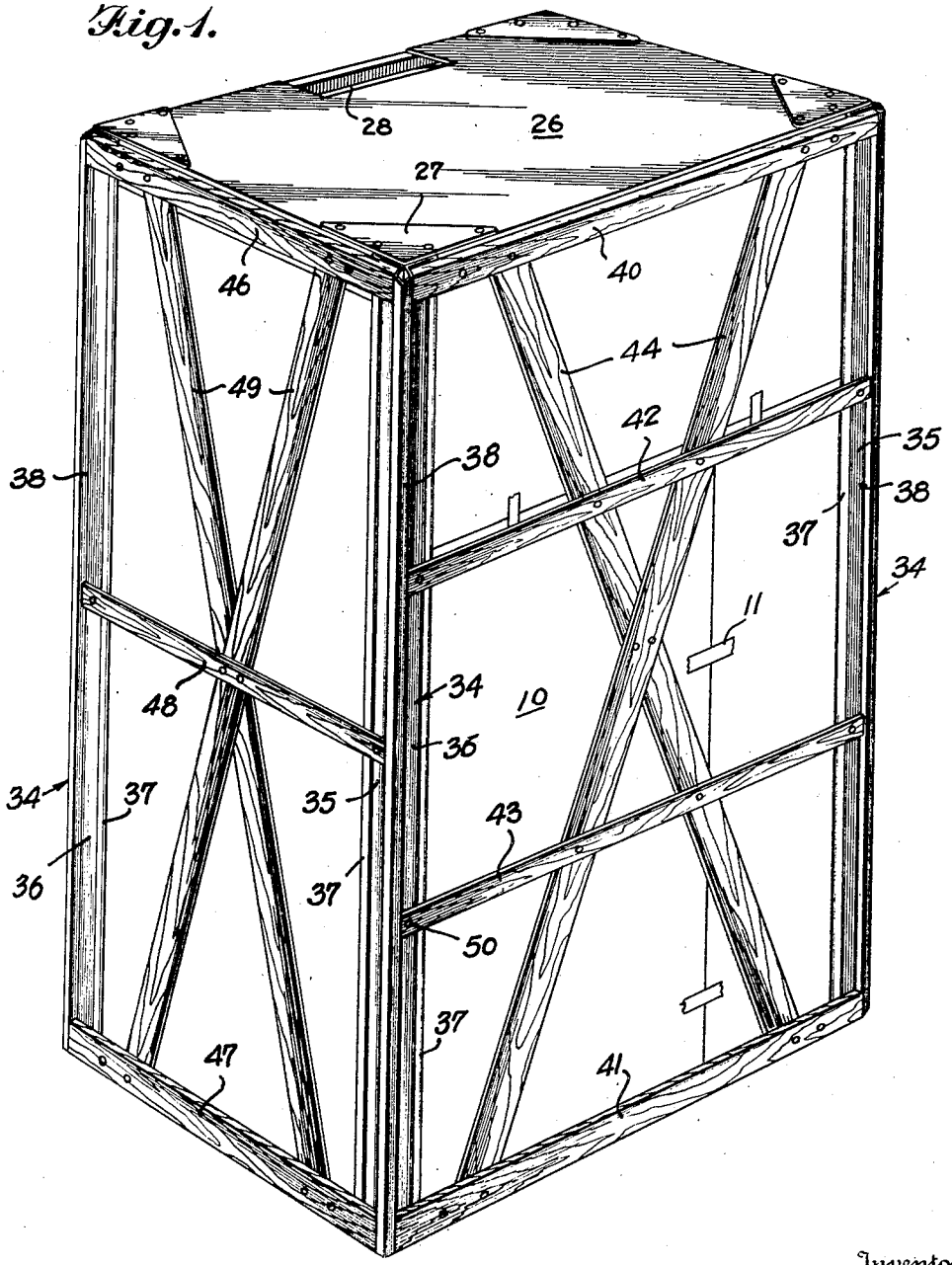
April 27, 1943. M. R. HULL ET AL 2,317,613

CRATE FOR REFRIGERATOR CABINETS AND THE LIKE

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Fig. 1.



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CRATE FOR REFRIGERATOR CABINETS AND THE LIKE

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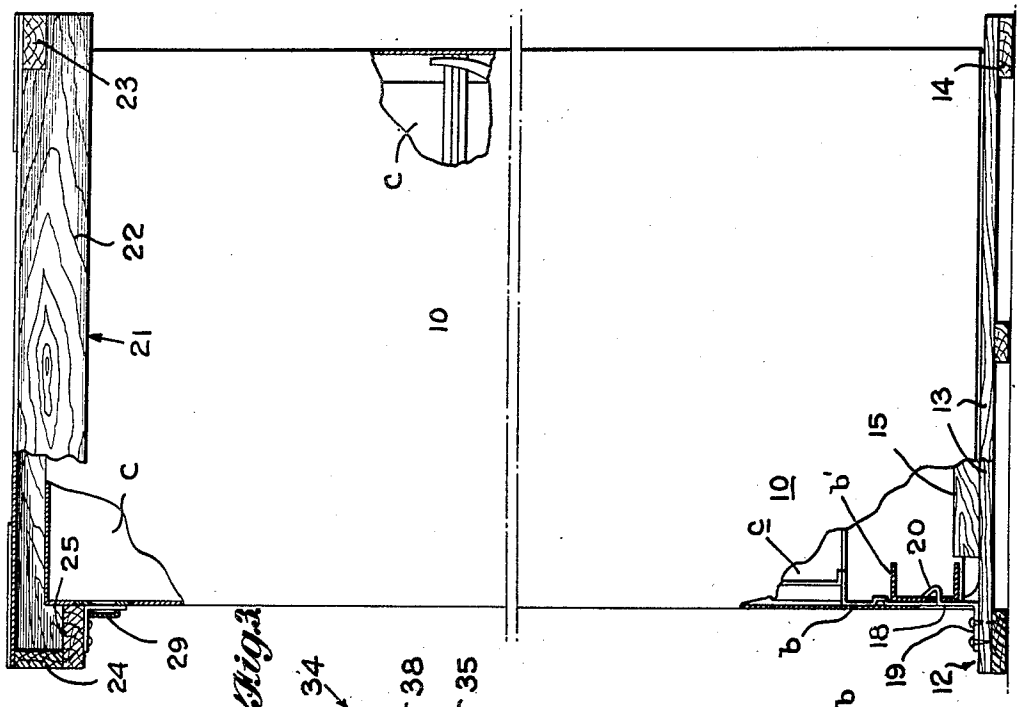


Fig. 3.

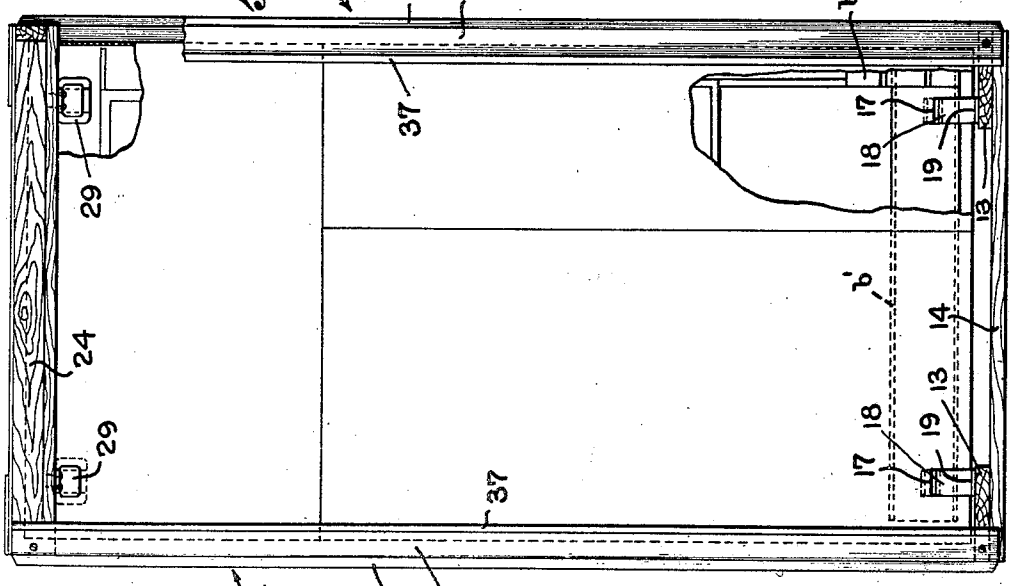


Fig. 2.

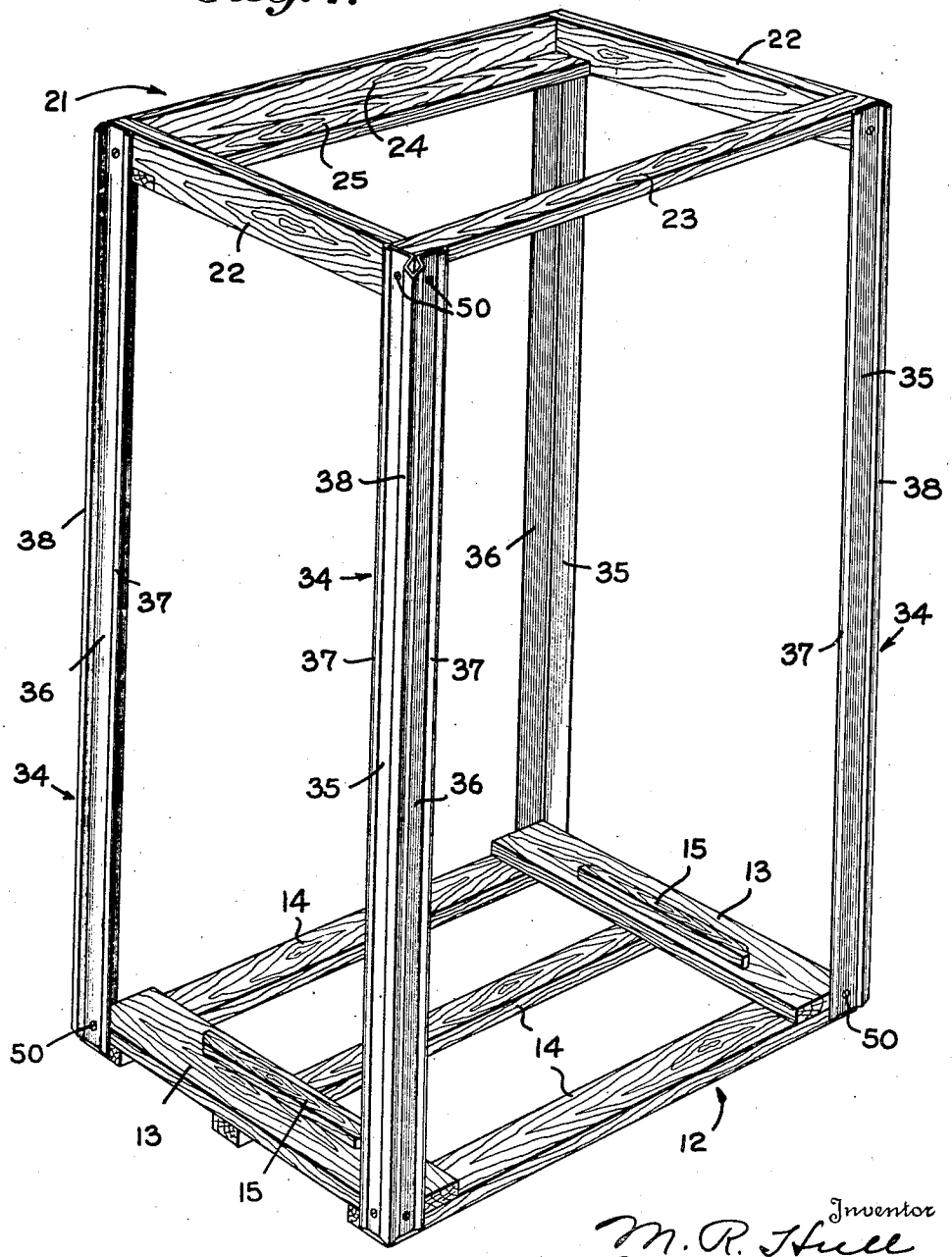
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CRATE FOR REFRIGERATOR CABINETS AND THE LIKE

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Fig. 4.



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CRATE FOR REFRIGERATOR CABINETS AND THE LIKE

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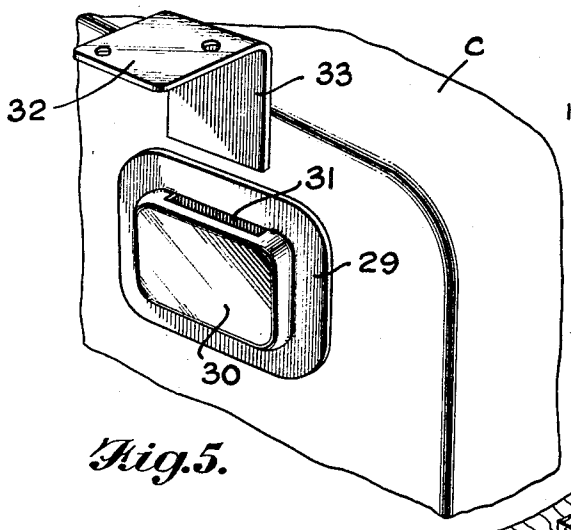


Fig. 5.

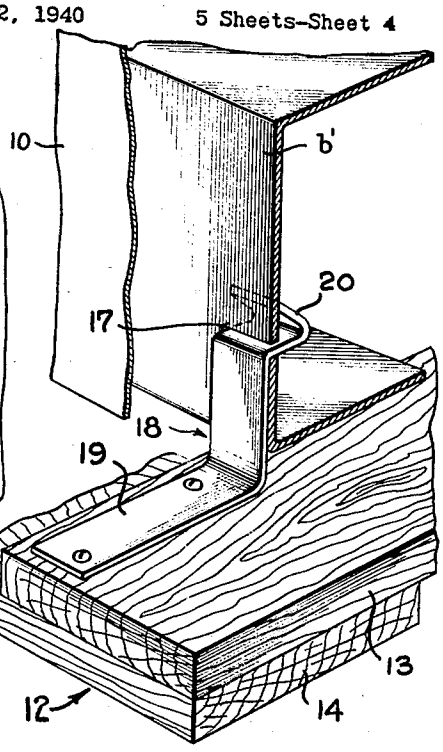


Fig. 6.

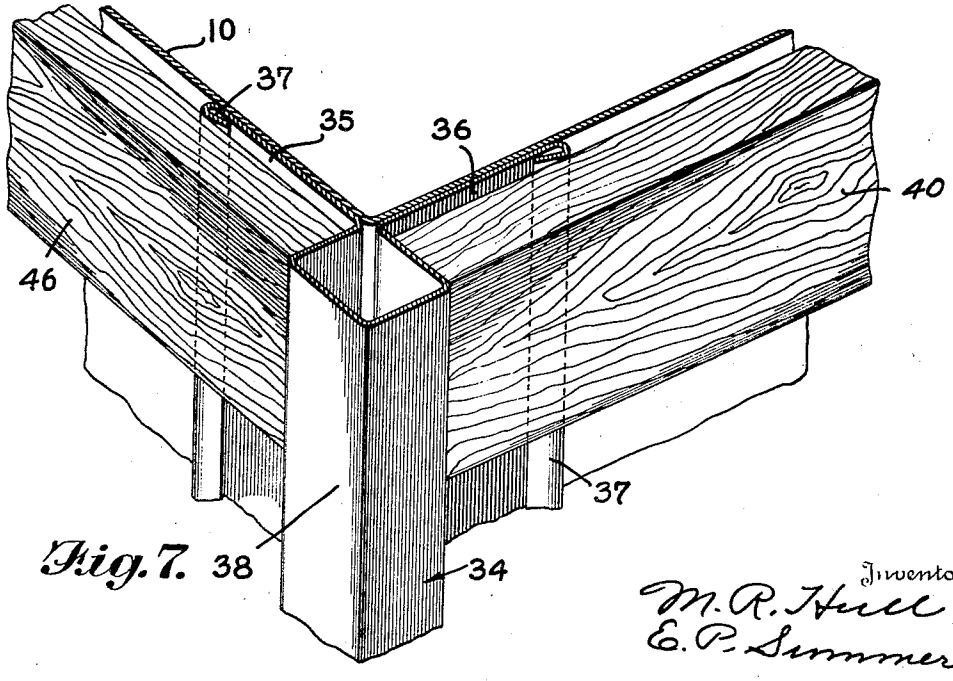


Fig. 7.

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CRATE FOR REFRIGERATOR CABINETS AND THE LIKE

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Fig. 8.

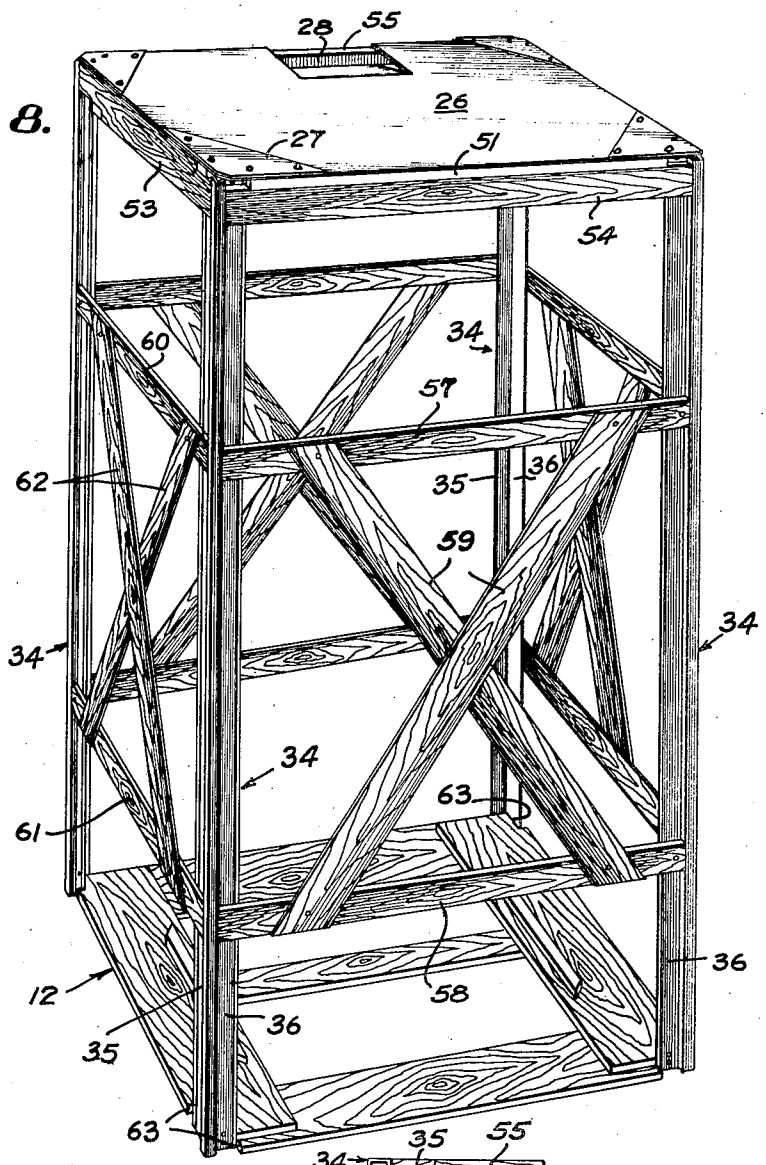


Fig. 9.

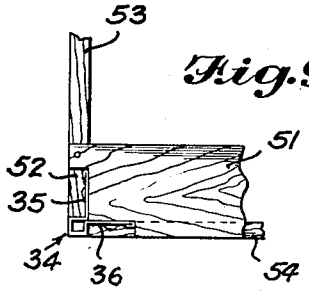
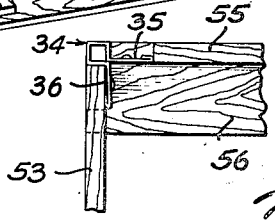


Fig. 10.



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UNITED STATES PATENT OFFICE

2,317,613

CRATE FOR REFRIGERATOR CABINETS AND THE LIKE

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Application November 22, 1940, Serial No. 366,772

8 Claims. (Cl. 217—36)

The crating of refrigerator cabinets and like articles for shipping and transportation has heretofore presented quite a problem. Refrigerator cabinets are generally provided with a porcelain or enamel finish, and while a finsh of this type may stand for a certain amount of abrasion and scratching, yet it will become seriously damaged if the metal shell bearing the finish is unduly flexed or bent. Therefore, the cabinet must be held against movement in crate and furthermore it should be cushioned against shocks and jars which inevitably result through handling of the crate. Also, the crate must be unusually strong since it has to stand the weight of the cabinet and there must be no doubt as to its ability to hold together under all shipping conditions. These factors have necessitated high crating costs with respect to both labor and material. If wood is used, ample padding and a considerable number of frame members are required, whereas if metal is used throughout, the cost of the crate frame mounts and the cabinet must be well padded or protected from contact with the metal.

The present invention provides means for crating refrigerator cabinets and like articles which will definitely ensure against damage to the cabinet during shipping or transportation and at the same time cheapen the cost of the crating job through reduction in labor and materials. The bulk of the crate framework comprises wood or analogous relatively light and cheap material reinforced by metal in a manner such as to promote strength and durability while at the same time cushioning the cabinet against shocks and jars. Crates of the type disclosed herein are cheaper with respect to prior known all wood crates for the same purpose, require less handling of the cabinet and are simplified in construction and therefore involve less labor for the crating operation.

In the drawings:

Fig. 1 is a perspective of a crate in accordance with the features of the invention, the crate housing a refrigerator cabinet;

Figs. 2 and 3 are, respectively, views in rear and side elevation, partly broken away, of a cabinet with the top and bottom frame assembly in place ready for the side frame members, Fig. 3 being on a larger scale than Fig. 2;

Fig. 4 is a perspective of the partially assembled crate of Figs. 2 and 3;

Fig. 5 is a fragmentary view illustrating the manner in which the top of the crate is anchored to the cabinet;

Fig. 6 is a view similar to Fig. 4, particularly showing the manner in which the base of the crate is anchored to the base of the refrigerator;

Fig. 7 is a further fragmentary perspective view showing one of the resilient sheet metal corner posts and the manner in which it is connected to the coacting frame members.

Fig. 8 is a perspective view of a modified form of crate with respect to that shown in Figs. 1 to 7, inclusive;

Figs. 9 and 10 are fragmentary views in plan of the upper front and rear corner portions of the crate of Fig. 8.

Referring to the drawings in detail, a refrigerator cabinet is indicated at C and has a machinery compartment *c* and a base *b* which is of open construction at the bottom. The back of the cabinet is covered by a back plate which terminates short of the machinery compartment, leaving the back of the latter compartment open and accessible from the rear, note Fig. 2. Below the machinery compartment at the back of the cabinet, the base *b* is connected by channel member *b'*.

Before crating, a band of thin sheet steel *s* or the like (Fig. 3) is preferably secured around the body of the cabinet to ensure against unlatching and opening of the door. The cabinet is then completely wrapped or enveloped by a suitable material **10** such as heavy paper, which ensures against marring of the finish. The wrapping or envelope **10** may be secured at the meeting edges by glued strips of paper or cloth **11**, Fig. 1.

The crate assembly comprises a base **12** made up of side rails **13** which are cross connected by bottom rails **14** at the front and rear and also preferably intermediate of the base. Secured to the side rails and projecting upwardly therefrom are cleats **15** which engage the adjacent inner walls of the base of the cabinet, note Fig. 3, to ensure against relative displacement.

To anchor the base of the crate firmly to the base of the cabinet, the base channel member *b'* is formed with one or more slots **17**, and angle brackets **18** are provided, each bracket having a foot **19** and a resilient bent locking and clamping tongue **20**, as best shown in Fig. 6. These brackets may be inserted from the inner side of the base channel member *b'* foot first, and then secured to the base of the crate by suitable fastenings such as nails, screws and the like. When the angle bracket is brought down with the foot **19** flat against the base **12**, the end of the tongue **20** bites against the inner surface of the base channel member *b'* and locks the bracket firmly to the base channel member *b'*. To remove the

brackets 18, it is only necessary to detach the foot 19 and swing the bracket upwardly to permit it to be withdrawn from the inner side of the base channel member b'. It will be clear that the cleats 15 obviate the movements of the cabinet which might shear off the angle brackets 18.

After the cabinet has been anchored to the base 12, it is ready for crating at the top and sides.

A top panel assembly 21 is provided and includes side rails 22, front and rear rails 23 and 24 and rear brace rail 25, said rails being secured together to form a rectangular frame with the rear brace rail 25 contacting the rear wall of the cabinet, note particularly Fig. 3. A top panel 26 is secured over the top of the frame so formed and rigidly connected to the frame by means of gusset plates 27, note Fig. 1. This top panel is preferably formed of relatively rigid yet non-abrasive material such as a piece of fiber board and is preferably formed with a cut-out portion defining a tongue 28 which is inclined downwardly over the top of the cabinet at the rear and engages the cabinet to render the connection between the parts more stable.

It will be noted from Fig. 3 that the base 12 and top frame assembly 21 extend outwardly from the front and rear of the cabinet in substantially aligned relation and this also holds true at the sides of the cabinet. Thus, when the front and rear and side frame assemblies, to be described, are applied, they are held in spaced relation from the side walls of the cabinet.

To hold the top frame assembly in definite spaced relation with respect to the top of the cabinet, brackets 29 are secured as by welding to the rear wall of the cabinet adjacent the top of the latter, note Figs. 2, 3 and 5, said brackets each having an outwardly projecting cup-shaped central portion 30 formed with a vertical slot 31. Angle brackets 32 are provided and are secured to the brace rail 25, each of said brackets having a downwardly projecting tongue 33 adapted to engage in one of the slots 31. By this means the top frame assembly is rigidly anchored to the top of the cabinet in a manner similar to the anchorage of the base frame 12 to the base of the cabinet. After the cabinet has been crated at the top and bottom as illustrated in Figs. 2 and 3, it is ready for assembling of the corner posts and side frames.

The corner posts, indicated at 34, are preferably made of sheet steel and are given a particular shape to provide a cushioning and protective action for the cabinet and crate. Each corner post comprises oppositely diverging extensions or wings 35 and 36 which are secured to the corners of the base 12 and top frame 21, said wings terminating in rolled edges or beads 37, note particularly Fig. 7. The central portion or post proper is indicated at 38 and is preferably generally rectangular in shape providing a hollow or tubular resilient sheet steel section which not only protects and cushions the corners of the crate but projects outwardly beyond the plane of the sides of the crate so as to also protect the side framing. The corner posts are preferably formed by rolling but may be pressed, stamped or otherwise shaped, the particular shape of the post imparting considerable strength thereto while at the same time permitting lateral flexing and a limited amount of distortion during handling of the crate. The rectangular section is preferably disposed so that the outer edge is exposed, and if this edge contacts some object, the section "gives" and spreads to a limited extent, the thrust component being applied along divergent lines through the side framing to and being absorbed by the remaining corner posts. Thus these posts will not break or dent while at the same time they are capable of absorbing shocks and jars and impart the desired amount of rigidity to the crate as a whole.

Fig. 4 shows the crate with the base, top and corner posts applied ready for the side frames. The latter consist of two end frames and front and rear pre-fabricated frames which may be of similar construction. As shown in Fig. 1, each front and rear frame includes top and bottom cross members 40 and 41 and intermediate cross members 42 and 43. These cross members are preferably connected by X-braces 44 which are secured at their ends to the top and bottom members 40, 41.

The end frames each comprise top and bottom cross members 46 and 47, an intermediate cross member 48 and X-braces 49 all secured together as shown.

The front and rear frames and end frames may be first assembled as complete panels or units and then secured to the corner posts as best shown in Figs. 1 and 7, the contiguous or adjacent ends of the cross members 40—43 and 46—48 being placed against the adjacent walls of the corner posts 38 and secured to the divergent wings 35 and 36 by means of suitable fasteners such as screws 50.

The crate is now completely assembled, the side frames being held in spaced relation with respect to the side walls of the cabinet while the corner posts permit a limited amount of "give" to the crate as a whole and also cushion the cabinet in its crate. Should the corner posts contact with some object, the shock is cushioned and no part of the crate is permitted to press against the walls of the cabinet and bend or distort the latter. Ordinarily, the crate will be placed with the refrigerator in an upright position, but irrespective of how the crate may lie, two of the corner posts will always contact the surface on which the crate rests and cushion the assembly as a whole against shocks and jars. The base, top and side frames of the crate may be made up in separate pre-fabricated units and nested in compact relation, and these units may be quickly and easily applied during the crating operation. When the crate reaches the retailer, the knock-down operation may also be carried out easily and quickly with a minimum amount of labor. If the frames are to be returned to the manufacturer, they may be nested and shipped at a relatively low cost. The entire assembly is lighter in weight than the conventional all-wood crate while at the same time it is much stronger and more durable.

Figs. 8, 9 and 10 illustrate a modified form of crate by means of which a certain amount of wood framing may be dispensed with. The corner posts are of the same construction as those used in the form first described and are given similar reference numerals, and the same also holds true of the top panel 26.

The principal differences in construction reside in the arrangement of the top wood framing with respect to the corner posts, and the X-bracing for the sides of the crate. The top framework comprises front, rear and side rails of which the front rail 51 at its opposite ends is notched as at 52 to receive the wings 35 and 36 of the corner posts 34. Side rails 53 are connected at

their opposite ends to the adjacent wings of the corner posts **34** and also to the front and rear rails **51** and **56**. Immediately beneath the front rail **51** is a front cross member **54** also connected at opposite ends to the adjacent side wings of the corner posts. The frame members **51, 53** and **54** correspond to the frame members **23, 22** and **40** of the crate first described. At the rear of the crate, the construction is substantially similar to the frame members **24** and **25** used in the form of crate shown in Figs. 1 to 7 inclusive, except that the frame members are placed on the outside of the wings of the corner posts instead of on the inside, note Fig. 10, where the rear rail which corresponds to the rail **24** is indicated at **55** and the brace rail which corresponds to the rail **25** is indicated at **56**.

Instead of extending the X-braces to the top and bottom of the crate, cross members **57** and **58** are connected at an intermediate point to the side wings **36** of the corner posts, the said cross members being connected by X-braces **59**. The sides of the crate are reinforced in a similar manner by means of cross members **60** and **61** and X-braces **62**.

The base member **12** may be of substantially the same construction as that heretofore described except that in this instance the corners are notched or recessed as at **63** to receive the side wings of the corner posts.

It will be noted that with the type of crate shown in Figs. 8 to 10 inclusive, certain of the wooden framework may be dispensed with while at the same time maintaining ample rigidity and strength.

It will be understood that the improved crate embodies advantages other than those specifically mentioned herein, and it will be further understood that certain changes in construction and design may be adopted to carry out the advantages and spirit of the invention without departing from the scope of the appended claims.

What is claimed is:

1. In combination with a cabinet for refrigerators and the like having a base, the base of the cabinet having a member having a slot therein, a crate for the cabinet having a base frame on which the cabinet rests, an angle bracket for detachably anchoring the cabinet to said base frame, said angle bracket having a foot secured to said base frame and a reversely bent locking tongue adapted to engage in said slot and clamp against the inner surface of said slotted member when said foot is secured to said base frame.

2. In combination with a refrigerator cabinet of the type having a horizontal channel member fixed at the back of the cabinet base, a crate which encloses the cabinet and has a base frame on which the cabinet rests, a pair of cleats each extending at right angles to said channel member and fixed to and projecting upwardly from the base frame, said cleats each engaging throughout its length the adjacent inner wall of the cabinet base, and an angle bracket rigidly secured to the base frame and extending through a slot in the channel member and having its extremity engaging the channel member on the inside to lock the base frame to the channel member; the cleats obviating such movements of the cabinet as may tend to shear off the angle bracket or tear it loose from the base frame.

3. In combination with a refrigerator cabinet having a horizontal channel member at the base, a crate having a base frame on which said cabinet rests, said channel member having a slot, an angle bracket comprising a foot which is rigidly secured to the base frame and a portion at right angles to the foot and lying outside of and substantially in contact with the channel member, and a reversely bent resilient locking and clamping tongue at the end of the bracket portion which lies at right angles, said tongue extending through said slot and its reversely bent shape bringing the extremity of the tongue firmly against the inside wall of the channel member, whereby the channel member is locked and clamped to the base.

4. In combination with a crate, a refrigerator cabinet inside of the crate and having a slotted bracket secured to its rear wall adjacent the top of the cabinet and also having a slotted channel member fixed to the base of the cabinet, an angle bracket secured to the top of the crate and projecting through the slot of the slotted bracket, another angle bracket secured to the bottom of the crate and projecting through the slot of the slotted channel member, means on the bottom of the crate to obviate such shifting of the cabinet as would tend to shear off the angle brackets or their connections, and means forming a part of the top of the crate and directly engaging the cabinet at the top and rear thereof to steady the cabinet.

5. In combination with a cabinet for refrigerators and the like having a hollow base and an associated base member provided with a slot, a crate for the cabinet having a base frame on which the cabinet rests, a bracket for anchoring the cabinet to the base frame of the crate, said bracket being formed of material possessed of a limited degree of resiliency and having a foot portion secured to said base frame and an upwardly projecting portion terminating in a substantially horizontally-extending reversely-bent free end portion defining a locking tongue adapted to pass thru said slot when the foot is unattached and then lock in said slot with its free end clamping against one side of said slotted base member and the upwardly projecting portion clamping against the opposite side of said slotted base member when the foot is brought down against and is secured to the base of the crate.

6. In combination with a cabinet having a base of open construction spanned by a horizontal member formed with a slot, a crate comprising a base frame on which the cabinet rests, a bracket having an upstanding portion formed with a locking tongue projecting through said slot and locked to said horizontal member, said bracket being secured to said base frame to anchor the cabinet thereto, a top frame overlying the cabinet, an anchoring bracket secured to the cabinet adjacent the top thereof, said top frame having secured thereto a member provided with a tongue engaging said anchoring bracket, resilient sheet metal corner posts each comprising a post portion proper of hollow section having divergent extensions or wings, said corner posts extending substantially the full height of the crate and being secured to said base and said top frame to hold those parts in definite spaced relation, and frame members forming the sides of the crate, said side frame members having the opposite ends thereof secured to said extensions or wings, the hollow section of each corner post extending outside of the outer planes of the two crate sides which join on that corner so that the crate, when laid on any of its sides, will be resiliently support-

ed by two of the corner posts and the side frames will be elevated out of contact with the surface on which the crate may rest.

7. In combination with a cabinet, a crate therefor comprising a base frame on which the cabinet rests, means detachably anchoring the cabinet to said base, a top frame fitted over the top of the cabinet, means detachably connecting the top portion of the cabinet to said top frame, frame members forming the side walls of the crate, corner posts extending for substantially the full height of the crate to which the opposite ends of said side frame members are connected, each of said corner posts consisting of a strip of sheet metal shaped to define a substantially closed hollow tubular corner post proper which extends outwardly beyond the outer planes of the two crate sides which join on that corner so that the crate when laid on any of its sides will be resiliently supported by two of the corner posts and the side frame members will be elevated out of contact with the surface on which the crate may rest, the marginal edges of the sheet metal which defines each corner post being extended at divergent angles and connected to the adjacent ends of the side members.

8. A crate for refrigerator cabinets and the like comprising a base frame, a top frame and side frames, corner posts connecting said top, bottom and side frames, said corner posts each comprising a strip of resilient sheet metal formed with a central hollow section defining a tubular member projecting outwardly from the corner of the crate and oppositely divergent wings or extensions projecting inwardly at divergent angles from said hollow section wholly inside of the side frames and forming means for connecting the tubular corner member to the framework of the crate, the hollow section of each corner post extending outside of the outer planes of the two crate sides which join on that corner so that the crate, when laid on any of its sides, will be resiliently supported by two of the corner posts and the side frames will be elevated out of contact with the surface on which the crate may rest.

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