

(No Model.)

W. E. RICHARDS.  
SUPPORT FOR SHELVES.

No. 501,591.

Patented July 18, 1893.

Fig. 1.

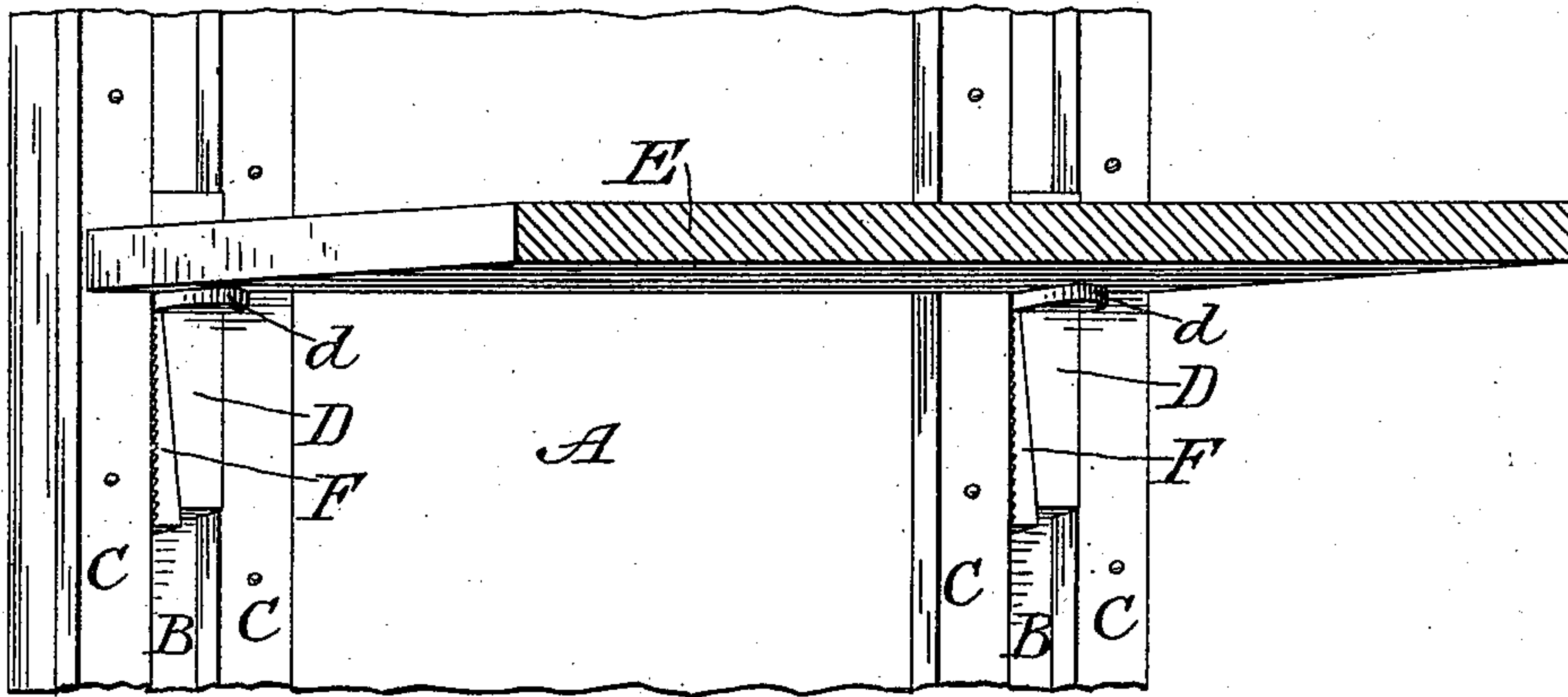


Fig. 2.

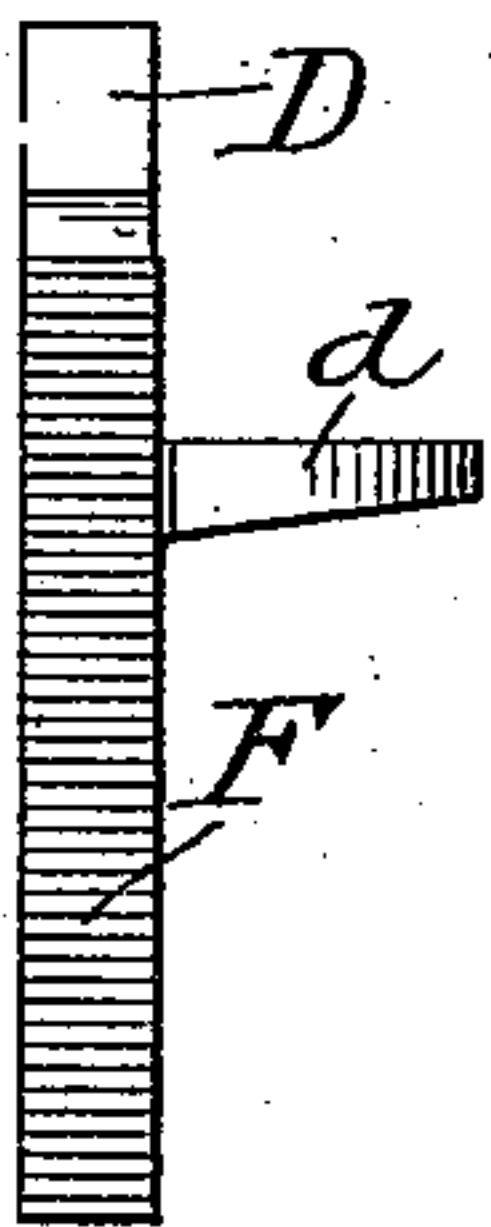


Fig. 3.

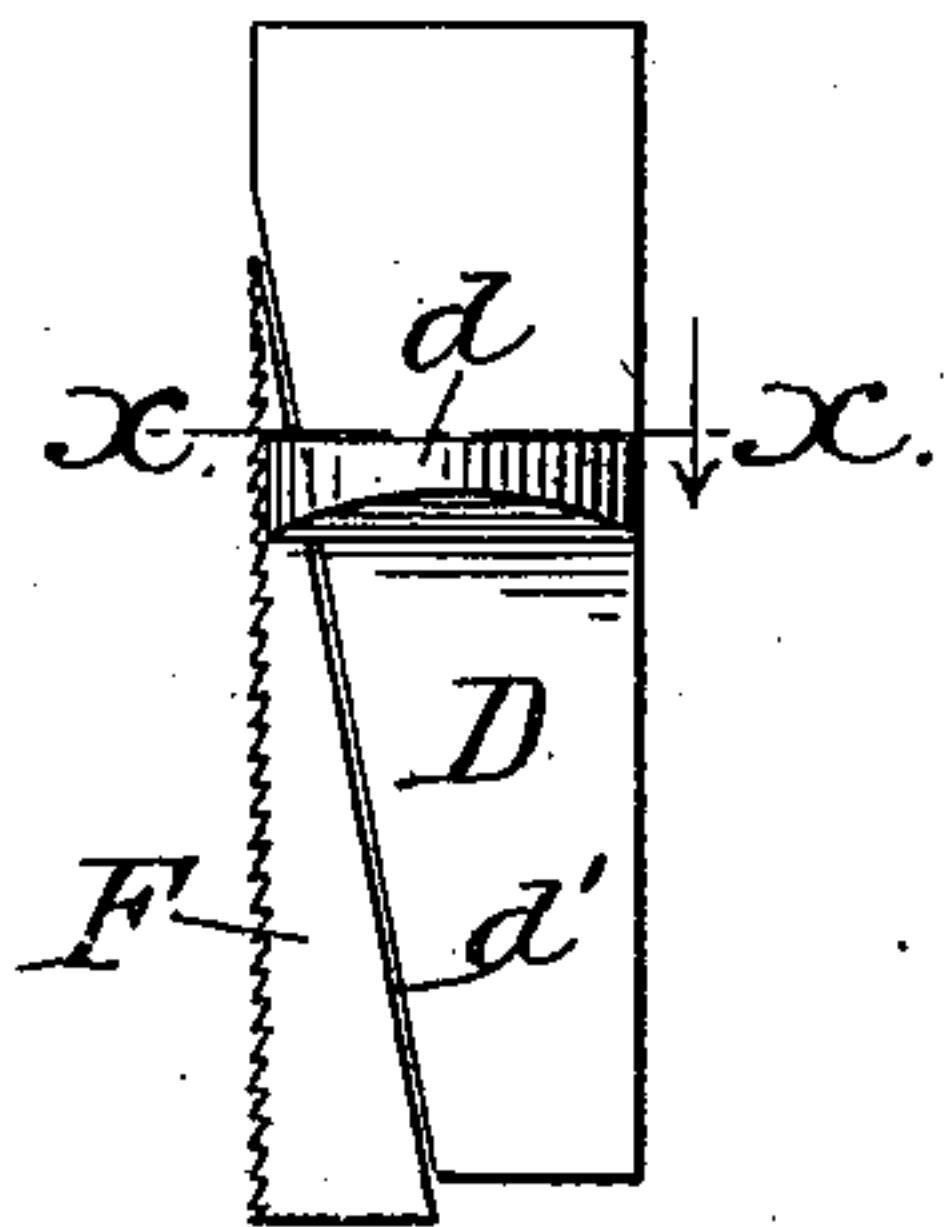


Fig. 4.

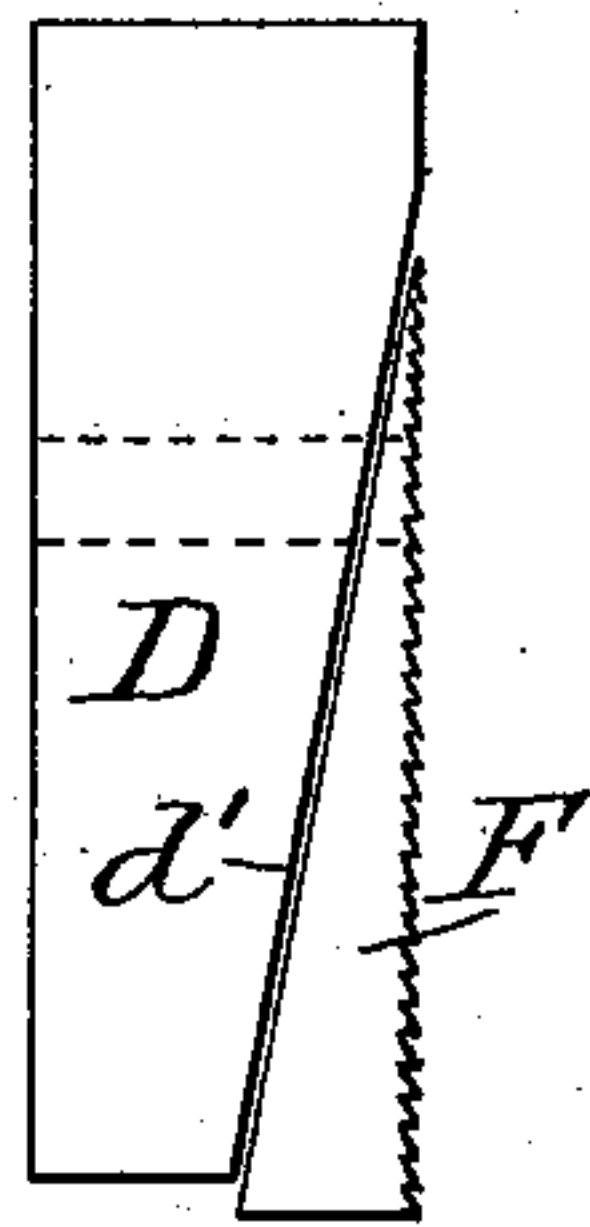


Fig. 5.

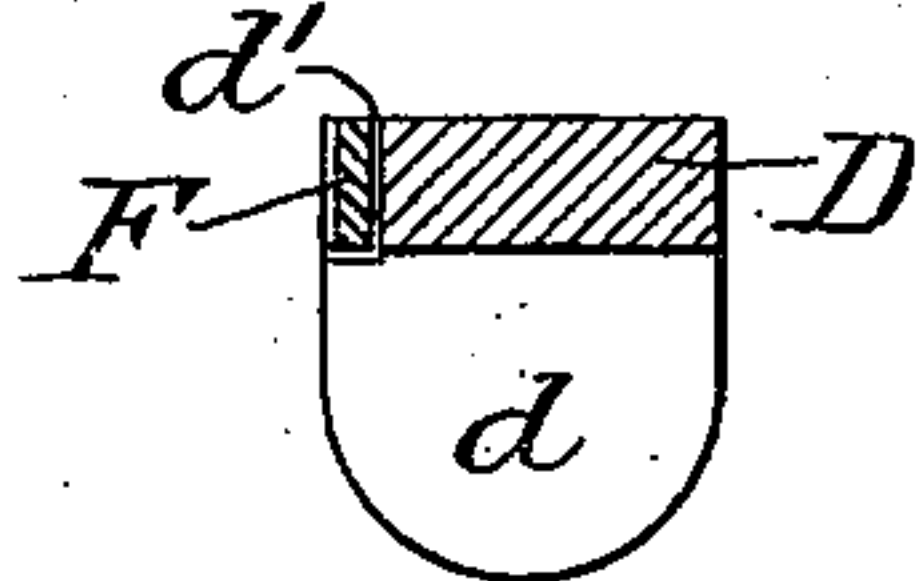


Fig. 6.

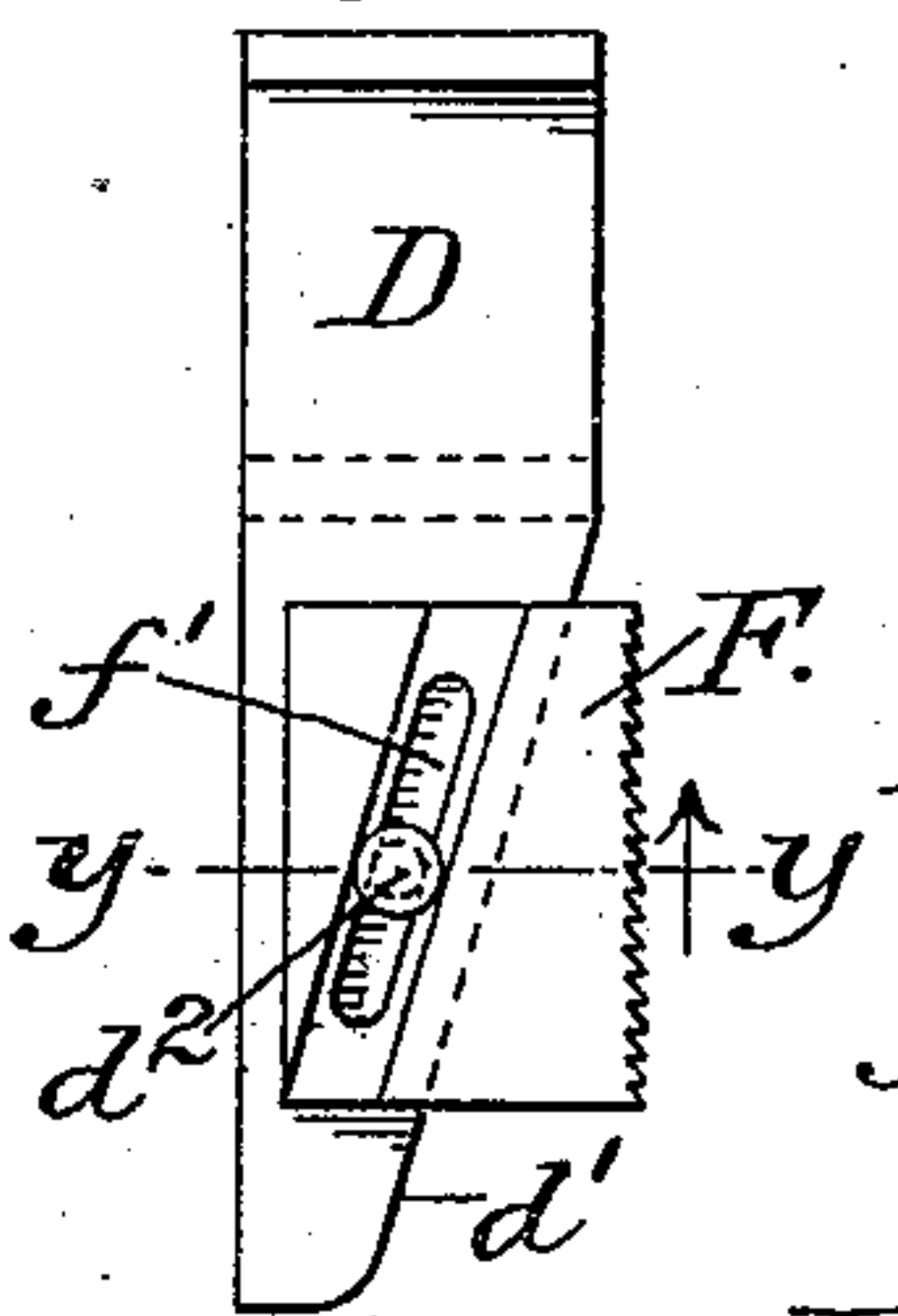


Fig. 7.

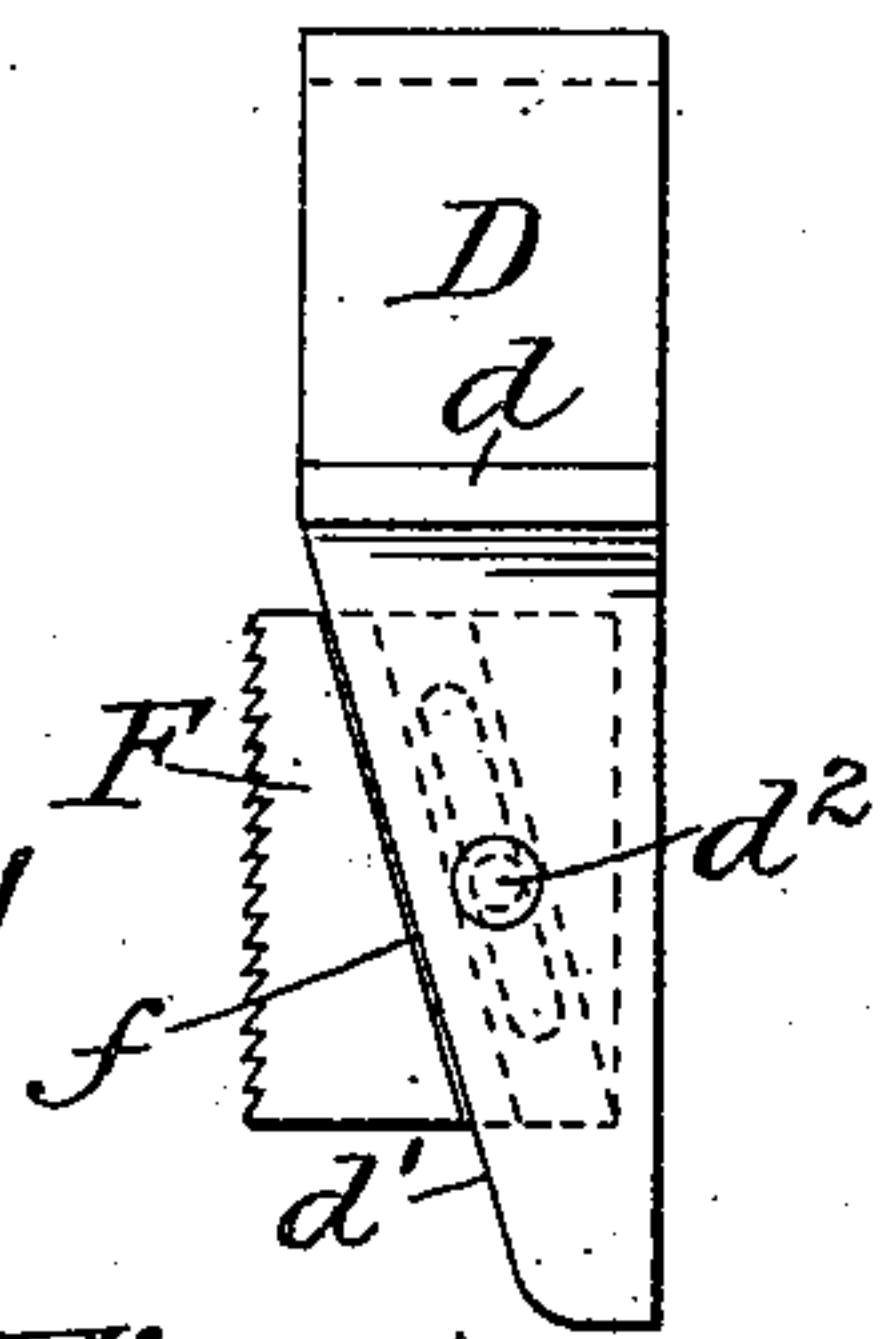


Fig. 9.

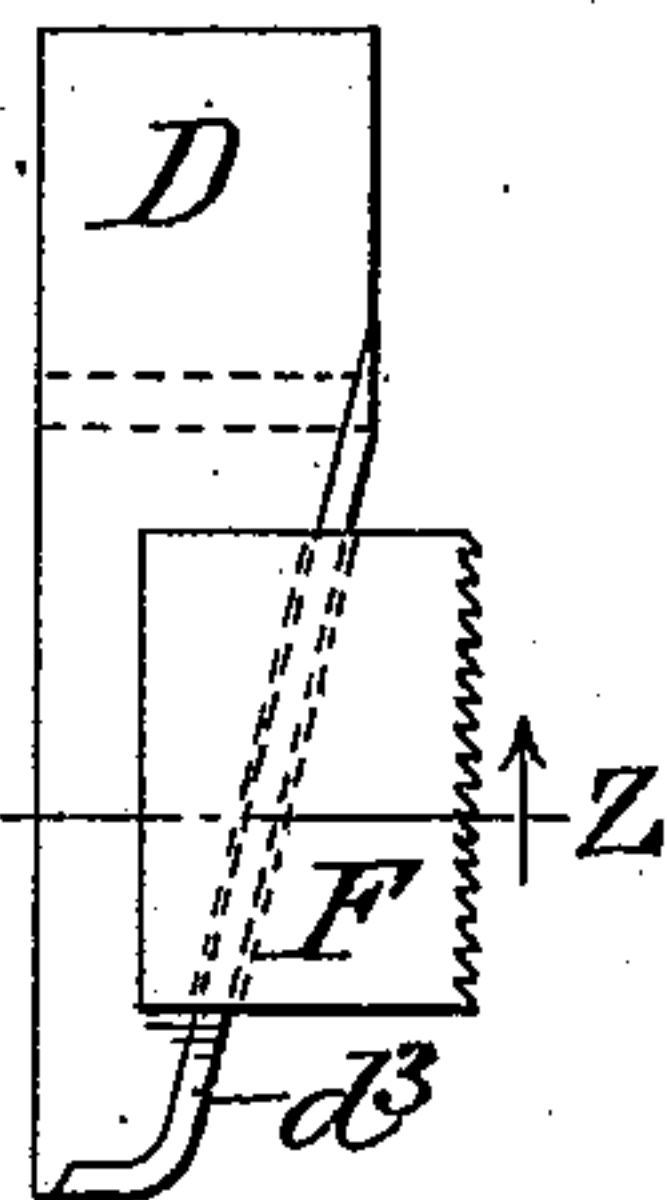


Fig. 10.

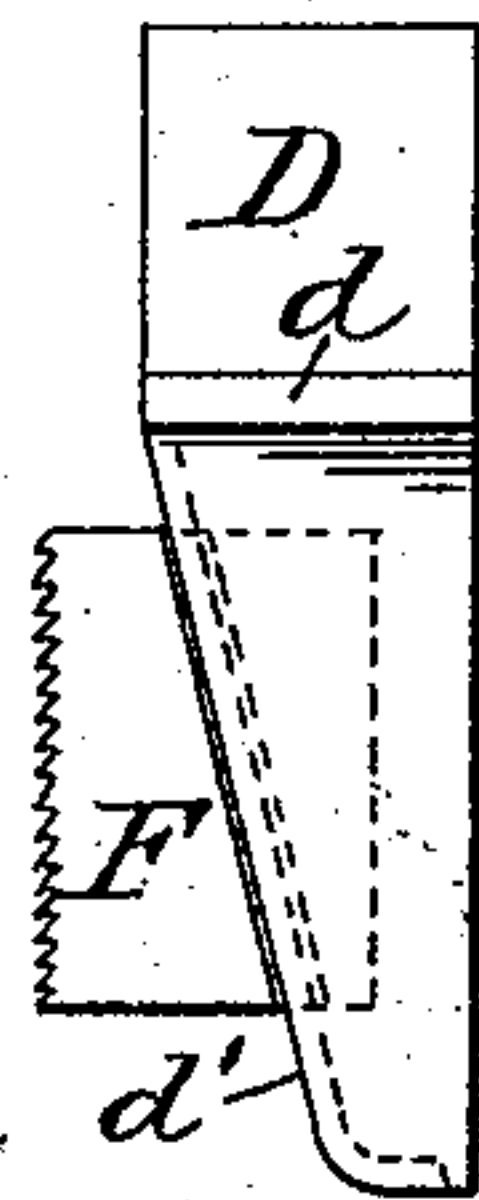


Fig. 12.

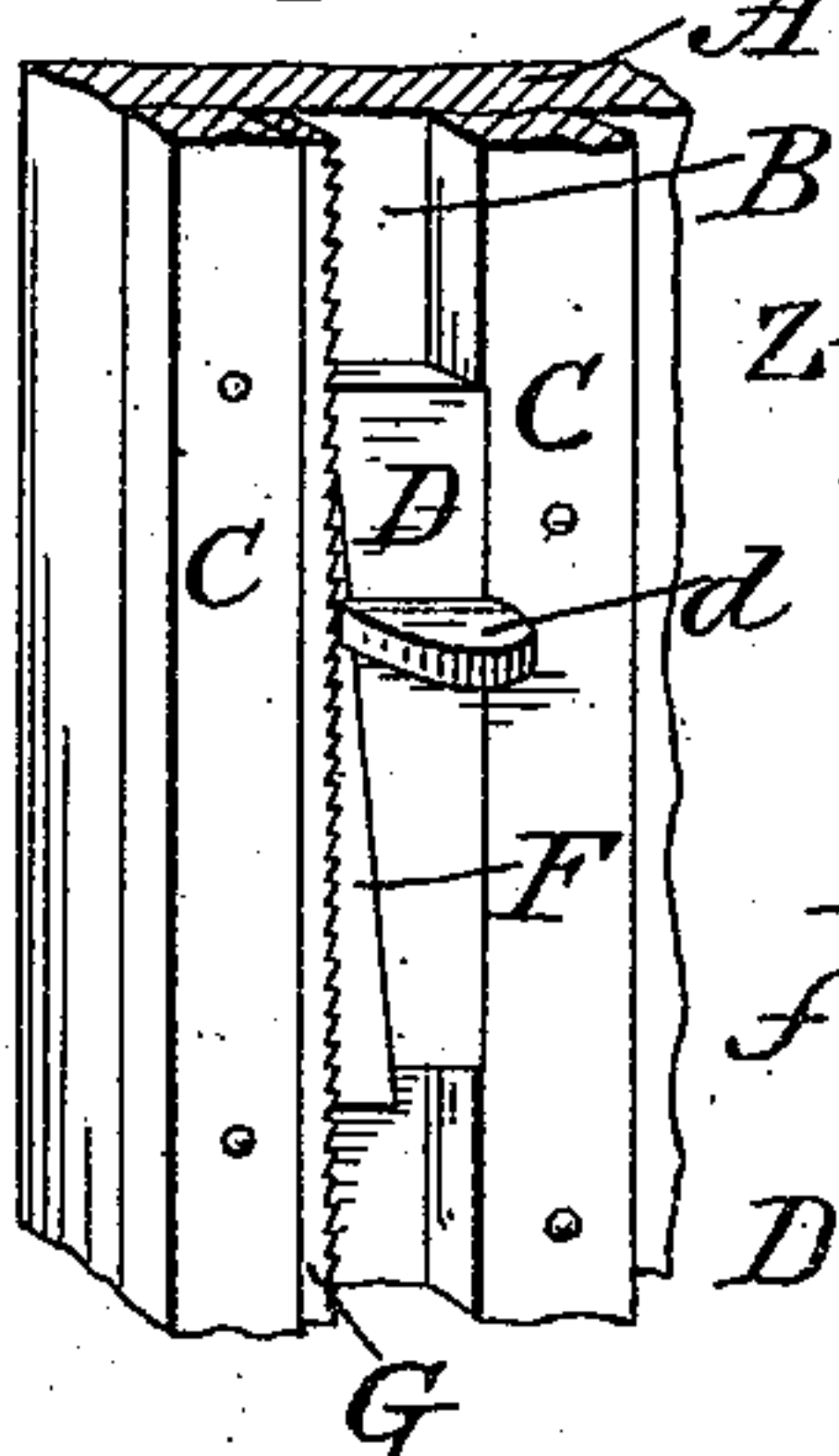


Fig. 8.

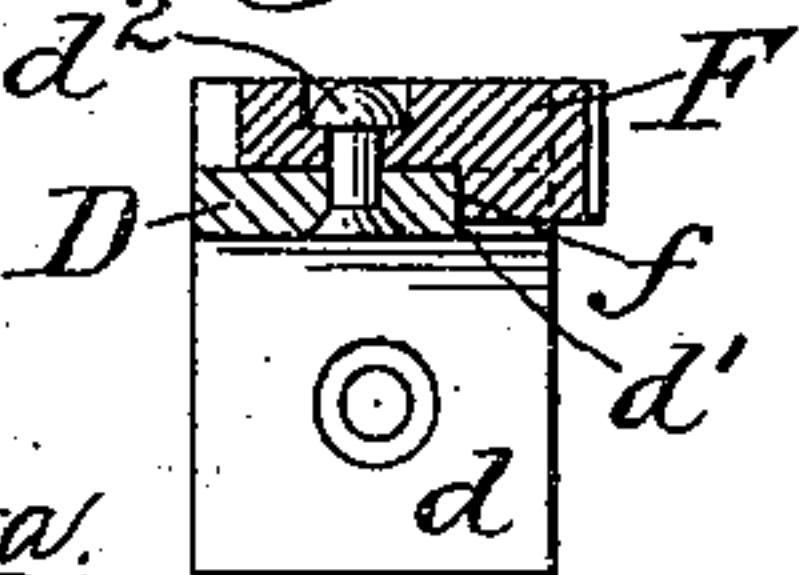
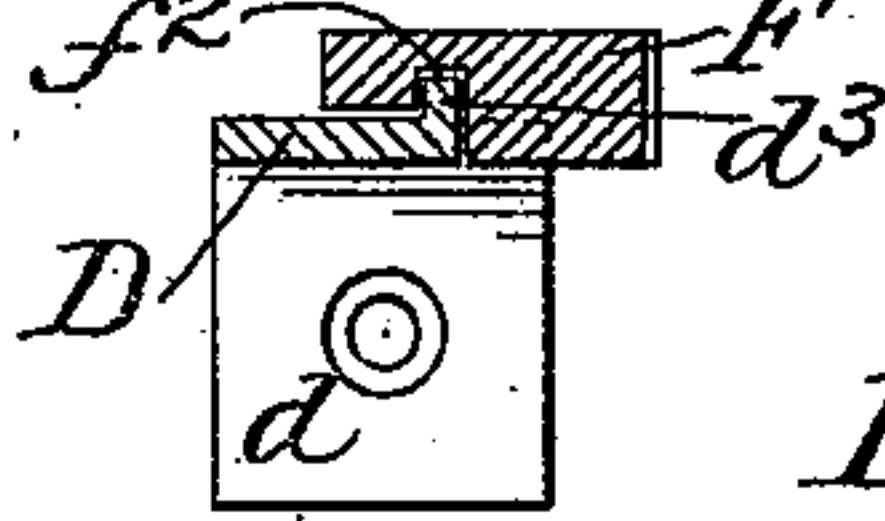


Fig. 11.



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# UNITED STATES PATENT OFFICE.

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## SUPPORT FOR SHELVES.

SPECIFICATION forming part of Letters Patent No. 501,591, dated July 18, 1893.

Application filed September 15, 1892. Serial No. 446,001. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM E. RICHARDS, a citizen of the United States of America, residing at 203 Broadway, in the city, county, and State of New York, have invented a certain new and useful Improvement in Supports for Shelves, &c., of which the following is a full, clear, and exact specification.

The rapid multiplication of books in recent years has taxed the capacity of libraries to properly and economically arrange and store them, and rendered it very important, in order that the valuable space of such institutions may be economized in the highest degree, that all of the book space shall be made available, and capable of full utilization. It will be readily apparent that this can only be accomplished by the adoption of some system of shelving in which it is possible to exactly adjust the shelves to the required distances apart, in order that different sizes of books, which, as it is well known, vary greatly in height, may be accommodated without a waste of space.

The present methods of supporting shelves usually involve either a fixed position of the shelves, by which method it is estimated that from twenty to forty per cent. of the total available book space is entirely lost, or a system of racks or the like, arranged in the corners of the book case, and adapted to receive a cross-piece, pin, or pawl, upon which the shelves rest. The latter method is found in practice to be more or less awkward and laborious to manage, and the racks and cross-pieces usually infringe upon the book space to the extent of their thickness, while, in order to obtain the necessary strength, the rack teeth are necessarily formed a considerable distance apart, thereby preventing a close adjustment, and occasioning a very considerable loss of space.

The object of my invention is to produce a shelf support simple in construction, yet strong and durable, and one that will permit of absolute adjustability, so that the shelves may be easily and quickly adjusted to and held in any desired position, and which shall at the same time be so arranged that it will neither occupy any of the book space nor present any projecting part or surface that

would tend to injure or deface the binding or leaves of the books.

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 precise details of construction, which, for the sake of illustration, I have particularly set forth. In the various forms which my improved support may take, however, it comprises essentially a bracket which is formed to support the shelf either directly or indirectly and a wedge-piece which co-operates with said bracket to retain it in whatever position it may be placed. The frame of the case may be constructed in any desired manner or of any preferred material, it being only necessary that there shall be some rigid part between which and the bracket the wedge-piece may be interposed, while the bracket itself is supported against the action of the wedge-piece either by the shelf or by an opposing part of the frame.

In the drawings: Figure 1 is a perspective view of a portion of a book-case having one form of my improved shelf-support applied thereto. Fig. 2 is an edge view of the form of support shown in Fig. 1. Figs. 3 and 4 are opposite side views of the same; and Fig. 5 is a section on the line  $x-x$  of Fig. 3 looking in the direction of the arrow. Figs. 6 and 7 are opposite side views of a modified form of the support; and Fig. 8 is a section on the line  $y-y$  of Fig. 6, looking in the direction of the arrow. Figs. 9 and 10 are opposite side views of another modified form; and Fig. 11 is a section on the line  $z-z$  of Fig. 10, looking in the direction of the arrow. Fig. 12 is a perspective view of a portion of one end of a book case, to illustrate a detail to be referred to.

As shown in Fig. 1 the end piece or frame A of the case or rack has two grooves B, B, which are formed by securing strips C, C, upon the end-piece, but they might be formed in the material of the end-piece itself or in separate pieces which are subsequently secured in position upon the end-piece or upon the corner posts of the case or rack. A bracket D is formed to move freely up and down in each groove B and is adapted in any convenient manner to support the shelf E. As shown



in the several figures of the drawings it has integral therewith an ear or lug  $d$  which projects laterally from the body of the bracket to permit the shelf to rest thereon. One side of the bracket may be cut away somewhat, or tapered downwardly, as indicated by the line  $d'$ , to permit of the insertion between itself and the adjacent side of the groove C of a wedge F. The latter tapers upwardly and is adapted to be pushed or driven upwardly between the bracket and the side of the groove until by its action the bracket is locked firmly in place. The result is that the greater the weight upon the bracket the more firmly is it locked in place. I prefer, moreover, in order to guard against any possible slipping between the wedge and the adjacent side of the groove, to roughen the outer edge of the wedge like the surface of a file, or to provide it with fine teeth as shown, so that it may have a surer hold against the side of the groove. In the form shown in Figs. 1, 2, 3, 4 and 5 the wedge and bracket are entirely independent of each other, the ear or lug  $d$  overlapping the wedge so that the bracket, which is itself held from slipping out laterally from the groove by the end of the shelf, shall in turn prevent the wedge from slipping out laterally. In the form shown in Figs. 6, 7 and 8 the part D is formed substantially as before, while the part F, though still having the function of a wedge, is formed as a substantially rectangular plate with an inclined or obliquely disposed shoulder  $f$ , which bears against the inclined side  $d'$  of the bracket, and with a slot  $f'$  parallel with the shoulder  $f$ . A pin or bolt  $d^2$  passes freely through this slot and is secured to the body of the bracket D, whereby the two parts of the support may not become separated. The form shown in Figs. 9, 10 and 11 is also designed to prevent the too easy separation of the parts of the support. In this case the bracket D is formed along its inclined edge  $d'$  with a rib  $d^3$  which engages a corresponding inclined groove or slot  $f^2$  on the lateral surface of the wedge-piece F.

The mode of use of the several forms above described is in every respect the same; the bracket D having been placed at the desired height, the wedge-piece F is pushed or driven up as far as possible thereby locking the bracket in the determined position. If desired the side of the groove adjacent to the wedge may be roughened or may have fixed thereon a strip G, as shown in Fig. 12, the surface of which is cut like a file, or provided with fine teeth but in practice such a device is not found to be necessary.

Although I have herein shown my improved support as applied to a book-case made of wood with a solid end-piece, it will be readily understood that the frame of the case might be a skeleton frame and made, for example, of channel-iron or of gas-pipe. In cases where it is so made it is not necessary to form

a groove for the reception of the bracket, but the wedge-piece may take its bearing directly against one of the supporting posts, being suitably shaped for that purpose, while the bracket may be otherwise supported laterally against the action of the wedge-piece, as by the shelf itself or by being extended to meet the bracket for the other side of the shelf.

While I have shown the wedge piece as tapering upwardly it will be understood that it may be of any other suitable or desired form.

It will be seen readily that my improved shelf-support occupies no valuable space in a book case, is of extremely simple and inexpensive construction, may be adjusted with any required degree of exactness, and is the more firmly locked in position with every increase of the weight imposed upon the shelf.

It is not essential that the wedge piece be in the form of the wedge as shown, as it may be of other form provided there is a wedging action when it is thrust between the bracket piece and the adjacent wall of the groove in the casing thus holding the bracket in place.

I claim as my invention—

1. As an article of manufacture a shelf support consisting of a bracket for supporting the shelf, and a wedge piece for locking the bracket.

2. In combination, with ways or grooves in the frame of a book case or like article a shelf support adapted thereto consisting of a bracket and a wedge piece, the said bracket being locked within the grooves or ways by the wedge, substantially as described.

3. In combination, with the ways or groove in the frame of a book case or like article, a shelf support fitted thereto consisting of a bracket within the groove having an ear or lug projecting therefrom to support the shelf and a wedge piece interposed between the bracket and the wall of the groove or way, substantially as described.

4. The combination in a book case or similar structure of the main frame A provided with grooves B, the brackets D, wedges F, and shelf E, substantially as shown and described.

5. In a support for shelves and other like structures, the combination with the grooves or ways in the frame, of a wedging piece and a bracket piece, said bracket piece having a ledge projecting therefrom to support the shelf and a projecting part or portion overlapping the wedging piece to prevent its displacement, substantially as shown and described.

In witness whereof I have hereunto set my hand in presence of two subscribing witnesses.

WILLIAM E. RICHARDS.

Witnesses:

E. K. STURTEVANT,  
A. R. DUNNE.