Dec. 24, 1935. C. C. WAITE 2,025,138

BRACKET BOOKSTACK

Filed April 27, 1932 3 Sheets-Sheet 1

Fig: 1.

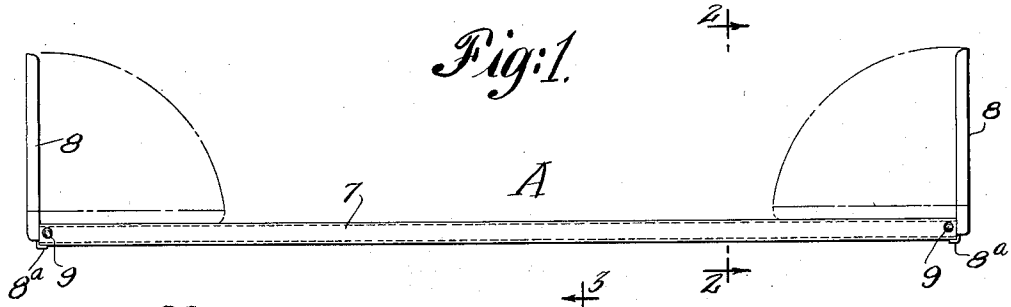


Fig: 2.

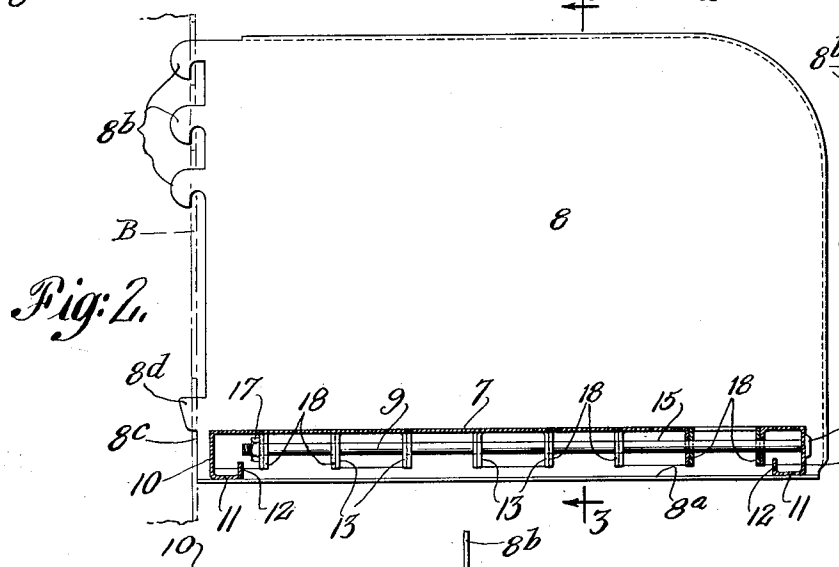
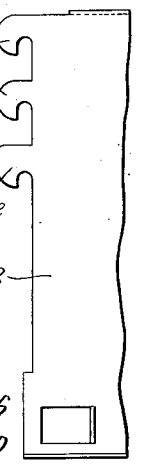


Fig: 5.



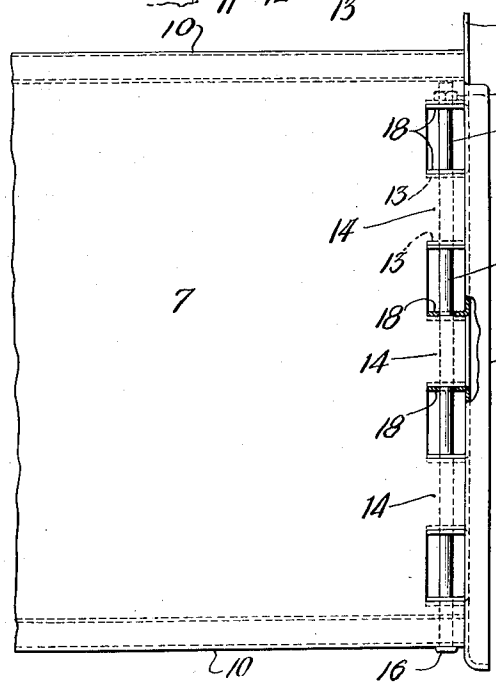
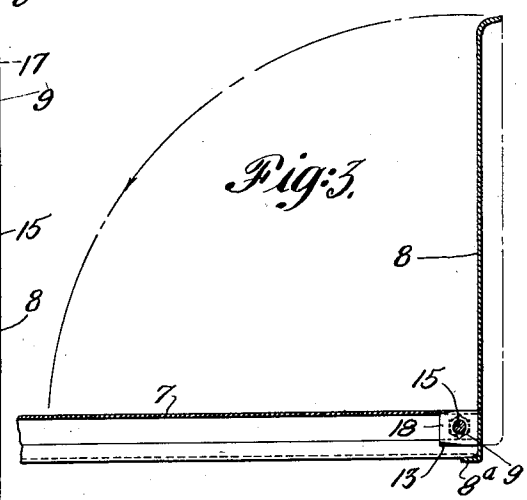


Fig: 4.

Fig: 3.



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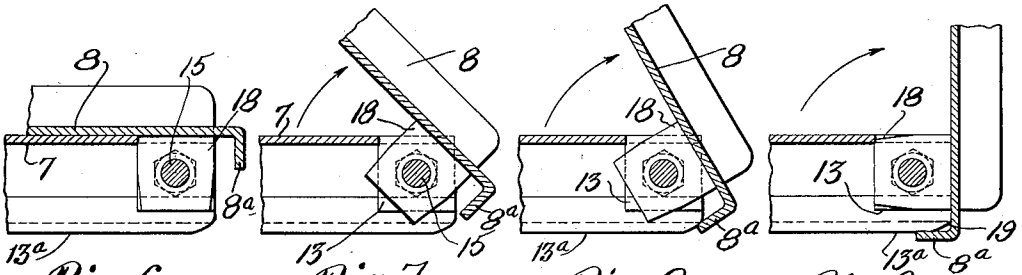


Fig:6. Fig:7. Fig:8. Fig:9.

Fig:10.

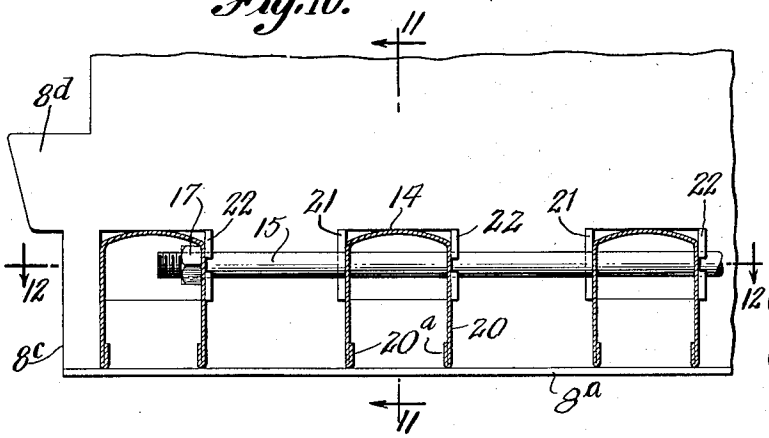


Fig:11.

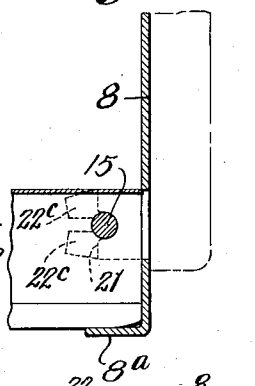
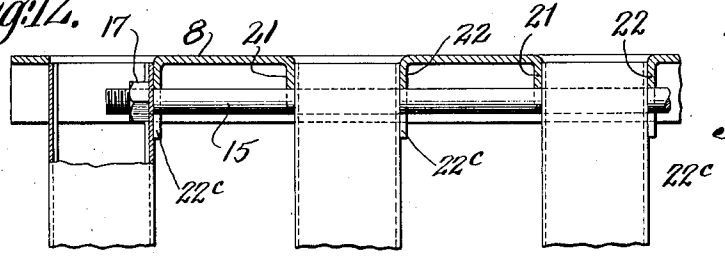


Fig:13.

Fig:12.



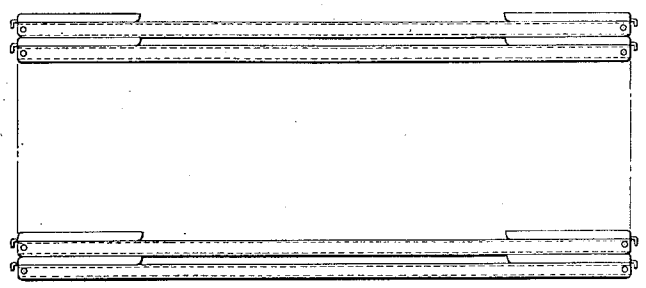


Fig:14.

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Fig:15.

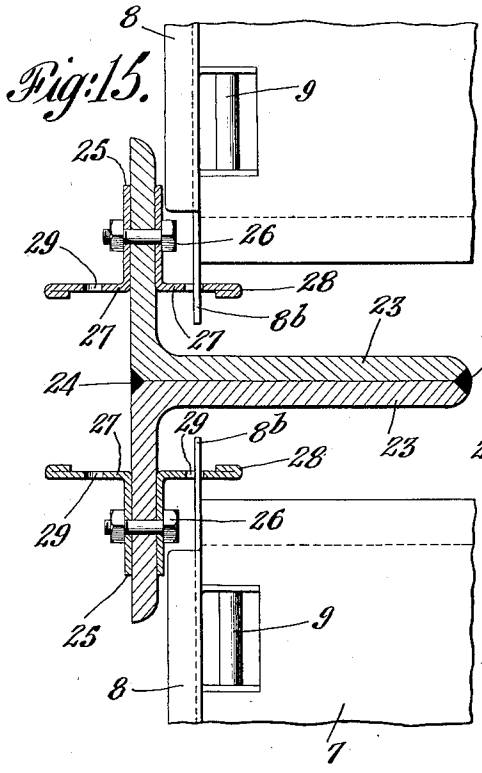


Fig:16.

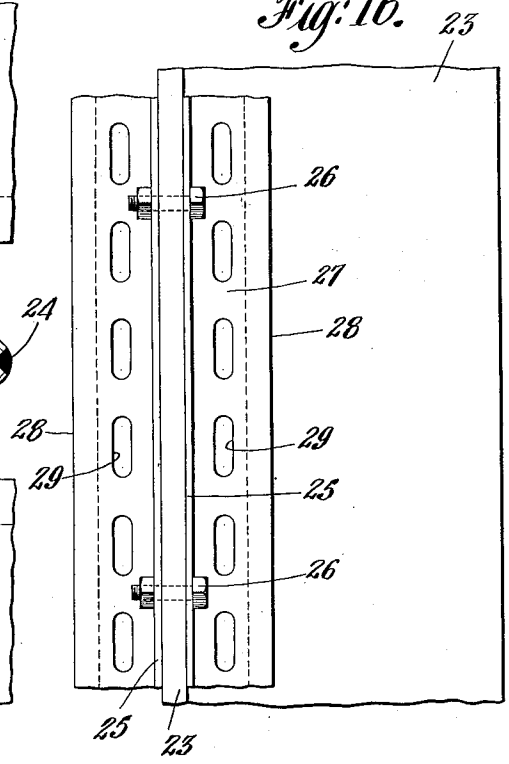


Fig:17.

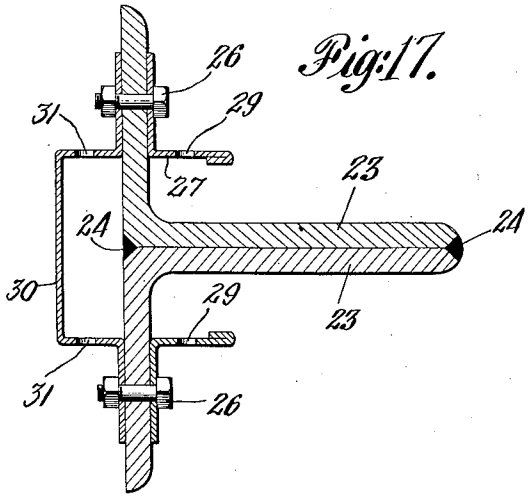
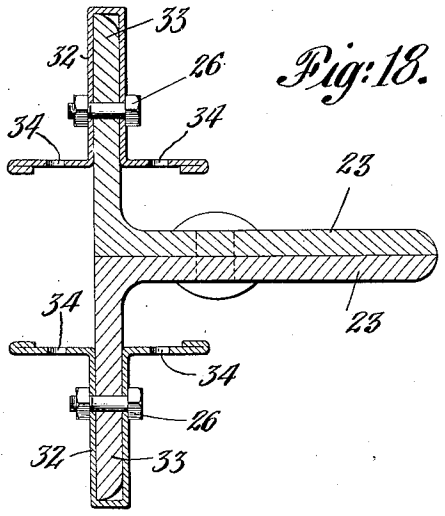


Fig:18.



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Patented Dec. 24, 1935 2,025,138

UNITED STATES PATENT OFFICE

2,025,138

BRACKET BOOKSTACK

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Application April 27, 1932, Serial No. 607,731

13 Claims. (Cl. 211—136)

This invention relates to bookstacks of the bracket type wherein the shelves are hooked into the supporting uprights, for which purpose the uprights are provided with slots and the inner edges of the end or bracket portions of the shelves are provided with one or more hooks at the top and with an abutment at the bottom. The hooks and the slots for receiving them serve as a means for adjustably suspending the brackets, and the abutments support the shelving in horizontal position, taking thrust of the load. It will be understood that the bracket shelf has a flat bottom or shelf portion upon which the books rest and has upright end or bracket portions above referred to rising from the ends of the shelf. While the shelf proper and the brackets have heretofore been individual parts they have been assembled in a rigid structure by means of bolts or other interlocking devices.

The foregoing arrangement has been open to certain difficulties. If, as is frequently the case, shelving of this character has to be stored, it can only be stored in compact form by dismantling the parts. This frequently resulted in damage either in disassembly or in reassembly, as well as in loss of certain of the parts. It has, therefore, been the custom to store the shelving in libraries in assembled form which, because of the shape of the shelving, required so much space and presented such an unsightly appearance that the shelving had to be stored in some part of the building, such as a cellar or the like, remote from the point of possible use, where they would not be instantly available when needed. Furthermore, if the shelving were shipped from the factory in knocked down condition and assembled on the job, there would be liability of loss of parts and injury. If assembled at the plant the shelves would be bulky in shipment.

The primary object of my invention is to provide bracket shelving which overcomes the above difficulties.

Another object of the invention resides in the provision of improved means for adjustably attaching the shelves to the supporting uprights.

A more specific object resides in the provision of improvements relating to the assembling of the shelf parts.

How the foregoing, together with such other objects and advantages as may hereinafter appear, or are incident to my invention are realized, is illustrated in preferred form in the accompanying drawings, wherein—

Figure 1 is a front elevation of a bracket shelf embodying my improvements.

Figure 2 is a section taken on the line 2—2 of Figure 1, drawn on an enlarged scale.

Figure 3 is a section taken on the line 3—3 of Figure 2.

Figure 4 is a top plan view of Figure 3.

Figure 5 is a fragmentary view of a modification of a detail of the invention.

Figures 6, 7, 8, and 9 are sectionalized detail views illustrating the manner in which parts of the shelf operate.

Figure 10 is a fragmentary elevation and sectional view illustrating certain details of a modification of the invention.

Figure 11 is a section taken on the line 11—11 of Figure 10.

Figure 12 is a section taken on the line 12—12 of Figure 10.

Figure 13 is a fragmentary view illustrating a detail of the invention.

Figure 14 shows how a number of shelves can be conveniently and compactly piled together.

Figure 15 is a fragmentary plan section illustrating a modified means for attaching the shelves in place.

Figure 16 is a fragmentary front elevational view of Figure 15.

Figures 17 and 18 are modifications of the means illustrated in Figures 15 and 16.

Referring now to the drawings and particularly to Figures 1 to 4 inclusive, the shelf is indicated as a whole by the reference character A, and comprises the shelves proper 7 and the brackets 8. The brackets are hinged to the shelf as indicated at 9 in a manner to be more particularly hereinafter described. At this point it will suffice to state that the hinging is done in such a way that the brackets may be folded so as to occupy the dot and dash line position indicated in Figure 1. The position of the brackets shown in full lines is that which they have when ready for hanging on the shelf supports.

The shelf is in the form of a flat plate having its front and rear edge portions flanged downwardly as indicated at 10, inwardly as indicated at 11, and upwardly as indicated at 12. (See Figure 2.) This provides the needed strength and rigidity to support the load of the books. At the ends the shelves have a series of downwardly extending lugs 13, preferably formed by a stamping operation. These lugs, with the portions 14 which connect between pairs of lugs, constitute short channel-like bars which carry and support the hinge pins 15 which are in the shape of rods or long bolts having a head 16 and a nut 17 for securing them in place. Similarly the brackets

8 have cooperating pairs of stamped lugs 18 fitting in between pairs of lugs 13 and provided with apertures to receive the pins or bolts 15. In this manner the brackets are hinged to the shelves.

To hold the brackets in the full line position shown in Figure 1 in order to make it easy to hang the shelving from the supports, I provide means to snap or friction hold the brackets. For this purpose I turn in the lower edge portion 8a of the brackets to form a laterally extending flange. The inner face of this flange is the same distance from a plane cutting the center of the hinge pin as are the edges 13a of the shelves. The corner portions 19 of the shelves are somewhat rounded, but the radius is greater than the distance from which the inner surface of the flange 8a is away from the center of the hinge pin, in consequence of which, in swinging the brackets from the position shown in Figure 6 to the position shown in Figure 9, the flange will be somewhat sprung in getting to the position shown in Figure 9. Vice versa, the brackets cannot be folded back without outwardly springing the flanges 8a. Thus the shelves will remain in the full line position shown, once they have assumed that position.

The shelf as a whole is adapted to be suspended from the supports or uprights B by means of hooks 8b formed on the brackets 8 at their upper portions which fit suitable slots in the supports. In order to properly position the shelf, abutments 8c and positioning lugs 8d are provided at the lower portions of the brackets, the abutments resting against the face of the uprights and the lugs fitting slots therein. The lugs 8d prevent the shelf from being unintentionally dislocated from upward thrust.

In the modification illustrated in Figure 5 I have shown the bottom suspending hook formed with a straight top which in effect constitutes a lug 8e serving to prevent the unintentional dislocation of the shelf just referred to. By grouping the lug 8e with the hooks 8b, the shelves will more readily fit the slots than if they were spaced away from the hooks, as illustrated in Figure 2, in which case the slots must be accurately spaced and the uprights accurately positioned in order to have the lugs enter the slots.

In Figures 10 to 13 inclusive I have shown the invention as applied to shelving of the bar type in contradistinction to the plate type just above described. In this type the shelf is composed of a series of bars 20, the lower edges of which may be bent back on themselves as indicated at 20a for purposes of strength. These bars fit between pairs of spaced lugs 21 and 22 formed on the brackets as before, and they are apertured to receive the pins 15. The lugs 22 are slotted and apertured to fit the hinge pins and the lugs 20 socketed so as to engage the pins. In this construction the pins 15 also serve as tie rods for constituting the bars in the form of a shelf as well as constituting the means for hinging the brackets.

Referring now to Figure 13, it will be seen that before assembling the brackets 8 to the bar shelf the slots of the lugs 22 are wide open as indicated at 22a, so that the pins 15 may be forced into position in the apertures 22b. After this is done the slots are closed by pinching in the arms 22c as shown in Figure 11, thus securing the pins in position. This arrangement is very advantageous for the reason that it is customary to enamel the bracket portions a different color than the shelf portion and therefore it is preferable to do the enameling before assembly. Thru the arrangement just described the open bar shelf including the pins or tie rods may be completely assembled before enameling, then enameled independently of the brackets, and finally assembled to the brackets, thus permitting these parts to be finished economically in different colors.

In the plate type of Figures 1 to 5 it will be seen that no stiffening member is required for the plate at its ends, the bracket and the hinge joint serving this function. The brackets have lower portions which constitute end walls for the shelf members when the brackets are in bracket forming position. It will be understood that the friction spring action described in connection with Figures 1 to 9 is also employed in the construction of Figures 10 to 13. It will be apparent that the shelving may be readily shipped, easily installed or removed, and that it may be stored in a sightly manner immediately adjacent the point of use, as in the space between adjacent uprights or in an empty compartment of the stacks. In Figure 14 it is shown how the shelving may be conveniently and compactly stacked.

In Figures 15 to 18 inclusive I have illustrated modifications of the support or uprights in which the shelves are not suspended directly from the uprights as illustrated in Figure 2, but in which shelf adjustment strips art employed. In Figures 15 and 16 the uprights are formed of a pair of angle irons 23, 23, placed back to back and secured together as by means of welding at 24 and the strips 25 are of angle form. The strips may be secured to the uprights in any suitable manner as by means of bolts 26 and the flanges 27 are rebent at 28 for purposes of stiffening. A plurality of slots 29 are provided in the flanges 27 for receiving the hooks of the shelves. The strips may be readily attached and detached from the uprights and are of such construction that no hollow spaces are formed where dust, rust, or vermin may lodge. Also, they are of such form that all parts of the upright or column are open for inspection and refinishing.

In Figure 17 the strip 30 at the flat side of the upright is of channel form having hook receiving slots at 31 and in Figure 18 I have illustrated clips 32 which are adapted to straddle the flanges 33 of the uprights and in which hook receiving slots 34 are provided.

I claim:—

1. In a bracket shelf, the combination of a shelf member, end bracket members therefor, hinge means for folding said bracket members into the general plane of the shelf member, and means on said bracket members cooperating with adjacent portions of the shelf member self acting to yieldingly hold the bracket members in shelf-supporting position when they are moved to such position.

2. In a bracket shelf, the combination of a bar shelf, end bracket members therefor, and hinge means for folding said members into the general plane of the shelf, said bracket members having lower portions constituting end walls for the bar shelf when in shelf-supporting position.

3. In a bracket shelf, the combination of a plate shelf flanged at its front and rear edges and unflanged at its ends, and end bracket members hinged thereto for folding into the general plane of the shelf, said bracket members having lower portions constituting end walls for the shelf when in shelf-supporting position.

4. In a bracket shelf the combination of a shelf portion composed of a plurality of open ended

spaced hollow bars, end bracket members, and hinge pins for hinging the bracket members to the bars, said bracket members having lower portions constituting end closures for said bars when in shelf-supporting position.

5. In a bracket shelf, a plurality of spaced bars forming the shelf bottom, end bracket members, and means for hinging the bracket members to the bars, said means serving also to support the bars in shelf form.

6. In a bracket shelf the combination of a shelf portion composed of a plurality of spaced bars, end bracket members, and hinge pins for hinging the bracket members to the bars, said pins also serving as tie rods for the bar shelf.

7. In a bracket shelf, the combination of a shelf member, end bracket members hinged to said shelf member for folding toward the shelf member, hinge pins carried by said shelf member, and a plurality of hinging lugs carried by the bracket members, said lugs having pin receiving apertures and open slots leading from an edge thereof to said apertures to permit insertion of the pins into said apertures thru the slots.

8. In a bracket shelf, the combination of a shelf portion composed of a plurality of bars assembled on transverse pins, and end bracket members having apertured lugs for hinging them on said pins, said lugs having open slots leading from an edge thereof to the apertures therein whereby said brackets may be mounted on the pins of the assembled shelf thru the medium of the slots, said lugs being spaced apart and serving to space the bars of the shelf.

9. In combination a bracket shelf having a shelf member and bracket member hinged thereto, supporting uprights therefor, shelf adjusting strips detachably secured to said uprights, said strips having a plurality of spaced slots therein, hook means carried by said bracket members adapted to be hooked into said slots to suspend the shelf and positioning means carried by said bracket members adapted to cooperate with said slots whereby stability of the bracket shelf against collapse and displacement is ensured.

10. In a bracket shelf, the combination of a shelf member, end bracket members therefor, hinge means for folding said bracket members into the general plane of the shelf member, and yieldable means on said bracket members cooperating with adjacent portions of the shelf member to automatically friction spring hold the bracket members in shelf-supporting position when they are moved to such position.

11. The combination of a shelf member having a plurality of slots at one of its end portions for the reception of hinge lugs, a supporting bracket member therefor provided with a plurality of laterally extending integral hinge lugs at its lower edge portion adapted to enter said slots for hinging thereat, and a hinge pin for pivotally uniting said shelf member and said bracket member whereby said bracket member is adapted to be swung from a position parallel with the shelf member to a position substantially perpendicular to the shelf member, and one of said members having means cooperating with an adjacent portion of the other member self acting to yieldingly hold the bracket member in perpendicular shelf supporting position when it is moved to such position.

12. In a bracket shelf, the combination of a shelf member, end bracket members therefor, hinge means for folding said bracket members into the general plane of the shelf member, and laterally extending lips on said bracket members cooperating with adjacent portions of the shelf self acting to yieldingly hold the bracket members in shelf supporting position when they are moved to such position.

13. In a bracket shelf, the combination of a shelf member, end bracket members therefor, hinge means for folding said bracket members into the general plane of the shelf member, and means on said bracket members engageable with adjacent portions of the shelf member for limiting hinging movement of the bracket members in a direction away from the shelf to the shelf supporting positions thereof, and means associated with said limiting means and shelf member self acting to yieldingly hold the bracket members in shelf supporting position when they are moved to such position.

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