May 23, 1944. W. L. SNELLING 2,349,385

TRAY TIER SUPPORT

Filed Nov. 18, 1942

Fig. 1

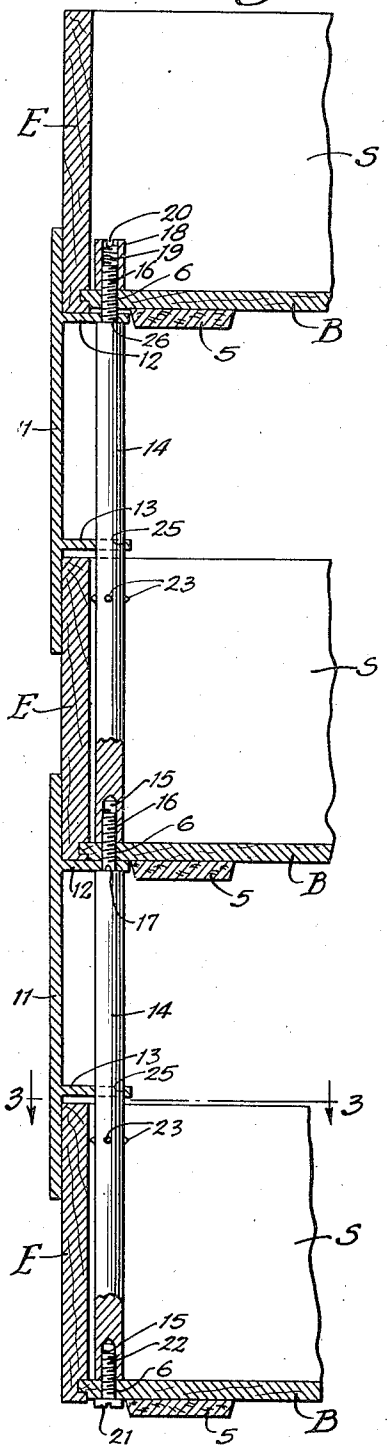


Fig. 2

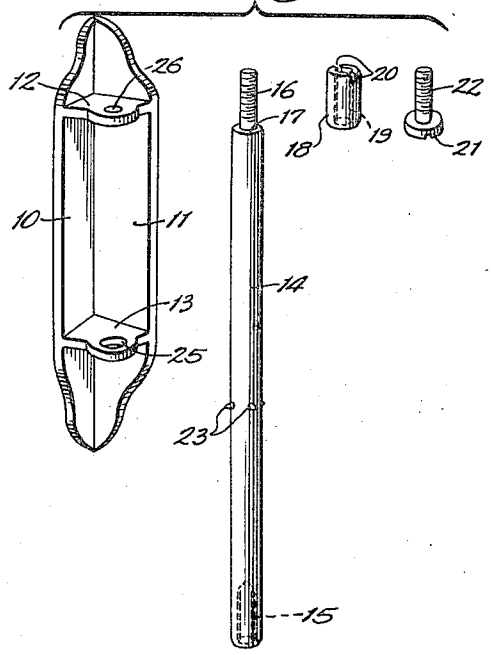
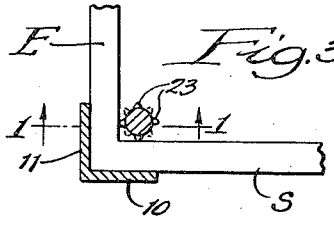


Fig. 3



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2,349,385

TRAY TIER SUPPORT

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9 Claims. (Cl. 211—126)

This invention is concerned with a support for desk trays that are to be built up into a tier.

The trays for which the present supports are designed are of the usual type for use on desks, counters, cabinets, etc., adapted to contain various papers which may be placed therein or removed therefrom from time to time. These trays, commonly made of wood, are often arranged in spaced relation one over another in tier formation, two high or more. To sustain the tier of trays various expedients have been worked out, most of them involving spring clips which assist in holding the associated supports in place, but none of them being wholly satisfactory. With a view to providing interconnecting supports which are simple, inexpensive, easily fitted in place, and furnish a stable inseparable support for the various trays comprised in the tier, the present improvements have been developed. A suggestive embodiment of my invention is set forth in the accompanying drawing wherein:

Figure 1 is a vertical sectional view, taken on line 1—1 of Fig. 3, showing a tier of three trays interconnected by the supports of this invention;

Fig. 2 is a perspective view of the four elements, disassembled, which together make up one of the supports; and

Fig. 3 is a horizontal sectional view, taken on line 3—3 of Fig. 1.

The trays of which three are in the tier shown in Fig. 1 may each consist of a bottom B from which rises a pair of ends E and a pair of sides S (one only of the ends and sides being illustrated) and all interconnected in any suitable way to render the structure rigid and sturdy. If desired a foot 5, of cork, felt or the like, may be affixed to the under face of the bottom, one adjacent each corner thereof. For application of the supports presently to be described a set of relatively small holes 6 extend through the tray bottom, one slightly to the outside of each foot and slightly to the inside of the angle formed by the inner faces of the sides and ends whereby opposite ends of the four holes will be fully exposed on the upper and under faces of the bottom.

To sustain one tray in spaced relation above another, a set of four supports are employed, one for each corner. Each support set (see Fig. 2) consists of a post in the form of an angle plate affording walls 10 and 11 in right angular relation between which are carried upper and lower ledges 12 and 13, respectively; a rod or bolt 14 having at its lower end a threaded socket 15 and at its upper end a threaded stem 16 of reduced diameter forming at its juncture with the bolt an annular shoulder 17; a cap nut 18 having a threaded socket 19 to receive the stem 16, and formed at one end with a slot 20 for reception of a screw-driver blade; and a base screw comprising a slotted head 21 from which extends a threaded shank 22 adapted to be received cooperatively within the socket 15 of the bolt. The bolt is also formed, by preference, with a plurality of radially extended teeth 23, four being illustrated, all in a common plane at a point lengthwise of the bolt which is opposite an end and side of the tray (when assembled therewith) slightly below their top edges. The ends of the angled walls of the post may be curved, sloped, or otherwise formed to produce an effect pleasing to the eye, one suggestive design being indicated in Fig. 2.

To erect and sustain a tier of trays, the four supports are assembled therewith in the manner shown for one corner thereof in Fig. 1. Here it will be observed the angle post is placed over the outside corner of a lower tray, the exterior face of the meeting end and side being engaged by the walls 10 and 11. When thus fitted, the bolt is inserted through the tray bottom hole 6 and two registering apertures or holes 25 and 26 in the lower and upper ledges 13 and 12, respectively, the lower hole being of a size to freely receive the bolt, and the upper hole only the threaded stem extending beyond the upper end thereof, and through the hole 6 in the bottom of a second tray to project upwardly therewithin. This second tray finds support upon the top face of the upper ledge 12 of the angle post which itself is supported at a fixed elevation by engagement of the bolt shoulder 17 with the under face of the same ledge. The lower ledge which desirably remains spaced from the top edge of the tray corner therebelow to accommodate itself to trays having walls of non-uniform height, affords a bearing for the bolt whereby the post as a whole is maintained in vertical alignment therewith and with the ends and sides of the tray each of which is also maintained in vertical register with the walls of the other trays in the same tier. If a third tray is also to be added to the tier, then another bolt with angle post threaded thereon is screw threaded endwise to the bolt extending upwardly from the bottom tray, a support upon the upper ledge 12 of the second strut being thereby afforded for the third tray. Having completed the build-up of trays for the tier, a cap nut, such as the one denoted as 18, is applied over

the upwardly protruding stem of the bolt to bear upon the top face of the bottom of the top tray. The four parts forming the support for one corner of a two-high tier are duplicated for each of the remaining corners thereof, and are duplicated once again for a three-high tier, and so on to the top.

It is desirable that the erected tier of trays be stable and inseparable. This end is attained by the angle posts which engage the tray corners on the outside in cooperation with the bolt whose teeth are adapted to engage the tray corners on the inside. It may be that the thickness of the tray walls do not always run uniform, or that the holes 6 in the tray bottom may not always be located a uniform distance from the tray walls, and to meet such contingencies the bolt teeth may, with slight effort, be sunk into the tray walls to whatever extent is necessary to provide for each bolt a requisite bracing relative thereto. In one rotative position of the bolt two of the four teeth extend directly toward the facing walls of the tray, and so tend to space the bolt further removed therefrom than if the bolt be rotated to another position, say through 45°, wherein the teeth are disposed angularly to such walls, permitting the bolt then to occupy a position closer to the tray corner. With the bolt, or two or more interconnected bolts fitted in place, as already described, the assembly is completed by application of the bolt end fittings whereby to clamp the top and bottom trays (together with any trays intermediately thereof) into unitary relation. The entire tier of trays is then joined immovably and inseparably so as to be ready for sustained and active use. At any time that a tray (one or more) is to be added to the tier, or subtracted therefrom, it is necessary merely that the cap nuts be removed for receiving the added supports and trays, or for taking away the supports and trays no longer needed, the operation being completed by again restoring the bolt end fittings to clamping positions within the topmost tray where they may then be reconnected with the upper ends of the several bolts (or interconnected bolts, as the case may be).

The tray support herein described is advantageous in that it makes for a firm and stable tier structure. It is also simple to apply and use, and accommodates itself to non-uniform conditions such as differences in tray heights, wall thicknesses, etc. The fittings at opposite ends of the rods or bolts are so small as not to mar the wood or to interfere with the tray contents, and if desired may be formed to occupy positions within counter-sunk openings wherein they will lie flush with the adjacent faces of the trays. The post walls extend endwise beyond the two ledges, thereby assuring engagement with the tray corners for a sufficient distance to afford stability to the tier structure as a whole.

I claim:

1. For use with a tier of like desk trays having vertical walls, four corner supports each comprising an angle post engageable flatwise with exterior faces of two adjacent walls of an upper and lower tray for maintaining one in vertical register with the other, there being through each tray bottom a corner hole adjacent the inner faces of the tray walls aforesaid, a pair of spaced ledges carried by the angle post at points spaced from the ends thereof, between two trays, one of the ledges affording support for the bottom of the tray thereabove and both of the ledges being formed therethrough with holes in register with each other and with the holes in the tray corners, and means for securing the post in a fixed position exteriorly of the registering corners of the superposed trays comprising a bolt extending vertically through the holes thereof and of the post ledges and provided near its upper end with means in engagement with the ledge thereabove, and bolt end fittings at opposite ends of the bolt adjustable relatively toward and from each other and engageable with opposite faces of the tray bottoms to exert a clamping force thereon whereby to interconnect the trays with the supporting post therebetween as an immovable unit.

2. For use with a tier of like desk trays having vertical walls, four corner supports each comprising an angle post engageable flatwise with exterior faces of two adjacent walls of an upper and lower tray for maintaining one in vertical register with the other, there being through each tray bottom a corner hole adjacent the inner faces of the tray walls aforesaid, a pair of spaced ledges carried by the angle post spaced from the ends thereof at points between two trays, one of the ledges affording support for the bottom of the tray thereabove, and means for securing the post in a fixed position exteriorly of the registering corners of the superposed trays comprising a bolt extending vertically through the holes in the bottom of the tray, and means on the ledges connected with the bolt and provided near its upper end with supporting means in engagement with the ledge thereabove, and means at opposite ends of the bolt adjustable relatively toward and from each other and engageable with the trays to exert a clamping force thereon whereby to interconnect the trays with the supporting post therebetween as an immovable unit.

3. For use with a tier of like desk trays having vertical walls, four corner supports each comprising an angle post engageable exteriorly with corners of upper and lower trays, there being through each tray bottom a corner hole adjacent the inner faces of the corner, a pair of spaced ledges carried by the angle post at points spaced from the ends thereof between two trays, one of the ledges affording support for the tray thereabove when rested thereupon and both of the ledges being formed therethrough with holes in register with each other and with the holes in the tray corners, a bolt extended vertically through the ledge holes and into engagement with the proximate face of the bottom of the tray therebelow, and having near its top means engageable with the under face of the upper ledge whereby to serve as a spacer between the two trays, and screw means engageable with the remote faces of the tray bottoms and removably and adjustably connected to opposite ends of the bolt adapted to exert upon the trays a clamping force whereby to interconnect the trays immovably as a unit.

4. In combination with a pair of like superposed trays, corner supports between the trays each comprising a bolt extended between the bottoms thereof to space one from the other a fixed distance, a post extending from one tray to the other on the outside of the bolt having means adjacent opposite ends for engagement with an exterior corner of each tray, means connecting with the bolt ends in engagement with the bottoms of the trays adapted to prevent separation of one tray from the other, spaced means extending inwardly from the post at points spaced from the ends thereof, and means pro-

viding a sliding interlock between the spaced means and the bolt at points between the trays, one of said spaced means engaging also with the upper tray to afford a sustaining support therefor.

5. In combination with a pair of like superposed trays having bottoms and connected walls forming corners, supports between the trays each comprising an angle post extended from one tray to the other and in engagement with an exterior corner of each tray, a bolt extended vertically between the trays close to the inside corners thereof and connected to each to prevent separation thereof, spaced means interconnecting the post and bolt at points between the two trays, and means extended outwardly from the bolt for engagement with inner faces of the tray walls to maintain the bolt in spaced relation thereto.

6. In combination with a pair of like superposed trays having bottoms and connected walls forming corners, supports between the trays each comprising an angle post extended from one tray to the other and in engagement with an exterior corner of each tray, a bolt extended vertically between the trays close to the inside corners thereof and connected to each to prevent separation thereof, and spaced means interconnecting the post and bolt at points between the two trays.

7. In combination with a pair of like superposed trays having bottoms and connected walls forming corners, supports between the trays each comprising an angle post extended from one tray to the other and in engagement with an exterior corner of each tray, a bolt extended vertically between the trays close to the inside corners thereof and connected to each to prevent separation thereof, spaced means interconnecting the post and bolt at points between the two trays, and spaced means extended outwardly from the bolt for engagement with inner faces of the tray walls at points varying in distance from the bolt axis according to the rotative position of the bolt, whereby to maintain the bolt in adjustable spaced relation to the proximate tray corner.

8. For use with a tier of like desk trays having vertical walls, four corner supports each comprising an angle post engageable exteriorly with corners of upper and lower trays, there being through each tray bottom a corner hole adjacent the inner face of the corner, spaced means having apertures and extending transversely of the angle post to the inside thereof at points spaced from the ends of the posts, the upper of said means affording support for the upper tray when rested thereon, and means for locking the post in a fixed position of engagement with the corners of registering upper and lower trays comprising a bolt extending vertically through the holes thereof and in locking engagement with the apertures of said spaced means inwardly of the angle post and abutting the underside of the upper of said spaced means.

9. In combination with a pair of like superposed trays, corner supports between the trays each comprising a post extending from one tray to the other and having means adjacent opposite ends for engagement with an exterior corner of each tray, spaced ledges between the trays extending inwardly from the post at points spaced from the ends thereof, one of the ledges engaging with the upper tray to afford a sustaining support therefor, and a bolt located interiorly of the corner post and extending from the lower tray to the upper tray and abutting the upper ledge and the bottom of the lower tray, said ledges having means slidably receiving the bolt and connecting them to the same, and means connecting opposite ends of the bolt to the proximate trays to unite the tier of trays immovably.

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