Jan. 31, 1961 E. F. HAMILTON 2,969,882

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Fig. 1.

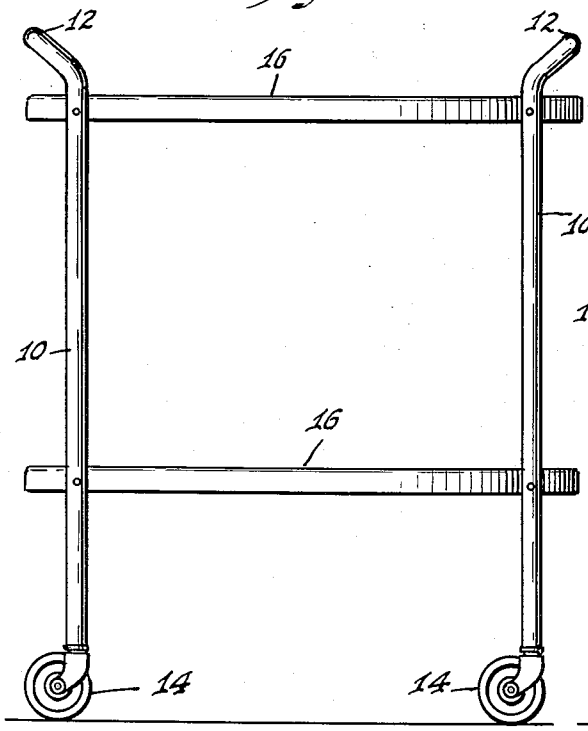


Fig. 2.

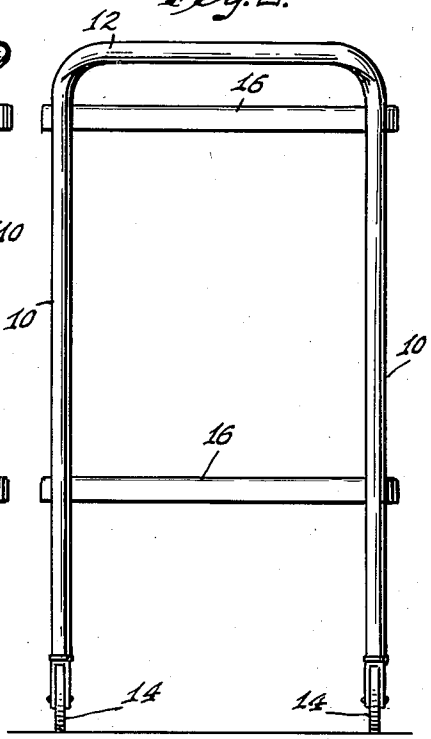
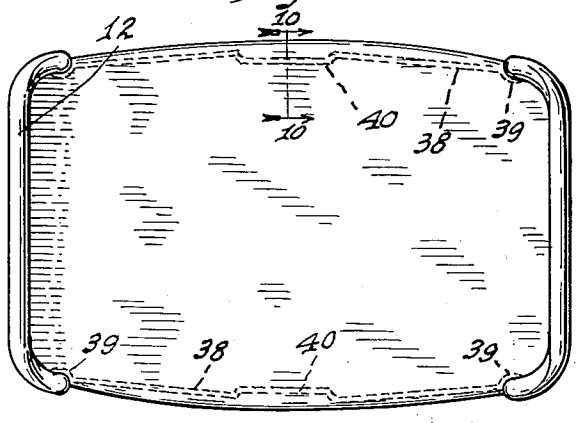


Fig. 3.



INVENTOR.
EARL F. HAMILTON,
BY
ATTORNEYS.

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Fig. 4.

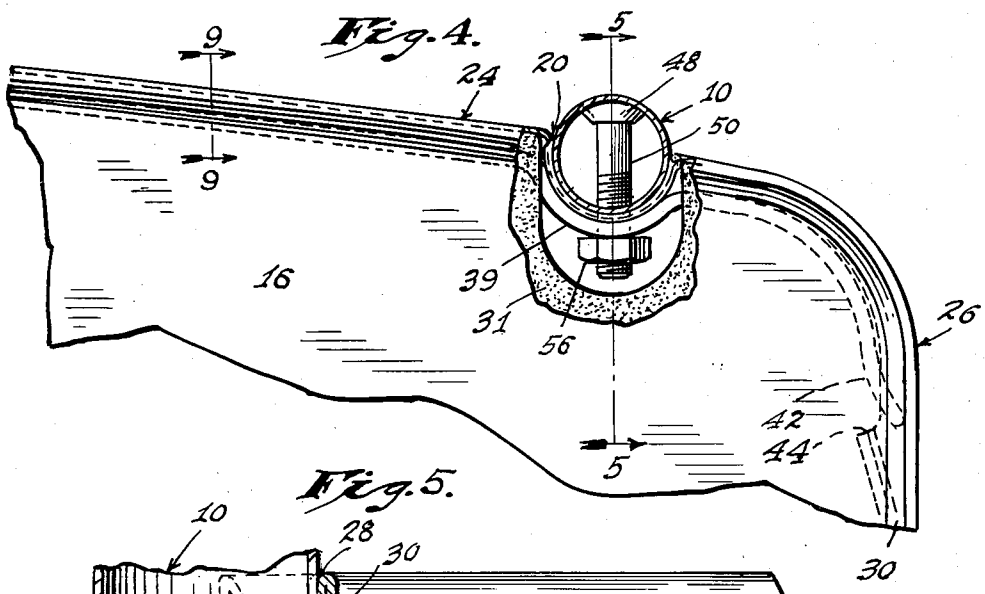


Fig. 5.

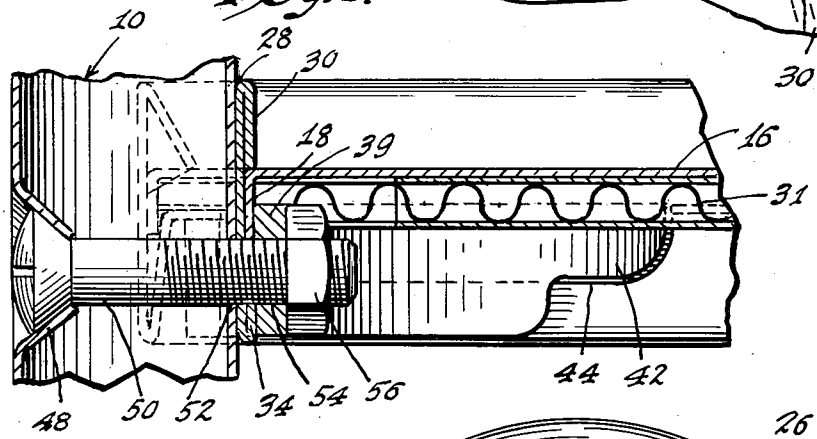
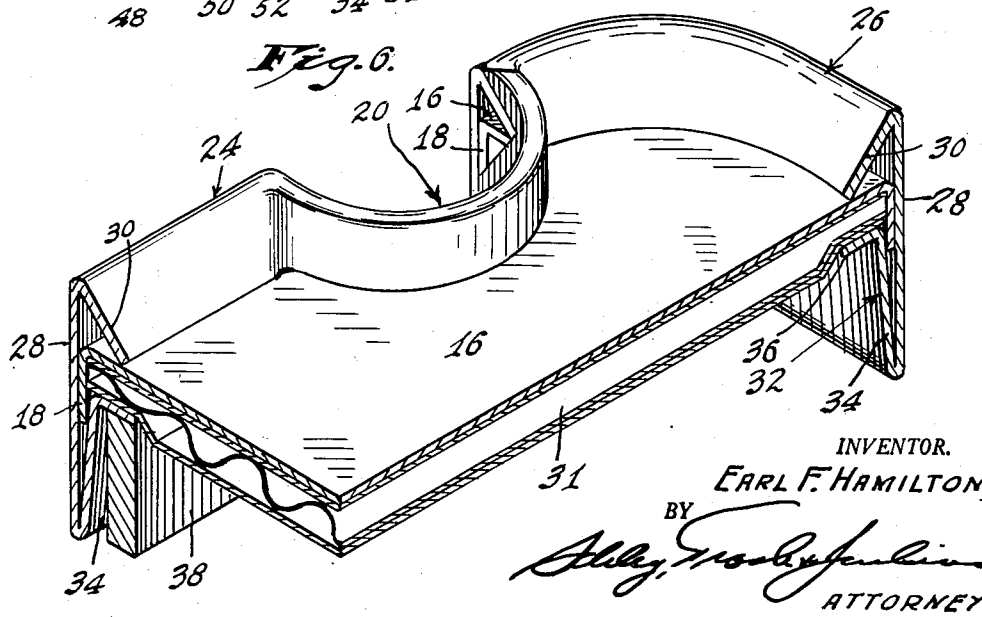


Fig. 6.



INVENTOR.
EARL F. HAMILTON,
BY
ATTORNEYS

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Fig. 7.

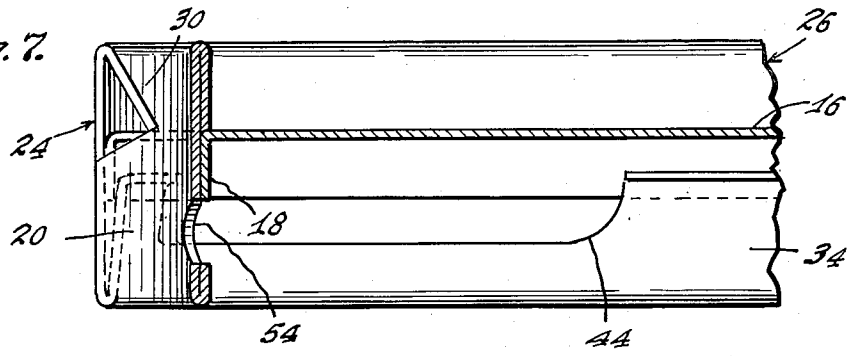


Fig. 8.

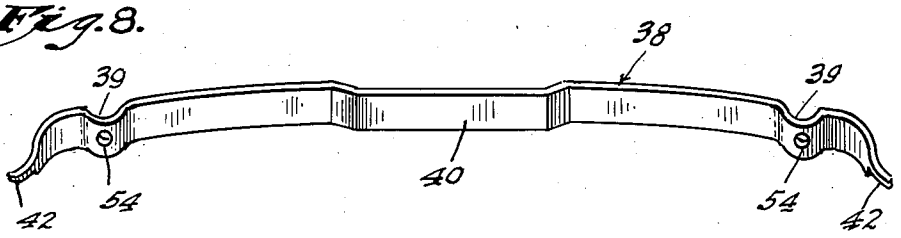


Fig. 9.

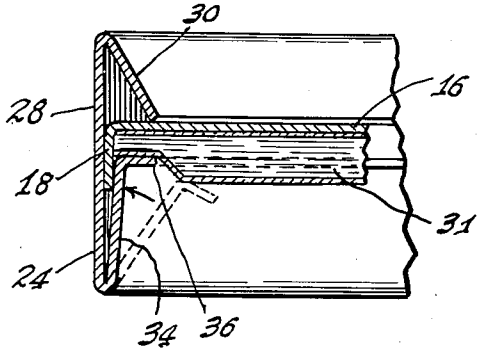
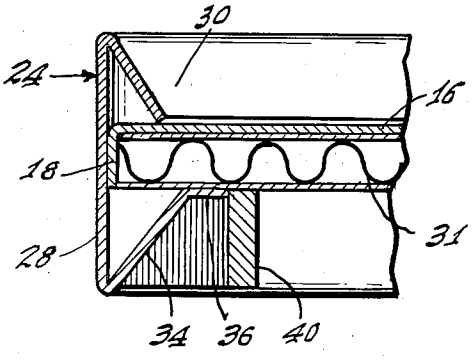


Fig. 10.



INVENTOR.
EARL F. HAMILTON,
BY
ATTORNEYS

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2,969,882

CART

Earl F. Hamilton, Columbus, Ind., assignor to Hamilton Cosco, Inc., a corporation of Indiana

Filed Oct. 21, 1957, Ser. No. 691,240

10 Claims. (Cl. 211—148)

This invention relates to movable utility carts, and more particularly to carts of the type used in the homeware line of metal furniture.

It is an object of my invention to provide a cart of the type referred to above having an attractive appearance, and possessing a rigid inter-braced construction. Another object is the provision of such a cart made of economical sheet-metal and metal-tube construction, which can be conveniently and rapidly assembled and is adapted for shipment, or even sale, in knocked-down condition. A further object is to provide enhanced rigidity and strength in a cart the major portions of which are formed of light-weight metal.

In carrying out my invention I provide a cart having legs formed in end-pairs, each pair formed from a tubular metal leg-forming member having a general shape of an inverted U whose intermediate stretch serves as a brace and a push bar for the table. At a plurality of elevations on such legs and releasably secured thereto, I provide shelves which position the legs in pairs in vertical planes, with the intermediate stretch of each leg-forming member located above the uppermost shelf to provide the above mentioned push bar.

Each of the shelves is conveniently constructed of sheet-metal and is provided with a peripheral molding stiffening the shelf and adding to its decorative appearance. Underlying each of the shelves is a silencer, or sound deadener, constructed from any suitable material, such as corrugated board, cardboard, or the like, and secured in such an underlying position by the peripheral shelf molding. Desirably, additional rigidity is added to the selves and to the cart assembly as a whole by providing a brace disposed along each longitudinal edge of each shelf and interlockingly engaging the molding of said shelf.

The accompanying drawings illustrate one embodiment of my invention. In such drawings:

Fig. 1 is is a side elevation of a cart embodying my invention;

Fig. 2 is an end elevation of the cart shown in Fig. 1;

Fig. 3 is a top elevation of the cart shown in Figs. 1 and 2;

Fig. 4 is a fragmentary top elevation of one corner of a cart-shelf with parts broken away to show the leg-shelf mounting;

Fig. 5 is a vertical section taken on the line 5—5 of Fig. 4;

Fig. 6 is a perspective view of the cart-shelf corner shown in Fig. 4 with the cart leg removed;

Fig. 7 is a section similar to Fig. 5, but with the cart leg and silencer removed;

Fig. 8 is a perspective view of a shelf brace;

Fig. 9 is a vertical section taken on the line 9—9 of Fig. 4 and showing the method of securing the silencer and molding to a cart-shelf; and

Fig. 10 is a vertical section taken on the line 10—10 of Fig. 3.

My invention as illustrated comprises a cart having four upstanding legs 10, conveniently formed from two lengths of metal-tubing, each length being bent into a U-shape to form two adjacent cart legs 10 interconnected by a transverse medial portion 12 which braces the cart and serves as a push bar for moving the cart from one location to another. Thus as shown, the legs are formed as end-pairs, all legs extending vertically from casters 14 upward to the push bars 12.

Interconnecting the legs 10 at upper and lower elevations are a pair of generally rectangular identical cart-shelves 16 each conveniently formed of sheet-metal and having a depending peripheral flange or lip 18. Each of the shelves 16 is formed at its corners to provide notches 20 receiving the legs 10.

To stiffen and prevent the warping of each shelf, thus enabling it to be made of light-gage, light-weight metal, I provide it with a molding extending peripherally around the shelf and providing a means of rigidity securing it to the cart legs 10.

As shown in Fig. 4, the molding for each shelf comprises a first pair of molding strips 24 extending along the sides of the shelf and a second pair of molding strips 26 extending across the ends of the shelf, the latter strips conveniently extend around the corners of the shelf to meet the molding strips 24 in mitred joints at the outer corners of the notches 20 (Fig. 6). Each of the molding strips 24 and 26 is comprised of a centrally disposed vertical web 28 abutting the outer face of the shelf flange 18 and extending above and below the shelf 16 to form an outer border for the shelf. A flange 30 integral with the top of the web 28 and disposed at an acute angle thereto extends obliquely downward from the top of the web 28 so as to be adapted to engage and bear against the upper face of the shelf 16 at a distance from the edge thereof. The lower edge of the web 28 is folded upwardly to provide a flange 34 disposed (Fig. 10) at an acute angle to the web 28 and terminating in an outturned lip 36.

The molding strips 24 are deformed adjacent their ends to take the shape of the notches 20 and partially embrace the legs 10. As shown in Fig. 5, in the regions of such deformation the flanges 30 and 34 are bent into contact with the web 28, the edge portions of the flanges, including the lip 36, being trimmed as necessary to permit the shelf-flange 18 to be received between them. There is thus provided at each end of each strip 24 a rigid double-thickness portion adapted to bear against the adjacent leg for a substantial vertical and circumferential extent.

Underlying each of the shelves 16 and having substantially the same extent and shape as the shelf is a silencer 31 formed from any suitable material, such as corrugated board or the like. These silencers 31, which absorb and deaden shocks and noises created by any objects that may be dropped upon the shelves, are held in place by the lips 36 of the strips 24 and 26. To that end, each of the strips 24 and 26 is initially formed (Fig. 10)

so that the combined shelf **16** and silencer **31** may be snugly received between the lip **36** and the edge of the flange **30**. After the strips are applied to each shelf, they are deformed as shown in Fig. 9 to bring the flange **34** into contact with the shelf-flange **18** and to clamp the shelf and silencer firmly between the lip **36** and the flange **30** (Fig. 9). Desirably, the deformation from the cross-section of Fig. 10 to that of Fig. 9 is not continuous for the length of each strip, as variations in the dimensions of the silencer or tearing of the edges thereof as an incident to the crushing action which takes place when the flange **34** and lip **36** are moved to their Fig. 9 position may cause the silencer to be without support from the lip **36** at one or more places along its margin. Accordingly, I prefer to leave about the middle third of each strip **24** and **26** with the cross-sectional shape shown in Fig. 10, where the lip **36** is spaced well inwardly from the margin of the silencer and is capable of supporting it should the lip **36**, for any reason, fail to do so.

To add further rigidity and strength to each shelf, as well as to stiffen the entire structure, I employ braces **38** which may be substantially thicker, stronger stock than that used for the shelves and molding strips. Each such brace extends along a side of a shelf between the legs **10** and preferably extends beyond such legs and around the corner of the shelf as shown in Fig. 4. At the notches **20**, the brace is formed with offsets **39** conforming to the leg-embracing portions of the flange **34**, and over its center portion it is provided with another offset **40** to clear (Fig. 10) the underformed stretch of the flange **34** and lip **36**. To hold the braces in association with each shelf prior to assembly of the cart, the brace-ends may be reduced in width and bent outward slightly to form tongues **42** adapted to enter notches **44** provided in the flanges **34** of the end molding strips **26**. Each brace-end is formed in the shape indicated in Fig. 4, and to effect insertion of the tongues **42** into the notches **44**, the brace is resiliently sprung to face the tongues toward each other as necessary to permit them to clear the lower portions of the flanges **34**. When the springing effect is released, the brace resumes its original shape, and the tongues **42** project into the notches **44**.

As shown in Fig. 5, each leg **10** is provided with a countersunk opening **48** which receives a bolt **50** extending through the leg **10**, through an opening **52** in the molding strip **24**, and finally through an opening **54** in the brace **38**. Nuts **56** are received on the inner threaded ends of the bolts **50**, which when tightly drawn bind against the braces **38** to rigidly retain them against the molding strips **24** for fixedly securing the shelves and legs in an assembled relation with the legs being retained in the notches **20**. Since the formed molding strips **24** bear for substantial vertical and circumferential extents against the legs **10**, the assembled cart possesses a high degree of rigidity and strength.

Although I have disclosed a cart-shelf employing the use of longitudinally extending braces for inter-bracing the shelves, moldings, and legs, it is to be understood that a rigidly constructed cart-shelf may be constructed according to my invention without employment of such braces if the shelves and moldings are formed of material of adequate strength.

I claim as my invention:

1. In a cart, a plurality of generally rectangularly shaped shelves having opposed longitudinal edges and mounted in vertically spaced relation on a plurality of upstanding legs disposed adjacent the corners of said shelves, a shelf molding extending peripherally around each shelf and including a vertical web and a pair of members engaging said shelf to retain the molding thereon and stiffen said shelf, a silencer underlying each shelf and retained thereunder by one of said pair of members, a brace extending along each longitudinal edge of each shelf inwardly of the silencer-retaining molding member and engaging the molding at each end of the shelf for bracing said shelf, and means on said legs fastening each of them to the molding and one of said braces for securing said legs to the shelves in a bracing relation to form a rigid structure.

2. In a cart, a plurality of generally rectangular shaped shelves having opposed longitudinal edges and mounted in vertically spaced relation on a plurality of upstanding legs disposed adjacent the corners of said shelves, each shelf having a vertically extending peripheral lip, a molding extending peripherally around each shelf and including a vertical web and a pair of inwardly extending flanges engaging said shelf, one of said flanges engaging said shelf lip and bindingly retaining it against said vertical web, a silencer underlying each shelf and retained thereunder by said one flange engaging the shelf lip, a brace disposed along each longitudinal edge of each shelf inwardly of said molding and shelf lip and engaging the molding at each end of the shelf for mounting the brace thereon, and means on said legs securing each of them to the shelves in a bracing relation to form a rigid structure.

3. In a cart as defined in claim 2 in which the ends of each of said braces are retained between one of the molding flanges and the shelf lip.

4. In a cart as defined in claim 2 in which the molding flange engaging said lip is bent inwardly medially along each side of each shelf to permit said flange to engage the silencer substantially inwardly of its marginal edge.

5. In a cart as defined in claim 2 in which the medial portion of each of said braces is deformed laterally inwardly to support the shelf silencer against the shelf inwardly from the edges thereof.

6. In a cart, a plurality of generally rectangularly shaped shelves having opposed longitudinal edges and mounted in vertically spaced relation on a plurality of upstanding legs disposed adjacent the corners of said shelves, each shelf having a vertically extending peripheral lip, a shelf molding extending peripherally around each shelf and including a vertical web and a pair of flanges engaging said shelf, one of said flanges retaining said shelf lip against said vertical web and having a lip adapted to engage and retain a silencer against the lower face of said shelf, a brace disposed inwardly of said molding and shelf lip along each of the longitudinal edges thereof and engaging the molding at each end of the shelf, and bolts received in said vertical web and braces to secure said legs and shelves in a bracing relation to form a rigid structure.

7. In a cart, a plurality of generally rectangularly shaped shelves having opposed longitudinal edges and mounted in vertically spaced relation on a plurality of upstanding legs disposed adjacent the corners of said shelves, a shelf molding extending peripherally around each shelf and including a vertical web and upper and lower flange members engaging said shelf to retain the molding thereon and stiffen said shelf, a brace disposed along each longitudinal edge of each shelf inwardly of said lower flange, the ends of said braces being received in openings formed in the lower molding flange along the transverse edges of the shelf, and means on said legs fastening each of them to the molding and one of the braces for securing said legs to the shelves in bracing relation to form a rigid structure.

8. In a cart, a plurality of generally rectangularly shaped shelves having opposed longitudinal edges and mounted in vertically spaced relation on a plurality of upstanding legs disposed adjacent the corners of said shelves, a shelf molding extending peripherally around each shelf and including a vertical web having a depth substantially greater than the depth of the shelf and a pair of flange members at an acute angle to said web to bindingly grip the shelf between the opposed edges thereof to retain the molding thereon and stiffen said shelf, said molding having offsets formed therein for the reception

of said upstanding legs, and means on said legs fastening each of them to the molding for securing each of them to each shelf to form a rigid structure.

9. The invention as set forth in claim 8 in which the flange members on said molding are substantially parallel to the molding web in said offset areas, and the means for fastening the legs thereto extends through the molding web and one of said flange members.

10. In a cart, a plurality of vertically spaced shelves mounted on a plurality of upstanding legs, each shelf having a downwardly extending peripheral lip, a molding extending peripherally around each shelf and including a vertical web and a pair of inwardly extending flanges engaging the upper face of said shelf and said shelf lip and bindingly retaining said shelf lip against said vertical web, a plurality of elongated braces disposed inwardly

of said molding and shelf lip and having outwardly bent ends received in openings formed in said one of said flanges, and means on said legs fastening each of them to the molding and one of said braces for securing each of them to each shelf to form a rigid structure.

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