Dec. 31, 1935. F. A. DONNELLY ET AL 2,026,223

SHELVING

Filed June 27, 1933 2 Sheets-Sheet 1

Fig. 1

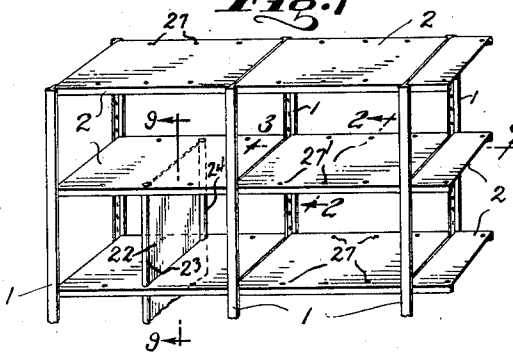


Fig. 3

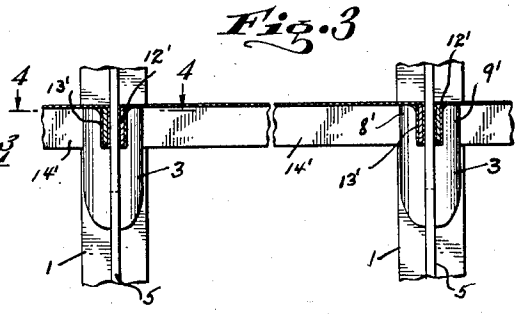


Fig. 2

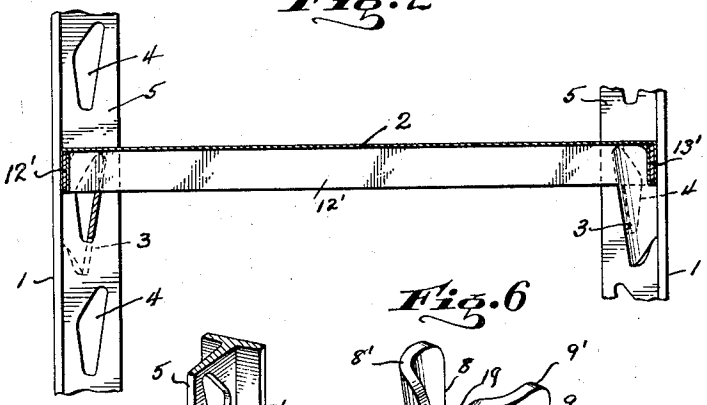


Fig. 4

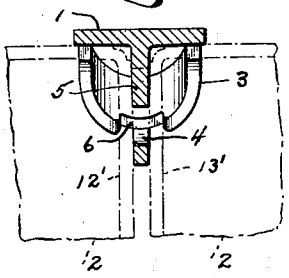


Fig. 5

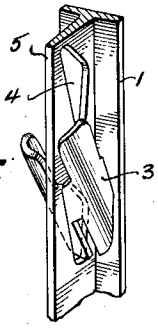


Fig. 6

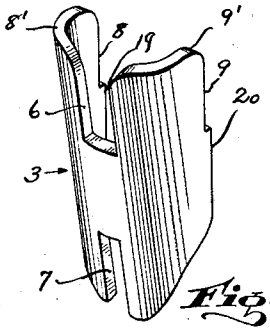


Fig. 7

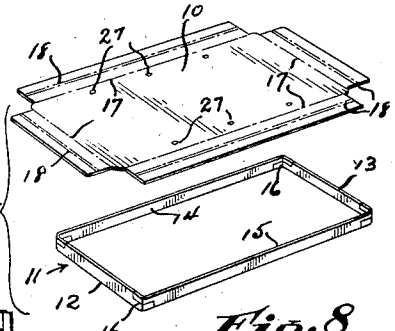


Fig. 9

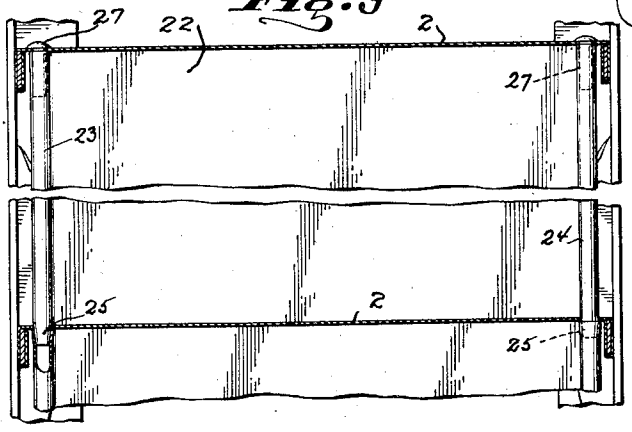
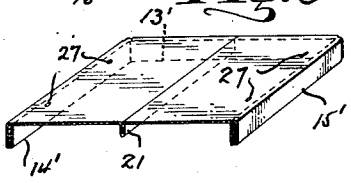


Fig. 8



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SHELVING

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Fig. 10.

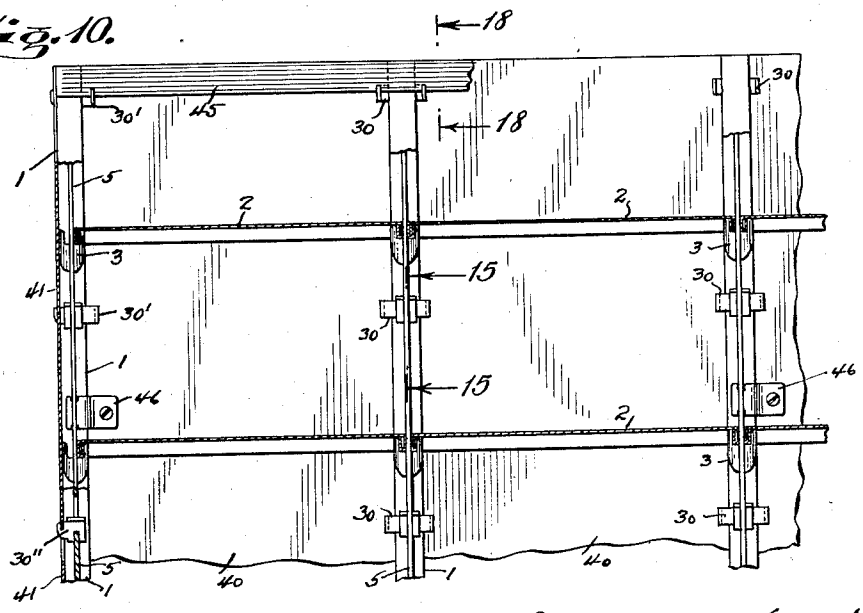


Fig. 11.

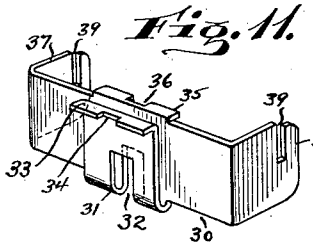


Fig. 12.

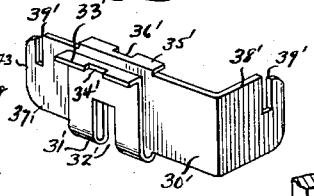


Fig. 13.

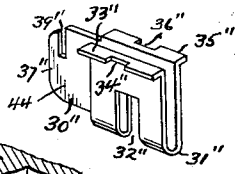


Fig. 19.

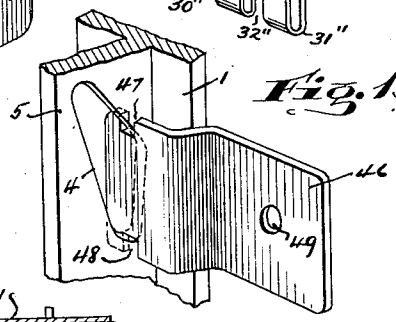


Fig. 16.

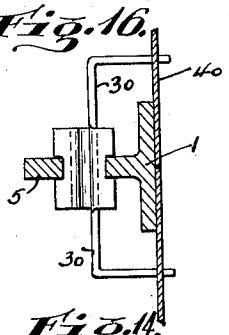


Fig. 15.

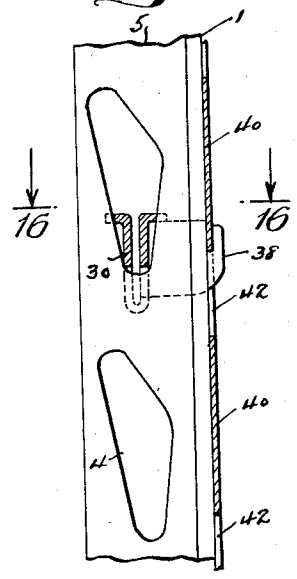
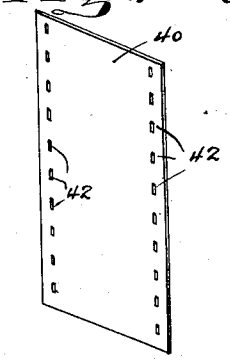


Fig. 14.



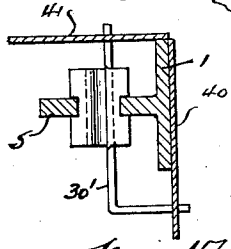
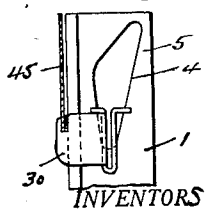


Fig. 17.

Fig. 18.



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Patented Dec. 31, 1935

2,026,223

UNITED STATES PATENT OFFICE

2,026,223

SHELVING

Frank A. Donnelly, Englewood, N. J., and
John E. Blanthorn, Brooklyn, N. Y.

Application June 27, 1933, Serial No. 677,796

10 Claims. (Cl. 211—136)

This invention relates to improvements in shelving and is particularly directed to portable metallic shelving for use in stores, libraries, storage rooms and the like, for storing or supporting commodities, books or other articles, depending upon the particular use to which the shelving is put.

One of the objects of this invention is the provision of shelving of the character indicated wherein the shelves are readily adjustable to any desired height to accommodate articles of various sizes, and which can readily be adjusted, assembled or dismantled without the use of tools.

Another object of this invention resides in a shelving wherein the employment of bolts, screws, clamps and the like is entirely eliminated, thereby reducing the cost to a minimum and eliminating the necessity of cover plates which are at present employed with some types of shelving to hide or conceal the heads of bolts and screws.

Another object of the invention is the provision of a shelf section or unit reinforced in such a manner that very light sheet metal can be employed, thereby further reducing the cost while at the same time providing a structure of increased strength.

Another object of this invention resides in a novel bracket or clip for securely supporting the shelves in such a manner as to add rigidity to the entire structure.

A further object of this invention resides in the form of backing sheets and side walls particularly the means for supporting such sheets and side walls, whereby the same may be readily erected and dismantled without the use of tools and wherein drilling of holes for receiving supporting bolts and the like is eliminated.

A further object of the invention is the provision of novel clips or brackets for supporting the backing, side walls and also an ornamental moulding.

A still further object resides in novel partitions for separating the shelf sections vertically and novel means for retaining the partitions in place.

Other objects of this invention will be manifest from the following description and the accompanying drawings, in which drawings:

Fig. 1 is a perspective view of a portion of the shelving;

Fig. 2 is a sectional view in line 2—2 of Fig. 1;

Fig. 3 is a sectional view on line 3—3 of Fig. 1;

Fig. 4 is a sectional view on line 4—4 of Fig. 3;

Fig. 5 is a perspective view showing one of the brackets or clips partially inserted in one of the uprights;

Fig. 6 is a perspective view of one of the brackets or clips;

Fig. 7 is a perspective view of a shelf blank and the reinforcing band therefor;

Fig. 8 is a section of a larger shelf shown in perspective;

Fig. 9 is a sectional view on line 9—9 of Fig. 1;

Fig. 10 is an elevational view partly in section of the shelving showing the backing sheets, side walls and moulding in place;

Fig. 11 is a perspective view of one form of bracket or clip for supporting the backing;

Fig. 12 is a perspective view of another form of bracket or clip for supporting the backing and rear edge of the side walls;

Fig. 13 is a similar view of another form of clip for supporting the forward edge of the side walls;

Fig. 14 is a view of a backing sheet or side wall in perspective;

Fig. 15 is a view on line 15—15 of Fig. 10;

Fig. 16 is a view on line 16—16 of Fig. 15;

Fig. 17 is a view similar to Fig. 16 but taken at the corner of the shelving;

Fig. 18 is a section on line 18—18 of Fig. 10; and

Fig. 19 is a perspective view of an anchor plate.

Referring to the drawings in detail and first of all to Fig. 1 wherein there is illustrated an assembled shelving, uprights 1 are arranged in two rows, one row in front and one row in the rear and in alignment with each other. The uprights 1 are held together by shelves 2 which are supported on and secured to the uprights at each corner by brackets or clips 3 (one of which is shown in perspective in Fig. 6).

Each of the uprights is in the form of T-irons provided with a plurality of closely arranged triangular cut-out portions or openings 4 in the web 5 of the upright, these openings being adapted to receive the clips 3 as will be hereinafter pointed out.

The clip 3 is semi-circular in cross section and is provided with a central longitudinal slot 6 in its upper edge and a central longitudinal slot 7 in its lower edge and recesses 8 and 9 in its upper corners. The upper slot 6 it will be noted is wider than the lower slot 7. The reason for the difference in dimensions of these slots will be apparent as this description proceeds.

The shelf sections of the present invention may be made of very light sheet metal cut or stamped from a sheet into blanks 10, one of which is shown in Fig. 7. The blank is provided with a reinforcing band 11 which comprises two end sections 12

and 13 and two side sections 14 and 15, the adjacent corners of which are cut complementary to each other as illustrated at 16 in Fig. 7. This novel corner construction of the reinforcing band provides a smooth corner free of overlapping portions. The projecting ends and sides of the shelf blank 10 are folded along the single dot and dash lines 17 over the top of the band and inwardly along the double dot and dash lines 18 around the bottom of the band so as to completely enclose the band to hold the same in place to the shelf and provide reinforced depending flanges for the shelf section as will be seen from Figs. 2, 3, 8 and 9. When the flange is thus formed a sturdy shelf of increased strength results having a smooth flange throughout including the corners.

In assembling the structure a clip 3 is inserted in each of the openings of the web 5 of the upright as shown in Fig. 5 and dropped into position, the clip when in place taking the position shown in Fig. 2, the lower slot 7 straddling the web 5 of the upright and the web of the clip between the upper slot 6 and the lower slot 7 engaging the adjacent base of the triangular opening 4. It will be noted in Fig. 2 that the clip sits in the opening 4 at an angle, the edges 19 and 20 of the clip adjacent the cut-out portions 8 and 9 engaging the T-iron upright 1 on either side of the web of the upright. It will be obvious, due to the angularity of the clip in the opening 4 on the web 5 of the upright and the taper of the clip, that the clip will be securely wedged between one edge of the triangular opening and the flange of the T-iron.

When the clip is in position it will be noted from Fig. 3 that there is a recess provided by the slot 6 on both sides of the web 5. These recesses are of sufficient dimensions to accommodate the end flanges 12' and 13' of adjacent shelves. It will also be noted from Fig. 2 that the recesses 8 and 9 of the clip will accommodate the side flanges 12' and 13' of adjacent shelves whereby the upper ends 8' of the clip will be inside the flanges 12' and 14' of one shelf at the corner of the shelf so as to support the shelf at the corners and hold the same securely in place. It will also be noted that the upper end 9' of the clip will be inside the flanges 13' and 14' of the adjacent shelf at the corner so as to support this shelf in a like manner. The slot 6 and the recesses 8 and 9 are of the same depth so that the shelf will be supported horizontally in spite of the fact that the clip sits in the upright at an angle thereto.

In the event that should it be desired to have greater space between the uprights thereby requiring longer shelves, a shelf of the type illustrated in Fig. 8 may be employed. This shelf is provided with a longitudinal rib 21 formed by folding the blank to form the rib before the same is formed into a shelf. This rib will provide additional reinforcement for shelves of greater length if deemed necessary.

In the event that it is desired to subdivide any section there is provided a partition 22 shown in Figs. 1 and 9. This partition is of novel construction and can readily be inserted and removed without tools and without flexing the shelves. The partition is formed from a sheet of metal and has rolled or tubular ends or edges 23 and 24 to provide a finished appearance. The lower extremity of the tubular edges may be formed with projections 25 adapted to be inserted in any of the desired holes 26 of the shelf, the upper ends of the tubular edges registering with corresponding holes in the shelf immediately above and adapted to receive pins 27. Any number of these partitions or spacers may be employed, all of the shelves being provided with a plurality of holes 25 to accommodate the same. The partition may be included in the structure at the time of assembling or may be placed therein after the structure is completely assembled. When it is desired to remove the partition it is merely necessary to first lift out the pins 27 and the partition can then be readily removed.

Referring now to Figs. 10 to 18 inclusive wherein we have illustrated an improved backing, side walls and moulding, the openings 4 in the uprights 1 in addition to receiving the shelf supporting clips 3 are adapted also to receive other clips 30, 30' and 30'' for supporting the backing, side walls and moulding. These clips, for purposes of clarity and to distinguish the same from the shelf supporting clips 3, we shall designate brackets.

Three forms of these brackets are shown in the drawings, the bracket 30 shown in Fig. 11 is made of a strip of metal having a central portion folded at 31 upon but spaced from the body portion, this folded portion is provided with a central slot 32 adapted to be received by and straddle the web 5 of the upright 1 when placed in one of the openings 4. The upper end of the folded over portion is provided with a flange 33 which has a central slot 34, the body portion has a corresponding flange 35 and a slot 36 in alignment with the flange 33 and slot 34. The slots 34 and 36 are adapted to engage the web 5 of the T-iron opposite each other when the bracket is in place. The ends of the bracket are bent at right angles to form ears 37 and 38, each of which ears are provided with a vertically extending slit 39, one edge of the slit being lower than the other, the purpose of which will be apparent as the description proceeds. The bracket 30 is adapted to be received by and extend through the openings 4 in the intermediate uprights, that is, by any of the uprights other than those at the corner of a completed unit. When the bracket is in place the ears 37 and 38 will project slightly beyond the flange of the T-iron so that the slits 39 will be substantially in line with the plane of the outside of the flange of the T-iron as shown in Fig. 16.

Backing sheets 40 and side walls 41 may be of identical construction. These are each made up in the form of a rectangular sheet of metal having a plurality of rectangular openings 42 adjacent each vertical edge as illustrated in Fig. 14. The backing sheets however may if desired be made wider than the side walls, for instance if twice as wide the sheet will be provided with two rows of adjacent openings 42 in the center in addition to the rows at the edges. The vertical spacing of the openings 42 are the same as the vertical spacing of the openings in the web of the T-iron.

When the brackets 30 are in place it is a simple matter to place the backing sheets against the back of the structure so that the top edge of the openings 42 will engage the high edge of the slit 39 of the ears 37 and 38 of the brackets 30 and the backing sheets allowed to drop downwardly so that the backing will be engaged in the slits 39 as shown in Figs. 15 and 16.

The form of bracket 30' shown in Fig. 12 is similar to the bracket 30 except that it has but one bent ear 38', the other end 43 being straight. Both the ear 38' and the straight end 43 however are provided with slits 39'. This bracket

30' is adapted to be used on the left end upright of the back row, the ear 38' being for the purpose of supporting the backing as do the ears 38 of the bracket 30. The straight side however is for supporting the rear edge of the side wall 41 as shown in Fig. 17.

Another bracket of this type (not shown) may be employed with the ears reversed for the right end upright.

The form of bracket 30'' shown in Fig. 13 is similar to the bracket 30' except that no bent ear is provided. In this bracket there is one straight portion 44. This bracket is employed in the front upright for supporting the front edge of the side wall and is short enough so as not to project beyond the flange of the T-iron where it might be in the way or unsightly.

Brackets 30 and 30', in addition to supporting the backing sheet as just referred to, also may be employed for supporting a moulding 45 along the top front of the unit as shown in Figs. 10 and 18. This moulding is merely decorative and may be of a strip of metal plain or ornamented as may be desired.

In Fig. 19 we have shown an anchor plate 46. It is sometimes desired to anchor the unit to a wall or other support. We have therefore provided this anchor plate which has notches 47 and 48 in its upper and lower edges to be received in the opening 4 of the upright 1. The plate is bent laterally and provided with a hole 49 for receiving a bolt or screw for securing the same to the wall.

It will be appreciated that we have provided a shelving having a minimum number of parts and wherein the shelves can readily be adapted to any desired height by simply removing the shelf and supporting clips and replacing the same at the position desired; also backing, side wall and moulding which can readily be assembled or dismantled without the use of tools and in a minimum amount of time.

While we have illustrated and described a clip supporting adjacent corners of adjacent shelves, it will be appreciated that should it be desired to have the shelves in the adjacent tiers at different heights or positions the clip will serve equally as well in supporting one shelf as well as two.

It is to be understood that while we have mentioned very thin metal as being preferred because of the resultant reduction in cost of material we do not wish to be limited to any particular weight of metal inasmuch as the same may be varied. It is to be understood also that various other changes and modifications may be made in the structure herein illustrated and described without departing from the spirit and scope of our invention.

What is claimed is:—

1. A shelving comprising in combination a plurality of spaced uprights each having a series of openings therein, unitary clips each having a central longitudinal slot engaging said uprights at said opening for supporting the clip therein, and shelves between said uprights, each shelf having depending end and side flanges, said clips each having a single longitudinal slot receiving the end flange of adjacent shelves and a recess on each side of the upright receiving the side flange of the shelves to support the shelves at their corners and secure the same to the uprights.

2. Shelving comprising in combination a plurality of spaced uprights in the form of T-irons having a series of openings in the webs thereof, clips projecting through said openings and supported therein, the projecting portions each providing shelf supporting members, a plurality of shelves between said uprights each of said shelves having depending end and side flanges, the upper ends of said clips each being cut away to provide a single recess between the clip and the web of the T-iron and between the clip and the flange of the T-iron for receiving said end flange and side flange respectively of one of said shelves adjacent the corner of the shelf to secure the shelf in the corner of the T-iron upright and to support the shelf and upright.

3. Sectional shelving comprising in combination a plurality of uprights in the form of T-irons the web of each upright being provided with triangular openings the bases of which are at an angle to the upright, clips each being provided with a central longitudinal slot for engaging the web of the upright and being wedged between the angular base of the opening and the flange of the T-iron upright, shelves on both sides of said upright each having depending end and side flanges, recesses between said clip and said web for receiving the end flanges of adjacent shelves and recesses between said clip and the flange of said T-iron upright for receiving the side flanges of adjacent shelves to removably secure the shelves at their corners to said uprights.

4. Shelving comprising in combination a row of spaced uprights, a second row of spaced uprights, said uprights each being in the form of T-irons, having a series of triangular openings in the webs thereof, clips extending through and retained in said openings and projecting on opposite sides of said web, each of said clips being provided with a central longitudinal slot at the bottom thereof engaging the web of the upright and supporting the clip in said opening, shelves between said uprights, each of said shelves having depending end and side flanges, said flanges being formed by folding the shelf material about a reinforcing band, recesses in said clips receiving the end flanges and recesses in the clips receiving the side flanges of the shelves, said recesses being of sufficient width to accommodate the reinforced flanges.

5. In combination a shelving comprising a plurality of T-iron uprights for supporting shelves, the web of each of said T-irons being provided with a plurality of openings, clips semi-circular in cross section extending through said openings and projecting on opposite sides of said web, the free edges of said clips engaging the flange of said T-iron, a central longitudinal slot in the lower edge of each of said clips received by and fitting on said web to support the clip on said web, each of said clips having a central longitudinal slot in the upper edge, the last mentioned slot being of a greater width than the first mentioned slot to provide recesses on opposite sides of said web, between each clip and the web, additional recesses formed in each of said clips in the free edges thereof adjacent the web of each of said T-irons, said shelves each having depending end and side flanges, said first mentioned recesses in said clips receiving the end flanges of adjacent shelves and securely holding the same on opposite sides of said uprights between the clip and the web of said T-irons, said additional recesses receiving the side flanges of adjacent shelves and securely holding the same

on opposite sides of said uprights to removably support the shelves and to support the structure.

6. A sectional shelving comprising in combination a plurality of uprights each having a series of openings therein, removable clips through certain of said openings, shelves supported by said clips, a plurality of brackets extending through certain other of said openings and projecting beyond said uprights, said brackets being provided with vertically extending slits in the projecting portion, and backing sheets and side walls having a plurality of openings therein, said projecting portion extending through the openings in said backing sheets and side walls so that the backing sheets and side walls will be received by the slits in said brackets to be supported thereby.

7. A sectional shelving comprising in combination a plurality of T-iron uprights each having openings in the web thereof, means for removably supporting shelves on said uprights, brackets extending through certain of said openings, said brackets each having a slot formed therein to engage the web of the T-iron for holding the same in the openings, a portion of said brackets being bent laterally to extend beyond the flange of said T-iron on both sides thereof for supporting backing sheets on said uprights.

8. A sectional shelving comprising in combination a plurality of T-iron uprights each having openings in the webs thereof, clips extending through certain of said openings for supporting shelves on said uprights, brackets extending through certain other of said openings, said brackets each being bent laterally to provide supporting portions, a slit in said supporting portions, and backing sheets having openings, said projecting portions extending through the openings in the backing sheets to removably support the sheets in said slits.

9. A sectional shelving comprising in combination two rows of uprights in the form of T-irons having triangular openings in the webs thereof, clips so formed as to fit in said openings and extending through certain of said openings for supporting shelves on said uprights, brackets so formed as to fit in said openings and extending through certain other of the openings in the front row of uprights for supporting moulding adjacent the top edge thereof.

10. A sectional shelving comprising T-iron uprights having openings in the web thereof, clips U-shaped in cross section fitting in said openings and having the legs thereof disposed horizontally astride the web and towards the flange of the T-irons, said legs having recesses formed therein, and shelves detachably engaging said recesses to support the shelves on said clips in the angle formed by the web and flange of the T-iron.

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