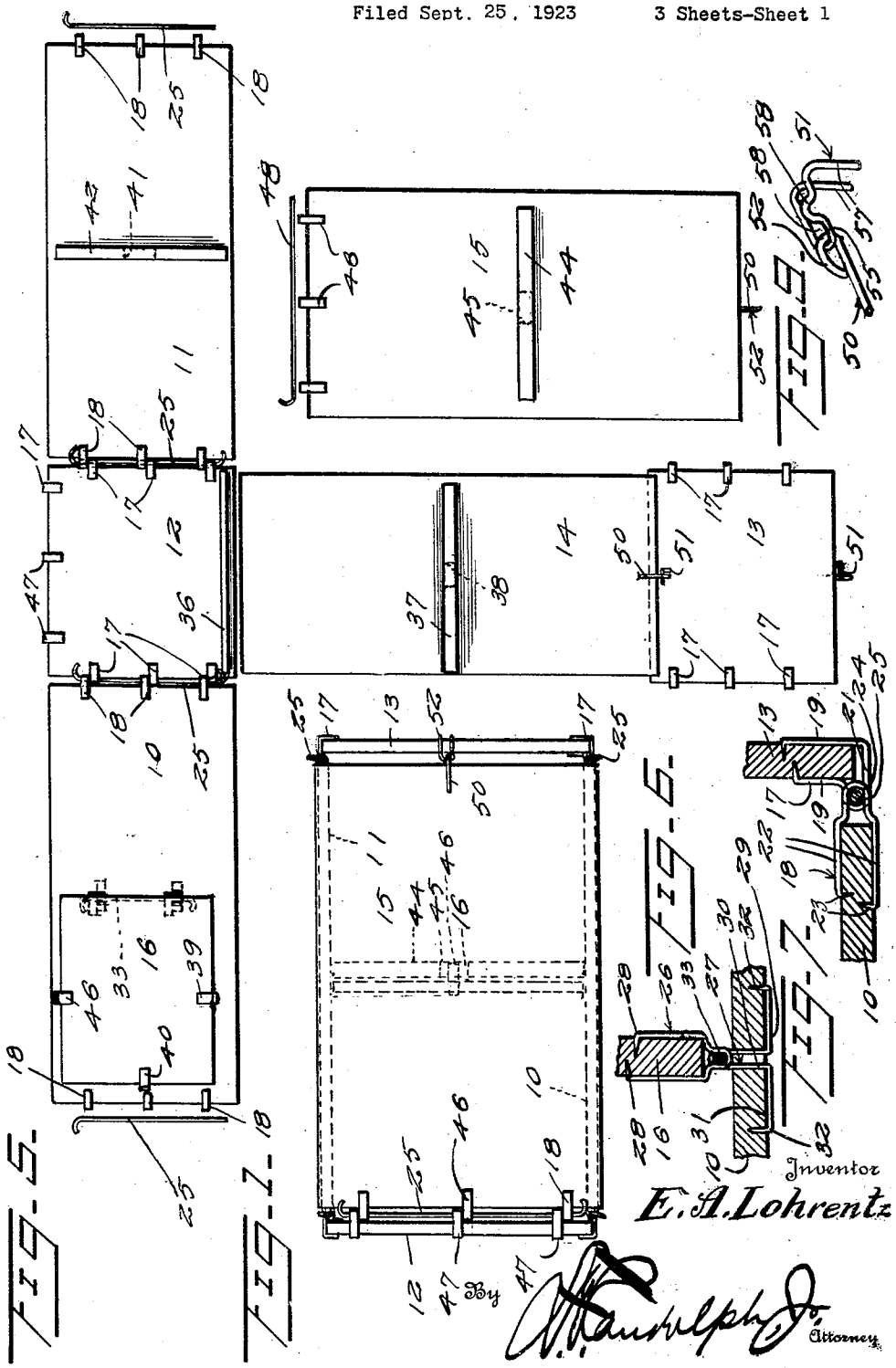
Sept. 2, 1924. 1,507,557

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FOLDING BOX OR CRATE

Filed Sept. 25, 1923 3 Sheets-Sheet 1



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Filed Sept. 25, 1923 3 Sheets-Sheet 2

FIG. 2.

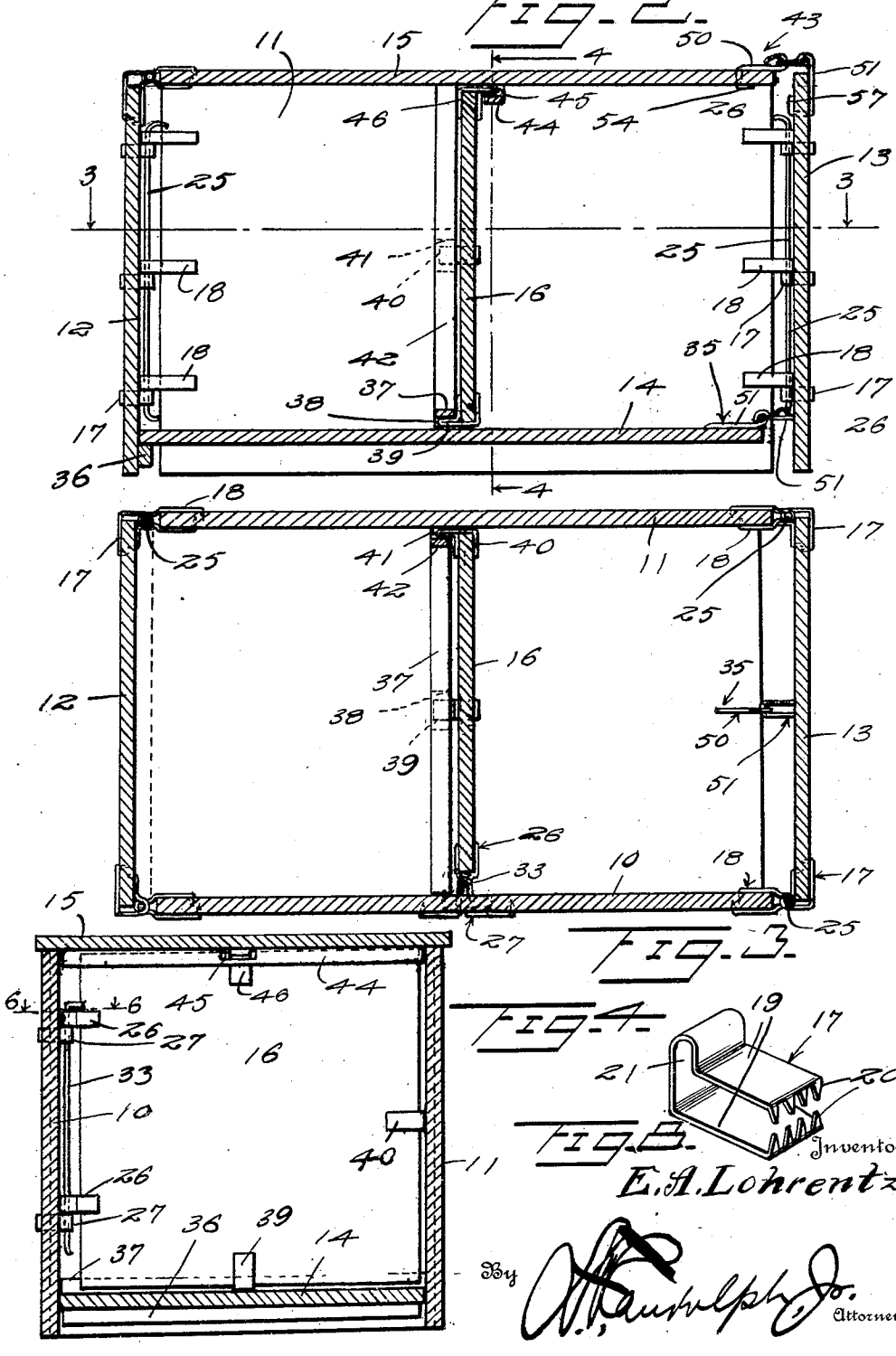


FIG. 3.

FIG. 4.

FIG. 5.

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Filed Sept. 25, 1923 3 Sheets-Sheet 3

Fig. 10.

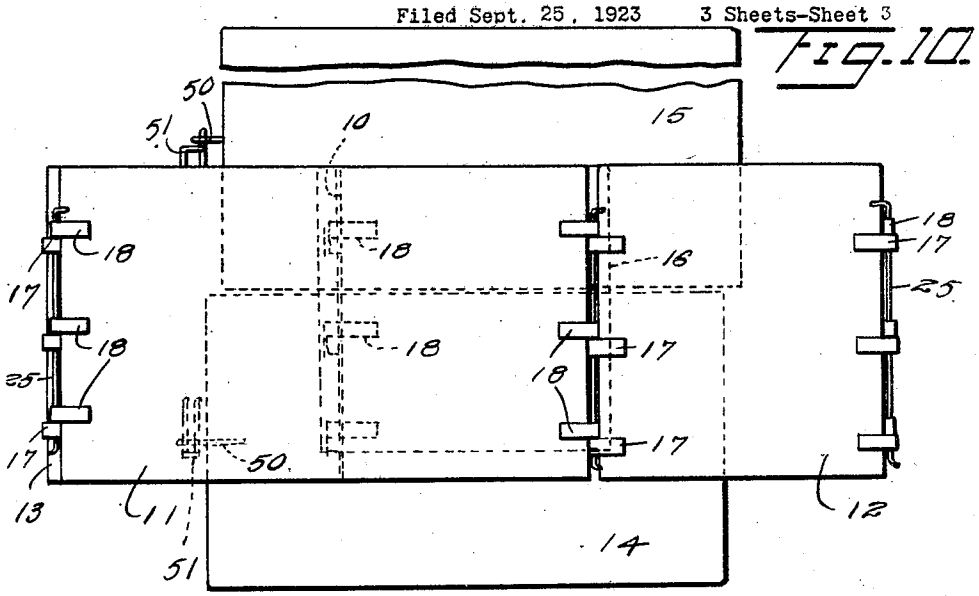


Fig. 11.

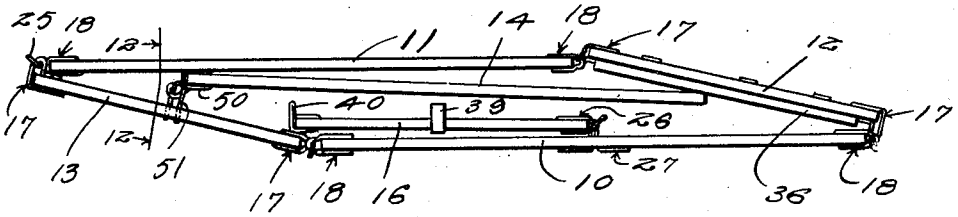
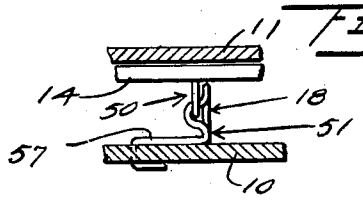


Fig. 12.



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UNITED STATES PATENT OFFICE.

EDWARD A. LOHRENTZ, OF MILWAUKEE, WISCONSIN.

FOLDING BOX OR CRATE.

Application filed September 25, 1923. Serial No. 664,734.

To all whom it may concern:

Be it known that I, EDWARD A. LOHRENTZ, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Folding Boxes or Crates; 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 a folding box or crate.

It is aimed to provide a generally improved construction which is capable of expeditious manipulation, which is inexpensive and which is durable in use.

A particular object is to provide a novel construction which necessitates the manipulation or removal of a single fastening in order to permit the folding or collapse of the box or crate.

Another particular object is to provide an improved means of reinforcing and locking connection between a partition employed and the adjacent side, top and bottom walls.

A further object is to provide a novel construction of hinge means for the different wall and a novel hinge connection for the top and bottom walls to permit folded disposition thereof between the sides and ends when the latter are folded.

Various additional objects and advantages will become apparent from a consideration of the description following taken in connection with accompanying drawings illustrating an operative embodiment.

In said drawings Figure 1 is a plan view of the box or crate;

Figure 2 is a substantially central vertical sectional view through the box or crate;

Figure 3 is a horizontal sectional view taken on the plane of line 3—3 of Figure 2;

Figure 4 is a vertical sectional view taken on the plane of line 4—4 of Figure 2;

Figure 5 is a plan view of the box or crate in flat form, the top and bottom being removed and the pintle connecting one of the ends to the sides also being removed;

Figure 6 is a detail sectional view taken on the line 6—6 of Figure 4;

Figure 7 is an enlarged detail view illustrating in section the hinge connection of one of the side and end walls;

Figure 8 is a detail perspective view of one of the hinge sections used on the end wall,

Figure 9 is a detail perspective view illustrating the hinge connection of the top and bottom walls with the adjacent side wall,

Figure 10 is a plan view showing the box or crate in substantially flat or collapsed condition,

Figure 11 is a side elevation of the parts in the condition of Figure 10, and

Figure 12 is a detail sectional view taken on line 12—12 of Figure 11.

Like reference characters designate like or similar parts in the different views.

In reducing the invention to practice, a box, crate or receptacle is essentially made up of similar side walls 10 and 11, end walls 12 and 13, a bottom wall 14, a top wall 15 and a middle wall or partition 16. The aforesaid parts are advantageously shown in Figure 5.

As best shown in Figure 3 and 6, the side walls 10 and 11 and end walls 12 and 13 are hinged together. Any suitable means may be used to effect the hinge connection. Such means preferably consist of hinge members 17 and 18. Hinge member 17 is detailed in Figure 4 and consists of securings tangs 19 which embrace opposite sides of the end walls and are secured thereto by spurs or the like 20, integral with the tangs 19 and adapted to be driven into such end walls. The tangs 19 preferably differ in length so that the spurs 20 of the different tangs will be disalined as emphasized in Figure 7 to avoid undue weakening of the walls at the point of connection. In addition, the hinge members 17 have barrels 21 offset into longitudinal alinement with the sides 10 and 11 when the latter are unfolded.

The hinge sections or members 18 are provided with securing tangs 22 having spurs 23 integral therewith and secured in the sides 10 and 11. Spurs 23 of the different tangs 22 are disalined like the spurs 20 and for the same reason. At the junction of the tangs 22, barrels 24 are provided. Removably disposed in the barrels 21 and 24 are pintles or rods 25 which are fastened therein against accidental displacement and for instance by bending or upsetting the ends thereof as at 26.

The partition wall 16 is hinged at one

side to the side wall 10 by hinge members or sections 26 and 27. The sections 26 are in the form of loops having attaching spurs 28 at their terminals penetrating in dis-alinement, the opposite sides of the partition 16. The sections 27 have loops 29 which extend through slots 30 in the wall 10 and they have fastening tangs 31 disposed at a right angle to the loops 27 and terminating in spurs 32 penetrating the side 10. A pintle or rod 33 passes through the loops 26 and 27 and is fastened against displacement in any suitable manner as by upsetting its ends as at 34.

The bottom wall at one end and at a single point is hinged as at 35 to the end wall 13. The opposite end of bottom wall 14 to the hinge, is adapted to rest on a support or cleat 36 carried by the end wall 12 as shown in Figure 2. On the upper surface of bottom wall 14 a cleat 37 is provided which has a slot as at 38 adapted to receive a lug 39 carried by the partition 16. Cleat 37 is disposed on the same side of the partition 16 as cleat 36 and the lug 39 projects from wall 16 toward such cleat.

Extending from the free vertical wall of the partition 16 on the same side as lug 39 is a lug 40 which is adapted to enter a slot 41 in a cleat 42 carried by a side wall 15.

At one end, the top wall 15 at a single point as at 43 is hinged to the end wall 12. Wall 15 on its under surface carries a cleat 44 provided with a slot 45 adapted to receive a lug 46 extending from the partition 16. It will be noted that the cleats 37 and 44 are disposed on different sides of the partition 16 and that the lugs 39 and 46 are also disposed on opposite sides of such partition so that when the top and bottom are in place, the partition is held against danger of displacement. The end of the top 15 opposite to hinge 43 is adapted to be secured in any suitable manner to the end wall 13 and for instance as shown, hinge members 46 are provided on the top and hinge members 47 are provided on end 13. These hinge members respectively are similar in shape and construction and use to the hinge members 18 and 17 respectively and they removably accommodate a fastening pintle or rod 48 which may have one or both ends bent or offset at 49 when the box is unfolded, so as to prevent accidental displacement. This pintle 48 is of such metal that it may be readily straightened in order to permit its removal.

The hinges at 35 and 43 are identical in construction and consist of sections 50 and 51. The sections 50 have eyelets 52 and attaching tangs 53 provided with spurs 54 penetrating the opposite sides of the top 14 in disalinement. The sections 51 have eyelets 55 and attaching tangs 56 disposed against opposite sides of the end wall 13 and provided with spurs 57 penetrating the same in disalinement. The eyelets 55 have offset portions as at 58 and 59 in order to provide enlarged or substantially L-shaped slots to permit not only ordinary hinge movement of the top wall and bottom wall but also hinge movement of such top wall and bottom wall when turned into substantial parallelism with the side walls 14 and 15 to facilitate disposition of the top and bottom walls intermediate the side walls and folding therewith into substantially flat or collapsed condition.

When the box or crate is collapsed, merely the fastening pintle 48 is removed. Thus the sides and ends are hinged together and the ends 12 are brought into substantial parallelism with the sides 10 and 11 with partition 16 folded flat between them and the top wall 15 and bottom wall 14, still connected by their hinges 43 and 35, respectively disposed between such side and end wall. In assembling the crate, the side and end walls are swung into rectangular relation and incidental thereto the bottom wall 14 at its distal or free end is placed in supporting engagement with the cleat 36 as shown in Figure 2. Thereupon the partition 16 is unfolded in parallelism with the end walls 12 and 13 causing the lugs 39 and 40 to enter the slots 38 and 41 respectively and the partition 16 to have abutting support against the cleats 37 and 42. Thereupon, with the top 15 swung open, the compartments of the crate on opposite sides of the partition 16 may be filled. Thereafter the cleat 44 at slot 45 receives the lug 46 and the fastening pintle 48 is applied to the hinged sections or members 46 and 47.

The various walls 10, 11, 12, 13, 14, 15 and 16 are preferably made of wood but may be made of any suitable material desired. Also if desired the various hinges and eyelets employed, may be fastened by the spurs shown or by screws or in any other suitable manner. The different cleats referred to are also preferably made of wood and fastened to their respective walls by nails, screws or the like.

Various changes may be resorted to provided they fall within the spirit and scope of the invention.

I claim as my invention:—

1. A collapsible crate having upstanding walls collapsibly connected together, a wall connected to one of said walls and adapted to normally span the upstanding walls and for disposition between them in the collapsed condition of the crate, a partition for the upstanding walls, and said partition having means to engage and support the spanning wall.

2. A collapsible crate having upstanding collapsible walls, a wall to span the said

walls, a partition for the first mentioned walls, separable coacting means between the partition and one of said walls to support the second mentioned walls in normal position and means mounting the second mentioned wall for disposition between the first mentioned walls in the collapsed condition of the crate.

3. A collapsible crate having upstanding side and end walls, a spanning wall therefor having movable connection at one end with one of the first mentioned walls so that it may fold compactly in the collapsed condition of the crate, and another of the first mentioned walls having a cleat supporting the spanning wall adjacent its distal end, and a partition to prevent collapse of the first mentioned walls.

4. A collapsible crate having collapsible walls, a partition therefor and collapsible therewith, and interlocking connections for said partition and adjacent walls, said connections being disalined with the partition and disposed on opposite sides of the partition, said connections consisting of means on the walls providing slots, lugs to engage said slots extending in opposite directions transversely of the partition, and said lugs having securing means straddling the partition at edges of the latter.

5. A collapsible crate having collapsible walls, a partition therefor and collapsible therewith, interlocking connections for said partition and adjacent walls, said connections being disalined with the partition and disposed on opposite sides of the partition, said connections consisting of lugs on the partition, and cleats on the walls having slots to receive said lugs.

6. A collapsible crate having collapsible upstanding walls, a spanning wall collapsible therewith, a supporting cleat for the spanning walls on one of the first mentioned walls, and a hinge connection between the spanning walls and another of the first mentioned walls providing for movement of the spanning wall in substantially an L-shaped path for the purpose specified.

7. A collapsible crate having collapsible upstanding walls, a spanning wall collapsible therewith, a supporting cleat for the spanning walls on one of the first mentioned walls, a hinge connection between the spanning walls and another of the first mentioned walls providing for movement of the spanning wall in substantially an L-shaped path for the purpose specified, said connection consisting of eyelets, one of the eyelets having offset portions providing substantially an L-shaped eye.

8. A collapsible crate having side and end walls in collapsible relation, a partition wall hinged to one of the side walls, a top wall and a bottom wall, means hinging the top and bottom walls to one of the end walls, a supporting cleat on the other end wall for the bottom wall, attaching cleats on the top and bottom walls on opposite sides of the partition, said attaching cleats having slots and lugs on said partition adapted to enter said slots.

9. A collapsible crate having side and end walls in collapsible relation, a partition wall hinged to one of the side walls, a top wall and a bottom wall, means hinging the top and bottom walls to one of the end walls, a supporting cleat on the other end wall for the bottom wall, attaching cleats on the top and bottom walls on opposite sides of the partition, said attaching cleats having slots, lugs on said partition adapted to enter said slots, one of said side walls having an attaching cleat provided with a slot, and the partition having a lug adapted to enter the last mentioned slot.

10. A collapsible crate having side and end walls pivotally connected together, adjacent their ends, a partition hinged to one of the side walls, the other side wall having a cleat, a top wall and a bottom wall, said top wall and bottom wall having hinge connection with one of the end walls for movement in substantially L-shaped paths, a supporting member on the other end wall for the free end of the bottom wall, said top and bottom walls having cleats on the opposite sides of said partitions, all of the cleats having slots, and lugs extending from the partition to enter said slots, and a releasable fastening between the top wall and one of the first mentioned walls.

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

EDWARD A. LOHRENTZ.

Witnesses:
H. V. KEFISCH,
C. M. HENNBUGHT.