R. SCHUFTAN.

SHELF FRAME WITH VERTICALLY ADJUSTABLE SHELVES.

APPLICATION FILED OCT. 4, 1910.

984,857. Patented Feb. 21, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

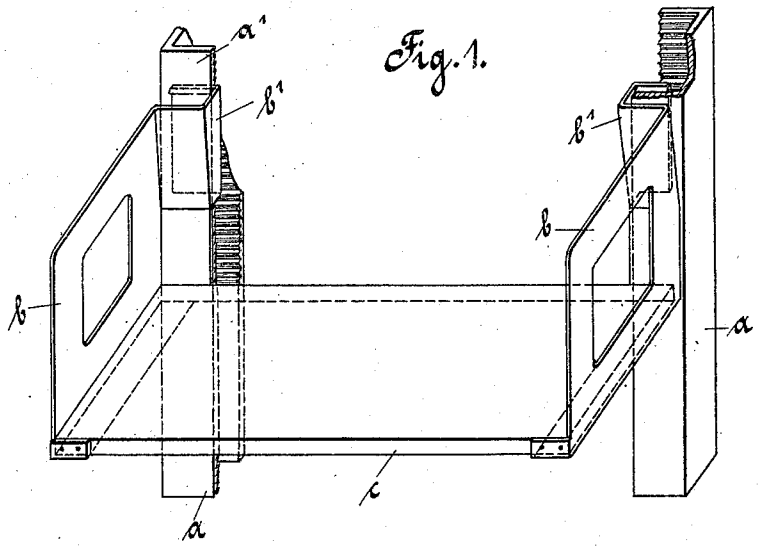
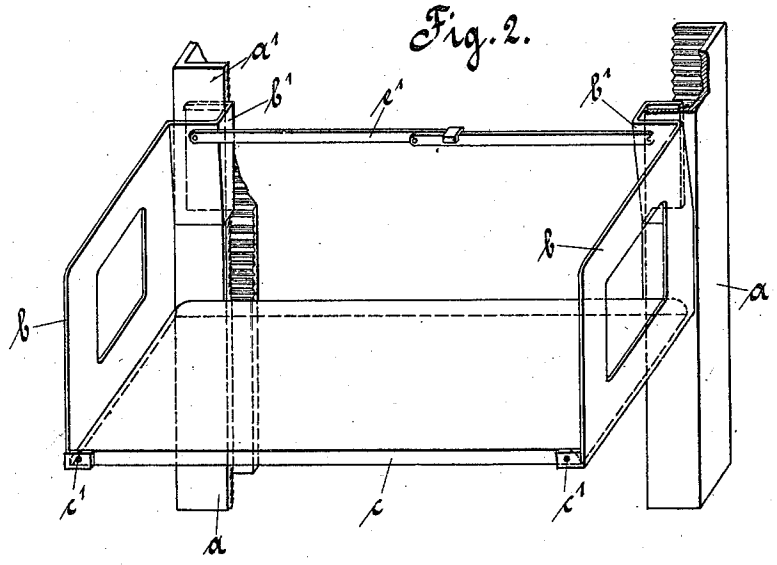


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 4.

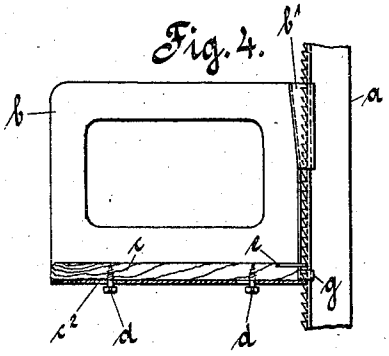


Fig. 5.

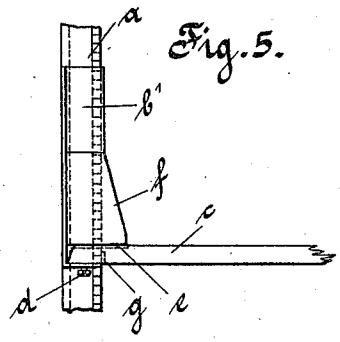


Fig. 6.

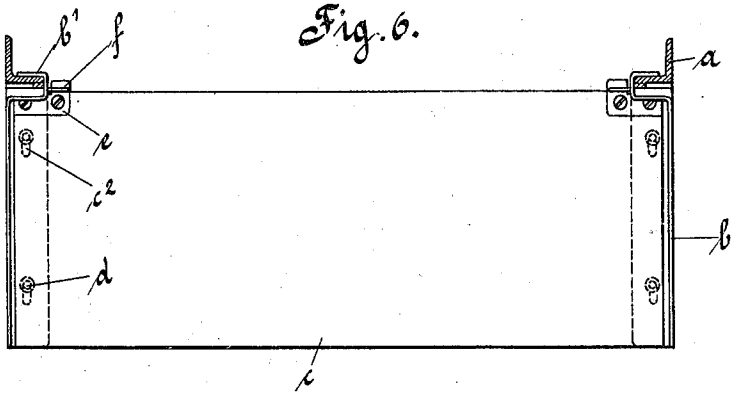
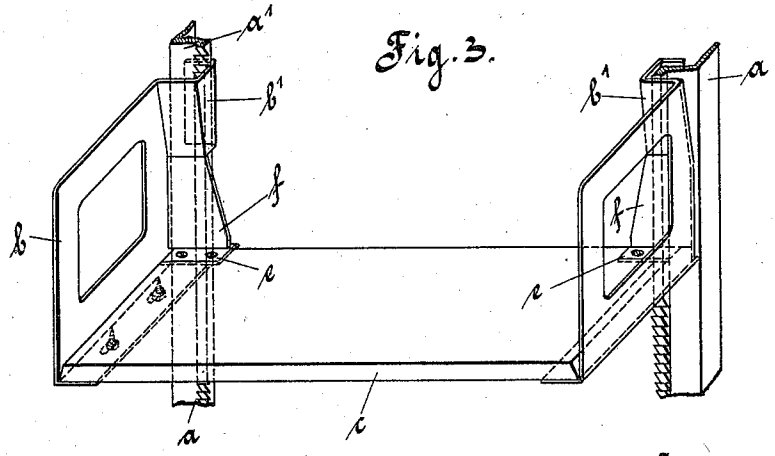


Fig. 3.



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UNITED STATES PATENT OFFICE.

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SHELF-FRAME WITH VERTICALLY-ADJUSTABLE SHELVES.

984,857. Specification of Letters Patent. **Patented Feb. 21, 1911.**

Application filed October 4, 1910. Serial No. 585,218.

To all whom it may concern:

Be it known that I, RICHARD SCHUFTAN, engineer, residing at Berlin, in the Kingdom of Prussia and Empire of Germany, have invented certain new and useful Improvements in Shelf-Frames with Vertically-Adjustable Shelves, of which the following is a specification.

The present invention relates to a shelf-frame with vertically adjustable shelves, the shelf brackets of which are bent over in such a manner as to each grasp one flange of a vertical post of the frame. The brackets are bent over in a U-shape in a direction vertical to the planes of said brackets and grasp a flange of a frame post extending in the direction of the width of the frame; the said post may be either of a U-, a L- or any other suitable section. The shelf brackets according to the present invention may be fitted with the shelf boards proper before the said brackets are secured into the frame. It is furthermore not necessary to remove the articles resting on such shelves for the purpose of fitting the shelves to the frame or removing them therefrom respectively, as it is possible to remove the entire shelf by simply bending or swinging the brackets toward the center. For the purpose of preventing the shelf from being unintentionally detached from the frame, special safety devices are provided, which are so constructed, that they can be conveniently operated, without it being necessary to reach behind say the books on the shelf.

In the accompanying drawing several constructional forms for carrying out the present invention are exemplified.

Figure 1 is a perspective view of the shelf arrangement, in which it is necessary to bend the brackets toward the center for detaching them from the frame. Figs. 2 and 3 are perspective views of shelf arrangements, in which the brackets are swung toward the center two different methods of locking the brackets in position being shown in these figures. Fig. 4 is a side view of the constructional form shown in Fig. 3. Fig. 5 is a front view of the same. Fig. 6 is a plan view of the same.

The shelf frame consists of the upright posts a, which are coupled and braced together by known means, and of brackets b vertically adjustable on the said posts between which the shelf boards c are secured. The posts are made of rolled iron of suitable section, the one flange of which extends in the direction of the width of the frame. The brackets b are provided at the point where they are intended to grasp the flange of the post with a U-shaped bend b^1, with which they fit around the flange a^1 of the frame post, extending in the direction of the width of the frame. This bend preferably commences at half the height of the brackets b and widens toward the top in the direction of the brackets, so that when the shelves c are in a horizontal position the upper rear part and the lower front part of these bends b^1 bear against the rear and the front side respectively of the post flange a^1.

The brackets may be secured to the posts by any suitable means. In Figs. 1 and 2 in the accompanying drawing the upper rear part of the bend is fitted with teeth or grooves, which engage with corresponding grooves in the post. At the great pressure on the bearing surfaces between post and bracket the friction alone will, however, suffice to hold the bracket in position. According to Fig. 3 the bracket is held in position by means of teeth provided on the front side of the posts, into which teeth engages a tooth arranged at the lower end of the bracket.

For varying the level of the shelf the brackets b are turned around the narrowest point of the bend, so that post and sides are disengaged and the shelf can be raised or lowered. As the brackets are made of thin sheet metal only and are therefore flexible they may be bent inward until the bend is disengaged from the post. The whole shelf may then be drawn forward away from the posts, particularly when, as shown in the drawing, the part of the bend reaching around the post is discontinued below the narrowest part of the bend.

For facilitating the inward movement of the brackets b, particularly when two shelf frames stand close beside each other and it is not possible to seize the brackets on their sides, these brackets may be hinged to the bottom, as shown in Figs. 2 and 3. In the former instance they will swivel around the points c^1, in the latter instance the brackets are provided with slots c^2 in those parts on which the shelf boards rest, through which slots screws d are screwed into the shelf boards thereby securing the latter to the brackets. These screws d are tightened

so far only as to allow of a certain movability of the brackets, so that the latter may be tilted toward the center.

For preventing the arrangements as shown in Figs. 2 and 3 from being unintentionally detached from the post the brackets must be braced against each other or the shelf board. This may be obtained as illustrated in Fig. 2 by a linked bar e^1 coupled to the brackets. It will, however, be preferable to employ the arrangement shown in Figs. 3–6, as this will not necessitate the operator having to reach behind the books on the shelf. This arrangement consists of a stop plate e screwed to the back edge of the shelf boards and of projections f on the brackets, the lower edge of which projections f are in the same level with the upper edge of the stop plates e. When in normal position these projections f rest on the stop plates e so that it is impossible to bend the backets toward the center. When the shelf is to be removed, it is seized and drawn so far forward, as the slots e^2 will allow. The stops e thereby release the projections f, and the brackets may be tilted toward inside.

For affording a better guidance of the brackets along the posts the former may be provided as shown in Figs. 5 and 6, at their lower ends with a lug g, which is in the same plane with the part of the bend parallel to the brackets.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare, that what I claim is:

1. In shelf-frames with adjustable shelves in combination frame posts having flanges extending in the direction of the width of the frame, brackets having bent over sections with which they grasp the said flanges of the frame and shelf boards, said bent over sections being of a U-shape and vertical to the plane of the brackets and said brackets being arranged and connected to the shelf boards in such a manner as to allow of the brackets being tilted over toward the center and being disengaged from the frame posts for the purpose described.

2. In shelf-frames with adjustable shelves in combination frame posts having flanges extending in the direction of the width of the frame, brackets having bent over sections with which they grasp the said flanges of the frame, shelf boards, said bent over sections being of a U-shape and vertical to the plane of the brackets and said brackets being arranged and connected to the shelf boards in such a manner as to allow of the brackets being tilted over toward the center and means for preventing an unintentional disengagement for the purpose described.

3. In shelf-frames with adjustable shelves in combination frame posts having flanges extending in the direction of the width of the frame, brackets having bent over sections with which they grasp the said flanges of the frame, shelf boards, said bent over sections being of a U-shape and vertical to the plane of the brackets and said brackets being arranged and connected to the shelf boards in such a manner as to allow of the brackets being tilted over toward the center and projections provided on said brackets vertically to their plane and adapted to engage with stop plates arranged at the shelf boards for the purpose described.

4. In shelf-frames with adjustable shelves in combination frame posts having flanges extending in the direction of the width of the frame, brackets having bent over sections with which they grasp the said flanges of the frame, shelf boards, said bent over sections being of a U-shape and vertical to the plane of the brackets and said brackets being arranged and connected to the shelf boards in such a manner as to allow of the brackets being tilted over toward the center and of the shelf-boards being moved in a horizontal direction on their brackets, projections provided on said brackets vertically to their plane and adapted to engage with stop plates arranged at the shelf boards for the purpose described.

5. In shelf-frames with adjustable shelves in combination frame posts having flanges extending in the direction of the width of the frame, brackets having bent over sections with which they grasp the said flanges of the frame, shelf boards, said bent over sections being of a U-shape and vertical to the plane of the brackets and said brackets being arranged and connected to the shelf boards in such a manner as to allow of the brackets being tilted over toward the center and of the shelf boards being moved in a horizontal direction on their brackets, projections provided on said brackets vertically to their plane and adapted to engage with stop plates arranged at the shelf boards and means for moving the shelf boards in the said manner thereby disengaging the said projections with said stop plates for the purpose described.

6. In shelf-frames with adjustable shelves in combination frame posts having flanges extending in the direction of the width of the frame, brackets having bent over sections with which they grasp the said flanges of the frame, shelf boards, said bent over sections being of a U-shape and vertical to the plane of the brackets and said brackets being arranged and connected to the shelf boards in such a manner as to allow of the brackets being tilted over toward the center and of the shelf-boards being moved in a horizontal direction on their brackets, projections provided on said brackets vertically to their plane and adapted to engage with

stop plates arranged on the shelf boards and slots in the brackets, through which the screws holding the shelf boards are screwed.

7. In shelf-frames with adjustable shelves in combination frame posts having flanges extending in the direction of the width of the frame, brackets having bent over sections with which they grasp the said flanges of the frame, shelf boards, said bent over sections being of a U-shape and vertical to the plane of the brackets and said brackets being arranged and connected to the shelf boards in such a manner as to allow of the brackets being tilted over toward the center and of the shelf-boards being moved in a horizontal direction on their brackets, projections provided on said brackets vertically to their plane and adapted to engage with stop plates arranged on the shelf boards and slots in the brackets, through which the screws holding the shelf boards are screwed, said screws not being fully screwed down and adapted to allow the said tilting of the brackets for the purpose described.

In testimony whereof I have affixed my signature in presence of two witnesses.

RICHARD SCHUFTAN.

Witnesses:

HENRY HASPER,

WOLDEMAR HAUPT.