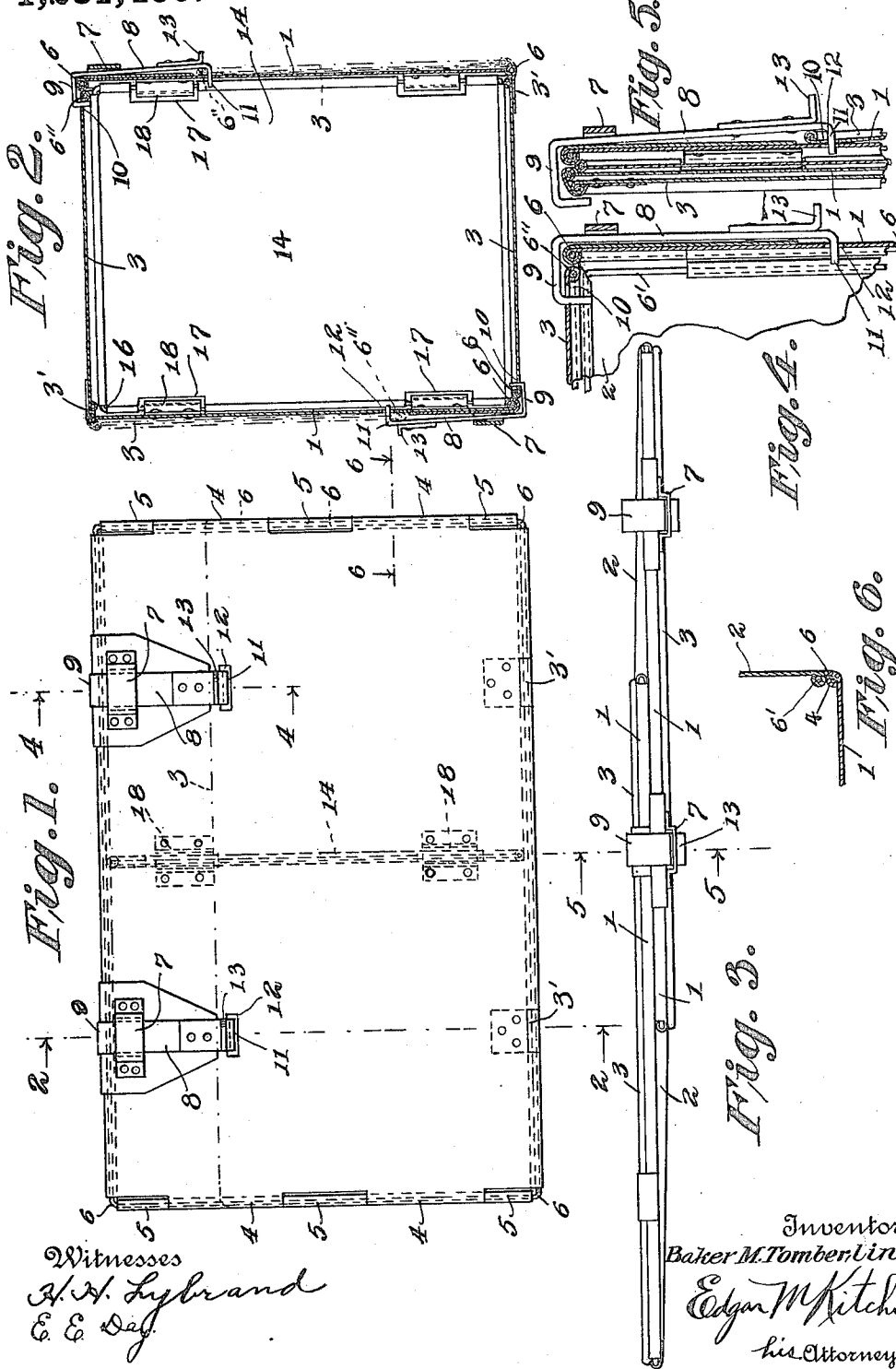


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 COLLAPSIBLE CRATE AND LOCK.  
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1,231,460.



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# UNITED STATES PATENT OFFICE

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COLLAPSIBLE CRATE AND LOCK.

1,231,460.

Specification of Letters Patent.

Patented June 26, 1917.

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*To all whom it may concern:*

Be it known that I, BAKER M. TOMBERLIN, a citizen of the United States, residing at Santa Rosa, in the county of Sonoma and State of California, have invented certain new and useful Improvements in Collapsible Crates and Locks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in collapsible crates and to the combination of locking means therewith.

The object in view is the construction and location of a lock enabling the same to effectively lock the folding parts of a collapsible crate, both in a closed and open position.

With this and further objects in view, the invention comprises certain novel constructions, combination and arrangements of parts as will be hereinafter specifically claimed.

In the accompanying drawing,—

Figure 1 is a view in side elevation of a crate embodying the features of the present invention.

Fig. 2 is a transverse, vertical section, taken on the plane indicated by line 2—2 of Fig. 1 and looking in the direction indicated by the arrow.

Fig. 3 is a top plan view with the parts illustrated in their collapsed condition.

Fig. 4 is an enlarged detail fragmentary, vertical section taken on the plane indicated by line 4—4 of Fig. 1.

Fig. 5 is a similar view taken on the plane indicated by line 5—5 of Fig. 3.

Fig. 6 is a fragmentary, horizontal section taken on the plane indicated by line 6—6 of Fig. 1 and looking downward.

While the present invention is applicable particularly to a collapsible crate formed of sheet metal and hence it has been found necessary to exaggerate thickness in order to illustrate structure in the drawings, it is obvious that the invention is applicable to other material, such as papier mâché or other appropriate sheets.

Referring to the drawings by numerals, 1—1 indicate the sides, 2—2 the ends and 3—3 the top and bottom plates of a crate or other collapsible container. While each of said plates is illustrated in the drawings as rectangular, obviously the contour thereof

will vary with variations in the shape of the container as a whole.

Ends 2 are hinged to the sides 1 by interlacing elongated eyes 4, 5 connected by a pintle comprised of the wire or rod 6 which serves the double function as acting as a pintle and edge binding rod, the material at the edges of the upper and lower edges of the respective sides being rolled over the rod.

Each of the end plates 2 is provided with a similar edge stiffening and finishing rod 6' over which the upper and lower edges of the respective end plate are rolled and over which those portions of the vertical edges of the respective end plates not forming eyes 5 are also rolled, each of the top and bottom plates 3 is provided with a like edge stiffening and finishing rod 6'' about which the material at the edges of the respective plates 3 is rolled.

Hinged leaves or plates 3' are fixed to the rear edge portion of the top plate 3 and the front edge portion of the bottom plate 3, the former extending rearwardly and being provided with an eye surrounding the upper horizontal portion of the rod 6 of the respective side, and the latter extending forwardly and being formed with an eye surrounding rod 6 of the other side plate 1, the material of the side plate being cut away at points necessary for accommodating the eyes of hinged plates 3'.

Thus the bottom plate 3 is adapted to be swung upon its hinges 3' to an upstanding position immediately in front of the front side plate 1 and the top plate 3 is adapted to be swung to a vertical, pendent position immediately in the rear of the rear side plate 1, said vertical position being indicated in dotted lines in Figs. 2 and 3.

Fixed to the upper portion of the front side plate 1 are preferably flat guiding sleeves 7—7, there being preferably two such sleeves employed, or otherwise a single sleeve might be utilized if preferred or a greater number of sleeves with their accompanying parts may be found desirable under certain conditions.

Slidably mounted in each sleeve 7 is a locking bolt 8, having its upper end formed with a hook 9 whose bight is sufficiently large to inclose the edges of the collapsible parts, as seen in Fig. 3 and as will be hereinafter more fully set forth, the hook being propor-

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tioned to have its down-turned free portion enter an aperture 10 formed in the plate 3 just inside of the edge binding of the plate.

The lower extremity of each bolt 8 is bent inwardly to form a right angle extension or hook portion 11, disposed to enter an aperture 12, and each plate 8 is also formed with an outstanding hook portion 13 formed in any appropriate manner; as by the fixing of an additional plate to the plate 8 with the terminal portion of the additional plate bent upwardly.

The lower portion of the rear side plate 1 is provided with locking devices which are exact duplicates of those just described, and the same reference numerals have therefore been applied, and the same description is applicable, the locking devices fixed to the rear plate 1, however, being at the lower portion of the plate, obviously necessarily acting in an inversed direction to that of the lock carried by the front plate 1, and the bottom plate 3 being formed with the appropriate apertures 10, similar to those formed in the top plate 3.

A partition plate 14 is arranged within the body of the crate, and has its edges bound by a rod 16 similar in structure and arrangement to the rods 6, 6' and 6'', and the partition is formed with notches 17 in its vertical edges into which extend eyes 18 fixed to the respective sides 1, and through which eyes extend the rod 16 to serve as a pintle for hinging the partition to the side plates, the eyes 18 being preferably considerably larger than the diameter of the rod 16 so as to form a loose hinged connection to allow some lateral play of the partition in addition to its hinging movement in the collapsing of the parts.

It is obvious, particularly from the dotted line position of the plates 3 as seen in Figs. 1 and 2, that the apertures 10 are located and the plates 3 are proportioned with respect to the plates 1 and the position of the bolts 8, so that when the plates 3 are folded back upon the side plates, the apertures 10 will register with apertures 12 and hook portion 11 is adapted to be passed through the two apertures, so as to lock the respective plate 3 in its folded back position.

When both of the plates 3 are so folded back and locked, there is nothing left to stabilize the crate, and the sides, ends, and partition are free to collapse upon each other in the manner indicated in Fig. 3, it being, of course, obvious that before swinging the plates 3 to their dotted line positions in Fig. 2, said plates 3 must be released by the moving of the bolts 8 vertically until their hooks are disengaged from the plates. To do this the operator grasps the extension or handle 13 and draws the hook 11 out of the respective aperture 12, springing the material of the plate 1 in order to

accomplish this result, and then presses the respective bolt 8 longitudinally for releasing the plate 3, which plate after being folded back upon its respective side plate 1 is then engaged by a locking element at the other side of the crate from that which formerly engaged it, this engagement being effected also by the springing of the material of bolt 8 so as to enable the hook portion 11 to pass over the edge binding 6'' and through the aperture 10.

When the plates 3 have been thus folded back the parts collapsed and the bolts 8 caused to engage the parts for locking the plates 3 in their collapsible position, the hook 9 of one of the upper locking elements and one of the lower locking elements will be found to inclose the collapsible parts in the manner clearly illustrated in Fig. 5.

Each bolt 8 consists of a substantially rigid strip of material sufficiently resilient to permit springing into and out of locking position, the bolt carrying its two hooks as integral parts and being confined against release of the engaged parts by the guiding bracket or sleeve 7.

What I claim is:—

1. In a folding crate, the combination of a collapsible container comprising side and end plates hinged together, a top plate hinged to the upper edge of one side plate, a bottom plate hinged to the lower edge of the other side plate, a bolt rigid throughout its length and slidingly carried by the upper portion of one of the side plates and having a hook at each end, the upper or outer hook being adapted to engage and lock the top plate in its extended position and the lower or bottom hook being adapted to engage and lock the bottom plate in its folded position, and a similar lock engaging the other side plate at its lower portion and having similar hooks for engaging respectively the bottom plate in its extended position and the top plate in its folded position.

2. In a folding crate, the combination of a collapsible container having hinged side and end plates, a top plate hinged to the upper edge of the rear side plate, a bottom plate hinged to the lower edge of the front side plate, the hinges of the top and bottom plates being adapted to enable said plates to swing from an unfolded horizontal position to a folded vertical position, a bolt substantially rigid throughout its length slidingly engaging the upper portion of the front side plate and having a catch at each end, one catch being adapted to engage the front edge portion of the top plate when in its unfolded position and the other catch being adapted to engage the free edge portion of the bottom plate when in its folded position, and a similarly constructed locking bolt having similar locking means disposed at the lower portion of the rear side plate and adapted to

engage respectively the bottom and top plates in their unfolded and folded positions.

3. In a folding crate, the combination of a collapsible container, comprising the side and end plates hinged together, a top plate hinged to the upper edge of one side plate, a bottom plate hinged to the lower edge of the other side plate, a bolt rigid throughout its length and slidingly carried by the upper portion of one of the side plates and having a hook at each end, the upper or outer hook being adapted to engage and lock the top plate in its extended position, and the lower or inner hook being adapted to engage and lock the bottom plate in its folded position, the said outer hook, when the parts are in the last named position, being adapted to clasp the upper portions of the folded parts, and a similar bolt similarly carried by the other side plate at its lower portion and having similar hooks for engaging respectively the bottom plate in its extended position and a top plate in its folded position and for clasping the lower portions of the folded parts.

4. In a folding crate, the combination

with a collapsible structure, of a substantially rigid slide having a catch at each end adapted to engage and lock various parts in their folded and unfolded positions, the slide being of spring material and adapted to be sprung to and from certain of its locking positions.

5. In a folding crate, the combination with a collapsible container having side and end plates hinged together, top and bottom plates hinged to the side plates, the bottom plate being adapted to swing from a horizontal unfolded to a vertical folded position, means for locking the bottom plate in its unfolded position, a substantially rigid sliding bolt having means adapted to engage and lock the top plate in its unfolded position and also having means adapted to be sprung past portions of the bottom plate for locking the same in its folded position.

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

BAKER M. TOMBERLIN.

Witnesses:

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HARRY E. BENNETT.

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