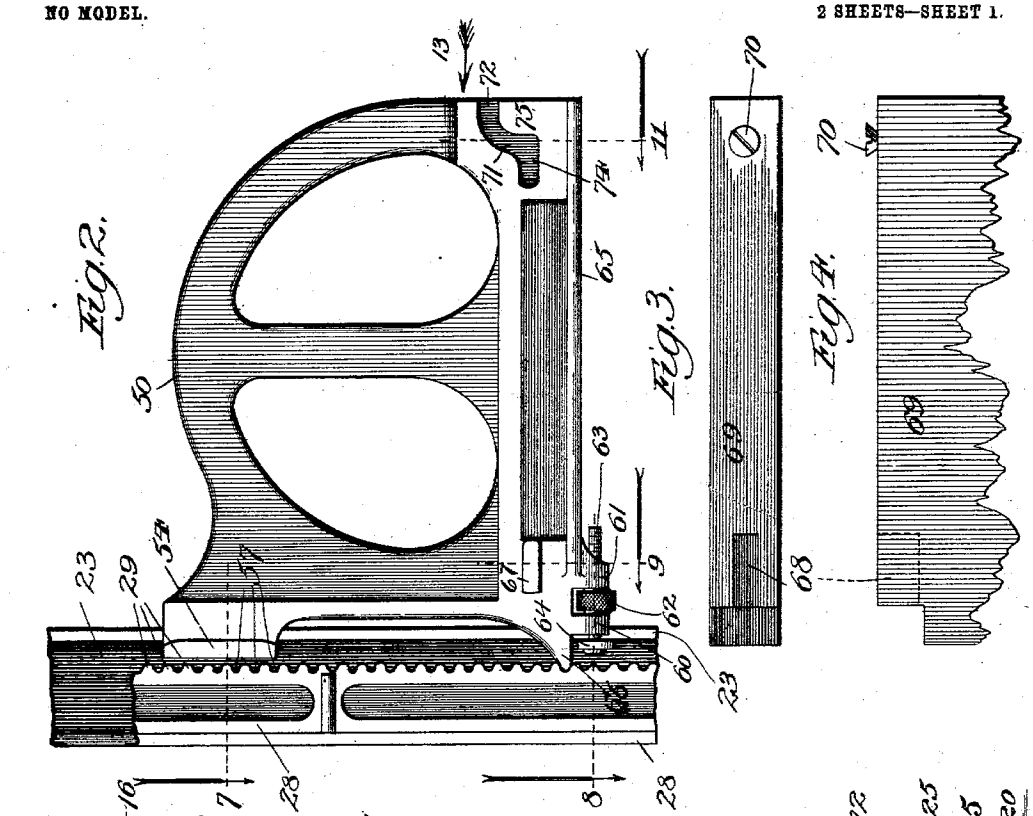
No. 739,804. PATENTED SEPT. 29, 1903.

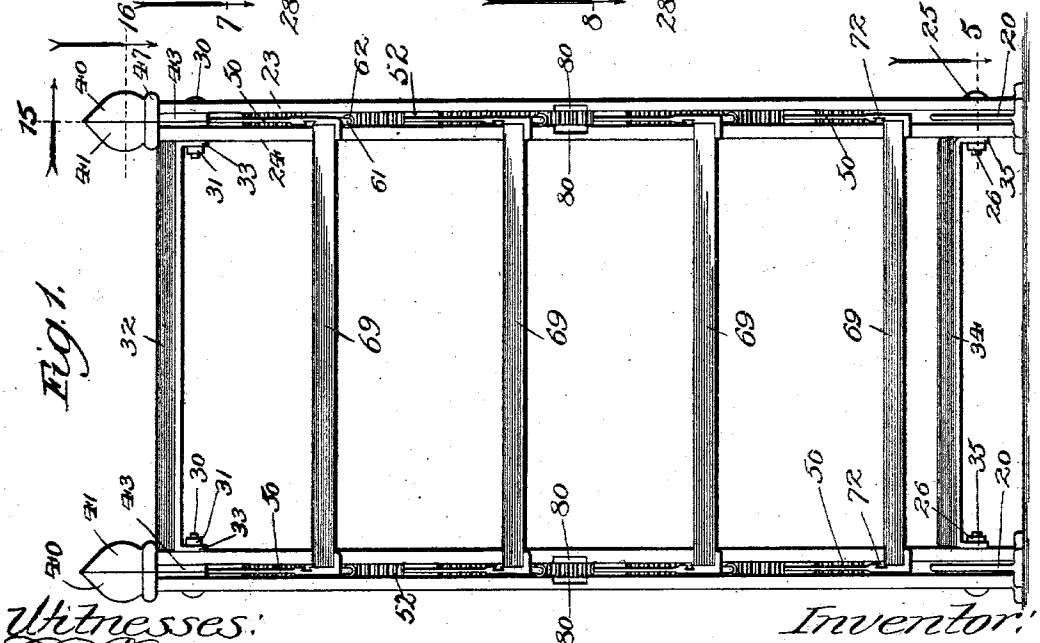
E. ALLEN.

ADJUSTABLE SHELVING.

APPLICATION FILED SEPT. 22, 1902.

NO MODEL. 2 SHEETS—SHEET 1.




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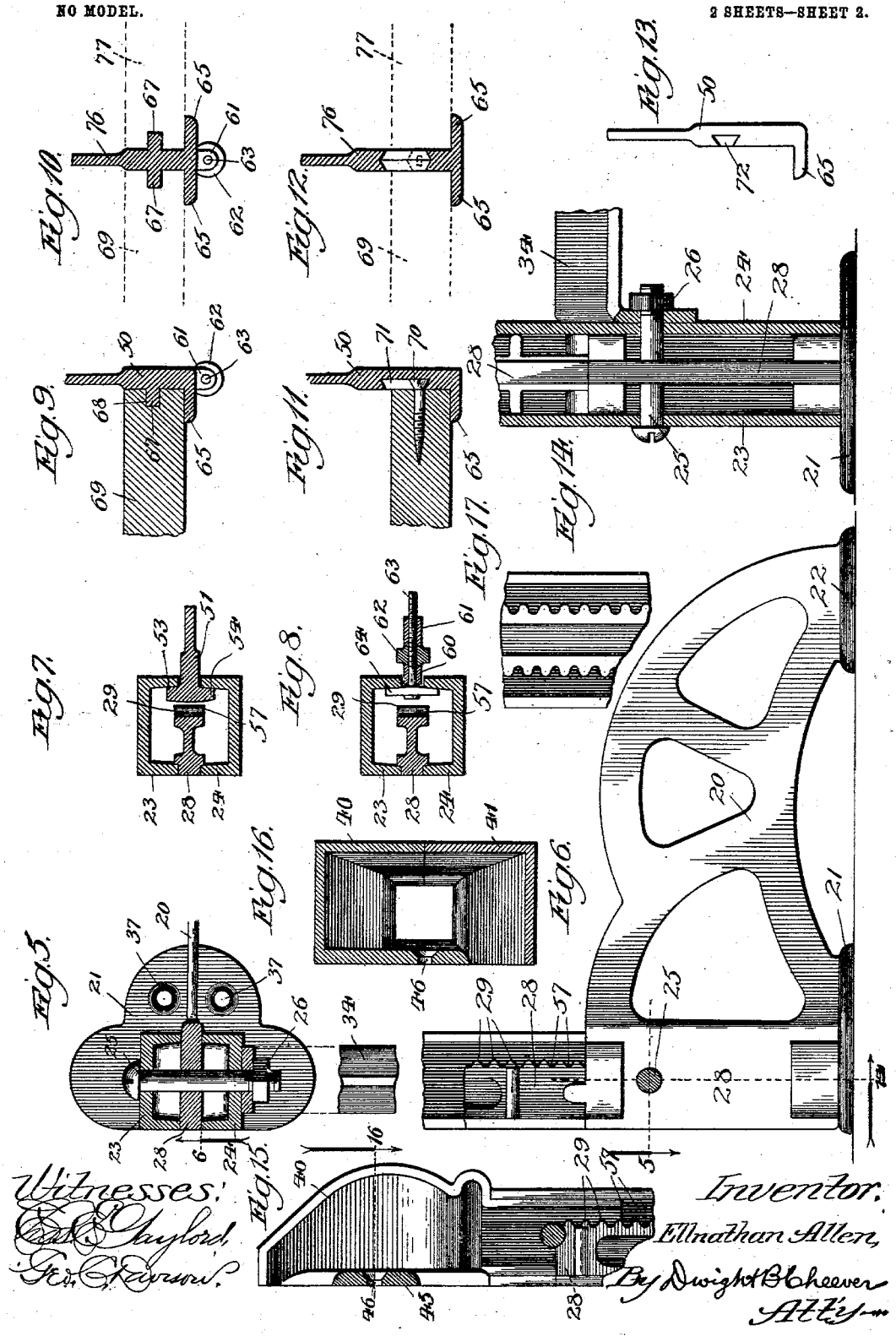
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ADJUSTABLE SHELVING.

APPLICATION FILED SEPT. 22, 1902.

NO MODEL. 2 SHEETS—SHEET 2.




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No. 739,804. Patented September 29, 1903.

# UNITED STATES PATENT OFFICE.

ELLNATHAN ALLEN, OF CHICAGO, ILLINOIS.

## ADJUSTABLE SHELVING.

SPECIFICATION forming part of Letters Patent No. 739,804, dated September 29, 1903.

Application filed September 22, 1902. Serial No. 124,350. (No model)

*To all whom it may concern:*

Be it known that I, ELLNATHAN ALLEN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Adjustable Shelving, of which the following is a specification in its best form now known to me, reference being had to the accompanying drawings, in which similar numerals indicate the same parts throughout the several views.

My invention relates to adjustable shelving for use in libraries, stores, &c.

The object of my invention is to provide an adjustable shelving for use in such places, and particularly where substantially fireproof construction is desired, which can be easily and cheaply made, put in place, and adjusted so that books or other articles of different sizes can be placed on different shelves without wasting space.

It consists in mechanism for enabling the shelves to be readily adjusted to different heights and in mechanism for preventing the shelf itself being withdrawn from the supports on a direct horizontal line, thereby preventing accidents, which frequently occur where the shelves can be so withdrawn.

It also consists in means for securing the top of the case to the wall in a neat and ornamental manner and in a general combination which enables the entire apparatus to be readily taken apart and packed for shipment, if desired.

In addition to the foregoing the invention consists in many details of construction, hereinafter more fully described as the specification proceeds.

Referring to the drawings, Figure 1 is a front view of a bookcase embodying my invention in its preferred form. Fig. 2 is a side elevation of a shelf-bracket, showing details of the method of securing it to an upright support or frame of the case. Fig. 3 is an end view of the shelf. Fig. 4 is a broken plan view showing the end of the same shelf. Fig. 5 is a plan detail view taken on line 5 of Figs. 1 and 6, showing the supporting-foot of the bookcase. Fig. 6 is a side detail view of the same portion of the structure. Figs. 7 and 8 and 9 are sectional detail views taken on lines 7, 8, and 9, respectively, of Fig. 2. Fig. 10 is similar to Fig. 9 except that it shows the structure of the case as made with two sections side by side, with shelves extending in opposite directions. Fig. 11 is a detail sectional view showing the position of the shelf and bracket with reference to each other in final position, the same being taken on line 11 of Fig. 2. Fig. 12 is a corresponding figure where the extending shelves referred to in describing Fig. 10 are used. Fig. 13 is a detail end view of a portion of the bracket looking in the direction marked by the arrow 13 in Fig. 2. Fig. 14 is a detail view showing the method of coupling the successive uprights together to form the case. Fig. 15 is a sectional detail view taken on line 15 of Fig. 1, showing the construction of the ornamental top for securing the case to the wall. Fig. 16 is a plan sectional view on line 16 of Fig. 15, showing the details of this ornamental top. Fig. 17 shows a modified form of structure for use where two cases back to back in the middle of the room are desired.

My invention in its simplest form consists of a structure made up of two uprights, with mechanism for supporting a series of shelves one above the other between these upright supports and mechanism for adjusting the shelves up and down for securing the top of the case to the wall. It should, however, be understood that by providing double brackets for supporting the opposite ends of successive shelves and then providing a proper number of upright supports the structure can be multiplied as many times as desired until the entire side of the room or all the sides of the room are completely filled with cases embodying my invention. For convenience I will describe the invention in its simplest form, as above referred to, and then illustrate by three figures, Figs. 10, 12, and 17, methods of duplication. Taking up such description of the minimum form of structure I first provide two right-angled base-castings 20, preferably of some ornamental construction, one form of which is shown in Fig. 6, having two base-plates 21 and 22 bearing on the floor, the length of the casting from the rear edge of the plate 21 to the front edge of plate 22 being preferably somewhat greater than the width of the largest books or other articles to be carried by the stand, this to prevent the case toppling over frontward.

Rising from these base-castings 20 are two channel-irons 23 and 24, secured to the casting 20 by bolt 25 and nut 26. Interposed between these channel-irons 23 and 24, preferably between the rear flanges, is a rack 28, having on its front edge the teeth or serrations 29. The rack holds the channels apart, so that a slot or opening 52 is left between the front flanges of the channels, the total breadth of the rack, as shown in Fig. 6, being less than the height of the channel-irons, so that the teeth 29 are within the spaces formed by the channel-irons and some little distance from the inner edges of the front flanges of the channels. (See Fig. 6.) The upright supports thus formed, consisting of the channels 23 and 24, with the rack between them, are secured together at the bottom by the bolts 25, as heretofore described, and at the top by other bolts 30, secured in position by nuts 31. (Shown in Fig. 1.) Additional bolts are inserted at such points between the top and the bottom, as the load to be carried seems to require. The two upright supports just described are secured in a parallel upright position at a certain distance from each other by angle-iron 32, having lugs 33, and the nuts 31 bear against them, thereby securing the angle-iron 32 rigidly in position. In a similar manner I secure the uprights at the bottom in parallel position by means of the angle-iron 34, having lugs 35. The bolts 25 pass through these lugs and, as heretofore described, are secured in position by nuts 26. If greater rigidity is desired, additional angle-irons may be interposed between the angle-irons 32 and 34. In order to secure the structure firmly in position, I provide, first, holes 37 in the base-plates 21 and 22, through which screws or bolts may be inserted to fasten the structure to the floor, and, second, at the top I provide a novel adjustable form of coupling consisting of two castings 40 and 41. (Illustrated in detail in Figs. 15 and 16.) The castings 40 and 41 are exactly alike as far as external appearance is concerned (see Fig. 1) and each have projecting from their bases extension-pieces 43, adapted to pass down between the tops of the channel-irons 23 and 24. These projecting pieces 43 are made of such a size that taken together they are of sufficient thickness to act as a block or wedge and hold channels 23 and 24 apart against the tightening action of bolts 30, thereby keeping the edges of the channels a sufficient distance apart, so that the edges of the slot 52 will always be parallel to each other. The casting 40 has upon its rear face a lug 45, through which a screw may be passed and secured to the wall. In the operation of this part of the invention I leave the nut 30 a little loose and insert the casting 40 in position, as shown in Fig. 15, until the ridge 47 comes in contact with the top of the channel, as shown. I then insert the screw 46 into the wall and tighten it, so that the casting 40 is securely fastened to the wall. I now slip the casting 41 in position, with its lower portion 43 in between the channels and adjacent to the channel 23, as shown, and then tighten the bolt 30 by means of the nut 31, thereby securing the ornamental top in position, and consequently the whole shelving to the wall.

I now provide a series of shelf-brackets 50, made preferably of cast metal and of sufficient width, as shown in Fig. 2, to take the books or other articles of the desired width. On the upper rear corner of each of these shelf-brackets I provide lugs 51 of a width which will allow of their passing through the slot 52, formed by the front edges of the channel-irons 23 and 24, as heretofore described. On the rear of these lugs 51 are flanges 53 and 54 of such a width that they engage the channel-irons adjacent to the slot 52, as shown in Fig. 7, and of such a thickness that they are free to move up and down within the space between the rack 28 and the edges of the channel, as shown in Figs. 2 and 7. At the rear edge of each of these brackets 50 I provide teeth 56, adapted also to pass through the slot 52 and to fit into the notches 57 between the teeth 29 on the rack 28. It will thus be seen that the load on the shelf-bracket 50 will tend normally to force these teeth 56 against the rack and pull the flanges 53 and 54 against the inside of the channel-irons, thereby securing the shelf-bracket in position; but if the outer end of shelf-bracket 50 be elevated a sufficient distance, so that the tooth 56 clears the teeth 29, the bracket may be moved up and down, flanges 53 and 54 bearing against the inside of the channel. In order to detachably lock the part in position, I provide upon the under side of the bracket 50 two lugs 60 and 61, between which is placed the thumb-nut 62. Through these two lugs and this thumb-nut I pass a screw 63, carrying on its end a T-shaped portion 64 of sufficient width, as shown in Fig. 8, to engage the edges of the channels 23 and 24 and of a sufficient thinness to allow of considerable play between it and the teeth of the rack.

If now with the shelf-bracket in the position as shown in Fig. 2 I desire to lock it in position so that it cannot be accidentally raised or lowered, I simply tighten the thumb-nut 62 until the T-shaped piece 64 bears against the edge of the channel, as shown, in which position it is impossible to move the tooth 56 out of engagement with the rack, and therefore it is impossible to move the shelf-bracket 50 up or down. If now it is desired to move the shelf-bracket, I simply loosen the thumb-nut 62, thereby moving the T-shaped piece 64 a sufficient amount, so that the tooth 56 clears the teeth of the rack 28, in which position the shelf-bracket may be moved up or down, as heretofore described.

On the lower edges of the brackets are flanges 65, adapted to carry the end of an ordinary shelf or one of any other desired construction. In order to lock these shelves in

position so that when a person using the bookcase grasps the shelf, the shelf and books cannot be accidentally pulled out, perhaps to the physical injury of the person, I provide on the rear of the bracket a lug 67, adapted to fit into the slot 68, cut in the end of the shelf 69, and at the front end of the shelf I place a screw or other projecting member 70, adapted to enter the cam-slot 71, cut in the bracket. This cam-slot has its entrance 72 somewhat above the position of the screw 70 when the shelf is in a horizontal position and its other end terminating in the portion 74, which is on a level and in an exact position to allow the screw 70 to rest in it when the shelf is on a level. It will readily be seen that in order to insert the shelf I first place it with its rear portion adjacent to lug 67 and the screw 70 opposite the entrance 72 of the cam-slot 71. I then shove the shelf back, and as I do so the rear end of the shelf travels on the lug 67 and the screw at the front end passes through the cam 70 down to the portion 74, in which position the shelf is level. If now a person using the case grasps the shelf 69 and attempts to pull it out by moving it directly in a horizontal position, the screw 70 will bear against the upright portion 75 of the shelf-bracket 50 and the shelf cannot be moved. By simply raising the front of the shelf a little the screw 70 travels out of the cam through the opening 72 and the shelf may be removed. It should of course be understood that the shelf-castings 50 at the opposite ends of the shelf are provided with these lugs and slots, as shown. The opposite ends of the shelves themselves are provided with the slots 68 and the screws.

In the simple form of construction here shown I provide the flange 65, the lug 67, and the cam-slot 71 on only one side of each casting 50, thereby giving the ends of the case a smooth and ornamental appearance. If now it is desired to duplicate the structure as heretofore referred to, I provide additional upright supports and intermediate shelf-castings, as shown in Figs. 10 and 12, having duplicate flanges 65 extending in opposite directions, so that the shelf 69 may be inserted extending out in one direction and shelf 77 may be inserted extending from it in the other direction. They also have lugs 67 and cam-slots 71 on opposite sides. By duplicating this construction the case may be extended around the room. Where it is desired to have the cases back to back in the middle of the room, I adopt the modified form shown in Fig. 17, using wider channels and a two-faced rack, as shown, so that brackets 50 may be inserted from opposite sides of the support. It is of course necessary in this construction to also provide a foot-bracket-duplicating bracket 20—*i. e.*, extending in opposite directions—so as to give the upright support in two directions.

In the general operation of my invention I provide the mechanism herein just described, leaving the ornamental casting 40 and 41 off until the proper number of shelf-brackets 50 have been inserted from the top in the slots 52. I then insert the casting 40 and secure the top of the case in position. I now take opposite shelf-brackets 50 and adjust them up or down until their opposite flanges 65 are parallel to each other and place on them the shelves in the manner heretofore described. If at any time larger books or packages are to be used on the case, I move the shelves up or down, as needed, or take out a set of brackets for one shelf entirely, or if smaller books are desired I can insert additional sets of shelf-brackets through the notches 80, cut in the channels near the center of the upright for the purpose. If it is desired to move the case from one building to another or from one city to another, I can by methods readily apparent from the foregoing description take the structure apart and pack it in a small space for shipping. This of course applies to packing it for shipment from the factory to the place where first used.

I do not wish to be understood as limiting myself to the exact details of construction, which may be varied within reasonable limits without departing from my invention.

Having thus described my invention, what I claim as new, and on which I desire Letters Patent, is—

1. In an adjustable shelving the combination of a vertical support having a rack or other notched member mounted within a recess running vertically of said support, a shelf-bracket having a rigid T-shaped piece entering a slot in the support running parallel to the rack-face and slidably bearing against the inside of the support, a tooth on said bracket engaging with the rack and an adjustable T-shaped piece mounted upon said bracket with its T portion entering said recess in the upright and bearing against the inside of the support, and mechanism for moving said movable T-shaped piece into engagement with the support whereby said shelf-bracket may be locked in different positions on the support.

2. In an adjustable shelving the combination of a vertical support made up of two channel-irons placed with their angular edges toward each other the space between these edges forming a slot, a rack mounted within said support and a shelf-bracket having a rigid T-shaped piece entering said slot and bearing against the insides of the flanges of the channel-irons in such a way that the bracket may be moved up or down the support, a tooth upon the bracket entering said slot engaging with the rack, an adjustable T-shaped piece mounted on the bracket and entering said slot with the T portion adjacent to the inner edges of the flanges of the channel-irons and mechanism for moving said second T-shaped piece into detachable engagement with the channel-irons whereby the bracket is locked in a predetermined position.

3. In an adjustable shelving, the combination of an upright support having a slot running vertically along one side, a rack mounted within said upright support parallel to said slot, a movable shelf-bracket having a T member on its upper portion entering said slot and slidably bearing against the inside of the support whereby the said shelf may be moved up or down the support, a tooth on the lower portion of said bracket adapted to engage said rack and mechanism mounted on said bracket engaging with the support, adapted to lock said tooth in detachable engagement with the rack, whereby the bracket is locked in the desired position.

4. In an adjustable shelving the combination of an upright support having a slot running vertically along one side, a rack mounted within said upright support, a movable shelf-bracket so mounted near its upper end that it can be moved up or down the support, a tooth on said bracket entering said slot and adapted to engage the rack, a movable screw mounted on the bracket entering said slot and having a head within the support adapted to engage the support, and a thumb-nut mounted on said bracket adapted to control the engagement of said movable member with the support whereby the tooth on said bracket may be locked to the rack in a desired position.

5. In an adjustable shelving in combination with an upright support having a vertical slot in its face and a rack within the support opposite said slot, a shelf-bracket frame having lugs extending from its upper portion adapted to engage with said support inside said slot, a tooth on its lower portion adapted to enter said slot and engage said rack, two lugs on said bracket near said tooth, a horizontal screw mounted in said lugs and a thumb-nut on said screw between said lugs, said screw having an enlarged head adapted to normally lie inside the upright support and bear against the inner edges of the sides of the slots substantially as described.

6. In an adjustable shelving, the combination of an upright support, a rack running vertically along it, a movable shelf-bracket so mounted near its upper end that it can be moved up and down the support, a tooth on the lower portion of the bracket adapted to detachably engage the teeth of the rack, a movable screw mounted on the bracket near said tooth in detachable connection with the upright support and a thumb-nut mounted on the bracket adapted to control said movable screw whereby the tooth on the bracket may be locked to the rack in a desired position.

7. In an adjustable shelving, the combination of a vertical upright adapted to support shelves, a detachable member adapted to engage the top of said support and also adapted to be rigidly secured to the wall and a cover adapted to engage said upright and conceal the means by which said attaching member is secured to the wall.

8. In an adjustable shelving the combination of a vertical upright having an opening in the upper end thereof, a plug adapted to fill a portion of said opening having a top portion adapted to be secured to the wall, and another plug adapted to also fit in the remaining space of said opening left in the top of the support after the first plug is inserted, having a top so shaped as to conceal the attachment of the first plug to the wall, whereby the top of the upright support is secured to the wall in a neat and ornamental manner, substantially as described.

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