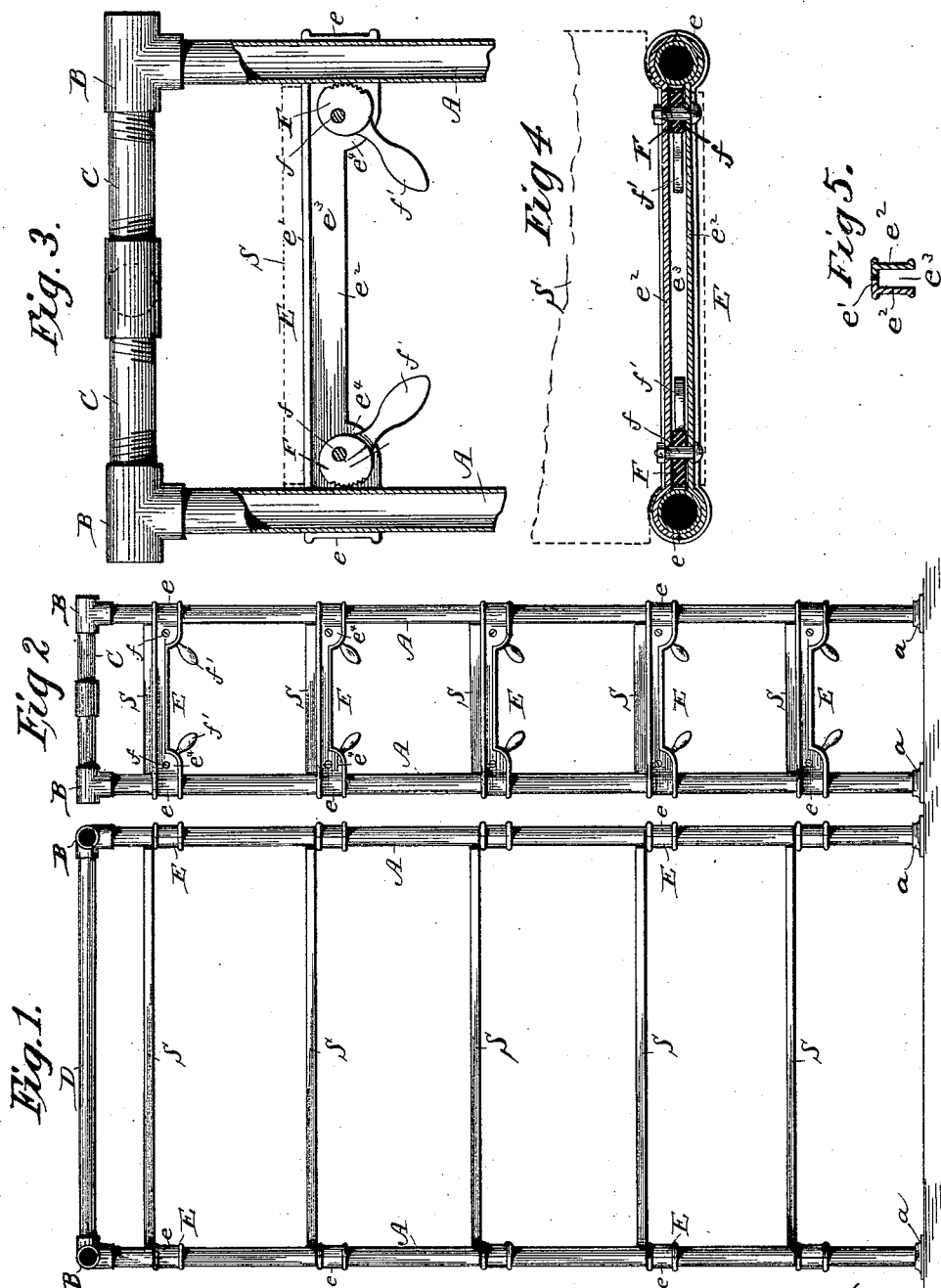


(No Model.)

W. D. HAVEN.
SHELF SUPPORT.

No. 431,745.

Patented July 8, 1890.



Witnesses:
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UNITED STATES PATENT OFFICE.

WILSON D. HAVEN, OF TRENTON, NEW JERSEY.

SHELF-SUPPORT.

SPECIFICATION forming part of Letters Patent No. 431,745, dated July 8, 1890.

Application filed September 12, 1889. Serial No. 323,732. (No model.)

To all whom it may concern:

Be it known that I, WILSON D. HAVEN, a citizen of the United States, residing at Trenton, in the county of Mercer and State of New Jersey, have invented certain new and useful Improvements in Shelf-Supports; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The rapid production of books renders it of especial importance that libraries should be provided with shelving capable of adjustment to any required height or distance between shelves, thus enabling the valuable space of such institutions to be economized to the highest degree. Such shelving should, moreover, be fire-proof in its character and adapted to modern fire-proof interior construction, and the means of adjustment accurate and easy of operation. With these objects in view I have devised the shelf-support hereinafter more particularly described and claimed.

In order to make my invention more clearly understood, I have shown in the accompanying drawings means for carrying the same into practical effect, without, however, limiting my invention to the details of construction, which, for the sake of illustration, I have particularly set forth.

In said drawings, Figure 1 is a front and Fig. 2 a side view of shelving and supporting devices embodying my invention. Fig. 3 is a vertical and Fig. 4 a horizontal sectional view, on a larger scale, of the support. Fig. 5 is a transverse sectional view of the cross-piece.

Referring to the drawings, A indicates vertical standards composed of iron piping seated at the lower end in sockets *a* and at their upper ends connected with each other by couplings B and horizontal pipe-sections C. Each pair of standards A may be connected by a transverse pipe or pipes D with the corresponding pair at the opposite ends of the shelves.

E is a casting provided at each end with a vertical sleeve *e*, a horizontal shelf-supporting web *e'*, and two vertical webs *e''*, which connect the sleeves *e*, and are joined at their upper edges to the outer edges of web *e'*, leaving

between them the vertical space *e'''*. The sleeves *e* have a loose or sliding fit upon the standards A.

F indicates cams or eccentrics situated in the space *e'''* at each end thereof, pivoted upon pins *f*, which pass through ears *e''*, formed with the webs *e''*, and adapted to engage the contiguous faces of standards A. The swell of the cam or eccentric is below its pivot-pin, so that the weight of the casting or cross-piece E and the superimposed shelf S, with its books or other load, only tends to force the cam more firmly against the standard, with the result of making the cross-piece perfectly rigid therewith. This connection can take place at any point on the standard, and the shelves may therefore be securely supported at any desired distance apart.

In order to insure that the eccentrics F are kept in contact with the surfaces of standards A at all times, so as to be ready to perform their office of securing the cross-piece, as above described, each cam is provided with a weight *f'*, situated upon the opposite side of the pivot *f* from the swell of the cam and of sufficient gravity to overcome the weight of said swell and lift it into contact with the standard.

The weights *f'* may conveniently be shaped as handles for depressing and releasing the cams and are situated relative to the swell of the cams, so that when the cams are released the said handles are below the plane of the shelf, thus enabling the support to be adjusted without removing either the books or shelf. The handles are also preferably extended inward toward each other for such distance as to enable both of them to be operated by one hand of the operator while the other hand is being occupied similarly with the support at the other end of the shelf or sustains a portion of the weight of the shelf and books.

The operation of my invention is very simple. It being desired to lower a shelf, the handles *f'* at one end of the shelf are raised slightly, whereupon the cross-piece E will slide downward. When it has reached the desired point, it is simply necessary to permit said handles to drop, and the cross-piece and shelf will at once be arrested and firmly secured. The same operation may then be performed at the other end of the shelf. In raising the shelf it is simply necessary to lift the cross-pieces

for the desired distance, when they will instantly and automatically be secured by the cams. If desired, the cams may be roughened or slightly toothed, as indicated.

5 By making the ends of the pipe-sections C reversely screw-threaded the distance apart of standards A to correspond with the space between the sleeves e may be accurately regulated, so that said sleeves will not bind upon
10 the standards.

Springs might of course be substituted for the weights f' to keep the cams in place.

By making the cross-piece E divisible—as, for instance, upon a vertical longitudinal
15 plane, in the manner indicated—I am enabled to apply the cross-pieces to or remove them from the standards after the latter have been erected and secured in place at top and bottom.

Having thus described my invention, what
20 I claim is—

1. In a shelf-support, the combination, with vertical standards, of a cross-piece provided with bearings adapted to fit said standards, cams pivotally mounted in said cross-piece,
25 and weighted operating-handles connected with said cams and situated below the plane of the shelf when the cams are released, substantially as set forth.

2. In a shelf-support, the combination, with
30 vertical cylindrical standards, of a cross-piece provided with bearing-sleeves e , adapted to fit said standards, and having a horizontal shelf-supporting top web e' and two vertical

depending webs e^2 , and cams pivotally mounted between said vertical webs and provided
35 with weighted operating-handles, substantially as set forth.

3. In a shelf-support, the combination, with vertical standards, of a series of cross-pieces provided with bearings adapted to slide vertically upon said standards, securing devices
40 whereby the cross-pieces may be sustained at various heights upon the standards, and adjustable connections between said standards, whereby their distance apart may be regulated and the proper fitting of said bearings
45 upon the standards insured, substantially as set forth.

4. In adjustable shelving, the combination, with standards A, of cross-pieces each provided with bearings adapted to fit said standards and with two pawls adapted to engage
50 the same, said pawls having weighted operating-handles situated, when the pawls are in their unlocked position, below the plane of the shelf and extending inward toward each
55 other to a point where both may be operated by one hand to lower the shelf, substantially as set forth.

In testimony whereof I affix my signature in
60 presence of two witnesses.

WILSON D. HAVEN.

Witnesses:

PETER BACKES,
E. H. MURPHY.