No. 619,418. Patented Feb. 14, 1899.

D. E. HUNTER.

ADJUSTABLE LIBRARY SHELVING.

(Application filed Jan. 6, 1898.)

(No Model.)

Fig. 1.

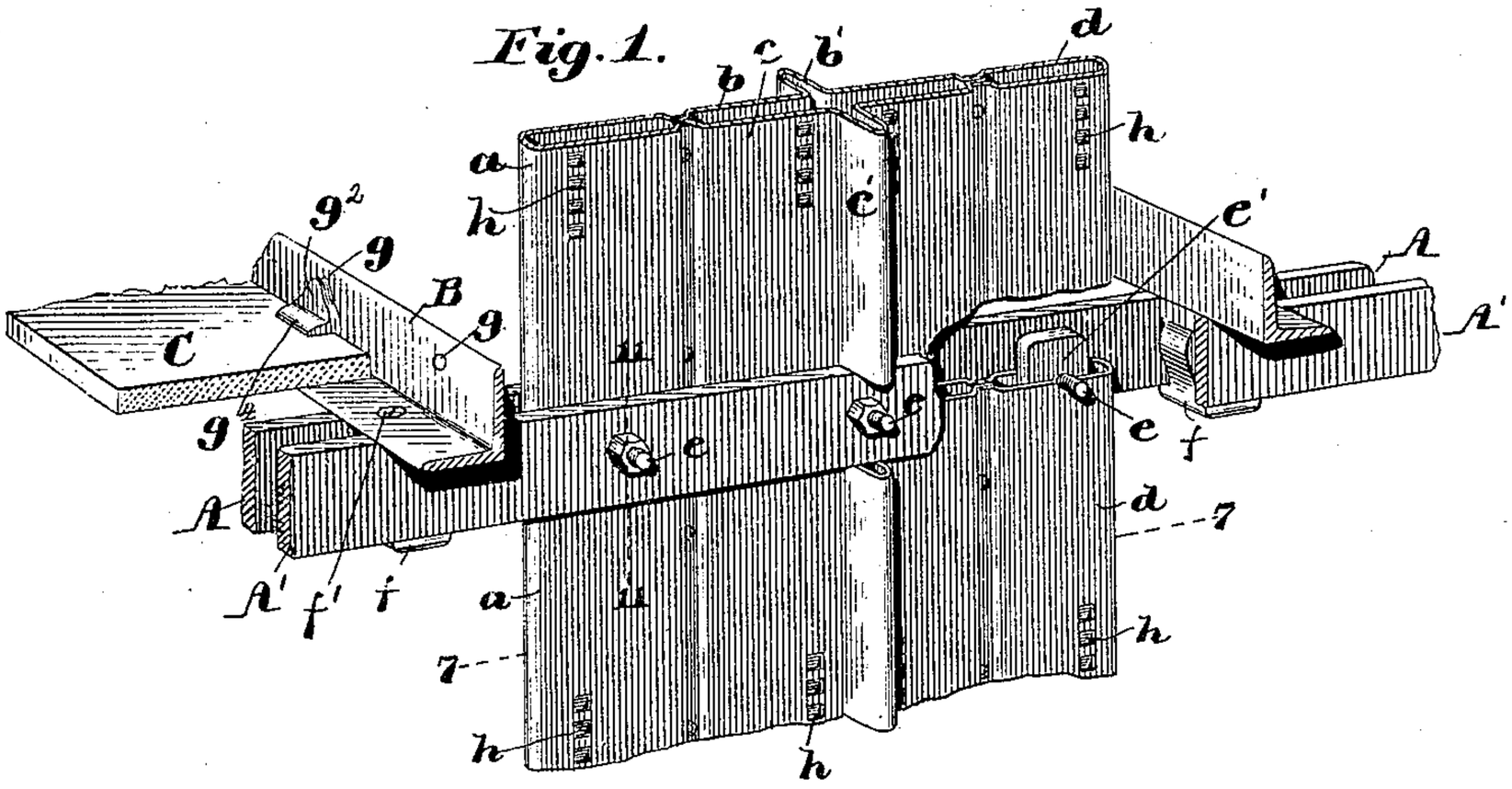


Fig. 2

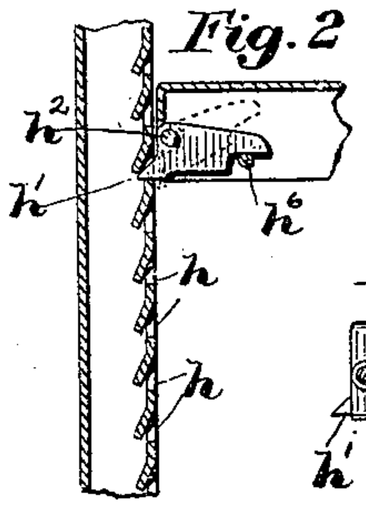


Fig. 3.

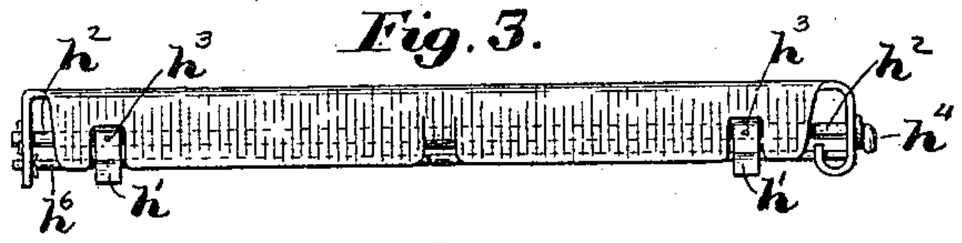


Fig. 4

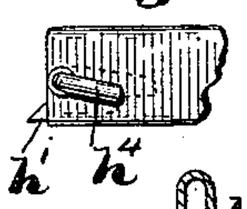


Fig. 5

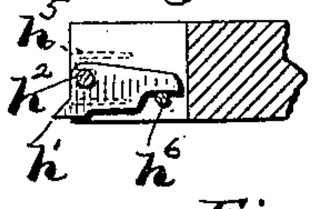


Fig. 6

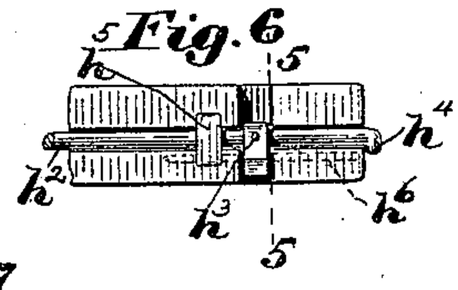


Fig. 7.

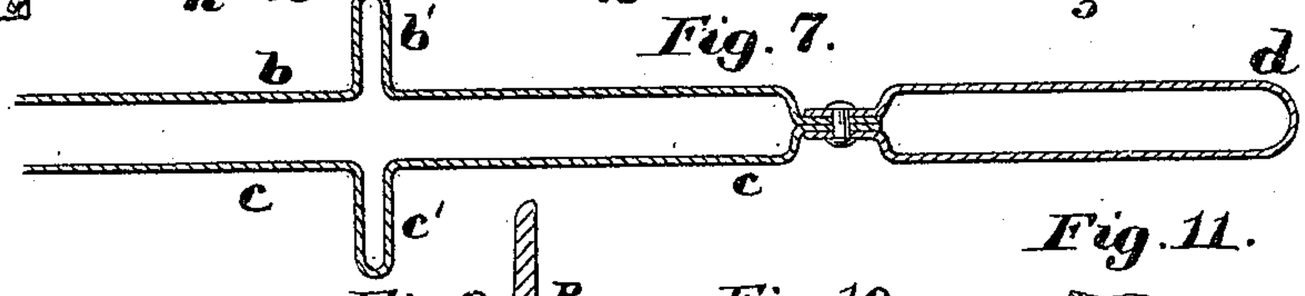


Fig. 8.

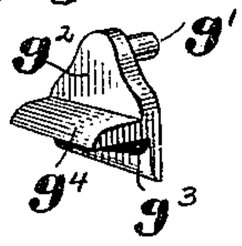


Fig. 9.

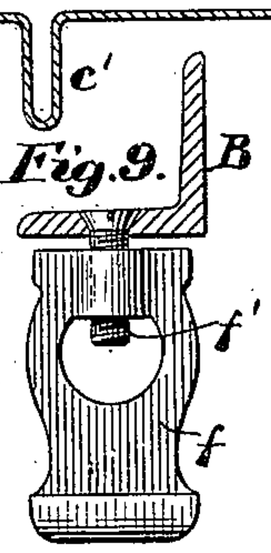


Fig. 10.

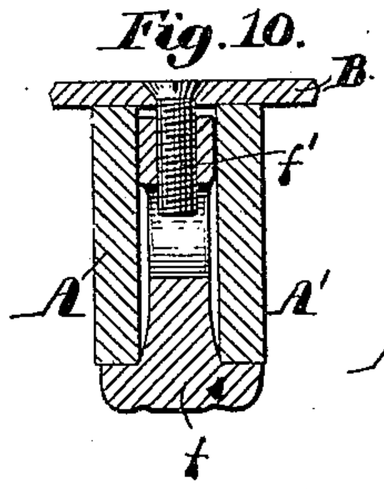
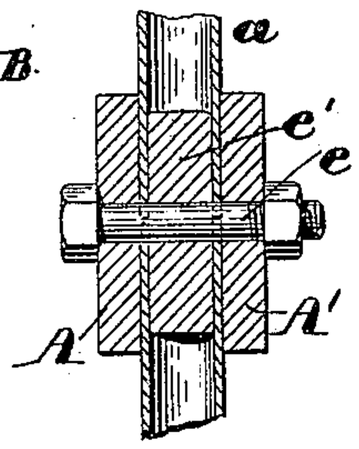


Fig. 11.



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Attys.

UNITED STATES PATENT OFFICE.

DAVID E. HUNTER, OF CAMBRIDGE, MASSACHUSETTS.

ADJUSTABLE LIBRARY-SHELVING.

SPECIFICATION forming part of Letters Patent No. 619,418, dated February 14, 1899.

Application filed January 6, 1898. Serial No. 665,792. (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 Adjustable Library-Shelving, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention has for its object the provision of a shelf-support or locking-dogs carried by the shelf, by means of which the latter is automatically engaged with the standards as the shelf is adjusted to the height desired, the dogs being preferably operated simultaneously.

A further feature of my invention relates to the standards, whereby an inexpensive strong rigid structure is made of sheet metal of ordinary widths. The standards are secured to the floor-beams or other stack structure, and to the latter the usual glass floors are fastened in novel manner, all according to my present invention.

The various features and advantages of my invention will be hereinafter fully set forth in detail, and more particularly pointed out in the accompanying claims.

In the drawings, Figure 1, in perspective, shows a portion of a library-stack constructed according to my invention. Fig. 2, in vertical section, shows my improved shelf in operative position on a standard. Fig. 3 is an end elevation of a shelf. Fig. 4 is a front edge view of a shelf, adjacent one edge thereof. Fig. 5 is a vertical sectional view taken on line 5 5, Fig. 6. Fig. 6 is an end elevation of a shelf, looking toward the right, Fig. 4. Fig. 7 is a horizontal section taken on line 7 7, Fig. 1. Fig. 8 shows in perspective the locking-clip to hold the flooring to the cross-girders. Figs. 9 and 10 are respectively cross-sectional and longitudinal sectional views of the cross-girder and its fastening at the juncture thereof with the floor-beam. Fig. 11 is a sectional detail taken on line 11 11, Fig. 11.

In the preferred embodiment of my invention a plurality of sheets of rolled steel or other sheet metal (four sheets *a b c d* being herein shown) are centrally crimped or rolled over into U shape, the sheets *b c* being also laterally bent at their free edges, thereby to provide central ribs *b' c'*, standing opposite each other, and the opposite meeting edges are then crimped together, overlapped, and riveted, as shown in Figs. 1 and 7.

The standards, as above described, are preferably made in sections to extend from one floor to another and are bolted to the floor-beams A A' by means of bolts *e*, passed therethrough or let into their end edges, as shown in Figs. 1 and 11, filling-blocks *e'* being interposed to strengthen and brace the hollow standards.

The framework is completed by clamping the cross-girders B to the floor-beams whenever desired by means of T-headed clamps *f*, secured by tightening-screws *f'*, Figs. 9 and 10, to the girders, the latter being L or T irons having their upright flanges perforated at *g* to receive the shanks *g'* of the clips g^2.

The usual floor-plates C of glass are placed on the girders B against the depending wings g^3 of the clips g^2 and beneath the overhanging flanges g^4 thereof, the plates being thereby rigidly and immovably secured in place without other fastenings.

The sheet-metal standards have notches or ledges *h* stamped or punched therein in a plurality of corresponding series, as desired, two series being herein shown for the end of each shelf. Coöperating with these notches or ledges *h* are supporting devices mounted on the ends of the shelves, preferably in the form of gravity-dogs *h'*, herein shown as supported on a rod h^2, being fixed thereon by pins h^3, the rod being pivoted in the shelf and having its forward end projecting therefrom to constitute a handle h^4 for manipulating the dogs.

In Fig. 3 I have shown a sheet-metal shelf bent down at its edges and cut away to form pockets to receive the dogs *h'*, and in Figs. 4 to 6 I have shown a wooden or other solid shelf grooved and recessed to receive the rod h^2 and dogs *h'*, the former being secured by staples h^5. A stop-bar h^6 extends beneath the extended rear ends of the dogs *h'* to support them in substantially horizontal position, and preferably the notches *h* will have sloping upper sides, as shown in Fig. 2, so that the shelf may be readily raised without manually operating the dogs for the purpose.

When it is desired to lower a shelf, the sev-

eral dogs h' are turned or moved back out of engagement with the notches or ledges h by turning the handle h^4 in case the pivoted form of my invention, as shown, is used. The shelf is then lowered as desired, and the dogs are thrown forward to engage the standard by dropping the handle.

Various changes in details and other variations in arrangement and combination of parts may be resorted to without departing from the spirit and scope of my invention.

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

1. In combination with a standard having ledges, a shelf, provided with supporting devices therefor, a plurality of said devices being permanently mounted in each end of the shelf, means for simultaneously moving said plurality of supporting devices out of engagement with the ledges, and means to automatically move said devices into supporting engagement with the said ledges, substantially as described.

2. As an article of manufacture, a shelf, having a rod permanently pivoted in its ends, and gravity-dogs fixed on said rod to be projected beyond the ends of the shelf, said dogs being adapted to be engaged with ledges of a library-standard, substantially as described.

3. As an article of manufacture, a shelf, having gravity-dogs mounted in its ends, and means external to said shelf to operate said dogs against their gravity, substantially as described.

4. As an article of manufacture, a shelf, gravity-dogs mounted in its ends, means to raise said dogs, and stops to limit the downward movement of the dogs, substantially as described.

5. A library-standard composed of sheet metal, said standard having a middle portion, provided with laterally-extended central ribs b', c', and edge portions a, d, the said latter portions having double separated walls, and being fastened at their inner edges to said middle portion, substantially as described.

6. A library-standard made up of sheet-metal sections, each section being composed of a middle portion and two edge portions, said middle portion having a laterally-extended central rib, and said edge portions being each doubled over on itself and fastened at their inner edges to said middle portion, spacing-blocks being interposed in said edge portions at the ends of the sections, and bolts passed through said blocks and adjacent portions of the standard, substantially as described.

7. In a library-framing, angle-irons having a vertical flange, and holes in said flange, combined with clips, provided with rearwardly-extended shanks to fit said holes, and having downwardly and forwardly extended wings, adapted to receive the floor-plates, substantially as described.

8. The combination with the floor-beams in pairs, of the cross-girders thereon, inverted-T-headed clamps between said beams being engaged therewith, and screw-bolts being tapped through said girders into said clamps, 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,
GEO. W. GREGORY.