Dec. 7, 1965 R. E. BOWLES ETAL 3,221,972

REINFORCED CARTON

Filed Nov. 8, 1963 3 Sheets-Sheet 1

FIG. 1

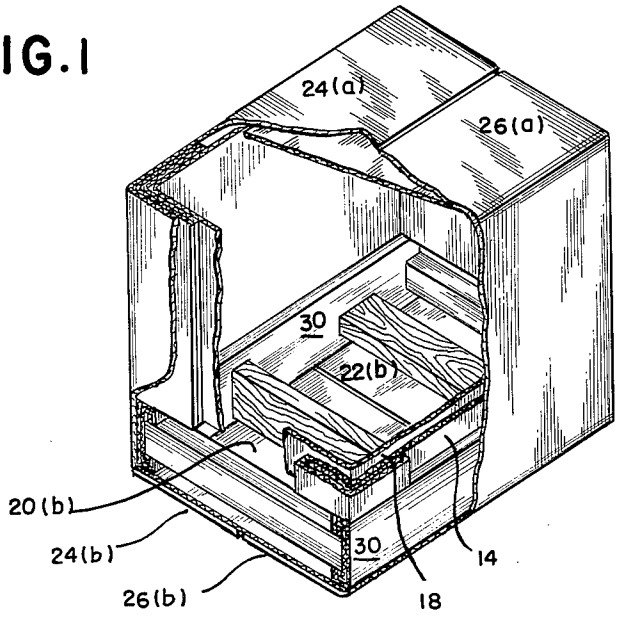
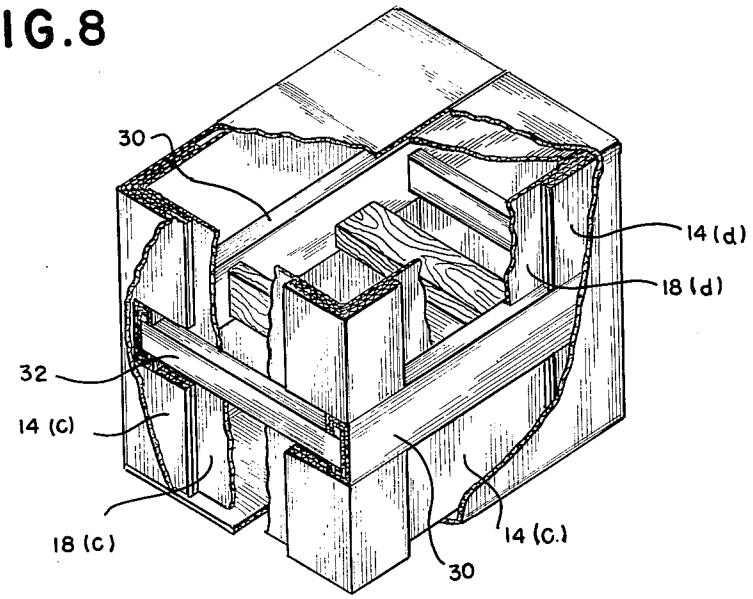


FIG. 8



LAZO & BARRY

ATTORNEYS

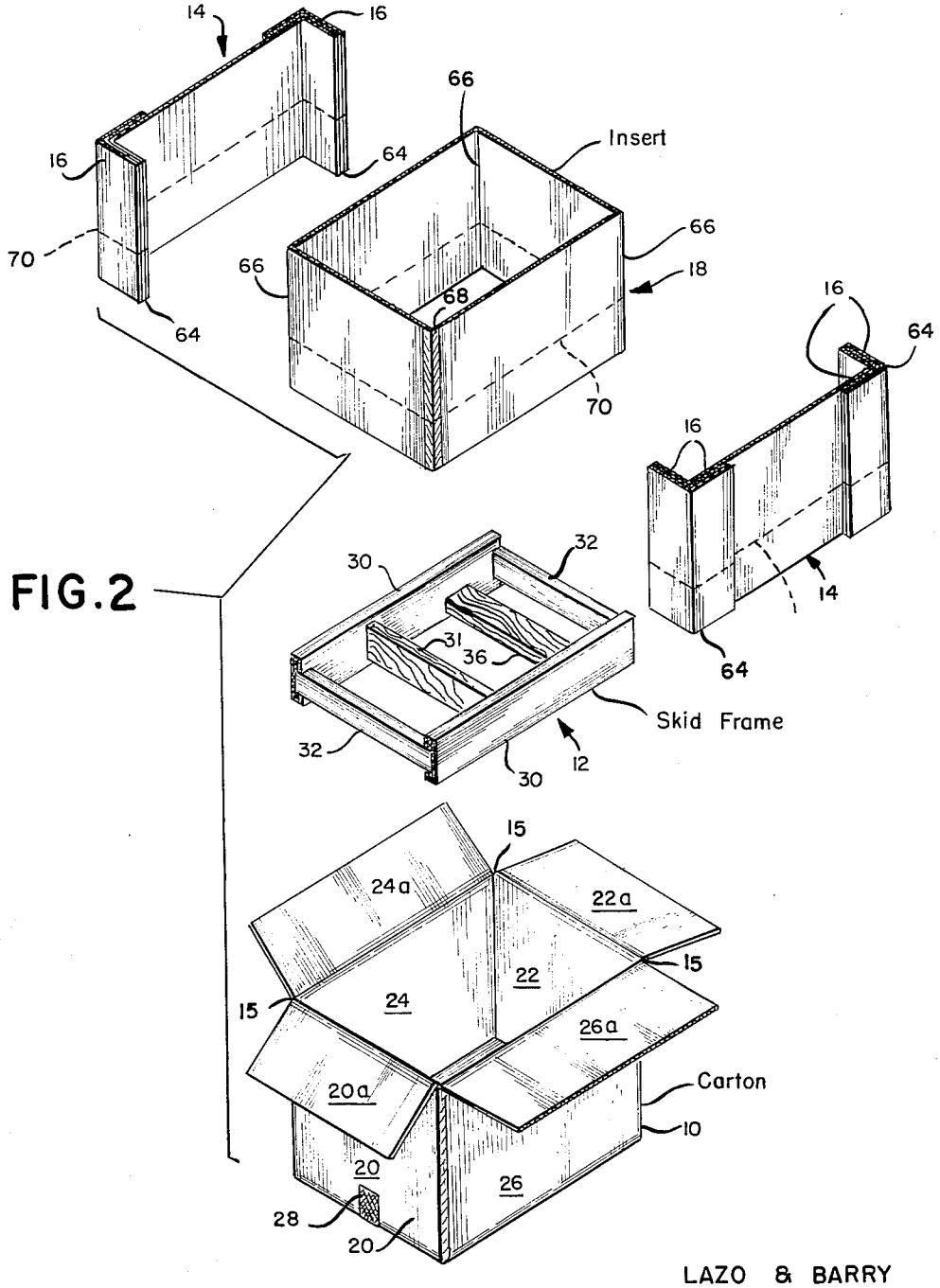


FIG.2

LAZO & BARRY
ATTORNEYS

Dec. 7, 1965 R. E. BOWLES ETAL 3,221,972

REINFORCED CARTON

Filed Nov. 8, 1963 3 Sheets-Sheet 3

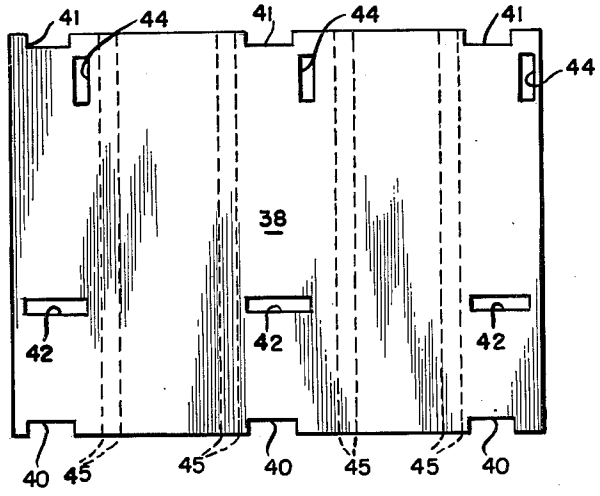


FIG. 4

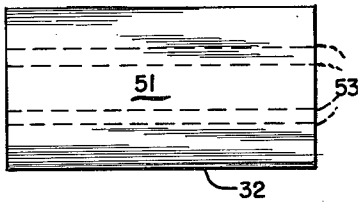


FIG. 5

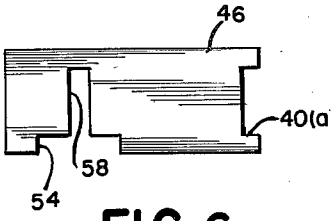


FIG. 6

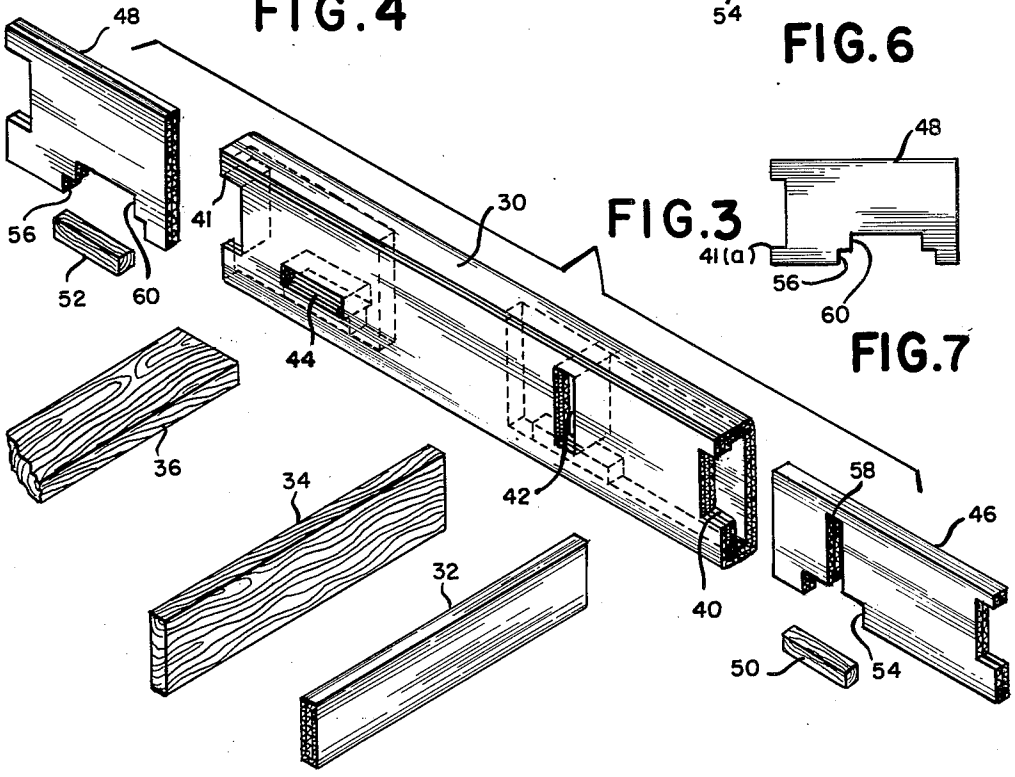


FIG. 3

FIG. 7

LAZO & BARRY

ATTORNEYS

United States Patent Office 3,221,972 Patented Dec. 7, 1965

3,221,972

REINFORCED CARTON

Renile E. Bowles, Janesville, Wis., and Robert L. Craig, Gurnee, Ill., assignors to Hoerner Boxes, Inc., Keokuk, Iowa

Filed Nov. 8, 1963, Ser. No. 322,292
13 Claims. (Cl. 229—14)

This invention relates to containers for shipping and storing engines and motors and more particularly to the skids used to support the engine or motor within the container and its combination with the reinforcing structure of the container.

One of the primary objects of the invention is to provide a container which is strong enough to protect an engine or motor during shipment and storage.

Another object is to provide a combination wood and corrugated paperboard skid for supporting an engine or motor and the like during shipment and storage.

Another object of the invention is to provide a container structure which can be used in combination with a skid for protecting such engines or motors.

Another object of the present invention is to provide a container which can be readily adapted to carry different types of engines or motors.

Another object of the present invention is to provide a container for transporting and storing engines or motors which can be stacked on top of each other.

A further object of the present invention is to provide a container that is economical to manufacture and simple to erect and assemble.

A still further object is to provide a reinforcing lining for a container used to ship or store an engine or motor.

Other objects and advantages will become more readily apparent from the following detailed description when read in connection with the enclosed drawings in which

FIG. 1 is a cutaway view of the container with the skid and liner positioned therein.

FIG. 2 is an exploded view of the container.

FIG. 3 is an exploded view of one side of the skid.

FIG. 4 is a view of the corrugated paperboard blank used for the longitudinal members of the skid.

FIG. 5 is a view of the corrugated paperboard blank used for the lateral members.

FIG. 6 is a view of the blank used for one of the pads.

FIG. 7 is a view of the blank used for the other pad.

FIG. 8 is a cutaway view of a container with the interior structure modified to support an engine or motor having a portion projecting below the skid.

Referring to the drawings, the engine or motor container consists of a carton **10** of ordinary corrugated paperboard construction. Into this carton an engine or motor mounted on a skid **12** is inserted until the skid rests on the bottom of the carton. Sidewall retainers **14** having double walled corners **16** are inserted into opposite sides of the carton with the bottom edge resting on the top of the skid and the top edge of the retainer flush with the top of the carton. An open-ended insert **18** is forced into the space between the sidewall retainer surrounding the engine and holding the sidewall retainers in position. When the top flaps of the carton are closed, the double-walled corners of the sidewall retainers act as corner braces to reinforce the container for stacking and to hold or lock the skid in place in the event that the container is tipped over.

The carton is cut from corrugated paperboard preferably R.S.C. Stitched 500# B/C and is scored at **15** to form end walls **20** and **22**, side walls **24** and **26**, bottom closure flaps **20***b*, **22***b*, **24***b*, and **26***b* and top closure flaps **20***a*, **22***a*, **24***a*, and **26***a*. The bottom closure flaps are folded over in conventional manner and secured together

by a tape **28** or any other suitable means to form the bottom for the carton. The top closure flaps can be folded over in the same manner to form the top after the engine or motor to be shipped has been seated therein and the other parts of the container have been inserted into position. This carton is of generally standard configuration and can be made of any type of paperboard considered strong enough to protect the engine or motor.

The skid **12** must have sufficient strength to support an engine or motor of considerable weight. Corrugated paperboard if properly cut and folded has been found to have the necessary strength. The skid therefore includes a pair of longitudinal members **30** having notches **40** and **41** at the ends. Lateral members **32** have their ends embedded in the notches to form a rectangular paperboard frame. Both the longitudinal and lateral members are made from a single blank of corrugated paperboard cut and scored as shown in FIGS. 4 and 5. Wooden braces **34** and **36** have their ends seated in slots **42** and **44**, respectively, in the longitudinal members. The wooden braces can be drilled for mounting the base of the engine or motor to the skid frame.

Referring to FIG. 4, the longitudinal member is cut from a corrugated paperboard blank **38** (200# C/F) having the flutes of the corrugations running transverse to the longitudinal axis of the blank. This blank has a number of double score lines **45** which extend transversely across the blank, so that it can be folded into a hollow rectangular members having a double wall on the outerside and a triple wall on the inside. Notches **40** and **41** are cut along the edges of the blank and slots **42** and **44** are cut in the inside wall portions of the blank. The notches are cut slightly smaller than the contemplated width of the lateral members so that they will fit tightly in the longitudinal members without the aid of any nails or bolts. It should be obvious that the blanks for the longitudinal members must be scored and cut for right hand and left hand members.

To increase the strength of the longitudinal members pads **46** and **48** are inserted into the ends of the longitudinal member. The pads are formed from a number of flat corrugated paperboard blanks as shown in FIGS. 6 and 7 which are glued together. In the present embodiment seven blanks are used to make each of the pads and kraft corrugated C flute 275# test double-faced board is used in this container. Slots **58** and **60** are cut in the blanks and are aligned with slots **42** and **44**, respectively, when the pads are inserted into the ends of the longitudinal member. Wooden blocks **50** and **52** may be imbedded within notches **54** and **56**, respectively, to increase the strength of the longitudinal member. These blocks are embedded in the notches before the pads are inserted into the longitudinal members. Notches **40***a* and **41***a* are cut in the ends of the blanks for alignment with notches **40** and **41** in the longitudinal members. Referring to FIG. 6, the lateral members **32** are cut from a paperboard blank **51** (200# C/F) which has been scored at a number of places **53**. Each set of score lines is spaced a progressively greater distance from the previous set of score lines so that the lateral member can be folded into a solid rectangular member. The finished lateral member will have a rectangular cross section having a width slightly greater than the width of notches **40** and **41**. As is well known, the corrugated paperboard has a certain amount of surface flexibility which makes it possible to press or force the ends of the lateral members into the notches in the longitudinal members so that they will be tightly seated therein.

In assembling the skid frame a right hand and left hand longitudinal member is formed from the cut and scored corrugated paperboard blank. Woden blocks **50**

and 52 are placed in the notches 54 and 56 in pads 46 and 48 and the pads inserted into the respective ends of the longitudinal members until slots 58 and 60 are aligned with slots 42 and 44 respectively. One end of each of the wooden braces is inserted into the slots 42 and 44 in one of the longitudinal members and the other end inserted into the corresponding slots 42 and 44 in the other longitudinal member. The longitudinal members are squeezed tightly together so that the ends of the braces are completely seated in the slots. The preformed lateral members are inserted into the notches at the ends of the longitudinal member and pads to complete the skid. It should be noted that the skid does not require any nails or bolts in assembling and has been found to withstand considerable vibration without coming apart. After assembly holes may be drilled into the wooden braces for securing the base of the engine or motor to the skid frame.

The side wall retainers are identical and are formed from a single blank of corrugated paperboard (500# B/C) which has a number of scored and slit lines 64 at each end. The ends are folded to form the double walled corners 16 which act as braces for the corner of the carton. The width of the retainers is made equal to the difference between the height of the side wall of the carton and the width or height of the longitudinal member. When the sidewall retainer is placed in the carton it will extend upward from the top edge of the longitudinal member of the skid to a height flush with the top of the side wall of the carton.

The open-ended insert is also formed from a flat blank of corrugated paperboard which has a number of score lines 66 that are folded to form the corners of the insert. The blank is folded along the score lines and secured at one corner by tape 68 to form an open ended rectangular shaped tube having outside dimensions slightly smaller than the inside dimensions of the carton. When placed in the carton, the insert rests on the top of the longitudinal members and extends upward to a height flush with the top edge of the carton. It acts to squeeze the sidewall inserts against the inside surfaces of the sidewalls, as well as to surround the engine or motor mounted therein.

In using the carton, the skid is preassembled as described above. An engine or motor is secured to the wooden braces on the skid and bolted in position. The carton is erected and the bottom flaps folded inwardly and secured together by any suitable means such as a tape as shown. The engine and skid are placed in the carton with the longitudinal members of the skid parallel to the sidewalls of the carton and resting on the bottom of the carton. The length of the longitudinal members of the skid are made approximately equal to the inside length of the sidewalls. The lateral members are made with a length sufficient to seat the outside surfaces of the longitudinal members against the inside surfaces of the carton. With this arrangement the outside surfaces of the skid will fit snugly within the carton. The two sidewall retainers are folded with their ends doubled and positioned so that they overlie the longitudinal members of the skid frame and extend upward flush with the upper edge of the carton. The double walled ends of the retainer thereby form braces in the four corners of the carton.

The open ended insert is then pushed into the carton until it seats on the top of the longitudinal members of the skid frame with its upper edge flush with the upper edge of the carton. This insert holds the sidewall retainers in place by squeezing them against the inside surface of the side-walls of the carton. This insert also acts as a secondary wall or shroud for the engine that is mounted on the skid frame. When the carton is closed and sealed, the skid retainer and inserts will be rigidly held in place. The container assembled will be sufficiently strong to support and protect the engine or motor from any damage in shipment or storage.

If the engine which is to be shipped in the carton has any depending parts which might extend below the skid, it is a simple matter to adapt the container to carry such an engine. Each of the sidewall retainers and the open ended insert are cut along a line 70 (shown dotted in FIG. 2) which divides the retainers and insert into upper (*c*) and lower (*d*) sections. This line is determined by the amount of clearance required below the skid.

Referring to FIG. 8, the lower section *c* of the retainer and central insert is placed in the carton first so that it rests on the bottom of the carton. The engine and skid are then placed in the carton with the longitudinal members of the skid resting on the lower sections of the retainers and insert. The upper sections *d* of the retainers and inserts are then positioned in the carton. When the carton is closed the skid will be supported in a fixed position within the carton. The important consideration in modifying the carton is that the width of the longitudinal member on the skid plus the total width of the retainers sections *c* and *d* must be approximately equal to the height of the carton.

Although only two embodiments of the present invention have been shown and described, it should be apparent that various changes and modifications can be made herein without departing from the scope of the appended claims.

What is claimed is:

1. A combination wood and corrugated paperboard skid comprising

a pair of longitudinal members each formed from a single blank of corrugated paperboard folded to a hollow rectangular cross section,

two pair of reinforcing pads having a wooden block imbedded in each pad,

one pad of each pair of pads being positioned in opposite ends of one of said longitudinal members and the other pad of each pair being positioned in the opposite ends of the other of said longitudinal members,

a pair of wooden cross members interconnecting the longitudinal members and resting on said wooden blocks in said pads,

and a pair of lateral members secured to and interconnecting the ends of the longitudinal member.

2. A combination wood and corrugated paperboard skid comprising

a rectangular frame having longitudinal members and lateral members made of corrugated paperboard,

a pair of wooden cross members having their ends imbedded in the longitudinal members,

reinforcing means imbedded within the longitudinal members and surrounding the ends of the wooden member.

3. A skid according to claim **2** wherein said reinforcing means includes a wooden block positioned to under lie the ends of the wooden member.

4. A skid according to claim **3** wherein said longitudinal members are folded to hollow tubular form having rectangular cross section, said reinforcing means being inserted into the ends of said longitudinal member and being notched to receive the ends of the wooden members.

5. A shipping container for transporting and storing engines or motors comprising

a carton having end walls, sidewalls, and top and bottom closure flaps integral with said walls,

a skid for supporting said engines or motors and having longitudinal members and lateral members,

said skid being adapted to fit snugly in the bottom of said carton with the longitudinal members parallel to the sidewalls of the carton,

a retainer means positioned against each sidewall of the carton and having its bottom edge abutting the

top of the longitudinal members and its top edge flush with the top of the sidewall,

each of said retainer means having a double walled section at each end which is positioned in the corners of the carton,

and tubular means positioned within said carton to hold the retainer means against the sidewalls whereby upon closure of the end flaps the longitudinal member and retainer means form a solid wall from the bottom closure flap to the top closure flap thereby holding the skid rigidly in position.

6. A shipping container according to claim **5** wherein said double walled sections of said retainer means extend partly across the inside surface of the end walls of said carton.

7. A shipping container according to claim **6** wherein said skid includes a pair of wooden cross members having their ends imbedded in the longitudinal members.

8. A shipping container according to claim **7** wherein said longitudinal members and lateral members each being formed from a single blank of corrugated paperboard

said longitudinal member having a rectangular cross section and open at both ends.

9. A shipping container according to claim **8** wherein said longitudinal members have reinforcing pads positioned in each end,

said pads being slotted and notched to receive one end of one of the wooden braces and one end of one of the lateral members.

10. A shipping container according to claim **9** wherein said pads have wooden blocks imbedded therein to support the ends of the wooden braces.

11. A shipping container for transporting and storing engines or motors comprising,

a carton having end walls, sidewalls, top and bottom closure flaps integral with said walls,

skid means for supporting said engines or motors and having longitudinal members and lateral members,

said skid means being adapted to fit within the endwalls and sidewalls of the carton,

retainer means having upper and lower sections for supporting said skid means in spaced relation to the top and bottom of the carton,

and a tubular insert means having upper and lower sections for holding the retainer means in position.

12. A container according to claim **11** wherein each of said retainer sections has a double walled L-shaped end, each of which is positioned in a corner of the carton.

13. A skid for supporting an engine or motor comprising

a pair of longitudinal members and

a pair of lateral members interconnecting the ends of the longitudinal members,

each of said longitudinal and lateral members being formed from a single blank of corrugated paperboard and having rectangular cross sections, and

a pair of wooden cross members interconnecting the longitudinal members intermediate the lateral members,

said longitudinal members including slots to receive the ends of the wooden cross members, and

reinforcing means within said longitudinal members underlying the ends of the cross members.

References Cited by the Examiner

UNITED STATES PATENTS

974,871	11/1910	Ferres.	
2,013,346	9/1935	Gomes	229—14
2,761,558	9/1956	McLean	229—14 X

FOREIGN PATENTS

1,083,357	6/1954	France.
509,241	10/1930	Germany.
1,101,271	3/1961	Germany.

FRANKLIN T. GARRETT, *Primary Examiner.*

GEORGE O. RALSTON, *Examiner.*