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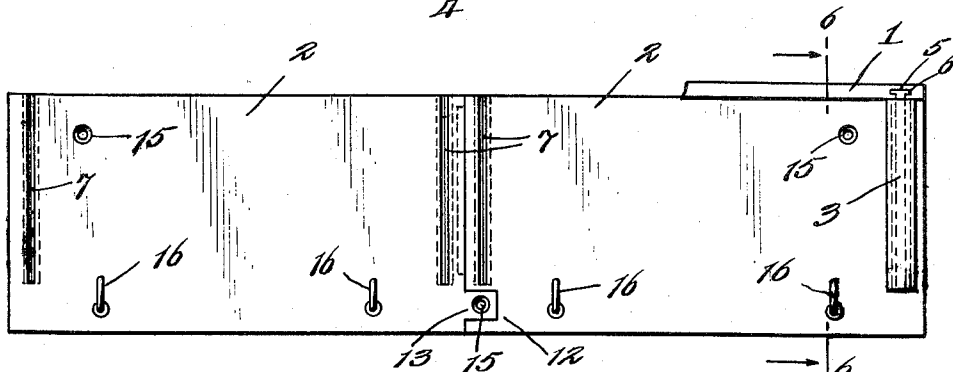
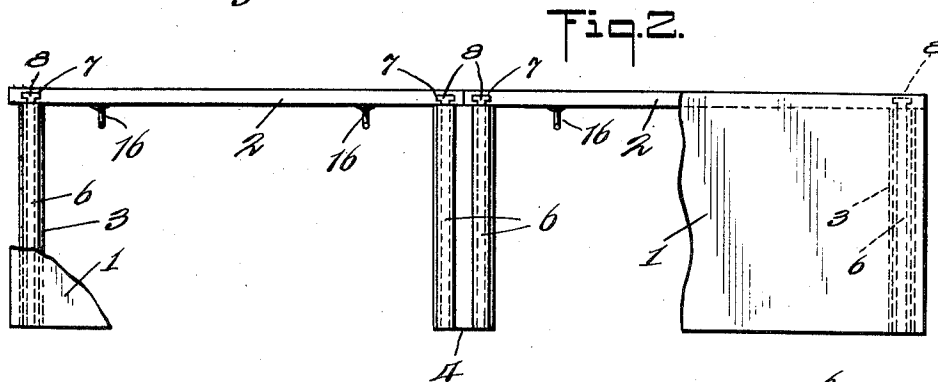
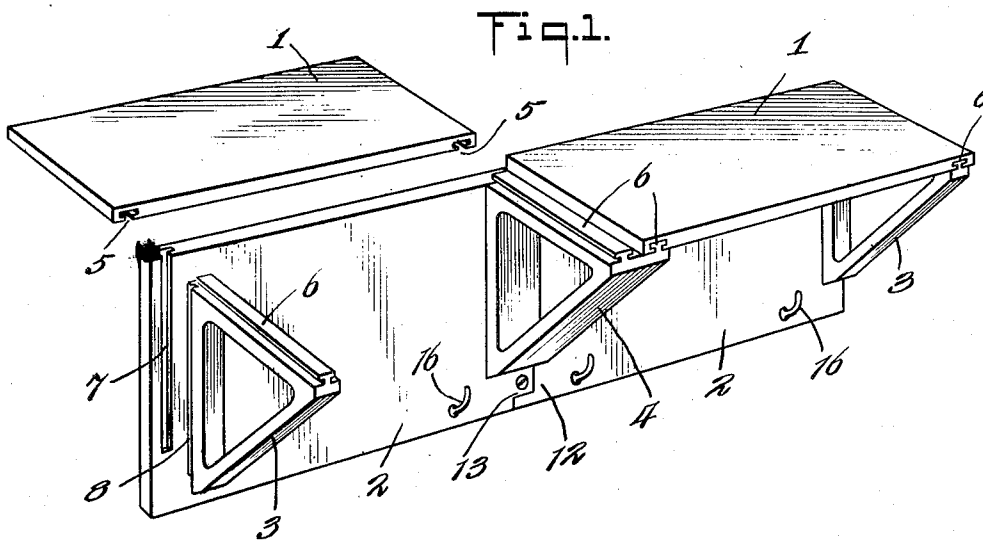
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**A. CRANSTON**

## SHELF AND SIMILAR STRUCTURE

Filed June 16, 1925

2 Sheets-Sheet 1



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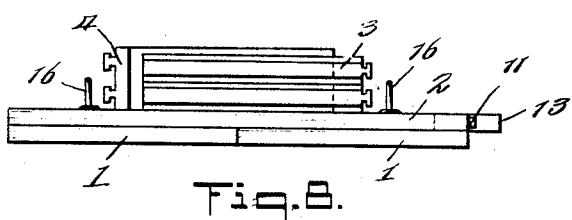
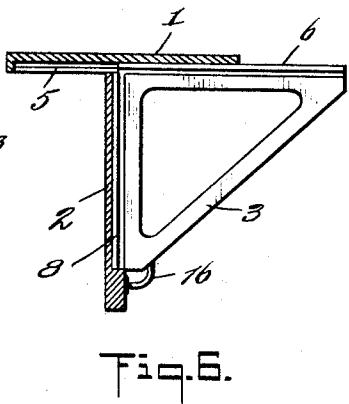
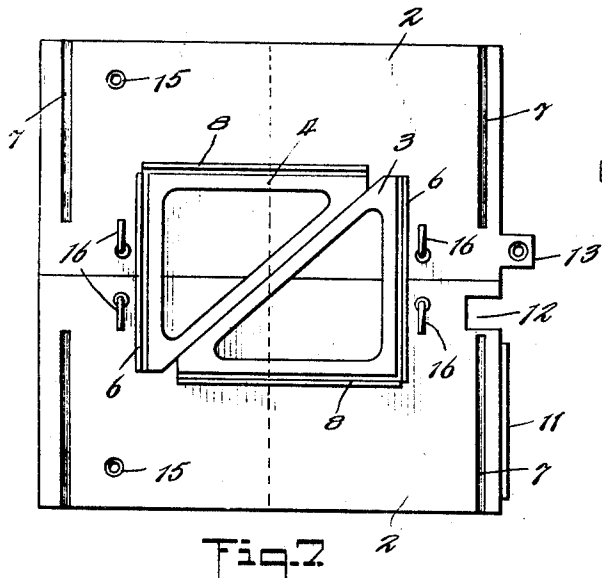
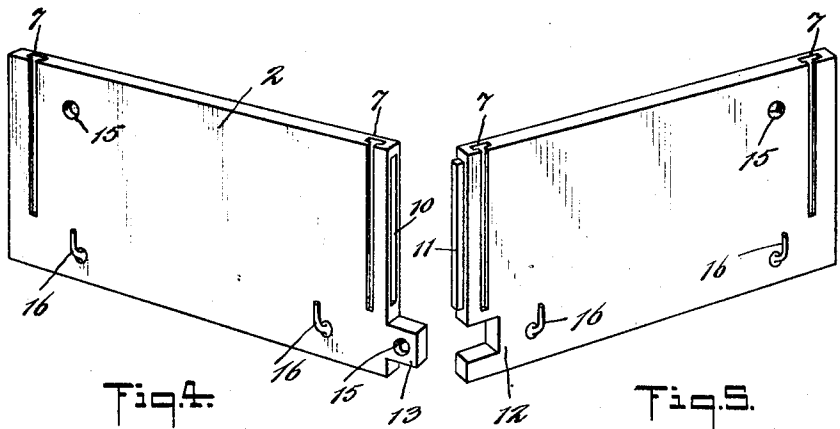
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SHELF AND SIMILAR STRUCTURE

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2 Sheets-Sheet 2



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## UNITED STATES PATENT OFFICE.

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## SHELF AND SIMILAR STRUCTURE.

Application filed June 16, 1925. Serial No. 37,514.

My invention relates to shelves and analogous structures, and especially to "knock down" shelves which are very strong and rigid when set up and arranged for use, and which may be easily and quickly taken apart, arranged very compactly for transportation, and easily and quickly reassembled.

The characteristics, objects and advantages of the invention are sufficiently explained hereafter, in connection with the detail description of the accompanying drawings, which show one exemplifying structure embodying the invention. This particular embodiment of the invention is what I call a straight shelf, in distinction from a corner shelf disclosed in a companion application. After considering the present embodiment of the invention, skilled persons will understand that many variations may be made without departing from the invention, and I contemplate the employment of any structures that are properly within the scope of the appended claims.

Fig. 1 is a perspective view of a shelf structure embodying the invention in one form, certain parts being shown disconnected to facilitate explanation of the assembly method.

Fig. 2 is a top plan with portions of the shelves broken away.

Fig. 3 is a front elevation of the backboards or uprights with one end brace and part of one shelf in position.

Figs. 4 and 5 show the backboards or uprights in juxtaposed position ready for assembly.

Fig. 6 is a section at 6—6, Fig. 3.

Fig. 7 is a plan of the separated parts in one suitable compact arrangement for transportation.

Fig. 8 is a front elevation of the same.

The shelf proper may consist of one or a plurality of shelf sections 1, and a corresponding number of uprights or backboards 2 is also usually provided. The shelf and upright members are secured together and the shelf members are supported by substantially triangular braces such as 3 and 4. While any suitable materials may be employed for the parts, it is usually preferred to make them of a substantially light metal alloy of which duralumin is one example. The use of such material permits the parts to be made of a moderate cross section and of light weight, and at the same time very

strong and rigid, and they may be produced economically by casting and especially by die casting operations, which practically or entirely eliminate any machine work on the parts.

The different parts are secured together by interfitting devices conveniently described as tongue and groove formations, arranged for sliding connection of the parts and eliminating in general any necessity for additional fastenings such as screws or bolts and therefore avoiding a common annoyance incident to the loss of such small fastening parts.

Specifically, in the example shown, the shelf sections 1, have near each end, grooves or channels 5 of T-section to co-operate with tongues or ribs 6 of similar section, formed on the upper members of the braces 3 and 4. The upright members 2 have similar channels 7 to co-operate with similar tongues 8 on the rear upright members of the braces. Desirably the grooves 5 in the shelf members extend from the front edges to a point somewhat removed from the rear edge of the shelf, and the ribs 6 of the braces are similarly dimensioned. This avoids any difficulty in overlapping of the rear and upper ends respectively, of the brace tongues 6 and 8. Desirably also, the upright member grooves 7 terminate well above the bottom edges of the uprights. When two or more shelf sections 1 are to be used in a complete shelf structure, one or more of the intermediate braces 4 is provided at its upper and rear members, with two of the tongues 6 and two of the tongues 8 respectively, so that these intermediate braces act not only as braces to support the shelf sections, but also serve to connect together the shelf and upright sections in a way which will be obvious in the drawing.

Desirably, the upright or backboard sections have additional bracing or interlocking means such as the channel 10 in one of the uprights 2, and the rib 11 on the adjacent end of the other upright, the rib having a substantially close, detachable fit in the socket or channel and also, one of these members may have a socket such as 12 of substantially rectangular outline to cooperate with a tongue or lug 13 on the other member. These formations aid materially in bracing or connecting the uprights against vertical bending strains and hold them in substantially straight alignment,

A very simple provision may be made for supporting the shelf structure on an upright surface such as a wall, this provision consisting in the present example of a suitable number of screw holes 15, certain of which are desirably located near upper edges of the upright members and one of which may desirably be made in the tongue or lug 13. Hooks such as 16 may also be provided in any suitable arrangement on the uprights or on the under sides of the shelves, these parts being suitably bored and tapped to receive the screw shanks of the hooks; or the hooks may be cast integral with the uprights.

Evidently in some cases a single shelf section may be used and there will then be provided to co-operate with it a single upright 2 and two simple braces such as 3, the type of brace illustrated as 4 being unnecessary.

It will be sufficient to describe the assembly of a multi-section structure, such as shown in the drawings. The uprights 2 are placed together end to end with the formations 10—11, and 12—13 interfitted in an obvious way. The intermediate brace 4 is then applied by downward sliding movement to engage its tongues 8 with adjacent grooves 7 of the uprights, whereupon the uprights are locked together against endwise separation or bending movement in their plane. The end braces 3 are then inserted in a similar way in the end grooves 7 of the connected uprights. The shelf sections are then applied by a forward sliding movement which engages the brace ribs 6 with the shelf grooves 5. The intermediate brace 4 thus connects the shelf sections against endwise displacement or bending in their plane, and the interaction of all the parts prevents any bending movement at the shelf and upright intersections in any direction. The shelf is then placed on a wall or other upright surface and secured in an obvious way by inserting screws through the holes 15, and is then perfectly secure against any displacement of the parts, since the shelf sections cannot move forward and are prevented from moving backward by engagement with the wall surface; and there is, of course, no tendency for upward displacement of the shelves or braces. The structure when so assembled and mounted on a wall is very strong and rigid and will support securely any reasonable weight which may be placed upon the shelves.

The parts may be disconnected easily and rapidly by operations substantially the reverse of those above described and may then be placed together in various compact ways for convenient transportation. As shown the shelf and upright sections may be of closely similar dimensions. When the two shelves and the two upright sections are

placed together with their long edges abutting they therefore occupy substantially the same area, which may be a square area, the side of which is no longer than the length of a single shelf or upright section. The two pairs of sections may then be superposed either in parallel relation or in crosswise relation, as shown in Figs. 7 and 8, and the braces may be placed upon the other sections in the compact arrangement shown, the two end braces being superposed and occupying the same vertical space as the intermediate brace. In another arrangement the shelf and upright sections may all be superposed with the braces upon them, and the greatest dimension of the package so formed will be only that of the length of a single shelf or upright section, and the other dimension will be substantially less—usually only about one-half the lengthwise dimension of the shelf or upright section.

The shelf and similar structures constructed in accordance with the principles outlined, and in equivalent ways, are especially valuable under present housing conditions, since they admit of very quick and easy connection and disconnection and mounting in operative positions in any residence or apartment, and especially when made of metal are practically indestructible. Great economy is therefore provided in comparison with present methods of erecting wooden shelving which must generally be left in place when the premises are vacated.

I claim:

1. A knockdown shelf or similar structure comprising a rear vertical supporting member, a horizontal shelf member adapted for location substantially at the top of the supporting member, and brackets to additionally brace and support the shelf member, the brackets and rear member having interlocking tongue and groove formations detachably engaged by downward sliding movement of the brackets, and the brackets and shelf member having interfitting tongue and groove formations detachably engaged by forward sliding movement of the shelf, the shelf tongue and groove members having cooperating stops limiting forward shelf movement, the shelf being securely supported and braced against downward displacement and prevented from rearward displacement by engagement with a wall against which the structure is mounted.

2. A knockdown shelf or similar structure comprising at least two aligned endwise abutting rear upright members adapted for location against a wall, at least two aligned and endwise abutting shelf members arranged for location substantially at the top of the rear members, and a plurality of upright brackets, the brackets and rear members having tongue and groove formations

detachably engaged by vertical sliding movement of the brackets, the brackets and shelf members having tongue and groove formations detachably engaged by forward sliding movement of the shelf members prevented from rearward displacement by engagement with a wall against which the structure is mounted, at least one intermediate bracket being provided with two sets of interlocking members whereby the adjacent rear and shelf members are connected together against endwise displacement and the shelf members are simultaneously supported by said bracket as well as by the others.

3. A knockdown shelf or similar structure comprising a rear vertical supporting member, a horizontal shelf member adapted for location substantially at the top of the supporting member, and brackets to additionally brace and support the shelf member, the brackets and rear member having inter-

locking tongue and groove formations detachably engaged by downward sliding movement of the brackets, and the brackets and shelf member having interlocking tongue and groove formations detachably engaged by forward sliding movement of the shelf, the shelf tongue and groove members having cooperating stops limiting forward shelf movement, the shelf being securely supported and braced against downward displacement and prevented from rearward displacement by engagement with a wall against which the structure is mounted, the parts being constructed and dimensioned so that when knocked down they may be superposed and packed in a space substantially less than the length of the erected structure.

Signed at Atlantic City in the county of Atlantic and State of New Jersey this 12th day of June A. D. 1925.

ARTHUR CRANSTON.