(No Model.)

2 Sheets—Sheet 1.

D. E. HUNTER.

LIBRARY SHELVING, STACK, &c.

No. 605,291. Patented June 7, 1898.

Fig. 1.

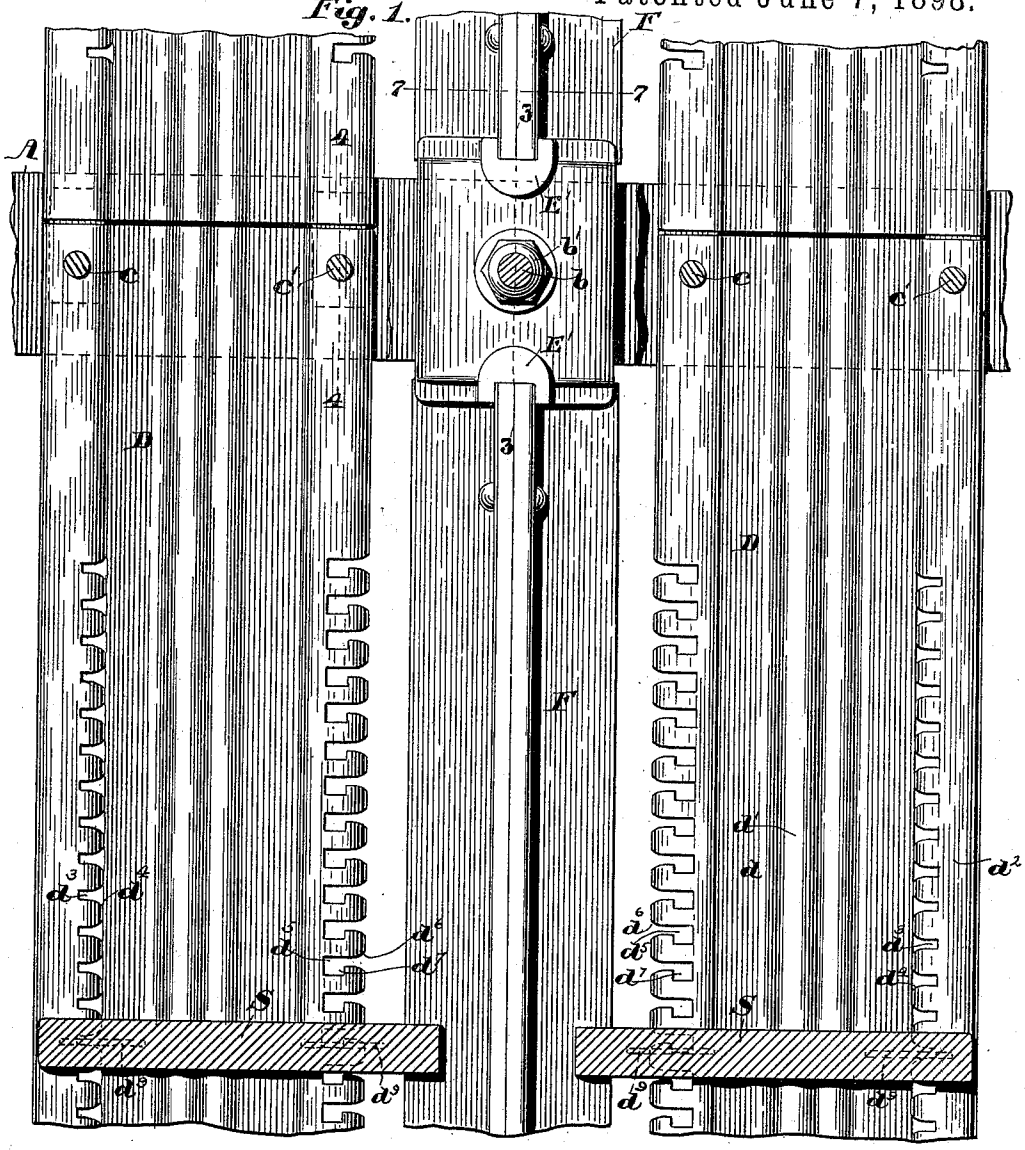
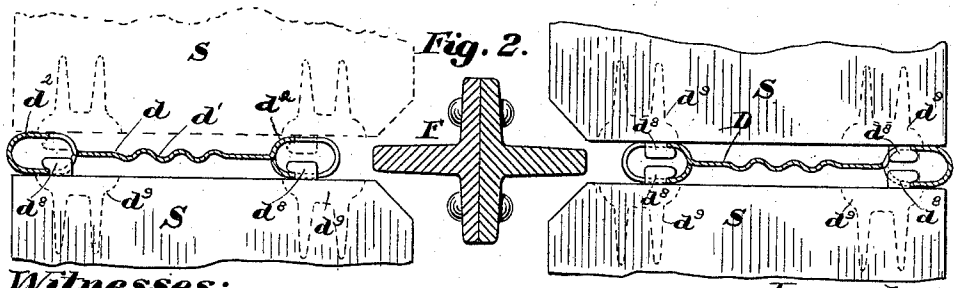


Fig. 2.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

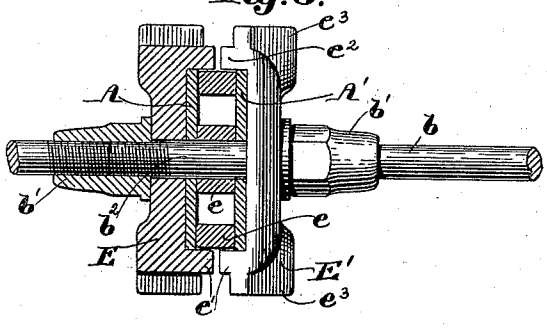


Fig. 4.

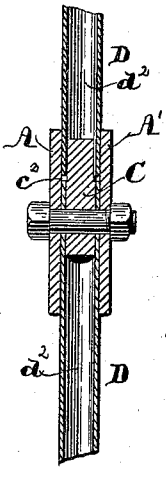


Fig. 5.

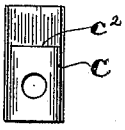


Fig. 6.

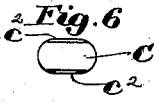


Fig. 7.

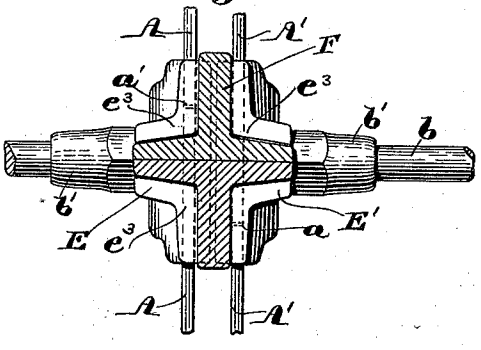
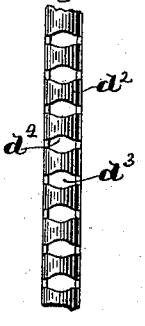


Fig. 8.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

DAVID E. HUNTER, OF CAMBRIDGE, MASSACHUSETTS.

LIBRARY SHELVING, STACK, &c.

SPECIFICATION forming part of Letters Patent No. 605,291, dated June 7, 1898.

Application filed January 6, 1898. Serial No. 665,793. (No model.)

To all whom it may concern:

Be it known that I, DAVID E. HUNTER, of Cambridge, county of Middlesex, State of Massachusetts, have invented an Improvement in Library Shelving, Stacks, &c., of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention is an improvement in library-stacks and the adjustable shelving thereof, and has for its primary object the provision of a stack which is economical of material and possesses extreme rigidity, lightness, compactness, and simplicity.

The details of construction and further advantages of my invention will be more particularly explained in the course of the following description and further defined in the accompanying claims, reference being had to the drawings illustrative of a preferred embodiment of my invention.

In the drawings, Figure 1 shows in elevation a portion of a library-stack constructed according to my invention, showing in detail two end standards supporting shelves, the latter being shown in section, the rear floor-beam being broken away to better show the standards. Fig. 2 is a transverse horizontal section thereof. Fig. 3 is a central vertical section on the line 3 3, Fig. 1. Fig. 4 is a central vertical section on the line 4 4, Fig. 1. Fig. 5 is a side elevation, and Fig. 6 a top plan view, of a filling-block. Fig. 7 is a transverse sectional view taken on the line 7 7, Fig. 1. Fig. 8 is a rear edge view of a portion of one of the standards.

The floor beams or plates A A', herein shown as arranged in pairs and connected by adjustable brace-rods *b* and nuts *b'*, may be of any suitable construction desired. Suspended by bolts *c c'* are sheet-metal standards D, which constitute a main feature of my invention. These standards are shown in side elevation in Fig. 1, in cross-section in Fig. 2, and in rear elevation in Fig. 4, viewing which it will be seen that they comprise a central web *d*, preferably corrugated longitudinally, as shown at *d'*, in order to strengthen them, and each having at its respective vertical edges a longitudinal projection or bead, herein shown as a flattened hollow roll d^2, the front roll being provided on each side with horizontal recesses, notches, or cuts d^3, preferably having flaring rear openings d^4, and the rear roll d^2 being provided with transverse horizontal notches or cuts d^5, also preferably having flaring mouths or lips d^6, said notches being offset or enlarged at their lower inner edges d^7, said offset portion thereof being in horizontal alinement with the notches d^3. It will be understood that in case these standards are used to support shelves on one side only it will be necessary only to have notches on one side of the standard, the opposite notches on both sides of the standards being herein shown for regular library-stack purposes, in which shelves S are supported, as indicated in Fig. 2; and also I wish it understood that while I have herein shown the stack as bent or formed from sheet metal I am in no wise limited to this material nor to other features of detail otherwise than as expressed in the claims hereinafter.

Coöperating with the notches d^3 and d^5, above explained, are lugs d^8, projecting from the ends of the shelves, these lugs being herein shown as extending from clips d^9, driven into the wood of the shelf, it being supposed in the illustrative embodiment of my invention herein presented that wooden shelves are used.

When it is desired to remove a shelf S from the standards D, all that is necessary is to raise the rear edge of the shelf sufficiently to disengage the rear lugs d^8 from the offset portions d^7 of the rear notches and then simply push the shelf back, thereby disengaging the pairs of lugs d^8 at the ends of the shelves from their notches, so that the shelf may be entirely removed or raised and lowered as desired. In the latter case the shelf is restored to supported position simply by pulling it forward, so that its pairs of lugs enter the proper notches d^3 d^5, whereupon the rear lugs drop by gravity into the offsets of the rear notches and are held locked therein by the shoulders of said offsets.

The standards D are supported at their upper ends between the floor-beams A A', being held rigidly therein by filling-blocks C, (shown in detail in Figs. 4, 5, and 6,) and at their lower ends the standards rest loosely between

said floor-beams, being held against any lateral vibration by the upper ends of the filling-blocks C, which enter them, being reduced in size above the shoulders c^2 in order to permit the standards to freely expand and contract under varying temperatures.

In my application Serial No. 613,888 I have shown a construction embodying filling-blocks, the construction herein shown being an improvement thereon, inasmuch as it maintains the standards in absolutely true vertical alinement by holding their lower ends between the floor-beams, which are tightly clamped on the upper ends of the standards below, the filling-blocks in the present instance, as explained, being reduced in size sufficiently to prevent any interference with vertical movement and yet serve accurately to maintain the true vertical alinement required of the standards.

In my before-mentioned application I have shown the floor-beams as spaced a considerable distance apart, whereas in my present application I have made a more rigid and compact structure by bringing the floor-beams together, not only thereby clamping the standards with a considerable bracing effect across the width or inner faces of the floor-beams, but causing said floor-beams to mutually brace each other, filling-rings or separators e being provided between the floor-beams at their ends, where they are clamped together by blocks E E′, (shown in detail in Figs. 1, 3, and 7,) the floor-beams preferably being overlapped, as shown in Fig. 7, where it will be seen that the contiguous floor-beams A′ abut at a and the contiguous floor-beams A abut at a', the respective overlapping floor-beams A A′ being perforated, as indicated in the sectional view Fig. 3, so as to be held firmly against endwise movement by a stub-bolt b^2, entering at its respective ends the nuts b', which join the clamping-rods b.

The floor-beams rest on ledges e' on the inner faces of the blocks E E′, similar ledges e^2 being provided adjacent the upper edges of said blocks for the purpose of supporting vertical posts F, herein shown as made up of two T-irons bolted together.

The blocks E E′ are provided at their upper and lower sides with angular projections e^3, which form between them pockets or recesses to receive the adjacent ends of the posts F and retain them in proper supporting position.

From the above description it will be evident to those familiar with the art that the parts are readily put up and taken down, and, because of their simplicity and fewness in number, they are not liable to get out of order, are readily repaired, and broken or injured parts may be easily replaced without disturbing the rest of the stack.

While I have herein shown preferred embodiments of my invention and have described the details thereof, I wish it understood that I am not limited thereto, but that many changes in form, proportions, and relations of parts may be resorted to within the spirit and scope of my invention.

By forming the supporting-notches on the rear sides of the projections or beads the latter present smooth unobstructed edges for the entrance of the books to the shelves, so that when the books are put upon the shelves there is no possibility of their coming in contact with any rough edges, and thereby becoming injured.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A library-standard having adjacent its vertical edges longitudinal projections rigidly spaced apart and each provided with a series of transverse notches in its rear edge, the respective notches of the two projections being in substantial horizontal alinement, and the rear notches having engaging shoulders, said notches being adapted to receive shelf-lugs slid into them horizontally from the rear, and locked therein by dropping into engagement with said shoulders, substantially as described.

2. A library-standard comprising a central web having at its edges longitudinal projections or beads, the front projection having a series of horizontal notches formed therein on its rear edge at each side of said web, and the rear projection having a series of notches cut transversely thereof across its rear edge, the latter series of notches containing locking-offsets in their lower sides, substantially as described.

3. A library-standard composed of sheet metal rolled over at its opposite vertical edges to form hollow beads or projections, the front roll having on its opposite sides at the rear part of the roll opposite series of horizontal notches, and the rear roll having at its rear part and extending into its opposite sides series of horizontal notches, the said notches having flaring lips at their rear ends for the ready reception of shelf-lugs, substantially as described.

4. A support for library-shelving comprising opposite standards, shelves to be supported thereby, said shelves having adjacent their four corners fixed lugs projecting therefrom, and said standards having recesses with openings at the rear only for the reception of said lugs, whereby a shelf is put in position by forward movement from the rear and is removed by movement toward the rear, certain of said recesses having offsets and shoulders to receive and engage certain of said lugs and lock the shelf in position when properly placed, substantially as described.

5. In a library-stack, a plurality of standards for supporting the shelves, said standards being arranged vertically one above the other, floor-beams in pairs, said standards being rigidly clamped at their upper ends between said floor-beams and extending loosely between said floor-beams at their lower ends,

and means to prevent lateral movement in any direction of said lower ends while permitting vertical movement due to contraction and expansion thereof, substantially as described.

6. In a library-stack, a standard for supporting the shelves, having hollow rolls or beads at its opposite vertical edges, filling-blocks rigidly clamped in said rolls at the upper ends of said standard, said filling-blocks having reduced portions projecting above said standard adapted to receive the lower end of a similar standard placed vertically thereabove, substantially as described.

7. In a library-stack, horizontal floor-beams, separators therefor, clamping-blocks engaging said beams on their outer sides, in combination with supporting-posts vertically alined, said blocks having vertical projections at their top and bottom sides to inclose and form pockets for the said posts, retaining the latter from relative lateral displacement, and means to clamp said blocks and beams together, substantially as described.

8. In a library-stack, horizontal floor-beams, separators therefor, clamping-blocks engaging said beams on their outer sides, said blocks having inwardly-projecting ledges on which said beams may rest, in combination with supporting-posts vertically alined, said blocks having vertical projections at their top and bottom sides to inclose and form pockets for the said posts, retaining the latter from relative lateral displacement, and means to clamp said blocks and beams together, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DAVID E. HUNTER.

Witnesses:
GEO. H. MAXWELL,
EDITH M. STODDARD.