(No Model.)

J. W. HINE.

ADJUSTABLE SHELVING.

No. 433,622. Patented Aug. 5, 1890.

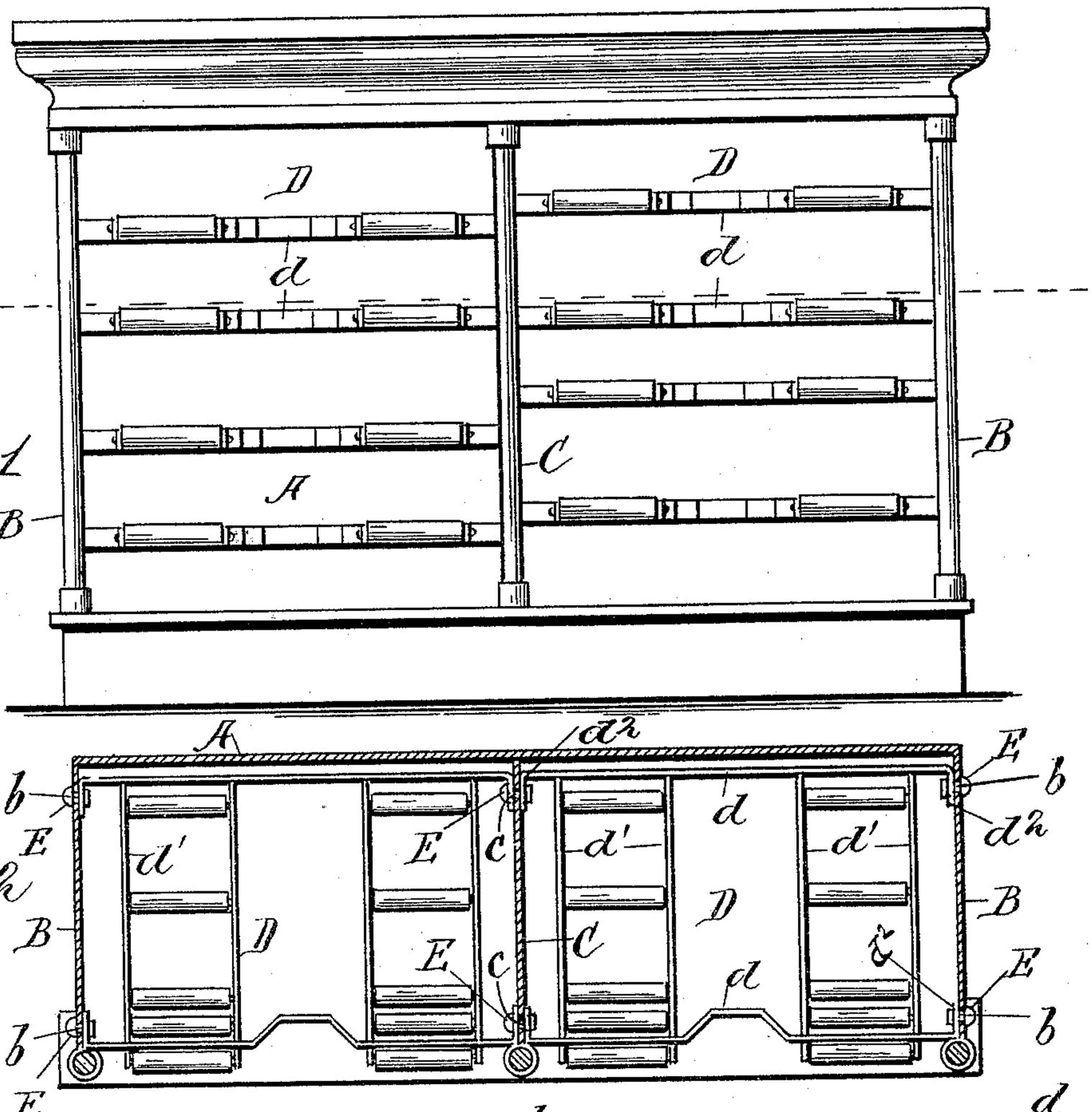

Fig 1

Fig 2

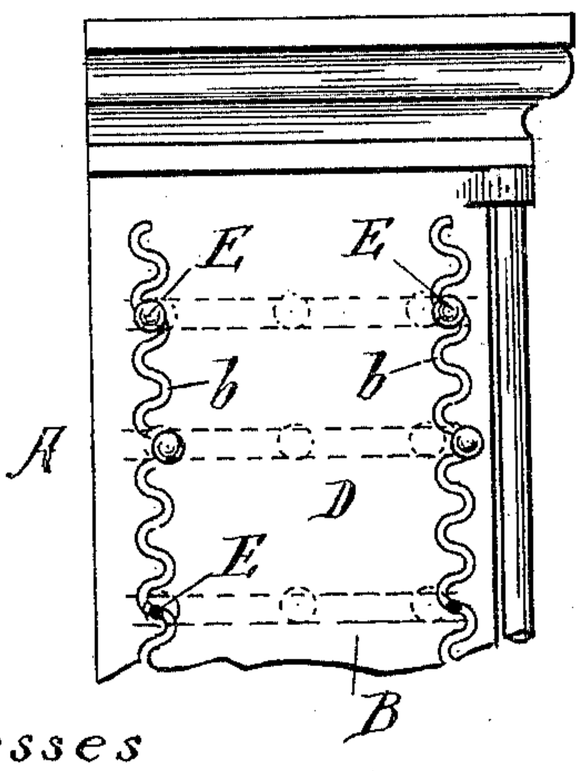

Fig 3

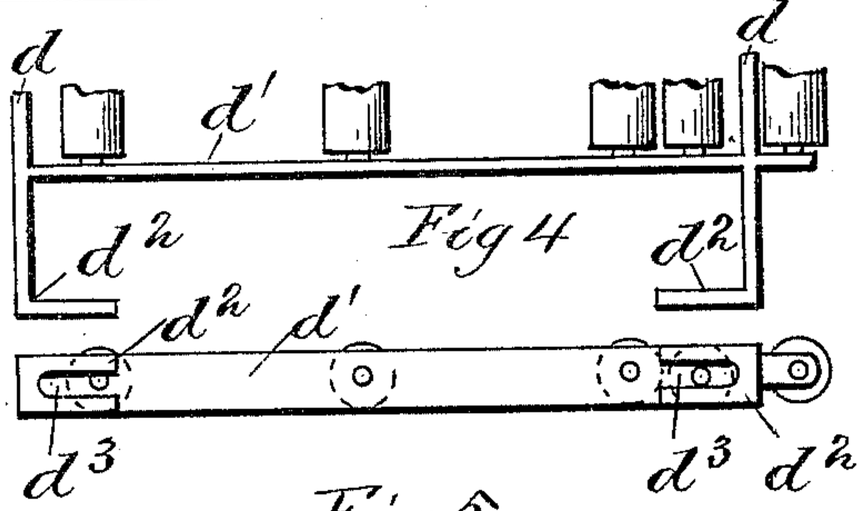

Fig 4

Fig 5

Witnesses

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UNITED STATES PATENT OFFICE.

JAMES W. HINE, OF JAMESTOWN, NEW YORK.

ADJUSTABLE SHELVING.

SPECIFICATION forming part of Letters Patent No. 433,622, dated August 5, 1890.

Application filed August 26, 1889. Serial No. 321,943. (No model.)

To all whom it may concern:

Be it known that I, JAMES W. HINE, a citizen of the United States, residing at Jamestown, in the county of Chatauqua and State of New York, have invented certain new and useful Improvements in Adjustable Shelving, which are fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a front elevation of a section of shelving embodying my improvement; Fig. 2, a plan section of the same, taken on the line 1 1 of Fig. 1; Fig. 3, a detail end elevation of the same, the lower portion being broken away; Fig. 4, a detail plan of one end of one of the shelf-frames, on an enlarged scale; and Fig. 5, an end elevation of the same on the same enlarged scale.

My invention relates to adjustable shelving, being especially adapted to metallic shelving intended for vaults, libraries, &c.

The invention consists in an improvement in the devices for securing the shelves in any position to which they may be adjusted, whereby they are more firmly and certainly held in position.

I will proceed to describe in detail one way in which I have embodied my invention in practical form, and will then point out more definitely in claims the improvements which I believe to be new and wish to secure by Letters Patent.

In the drawings a case of adjustable roller-shelves is shown. In this structure the casing proper is composed of upright metal plates, preferably steel, A being the back, B the end plates, and C the middle partition. The case is also constructed with a base and cornice, as shown in Fig. 1 of the drawings, as may be desired. The roller-frames D are composed of metal bars, the side bars *d* being arranged at the inner and outer edge of the shelf and connected by transverse bars *d'*, in which the rollers are set. The bars *d* are bent inward at right angles to each other, as shown in Figs. 2 and 4 of the drawings, and in each of these angular projections d^2 there is made a horizontal open slot or recess d^3. These roller-frames are adapted to extend from one upright partition-plate to another, and the said upright plates are provided with slots extending from top to bottom thereof. There are two of these slots in each partition-plate, being arranged at such distance apart as to bring the bent ends of the roller-frames opposite thereto when they are set in the case. These slots are designated by *b* in the end pieces B and *c* in the partition-plate C. The roller-frames are secured in any position desired by bolts E, which are passed through the slots in the upright plates and the notches or slots in the ends of the roller-frames, and fastened with a nut on one end thereof, by which the parts are drawn tightly together. This casing and shelving is of a well-known construction; but heretofore the slots in the upright plates have been perfectly straight, and hence the frictional resistance of surfaces standing in vertical planes and drawn together by a screw-nut has been the sole dependence for holding the shelves in the positions to which they are adjusted.

Now, sometimes an imperfection or some change produced by temperature or otherwise will loosen the fastening sufficiently to permit it to yield or give a little under the weight put upon the shelf. My improvement is to overcome this difficulty, and for this purpose I make the slots in the upright plates sinuous or serpentine instead of straight, as seen in Fig. 3 of the drawings. Now, it is obvious that with the slots thus formed the fastening-bolts will have more or less vertical support, whatever may be their position in the bends of the slots. The resistance to the displacement of the shelf is therefore greatly increased. In fact it will be seen that if both slots are sinuous a shelf cannot drop, unless both fastenings at the same end thereof are loosened, for there must be some lateral movement in order to produce any vertical movement of the shelf. The shelf-fastening is therefore made entirely secure, and all danger of displacement practically obviated. At the same time all the advantages of the old straight-slot construction mentioned above are retained, for the bolts can be fastened at any point whatever in the sinuous slots, so that the adjustment of the shelves is entirely at will, and the position is not in any way predetermined by a series of notches.

In some instances it may not be necessary to make both of the slots serpentine, only one may be sufficient for the purpose, this one

being located where the greater strain comes upon the shelving. I wish to be understood, therefore, as including in my invention either one or both of the slots in the upright plates of serpentine form.

The particular construction of the shelving is not material. I have shown and described a roller-frame shelving merely for the purpose of illustration; but I do not wish to be understood as limiting myself to this or any other particular construction, the only thing required is that the shelving shall be adapted to be fastened in place by the devices described. The same is true of the casing. I have shown a case of shelves simply for illustration, but wish it understood that I intend my improvement for application to all kinds of casing or shelf-framing wherever it is applicable. It will also be understood that the pitch of the undulations of the slots is not material. It may be as shown in the drawings or greater or less, as may be desired and circumstances require. The improvement is especially adapted for metal-work; but it may also be used with wood-work, or at least structures mainly of wood; hence I do not limit myself to structures entirely of metal.

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

1. In adjustable shelving, the upright transverse partitions and ends provided with one or more sinuous slots extending the length thereof, in combination with the shelf-frames, and bolts adapted to pass through said slots, and suitable openings in the shelving, and provided with the tightening-nuts, whereby the shelving may be fastened securely in position at any point whatever along the length of said slots, substantially as and for the purposes specified.

2. In adjustable shelving, the metal upright plates B C, &c., each provided with two sinuous slots *b c*, &c., in combination with the shelf-frames D, provided with the angular slotted extensions d^2, and the fastening-bolts E, provided with tightening-nuts, substantially as and for the purposes specified.

JAMES W. HINE.

Witnesses:
CARRIE FEIGEL,
A. M. BEST.