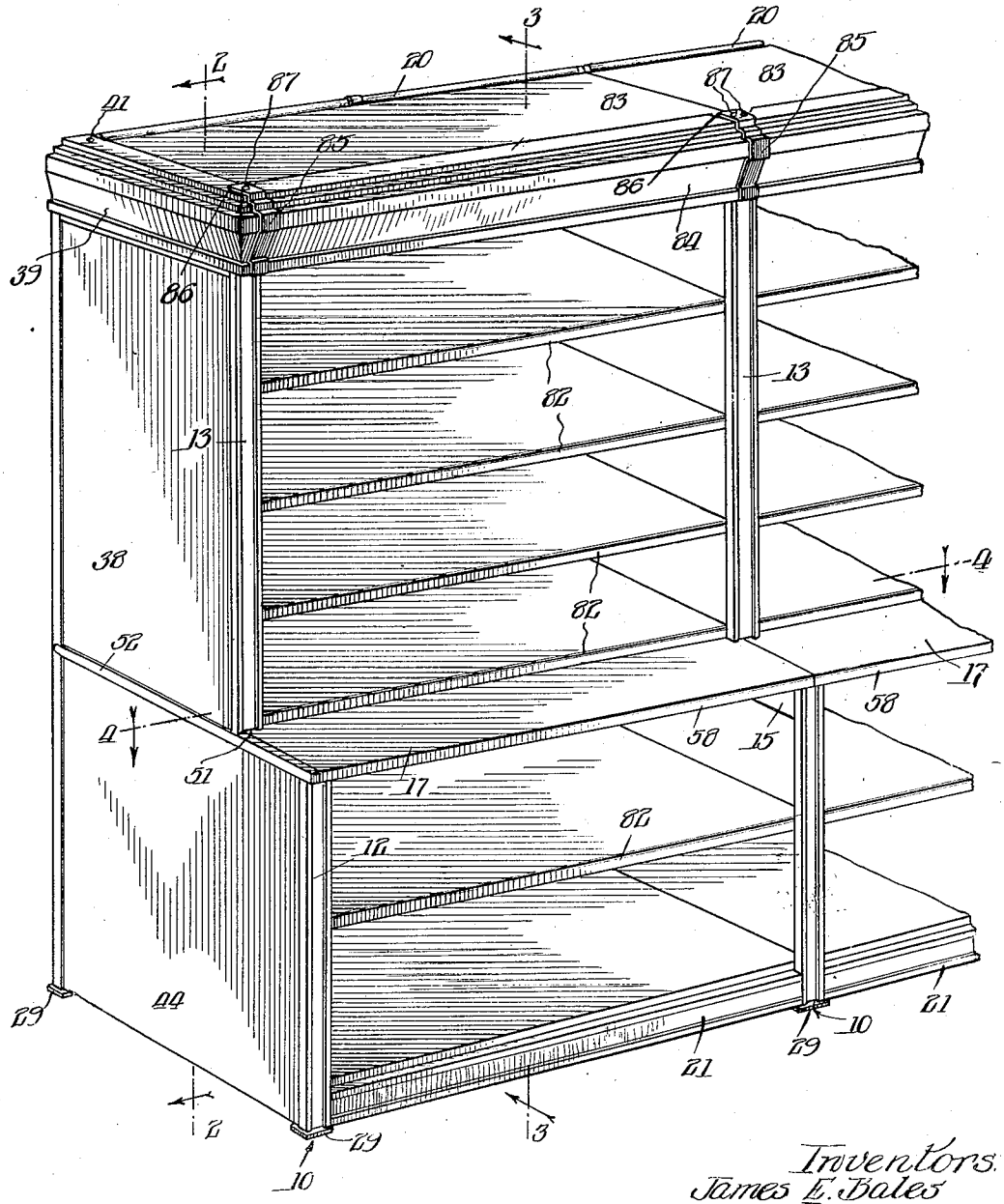
Feb. 2, 1932. J. E. BALES ET AL 1,843,262

SHELVING

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Fig. 1.



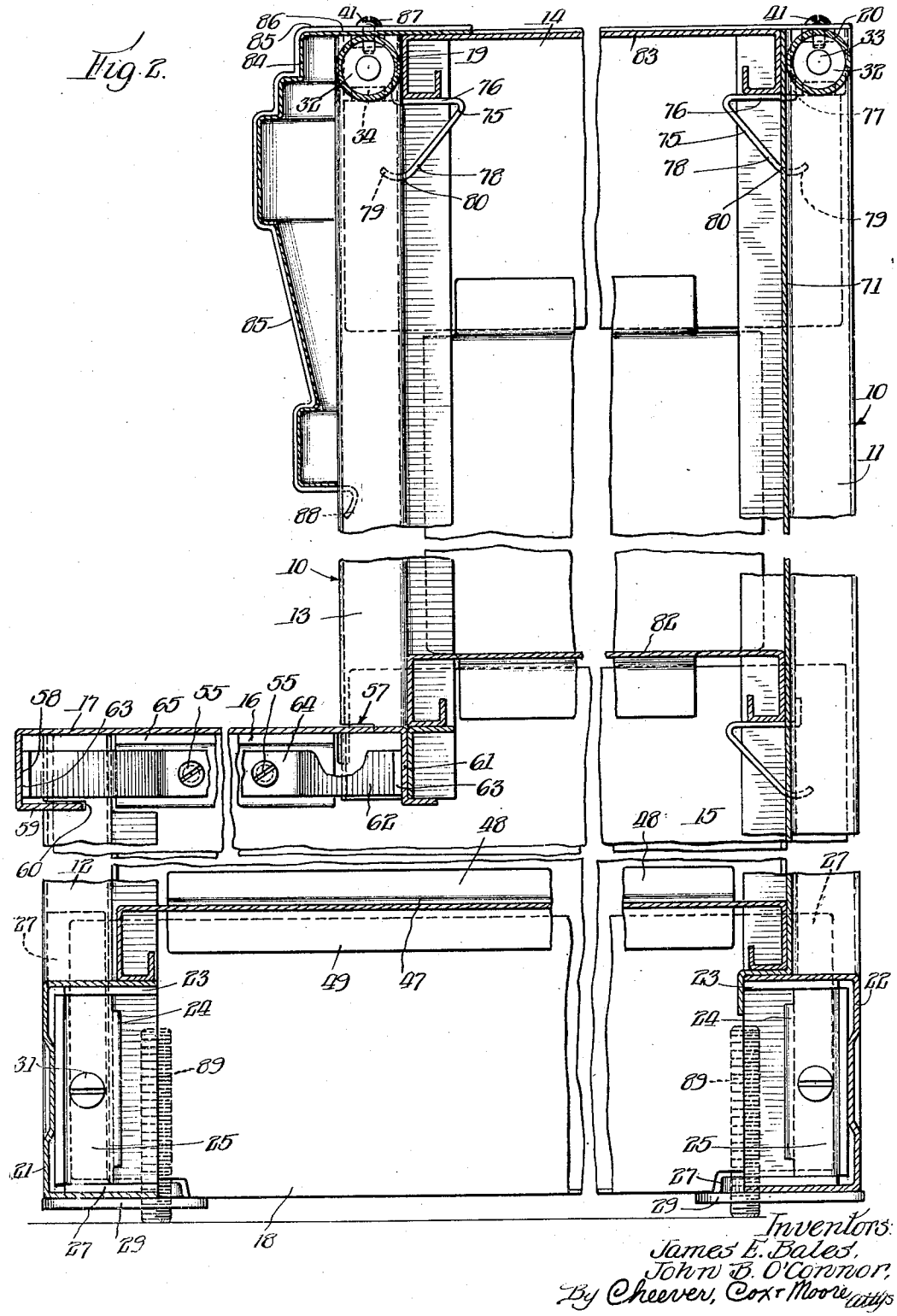
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SHELVING

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Fig. 2.



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SHELVING

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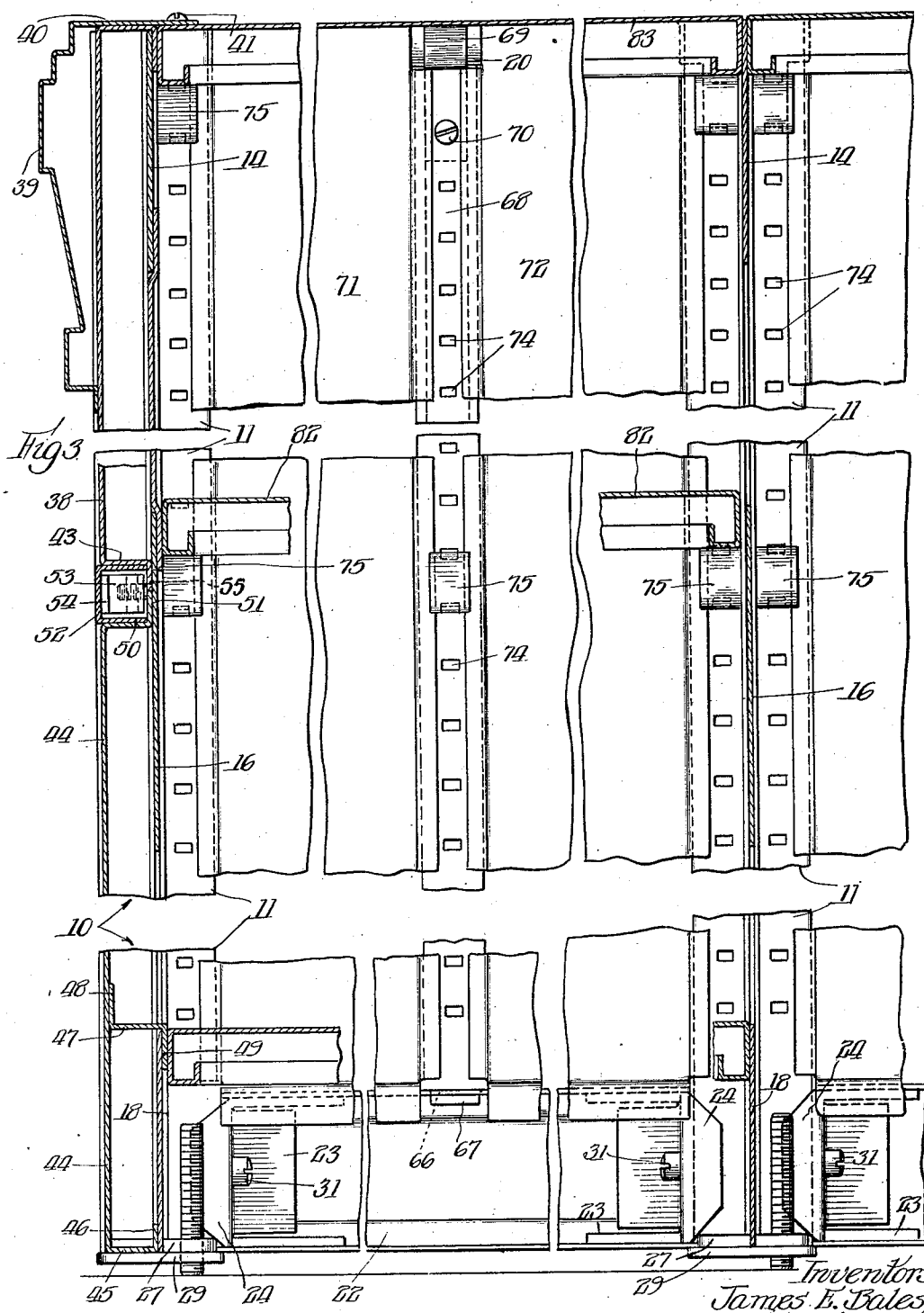


Fig 3

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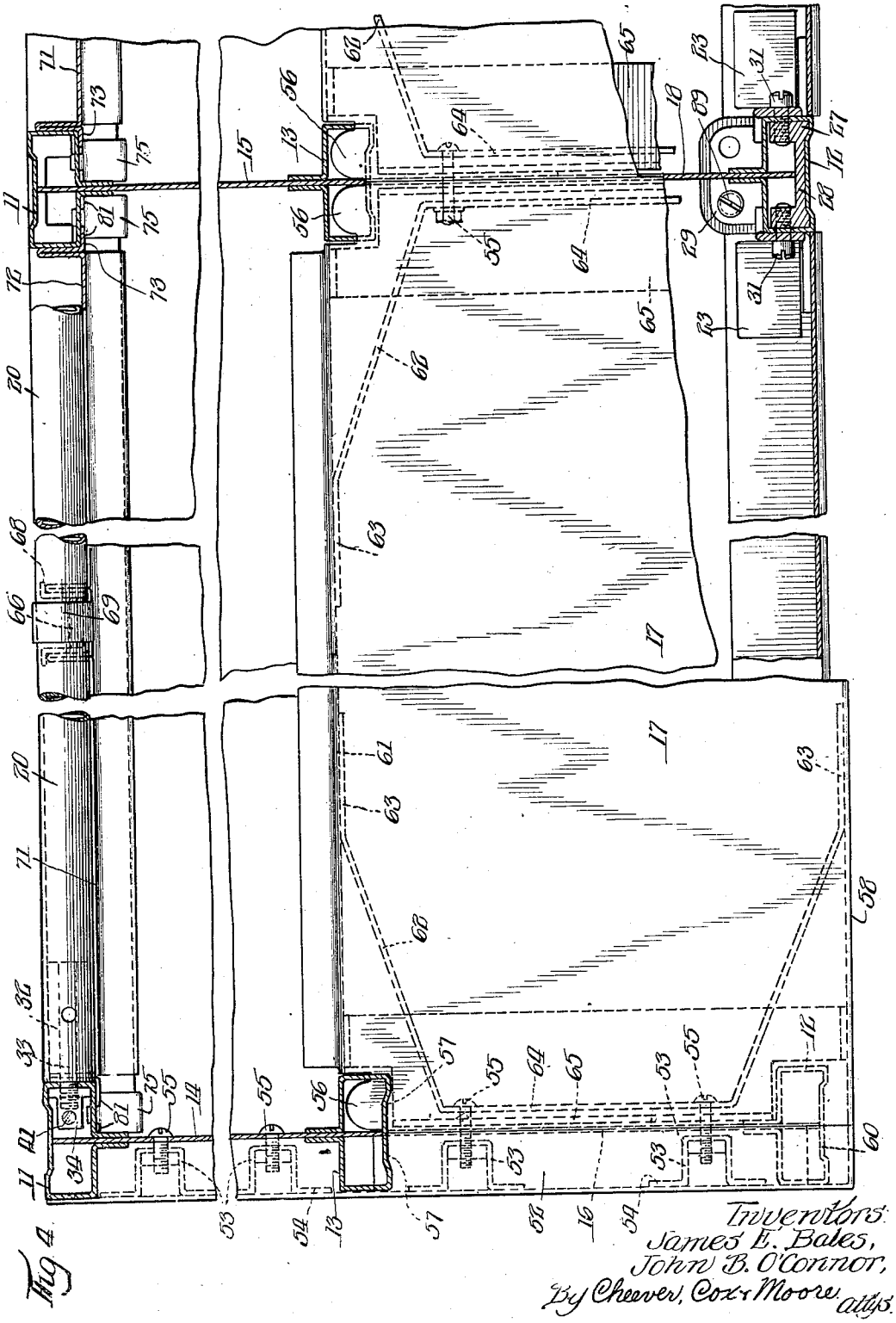


Fig 4

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Fig. 5.

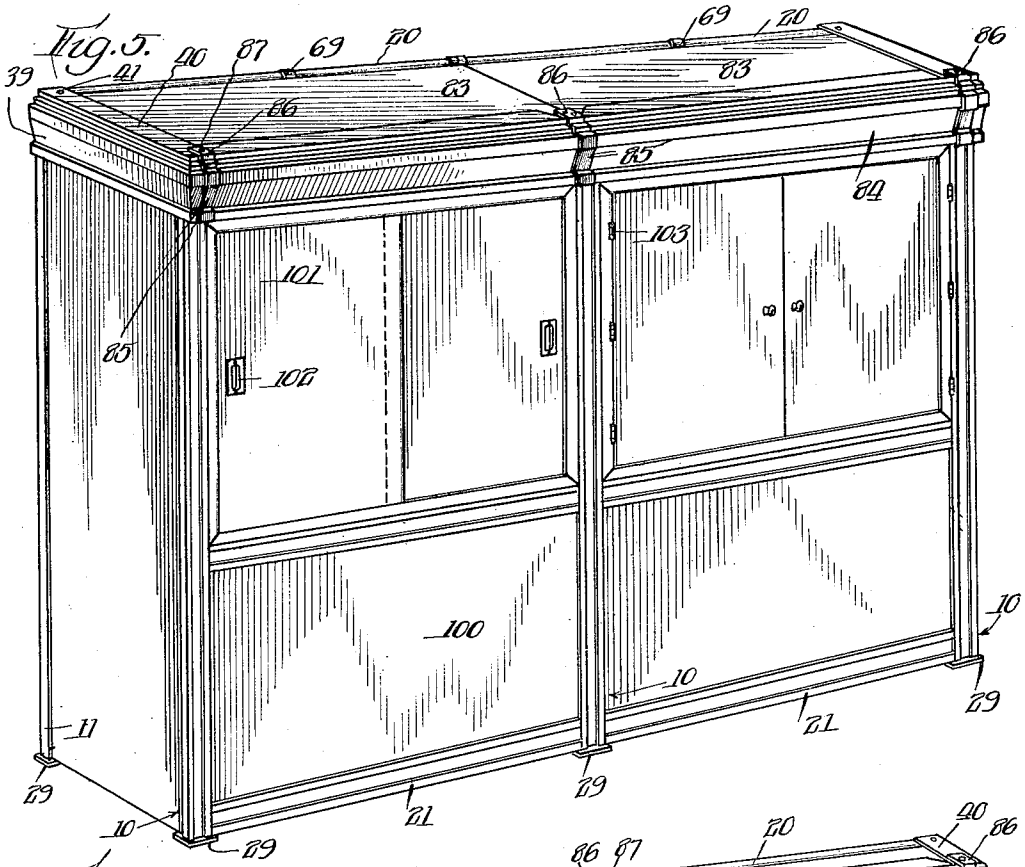
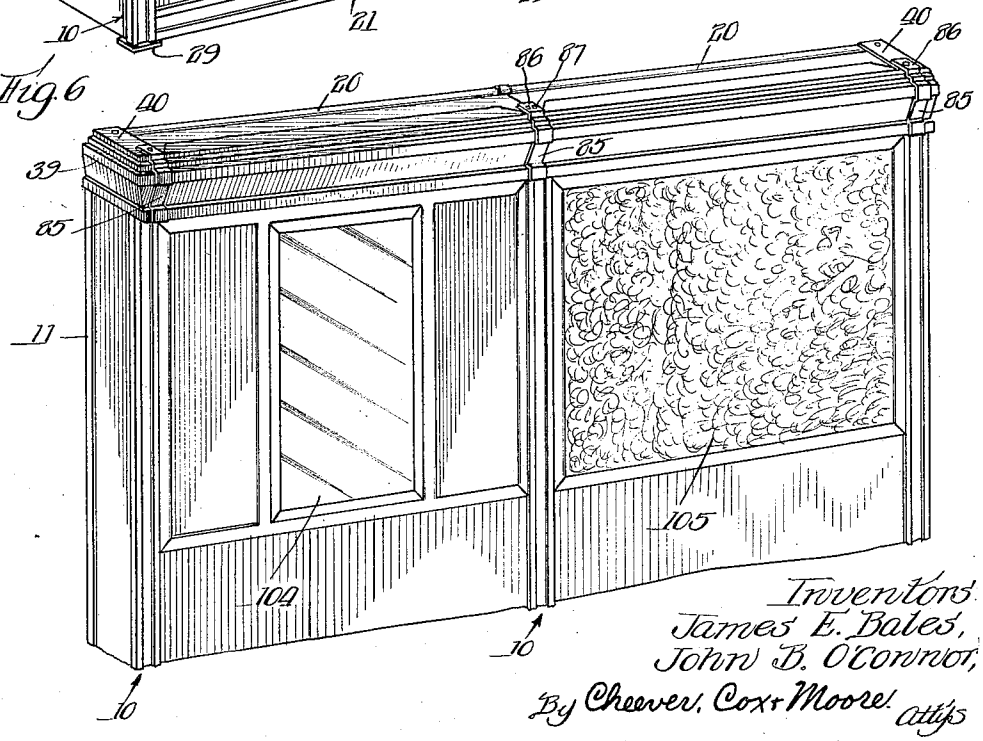


Fig. 6



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Fig. 7.

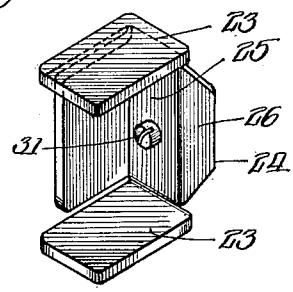


Fig. 9.

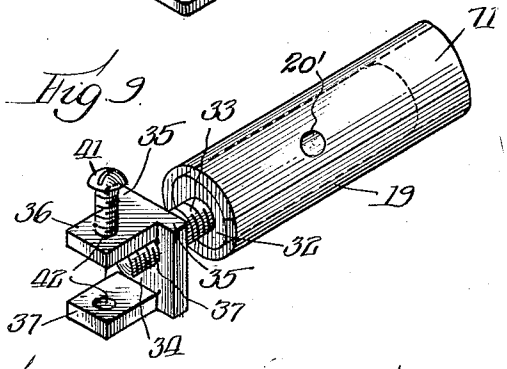


Fig. 10.

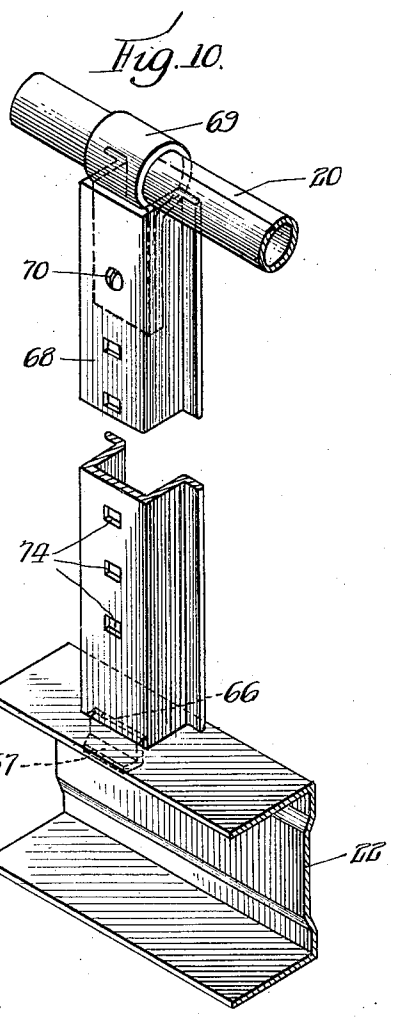


Fig. 8.

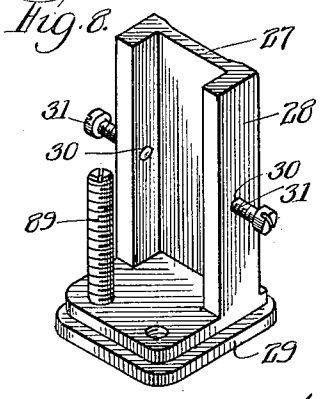


Fig. 11.

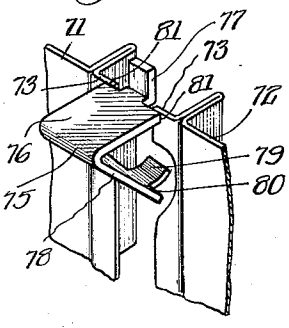
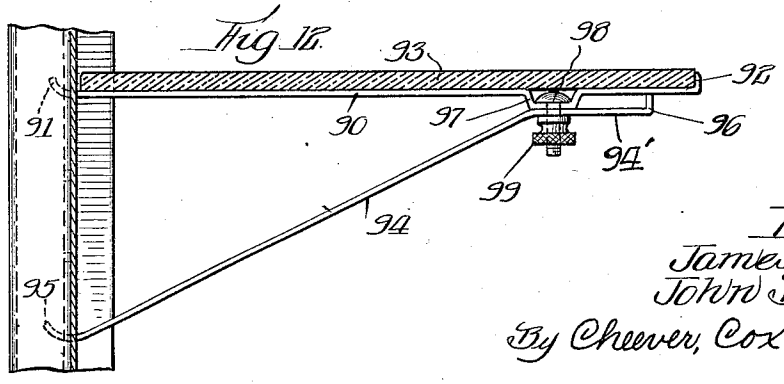


Fig. 12.



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UNITED STATES PATENT OFFICE

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SHELVING

Application filed July 29, 1929. Serial No. 381,740.

This invention relates in general to shelving and particularly to structures which comprise a plurality of sections which are fastened together, and which are provided with immovable shelves therein.

The object of the invention is to provide a structure which is rigid, strong, and durable, which can be quickly assembled or "knocked down", and which can be readily and economically manufactured.

Another object is to provide a structure which has certain parts arranged in interlocking relationship, and which is provided with means for adding onto or extending the structure.

Another object is to provide a structure made up of a plurality of sections, each of which is provided with leveling means and means for plumbing the structure and drawing and holding the parts together.

Another object is to provide a structure which has a plurality of interengaging and disconnectible parts, which are maintained in assembled position by means of overlapping and engaging parts.

A further object is to provide a device connected to the tie rods for plumbing the structure and for holding the parts together in rigid, assembled position.

Another object is to provide a leveling device for structures, such as shelving, cabinets, or the like, which has a part thereof extending up into the uprights, and which has a threaded member extending through the base thereof to bring the various sections of the structure to the proper level.

Another object is to provide a shelf clip for a shelving structure, which is removably mounted in the uprights of the structure, and which is provided with shoulders thereon to provide bearings for the clip and to hold some of the parts of the structure in locked position.

Other objects and advantages will hereinafter appear.

The invention comprises in general a structure having a plurality of uprights which are maintained in spaced relationship by means of front and rear lower bases and upper tie rods. The front and rear tie rods respectively connect the front and rear uprights together. A yoke is fastened to these tie rods and a threaded member is arranged in each tie rod and is engageable with a yoke. These threaded members have right and left hand threads at the opposite ends of the tie rods so that when the tie rods are rotated the uprights will be drawn into position. A foot is provided for the uprights and it has a vertical body portion which extends up into the uprights. The uprights are secured thereto by means of bolts which extend through the uprights and engage the body portion of the foot. A vertical member has threaded engagement with the foot so that operation of this threaded member will raise or lower the uprights to bring them to the proper desired height. Intermediate rear uprights are spaced between the longitudinal rear uprights and have a lip provided on their lower ends which engages a slot in the rear base. A strap surrounds one of the tie rods and is bolted to the rear intermediate upright. All of the uprights are provided with a plurality of vertically alined slots which receive removable shelf clips to support shelves. These clips are provided with legs which engage the slots in the uprights and have pairs of upper and lower shoulders which form a bearing for the clip and which also hold the backs of the structure in proper position against the rear intermediate uprights. A top which is similar in construction to the shelving used in the structure is also mounted on shelf clips. An ornamental cornice is provided on the sides and the front of the structure. A strap has interlocking relationship with the uprights and has a top portion which extends over the front cornice and a part of the top. Bolts pass through this strap and the top and securely hold the cornice and top in position. The cornice on the sides of the structure may be made integral with the sides or it may be welded thereto. This cornice has an overhanging edge which extends over the top and is fastened thereto by means of bolts or the like.

The accompanying drawings illustrate a selected embodiment of the invention and the views therein are as follows:

Fig. 1 is a detail perspective view of the improved shelving.

Fig. 2 is a detail vertical sectional view on the line 2—2 of Fig. 1.

Fig. 3 is a detail elevation on the line 3—3 of Fig. 1.

Fig. 4 is a detail plan section on the line 4—4 of Fig. 1.

Fig. 5 is a detail perspective view of a modified form of shelving having doors arranged thereon.

Fig. 6 is a detail perspective view of a modified structure having panels arranged on the front thereof.

Fig. 7 is a detail perspective view of the brackets for fastening the bases to the uprights.

Fig. 8 is a detail perspective view of the leg casting and leveling device.

Fig. 9 is a detail perspective view of the yoke for fastening the top tie rods to the uprights.

Fig. 10 is a detail perspective view of the intermediate rear uprights and supports for the rear panels.

Fig. 11 is a detail perspective view of the shelf clips or supports.

Fig. 12 is a detail side elevation showing a modified form of shelf support for glass shelves.

Referring to the drawings, 10 designates a frame having rear uprights 11, front uprights 12, and intermediate uprights 13. Upper members or plates 14, Fig. 3, connect the rear uprights 11 and the intermediate uprights 13 at the top thereof, and intermediate or partial side members 15 connect the front uprights 12 and the rear uprights 11 at any particular height desired. The intermediate uprights 13 rest upon the partial side members 15. The intermediate uprights are arranged rearwardly of the front uprights 12 and provide a projection 16 which is adapted to support an extension counter 17. The front, intermediate, and rear uprights are welded to the partial side members 14 and 15, and to the lower partial side member 18.

A pair of the frames 10 are arranged side by side, Figs. 2 and 4, and are connected at the top by longitudinal tie rods 19 and 20, and at the bottom by front and rear bases 21 and 22 respectively. The bases 21 and 22 have a substantially U-shaped bracket 23, Fig. 7, which is fastened to the top and bottom of the bases, and it is also provided with an outwardly extending flange 24. An arm 25 has an outwardly extending lip or tongue 26 fixed thereto which is preferably made integral therewith.

A leg casting 27, Fig. 8, has a U-shaped body portion 28 and a flat base plate 29. The body 28 of the base casting is adapted to extend up into the front and rear uprights, and the bottom edges of the uprights are adapted to bear against the top of the plate 29. Holes 30 are provided in the leg casting 27 to receive screws or bolts 31. These screws or bolts extend through a part of the bracket 23 and the upright portion 28 of the member 27, and securely connect the frame members 10 together.

The tie rods 19 and 20, Figs. 2, 4 and 10, are preferably tubular in shape and have a plug 32 fixed in the ends thereof. A threaded member 33 projects from this plug and has threaded engagement with a yoke-shaped member 34. The yoke-shaped member 34 has a back 35 and a pair of spaced legs 36 and 37. This member 34 is adapted to fit down into the top of the uprights, which are provided with a slot therein for receiving the threaded member 33. The tubular tie rods 19 and 20 may be each provided with a hole 20′, Fig. 9, therein to receive a bar or other instrument so that these members may be revolved. As the yoke is maintained in a fixed position by the uprights, revoluble movement of the tie rods causes the threaded members 33 to rotate in the threaded holes provided in the backs 35 of the yokes 34, Fig. 9. The threaded member 33 on one end of each tubular member 33 has righthand threads, while the member on the opposite end has lefthand threads. Revoluble movement of the tubular members, therefore, causes the frames to be pulled together and spaced in proper and rigid position. The length of the tie rods proper is substantially the same length as the bases, so that when the frames are drawn together they will be equally spaced. A plurality of these frames may be arranged in proper sequence to provide sections, and as many sections may be added thereto as are required.

In order to finish the ends of the sections and to present a neat appearance, panels are provided which fasten on the outer ends of the sections. An upper panel 38, Figs. 1 and 3, has a cornice 39 fastened thereto. The upper end of the cornice is provided with an inturned leg 40 which extends over the top of the uprights. A screw 41 extends through the flange 40 and has threaded engagement with a hole 42 provided in the leg 36 of the yoke 34. The lower edge of the upper panel is bent over to provide an angular shaped member 43, which has its lower leg bearing against the intermediate side member 16. A lower panel 44, Fig. 3, is bent around to form a supporting base 45, which rests on the plate 29 of the foot casting 27; and also an upstanding member 46 which bears against the bottom side member 18.

A Z-bar 47, Figs. 2 and 3, has one leg 48 welded or otherwise fixed to the inside of the bottom panel, and its other leg 49 extended over the partial bottom side member 18. The upper end of the bottom panel has an angularly shaped portion 50, which has a leg 51 thereof bearing against the intermediate side

member 16. The upper end of the member 50 extends substantially to the lower end of the angularly shaped member 43 of the top panel. A U-shaped ledge or filler block 52, Fig. 3, fits into the space between the top and bottom panels and is flush with these two panels where it is arranged in place.

A plurality of U-shaped brackets 53, Figs. 2, 3 and 4, having outwardly extending arms 54 are arranged in the member 52 and welded thereto. Bolts 55 extend through the side member 16 and have threaded engagement with the U-shaped brackets 53 for securely holding the filler block 52 in position.

The extension counter 17, Figs. 2 and 3, rests on top of the intermediate side members 16, and it is provided with tongues 56, Fig. 4, which are received in slots 57 in the intermediate uprights 13. The front edge 58 of the counter has an inwardly extending flange 59 provided thereon which extends into a slot 60 provided in the front uprights 12. The counter 17 also has end flanges 61, and a substantially U-shaped side strap 62 having straight legs 63 is welded to these end flanges 61, Figs. 2 and 4. The body portion 64 of these straps is provided with holes which receive the bolts 55, and these bolts have threaded engagement with the U-shaped members 53. As the bolts are tightened, they not only hold the filler block 52 in position, but firmly and rigidly secure the counter in fixed position. A bracket 65 is fastened to the extension counter, Fig. 4, to brace the counter and add rigidity thereto.

It is preferable, however, that the U-shaped strap 62 be fastened in the manner described rather than fastening it directly to the reinforcing bracket 65, as all the stresses and strains which may be applied to the counter will be carried and distributed by the legs of the strap 62.

The rear base 22, Figs. 3 and 10, is provided with a slot 66, which is adapted to receive an outwardly extending tongue 67 provided on the bottom of the intermediate U-shaped reinforcing member 68. The reinforcing member 68 is arranged substantially midway between the rear uprights 11. A strap 69 extends around the tubular members 19 and is fastened to the reinforcing member 68 by means of a screw 70. The tongue 67 securely holds the bottom of the member 68 in position due to its angular engagement with the slot, and the strap 69 securely holds the upper end of the member 68 on the tubular member 19.

Back panels 71 and 72, Figs. 3 and 11, have their outer ends bent upon themselves and then returned to provide a pocket for the intermediate rear uprights and to provide outwardly extending legs 73, which bear against the rear uprights at one end, and the intermediate members 68 at the other end.

All of the uprights are provided with a plurality of horizontally alined slots 74, Figs. 2, 3, 10 and 11, which are adapted to receive shelf supports on clips 75. The shelf clips 75, Fig. 11, each have a horizontal or flat portion 76 and an upturned end or leg 77. The leg 77 fits into one of the slots or recesses 74 and supports the upper end of the clip 75. The clip has a lower integral portion 78 which has an inturned leg 79 provided thereon to fit in the slot directly below the slot into which the leg 77 extends. A straight portion providing shoulders 80 extends from the leg 79 and rests against the outwardly extending legs 73 of the back panels to provide a bearing for the lower end of the shelf clip and to prevent the lower end of the clip from extending too far into the slot. Shoulders 81 are provided on the flat or top portion 76 of the shelf clip and engage the legs 73 of the back panels to provide a bearing for the upper end of the clip. A plurality of the shelf supports or clips 75 are arranged in position in the slots 74, and a plurality of shelves 82 are mounted on these clip supports.

A top 83, which is substantially the same construction as the shelves 82, is also arranged on shelf clips 75, as clearly shown in Fig. 2.

A cornice 84, Figs. 1 and 2, is arranged along the front of each section, and this cornice is held in place by straps 85. Each strap 85 has a rearwardly extending leg 86, which is fastened to the front tubular tie rods 19 by means of screws 87. The lower end of the strap is provided with a tongue 88 which fits into a slot provided in the intermediate uprights 13. In assembling, the tongue 88 of the strap is inserted in a slot or recess in one of the front uprights. The strap is then moved or swung to proper position so that it will fit over the top of the uprights and over the forward edge of the top 83. The screw 87 is then put in place for securely holding this strap to the tubular tie rod 19.

An adjusting screw 89, Figs. 2, 3, and 8, has threaded engagement with the base 29 of the member 27 to provide means for leveling each section 10. If one section is not exactly level with the next contiguous section, an implement of some kind can be applied to the leveling screw 89 to raise or lower any section to the proper desired elevation.

If glass shelves are to be used instead of the particular type of plain sheet metal shelves, as shown, a different type of shelf bracket is provided, Fig. 12. This bracket comprises a horizontal member 90 having an inturned tongue 91, which fits into one of the slots 74 in the uprights. An upturned lip 92 is also provided on the end of the bracket and engages the front end of the glass shelf 93. A bottom member or brace 94 has an inturned

lip 95 which fits into another slot 74 below the slot in which the end 91 engages. An upturned flange 96 is arranged at the forward end of the brace and bears against the bottom of the horizontal member 90. This horizontal member is provided with a depression 97 to receive the head of a bolt 98, which extends through both the member 90 and the straight portion 94' of the brace 94 as shown in Fig. 12. A thumb screw 99 is provided on the threaded end of the bolt 98 to fasten the horizontal member and the brace together and to hold them in proper rigid position.

Instead of having the open shelving, as shown in Figs. 1 to 4, front panels 100, Fig. 5, may be provided in each section, and sliding panels or doors 101 having hand holes 102 may be arranged thereon. Or, the panels or doors may be fastened to the uprights by means of hinges 103, if swinging doors are required.

It is sometimes desirable that substantially rigid panels be inserted in the front of the case, such as mirrors 104, Fig. 6, or panels 105 for fastening exhibits and the like thereto may be substituted for the mirrors. If the panels 104 or 105 are provided they are inserted in place before the cornice 84 or the straps 85 are applied. The panels 104 and 105 or the sliding doors 101 will rest upon one of the shelves, and are held in position by means of the cornice 84 and the straps 85.

When the doors or panels are arranged in the structure, the intermediate uprights may be dispensed with and the front uprights continued upwardly to the desired height; or the intermediate uprights may be shifted forwardly and directly connected to the front uprights. The filler strip may then be omitted and a single side panel, such as shown in Figs. 5 and 6, substituted for the pair of panels shown in Fig. 1.

The invention provides a structure which is composed of comparatively few parts, which are rigidly and securely connected together. The side members which connect the uprights constitute a frame. The bases and tie rods connect the frames together and provide a section. A plurality of sections may be arranged side to side and connected together. Sides and backs are provided on each section, and when a plurality of sections are connected together a single unitary structure is provided. Each frame is drawn together at the top so that the space between the frame at the top will be exactly the same as the length of the bases. The leveling device provides means for leveling each frame, so that each section can be maintained in proper alinement with the next contiguous section.

Changes may be made in the form, construction, and arrangement of the parts without departing from the spirit of the invention or sacrificing any of the advantages thereof, and the right is hereby reserved to make all such changes as fairly fall within the scope of the following claims.

The invention is hereby claimed as follows:

1. A structure comprising a plurality of sections, threaded means including a foot having a threaded bore and a threaded pin engaging the bore for leveling said sections, tie rods for each section and independently connected thereto, and threaded means arranged in said tie rods at each end for drawing each of said sections together independently of the other sections.

2. A structure comprising a plurality of sections, means fastened to the sections for leveling said sections, tie rods for drawing each section together independently of another section, a cornice for said structure, and a strap for removably holding said cornice in place.

3. A structure comprising a plurality of sections having uprights, threaded means operatively connected to the sections for leveling said sections, tie rods for each of said sections, a removable top for said structure, a horizontal cornice between uprights, and a strap connected to said top and an upright for removably securing said top and cornice to an upright.

4. A structure comprising a plurality of sections having uprights, said uprights having slots therein, movable means fastened to a part of the sections for leveling said sections, tie rods for each of said sections, shelf clips removably arranged in the slots of each of said uprights, a top supported by said clips, a front cornice, a strap engaging said top and said cornice, and means for securing said strap to said top and an upright to hold said top and cornice in position.

5. A structure comprising a plurality of sections, means for leveling said sections, tie rods for each of said sections, shelf clips removably arranged in each of said sections, a top supported by said clips, a front cornice, a strap engaging said top and said cornice, means for securing said strap to said top to hold said top and cornice in position, removable rear uprights for each section, backs connected to said uprights, sides for some of said sections, a side cornice, a leg on said side cornice and extending onto said top, and means for fastening said leg to said top.

6. A structure comprising a plurality of sections having uprights, tie rods for each section, a foot, horizontally positioned means threadedly engaging said foot for connecting said foot to an upright, and vertically positioned means threadedly engaging said foot and providing a leveling device.

7. A structure comprising a plurality of sections, tie rods for each section, a foot, means threadedly engaging said foot and providing a leveling device, rear intermediate uprights for each section, straps sur-

rounding said tie rods and means threadedly engaging said rear intermediate uprights for fastening said intermediate uprights in position.

8. A structure comprising a plurality of sections having uprights, tie rods for each section, a foot, means threadedly engaging said foot and providing a leveling device, rear intermediate uprights for each section, straps surrounding said tie rods and attached to said rear uprights, shelves removably supported in said sections, backs connected to said rear uprights, a top and sides for each section, and a strap connected to an upright for holding said top in position.

9. A structure comprising a plurality of uprights, side members connected to said uprights and forming a frame, a second frame spaced from the first frame, bases connected to the lower ends of said frames, one of said bases having a slot therein, a slotted upright having a tongue engaging the slot in one of said bases, tie rods connecting said frames at the top thereof, a strap surrounding one of said tie rods, means connecting said strap and said upright, and shelf clips engaging the slots in said first named uprights.

10. A structure comprising a plurality of uprights, side members connected to said uprights and forming a frame, a second frame spaced from the first frame, bases connected to the lower ends of said frames, one of said bases having a slot therein, a slotted upright having a tongue engaging the slot in one of said bases, tie rods connecting said frames at the top thereof, a strap surrounding one of said tie rods, means connecting said strap and said upright, leveling means for each frame, backs engaging said slotted upright, and shelf clips engaging said holes in said upright for holding said backs against said upright.

11. A structure comprising a plurality of uprights, front and rear bases and tie rods connected to some of said uprights, intermediate rear uprights arranged between some of said first named uprights, backs having bent portions for forming a pocket to receive the rear intermediate uprights, legs on said backs and overlapping the intermediate rear uprights, and clips arranged on said intermediate rear uprights and engageable with said legs for holding said backs in position.

12. A structure comprising front and rear uprights, side members connecting the front and rear uprights, front and rear bases connecting the front and rear uprights respectively, tie rods connecting said uprights, each said tie rod comprising a tubular member, a plug in said tubular member, a yoke engageable with an upright, and a threaded member engageable with said yoke and said plug, whereby said uprights may be drawn together when the tubular member is rotated.

13. A structure comprising a plurality of uprights having slots thereon, relatively wide but thin shelf clips engaging said slots and comprising a flat top portion, a reduced leg bent up from said flat top portion and extending into one of said slots, shoulders on said top portion at the juncture of the top and leg and providing a bearing for said clip, said flat top being bent downwardly and providing a flat lower portion on said clip integral with said upper portion, a reduced leg bent inwardly from said lower portion and engageable with another of said slots, and shoulders at the juncture of the last named leg and said lower portion and providing a bearing for said clip.

14. In a structure of the class described, having means for drawing a plurality of sections together and comprising a hollow member, a screw member threadedly supported in said hollow member, a yoke threaded to said screw member, and means for fastening said yoke to one of said sections.

15. In a structure of the class described, means for spacing a plurality of sections and comprising a pair of yokes connected to opposite sections, screw means threadedly engaging each of said yokes, and a member having operative engagement with said screw members whereby rotation of said last named member will cause translation of said yokes on said screw members.

In witness whereof, I have hereunto subscribed my name.

JOHN B. O'CONNOR.

In witness whereof, I have hereunto subscribed my name.

JAMES E. BALES.