June 18, 1929. E. PRATI 1,717,733

FOLDING BOX

Filed March 28, 1928 2 Sheets-Sheet 1

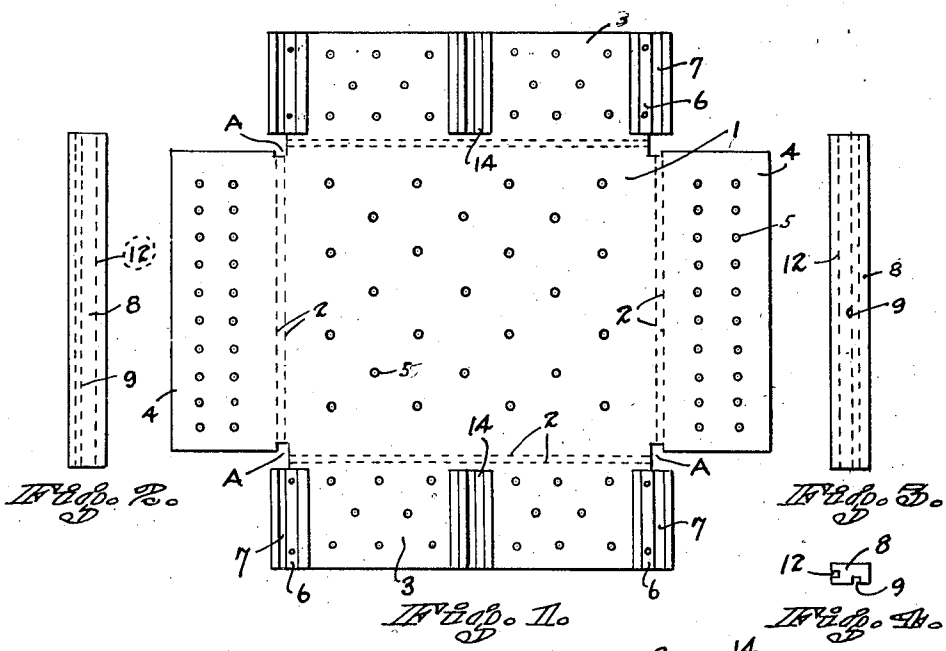


Fig. 2.

Fig. 5.

Fig. 4.

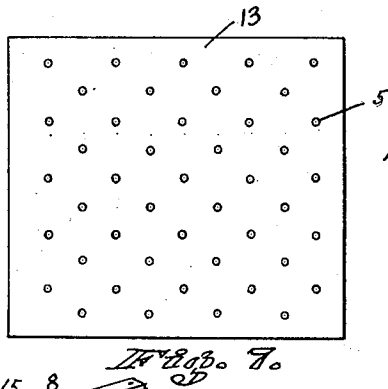


Fig. 7.

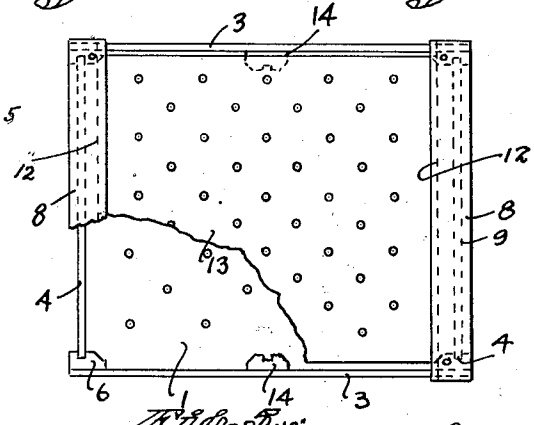


Fig. 3.

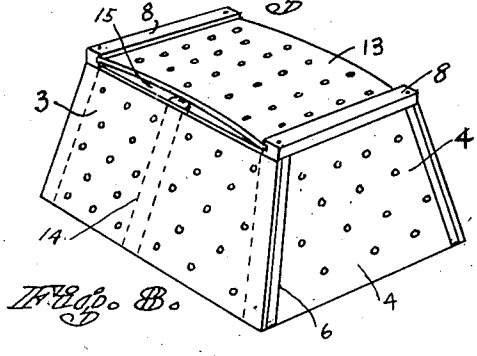


Fig. 8.

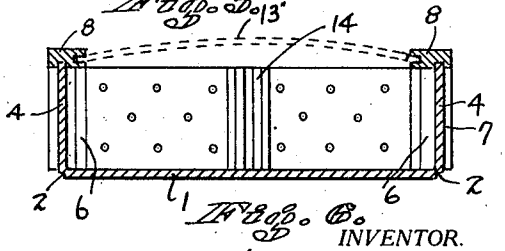


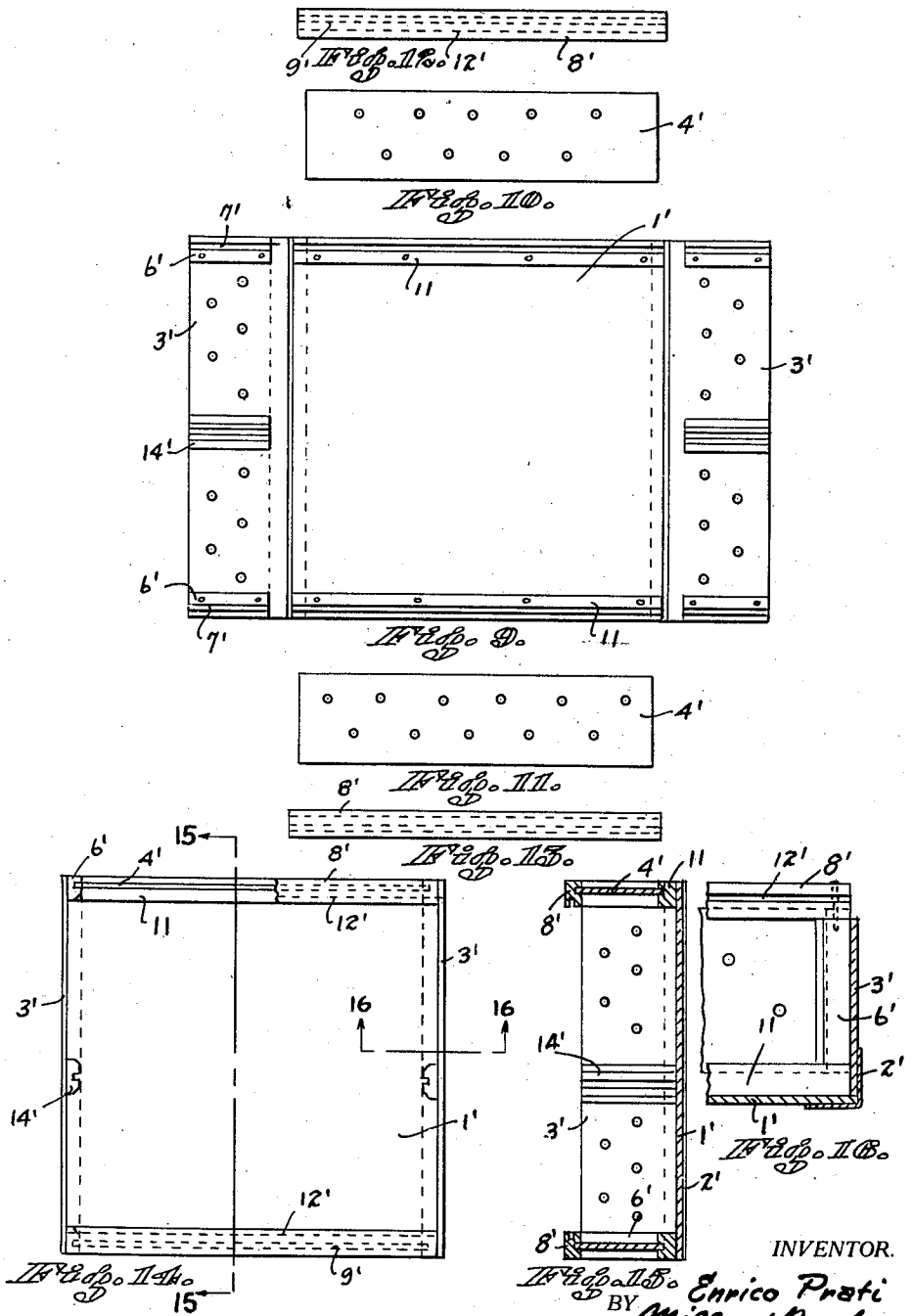
Fig. 6.

INVENTOR.
Enrico Prati
BY Miller & Boykan.
ATTORNEYS.

June 18, 1929. E. PRATI 1,717,733

FOLDING BOX

Filed March 28, 1928 2 Sheets-Sheet 2



Patented June 18, 1929. 1,717,733

UNITED STATES PATENT OFFICE.

ENRICO PRATI, OF ASTI, CALIFORNIA.

FOLDING BOX.

Application filed March 28, 1928. Serial No. 265,447.

This application is a continuation in part of my copending application filed under Serial No. 257,836 on February 29, 1928.

This invention relates to boxes for shipping fruit or other food materials, and has for its objects a foldable construction by which the boxes may be transported in knock-down condition to the fruit shipper and easily set up for use, and if desired knocked down again after use, for transportation and re-use again a great many times.

Also such a box construction which, while it may be made of any material, will provide for combining the cheapness of cardboard with rigidity of wood so as to produce a cheap light box of great strength which will stand the rough treatment of trans-continental shipping.

Other objects and features of advantage will appear in the drawings, and description to follow.

In the drawings Figs. 1 to 8 show my preferred construction and Figs. 9 to 16 show an optional construction, both constructions here shown being combinations of wood and cardboard.

Fig. 1 is a plan view of the body of the box in flat or unfolded condition. Figs. 2 and 3 are plan views of the wooden end strips or rails. Fig. 4 is an end view of Fig. 3.

Fig. 5 is a plan view of the box all set up and complete with its end strips nailed in place and with one of the strips and the cover partially broken away to show the underlying structure.

Fig. 6 is a cross section of Fig. 5 as seen from the line 6—6 thereof, and showing in dotted lines the cover as about to be sprung into place.

Fig. 7 is a plan view of the cardboard or other flexible cover of the box.

Fig. 8 is a perspective view of the box complete with cover, but with the box of a special shape as used for asparagus shipments.

Fig. 9 is a plan view of the unfolded box of optional construction. Figs. 10 and 11 are plan views of the two sides of the box, and Figs. 12 and 13 are plan views of the wooden strips or rails for the opposite upper edges of the box.

Fig. 14 is a plan of the optional form of a box all set up, without a cover, and with one of the edge rails broken away.

Fig. 15 is a cross section of Fig. 14 as seen from the line 15—15 thereof, and Fig. 16 is an enlarged section of a portion of the box of Fig. 14 as seen from the line 16—16 thereof.

Briefly described my invention comprises forming a box out of thin material such as cardboard by providing a flat cutout blank which may be folded into box form, and the blank provided with grooved strips of wood forming posts at the corners of the box adapted to engage the margins of the end or side flaps. Also grooved top rails or strips adapted to engage the upper edges of opposite sides of the box to form a rigid structure capable of supporting a pile of similar boxes, and resist end and side thrust as well, while providing through its rails the feature of a "lug-box" for ease of handling. Grooves in the confronting edges of the top rails and a cover sheet adapted to be sprung in place in the grooves, completes the box.

With reference to Fig. 1 the cut-out blank has a bottom panel 1 and is scored or hinged at 2 to provide upwardly foldable side and end flaps 3—4 which form the side walls of the box.

The sides, and bottom may be perforated for ventilation as at 5 if desired or left plain, and on opposite side flaps 3 are grooved strips or blocks of wood 6 either glued, nailed, stapled, or otherwise secured permanently to the side flaps as shown, and the grooves 7 of the blocks are so positioned and the end flaps 4 cut back of such a length, that upon folding all upwardly to the position of Fig. 5 the ends of the end flaps will fit within the grooves 7 as shown.

Attention is directed to the special notching of the body blank at the points A which prevents buckling of the material at the inner lower corners of the box and insures ease of assembly.

When the box is folded as described the end flaps 4 project above the side flaps 3 and the wooden strips or rails 8 are fitted over the ends 4 with grooves 9 engaging the upper projecting margins of the end walls 4 as shown clearly in Fig. 6.

The upper strips or rails 8 are preferably of the same width as the corner blocks 6 and are preferably secured thereto by a nail at each end as at 10, though if desired glue may be applied to the groove as well, but the box would not be so readily unfoldable for shipment and re-use as intended.

When in place the rails 8 have confronting grooves 12 adapted to receive a cover plate or sheet of material 13 (see Fig. 7.) This sheet of material is preferably of cardboard

perforated for ventilation of the box and adapted for springing into place over a box full of fruit by first inserting one edge in the groove of one rail and then bending the cover outwardly in an arch form as indicated at 13′ in Fig. 6 to spring the opposite edge into the groove of the opposite rail, and a reverse operation removes the cover. The cover is narrower than the box to provide ventilating slits 15 along opposite edges.

While the plate 13 forms a sliding cover it ordinarily could not be slid in or out of place as the box when filled with fruit, such as grapes, would be too full to permit sliding of the cover without injury to the fruit. When properly packed the cover plate arches upwardly on the fruit until about even with the upper surface of the rails 8, and gently presses the fruit down so that it will not shake about.

In some cases it is desirable to partition the box off into smaller compartments and I may therefore provide any number of extra grooved pieces of wood secured to opposite sides of the box, such as the pieces 14 and into the grooves of which a suitable partition plate may be slid.

Note that I preferably bevel off the corners of pieces 6 and 14 where the fruit comes in contact with them.

When the box is all set up the overhanging rails afford a convenient place to grip the box in handling or stacking for shipment, and any number of boxes may be piled one upon the other as the weight is then all taken directly upon the vertical blocks 6 at the corners.

The rails 8 are preferably of a length to extend somewhat beyond the sides of the box as shown so as to take side thrust in shipment.

In carload shipping of these boxes they are arranged in rows and tiers just as with the wooden boxes formerly used and require no special handling being substantially as strong yet much lighter in weight.

A box made as above described need not necessarily be rectangular at all joints, as in some cases the box may be of tapering form as shown in the perspective sketch Fig. 8 wherein the box members thus far described are similarly designated. A box of the form shown in Fig. 8 is used in shipping asparagus to the market.

In the construction shown in Figs. 9 to 16 the same numerals used on the construction above described are used on similar parts except that prime marks are added. In this construction however, the ends 4′ are shown entirely loose, and the sides 3′ only foldably connected to the bottom panel 1′.

In this case two additional grooved strips 11 are employed and are permanently fastened to the bottom panel as by nails, and/or glue, and the corner blocks 6′ are cut back at their lower ends so as to overlie the strips 11 with grooves coinciding as shown in Figs. 14 and 15.

In either construction of my box the side flaps may be connected to the bottom panel by scoring as at 2 in Figs. 1 and 6, or with a flap or other hinge as shown at 2′ in Fig. 16.

My invention provides a folding box of the lug type which may be quickly set up, and which by the driving of four nails is rigidly locked together on all sides.

I claim:

1. A box of the character described comprising a rectangular cardboard bottom, cardboard side and end panels hingedly connected to the bottom so as to fold upward to form the four vertical walls of the box, grooved posts at the corners of the box secured to the ends of some of said panels engaging in their grooves the margins of the other panels, and tie strips extending along the upper edge of opposite of said panels nailed at their ends directly to said posts.

2. In a foldable box as specified in claim 1, grooved blocks secured to said panels at points between said posts adapted for receiving a partition wall.

3. In a structure as specified in claim 1 said posts being positioned partly inside of the box and with the inner corners within the box beveled off.

4. A foldable box blank comprising a bottom sheet of material provided with side and end panels foldably connected thereto so as to fold upward to form the vertical walls of the box, grooved posts secured to the ends of opposite of said panels arranged to receive in their grooves the ends of the adjacent panels when the box is set up, and said blank notched out adjacent the ends of said panels where they connect to the bottom sheet, so as to facilitate inserting the panels in the grooves of the posts.

5. A foldable box comprising a bottom sheet of cardboard provided with side and end panels foldably connected thereto so as to fold upward to form the vertical walls of the box, grooved wooden posts secured to the ends of opposite of said panels arranged to receive in their grooves the ends of the adjacent panels when the box is set up, and upper wooden rails for said box adapted to overlie the upper edges of opposite of said panels and to be secured at their ends to said posts.

6. In a structure as specified in claim 5 said rails being grooved in their undersides and engaging in their grooves the upper margins of the panels which they overlie.

7. In a box as specified in claim 5, said rails extending outward beyond said panels to afford gripping edges and the rails extending lengthwise beyond the sides of the box when set up.

ENRICO PRATI.