

G. KLENK.  
SHEET METAL BOX.  
APPLICATION FILED JUNE 30, 1911.

1,015,234.

Patented Jan. 16, 1912.

2 SHEETS—SHEET 1.

Fig 1

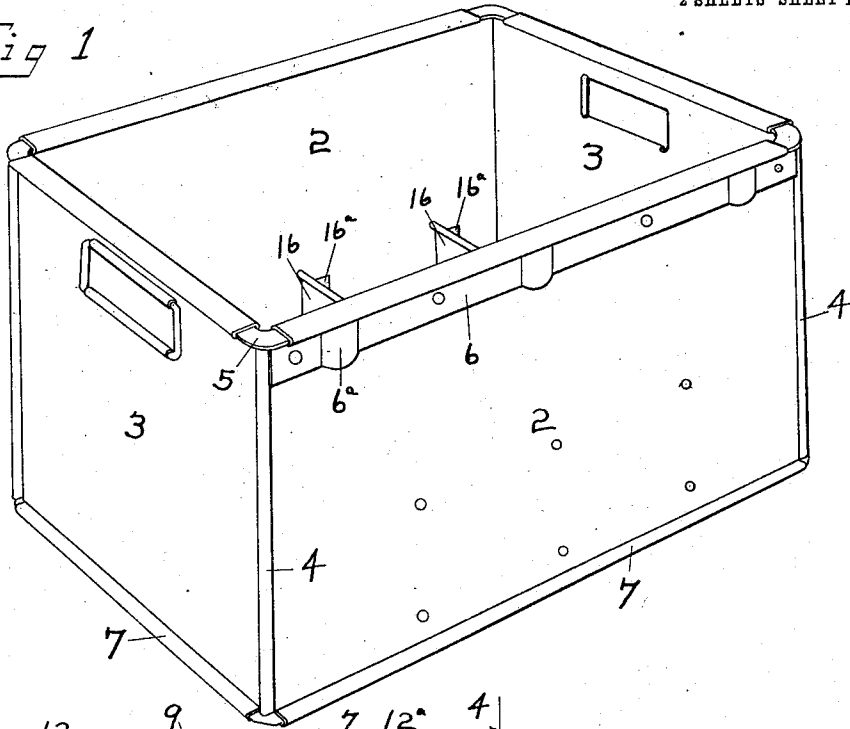
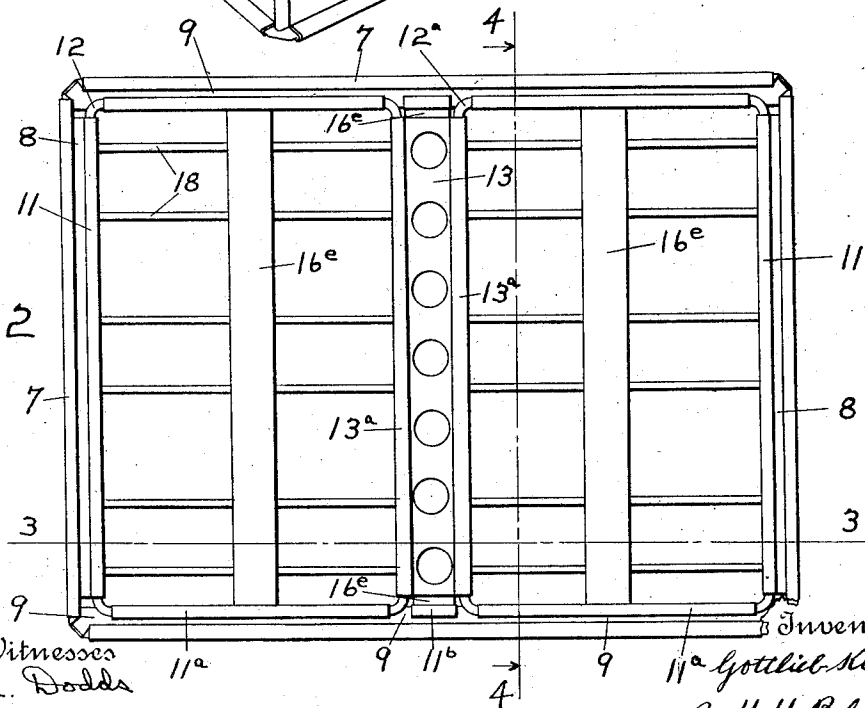


Fig 2



Witnesses  
F. L. Dodds

S. Jay Teller

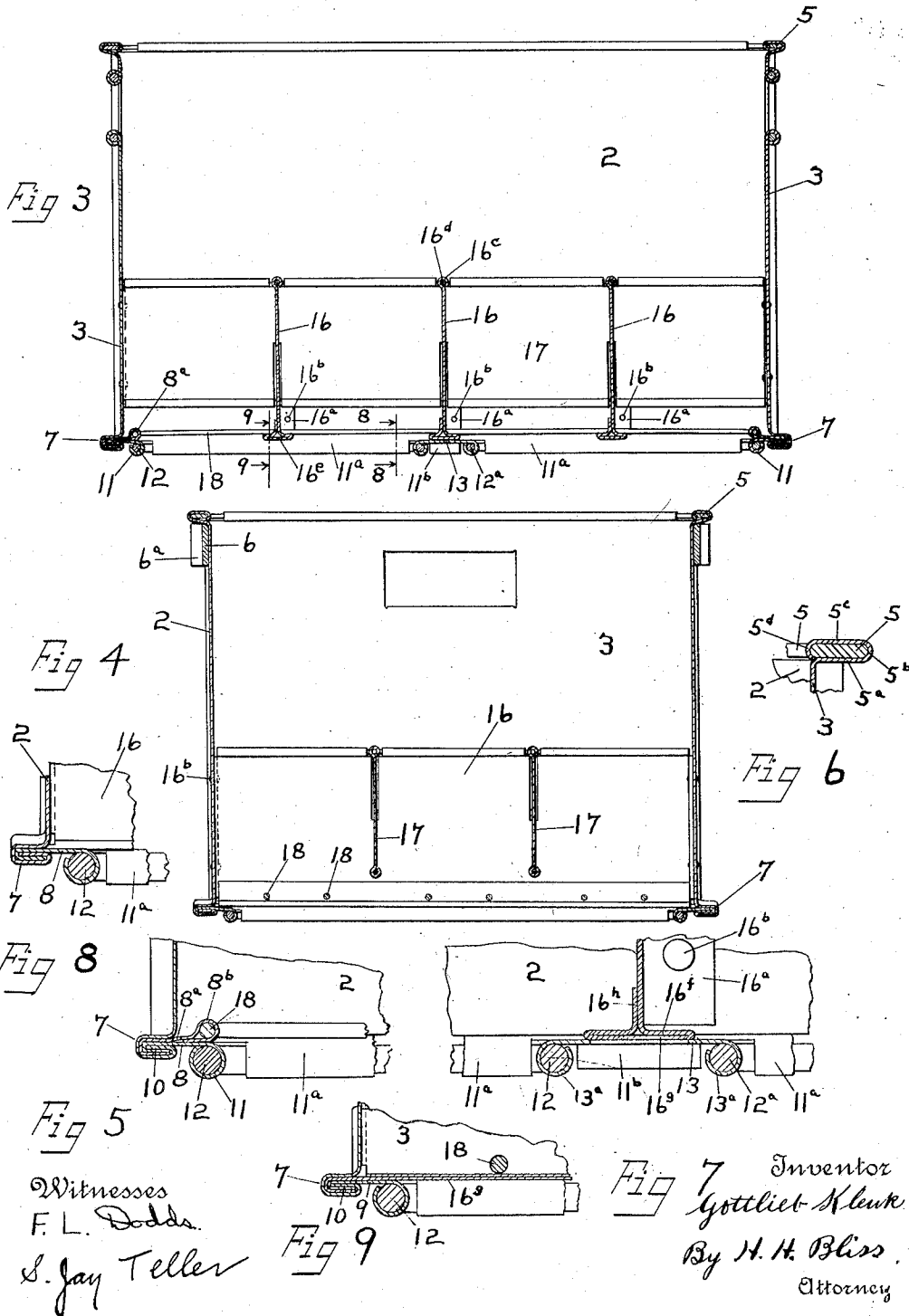
Inventor  
Gottlieb Klenk  
By H. H. Bliss  
Attorney

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2 SHEETS—SHEET 2.



# UNITED STATES PATENT OFFICE.

GOTTLIEB KLENK, OF DEFIANCE, OHIO, ASSIGNOR TO THE DEFIANCE PRESSED STEEL COMPANY, A CORPORATION OF OHIO.

## SHEET-METAL BOX.

1,015,234.

Specification of Letters Patent.

Patented Jan. 16, 1912.

Application filed June 30, 1911. Serial No. 636,288.

*To all whom it may concern:*

Be it known that I, GOTTLIEB KLENK, a citizen of the United States, residing at Defiance, in the county of Defiance and State of Ohio, have invented certain new and useful Improvements in Sheet-Metal Boxes, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention relates to improvements in sheet metal boxes of the class used for storing and transporting bottles containing liquids; it pertaining more particularly to boxes of this sort which have open bottoms furnished with wire supports for the bottles, and also having longitudinal and transverse sheet metal partitions, whereby the interior of the box is divided up into bottle compartments.

20 Figure 1 is a perspective view of a box embodying my improvements; Fig. 2 is a bottom plan view; Fig. 3 is a longitudinal section on line 3—3, Fig. 2; Fig. 4 is a transverse section on line 4—4, Fig. 2; Fig. 5 is an enlarged fragmentary cross section similar to Fig. 3 showing the structure at the bottom of one of the end walls; Fig. 6 is an enlarged fragmentary cross section similar to Fig. 3 showing the structure at the top of one of the end walls; Fig. 7 is an enlarged fragmentary cross sectional view similar to Fig. 3 showing the structure at the longitudinal center of the bottom; Fig. 8 is an enlarged fragmentary cross sectional view taken along the line 8—8 of Fig. 3; Fig. 9 is an enlarged fragmentary cross sectional view taken along the line 9—9 of Fig. 3.

35 The box is made of sections of sheet metal suitably secured together and properly reinforced.

2, 2 indicate the side walls, and 3, 3 the end walls, each formed of a section of sheet metal which in general formation is rectangular. The side sections and the end sections are crimped together to form the vertical corner flanges 4. The top of the box is preferably provided with a strong flat binding and reinforcing metal bar 5.

Around this the upper edge parts of the side sections 2 and the end sections 3 are crimped, preferably by having formed therein, respectively, flat beads, each having the outward turned horizontal flange part 5<sup>a</sup>, the edge part 5<sup>b</sup>, the top horizontal flange part 5<sup>c</sup>, and the outwardly turned lip 5<sup>d</sup> which lies under the inner edge of the flat band 5. To further reinforce the upper portion of the box, and add to the strength given by the flat band 5, I employ metallic bars 6 which are riveted to the side wall sections 2. These extend from one of the corner crimps at 4 to the opposite one and are placed as snugly as possible under the outwardly overhanging part of the band strip 5, so that any vertical distorting force applied to the top band shall be immediately met and resisted by the bars or bands 6. To increase this resisting efficiency against downward bending of this upper reinforcement, I prefer to crimp the bars or bands 6, as shown at 6<sup>a</sup>. The crimps should not extend beyond the outer edge of the overhanging flange part at 5<sup>b</sup>, lest projections should appear which will be dangerous in handling, shoving, or throwing of the boxes. The crimps or offsets at 6<sup>a</sup> serve as pillars or abutments to prevent the parts at 5, 5<sup>b</sup> from being bent or distorted downward.

The side wall sections and the end wall sections, at their lower edges, are bent outward and then inward to form the flange 7. Horizontal sheet metal strips 8, 9 are provided and the outer edges of these are folded or crimped with the metal of flange 7, as shown in the drawing, whereby the flange 7 is reinforced and the strips 8 and 9 are held securely in place at the bottom of the box. At 10 there is an additional bend given to each side wall section and each end wall section so as to bring the metal of these sheets snugly down to engage the top of the bent portion of the strips 8 and 9. There are two of the strips 8, one for each end. Of the strips 9 there are two, one for each of the long sides. The strips 8 are beaded at their inner edges to form downwardly extending projections 11. The strips 9 are each formed

with two relatively long beads 11<sup>a</sup>, and an intermediate shorter bead 11<sup>b</sup>.

12 and 12<sup>a</sup> are heavy wire rectangles. Each is secured in place by one of the beads 11 and two of the transversely opposite beads 11<sup>a</sup> formed on the strips 8 and 9. At the ends supplemental to the beaded strips 8 are metal strips 8<sup>a</sup>. The strips 8<sup>a</sup> are crimped at their outer edges with the parts of the flange 7. They have their inner edges turned backward or outward and clamped firmly with the aforesaid strips 8 and immediately above them. These strips 8<sup>a</sup> have beads at 8<sup>b</sup> for the purpose to be described.

The two wire rectangles 12 and 12<sup>a</sup> and their beads project well below the lowermost parts of the other elements of the box above referred to and form a strong rest upon which the box and its contents can be safely supported when standing on a flat surface. The innermost legs or cross bars of the wire rectangles 12 and 12<sup>a</sup> are firmly bound together by means of a sheet metal cross strip 13 which lies above them and which is beaded at its edges, as shown at 13<sup>a</sup>, the beads firmly inclosing the inner legs or bars 12<sup>b</sup> of the wire rectangles.

It will be seen that the rectangular base projection which extends downwardly (and formed of the two wire rectangles 12 and 12<sup>a</sup>, together with the beads 11 and 11<sup>a</sup> and the beads 13<sup>a</sup> of the binding and connecting strip 13) has its outermost lines so arranged that while they are parallel to the bottom edges of the end sections and the side sections of the box, they lie at a distance inside of the edge lines. This provides for a strong stacking "rest" outside of the rectangular base, this rest being composed of the crimped or bent parts of the wall sections and the crimped strips 8, 9 and 8<sup>a</sup>. One box can be placed directly upon the top of another, the bottom "rest" of one bearing downward upon the top bracing flange at 5<sup>c</sup> of the one below and the base rectangle of the upper one fitting inside the inner edges of the top of the box below, so that horizontal displacement of any box in the stack is prevented.

In addition to the parts above described, use is made of a series of interior walls or partitions 16. These lie parallel to the end walls and are so arranged as to divide transversely the interior of the box into substantially equal divisions. Each of these is secured at its upper part to the side walls of the box by flanges 16<sup>a</sup> and rivets 16<sup>b</sup>. At the upper edges they are provided with small beads 16<sup>c</sup> which surround bracing wires 16<sup>d</sup>. At their lower edges they are peculiarly constructed in such wise as to, first,

avoid their being bent or distorted by strains exerted upon the bottom part of the box and from blows imparted by objects below the box; second, to strengthen and stiffen the bottom part of the box and brace the sides, one against the other; and, third, to give firm strong support for the supporting wires at the bottoms of the bottles to more effectually avoid bending of these rods, giving them a widened base of support at several places under the middle portions of the rod. To accomplish these purposes, I form wide flanges 16<sup>e</sup> at the bottom parts of the partitions 16, these being in horizontal planes and formed by bending the metal of the partition first laterally as at 16<sup>f</sup>, then bending it backward as at 16<sup>g</sup> and carrying it well to the other side of the vertical partition, and then by preference bending the metal against itself and bringing the edge line back to the partition wall as at 16<sup>h</sup>, though this latter bend can be dispensed with unless an unusual strength and rigidity are desired.

Preferably, as indicated in Fig. 9, the lower part 16<sup>g</sup> of each flange 16<sup>a</sup> is extended beyond the partition at both ends and is crimped with the side walls and the strips 9 into the lower flanges 7. It will be observed that by preference the part 16<sup>g</sup> lies immediately above the strips 9 and extends in contact with them throughout the crimps.

Longitudinally of the box there are narrower vertically arranged partition walls 17. These intersect the partitions 16 in such way as to furnish a series of bottle compartments substantially square in plan outline. They do not extend downward to the bottom of the partition 16, such a width not being required.

18, 18 are bottle supporting rods preferably made of lengths of wire. They are so arranged as to present two parallel bars under the central part of each longitudinal row of bottle compartments. The two bars of each pair may be formed of one piece of wire bent at the central part of the total length to give a short cross connecting section at right angles to the two longitudinal parts and shaped at their ends to have two L bends. The central connecting part and the two L bends are placed in the beads 8<sup>b</sup> in the end flange strips 8<sup>a</sup> above described. The rods 18, 18 extend through apertures in the partitions 16, these apertures lying immediately above the flanges 16<sup>e</sup> so that the lower edges of the rods 18 bear downward upon or against the flanges and receive therefrom ample support for their central parts.

It will be observed that the flanges 16<sup>e</sup> at the bottom of the partitions 16 are arranged

on lines so high relatively to the bottom edges of the base rectangles 12 and 12<sup>a</sup> that the partitions are relieved of all strain.

Heretofore I have constructed boxes of this sort in the manner shown in my Patent No. 912,273, issued February 9, 1909. These earlier boxes had the longitudinal partitions extended down far enough to bring their beads and bead wires substantially flush, or in the same horizontal planes, with the lowermost surfaces of the bottom parts of the box. This was done in order to have the partitions of the bottle compartments take much of the strain experienced by the lowermost parts, and was particularly designed to have the lower edges of the partitions contact with and ride upon the rollers in the gravity roller conveyers commonly used in breweries and similar places where the bottles are filled and the cases are charged. But experience with the boxes shown in the aforesaid Patent No. 912,273 has shown that the partitions (either the shorter transverse partitions or the longer longitudinal ones) when subjected to such strains, arising from assisting in supporting the box, are speedily twisted and distorted. This carrying of the partition walls down to the lower horizontal plane of the box was largely necessitated because there was present only one base rectangle at the bottom of the box, that is, a single rectangular wire seated in beads at the ends of the box and at the sides.

In the present construction I divide the bottom area of the box into two approximately equal parts by the base rectangles 12 and 12<sup>a</sup>, and by combining with these the binding sheet or bar 13 I furnish a supporting device which takes the entire thrust and strain in such way that the partitions 16 and 17 are relieved of all twisting and distorting action, and their lower edges are removed from contact with the supporting bodies below the box.

The flanges 16<sup>e</sup> lie entirely above the beads and bead wires at 11 and 11<sup>a</sup> and their ends are fitted tightly against and interlocked with the vertical side walls of the box, so that they serve as bracing bars, extending from wall to wall and also serve as stiffeners for the partitions, the vertical parts of the latter being relieved by the flanged parts 16<sup>e</sup> from blows and distorting actions. In attempting to reach a number of these ends I have made boxes of this class with cylindrical hollow beads at the lower edges of the partitions 16, these beads lying in the horizontal planes of the beads and wires 8, 9; but have found from use, that while such beads are superior to the devices which I used in earlier structures

they are greatly excelled by the bar-like braces produced by the flanges at 16<sup>e</sup> which are raised above the beads at 11 and 11<sup>a</sup>, 65 which furnish supports for the bottle rods 18 and which rigidly and squarely engage the side walls of the box.

What I claim is:

1. A sheet metal box of the class described, comprising side and end sections crimped at their lower edges to form a horizontal flange around the bottom of the box, a rectangular wire stacking base projecting downward below the flange along lines within the periphery thereof, beaded sheet metal strips secured to the side and end sections and serving to hold the wire base in place; a series of vertical transverse partitions terminating at their lower edges in wide horizontally bent flanges above the bottom plane of the base, a series of vertical longitudinal partitions, the two series of partitions serving to divide the box into bottle compartments, and a series of longitudinal bottle supporting rods having their end parts rigidly secured to the end sections of the box, the intermediate parts of the rods extending through the transverse partitions and resting directly upon the horizontal flanges at the bottoms thereof. 70 75 80 85 90

2. A sheet metal box of the class described, comprising side and end sections crimped at their lower edges to form a horizontal flange around the bottom of the box, a rectangular stacking base formed of two adjacent wire rectangles, the base projecting downward below the flange along lines within the periphery thereof, beaded sheet metal strips secured to the side and end sections and engaging the outer sides of the wire rectangles to hold them in place, a binding strip for holding together the adjacent inner sides of the wire rectangles, a series of vertical transverse partitions terminating at their lower edges in wide horizontally bent flanges above the bottom plane of the base, a series of vertical longitudinal partitions, the two series of partitions serving to divide the box into bottle compartments, and a series of longitudinal bottle supporting rods having their end parts rigidly secured to the end sections of the box, the intermediate parts of the rods extending through the transverse partitions and resting directly upon the horizontal flanges at the bottoms thereof. 95 100 105 110 115

3. In a sheet metal box of the class described, the combination of side and end walls, a rectangular stacking base formed of wire, sheet metal strips at the sides and ends of the box crimped at their outer edges with the bottom edges of the side and end walls to form a horizontal flange extend- 120

ing around the bottom of the box, and  
beaded at their inner edges to engage the  
wire stacking base and hold it in place,  
transverse and longitudinal vertical parti-  
5 tions in the box dividing it into bottle com-  
partments, the bottom edges of the trans-  
verse partitions being bent to form wide  
horizontal flanges each of which is extended  
at its ends and crimped with the side strips  
10 and walls into the horizontal bottom flange,  
and bottle supporting rods at the bottoms

of the bottle compartments extending  
through the transverse partitions and rest-  
ing directly upon the horizontal flanges  
thereof.

In testimony whereof I affix my signature,  
in presence of two witnesses.

GOTTLIEB KLENK.

Witnesses:

WILLIAM E. MOLL,  
C. C. HOFFMAN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,  
Washington, D. C."