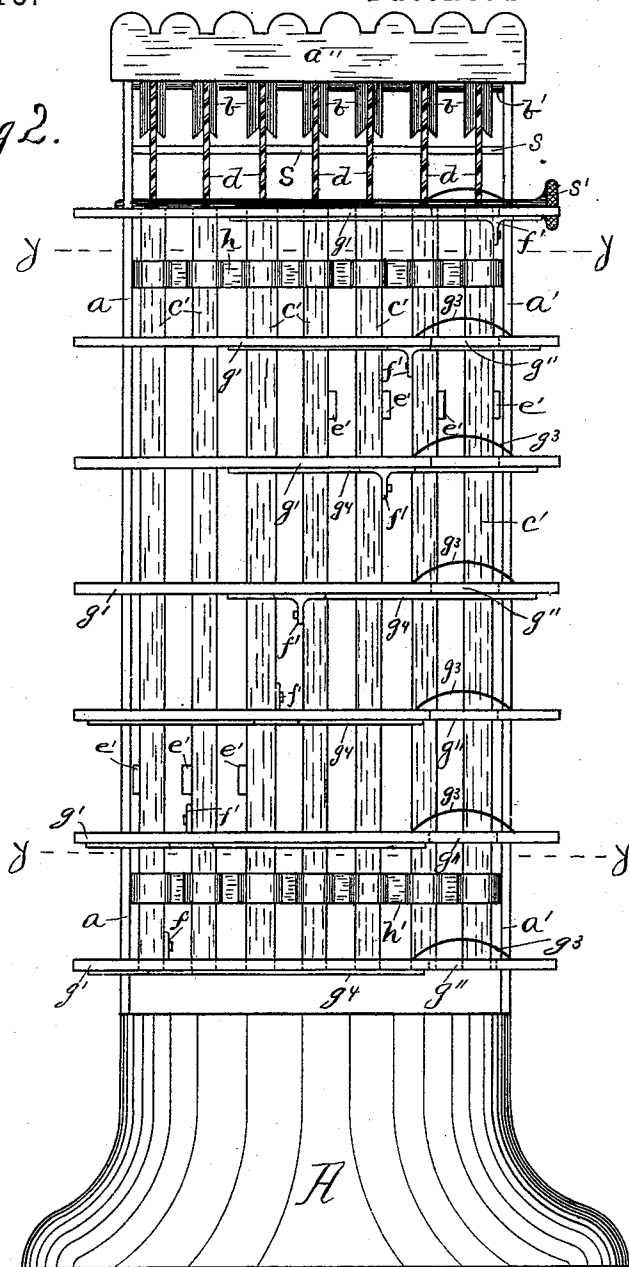


A. B. WAGNER & E. LIESENHOFF.
SHELVING.

No. 534,413.

Patented Feb. 19, 1895.

Fig 2.



WITNESSES:

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SHELVING.

SPECIFICATION forming part of Letters Patent No. 534,413, dated February 19, 1895.

Application filed November 5, 1894. Serial No. 527,988. (No model.)

To all whom it may concern:

Be it known that we, ALFRED B. WAGNER and EDWARD LIESENHOFF, of Miamisburg, county of Montgomery, State of Ohio, have invented a new and useful Improvement in Shelving; and we 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Our invention relates to improvements in shelving, and has for its object to provide a system of shelving for stores and other places; that is easily and quickly adjustable to enable access to be conveniently had to the goods thereon.

To this end the improvements consist of a construction that permits the shelves to be separated or parted at any point, with but little effort, as will appear from the following specification, taken in connection with the accompanying drawings, of which—

Figure 1, is a front elevation of our improved shelving, a portion of one side of the standard broken away; Fig. 2, an enlarged side elevation, or a view looking in the direction of the arrow, Fig. 1; Fig. 3, an enlarged cross section, on the lines $x-x$ or $y-y$ of Figs. 1 and 2; Fig. 4, a section on the line $u-u$, Fig. 1, brackets and plates not shown.

In the specification similar letters of reference indicate corresponding parts in the several views.

(A) designates the supporting base, which is preferably a metal casting of sufficient weight to insure a proper support for the shelving.

(a) and (a') designate vertical side pieces, constructed of lighter material, preferably wood, rigidly mounted on the base (A), and at the top attached to a cap (a'') of any preferred ornamental design. This completes a column or standard, having essentially, two open sides, and a hollow interior; in the upper extremity of which there is rigidly mounted a transverse shaft b' having thereon a series of independently running pulleys (b).

(c) and (c') designate two series of vertically sliding bars, preferably constructed of

iron, an inch and a quarter wide by a quarter of an inch thick, of any suitable length, say about forty five inches each. These sliding bars are arranged in pairs, in the interior of the standard, on opposite sides, and each pair is connected at the upper ends by cables (d), which surround the pulleys (b).

(e) and (e') designate laterally projecting guide bars, of which there is one attached to each of the bars (c) and (c'). These guide bars serve to prevent any twisting or lateral movement of the vertically sliding bars (c) and (c') to which they are rigidly attached. Each one of these guide bars (e) and (e') is of a length to project about half way of the width of the companion vertical bar or the sliding bar directly opposite the one to which said respective guide bar is attached, in order that when said vertically sliding bars are moved up and down, the brackets (f) and (f') thereon will not come in contact with said guide bars. There is upon each of the vertically sliding bars (c) and (c'), one bracket (f) or (f'); the position of one bracket on its respective sliding bar, being the reverse of that of the bracket on the companion bar, as shown in Fig. 1, where it will be seen the brackets (f) and (f') are on the extreme upper and lower ends of their respective bars (c) and (c'), so that the elevation of one shelf will correspondingly lower the other.

(g) and (g') designate the shelves, one being independently mounted on each bracket. The shelves may be constructed with a view to accommodate the articles which they are intended to hold, whether clothing, notions, &c.

The invention is mainly suitable for clothing stores, but of course may serve a variety of uses. The shelves (g) and (g') as shown, are especially designed to hold coats; there being circular openings (g'') in each of said shelves, as shown in dotted lines, over which, curved metallic bars (g³) are placed, and secured to the shelves.

It is well known that when a number of coats are placed upon each other, the shoulders or parts where the sleeves join the bodies, will be much higher than any other part of the pile. This requires greater space between the shelves than is otherwise necessary, and in order to accommodate this part of a pile of coats, there is much space between the shelves

that cannot be utilized. To avoid this we provide each shelf with one of said circular openings, through which the shoulders, or highest portion of the pile may project; the curved bars (g^3) serving to protect the projecting portion of said pile from the weight of the pile on the next upper shelf.

(h) and (h') designate transverse metallic guide plates two of which are sufficient, and are placed preferably about eleven inches from the top and bottom of the standard, rigidly attached to the sides thereof. These plates are provided with a series of slots (i) in which the vertically sliding bars (c) and (c') are confined and allowed to freely move.

The operation of raising or lowering the shelves, is performed by catching hold of the bracket (f) or (f') of the shelf that is to be raised or lowered, and pressing upwardly or downwardly thereon. The weight of the goods upon the shelf that is moved downwardly by the operation, adds to the necessary pressure to elevate the opposite bar with its shelf, and thereby renders the operation comparatively easy. The weight of the goods on each pair of shelves so moved, is usually sufficient to counterbalance the shelves in any position they are placed.

It will be understood from the foregoing description, that pressure applied to any one of the shelves to lower or elevate said shelf, will have the effect of moving the shelf similarly supported on the companion bar, in an opposite direction, and thus the shelves may be lowered or raised at will, without the use of levers, cranks, &c. In order to prevent the ends of the vertically sliding bars,—that is, the upper ends, from coming in contact with their respective pulleys, we mount in the sides (a) and (a') of the standard, rods (s)—(s) adjacent to said pulleys, and above the upper ends of said bars.

In practice the bars (c) and (c') may be brought much closer together than is shown in Fig. 2, and thereby the standard greatly reduced in width as compared to that shown in Fig. 1. A space of say, three eighths of an inch between each of said bars, will enable a free movement thereof, without frictional contact with each other. The vertical space between each of the brackets upon which the shelves are supported, when they are in their normal uniform positions, as shown in Fig. 1, may depend somewhat upon the requirements. In the present instance, we have provided a space between the adjacent brackets of about seven and a half inches. The vertically sliding bars (c) and (c') have a movement of about eleven inches.

It will be seen that there may be a number of standards placed in a line and connected to each other, to form one continuous row of shelving. These matters, however, do not in any way change or depart from our invention.

In order to prevent a preponderance of weight that might at any time be on one se-

ries of the shelves, and thereby unequalize the weight or positions of the two series, we provide two push rods (s') and (s') loosely mounted in the sides (a) and (a'), as shown in the reduced view, Fig. 4. These rods occupy horizontal positions across the upper, and outer ends of the bars (c) and (c') when said bars are in an equalized or uniform position. Said bars will thus be locked against any movement. By shifting the push rods (s') and (s'), any one or more pairs of said bars may be permitted to move, or all of them may be moved by pulling said shift rods entirely from over said sliding rods.

(g^4) designates brace bars attached to the brackets (f) and (f') upon which the shelves are supported.

Having fully described our invention, we desire to claim—

1. In a shelving, the combination with a hollow standard; of two series of vertically sliding bars; the bars of one series flexibly connected with those of other series to form pairs; pulleys for moving the bars of each pair up and down in opposite directions, and shelves supported by said bars, substantially as described.

2. In a shelving, the combination with a hollow standard provided with two open sides; of two series of vertically sliding bars, the bars of one series being flexibly connected by a cable or analogous means, to those of the other series; pulleys mounted in said standard for said cables; and guides in said standard to prevent twisting or lateral movement of said sliding bars during their movement, substantially as described.

3. In a shelving, the combination of a hollow standard with open sides; transverse guide plates (h) and (h') in said standard; two series of vertically sliding bars (c) and (c') flexibly connected in pairs; the bars of each pair simultaneously movable in opposite directions; guide bars (e) and (e') fixed to said sliding bars; pulleys over which each pair of said sliding bars is suspended; and shelving supported on said sliding bars, substantially as described.

4. The combination with a hollow standard; of two series of vertically sliding bars inclosed therein; the bars of one series having a flexible connection with those of the other series, at their upper ends, so that the bars of both series are arranged in pairs; anti-friction bearings for the flexible connection of each pair; a shelf attached to each of said bars; the location of said shelf on one bar being at a different point from the location of the shelf on the companion bar, substantially as described.

5. In a shelving, the combination with a hollow standard; of two series of vertically shifting bars (C) and (C'), one bar of each series having a flexible connection; a series of pulleys over which said flexible connections are placed; push rods (s) and (s') placed above said shifting bars to limit the movements

thereof; guide plates (*h*) and (*h'*) through
which said shifting bars move; a shelf sup-
ported on each of said shifting bars; the
shelf on one bar occupying a different posi-
5 tion from that on the companion bar; a cir-
cular opening (*g''*) in each of said shelves,
and a metallic bar (*g''*) over said opening,
substantially as described.

In testimony whereof we have hereunto set
our hands this 29th day of October, 1894.

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EDWARD LIESENHOFF.

Witnesses:

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AMOS K. CLAY.