July 27, 1954 O. F. BLOM 2,684,766

STACKABLE TRAYS AND HOLDER FOR SAME

Filed Dec. 29, 1950 2 Sheets-Sheet 1

Fig. 1

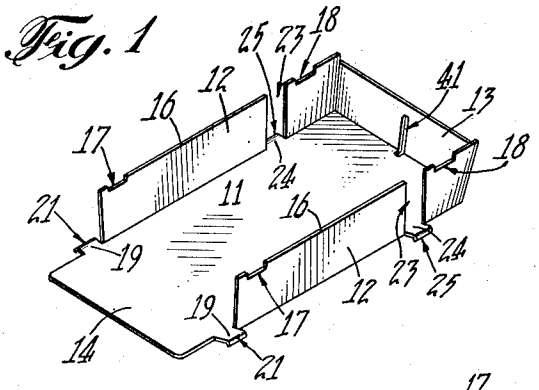


Fig. 2

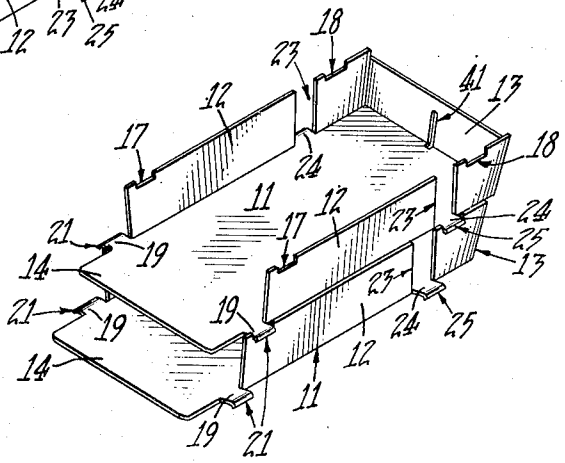


Fig. 4

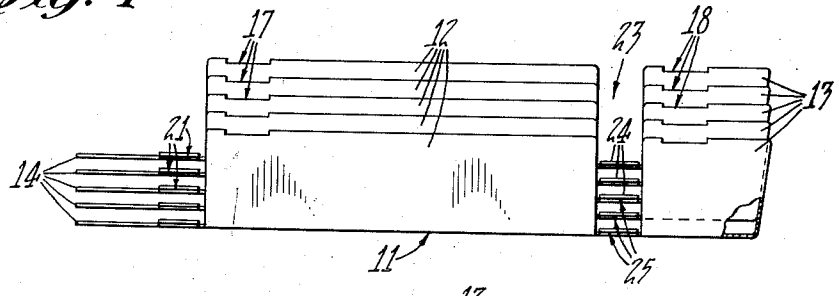
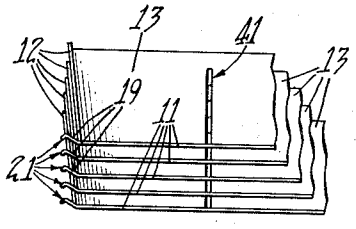


Fig. 5



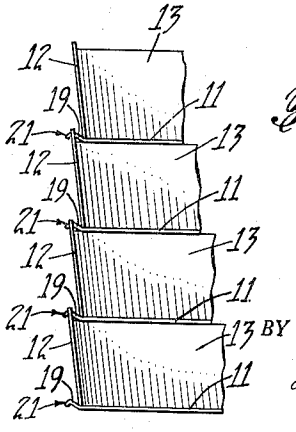


Fig. 3

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Fig. 6

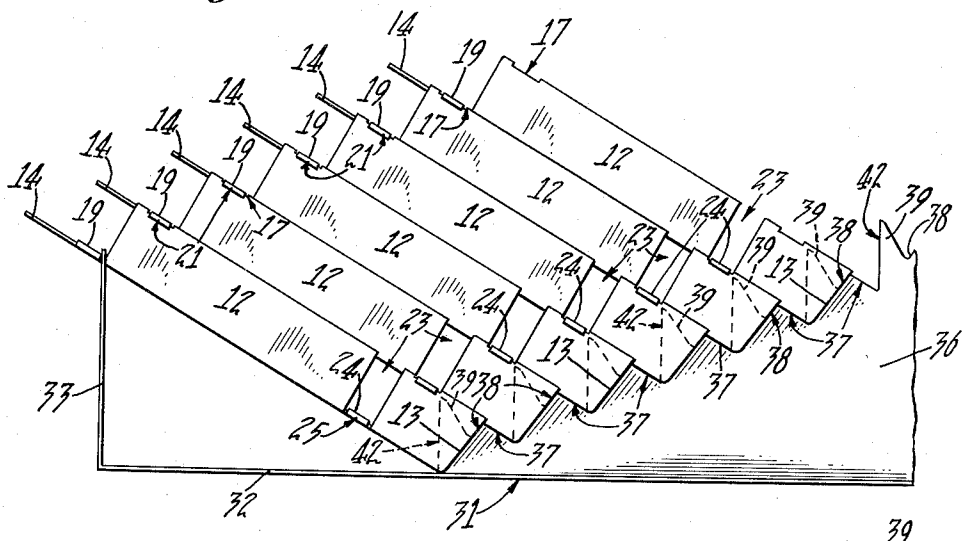


Fig. 7

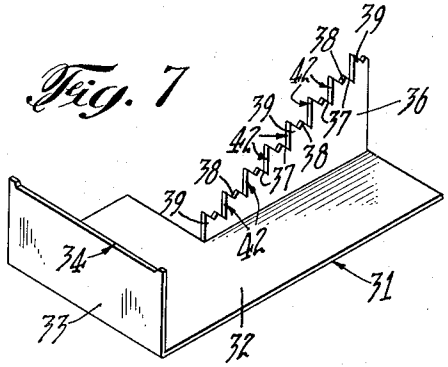
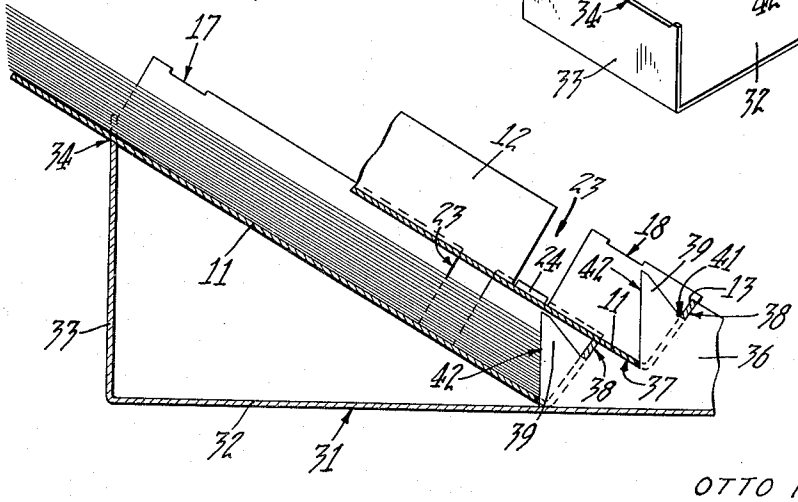


Fig. 8



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STACKABLE TRAYS AND HOLDER FOR SAME

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Application December 29, 1950, Serial No. 203,468

9 Claims. (Cl. 211—55)

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The present invention relates to containers such as filing baskets, sorting boxes, storage trays, etc. and has particular reference to such containers, hereinafter referred to as trays, which may be stacked upon one another for use in spaced relation and which may be nested within one another compactly when not in use.

An object of the invention is the provision of a storage tray which is formed in such a manner that a plurality of such trays may be readily and securely stacked one upon another to provide a series of vertically disposed bins or compartments which may be utilized for filing or collating letters and other papers or articles or for storing pages of letters, booklets or other articles arranged so that they may be conveniently withdrawn for assembly into various classifications or forms.

Another object is the provision of such a tray which is formed with co-operating lugs and notches for securing the trays together against shifting or displacement when in stacked relation.

Another object is the provision of such a storage tray which may be readily and compactly nested one within another so that a plurality of such trays may be stored in a small space when not in use.

Still another object is the provision of such a tray which may be drawn or molded economically from light weight material preferably in a single piece so that a plurality of such trays may be readily assembled or otherwise handled with ease.

Another object is the provision of such a tray which is formed for co-operation with a bracket, support or display stand for holding a plurality of stacked trays in an angular position while simultaneously retaining flat sheets or other articles on the trays in a convenient arrangement for ready classification or withdrawal.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description, which, taken in connection with the accompanying drawings, discloses a preferred embodiment thereof.

Referring to the drawings:

Figure 1 is a perspective view of a tray embodying the instant invention;

Fig. 2 is a view similar to Fig. 1 showing how a plurality of the trays stack one on top of the other;

Fig. 3 is an enlarged fragmentary front elevation showing four trays in stacked relation in the manner illustrated in Fig. 2;

Fig. 4 is an enlarged side elevation of a plurality of unused trays nested one within another;

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Fig. 5 is a fragmentary front elevation of the nested trays shown in Fig. 4;

Fig. 6 is a side elevation of a plurality of the trays illustrated in Fig. 1 arranged in an angularly disposed position in a holder;

Fig. 7 is a reduced scale perspective view of the holder shown in Fig. 6; and

Fig. 8 is an enlarged sectional view taken through the trays and the holder shown in Fig. 6, with parts broken away.

As a preferred or exemplary embodiment of the invention the drawings disclose a generally rectangular shaped tray preferably made of a one-piece lightweight sheet metal. The tray preferably comprises a flat rectangular bottom wall 11 (Fig. 1) surrounded by a pair of upright side walls 12 and one end wall 13 connecting the two side walls. The two side walls 12 and the end wall 13 taper or flare upwardly and outwardly at an angle slightly greater than 90° to the bottom wall 11 so that the trays will readily nest one within another.

The end of the tray opposite the end wall 13 constitutes the front end and is open for the reception of flat articles. At this front end the bottom wall 11 projects forwardly beyond the side walls 12 to provide a bottom wall extension 14 which is disposed in the plane of the bottom wall 11.

The two opposed side walls 12 preferably are the same height and terminate in upper straight edges 16 which are formed with shallow rectangular notches or recesses 17, 18 all of which are of the same depth with their bottoms disposed in the same horizontal plane. There is one each of these notches 17, 18 in each wall edge 16 and they are spaced a predetermined distance apart and are located one adjacent each end of the side walls 12. The notches 17 constitute front notches and the notches 18 constitute rear notches. The notches 17, 18 in one wall edge 16 are disposed directly opposite and in alignment with the notches in the opposite wall edge.

The height of the end wall 13 is substantially equal to the distance between the bottom of the notches 17, 18 and the bottom wall section 11 so that the top terminal edge of the end wall section, which preferably is straight, is in the same horizontal plane as the bottoms of the notches.

Adjacent the front edges of the side walls 12, the bottom wall extension 14 is provided with two front support lugs or tongues 19 which project laterally beyond the side walls 12. There is one lug on each side of the bottom wall extension 14

and the two lugs are directly opposite and in alignment with each other. The lugs extend upwardly from the outer edge of the bottom wall extension at a slight angle thereto and terminate in a hook 21. The distance between the two opposing hooks 21 is substantially the same or slightly greater than the distance between the bottom edges of the front notches 17 in the two side walls 12. The width of the hooks is substantially equal to but not greater than the width of the notches 17.

Between the front notches 17 and the rear notches 18, the side walls 12 are cut away the full height of the walls to provide rectangular openings 23 in each of the side walls 12 for nesting purposes to be described. These openings are directly opposite and in alignment with each other. At the base of the opening 23, the bottom wall 11 is formed with two rear support lugs or tongues 24 which are similar to the lugs or tongues 19 and which extend outwardly from the edge of the bottom wall 11. There is one lug on each side of the bottom wall 11. The lugs extend upwardly at a slight angle to the bottom wall section and terminate in hooks 25. The width of these rear lugs 24 is substantially equal to but not greater than the width of the rear notches 18 and the width of the openings 23. The two lugs 24 are spaced from the front lugs 19 the same distance that the front notches 17 are spaced from the rear notches 18. The transverse spacing of the rear hooks 25 is substantially the same or slightly greater than the distance between the bottom edges of the rear notches 18 in the two side walls 12. The width of the openings 23 in the side walls 12 is substantially equal or slightly greater than the width of the rear lugs 24.

Hence with such an arrangement of spaced front and rear notches 17, 18 and front and rear lugs 19, 24, a plurality of trays may be readily stacked vertically one upon another as shown in Figs. 2 and 3 to provide a plurality of compartments or bins into which articles or sheets may be readily stored and from which they may just as readily be withdrawn. In such a stacked relation, the front support lugs 19 of one tray fit into the front notches 17 of another tray with the hooks 21 of the lugs resting on the bottom edges of the notches and thus supporting the upper tray. In a similar manner the rear support lugs 24 of the upper tray fit into the rear notches 18 of the lower tray with the hooks 25 of the lugs resting on the bottom edges of the notches and thus supporting the upper tray. Along the rear portion of the trays, the bottom wall 11 of the upper tray rests on and is supported by the top terminal edge of the rear end wall 13 of the lower tray. Thus the upper tray is completely supported by the lower tray and is secured against shifting or displacement by the lugs and notches in the trays, while the front of the trays remains open for reception of sheets or other flat articles. With such a manner of supporting and locking the trays together any number of trays within reason may be stacked one upon the other to provide a vertical series of compartments for a required use.

When the trays are not in use any number of them may be readily nested one within another to occupy a small storage space as shown in Figs. 4 and 5. The tapered side and end walls permit of this easy nesting feature. Another feature is that since the trays are all alike and of

the same proportions, the openings 23 and the lugs 19, 24 in all trays are spaced the same distance from the end walls 13, and thus provide for vertical nesting of the rear lugs 24 in the openings 23 and complete vertical nesting of the front lugs 19 immediately in front of the forward edges of the side walls 12, to form a compact nest of trays as shown in Fig. 4.

Provision is also made for holding a stack of the trays in an angular position and to retain sheet material in the trays in an obliquely stacked relation to facilitate display or withdrawal of the material from the trays. For this purpose the entire stack of trays is supported in a holder 31 (Figs. 6, 7 and 8) and locked against displacement therein. The holder 31 preferably made from a single blank comprises a flat base 32 having a front vertical wall 33 of a desired height and a width slightly greater than the width of a tray for supporting the lowermost tray of a stack of such trays, in an angular position adjacent the front support lugs 19 of the tray. The rear edge of the lowermost tray rests on the holder base 32 as best shown in Figs. 6 and 8.

The top terminal edge of the front vertical wall 33 of the holder 31 is formed with a wide shallow notch 34 (Fig. 7) having a width slightly greater than the width of a tray. When the tray is in the holder as shown in Figs. 6 and 8, its front end fits within the holder notch 34 with the bottom wall 11 of the tray resting on the bottom of the notch and the rear edge of the laterally projecting front support lugs 19 of the tray engaging against the outer face of the front wall of the holder (Fig. 6). Thus the tray is locked against transverse and longitudinal displacement.

In this inclined position of the stacked trays on the holder support 31, the rear end wall 13 of each tray is supported by a vertically disposed serrated retaining wall 36 extending longitudinally of the holder base 32. This retaining wall 36 may be struck out from the base 32 and bent upwardly into supporting position as shown in the drawings or may be a separate wall if desired. The top terminal edge of the retaining wall 36 is generally inclined and is provided with a series of spaced steps or serrations defined by downwardly inclined faces 37 and upwardly inclined faces 38. The downwardly inclined faces 37 are parallel with and support the bottom walls 11 of the stacked trays in the holder (see Fig. 8). In a similar manner, the upwardly inclined faces 38 are parallel with and support the end walls 13 of the stacked trays in the holder. Thus each step supports the back corner of one of the trays in the stack and thus collectively the steps hold the entire stack in its inclined position. Only the lowermost tray is partially supported by the holder base 32, the base in this instance providing one face of the adjacent step.

Besides supporting the back end of each tray in the stack, the stepped edge of the retaining wall 36 also locks the stack of trays against transverse movement. This is brought about by a series of retaining projections 39 which extend outwardly and forwardly from the upwardly inclined faces 38 of the longitudinal serrated tray retaining wall 36. Each projection 39 extends through a vertical slot or opening 41 (see Figs. 1, 2, 5 and 8) formed in the rear end wall 13 and partially in the bottom wall 11 of the respective trays. The width of the slot is substantially equal to the width of the retaining projection 39 and thereby eliminates loose play so that a said

projection, by reason of its position in the slot of a said tray, locks the tray against transverse movement.

The retaining projection 39 serves a dual purpose in that it engages the back edge of sheet material in the tray and thus retains the material in a desired position relative to the tray. As shown in Figs. 6, 7 and 8 of the drawings the projection 39 preferably is formed with a vertical front face 42 although this face may be disposed at a different angle if desired. At the preferred angle, the face 42 in engaging against the back edges of the sheet material in the trays, shifts the sheets into an obliquely positioned stack with the front edges of the sheets separated and in overhanging relation to each other. Thus removal of the sheets individually from the trays is greatly facilitated.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description, and it will be apparent that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

I claim:

1. A walled tray having an open end and formed for stacking a plurality of like companion trays one upon another to provide compartments therebetween, said tray comprising a bottom wall having a connected surrounding upwardly and outwardly flared wall, a plurality of spaced notches formed in the top edge of said surrounding wall, and a corresponding plurality of spaced lugs extending laterally from said bottom wall and projecting beyond said surrounding wall for transverse alignment with and engagement in the notches of a subjacent companion tray for supporting a superposed tray in vertically stacked relation to said companion tray.

2. A walled tray having an open end and formed for stacking a plurality of like companion trays one upon another to provide compartments therebetween, said tray comprising a bottom wall having a connected pair of upright outwardly flared side walls disposed on opposed sides thereof, an outwardly flared end wall connecting said side walls, a pair of spaced notches in the top edge of each of said side walls, and a corresponding pair of spaced support lugs extending laterally from said bottom wall along each of its side edges for alignment with and engagement in the notches of a companion tray for supporting said tray in vertically stacked relation to said companion tray.

3. A walled tray having an open end and formed for stacking a plurality of like companion trays one upon another to provide compartments therebetween, comprising a bottom wall having a pair of connected upright outwardly flared side walls disposed on opposed sides thereof, an outwardly flared rear end wall connecting said side walls, said end wall being of less height than said side walls, a pair of spaced notches in the top edge of each of said side walls, the bottoms of said notches lying substantially in the same horizontal plane as the top edge of said end wall, and a corresponding pair of support lugs extending laterally from each side of said bottom wall at spaced localities disposed forwardly of said spaced side wall notches, said lugs respectively engaging the aforesaid notches of a subjacent companion tray for supporting the superposed tray in cooperation with the top end wall edge of said subjacent tray to maintain the trays in vertically stacked relation.

4. A walled tray having an open forward end and formed for stacking a plurality of like companion trays one upon another to provide compartments therebetween, comprising a bottom wall and a pair of connecting side walls disposed on opposing sides of said bottom wall, said side walls terminating short of the front edge of said bottom wall section to provide a forward extension of said bottom wall section, said side walls each having a vertical opening therein extending the full height of said walls and open at the top edge thereof, a rear end wall connecting said side walls, said side and end walls being tapered outwardly to provide for nesting of one tray within another when not in use, a pair of spaced forward and rearward support lugs disposed adjacent each side wall, the forward lug of each pair extending laterally from the forward extension of said bottom wall adjacent the front edge of the adjoining said side wall, and the rear lug of each pair extending laterally from said bottom wall at the base of the opening in its associated side wall, whereby to facilitate stacking of a plurality of trays in nested relation with their forward lugs disposed in substantial vertical alignment in advance of the front side wall edges of the trays and with their rear lugs disposed within the aligned vertical side wall openings of said trays.

5. A walled tray having an open end and formed for stacking a plurality of such trays one upon another to provide compartments therebetween, comprising a bottom wall connecting with a surrounding upwardly and outwardly flared wall, a plurality of notches formed in the top edge of said surrounding wall, and a corresponding plurality of lugs extending laterally beyond said surrounding wall and terminating in hook sections inclined toward said bottom wall, said lugs engaging in the notches of a companion subjacent tray for supporting the superposed tray in vertical stacked relation to said companion tray.

6. A holder for holding a stack of like companion trays in an inclined position, comprising a base member having an upright transverse front wall provided with a relatively wide notch in its top edge for receiving and supporting the front portion of the lowermost inclined tray of said stack, an upright retaining wall connected with said base member and having an inclined serrated upper edge provided with a series of steps respectively engageable by the rear ends of the stacked trays, said upright retaining wall being disposed at an angle to and spaced rearwardly from said front wall and extending longitudinally along at least a portion of said base member.

7. A holder for holding a stack of like companion trays in an inclined position, comprising a base member having an upright transverse front wall provided with a relatively wide notch in its top edge for receiving and supporting the front portion of the lowermost inclined tray of said stack, a retaining wall integrally connected with said base member and bent at an angle thereto into upright position and having an inclined serrated upper edge provided with a series of steps respectively engageable by the rear ends of the stacked trays, said upright retaining wall being spaced rearwardly from said front wall and extending substantially at right angles thereto lon-

gitudinally along at least a portion of said base member.

8. The combination of a walled tray having an open end and formed for stacking a plurality of such trays one upon another to provide compartments therebetween, and a holder for holding a stack of the trays in an inclined position; comprising a tray including a bottom wall connecting with a surrounding upstanding outwardly flared wall including a rear wall, a plurality of notches formed in the top edge of said surrounding wall, and a corresponding plurality of lugs extending laterally from said bottom wall beyond said surrounding wall for engagement in the notches of a companion subjacent tray for supporting the superposed tray in vertically stacked relation to said companion tray, and a holder comprising an upright transverse wall for engaging under and supporting a said tray in inclined position adjacent its front portion, said holder having an upright retaining wall provided with an inclined serrated stepped upper edge engageable by the said rear walls of the stacked trays for supporting said tray stack in an inclined position, and means on said holder retaining wall engageable with means on said tray rear walls for maintaining said inclined stack of trays against transverse movement relative to said holder.

9. The combination of a walled tray having an open end and formed for stacking a plurality of such trays one upon another to provide compartments therebetween, and a holder for holding a stack of the trays in an inclined position, comprising; a tray having a bottom wall and a connected upright outwardly flared wall having an opening therein, a plurality of notches formed in the top edge of said upright wall, and a corresponding plurality of lugs extending laterally from said bottom wall beyond said upright wall for engagement in the notches of a subjacent tray for supporting the superposed tray in vertically stacked relation to said subjacent tray, and a holder comprising an upright transverse forward support wall having a relatively wide notch in its top edge for receiving and supporting an inclined tray adjacent its front portion, said holder including an upright retaining wall having an inclined serrated upper edge provided with a series of steps respectively engageable by the rear ends of the stacked trays for supporting a plurality of said trays in said inclined position, each of said steps including a projection extending into an adjacent tray through said opening in the upright wall thereof for locking said tray against lateral displacement and for engaging and holding a plurality of sheets in said tray in obliquely stacked relation.

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