

March 23, 1937.

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2,074,915

SHELVING OR BIN STRUCTURE

Filed Dec. 10, 1934

2 Sheets-Sheet 1

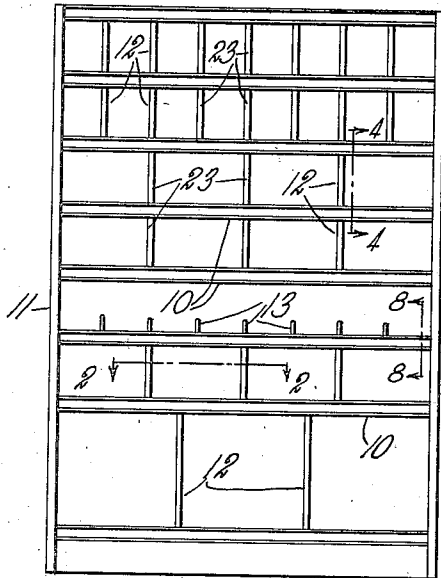


Fig. 1

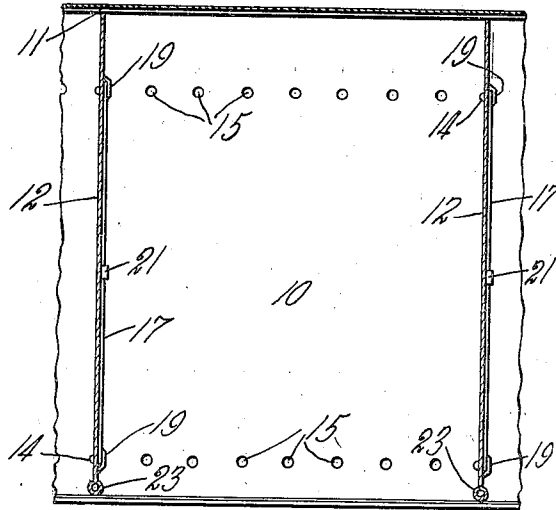


Fig. 2

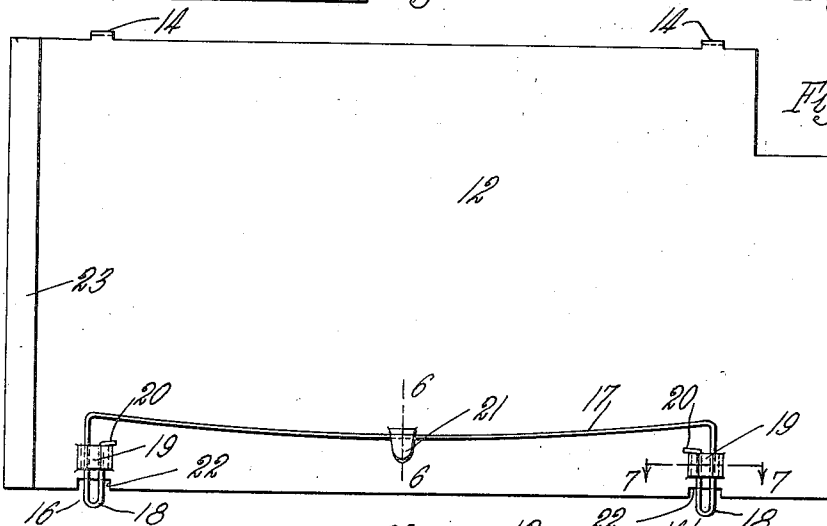


Fig. 3

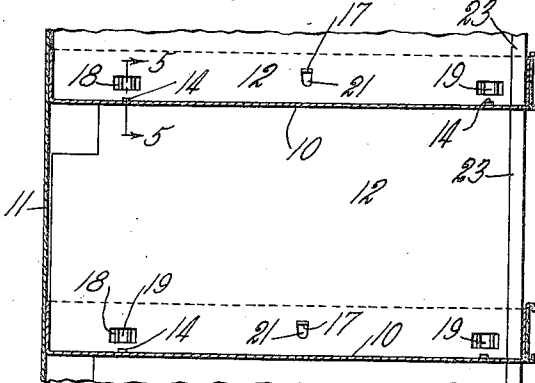


Fig. 4

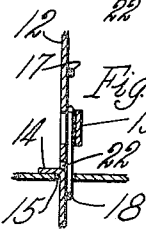


Fig. 5

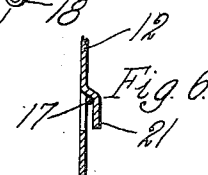


Fig. 6



Fig. 7

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2 Sheets-Sheet 2

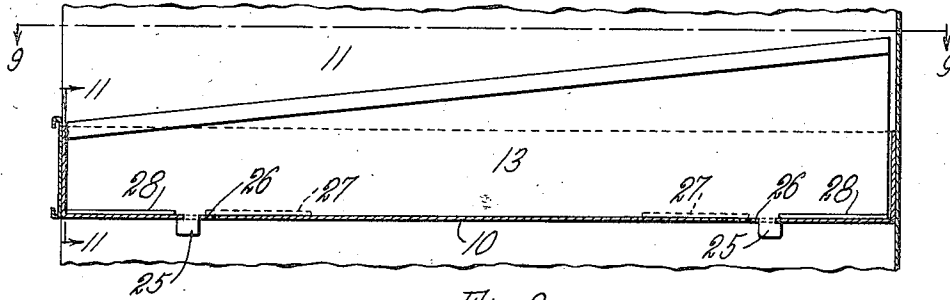


Fig. 8.

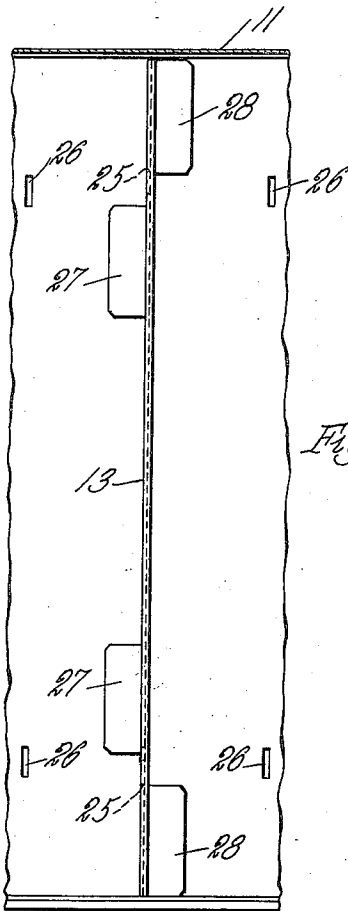


Fig. 9.

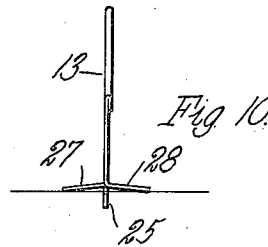


Fig. 10.

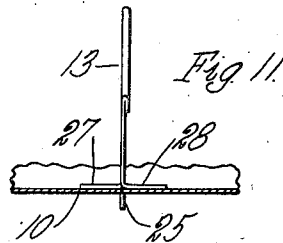


Fig. 11.

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UNITED STATES PATENT OFFICE

2,074,915

SHELVING OR BIN STRUCTURE

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Application December 10, 1934, Serial No. 756,847

6 Claims. (Cl. 211—135)

This invention relates to shelving or bin structures of that sort adapted for use in stock rooms, machine shops and elsewhere, which comprise a stack or group of shelves with interposed dividers or partitions forming a group of bins or compartments for the reception of articles of various sorts, and more particularly in which the sheet metal dividers are releasably secured and adapted to be placed in different positions, as may be necessary, to provide bins of similar or different desired sizes or a desired grouping of bins of like or different sizes.

The objects of the invention are to provide dividers for such structures adapted to be readily and releasably secured in place between the shelves without the use of tools in such positions as may be necessary to form compartments of desired widths; also to provide a bin structure in which the dividers extend the full vertical distance from one shelf to another but nevertheless can be removably retained in place without the use of securing bolts or the like or tools so as to adapt them to be readily placed in one or another position to form bins of desired widths or groupings; also to provide a desirable but simple and inexpensive divider equipped with means for readily and removably securing it in place between two shelves; and also to provide a bin or shelving stack or structure having the other features of improvement and advantage hereinafter described and set forth in the claims.

In the accompanying drawings:

Fig. 1 is a front elevation, on a reduced scale, of a bin or shelving stack embodying my invention.

Fig. 2 is a fragmentary, sectional plan thereof on an enlarged scale on line 2—2, Fig. 1.

Fig. 3 is a side elevation of one of the full height dividers removed.

Fig. 4 is a transverse, sectional elevation of the stack, on an enlarged scale, on line 4—4, Fig. 1.

Fig. 5 is a sectional elevation on an enlarged scale on line 5—5, Fig. 4, showing the means for retaining adjacent vertical dividers in place.

Figs. 6 and 7 are sections on an enlarged scale on lines 6—6 and 7—7 respectively, Fig. 3.

Fig. 8 is a transverse, sectional elevation of the stack on line 8—8, Fig. 1, but on an enlarged scale.

Fig. 9 is a sectional plan thereof on line 9—9, Fig. 8.

Fig. 10 is an end elevation, detached, of the sub-divider shown in Figs. 8 and 9.

Fig. 11 is a longitudinal, sectional elevation on line 11—11, Fig. 8.

The bin stack shown comprises spaced, horizontal shelves 10, which are supported in parallel spaced relation, one above the other in a suitable supporting frame or casing 11, and upright dividers or partitions dividing the spaces between the shelves into bins or compartments. The shelves are preferably made of sheet metal, but they and their supporting frame or case may be of any suitable construction, and provision may be made for supporting the shelves in the frame or case at different elevations so as to secure like or different desired vertical spacings between the shelves.

Some of the upright dividers, designated 12, extend the full height of the spaces between adjacent shelves so that the compartments between these dividers have full height side walls extending from shelf to shelf, while others of the dividers are subdividers or low partitions 13 which extend upwardly from one shelf only a part way up to the next shelf above to form open topped bins. The full height dividers 12 may be of different heights to suit different vertical spacings between the shelves, but each full height divider 12 extends from one shelf fully up to the next shelf above.

Each full height divider 12 is provided at one edge, preferably its top edge and adjacent its opposite ends, with upwardly projecting, integral lugs 14 adapted to enter apertures 15 in the upper one of the two shelves between which the divider is located, and the divider is provided at its opposite, or lower edge portion, with one or more catches 16 adapted to project below the bottom edge of the divider and enter the apertures 15 in the lower shelf on which the divider rests. The divider is placed in the position by inserting the tongues 14 into the apertures in the upper shelf while holding the divider at an inclination, and then the divider is swung downwardly until the releasable catches 16 at its lower edge register with and are adapted to enter the apertures in the lower shelf. Each shelf may be provided with two rows of relatively, closely spaced apertures 15, so as to allow the dividers to be placed in different desired positions, by engaging their lugs and catches in different pairs of apertures in the shelves. Circular apertures 15 are shown, but they can be of other shape.

Preferably, the top lugs 14 are of angle form having bent ends which extend laterally to one side of the divider at points spaced above the top edge of the divider substantially equal to the thickness of the shelf with which the tongues engage, and the releasable catches at the bottom

of the divider are preferably formed by a spring wire 17 which extends lengthwise of the divider at one side thereof and is bent at its opposite ends to provide downwardly extending U-shaped legs 18, the rounded bottom ends of which normally project below the bottom edge of the divider. The legs 18 extend through and are movable vertically in guides 19 on the divider, and the upper ends of the upbent portions of the U-shaped legs are bent laterally at 20 above the guides 19 so as to form stops to limit the downward movement of the legs 18. The middle portion of the wire 17 is anchored or fastened to the divider by a retaining member 21. Preferably the guides 19 are formed by integral punched out straps or portions of the divider plate, and the retaining member 21 is formed by an integral downwardly extending hook punched out from the divider. The catch spring is placed in position by inserting its legs 18 in the guides 19 and springing the middle portion of the wire 17 under the retainer hook 21, and it is retained in place on the divider by engagement with guides 19 and the hook 21, no tools or securing operation being necessary to place and retain the catch spring in position on the divider. The catch legs 18 are normally pressed downwardly and their lower ends held yieldingly below the bottom edge of the divider by the elasticity of the wire 17.

The bottom edge of the divider is preferably notched at 22 opposite the catch legs 18 and in vertical alinement with the securing lugs 14 at the top edge of the divider so that in assembling the dividers in the stack, when the adjacent superposed dividers are in vertical alinement, the top lugs of the lower divider will pass through the shelf between the dividers and can enter the notches 22 in the bottom edge of the upper divider. Thus, the lugs 14 on the dividers do not prevent the dividers from being arranged in vertical alinement one above the other. The top lugs 14 on one divider and the bottom catches 18 on the next divider above, when the dividers are placed in vertical alinement, enter the same apertures in the shelf between the two dividers, and the bottom catches on the upper divider will extend through the apertures in the shelf at one side of the top lugs 14 on the divider below, as shown in Fig. 5, so that the bottom catches on the upper divider act to prevent possible accidental disengagement of the top lugs 14 on the alined lower divider from the apertures in the shelf, the dividers thus mutually coacting in retaining each other in place.

The hooked or bent ends of lugs 14 are adapted to rest flat on the upper face of the shelf through which they project, and thus do not form objectionable upward projections on the shelves in instances where the dividers between two shelves are not in vertical alinement with the dividers between adjacent shelves, and furthermore, the laterally bent ends of the lugs 14 prevent the disengagement of the lugs from the apertures in one shelf in the event that the shelf below should sag or be deflected downwardly under the weight thereon far enough to allow straight lugs to slip downwardly out of the apertures.

The dividers 12 shown are provided with beaded or tubular front edges 23 to stiffen the dividers and provide a finished front edge appearance for the partitions of the stack, but the dividers may or may not be formed with these beaded or tubular front edges, as desired.

Each of the subdividers 13 is removably secured in place, preferably as follows: The di-

vider is provided at its bottom edge with a pair of integral, downwardly projecting hook-shaped lugs 25 adapted to enter transverse slots 26 in the shelf on which the subdivider rests. The hook lugs 25 on the divider are oppositely arranged with the ends of the hooks on the two lugs extending in opposite directions, or toward the opposite ends of the divider. The slots 26 in the shelf are longer than the bottom hooked ends of the lugs 25 and are spaced so that when the lugs are in place in the slots, the beaks of the hooks will project under or underlie the outer ends of the pair of slots which the hooks occupy. To secure the subdivider in place, one of its hooked lugs is inserted in its slot in the shelf and the divider is then bowed or sprung laterally sufficiently to enable the other hooked lug to enter its slot in the shelf, and the divider is then released or permitted to resume its straight condition by its inherent resiliency, thereby spreading the hooked lugs and causing the hooked end of the second lug to engage under the outer end of the slot which it occupies. The lugs of the divider are prevented from being removed from the slots in the shelf except by first springing or bowing the divider sufficiently to withdraw the hooked end of one lug from under the outer end of the slot occupied by said lug, whereupon the lug can be removed from the slot and the divider then moved to disengage the second lug from its slot.

In order to hold the subdivider firmly in upright position on the shelf, it is provided, preferably near each end of the divider, with oppositely bent bottom flanges or feet 27 and 28 which extend to opposite sides of the divider and are adapted to bear on the top face of the shelf. Normally these flanges preferably slope slightly downward outwardly from the divider, as shown in Fig. 10, so that when engaging the hooked lugs of the divider in the shelf slots, the flanges have to be sprung upwardly slightly to permit the engagement of the hooked lugs in the shelf slots. The tendency of the flanges to resume their normal position, due to the inherent elasticity of the metal sheet from which the divider is formed, causes the flanges to press firmly against the top face of the shelf and thus draw the hooks of the lugs up against the bottom face of the shelf and thereby firmly hold the divider perpendicularly to the shelf and prevent it from tilting out of its intended vertical position.

I claim as my invention:

1. The combination with spaced shelves arranged one above another and provided with apertures, of an upright divider arranged between said shelves and provided at its upper edge with a fixed projection arranged to project into an aperture in the upper shelf, and a spring wire mounted on and carried by said divider and having integral portions which are yieldingly held by the elasticity of the spring wire projecting below the bottom edge of said divider and are self-acting to releasably engage in the apertures in the lower shelf when alined therewith for removably securing the divider in position between said shelves.

2. The combination with a shelf structure comprising spaced shelves arranged one above another and having apertures in different parts thereof, of a divider arranged between said shelves, a spring wire anchored between its ends to said divider and having end portions which are yieldingly held by the elasticity of said spring wire projecting beyond an edge of the divider

and are self-acting to spring into said apertures in an adjacent part of the shelf structure, and means engaging with another part of the shelf structure and cooperating with said spring wire for removably securing said divider in position between said shelves.

3. The combination with a shelf structure comprising spaced shelves arranged one above another and having apertures, of a divider arranged between said shelves, a spring wire anchored between its ends to said divider and having end portions which are yieldingly held by the elasticity of said spring wire projecting beyond an edge of the divider into said apertures in the adjacent shelf, means engaging a part of the shelf structure and cooperating with said spring wire for removably securing said divider in position between said shelves, and guides integral with said divider for the end portions of said spring wires.

4. The combination with a shelf structure including a shelf provided with apertures there-through, of a divider arranged below said shelf and provided at its upper edge with hooked projections which project into said apertures and overhang one edge of the apertures, and a divider arranged above said shelf in the plane of said lower divider and having in its lower edge notches into which the projections on the lower divider extend and also having mounted at its lower edge at one side of the plane of the divider spring-actuated latches which extend into said apertures in the shelf at one side of the projections on the lower divider and prevent disen-

gement of said hooked projections from said apertures.

5. The combination with a shelving structure comprising spaced shelves and provided with apertures, of a removable divider therefor, a spring strip secured on said divider and having a portion which is yieldingly held by the spring action of the strip in engaging position at an edge of the divider and is self-acting to releasably engage the aperture in an adjacent part of said structure for holding said edge of the divider in place, and means on the divider adjacent an opposite edge thereof having a stud and socket engagement with the shelving structure and cooperating with said spring strip for removably securing the divider in position.

6. The combination with a shelving structure comprising spaced shelves arranged one above another and provided with apertures, of a divider arranged between said shelves having an integral tongue and integral guides for a spring, a spring wire anchored between its ends to said divider by engagement under said tongue and having movable end portions which are confined by said guides and yieldingly held by the spring action of said wire projecting beyond an edge of the divider and are self-acting to engage in apertures in the adjacent shelf for holding said edge of the divider in place, and means on the divider adjacent an opposite edge thereof having a stud and socket engagement with the shelving structure and cooperating with said spring wire for removably securing the divider in position.

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