Aug. 19, 1941. H. LEE 2,253,038

KNOCKDOWN CABINET

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Fig. 1.

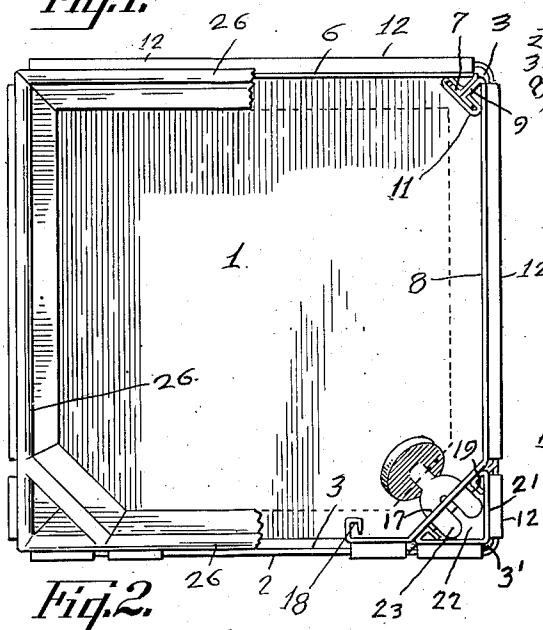


Fig. 3.

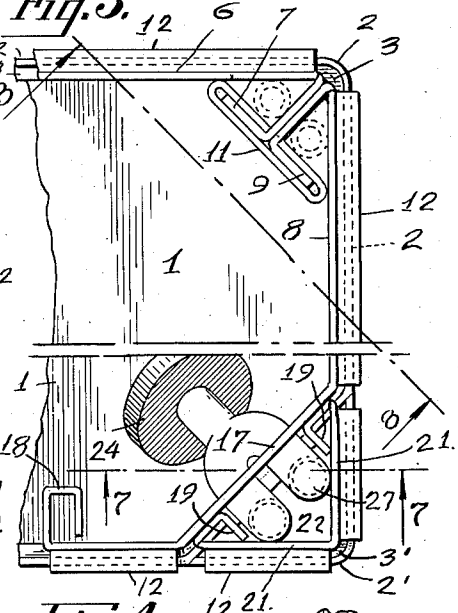


Fig. 2.

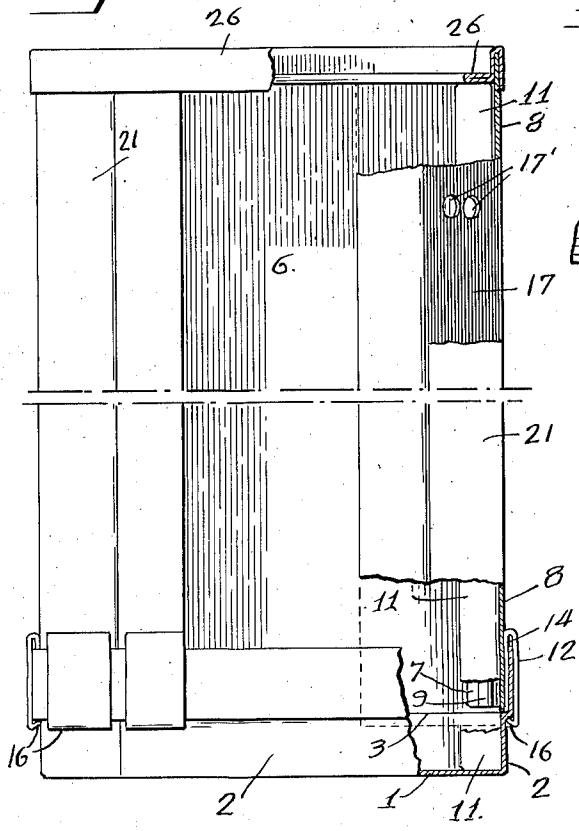


Fig. 4.

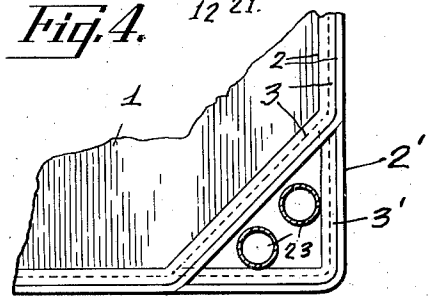


Fig. 5.

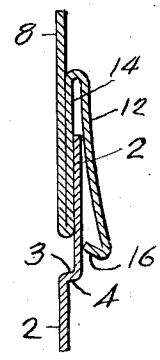
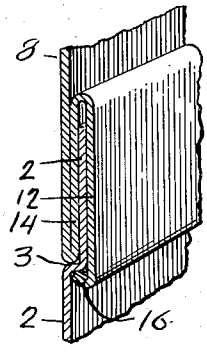


Fig. 6.



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Fig. 7.

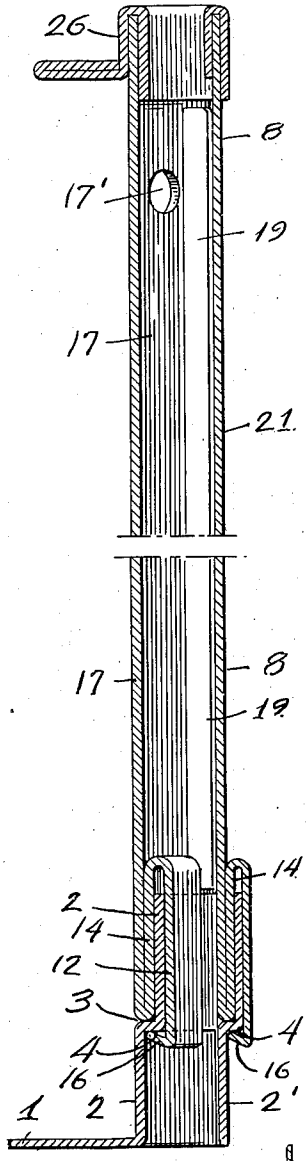


Fig. 8.

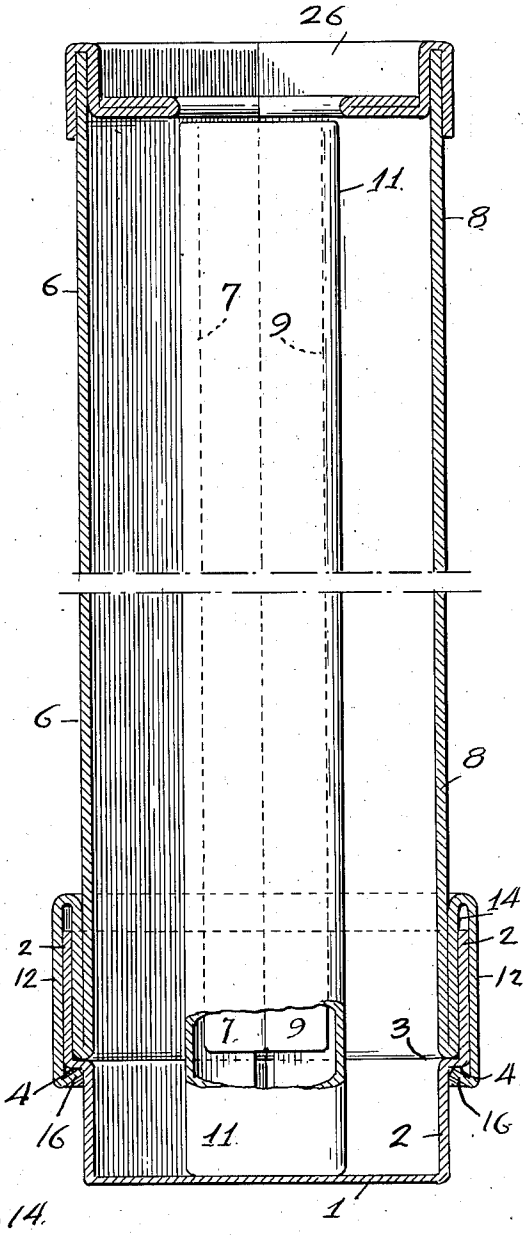
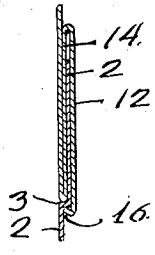


Fig. 9.



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UNITED STATES PATENT OFFICE

2,253,038

KNOCKDOWN CABINET

Harry Lee, Burlingame, Calif.

Application December 23, 1940, Serial No. 371,264

9 Claims. (Cl. 189—2)

My invention relates to improvements in the construction of a knock-down cabinet of the sheet-metal type and particularly for shower cabinets, wherein a shallow floor pan is provided with sides having horizontally offset portions forming internal and external shoulders around said pan, which shoulders operate in conjunction with vertically disposed panels having their side and bottom edges formed to easily and detachably engage each other and said pan, respectively, with detachable, interlocking, leak-proof joints, and also with exteriorly accessible pockets or chambers for the introduction of water-pipes and other required connections to the interior of said cabinet.

The primary object of the present invention is to provide a new and greatly simplified and improved construction for a knock-down cabinet.

Another object is to provide a new and improved construction of the character described, having new and improved interlocking leak-proof joints.

A further object is to provide an improved and simplified construction of the type set forth, in which detachable and leak-proof interlocking joints are provided to permit the structure to be easily and readily assembled and disassembled without the use of rivets, bolts, or other independent fastening or securing means.

A still further object is to provide a new and improved construction for a knock-down shower cabinet in which enclosed water-pipes leading into said cabinet are rendered readily accessible from the exterior of said cabinet proper.

The invention consists in the improved and simplified construction and arrangement of the several parts as disclosed in the drawings forming a part of the present application, and in which—

Fig. 1 is a top plan view of an assembled cabinet with a portion of the top securing channel removed;

Fig. 2 is a broken front elevation, partly in section, of Fig. 1;

Fig. 3 is an enlarged and exaggerated broken plan view of a cabinet, disclosing the construction of two corners thereof;

Fig. 4 is an enlarged detail view of one portion of the floor pan, with panels removed;

Figs. 5 and 6 are enlarged, broken detailed views of one of the interlocking, leak-proof joints;

Fig. 7 is a vertical sectional view taken on line 7—7 of Fig. 3 of the drawings, in the direction indicated, with the top channel replaced;

Fig. 8 is a vertical sectional view taken on line 8—8 of Fig. 3, in the direction indicated, also with the top channel replaced, and looking diagonally into an interior corner of an assembled cabinet; and

Fig. 9 is a full-sized transverse sectional view of the interlocking joint disclosed in exaggerated form in Figs. 5 and 6 of the drawings, disclosing the compactness of the actual joint.

Referring to the drawings:

The numeral 1 is used to designate a preferably rectangular floor-pan of sheet material and having substantially vertical sides 2 offset horizontally to form internal and external shoulders 3 and 4, respectively, around said pan, at least one corner of said pan 1 being beveled or cut diagonally, including the side 2 and shoulders 3 and 4 therein. The sides 2 adjacent the beveled corner, however, are extended by means of a permanently secured member 2', including extended internal and external shoulders 3 and 4, respectively, to complete or form a substantially square corner, with the bottom open, as disclosed in Fig. 4 of the drawings, the purpose of which will hereinafter more fully appear.

A rear, vertically disposed panel 6 has its side edges bent inwardly to form integral angle bars 7 arranged at substantially 45 degrees to said panel 6 while side panels 8 have their rear side edges similarly bent to form similar angle bars 9 combining with the adjacent angle bars 7 to form T bars, as disclosed in the upper right-hand corners of Figs. 1 and 3 of the drawings. The adjacent edges of the rear and side panels 6 and 8, respectively, are detachably secured or interlocked to form a firm, substantially square corner by means of a channel bar 11 having its flanges bent parallel to and in spaced relation to the web thereof and a distance equal to the thickness of the combined flanges of the angle bars 7 and 9 between the edges of said T bar flanges, so that when said channel bar 11 is slid longitudinally over said angle bars 7 and 9, said edges will firmly grip and detachably hold said bars 7 and 9 and, therefore, adjacent edges of the rear and side panels 6 and 8, respectively, together.

The lower portions of the panels 6 and 8 are twice folded to form parallel outer and inner plaits 12 and 14, respectively, the outer plait 12 being arranged in spaced relation to the inner plait 14 a distance equal to the distance or thickness of the side 2 of the pan 1, said outer plait 12 being extended beyond the fold between said inner plait 14 and its respective panel and hav-

ing its edge bent inwardly to form a hook 16 for engaging the under side of the outer shoulder 4 to rigidly and tightly hold the fold between said inner plait 14 and its panel upon the internal shoulder 3, to provide a leak-proof, interlocking joint, as disclosed in exaggerated form in Figs. 2, 6, 7 and 8, and in actual size in Fig. 9 of the drawings.

Each side panel 8 has its front portion bent vertically on lines parallel to the front edge thereof to form a beveled corner 17 conforming to the beveled corner of the floor pan 1 and beveled portion of the side 2 and shoulder 3 therein, as fully disclosed in Figs. 1, 2 and 3 of the drawings. The front edges of the panels 8 are also arranged in spaced relation to each other to form a doorway and may be bent again to form inner moldings 18.

A separate angle bar 21 has its lower end seated within the corner of the internal shoulder 3' and has its sides arranged flush with the sides of the panel 8 adjacent the beveled portion or corner 17 thereof, said angle bar 21 also has its vertical edges bent inwardly to form integral angle bars 19 arranged substantially at angles of 45 degrees with the said bar 21, as hereinbefore described for the rear panel 6, to impart rigidity thereto, as disclosed in Figs. 1, 3 and 7 of the drawings.

The lower portion of said separate angle bar 21 is also twice folded, as described for the lower portions of the panels 6 and 8, to provide inner and outer plaits 12 and 14, respectively, and an inwardly turned hook 16 to detachably engage the side corner 2' and the external shoulder 4' and detachably but firmly hold the lower end of said separate angle bar 21 in the internal shoulder 3'. By means of this novel arrangement the separate angle bar 21 combines with the beveled portion 17 of the panel 8 to form a vertically disposed pocket on the corner of an assembled cabinet through which water pipes 23 extend and are enclosed, said pipes 23 being passed through apertures 17' to a shower or spray-head 24 within the cabinet proper.

A preferably rectangular channel 26 may be provided to detachably engage the upper edges of the panels 6 and 8 to impart further rigidity to the assembled structure.

In operation:

In setting up the knock-down cabinet the floor-pan 1 is first laid horizontally and with its sides 2 provides a waterproof and vermin-proof floor or tray for the cabinet. The rear panel 6 is set up by first springing outwardly the hook 16 and outer plait 12 as disclosed in Fig. 5 of the drawings, then forcing said rear panel 6 downwardly, with the upper edge of the side 2 between the plaits 12 and 14, until the fold between the inner plait 14 and panel 6 rests upon the shoulder 3 and the hook 16 snaps under the external shoulder 4, thereby forming a leak-proof and vermin-proof, detachable interlocking joint, without the use of rivets, bolts or other separate fastening means.

The side panels are next similarly assembled upon their respective internal shoulders, with their angle bars 9 combining with the angle bars 7 of the rear panel 6 to form T bars, as hereinbefore fully set forth. The channel bars 11 are next slipped over said combined bars 7 and 9 and pushed downwardly until its lower end contacts the floor of the pan 1 thereby forming a tight, interlocking joint between the corners of said cabinet. It should be particularly noted that this arrangement forms a neat and attractive inner corner as disclosed partially in Fig. 2 and fully in Fig. 8 of the drawings.

It should also be particularly noted that the pipes 27 are now adjacent the beveled corner 17 of the panel 8 and on the outside of the assembled cabinet, where they are readily accessible for repairs or other purposes, without disturbing or disassembling said cabinet. The separate angle bar 21 is now installed in the corner of the internal shoulder 3' and its hooks 16 snapped under the external shoulders 4', as hereinabove described for the installation of the panels 6 and 8, and as disclosed in Fig. 7 of the drawings.

The rectangular channel 26 is next detachably attached to the upper edges of the panels 6 and 8 and also of the separate angle 21 and the cabinet is completely assembled with leak-proof and vermin-proof detachable, interlocking joints.

To render accessible for repairs or other purposes the now enclosed pipes 27, the rectangular channel 26 is first lifted slightly on one corner to release the top of the angle 21, the hooks 16 on the lower end of said angle bar 21 are then pried away from the external shoulders 4', as disclosed in Fig. 5 of the drawings, and the angle bar 21 is then lifted to disengage the edge 2 of the pan 1, thereby uncovering the said pipes 27 or other enclosed connections, not shown.

By completely removing the rectangular top channel 26 and similarly releasing the hooks 16 of the panels 6 and 8, the entire cabinet may be easily and readily disassembled.

Having described my invention, I claim:

1. A knock-down cabinet comprising a rectangular pan having an internal shoulder formed around the sides thereof; a back panel seated upon the back portion of said shoulder and having its side edge bent inwardly to form angle bars arranged at substantially 45 degrees with said panel; side panels seated on the side portions of said shoulder and having their rear edges similarly bent inwardly to form similar angle bars at similar angles, said angle bars combining with the bars on the rear panel to form T bars at the junctions of said rear and side panels, each of said side panels having their front portions bent right and left respectively on parallel lines near the front edges thereof to form beveled corners on said panels, with the front edges of said panels arranged in spaced relation to form a doorway; a separate channel bar interlocking with each T bar; a separate angle bar mounted over and covering each beveled corner and forming a pocket therewith and having its lower end seated within a corner of the shoulder of said pan; and a rectangular channel member detachably engaging the top edges of said panels and separate angle bars.

2. A knock-down cabinet comprising a rectangular pan having an internal shoulder formed around the sides thereof; a back panel seated on the back portion of said shoulder and having its side edges bent inwardly to form angle bars arranged at substantially right angles to said panel; side panels seated on the side portions of said shoulder and having their rear edges similarly bent inwardly to form similar angle bars at similar angles, said angle bars combining with the bars on said rear panel to form T bars at the junctions of said rear and side panels, each of said side panels having their front portions bent right and left respectively on parallel lines near the front portions thereof to form beveled corners on said side panels, the front

edges of said side panels being arranged in spaced relation to form a doorway; a separate channel bar detachably interlocking with each T bar; a separate angle bar mounted over and covering each beveled corner and forming a pocket therewith and having its lower portion seated within a corner of said shoulder; a continuous rectangular channel member detachably engaging the top edges of said panels and separate angle bars; and means formed integrally with the bottom portions of said panels and separate angle bars and interlocking with said pan.

3. A knock-down cabinet comprising a rectangular pan having an internal shoulder formed around the sides thereof; a back panel seated on the back portion of said shoulder and having its side edges bent inwardly to form angle bars arranged at substantially 45 degrees with said panel; side panels seated on the side portions of said shoulder and having their rear edges similarly bent inwardly to form similar angle bars at similar angles, said angles combining with the bars on the rear panel to form T bars at the junctions of said rear and side panels, said side panels having their front portions bent right and left, respectively, on parallel lines near the front thereof to form beveled corners with said front edges arranged in spaced relation to form a doorway; a separate channel mounted on each side of said rear panel and slidably interlocking with the T bars to detachably connect adjacent edges of said side and rear panels; a separate angle bar mounted over and covering each beveled corner to form a pocket therewith and having its sides arranged flush with the side and front portions of its respective side panel, the lower edges of each separate angle bar seating within said shoulder; and means formed on the lower edges of said panels and separate angle bars for detachably engaging the sides of the pan to form interlocking joints therewith to detachably hold said panels and separate angles on said pan.

4. A knock down cabinet comprising a rectangular pan having an internal shoulder formed around the sides thereof; a back panel seated on the back portion of said shoulder and having its side edges bent inwardly to form angle bars arranged at substantially 45 degrees with said panel; side panels seated on the side portions of said shoulder and having their rear edges similarly bent inwardly to form similar angle bars at similar angles, said angle bars combining with the angle bars on said rear panel to form T bars at the junctions of said rear and side panels, said side panels having their front portions bent right and left, respectively, on parallel lines near the front thereof to form beveled corners with the front edges of said side panels arranged in spaced relation to form a doorway; a separate channel mounted on each side of said rear panel and slidably interlocking with said T bars to detachably connected adjacent edges of said rear and side panels; a separate angle bar mounted over and covering each beveled corner to form a pocket therewith and having its sides arranged flush with the side and front portions of its respective side panel, the lower portions of each separate angle bar being seated within said shoulder; means formed on the lower portions of said panels and separate angle bars for detachably engaging and interlocking with said pan; and a continuous flanged channel detachably engaging the top edges of said panels and separate angle bars.

5. A knock-down cabinet comprising a pan of sheet material having sides offset to form internal and external shoulders around said sides; vertically disposed panels having their lower portions twice folded with outer plaits arranged in spaced relation to adjacent plaits to engage the upper portions of said sides of said pan to hold the folds between the inner plaits and panels seated upon said shoulders.

6. A knock-down cabinet comprising a pan of sheet material having sides offset to form internal and external shoulders around said sides; vertically disposed panels having their lower portions twice folded with outer plaits arranged in spaced relation to adjacent plaits to engage the upper portions of the sides of said pan to hold the folds between the inner plaits and panels on said pan; and a continuous channel detachably engaging the upper edges of said panels to hold the tops of said panels together.

7. A knock-down cabinet comprising a pan of sheet material having vertical sides offset horizontally to form internal and external shoulders around said pan; vertically disposed panels having their vertical edges turned inwardly to form abutting flanges and having their lower portions twice folded with outer plaits arranged in spaced relation a distance substantially equal to the thickness of the sides of said pan to engage the upper portions of said pan and hold folds between inner plaits and panels seated on said internal shoulders, the lower edges of said outer plaits being turned inwardly and interlocking with said external shoulders; and channel bars slidably engaging and interlocking with said abutting flanges to hold said panels together.

8. A knock-down cabinet comprising a pan of sheet material having vertical sides offset horizontally to form internal and external shoulders around said pan; vertically disposed panels on at least three sides of said pan and having their abutting edges turned inwardly to form abutting flanges and having their lower portions twice folded with outer plaits arranged in spaced relation a distance equal to the thickness of said sides to engage the same and hold folds between inner plaits and panels on said internal shoulders, the lower edges of outer plaits being turned inwardly to engage said external shoulders; channel bars slidably interlocking with said abutting flanges to detachably hold said panels together; and a continuous channel detachably engaging the upper edges of said panels.

9. The combination with a knock-down cabinet having a pan with an internal and an external shoulder, of a vertically disposed panel having its lower portion twice folded with an outer plait arranged in spaced relation to an inner plait a distance equal to the thickness of the edge of said pan and engaging a side of said pan to hold a fold between an inner plait and said panel on said shoulder, the lower edge of said outer plait being turned inwardly to engage said external shoulder.

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