No. 710,252. Patented Sept. 30, 1902.

J. CONRAD.

KNOCKDOWN BANANA SHIPPING CRATE.

(Application filed Jan. 3, 1902.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1,

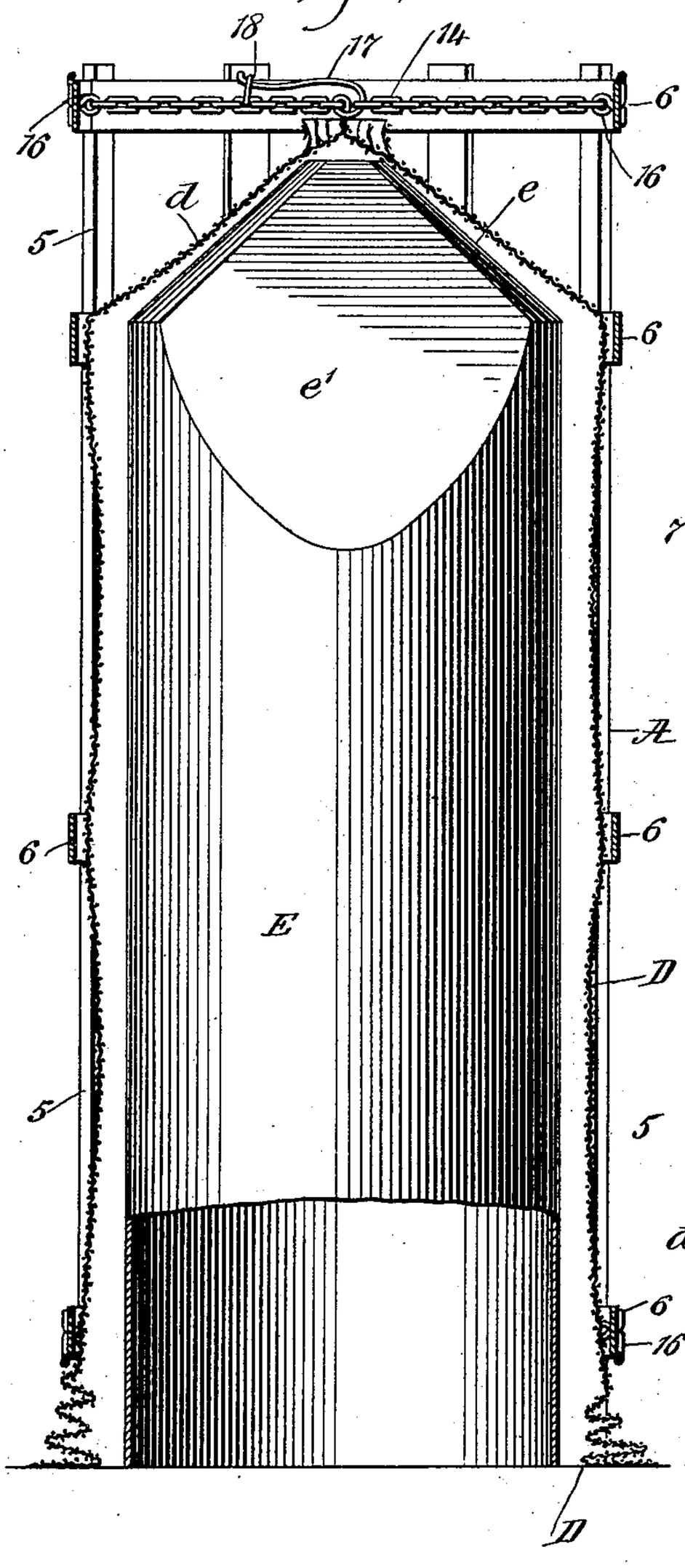
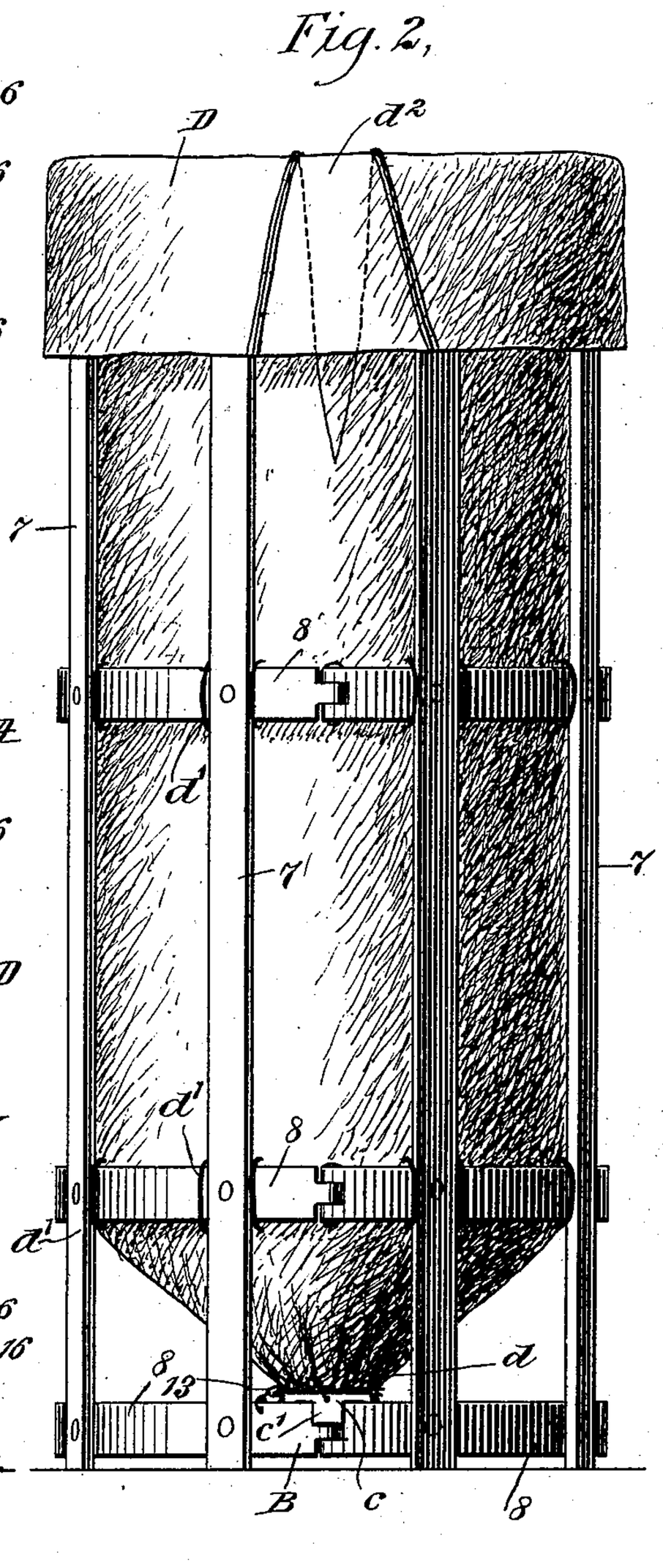


Fig. 2,



WITNESSES:

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Fig. 3,

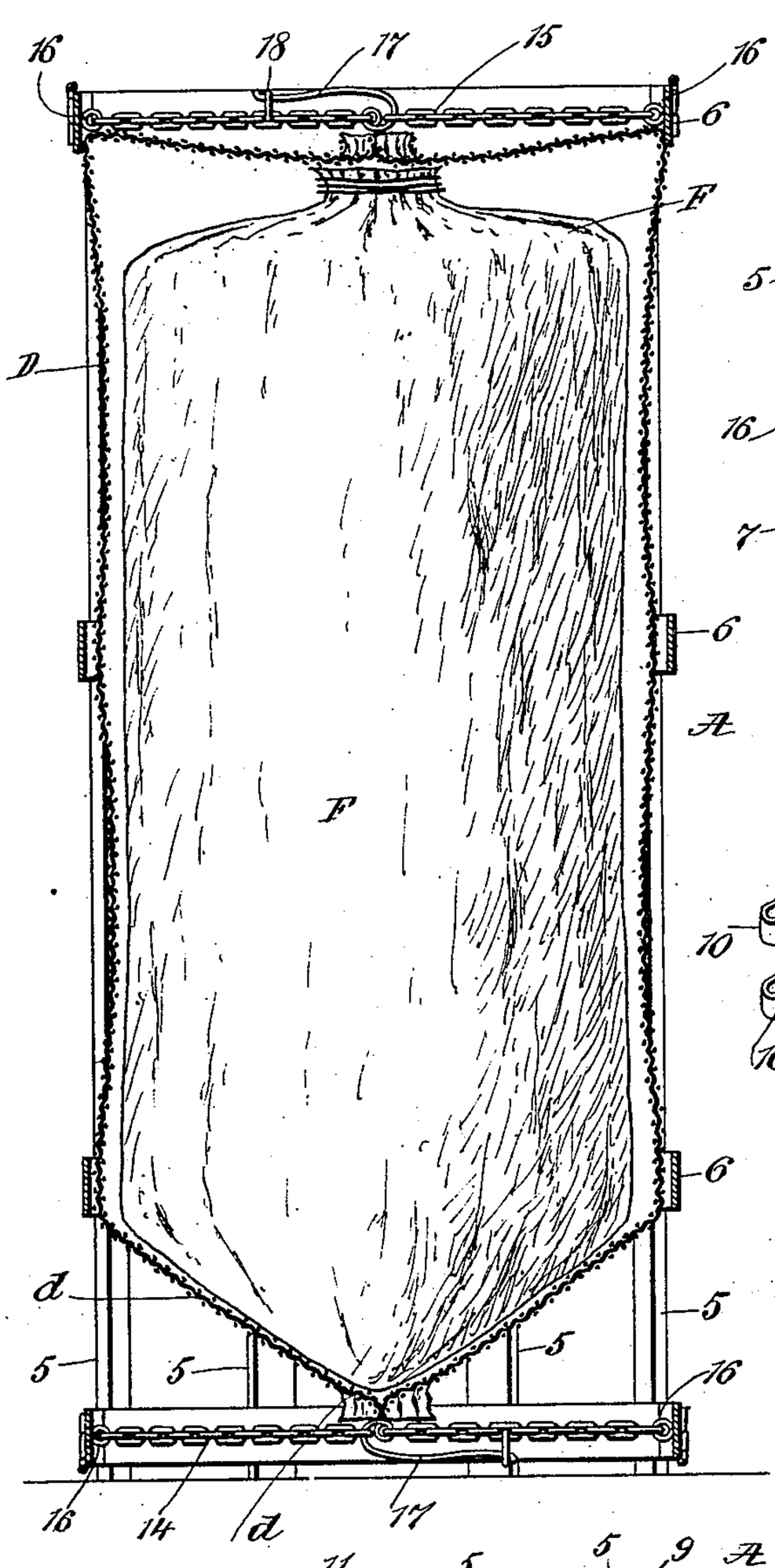


Fig. 4,

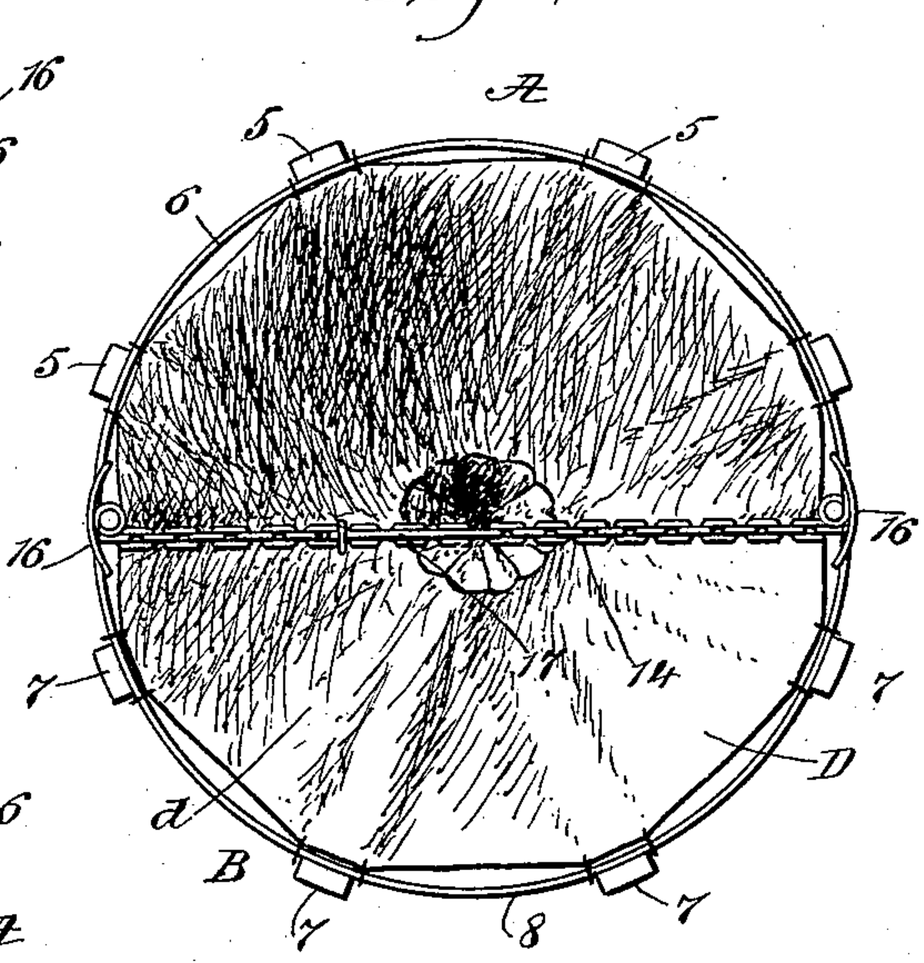


Fig. 5,

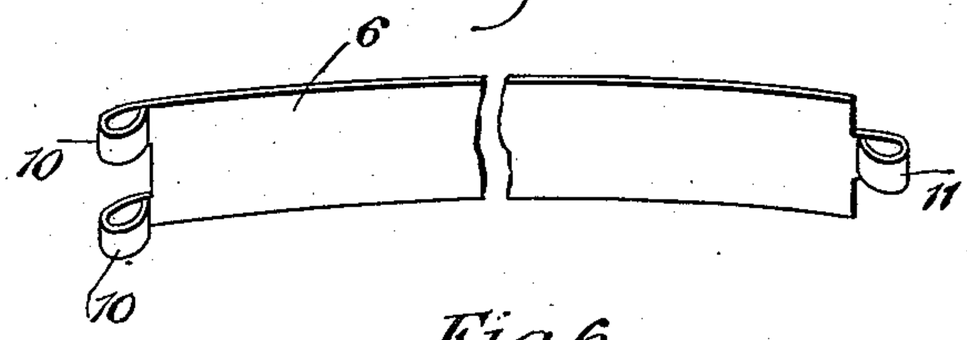


Fig. 6,

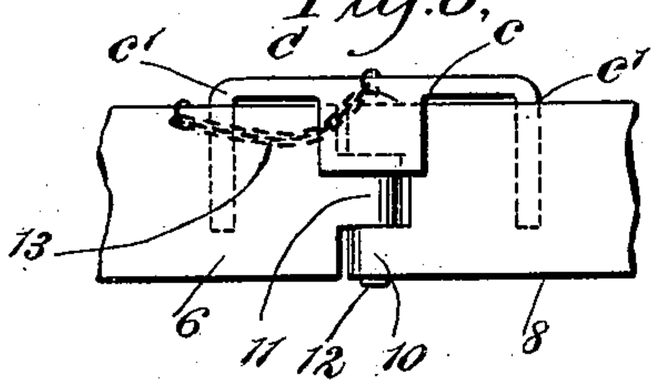
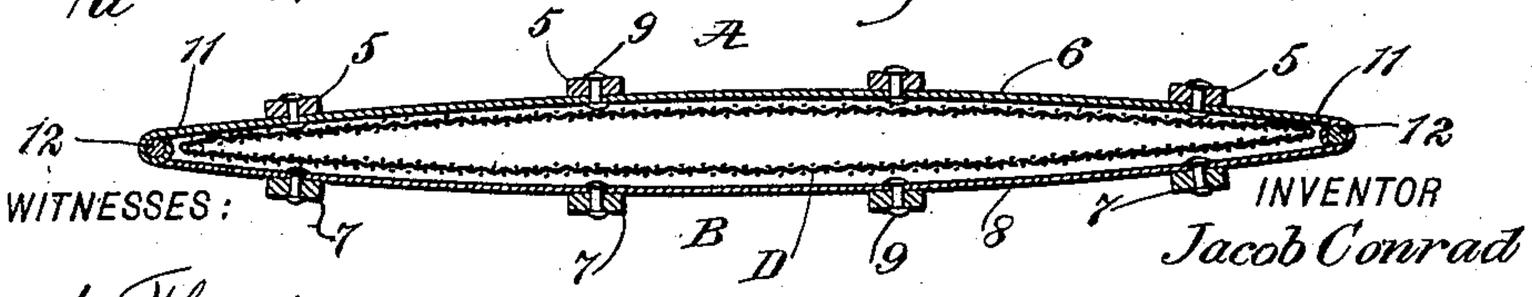


Fig. 7.



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UNITED STATES PATENT OFFICE.

JACOB CONRAD, OF CHICAGO, ILLINOIS.

KNOCKDOWN BANANA-SHIPPING CRATE.

SPECIFICATION forming part of Letters Patent No. 710,252, dated September 30, 1902.

Application filed January 3, 1902. Serial No. 88,331. (No model.)

To all whom it may concern:

Be it known that I, JACOB CONRAD, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Knockdown Banana-Shipping Crates, of which the following is a full, clear, and exact description.

My invention relates to improvements in knockdown shipping-crates especially adapted to the transportation of bunches of bananas, although it may be used for other substances.

The objects of my invention are to provide for the compact disposition of the parts comprising the crate in shipping the same back to the owner or in a non-loaded condition, thus effecting economy in transportation charges and enabling a large number of crates to be stored in a car or other place, to enable the crate to be quickly and easily expanded or set up for service, to allow the easy insertion of the bunch of bananas into the crate, to hold the load in a yieldably-suspended condition in the crate, to prevent the crate from collapsing when loaded, to simplify and strengthen the construction, and to secure economy in manufacture.

With these ends in view the invention consists in the novel construction, combination, and arrangement of parts, which will be hereinafter fully described, and defined in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation, partly in section, showing the manner of setting up the crate for service. Fig. 2 is another side view illustrating the crate in condition to receive a bunch of bananas. Fig. 3 is a vertical longitudinal section through the crate, illustrating the position of the paper bunch-inclosing bag within the fabric bag of the crate. Fig. 4 is a plan view of the crate, showing the closed end of the fabric bag. Fig. 5 is a detail view of one of the hoop-sections. Fig. 6 is an enlarged detail view showing the joint between the two hoop-sections and a clamp which prevents the joint from collapsing or breaking, and Fig. 7 is a cross-section through the crate in its collapsed or folded condition.

The improved crate of my invention consists of the sections A B, the former consisting of a series of slats 5 and a series of yieldable hoop members 6, while the other section is formed by a similar series of slats 7 and the hoop members 8. The slats forming a part of each section are preferably made of wood, while the hoop-sections 6 are of metal—as, for example, tempered steel plates or strips—but it is evident that other approved materials may be employed in the construction of the sections. The series of slats forming a part of each section are spaced at proper intervals and in parallel relation, and these slats are crossed by the hoop members, the parts being united together by means of rivets 9 or other suitable fasteners. The hoop members being made of elastic material impart a certain degree of flexibility to the crate-sections, and the members 6 8 of the two crate-sections are adapted to be interlocked together or to be connected by suitable means in order to form the complete crate. As shown by Figs. 5 and 6, each hoop member is forked or divided at one end, so as to provide the spaced eyes 10, while the other end of the hoop member is constructed with a single central eye 11. The hoop members of the two sections are so constructed and arranged that the central eye 11 of one member 6 will fit between the spaced eyes 10 of the other member 8, and vice versa, thus bringing the eyes of the two hoop members into coincident relation for the purpose of receiving the connecting-pins 12 or their equivalents. These pins 12 serve to loosely connect the series of hoop members of one section with the corresponding members on the other complemental section, whereby the flexible sections are adapted to be collapsed and folded compactly together, because the hoops or bands formed by the connected members are flexible, and loose joints are provided between the members forming said hoops or bands.

Any suitable means may be adopted to prevent the bands or hoops from collapsing, and thus maintain the crate in a set-up condition to receive the bunch of bananas—as, for ex-

ample, a solid hoop (not shown) may be fitted around the members during the operation of loading the bunch into the crate. I prefer, however, to employ one or a series of clamps in the form shown by Fig. 6, each clamp C consisting of a suitable plate or body *c*, having the forked or slotted legs *c'*. This clamp is adapted to be confined on a crate-section by a suitable flexible connection 13, which may be attached to one of the slats 5 and 7 and is fastened to the clamp. Said clamp is constructed and fashioned to span the joint between the members forming the hoop or band, and the forked or slotted legs of said clamp are arranged to straddle the hoop members on opposite sides of the joints. This attachment and arrangement of the clamp with relation to the joint prevents the hoop from collapsing at the joint, and as it or any desired number of clamps may be employed it is evident that the crate will remain in a substantially firm condition when the load is being placed therein.

D designates a fabric bag which forms a permanent part of the crate, said bag being made of suitable fabric—such as canvas, jute-cloth, &c. This bag is arranged longitudinally within the crate, and one end of the bag is closed, as at *d*, said end being intended to remain permanently closed during the service of the crate. The contracted and closed end *d* of the bag should terminate at or about the second hoop or band of the structure. The bag is loosely confined within the crate by a series of loops *d'*, which are attached to the bag at different points along its length and are engaged with the hoops or bands. The open end of this bag D is adapted to extend from and a suitable distance beyond one end of the crate which is formed by the sections A B, and this open end of said bag is adapted to be folded backward upon the crate when the banana bunch is loaded into the structure. In order to easily and quickly insert the bunch into the bag and to fold the open end of the latter around the crate, I have provided a novel construction of the bag by which the mouth of the open end is enlarged or expanded. This end is attained by cutting a V-shaped or tapered incision into the fabric of the back at the open end thereof, and in said cut-out portion is inserted a gusset d^2, the edges of which are sewed to the bag. This inserted gusset expands or widens the mouth portion of the bag, so that it can be readily folded back upon the comparatively rigid framework formed by the sections A B.

14 15 designate the chains or cables which are arranged across the end portions of the crate, each cable being provided at its ends with the clips 16, that are engaged with one of the bands or hoops. As shown by Fig. 4, each chain or cable is made in sections having one end attached to a coupling-link 17, which is adapted to engage with the other section of the chain or cable and to be held against accidental movement by a loop 18.

In order to expand the crate during the operation of setting up the same before loading the bunch of bananas into the fabric bag D, I employ the expanding-former E, the same being preferably made of a cylindrical metallic tube having a conical or tapered end *e* and converging flattened sides *e'*. In using the former it is thrust into the bag D, so that the tapered end of the former will enter into the closed end *d* of the bag; but as this former is only used temporarily it is evident that said former is intended to be withdrawn before the load is placed in the bag.

F designates the paper bag which surrounds the bunch of bananas and is placed thereon before the bunch is lowered into the crate. This paper bag prevents the fruit from soiling the fabric bag D, and it also serves as a means of keeping the bunch of fruit in a clean condition, of protecting the fruit from insects during the summer season, and of excluding cold air from the fruit during the winter-time.

In operation the cylindrical former E is placed in an inverted position upon the floor or any other surface, and the crate is turned over and upon the former, so that the latter will readily enter the bag through the open lower end thereof. The insertion of the former into the crate operates to expand the bag and to make the closed end *d* project well toward one end of the crate. While the parts are in the position shown by Fig. 1, the operator adjusts the chain 14 across the closed neck *d* of the bag, and the proper number of clamps C are applied to the members of the hoops or bands so as to cross the joints therein and to prevent the bands from collapsing. The former E having served its purpose, it is withdrawn from the bag, and the crate is turned upside down, thus bringing the open end of the bag D uppermost. This open end of the bag is folded back to allow the bunch of bananas to readily pass into the bag; but before the load is placed into the crate the paper bag F is securely placed around the bunch of fruit. After depositing the load into the fabric bag D the open end of the bag is folded inwardly and secured in any suitable way—as, for example, by sewing the plaited or folded parts of the mouth—and finally the chain 15 is adjusted across the open end of the crate.

The skeleton framework formed by the sections A B serves to protect the fruit or other commodity from injury during transportation, and the chains 14 and 15 partly sustain the weight of the load and relieve the fabric bag D and its loops *d'* from some of the strain and weight of the load.

The banana bunch may easily be removed from the crate when it reaches its destination, and the clamps C may be removed from

the bands or hoops, so as to allow the crate to be collapsed or folded into a compact condition. (Shown by Fig. 5.)

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A shipping-crate of the class described, comprising the complemental members connected together for folding compactly one on the other and adapted to be set up to form an open-ended rigid supporting framework, means for locking the members of said framework rigidly in their active positions, and a bag attached to and disposed within said members and collapsible or expansible with the framework.

2. A shipping-crate of the class described, comprising complemental members each having slats and yieldable band or hoop sections, said members having the band or hoop sections thereof connected together to permit the members to be folded compactly or to be assembled to form a rigid framework, means for locking said band or hoop sections to retain the members in their active positions, and a bag collapsible or expansible with the framework formed by the members.

3. A shipping-crate of the class described, comprising a collapsible framework having complemental members each formed by a series of slats and a series of band or hoop sections, means for pivotally connecting the hoop or band sections of said members, means for locking said band or hoop sections in place on the adjustment of the complemental members in their active positions, and a bag collapsible or expansible with the framework formed by the sections.

4. A shipping-crate of the class described, comprising an open-ended surrounding framework, a bag attached to said framework and provided in its open end with an inserted gusset adapted to form an expanded or enlarged mouth, said expanded mouth portion of the bag adapted to extend beyond the framework, and means adapted to extend across the end portions of the framework and the bag when the latter is closed, said means adapted to partly sustain the load in the bag.

5. A knockdown shipping-crate, comprising a surrounding framework, and a bag arranged within and attached to said framework, said bag having a closed end terminating within the framework, and an expanded end which is formed by an inserted gusset.

6. A knockdown shipping-crate, comprising a surrounding framework, a bag arranged within and attached to said framework, and load-take-up chains or cables attached to the framework and across the closed ends of the bag.

7. A knockdown shipping-crate, comprising foldable sections having attached hoop members, means for connecting said hoop members together, and clamps arranged to straddle the joints between the hoop members and to maintain the hoops in non-collapsible order and to hold the foldable sections in rigid operative condition.

8. A knockdown shipping-crate, comprising foldable members having attached hoop-sections, means for detachably connecting the hoop members together, and clamps straddling the hoop members and spanning the joints between the same, said clamps holding the hoops and the foldable members in operative condition.

9. A shipping-crate of the class described, comprising a framework, a bag supported within the framework, and load-sustaining means disposed across end portions of the bag when the same are closed, said means being attached to the framework and adapted to be readily displaced to permit access to an end portion of the bag.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JACOB CONRAD.

Witnesses:
CHAS. MONDENG,
W. B. BOARDMAN.