E. J. WALKER, JR.

BIN STRUCTURE.

APPLICATION FILED MAR. 7, 1919.

1,397,887. Patented Nov. 22, 1921.

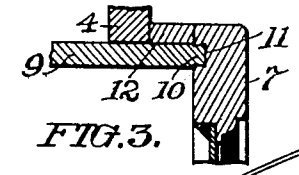


FIG. 3.

FIG. 1.

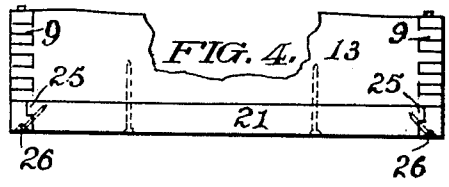


FIG. 4.

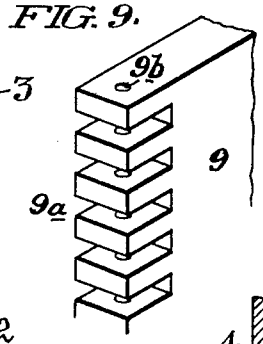


FIG. 9.

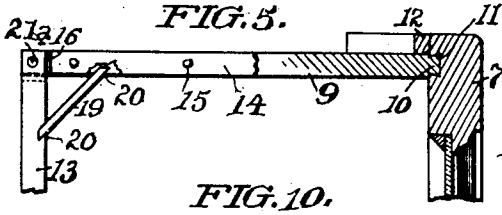


FIG. 5.

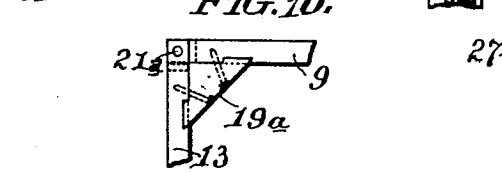


FIG. 2.

FIG. 10.

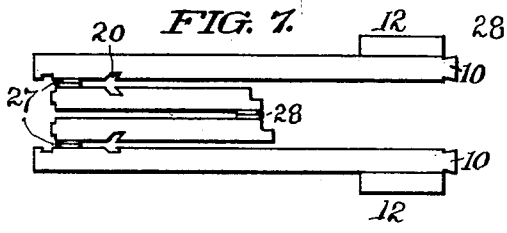


FIG. 7.

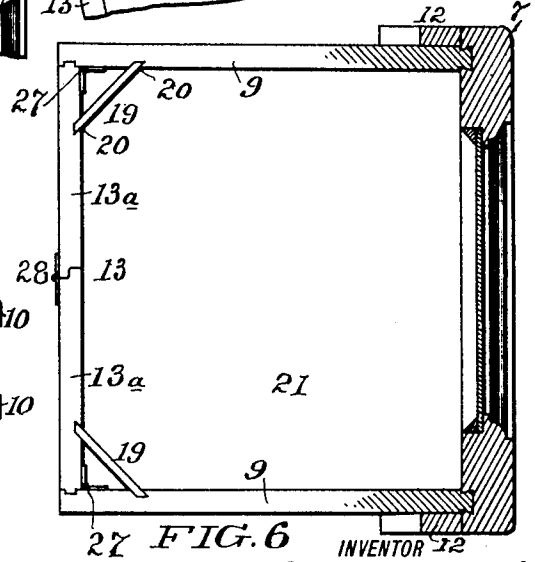


FIG. 6.

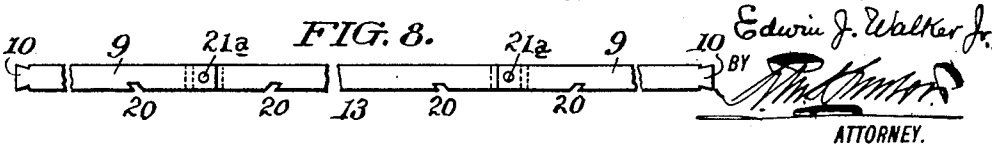


FIG. 8.

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BIN STRUCTURE.

1,397,887. Specification of Letters Patent. Patented Nov. 22, 1921.

Application filed March 7, 1919. Serial No. 281,180.

To all whom it may concern:

Be it known that I, EDWIN J. WALKER, Jr., a citizen of the United States, and resident of Penn Yan, county of Yates, and State of New York, have invented an Improvement in Bin Structures, of which the following is a specification.

My invention has reference to the construction of bins and more particularly of tilting bins, such as are employed in store fixtures for the convenient storage and handling of merchandise.

My invention has for its main object the construction of a bin which shall, when the parts thereof are assembled, provide a strong structure capable of sustaining the jarring, resulting in use, without injury; but which, more particularly, will permit the parts making up the bin to be closely packed for transportation and readily assembled to form the permanent bin structure, which assemblage may be easily accomplished at the distant end of the transportation by a person of ordinary intelligence. By this means, I am enabled to provide the elements which go into the bin structure in such form that they may be closely packed so as to take up very little cubic space during the transportation to distant parts of the United States and to foreign countries, and in this manner reduce the cost of transportation to a material extent, so that the cost of the operative bin at the place of destination may be much less than what it would otherwise be if the complete assemblage of the parts was required to be done at the factory and the bin shipped in its bulk form.

My improved bin is not what would be termed a "knock-down" bin, but on the other hand, comprises a construction of parts which easily fit together and provide an exceedingly strong construction when assembled; and my invention not only provides a desirable construction, but permits the parts to be made conveniently where lumber and labor are cheap, and be assembled and put into use at distant places at a nominal expense greatly less than the saving in transportation.

With the above and other objects in view, the nature of which will be more fully understood from the description hereinafter, my invention consists of improvements hereinafter described whereby the said objects and results are attained, said improvements comprising certain organization and combinations of parts which are fully described hereinafter and more particularly defined in the claims.

For the purpose of illustrating my invention, I have shown in the accompanying drawings the embodiment therein which is at present preferred by me, since the same is in form to give satisfactory and reliable results, though the several instrumentalities of which my invention consists may be variously arranged and organized without being a departure from the essential features thereof.

Referring to the drawings: Figure 1 is a sectional side view of a tilting bin and its support, embodying my invention; Fig. 2 is a side elevation of the upper portion of the bin and a part of the bin chamber in section; Fig. 3 is a transverse section taken on line 3—3 of Fig. 1; Fig. 4 is a rear elevation of the lower part of the bin structure; Fig. 5 is a plan view with a part in section of one side of the bin shown in Fig. 1; Fig. 6 is a plan view with part in section of my improved bin structure, somewhat modified; Fig. 7 is a plan view showing the sides and back portions of the bin structure illustrated in Fig. 5 in collapsed form before being assembled with the front and bottom; Fig. 8 illustrates a plan view of the sides and back of the bin shown in Fig. 1, when stretched out straight about their hinge connections; Fig. 9 is a perspective view showing the tongue and groove construction for hinging the sides to the back; and Fig. 10 illustrates a plan of a modification of the corner joint.

2 is the bin proper and is hinged to the vertical partition 4 of the counter or other store fixture and providing an opening 5 through which the bin has freedom of movement. The bin may be pivoted by suitable fulcrum and socket connections 6 arranged at the bottom of the opening 5 in the frame, so that the bin may tilt thereon, whereby it may be closed as illustrated in Fig. 1, or have its upper right-hand portion to swing outward from the supporting frame to expose the interior of the bin, as is customary in bins of this character. I do not restrict myself to any particular means of pivoting or supporting the bin within the bin chamber as my invention relates to the bin structure *per se* rather than to its means of support.

The front of the bin is formed of a board

7 which may be paneled and glazed or otherwise formed. This front board is provided near each side with vertical dovetailed grooves 11 (Figs. 3 and 5), and at the bottom it may be provided with a transverse recessed portion or groove 22 (Fig. 1.)

The side boards 9 have their front portions 10 made in dovetailed shape, and which tightly fits the grooves 11 in the front board, as is clearly shown. These parts should fit tightly so as to be driven or forcibly engaged. 13 is the back board and has its lateral edges coupled with the rear edges of the side boards 9 by tongue and groove parts such as illustrated at 9^a in Fig. 9. These tongue and groove parts of the side and back boards are interengaged and are then locked in connection by vertical pins 21^a which may be of wood or metal, fitting holes 9^b, Fig. 9. When in assembled condition, the union of these parts may be strengthened by being glued, if so desired. It is also evident that the dovetailed joint between the front edges of the sides and the front board may also be glued, if so desired. The back board 13 does not reach to the bottom of the side boards 9 by a distance which is equal to the thickness of the bottom board 21.

The lower parts of the side boards 9 are provided with grooves slightly above their lower edges, and into these grooves side tongues of the bottom board 21 extend, as indicated at 25 in Fig. 4. In this manner the bottom board 21 may be made to slide forward into position below the back board 13 and with its forward edge fitting into the recess 22 of the front board 7 as indicated in Figs. 1 and 4. When in this position, the bottom board is secured permanently by the nails 23 and 24, the former being driven through the bottom and into the front board, and the latter through the bottom and into the back board. In making up the parts for distant assemblage, holes are previously bored, into which the nails may be tightly driven, so that when assembling at a distant place there is no possibility for imperfect nailing or splitting of the wood due to the nailing. Aside from nailing the bottom in position, as indicated at 23 and 24 in Fig. 1, it may be nailed to the sides 9 by nails 26, as indicated in Fig. 4, this nailing preventing any spreading of the sides adjacent to the bottom.

While the bin, constructed as above described, is reasonably rigid, I prefer to provide the rear corners with diagonal boards 19 which fit into grooves 20 in the sides and back near the jointed portions thereof, as will be clearly understood from Figs. 1 and 5. These corner boards 19 make tight corners and stiffen the connections between the sides and back; and moreover, prevent pockets being formed in the corners for materials which might pack therein.

As a further strengthening means for the bin, I prefer to employ, along the upper edge of each of the sides 9, a metal strap 14 which is nailed to the wooden sides at 15; and in which further, the ends of these straps are turned upward and secured to the back board 13 by screw 16 and to the front board 7 by screw 18. The front flanges 17 of the straps are of considerably greater height than the flanges at the rear; and said front flanges act to take up the thrust when the bin is permitted to close, which in rough usage is, more or less, violent, and especially so when the bin is heavily loaded. These metal straps, therefore, constitute "ties" between the front board and back board, and act to securely attach them to the side boards at their points of greatest weakness.

The front board 7 extends beyond the side boards, and the spaces between the overhanging edges of the front board and the wall 4 of the compartment are filled with triangular side pieces 12 which are glued and nailed to the side boards so as to occupy positions indicated in Figs. 2, 3 and 6 of the drawings. These side pieces 12 also assist in removing strain from the upper part of the front board when the bin is closed, they acting to take up some of the thrust and hence relieve the strain upon the dovetailed joints between the side boards and front board.

In general, the screw holes and nail holes are all bored in the several parts, so that when the said boards are assembled at the distant places, any ordinary mechanic could not only assemble the main parts, but also drive in the nails and insert the screws without the slightest possibility of error or of damaging the bin, it being understood, of course, that certain definite sizes of these nails and screws are provided which would be suitable to the holes.

In place of connecting the sides and back boards by the tongue and groove means previously described, the same may be constructed as illustrated in Figs. 6 and 7, in which the sides 9 are hinged to the back boards 13^a by metal hinges 27, the back board 13 being divided in its middle to provide two sections 13^a which are hinged together at the outside as indicated at 28. These hinges may be of any length desired, or a plurality of short hinges may be employed. When the side and back boards are hinged together in this manner, they are definitely connected, and when being shipped may be collapsed as indicated in Fig. 7. When they are extended in assembling the bin, they are positioned as indicated in Fig. 6 and are then connected with the front board 7 and the bottom board 21, as previously described. Corner boards 19 may also be employed in this construction for the

same purposes and in the same manner as previously described in respect to Figs. 1 and 5.

If desired, the corner boards may be made in more solid form, as indicated at 19^a in Fig. 10, in which case the said corner parts may have tongue and groove connection, and also be nailed for greater security.

In the case of tongue and groove joints 9^a between the sides and back as previously described, it will be understood that these parts may be shipped in a disconnected form and assembled at the distant place by the insertion of the pins 21^a; but it will also be understood that if desired, the sides 9 and back 13 may be hinged together by the pins 21^a, so that the three parts are permanently hinged and, during transportation, stretched out flat as indicated in Fig. 8, for purposes of convenient shipment. Thereafter, the sides 9 are turned at right angles to the back 13 and assembled with the front board and bottom boards, as previously described.

In practice, the various parts being definitely shaped to interengage with each other when being assembled, and also having the nail holes through certain parts and into associated parts, mistakes in assembling cannot result, and this is an important feature of my invention.

It will now be apparent that I have devised a novel and useful construction which embodies the features of advantage enumerated as desirable, and while I have in the present instance shown and described the preferred embodiment thereof which has been found in practice to give satisfactory and reliable results, it is to be understood that I do not restrict myself to the details, as the same are susceptible of modification in various particulars without departing from the spirit or scope of the invention.

Having now described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. A bin structure consisting of front, back, sides and bottom formed of separate parts, united by being detachably interengaged and interlocked into a box-like form, the side parts having a dove-tail union with the rear of the side portions of the front part, and wherein the sides and back parts are hingedly connected and held in angular relation by a bottom board.

2. A bin structure consisting of front, back, sides and bottom formed of separate parts, united by being detachably interengaged and interlocked into a box-like form, the side parts having a dove-tail union with the rear of the side portions of the front part, and wherein the sides and back parts are jointedly connected and the corners so formed stiffened by diagonal corner boards secured in grooves in the back and side portions at a distance from the joints.

3. A box-like bin structure having the upper edges of its side portions strengthened by metal straps secured thereto and extending beyond said side portions, said extended portions of the straps bent upward and firmly secured to the rear of the front part of the bin structure.

4. A bin structure having a front portion, sides and back portions jointedly connected together and the side portions secured to the front portion, a bottom board fitted to the inner faces of the side portions and underlapping the back and front portions.

5. The bin structure according to claim 4, having the side and back portions rigidly positioned by diagonally arranged corner boards fitted into vertical grooves in said side and back portions.

6. A box-like bin structure comprising back and side boards connected together into U-shaped form, combined with a front board secured at its rear to the free ends of the side board portions by dove-tailed joints and said front board extending beyond the sides for a short distance, triangular side pieces secured in position upon the outer sides of the side boards and in contact with the rear of the front board where it projects beyond the sides, a bottom board fitted between the side boards and extending under the rear board, and means for securing said bottom board to the rear board and also to the front board.

7. A box-like bin structure comprising back and side boards connected together into U-shaped form, combined with a front board secured at its rear to the free ends of the side board portions by dove-tailed joints and said front board extending beyond the sides for a short distance, triangular side pieces secured in position upon the outer sides of the side boards and in contact with the rear of the front board where it projects beyond the sides, a bottom board fitted between the side boards and extending under the rear board and the lower end of the front board, means for securing said bottom board to the rear board and also to the front board, and metal straps secured along the top of the side boards and extending upward and secured to the rear upper portion of the front board.

8. In a box-like bin structure, the front board and back board, combined with metallic means positively connecting said boards together at their upper ends, and a bottom board underlapping both the back and front boards and nailed thereto for positively connecting said boards together at their lower ends.

9. A bin structure having its sides and back portions hingedly connected, so that they may be positioned in right angled relation in the completed bin or collapsed in flattened relation for transportation, but at

all times maintaining their connected association, combined with the front portion detachably connected with the free ends of the side portions by relatively interlocking sliding connections.

10. The structure according to claim 9, wherein the back is formed of two parts hinged together and said parts arranged to fold in the reverse direction as compared to the folding direction of the hinged connection between the sides and back.

11. A box-like bin structure in which the side boards have a vertical sliding interlocking interengagement with the rear part only of the front board and respectively adjacent to the two side edges thereof, a back board connecting the side boards at their rear parts to form a rectangular frame and in which the level of the bottom of the back, side and front boards are in a substantially uniform plane, combined with a flat bottom board secured to and extending from the bottom of the front board of the bin and also with respect to the rear board of the bin, and having a lateral engagement with the side boards whereby the bottom is held against vertical movement relatively thereto, and whereby the bottom board positively connects the front and back boards so that they cannot spread.

In testimony of which Invention, I hereunto set my hand.

EDWIN J. WALKER, JR.