the claims hereunto appended.

I claim as my invention:

1. In a support, a brace having spaced side walls and an interconnecting transverse wall, a leg disposed between said side walls and adjacent said transverse wall, one of said side walls including a portion laterally wrapped partially about said leg and extending beyond the said other side wall at the other side of said brace, said side wall portion being folded back on said brace to provide an edge about said leg, the said folded side wall portion lapping said transverse wall.

2. In a support, a brace having spaced side walls and an interconnecting transverse wall, a leg disposed between said side walls and adjacent one end of said transverse wall, one of said side walls extending beyond the end of said transverse wall, said one side wall including

a first portion wrapped partially about said leg and extending laterally beyond the other side wall at the opposite side of said brace, and including a second portion folded back from the said first portion to lap the said transverse wall, said second portion having a margin that embraces the said leg.

3. In a support, a brace having spaced side walls and an interconnecting transverse wall, a leg disposed between said side walls and adjacent said transverse wall, one of said side walls including a first portion wrapped partially about said leg and extending laterally beyond the other side wall at the other side of said brace, and including a second portion folded back from and angularly related to the said first portion to lap the said transverse wall, said second portion having a margin that embraces the said leg, an angle strut disposed along the fold between the angularly related first and second portions, and fastening means extending through the apex of said angle strut and said portions.

4. The combination and arrangement of elements as recited above in claim 3, but further characterized in that the said fastening means includes a bolt extending through the apex of said angle strut and said portions, said bolt including an angle head seating on said angle strut, a thrust plate on said bolt bridging and engaging the said angularly related portions, and a nut threadedly received on said bolt clamping the said angle strut and said portions between the bolt head and thrust plate.

5. In a support, a brace having spaced substantially vertical side walls and an interconnecting transverse wall, a leg disposed between said side walls and adjacent said transverse wall, one of said side walls being bent laterally to provide a substantially vertical portion partially embracing said leg and extending beyond the other side wall at the opposite side of the brace, and being bent back angularly relative to said substantially vertical portion to provide a substantially horizontal portion having a margin that embraces said leg, said substantially horizontal portion lapping said transverse wall.

6. In a support, a brace having spaced, substantially vertical side walls and an interconnecting transverse wall, a leg disposed between said side walls and adjacent said transverse wall, one of said side walls being bent laterally about a substantially vertical fold line to provide a substantially vertical portion partially embracing said leg and extending beyond the other side wall at the opposite side of the brace, and being bent back about a substantially horizontal fold line angularly relative to said substantially vertical portion to provide a substantially horizontal portion having a margin that embraces said leg, said substantially horizontal portion lapping said transverse wall, and a strut fastened to said portions.

7. In a support, a brace having spaced, substantially vertical side walls and an interconnecting transverse wall, a substantially vertical leg disposed between said side walls, the transverse wall embracing a part of said leg, said side walls embracing opposite parts of said leg adjacent said transverse wall, one of said side walls being bent laterally to provide a substantially vertical portion embracing a part of said leg opposite the part embraced by said transverse wall, and being bent back angularly relative to said substantially vertical portion to provide a substantially horizontal portion having a margin that embraces the leg, said substantially horizontal portion lapping said transverse wall.

8. In a support, a brace having spaced, substantially vertical side walls and an interconnecting transverse wall, a substantially vertical leg having generally four sides disposed between said side walls, the transverse wall embracing a first side of said leg, one of said side walls embracing a second side of said leg adjacent the said first side, the other side wall embracing a third side of said leg opposite said second side, said one side wall being bent laterally to provide a substantially vertical portion embracing a fourth side of said leg opposite the said first

side, and being bent back angularly relative to said substantially vertical portion to provide a substantially horizontal portion having a margin that embraces the said second and first sides of said leg, said substantially horizontal portion lapping said transverse wall.

9. In a support, a brace having spaced substantially vertical side walls and an interconnecting transverse wall, said side walls extending from the end of said transverse wall, one of said side walls being bent laterally to provide a substantially vertical portion extending toward and beyond the other side wall, and being bent back to provide a substantially horizontal portion having a margin adjacent the said other side wall, said substantially horizontal portion lapping said transverse wall, the said side walls and transverse wall providing an opening, a leg disposed in said opening and located between said side walls, and means securing said leg to one of said side walls.

10. The combination and arrangement of elements as recited above in claim 9, but further characterized by the provision of an angle strut disposed along the fold between the angularly related, substantially vertical and horizontal portions, a bolt extending through the apex of said angle strut and said portions, said bolt having an angle head seating on said angle member, a thrust plate on said bolt bridging and engaging said portions, and a nut on said bolt clamping the angle strut and portions between the bolt head and thrust plate.

11. In a support, a brace having spaced substantially vertical side walls and an interconnecting transverse wall, a substantially vertical leg having generally four sides disposed between said side walls, the transverse wall embracing a first side of said leg, one of said side walls embracing a second side of said leg adjacent the said first side, said one side wall being bent laterally along a substantially vertical fold line to provide a substantially vertical portion extending toward and beyond the other side wall, said substantially vertical portion embracing a third side of said leg adjacent the said second side, said one side wall being bent back angularly relative to said substantially vertical portion along a substantially horizontal fold line to provide a substantially horizontal portion having a margin that embraces a fourth side of said leg adjacent the said third side and embraces the said first side of the leg, said substantially horizontal portion lapping said transverse wall, the said other side wall of said brace embracing the said fourth side of said leg, and means securing said leg to one of said side walls.

12. The combination and arrangement of elements as recited above in claim 11, but further characterized by the provision of an angle strut disposed along the substantially horizontal fold line between the angularly related, substantially vertical and horizontal portions, said angle member seating on said portions, and fastening means extending through the apex of said angle strut and said portions to secure the angle strut to said brace.

13. The combination and arrangement of elements as recited above in claim 12, but further characterized in that said fastening means includes a bolt extending through the apex of said angle strut and said portions, said bolt having an angle head seating on said angle strut, a thrust plate on said bolt bridging and seating on the said portions, and a nut on said bolt clamping the said angle strut and said portions between the said angle head and said thrust plate.

14. In a support, a first member having spaced side walls and an interconnecting transverse wall, said side walls extending from the end of said transverse wall, one of said side walls being bent laterally to provide a first portion extending toward and beyond the other side wall, and being bent back to provide a second portion having a margin adjacent the said other side wall, the said second portion lapping said transverse wall, the said side walls and transverse wall providing an opening, a second member disposed in said opening and located between said side walls, and means securing said second member to said first member.

References Cited in the file of this patent

UNITED STATES PATENTS

1,214,738	Wolf	Feb. 6, 1917
1,807,186	Warner	May 26, 1931
2,230,889	McArthur	Feb. 4, 1941