Feb. 14, 1950 A. G. HAZEN 2,497,453

KNOCKDOWN BOX CONSTRUCTION

Filed Sept. 17, 1948 2 Sheets-Sheet 1

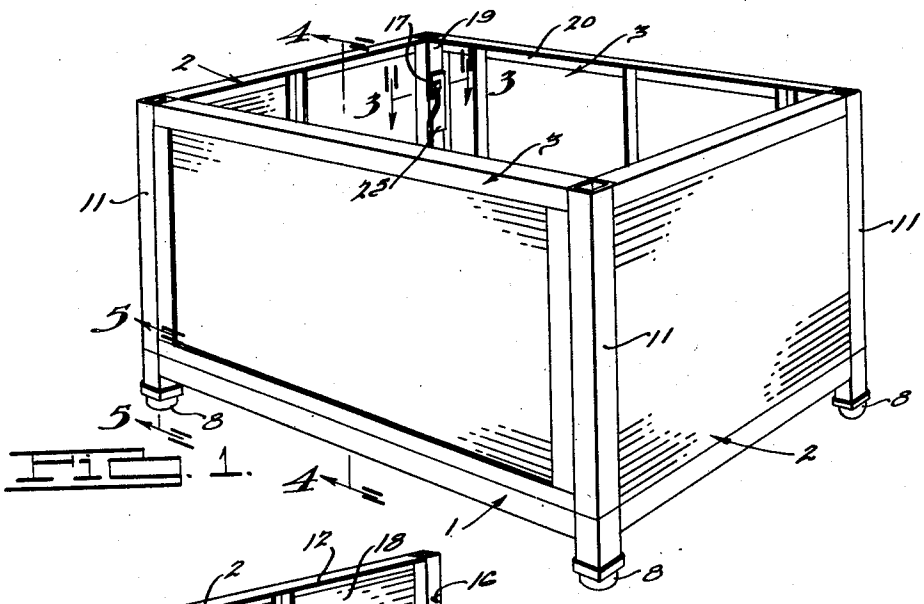


Fig. 1.

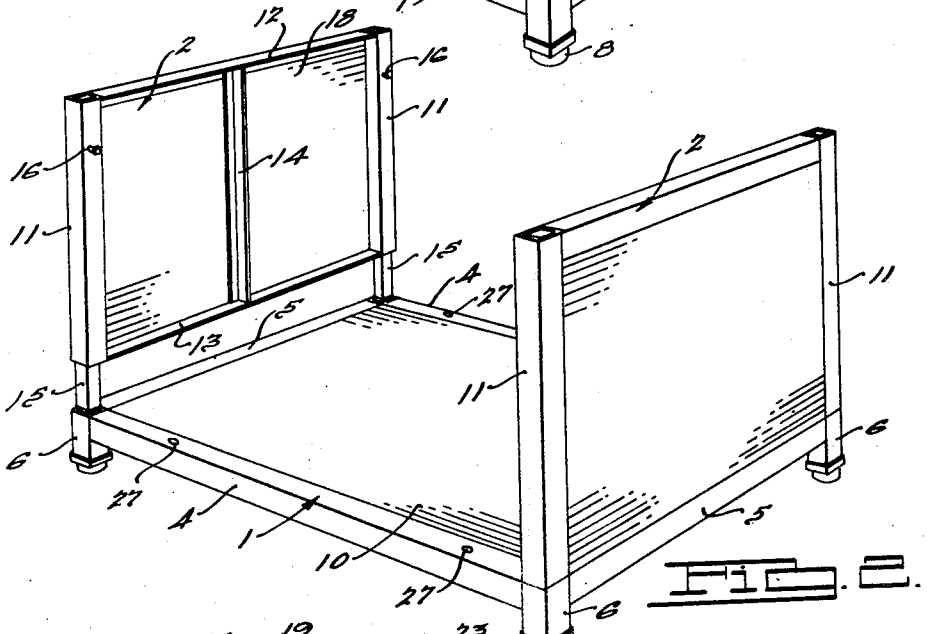


Fig. 2.

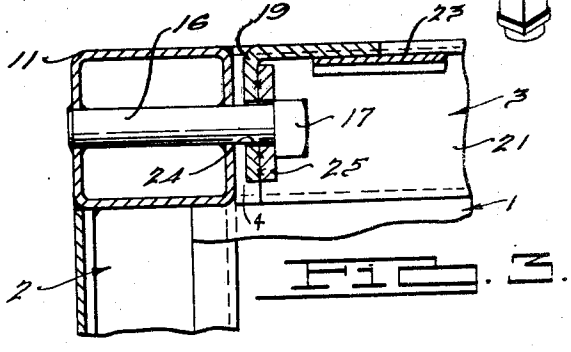


Fig. 3.

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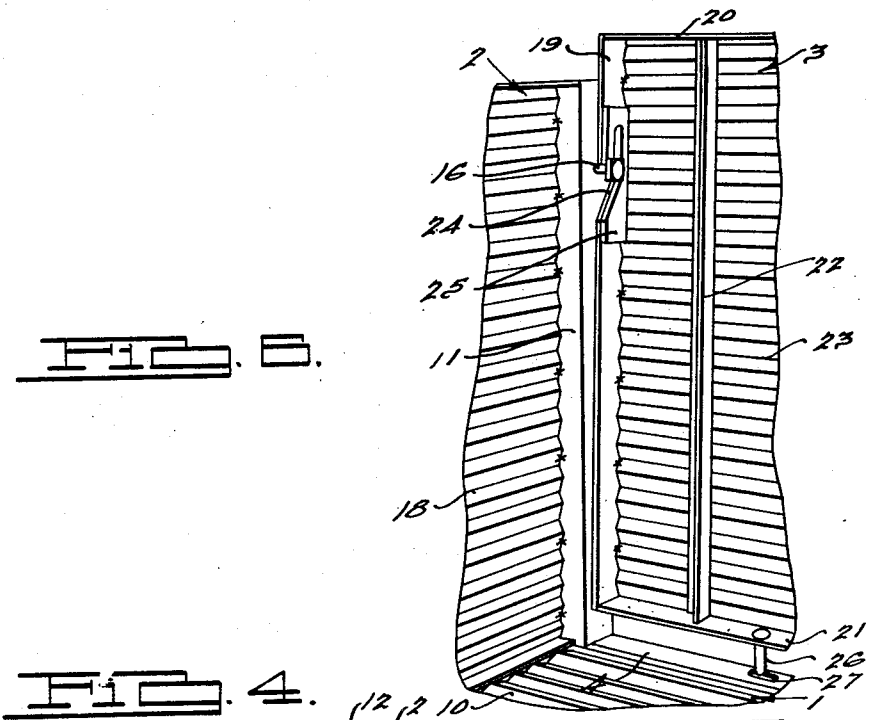
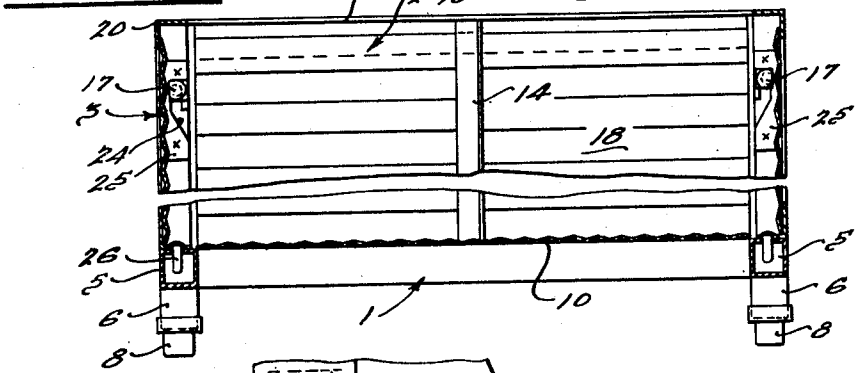


FIG. 4.



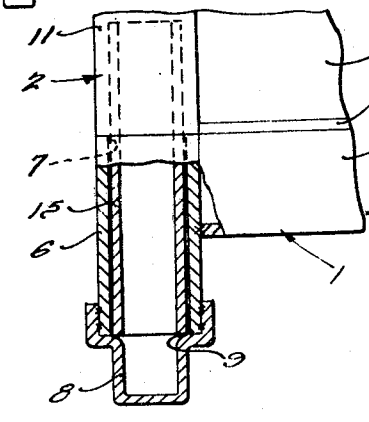


FIG. 5.

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2,497,453

KNOCKDOWN BOX CONSTRUCTION

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Application September 17, 1948, Serial No. 49,820

6 Claims. (Cl. 248—120)

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The present invention relates to improvements in knockdown box constructions.

One of the primary objects of the present invention is to provide a rugged metal box formed of sections which may be readily taken apart and of such construction that when disassembled the sections may be arranged in a compact position thus allowing many boxes to be shipped in the space ordinarily required by a few built-up boxes.

A further object of the invention is to provide improvements in knockdown boxes wherein the sections forming the ends and side walls are so constructed that a four-sided box may be used or the opposite side may be removed leaving the end walls on the bottom so that the box may be used as an end wall pallet for bar stock or the like.

Other objects of the invention will become apparent from the following specification, the drawings relating thereto, and from the claims hereinafter set forth.

In the drawings, in which like numerals are used to designate like parts in the several views throughout:

Figure 1 is a perspective view of an assembled metal box embodying features of the present invention;

Fig. 2 is a view similar to Fig. 1 with the opposite sides removed and with one of the end walls in a partially disassembled position;

Fig. 3 is an enlarged cross-sectional view, taken substantially along the line 3—3 of Fig. 1;

Fig. 4 is an end elevational and cross-sectional view, taken substantially along the line 4—4 of Fig. 1;

Fig. 5 is an enlarged cross-sectional view, taken substantially along the line 5—5 of Fig. 1, partially broken away; and

Fig. 6 is a partial interior perspective view illustrating one corner of the box and showing the side wall in a partially disassembled position.

The knockdown box of the present invention is preferably made of metal, such as steel, and is primarily used for shipping and storing castings. The box comprises a base generally indicated at 1, end walls generally indicated at 2, and side walls generally indicated at 3.

The base 1 comprises a rectangular frame formed of square box sections having opposite side elements 4 and opposite end elements 5 joined together at the corners by depending corner posts 6. The corner posts 6 are formed of square box sections having upwardly directed openings 7 in the top thereof and have a cap 8

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of reduced square section welded to the bottom end thereof. The reduced section forms internal annular shoulders 9 therein adjacent the lower end of the opening through the posts 6 for a purpose that will be described hereinafter. A corrugated sheet metal panel 10 is welded to the base frame and forms the supporting bottom for the base.

Each of the end members 2 comprises upstanding corner posts 11 formed of square hollow box section and joined together at the top and bottom by angle members 12 and 13 which are welded thereto. The ends may be braced by an upstanding angle member 14 which is welded to the abutting flanges of the angle members 12 and 13.

Depending projections 15 in the form of square tubes are telescoped within the lower open ends of the corner posts 11 and are welded thereto. The depending portions of the projections 15 have sections complementary in shape to the openings in the legs 6 and are received therein to rigidly support the ends 2 on the bottom frame. The manner of assembly and the final position are best shown in Figures 2 and 5 and it will be seen that the lower ends of the depending portions 15 abut against the annular shoulders 9 for the purpose of assisting in supporting the ends in their proper position. The adjacent faces of the lower ends of the corner posts 11 rest on and abut against the adjacent top surfaces of the legs when the parts are assembled.

Inwardly directed lugs 16 having spaced heads 17 are received through the openings in the corner posts 11 and welded thereto adjacent to but spaced downwardly from the tops of the end members 2. The purpose of the lugs 16 is to secure the sides 3 in a manner that will be more apparent from the later description.

A corrugated sheet metal panel 18 covers the end frame members and is welded thereto.

The side members 3 comprise a rectangular frame formed by end angle members 19, top angle members 20, and bottom angle members 21 welded together. The frame is preferably braced by vertically extending, longitudinally spaced angle members 22 which extend between and are welded to the adjacent surfaces of angle members 20 and 21. The side members 3 have corrugated sheet metal panels 23 welded thereto to form the closed sides.

In order to provide for ease in assembly and disassembly and at the same time to provide for a rugged box assembly, those flanges of the end angle members 19 which are adapted to abut

against the adjacent surfaces of corner posts 11 each have a bayonet slot 24 formed from the inner edge of the flange and spaced from but adjacent to the top of the sides. A bracing plate 25 having a similar slot is welded to the inner surface of the flange adjacent the slot 24 for the purpose of bracing the same. The bayonet slot 24 is of such a design and so located that the projecting portion of the lug 16 is received within the slot 24 with the head 17 bearing against the adjacent face of the reinforcing plate 24 so that the sides are secured when assembled.

To further secure the sides and provide for a rugged construction, depending pins 26 are provided through the horizontal flange on the bottom members 21 at spaced points therealong and such pins are adapted to be received through aligned openings 27 formed in the top surfaces of the side base frame members 4. The openings 27 may be slightly elongated to provide for ease in assembly.

The end elements 2 are assembled to the base 1 by dropping the projecting portions 15 in the top open ends of the legs 6 in the manner illustrated in Figure 2. The sides 3 are assembled to the bottom 1 and the ends 2 by first aligning the pins 26 with the openings 27 while the sides 3 are slightly raised from the base 1 and inclined outwardly at their upper ends, as shown in Figure 6. The side walls are then moved inwardly at their upper ends until the lower open ends of the bayonet slot 24 receive the headed pins or lugs 16. The sides are then allowed to drop with the pins 26 entering the holes 27 and the pins 16 engaging the upper ends of the bayonet slots 24.

It is pointed out that one of the important features of the present box resides in the fact that in the connecting means between the ends 2 and the sides 3 there are no endwise projections on the side wall sections. Consequently, after a shipment is made in a plurality of these boxes and it is necessary to return and store the empty boxes, a large number of the side wall sections can be fitted inside one completely assembled box for return shipment. Likewise, a large number of end wall sections may be similarly loaded. In this connection, the number of side wall sections which can be loaded in a single box is further increased by reason of the fact that the connecting mechanism between the side and end walls embodies no projections on the side wall sections perpendicular to the plane thereof.

It is also pointed out that the upper ends of the corner posts 11 are open so that the completely assembled boxes may be stacked to any desired height and that the reduced sections 8 may be received through the upper open ends of the corner posts 11. When the side and end wall sections are removed, the pallet base members may be similarly stacked.

A further feature of the device resides in the fact that, if desired, the side walls can be removed and the base and assembled end walls used as an end wall pallet for bar stock, or similar articles, and the prongs of an industrial lift truck may be readily inserted under the base, which is raised from the floor.

Formal changes may be made in the specific embodiment of the invention disclosed without departing from the spirit and substance of the invention, the scope of which is commensurate with the appended claims.

What is claimed is:

1. A knockdown box construction comprising a base having a border frame and depending legs at the corners thereof, said legs having upwardly directed openings in the upper ends thereof so that another base of the same construction and size may be stacked on said base with the legs of said other base nested in said openings, a pair of end members, each having upstanding corner posts, said corner posts having depending lower ends receivable in said openings, said end members being arranged one at each end of said base and parallel to each other and with the lower ends of the corner posts thereof nested in said openings in said base, lugs on the facing surfaces of the corner posts of each of said end member and projecting toward the other of said end members, side members having upstanding end elements provided with bayonet slots adapted to receive said lugs therein, and depending pins on the bottom of said side members receivable in aligned openings formed in said base border frame, the over-all length of said side members being at least as great as that of said end members but no greater than the distance between said end members, so that the box will accommodate therein parallel to said side members, the side and end members of another box of the same construction and size.

2. A knockdown box construction according to claim 1 wherein said corner posts are provided with upwardly facing sockets at their upper ends, said sockets being constructed and arranged to receive the lower ends of the legs of a base of a construction and size like the aforesaid base whereby a plurality of said boxes may be stacked in vertical alignment.

3. A knockdown box construction according to claim 1 wherein said corner posts are provided with upwardly facing sockets at their upper ends, said sockets being constructed and arranged to receive the lower ends of the legs of a base of a construction and size like the aforesaid base whereby a plurality of said boxes may be stacked in vertical alignment.

4. A knockdown box construction comprising a horizontally extending base having a border frame and depending legs at the corners thereof, said legs being provided at their upper ends with upwardly directed openings, so that another base of like construction and size may be stacked on said base with the legs of said other base nested in said openings, a pair of end members, each having upstanding corner posts, said corner posts having depending lower ends receivable in said openings, said end members being arranged one at each end of said base and parallel to each other and with the corner posts thereof nested in said openings in said base, each of said end members having lugs on the facing surfaces of the corner posts thereof projecting toward the other of said end members, side members having upstanding end elements of angle section with one flange thereof directed inwardly, said flanges being provided with bayonet slots adapted to receive therein said lugs, and depending pins on the bottom of said side members receivable in aligned openings formed in said base border frame, the over-all length of said side members being at least as great as that of said end members but less than the spacing between said end members so that the box will accommodate therein parallel to said side members, the side and end members of another box of like construction and size.

5. A knockdown box construction comprising a base having a box-section border frame and

box-section depending legs at the corners thereof, said legs having upwardly directed openings therein, a pair of end members each having upstanding box-section corner posts, said corner posts having depending ends receivable in said openings, said end members being arranged one at each end of said base and parallel to each other and with the corner posts thereof nested in said openings in said base, each of said end members having lugs on the facing surfaces of said corner posts adjacent the upper ends thereof projecting toward the other of said end members, side members having upstanding end elements of angle section with one flange thereof directed inwardly and defining the end confine of the side, each of said flanges being provided with a bayonet slot adapted to receive therein one of said lugs, and depending pins on the bottom of said side members receivable in aligned openings formed in said base border frame, the over-all length of said side members being at least as great as the length of said end members but less than the spacing between said end members so that the box will accommodate therein parallel to said side members, the side and end members of another box of like construction and size.

6. A knockdown box construction comprising a base having a box-section border frame and box-section depending legs at the corners thereof, each of said legs having an upwardly directed opening in the upper end thereof, a pair of end members each having upstanding box-section corner posts free of lateral projections, said corner posts each having a depending end receivable in one of said openings, said end members being arranged one at each end of said base and parallel to each other and with the corner posts thereof nested in said openings in said base, each of said end members having lugs on the facing surfaces of the corner posts thereof projecting toward the other of said end members, side members having upstanding end elements of angle section free of endwise projections and with one flange thereof directed inwardly, each of said flanges being provided with a bayonet slot adapted to receive one of said lugs therein, and depending pins on the bottom of said side members receivable in aligned openings formed in said base border frame, the over-all length of said side members being as great as the length of said end members and less than the distance between said end members so that said box will accommodate therein parallel to said side members, the side and end members of a plurality of other boxes of like construction and size.

ADELBERT GORDEN HAZEN.

REFERENCES CITED

The following references are of record in the file of this patent:

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Number	Name	Date
1,083,787	Zwickle	Jan. 6, 1914
1,881,822	McKelligon	Oct. 11, 1932
2,359,406	Crosser	Oct. 3, 1944

Certificate of Correction

Patent No. 2,497,453 February 14, 1950

ADELBERT GORDEN HAZEN

It is hereby certified that errors appear in the printed specification of the above numbered patent requiring correction as follows:

Column 4, lines 28 and 29, strike out the words "A knockdown box construction according to claim 1 wherein said corner posts are" and insert instead the following—

A knockdown box construction comprising a base having a border frame and depending legs adjacent the corners thereof, upwardly directed openings formed in the border frame adjacent the corners, end members having upstanding corner posts, said corner posts having depending ends receivable in said openings, lugs on the facing surfaces of said corner posts adjacent the upper ends thereof and projecting inwardly, side members having upstanding end elements provided with bayonet slots adapted to receive therein said lugs, and depending pins on the bottom of said side members receivable in aligned openings formed in said base border frame, said corner posts being;

and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 27th day of June, A. D. 1950.

[SEAL]

THOMAS F. MURPHY,
Assistant Commissioner of Patents.