

May 3, 1938.

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2,116,381

MEANS FOR HANDLING AND SHIPPING SHEET METAL

Filed June 16, 1936

2 Sheets-Sheet 1

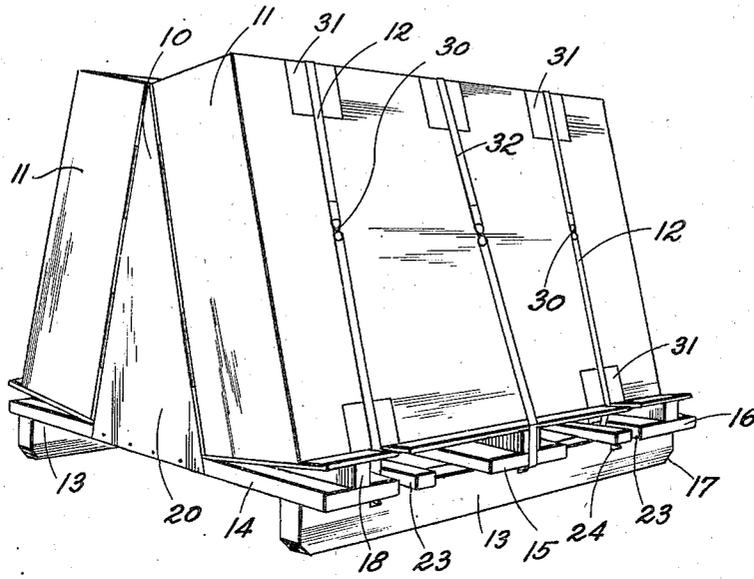


Fig. 1

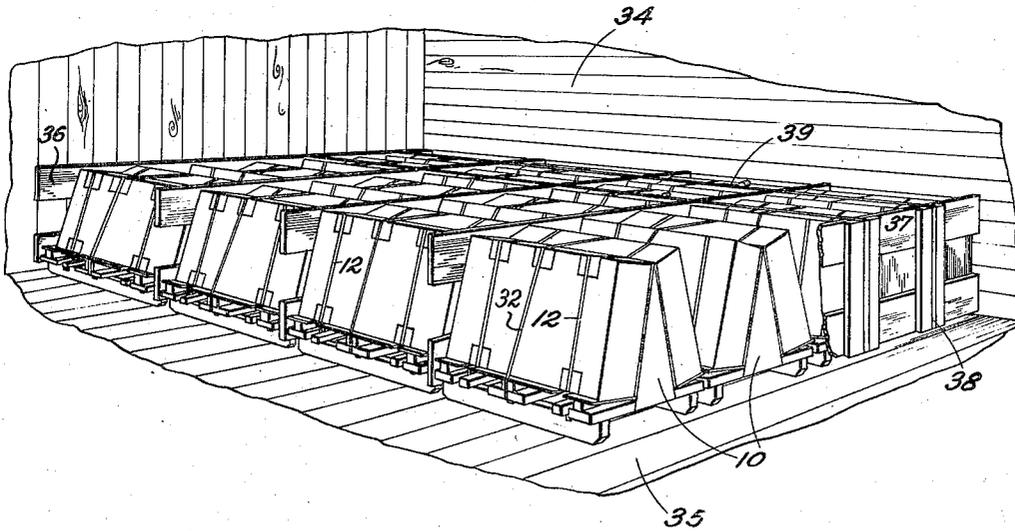


Fig. 2

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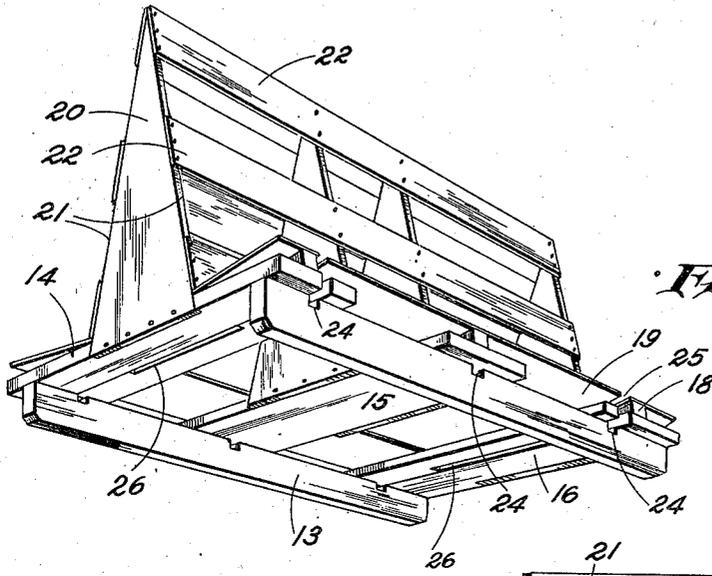


Fig. 3.

Fig. 4.

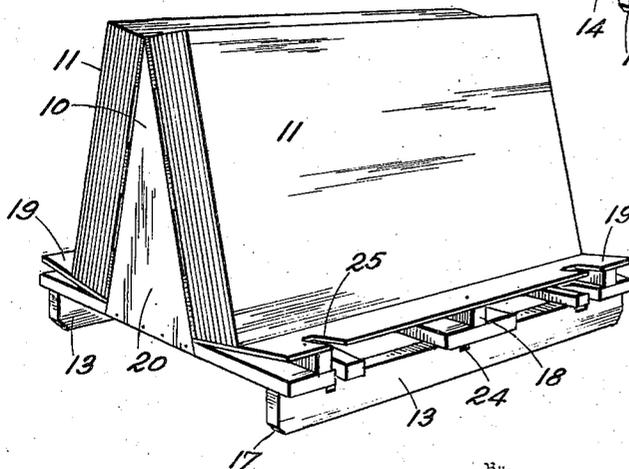
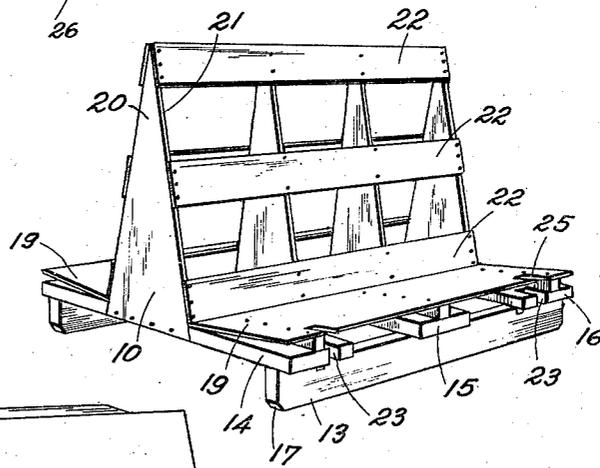


Fig. 5.

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UNITED STATES PATENT OFFICE

2,116,381

MEANS FOR HANDLING AND SHIPPING SHEET METAL

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Application June 16, 1936, Serial No. 85,541

5 Claims. (Cl. 206—60)

This invention relates to the art of packaging and shipping plate or sheet material and more particularly is concerned with the packaging of lacquer plate or other surfaced or polished plate or sheet metal for shipment.

Heretofore it has been proposed to ship plate or sheet metal by providing heavy metal frames in which the metal is laid horizontally in a stack, with means for compressing the stacks and holding the plates or sheets in position. This manner of packaging plates or sheets although having the advantage of overcoming any relative movement between the individual sheets of a package, as well as including a large number of sheets in a single package, was undesirable from a commercial standpoint. The sheets tended to stick together. Also the frames were expensive and were, therefore, returned to the shipper, thus further adding to the shipping cost and incurring liability of breakage. The frames, moreover, tended to damage and often to break through the bottom, sides and ends of the transporting vehicle and have, for this reason also been found to be objectionable.

Another method which has been used to ship plate or sheet material particularly lacquered, painted or coated metal was to box the material in relatively small packages containing a comparatively small number of plates or sheets. The boxes were then stacked in position with the aid of wooden bulk-heads nailed to the supporting vehicle so as to form stalls or bins. However, due to the weight of the metal packaged considerable damage to the surface of the metal has been caused by the packages breaking through the retaining bulk-heads during shipment as occasioned by jars or shocks received in transit. This method was also undesirable from a handling standpoint due to the fact that in filling and uncrating the boxes the individual plates or sheets were often slid or rubbed upon each other and bent, thereby marring or damaging the surface thereof. Also when the boxes were made of cardboard they could bend during handling and thus the plates were rubbed over each other with resultant damage to their surfaces.

By the present invention all the advantageous features of the prior practices of shipping lacquered, painted or coated plates and sheets are retained without any of the attendant disadvantages. For example, the present invention provides a package for shipping a large number of plates or sheets, which is desirable from the standpoint of shipping cost, and accomplishes this by means of a cheap and inexpensive frame

upon which the sheets are stacked on edge, as contrasted with the costly and heavy frames heretofore employed. Furthermore, this invention retains the advantages of the above prior methods of handling such material and avoids the scratching, marring and bending of the surfaces which attended both prior methods. This improved package is relatively inexpensive and highly efficient and can be handled mechanically in cars, warehouses and the like as contrasted with prior packages which were in part handled mechanically. Moreover the present invention has the further advantage that a plurality of packages can be placed in a box car and simply and inexpensively secured together in position within the car. These packages do not damage the car and afford delivery of the material in perfect condition.

The foregoing and other advantages are achieved by the present invention which is described in detail hereinbelow and illustrated in the accompanying drawings, wherein:

Fig. 1 is a perspective view of an improved plate or sheet package embodying the features of the present invention;

Fig. 2 is a perspective view of a unit formed of a plurality of metal plate or sheet packages positioned in a box car which has been broken away to better illustrate the invention;

Fig. 3 is a perspective view of the frame or platform on which metal plates or sheets are placed to make up the package of Fig. 1.

Fig. 4 is another perspective view of the frame or platform shown in Fig. 3;

Fig. 5 is a perspective view of the frame or platform of Figs. 3 and 4 partially loaded with a plurality of plates or sheets.

While the invention is adapted to be used to package, handle and ship substantially any type of plate or sheet material, it is particularly designed for the handling and transporting of thin sheet metal, such as lacquered, painted or coated plates and sheets having surfaces which are easily damaged and which must be accordingly handled with extreme care. The invention has been illustrated and will be described in connection with the packaging and shipping of lacquer plate which has surfaces that are somewhat sticky and soft when packed and are readily damaged even when fully dried and cured.

Referring to the drawings wherein one form of the invention is embodied, the numeral 10 generally indicates a frame or platform for receiving a plurality of stacks of lacquer plate 11. The individual sheets of lacquer plate are disposed

on edge on the frame and are supported thereby in an inclined position. Each stack of sheets is separately secured to the frame by flexible binding means 12.

5 The frame 10 includes a base comprising a pair of parallel sled runners or skids 13 upon which a plurality of cross members 14, 15 and 16 are disposed. The skids 13 are beveled upwardly at their ends 17 to permit the frame to be moved
10 along the floor of a supporting vehicle as hereinafter described. Adjacent the ends of each of the cross members 14, 15 and 16 and extending inwardly therefrom are disposed wedge members 18. Supported by the inclined surfaces of the
15 wedges at an acute angle to the horizontal are top members 19 on which the edges of the individual sheets of the lacquer plate may stand. Secured to each of the cross members 14, 15 and 16 intermediate the extremities thereof and extending
20 upwardly from the base are a plurality of pyramidally shaped uprights 20 having converging sides 21, to which are secured a plurality of slats 22. The uprights 20 and slats 22 form an inclined rest against which the plates may rest when standing
25 on edge on the top 19. These inclined surfaces are normal to the top 19, that is the angle between top 19 and slats 22 is a right angle, so that when sheets are stacked on-edge on top 19 and rest against slats 22, the plates will be parallel and
30 the stack will have square edges.

The ends of the cross members 14 and 16 are provided with inwardly extending slots 23, aligned with slots 24 in the sled runners 13, and slots 25
35 in the top 19. Midway between the ends of the cross members 14 and 16 and aligned with the end slots 23 are elongated openings 26, the ends of which are in line with the side edges of uprights 20.

In making up a shipping package according to
40 the present invention, plates 11 are stacked on edge on each of the tops 19, and rest against slats 22. Enough plates may be so stacked to cover top 19 to its outer edge if desired, but when a small number of plates are to be shipped fillers
45 may be used to fill the space between the outer plate and the ends of slots 23. Each stack is covered with a suitable kind of protective material and individually secured to the frame 10 by any desired means which may for example take
50 the form of the flexible binding elements or straps 12. These straps engage in slots 23, 24 and 25, extend along the bottom of the cross members 14 and 16, through the openings 26 and thence parallel to the back surfaces of slats 22 and over the
55 top edge and outer side of stack 11. The ends of the straps 12 are secured together as at 30. Edge protectors 31 are positioned between the straps 12 and the edges of the stack to prevent any damage to the stack. The individual stacks of plate
60 secured to the frame 10 as described above may be tied together by a tensioned strap 32 which extends around both stacks and under the cross member 15, thereby binding the frame and both stacks into a package.

65 Several of these packages may be assembled in a group in a car and tied together into a unit. For example, the packages are preferably positioned in a plurality of aligned rows on the floor of the vehicle 34 as illustrated in Fig. 2. Four
70 or more longitudinally extending aligned rows may be positioned in the end of the box car so that the sled runners or skids, as stated above, extend longitudinally of the box car. The plurality of aligned rows of individual packages are
75 bound together on a single unit by provision of the

end bulk-heads 36 and 37, which normally extend outwardly beyond the ends of the individual packages, as shown in the drawings, so that the bulk-heads themselves function as guiding means for
5 the unit if it shifts within the car. The bulk-heads are likewise of a height which is approximately the height of the upright members 20 of the frame 10 and, when the unit is bound up, are spaced from the floor of the vehicle. Flexible
10 binding means or straps 38 are provided for securing the bulk-heads 36 and 37 together and to bind the individual packages together into a unit. A strap is preferably provided for each longitudinal row of packages, and is tightened and locked as
15 at 39 by any suitable means. It will be seen that by positioning the bulk-heads 36 and 37 in spaced distance above the vehicle floor 35, the binding straps 38 will not only lie tightly against the top of the individual packages but will likewise lie
20 closely and tightly against the under side of the cross members of the individual packages. The disposition of the bands 38 in this manner prevents any dislodgment of the individual packages when the unit has been bound or tied up.

From the foregoing it will be recognized that by
25 the present invention a simplified, practical and inexpensive package has been provided for handling and shipping plate or sheet material such as lacquer plate and the like, and moreover; the various difficulties and undesirable features of
30 prior practices have been either overcome or avoided. There is no necessity to return any part of the packaging apparatus or frames to the shipper and the buyer can scrap or salvage the same if he so desires.

Having thus described my invention in particular detail what I desire to obtain by Letters Patent is set forth in the appended claims:

1. A shipping package comprising a base having an opening extending therethrough, sheet
40 supporting means on said base having its upper surface inclined at an acute angle to the horizontal and having a slot in the outer edge thereof in the vertical plane in which said opening
45 lies, rest means extending upwardly from the base and having a rest surface between said opening and said slot and inclined at right angles to the said upper surface of the supporting means, a plurality of metal sheets or plates standing on edge in parallelism on said supporting surface and resting
50 against said rest surface and forming a stack, and tensioned means disposed in a vertical plane encircling the stack, rest means and base, lying in the said slot and passing through said opening for securing the stack against the said rest
55 means and supporting means and to the base.

2. A shipping package comprising a base having an opening extending therethrough and a slot
60 in the outer edge thereof lying in the same vertical plane, sheet supporting means on said base having its upper surface inclined at an acute angle to the horizontal, rest means extending upwardly from the base and having a rest surface inclined at
65 right angles to the said upper surface of the supporting means, a plurality of metal sheets or plates standing on edge in parallelism on said supporting surface between said opening and said slot and resting against the said rest surface and forming a stack and tensioned means disposed
70 in a vertical plane encircling the stack, rest means and base, lying in the said slot and passing through said opening for securing the stack against the said rest means and supporting means and to the base.

3. A shipping package comprising a base having 75

an opening extending therethrough and a slot formed in the outer edge thereof, sheet supporting means on said base having its upper surface inclined at an angle to the horizontal and having a slot in the outer edge thereof, said opening and said slots in the base and in the supporting means being disposed in the same vertical plane, rest means extending upwardly from the base and having a rest surface disposed between said opening and slot and inclined at right angles to the said upper surface of the supporting means, a plurality of metal sheets or plates standing on edge in parallelism on said supporting surface and resting against the said rest surface and forming a stack and tensioned means disposed in a vertical plane encircling the stack, rest means and base, lying in the said slots and passing through said opening for securing the stack against the said rest means and supporting means and to the base.

4. A shipping package comprising a base having an elongated opening extending therethrough and slots formed in the longitudinal edges thereof, rest means extending upwardly from said base at opposite ends of said opening and having spaced upwardly converging rest surfaces, supporting means mounted on the base on opposite sides of the rest means and having their upper surfaces extending at right angles to the rest surfaces of the rest means and having slots formed in their outer longitudinal edges, said opening

and said slots in the base and in the supporting means being disposed in the same vertical plane, a plurality of metal sheets or plates standing on edge in parallelism on each of said supporting surfaces and resting against the said rest means and forming stacks, and tensioned means disposed in a vertical plane encircling each stack, the rest means and base, lying in the said slots and passing through said opening for securing each stack against the said rest means and its supporting means and to the base.

5. A shipping package comprising a base having an elongated, central opening extending therethrough and slots in the longitudinal edges thereof lying in the same vertical plane, rest means extending upwardly from said base at opposite ends of said opening and having spaced upwardly converging rest surfaces, sheet supporting means mounted on the base on opposite sides of the rest means and having their upper surfaces extending at right angles to the rest surfaces, a plurality of metal sheets or plates standing on edge in parallelism on each of said supporting surfaces and resting against the said rest means and forming stacks, and tensioned means disposed in a vertical plane encircling each stack, the rest means and base, lying in the said slots and passing through said opening for securing each stack against said rest means and its supporting means and to the base.

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