

Oct. 31, 1933.

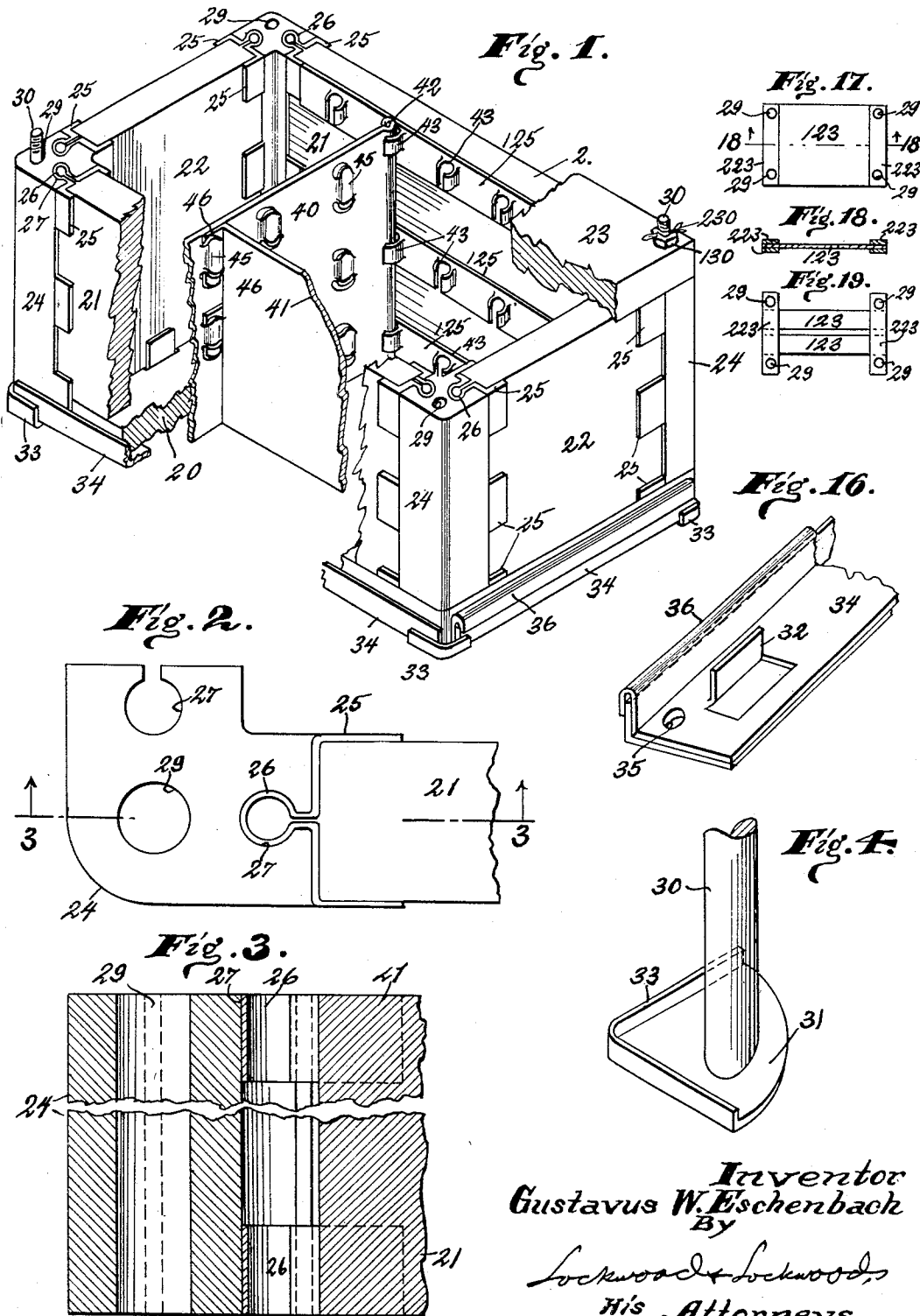
G. W. ESCHENBACH

1,932,772

MULTIFORM KNOCKDOWN BOX

Filed May 6, 1931

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 5.

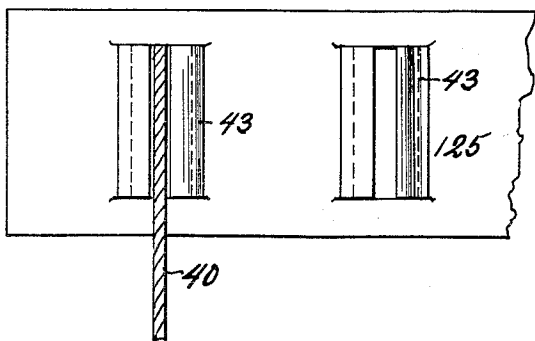


Fig. 6.

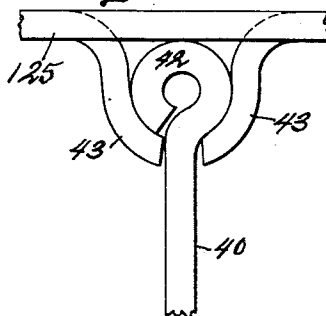


Fig. 7.

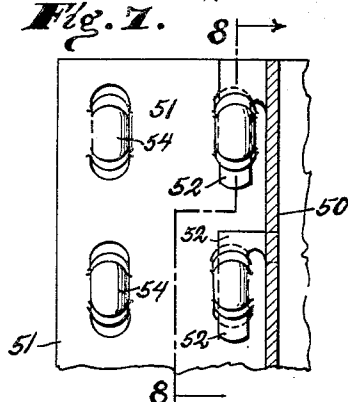


Fig. 8.

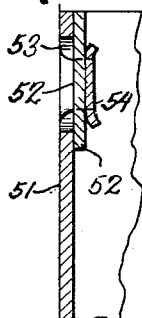


Fig. 9.

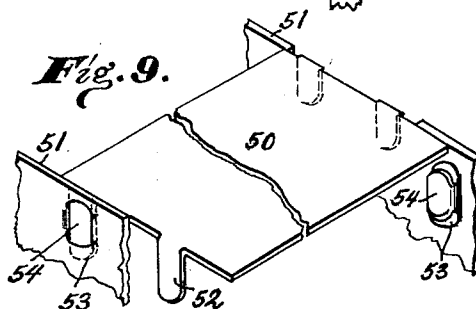


Fig. 10.

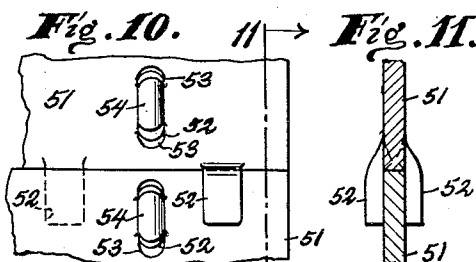


Fig. 11.

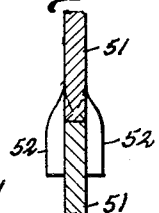


Fig. 12.

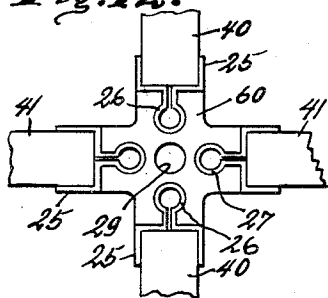


Fig. 13.

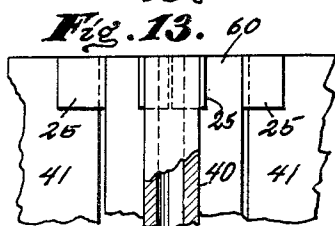


Fig. 14.

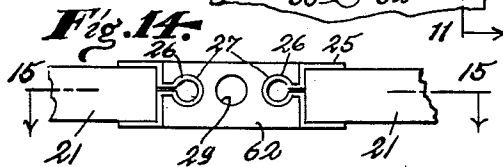
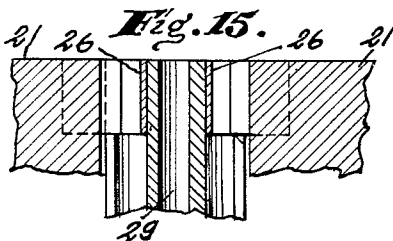


Fig. 15.



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UNITED STATES PATENT OFFICE

1,932,772

MULTIFORM KNOCKDOWN BOX

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Application May 6, 1931. Serial No. 535,430

6 Claims. (Cl. 217—12)

This invention relates to a multiple knock-down box, and the principal object is to provide knock-down parts of relatively uniform shape and locking means in various sizes so that boxes of various sizes with removable partitions there-
 5 in that can be formed from the parts by assembling them in proper order and detachably securing them together as planned.

One feature of this invention consists in the process of forming multiform knock-down boxes for packing and other purposes, varying in size, dimensions and interior arrangements, from a set of box parts, similar box parts being uniform in size and shape, and said box parts provided
 10 with means for interlocking them together in any position in the box as desired.

Another feature of the invention consists in providing a single set of box parts, similar parts being uniform in size and shape, and said parts
 20 being provided with uniform interlocking means whereby from said set of parts a packing box may be quickly assembled or built in any desired size or form suitable for receiving a desired article or number of articles of merchandise.
 25 These parts are such that they can be readily united to form any desired size or shape of packing box without the use of nails, brads or metal bands.

A feature of invention is shown in providing shipping boxes that include relatively few simple uniform parts that can be readily transported and cheaply stored, and from which packing boxes of any size or shape desired may be readily assembled and used, and since same is
 35 free from nails, brads and metal bands, they can be readily opened and knocked down and restored for use again.

The full nature of the foregoing and other features of the invention will more fully appear from the accompanying drawings and the following description and claims.

In the drawings, Fig. 1 is a perspective view of a packing box made in accordance with said invention, parts being broken away as indicated
 45 to show my removable partitions. Fig. 2 is a plan view of one of the corner block posts shown in Fig. 1, and an interlocking adjacent portion of the wall of the box, the latter being partly broken away. Fig. 3 is a vertical section through
 50 the box on the line 3—3 of Fig. 2, the central portion, however, being broken away, as shown. Fig. 4 is a perspective view of the lower portion of one of the rods for securing the corner block
 55 posts together. Fig. 5 is a fragmental elevation

of an attachment for the inside surface of a side wall with partition locking means and one partition being attached thereto and partly shown in vertical section. Fig. 6 is a fragmental plan view of an attachment for a side wall, showing a partition locking means and a portion of a partition in place therein. Fig. 7 is an elevation of the compartment partition with partition locking
 60 tongues and one partition associated therewith and being in vertical section, the compartment partition being partly broken away. Fig. 8 is a vertical section on the line 8—8 of Fig. 7. Fig. 9 is a fragmental plan view of a horizontal partition detachably connected at its ends to two vertical partitions, showing how the tongues of the former are connected to the straps of the
 65 latter. Fig. 10 is a side elevation of a wall superimposed on another wall and locked therewith for increasing the height of the box, parts being broken away. Fig. 11 is a fragmental vertical section on the line 11—11 of Fig. 10. Fig. 12 is a plan view of the center post of the box with four vertical partition walls connected therewith,
 70 said partition walls being partly broken away. Fig. 13 is a side elevation of what is shown in Fig. 12, parts being broken away. Fig. 14 is a plan view of two parts of a side wall united by a connecting post showing how the side can be extended to enlarge the box, the two parts of the side wall being partly broken away. Fig. 15 is a
 75 vertical section on the line 15—15 of Fig. 14, parts being broken away. Fig. 16 is a perspective view of one of the angle reinforcing plates at the end and bottom of the box, the same being partly broken away. Fig. 17 is a plan view
 80 on a small scale of the box lid formed of sheets of veneer or sheet metal. Fig. 18 is a section on line 18—18 of Fig. 17. Fig. 19 is a plan view of the box lid formed of veneer or sheet metal strips arranged to form a slat top.

Various forms and combinations of parts of the packing box constituting this invention obviously may be employed, but a simple form thereof is shown in Fig. 1. There is shown therein a bottom wall 20, side walls 21 end walls 22
 85 in a rectangular box, and a top 23 and corner posts 24. Each end and side wall is provided with metal strips 25 each having a central outwardly extending tongue 26 adapted to interlock with the corner posts 24, which tongue is preferably, but not necessarily, round in cross section, as
 90 seen in Fig. 2. These tongues 26 are vertically introduced in the slots or grooves 27 in the corner posts, as seen in Fig. 2. The inner portion of the slot or groove 27 is enlarged and preferably
 95 110

rounded so as to receive the rounded portion of the tongue 26, and these tongues and grooves interlock and secure the walls to the corner posts, as stated. The tops and bottoms 20 and 23, respectively, of the box are secured to the other members of the box by the corner tie rods 30, fragmentally shown in Fig. 4, which extend through a hole 29 in the post, and has its upper end threaded for the nut 130. Each of the posts is provided with nuts 130 so the lid 23 can be detachably secured to the box. These nuts are secured in place by cotter pins 230. The lids or tops 23 can be formed in any suitable way, but preferably they are formed of veneer strips 123 having end plates 223 through which the corner holes 29 are extended for the rods 30, as best shown in Figs. 17, 18 and 19. At the lower end each tie rod has an integral angle plate 31 that reinforces its respective corner of the box as well as aids in supporting the bottom of the box.

The foregoing describes a simple construction of said packing box, but it is to be understood that the invention is not limited to the particular tongue and groove arrangement described and shown, nor to single posts and walls as they can be each used in plural form for enlarging the height of the box, as desired. In such case, however, the tie bars 30 extend entirely through the box from bottom to top.

The ends and bottoms of the box are reinforced, preferably, by the construction shown in Figs. 4 and 16. The angle plate 31 at the lower end of the tie rod 30 is provided with upwardly extending side flanges or angle bars 33 and the reinforcing bar 34 shown in Fig. 16 are placed upon the plate 31 at the lower end of a tie rod 30 and is provided with a hole 35 for the tie rod 30 to extend through and also with an outwardly turned flange or angle member 36 which extends out over the side flanges 33 of said bottom plate 31. The assembled form is shown in Fig. 1.

Suitable vertical and horizontal partitions are provided for in this invention, as seen in Figs. 1 and 9. In the vertical partitions a cross partition 40 is shown connected with the side of walls 21 and a longitudinal partition 41 connected at one end with said cross partition 40 and at the other with the end wall 22 as best shown in Figs. 1, 5 and 6. For the purpose of removably connecting said partitions, the cross partition 40 is provided with enlarged lateral edge beads 42 adapted to be vertically introduced between pairs of tongues 43 that are punched out of the sides of the metal reinforcing strips 125 as seen in Figs. 1, 5 and 6.

In Fig. 1 there are three of such reinforcing metal strips 125, one in the bottom, one in the top, and one at an intermediate position, but the number thereof may be increased as desired.

The connecting means for one end of the longitudinal partition 41 is indicated in Fig. 1. The cross partition 40 is provided with vertically aligned rows of straps 45 that are punched out of the partition into which the tongues 46 are extended, and these tongues are integral with and bent at right angles to the ends of the longitudinal partition 41.

The partitions 40 and 41 may be multiplied as desired and have the desired dimensions, and also the desired removable connecting means in the construction of a box requiring them.

The horizontal partition plates 50, as seen in Fig. 9, are also provided in the box and may be

connected with other wall or partition plates 51 by means of downwardly extending tongues 52 that extend into slots 53 behind the straps 54 punched out of the wall 51. These connections are further illustrated in Figs. 7, 8, 9, 10 and 11.

The various partitions and walls may be extended by the means shown in Figs. 12-15. Thus in Fig. 12 there is shown a four-way center post 60 provided with the grooves 27 and adapted to receive the tongues 26 of cross partitions 40 and longitudinal partitions 41 or any other partitions or walls.

For extending the side walls of the box the means shown in Fig. 14 is employed wherein there is a post 62 with opposite grooves 27 therein adapted to receive the tongues 26 of the two parts of the side wall 21 that are in alignment with each other. Said post has a hole 29 for receiving tie-bar 30 similar to the other post.

In operation the parts of my multiform box are constructed, arranged and assembled or knocked down as hereinbefore fully described.

I claim as my invention:

1. In a multiform partitioned knock-down box the combination with, posts of uniform size and shape with vertical tie rod holes therethrough and with grooves in the sides thereof, vertical walls of uniform size and shape, uniform tongues connected with the ends of said walls for interlocking with the grooves in the posts, horizontal bottom and top members of uniform size and shape, tie rods insertible through said posts and bottom and top members, a corner reinforcing triangular metal plate secured to one end of each tie rod with lateral external flanges adapted to overlap the ends of the posts, and means adapted to be secured to the upper end of each tie rod for clamping the parts together when assembled, of vertical and horizontal partitions in said box that are detachably connected to the inside walls of said box and to one another.

2. In a partitioned multiform knock-down box the combination with posts of uniform size and shape with grooves in the sides thereof that are enlarged inwardly, vertical walls of uniform size and shape, uniform tongues connected with the ends of said walls and extended therefrom for interlocking with the grooves in said posts, metal strips secured to the inside walls of the box, of vertical partitions, beads secured to the vertical edges of said partitions that are detachably connected to said metal strips for the purpose specified.

3. In a partitioned multiform knock-down box the combination with side walls, end walls, a bottom and top, each of said classes of parts being of relatively uniform size and dimensions, relatively uniform corner posts, the ends of said walls and corner posts being provided with relatively uniform interlocking means, metal reinforcing strips secured on the inside of said side walls, pairs of tongues in said strips, vertical partitions for dividing said box into compartments, and beads on the vertical edges of said partitions for engaging said tongues to detachably interlock said side walls and partitions together.

4. In a partitioned multiform knock-down box the combination with corner posts having vertical holes extending therethrough and vertical grooves in the sides that are enlarged inwardly, side and end walls, tongues secured to the ends of said walls that are moved vertically into and out of the grooves to form a tight connection between the posts and walls or disconnect them, spaced metal reinforcing strips secured to the in-

side of said side walls, pairs of vertically aligned and spaced tongues punched out of said strips so they extend toward the interior of said box, of vertical cross partitions in said box, metal beads integral with the vertical edges of said partitions that are arranged to be engaged by said tongues to detachably hold said partitions upright in said box.

5. In a partitioned multiform knock-down box the combination with corner posts having vertical holes extending therethrough and vertical grooves in the sides that are enlarged inwardly, side and end walls, tongues secured to the ends of said walls that are moved vertically into and out of the grooves to form a tight connection between the posts and walls or disconnect them, of vertical partitions in said box, reinforcing metal strips secured to the inside of the walls of said box, spaced pairs of tongues integral with said strips,

beads integral with the vertical edges of said vertical partitions for lockingly engaging said tongues to hold said partitions detachably secured in said box, straps on said vertical partitions, horizontal partitions, and tongues integral with said horizontal partitions that are adapted to lockingly engage said straps to detachably secure said horizontal partitions in said box.

6. A partitioned multiform knock-down box including vertical and horizontal partitions in said box, metal plates secured to the wall of said box, beads integral with the ends of said vertical partitions, tongues integral with said plates for detachably engaging said beads to hold said partitions in said box, straps integral with said vertical partitions, and tongues integral with the ends of said horizontal partitions for engaging said straps to detachably secure said horizontal partitions in said box.

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