(No Model.) 2 Sheets—Sheet 1.

J. L. DANIELS.

SHELVING.

No. 454,259. Patented June 16, 1891.

Fig. 1

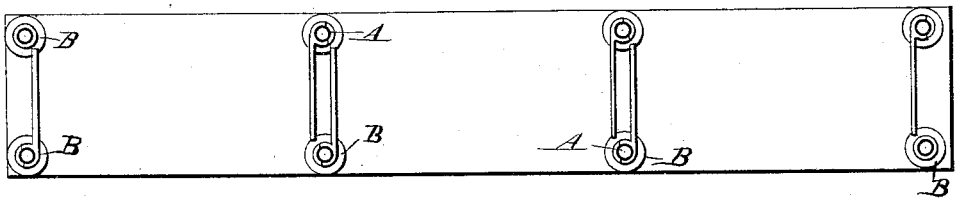
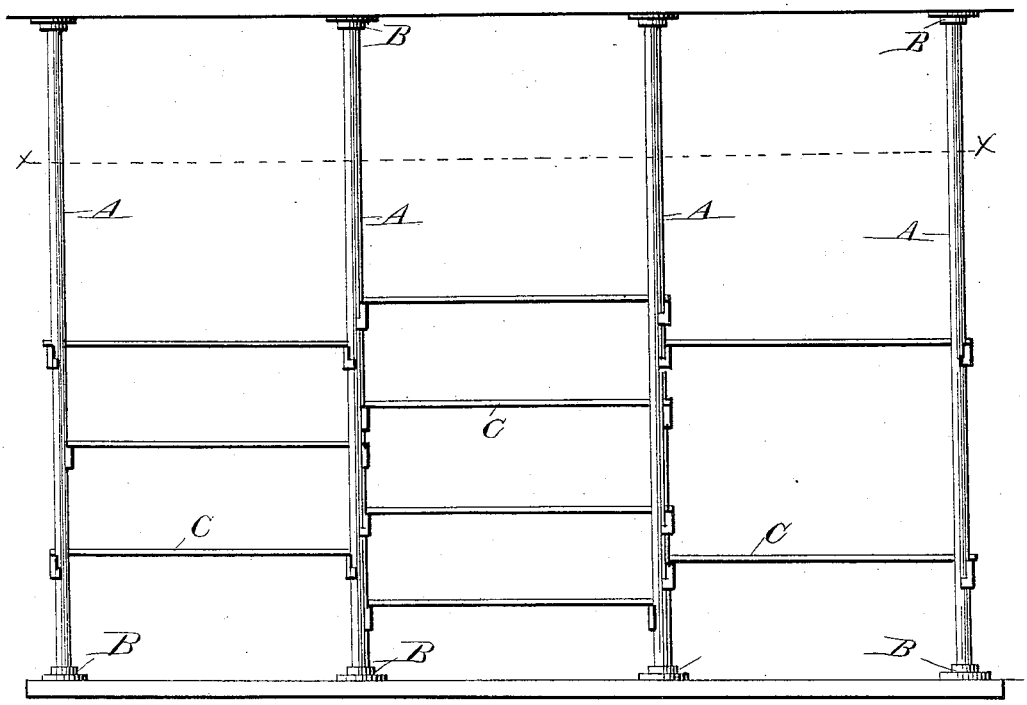


Fig. 2.



Witnesses
F. T. Cornwall
L. S. Bacon

Inventor
Jos. L. Daniels
by James Whittemore
Atty.

(No Model.) 2 Sheets—Sheet 2.

J. L. DANIELS.

SHELVING.

No. 454,259. Patented June 16, 1891.

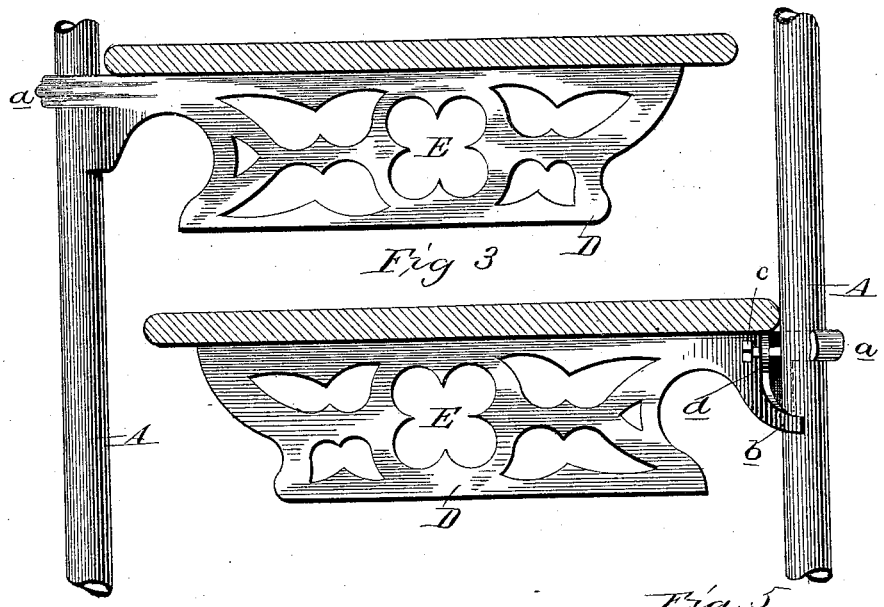


Fig 3

Fig. 5

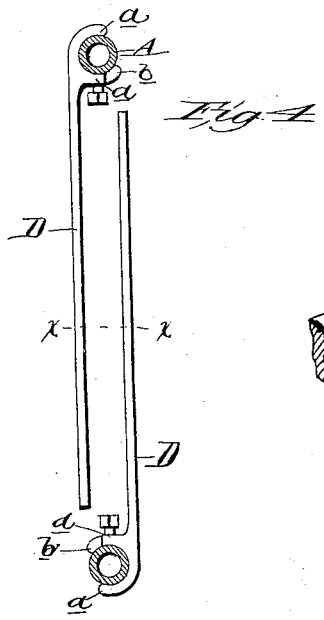
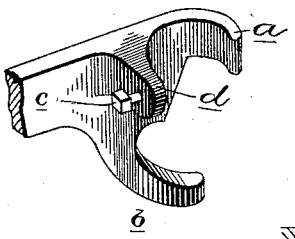
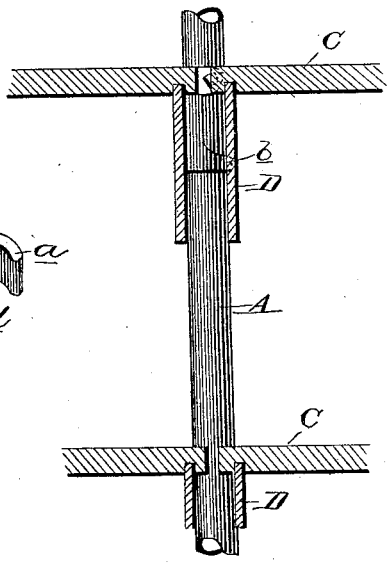


Fig. 4

Fig. 6.





Witnesses
F. P. Cornwall
L. S. Bacon

Inventor
Jos. L. Daniels
by James Whittemore
atty.

UNITED STATES PATENT OFFICE.

JOSEPH L. DANIELS, OF OLIVET, MICHIGAN.

SHELVING.

SPECIFICATION forming part of Letters Patent No. 454,259, dated June 16, 1891.

Application filed January 4, 1890. Serial No. 335,886. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH L. DANIELS, a citizen of the United States, residing at Olivet, in the county of Eaton and State of Michigan, have invented certain new and useful Improvements in Shelving, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to new and useful improvements in the construction of shelving; and the invention is designed especially for such purposes in which it is desirable to provide for a vertical adjustment of the shelves, and, further, wherein it is desirable to have each shelf or section of shelf independently adjustable between its standards, such as in the construction of shelving for storing book, as in libraries, where the different heights of the books need different spaces between the shelves, and wherein the utmost economy for storing is obtained by placing the shelves just the necessary distance apart to accommodate the particular size of the books.

To this end my invention consists, first, in the peculiar construction of the shelving itself, in that each vertical series of shelves between two pairs of standards is independently adjustable and supported independently of the shelves in the adjoining sections, right or left.

My invention consists, further, in the peculiar construction of the supporting-brackets of the shelves and in their peculiar attachment to the standards, all as more fully hereinafter described, and shown in the accompanying drawings, in which—

Figure 1 is a sectional view on the line *x x* of Fig. 2, with the shelves removed. Fig. 2 is a front elevation thereof, also in diagram. Fig. 3 is a front elevation of a section of shelving, showing two brackets secured to a pair of standards. Fig. 4 is an enlarged plan of one pair of standards with their brackets, as shown in Fig. 1. Fig. 5 is a cross-section on line *x x* in Fig. 4, with the shelves shown in position. Fig. 6 is a perspective view of the socket or bearing of the brackets.

A A are vertical standards which support the shelves a slight distance apart. They are arranged in pairs and are secured in position in any desirable manner, such as by means of the sockets B.

C are the shelves, which extend from the center of one pair of standards to the center of the next pair of standards.

D are the shelf-supporting brackets, upon the soles of which the ends of the shelves are supported, preferably by forming a slight mortise in the under part of the shelves in which the sole of the bracket is adapted to engage to prevent sudden displacement of the shelves when it should become necessary to adjust them. These brackets are constructed in the following manner: The sole of the bracket is supported, as shown, by an ornamental rib or vertical flange E of any graceful design which imparts the necessary strength to the bracket. At one end of this bracket a bearing is provided adapted to the shape of the standard, which in case of the tubular standards, as shown in the drawings, is constructed as shown in Fig. 6, wherein *a b* are two segmental jaws integral with the bracket and adapted to bear upon opposites sides of the standard, the upper one at the back of the standard and the lower one against the front of the standard, and when so engaged adapted to hold the bracket at right angles to the standard and form a friction-grip thereon under the action of its weight and the load supported thereon. For additional security I provide a set-screw *c* to bear against the standard upon the opposite side of the jaw *a*. The set-screw is tapped through a suitable ear *d*, formed in the side of the bracket. This bearing is not in the center plane of the bracket, but to one side thereof, so that when the bracket is in place upon the standard it is to one side of the center of the standard. Another peculiarity in the construction of the bearing of the brackets is that I place the two jaws far enough apart in a vertical direction and with enough clearance between the free ends thereof to detach the bracket or engage the bracket from or with its standard by a joint vertical and lateral movement of the bracket in relation to the standard, thus facilitating the adjustment of the bracket up or down or of securing additional brackets to the standards after the shelving is put up. In constructing the shelving with these brack-

ets I secure the brackets in each vertical division alternately to the front and rear standards, the brackets on one standard being so far apart as not to interfere with the brackets or the adjustment of the brackets secured to the opposite standard, and, further, two adjoining shelves are at a corresponding height, or nearly so. The brackets supporting these adjoining ends are attached relatively to the front and rear standards, whereby these two brackets are adjustable vertically without liability of interfering with each other. With a shelf constructed in this manner it will be seen that each shelf or section of shelf between two pairs of standards is entirely independent of any adjoining shelf or the shelves above and below, and it may be adjusted to suit any height of books; or if additional shelf-room is gained a new pair of brackets with its shelf may be secured in place, or if more space is wanted a shelf may be taken out without requiring the adjustment of any other shelf. Thus the utmost economy is obtained in the arrangement and construction of library-shelving wherein the ordinary construction does not provide for such facility, and thus entails a great amount of waste room.

The same considerations apply to shelving in book-stores and other mercantile contents where goods require different sizes of shelf room, and my device is thus applicable to different purposes.

It is evident that my brackets may be applied with a single series of vertical rods where they are used beside a wall, the shelf resting with its rear end against the wall, and I desire to include this within my invention, although the especial object of my invention is the application of the brackets to places where two rows of vertical supports are required.

The vertical flange E acts as the end support for the books at the end of the shelves. I find it a decided advantage to support the books at the top instead of from the bottom, as in falling upon the shelf the top of the book always moves first.

What I claim as my invention is—

1. The herein-described construction of shelving composed of vertical standards arranged in pairs, with shelves independently supported in each vertical division by a pair of brackets adjustably secured to the front or rear standards, substantially as described.

2. The herein-described construction of shelving composed of vertical standards arranged in pairs, with shelves independently supported in each vertical division by a pair of brackets adjustably secured alternately to the front and rear standards, substantially as described.

3. The herein-described supporting-bracket having a socket formed at one end to adjustably secure it to vertical standards, an ear on the bracket, a set-screw extending through the ear, and a depending flange forming the end support for the books on the shelf below, substantially as described.

In testimony whereof I affix my signature, in presence of two witnesses, this 24th day of December, 1889.

JOSEPH L. DANIELS.

Witnesses:
JAMES WHITTEMORE,
M. B. O'DOGHERTY.