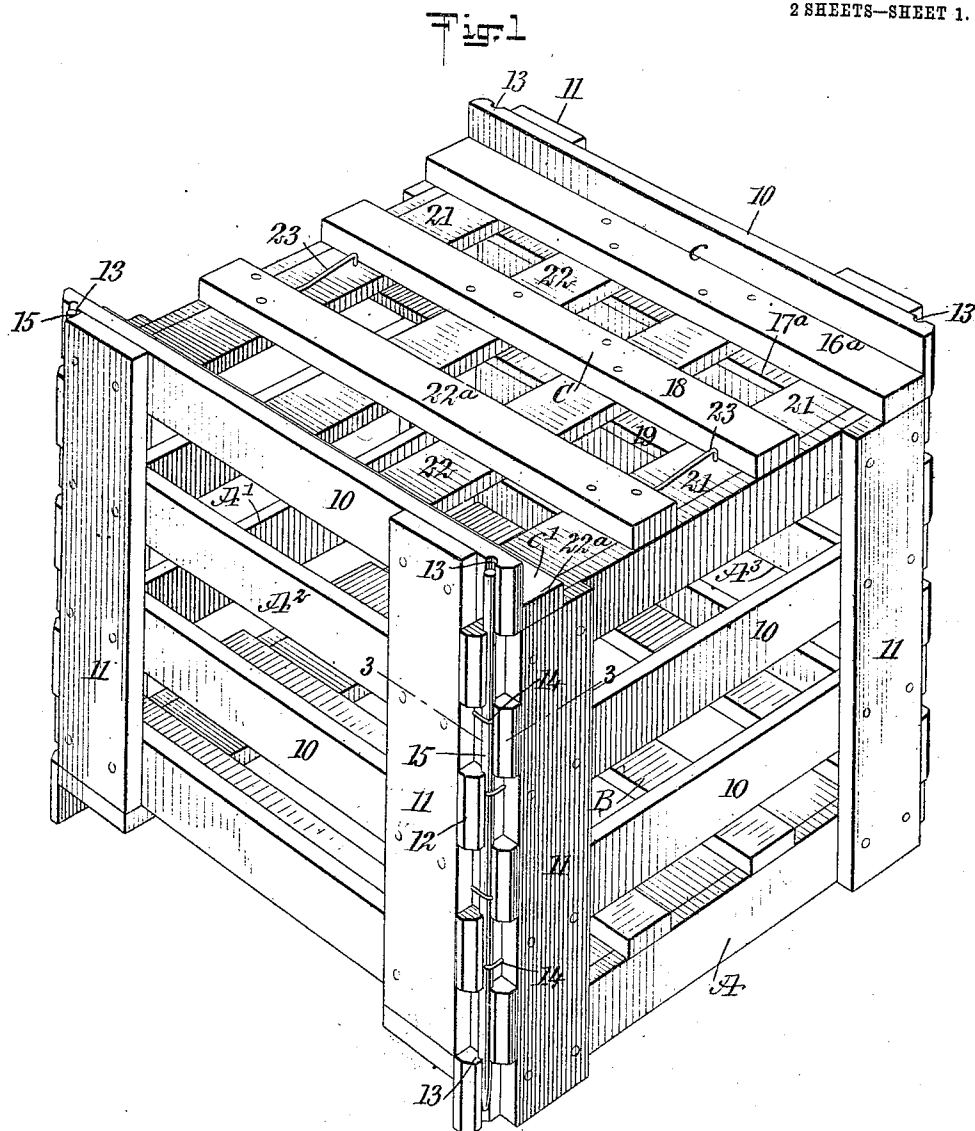


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PATENTED DEC. 10, 1907.

A. WILLIMAN.
KNOCKDOWN CRATE.
APPLICATION FILED FEB. 21, 1907.

2 SHEETS—SHEET 1.



WITNESSES

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KNOCKDOWN CRATE.

No. 873,645.

Specification of Letters Patent.

Patented Dec. 10, 1907.

Application filed February 21, 1907. Serial No. 358,536.

To all whom it may concern:

Be it known that I, ANTON WILLIMAN, a citizen of the United States, and a resident of Washington, in the county of Berkshire and State of Massachusetts, have invented a new and useful Improvement in Knock-down Crates, of which the following is a full, clear, and exact description.

The purpose of the invention is to provide a simple and economic construction of a knock-down crate, which construction admits of the members of the crate being expeditiously and conveniently separated and packed in a small compass, and as readily and quickly set up to receive merchandise, and wherein the cover can be equally conveniently and expeditiously placed and locked in position or unlocked and removed from the body of the crate.

The invention consists in the novel construction and combination of the several parts as will be hereinafter fully set forth and pointed out 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 perspective view of the complete crate set up for transportation; Fig. 2 is a longitudinal section through the crate; Fig. 3 is a horizontal section taken through one corner of the crate practically on the line 3—3 of Fig. 1, the view being drawn upon an enlarged scale; and Fig. 4 is an edge view of the members of the crate separated and folded for return delivery or for storage.

The crate consists of six separable sections, namely: two side sections A and A', two end sections A² and A³, a bottom section B and a top section C. Each side section A and A' and end section A² and A³ consists of vertical battens 11 to which are secured any desired number of horizontal slats 10, located one above the other, being placed at desired intervals apart. Although two battens only are shown in Fig. 1, in the construction of a crate more than that number may be employed, as for example, indicated in Fig. 4, wherein the several sections of the crate are folded one upon the other. These slats 10 of the said side and end sections of the crate extend beyond their connecting battens or standards 11, and such projecting ends of the

slats are designated in the drawings as 12 55 and in each projecting end 12 of each slat 10, a vertical groove 13 is produced and when the side and end sections are placed together the projecting ends of one side section are made to enter the space between the projecting ends of the opposing or abutting section, whereby the vertical grooves 13 in the extending ends 12 of the slats 10 are brought in alinement so as to receive a connecting rod 15 that is passed down, one at each corner of the crate through the alining grooves 13, as is particularly shown in Fig. 1, so as to tie the said side sections together, but the tie rods 15 would not accomplish this result unless there was some means other than the grooves 13 to hold them in place. Such means consists of hooks 14 that extend from the outer edges of the battens or uprights 11 between the projecting ends 12 of the accompanying slats 10, as is shown in Figs. 1 and 2, and these hooks 14 which are preferably of a spring character encircle the tie or locking pins 15 to a greater or lesser extent and at the same time admit of said locking or tie pins being not only readily and quickly placed in position, but as speedily and conveniently removed from position so as to disassemble the parts of the crate.

The bottom B consists of horizontal tie strips 16 that correspond to the battens or uprights 11 of the side and end sections of the crate and slats 17 secured to said tie strips, and in assembling the parts of the crate after the last side is placed in position the bottom is introduced and the ends of the slats 17 are made to extend over and rest upon the upper edges of opposing lower slats 10 of opposing side members A and A' as is shown in Figs 1 and 2.

The cover C is of peculiar construction. It is adapted to be contracted when initially placed in position and it is expanded to lock it in position, and it is necessary that the cover should be of very simple construction so that its operation can be readily understood by any person of ordinary intelligence. To that end I have made the cover in two sections c and c', the sections being slidable to and from each other. The section c comprises two end slats 16^a and 17^a that are suitably spaced and centrally located, correspondingly spaced slats 18 and 19, together with any desired number of parallel single

upper slats 20, and the double slats 16^a and 17^a and 18 and 19 are held suitably spaced apart by slats 21 that run in the same direction as do the slats 10 of the side members of the crate, as is best shown in Fig. 2.

The section *c'* of the cover C consists of a series of slats 22 parallel with and adapted to slide between the slats 21; and any desired number of cross slats 22^a. In Fig. 1 the section *c* is shown provided with but two sets of double slats 16^a and 17^a, 18 and 19, and the section *c'* with but two parallel slats 22^a. This number was selected in order to render the view more clear, but in Fig. 2 a larger number of single slats 20 are added to the section *c* and the slats 22^a are added to the section *c'*, since I desire it to be understood that the crate may be constructed in any desired size.

The slats 22 of the section *c'* pass through the spaces between the double slats 16^a, 17^a, 18 and 19, and in placing the cover in position on the body of the crate the two central cross bars, namely, the upper cross bar 18 of the section *c*, and the adjacent bar or slat 22^a of the section *c'* are drawn together, thus shortening up the cover in one direction, enabling it to be readily placed in position on the upper edges of the side sections A and A' which are lower than the corresponding portions of the end sections A² and A³. After the cover is in position on the body of the box, the upper cross bar 18 of the section *c* and the bar or slat 22^a of the section *c'* that had been drawn together or forced apart, thus carrying the ends of their crossing slats 21 and 22 below the edges of the upper slats 10 of the end sections A² and A³ of the crate as is shown in Fig. 2, and the cover is held in its locking position by means of springs 23 located between the central slats 18 and 22^a being attached to and extending longitudinally of the slats 21 of the section *c*, as is best shown in Fig. 1, and these springs 23 are preferably what is generally known as umbrella springs, being practically flush at either of their ends with the parts to which they are attached, and being elevated therefrom at their opposite ends so that when the slats 18 and 22^a are held so until the springs 23 are pressed downward into suitable slats provided for them in the customary way in their supports, and when the two said slats 18 and 22^a are drawn together the springs being pressed downward one of the bars righting over the said springs will be held locked relatively to the opposing bar until purposely separated therefrom.

When the sections of the box have been separated they are packed one upon the other, as is shown in Fig. 4, occupying but a small amount of room, and the slats of one side section being made to enter the spaces between the slats of another side section,

the bottom is then fitted in the same manner upon the uppermost side section, folded or packed and then the cover is adapted to the bottom, the sections being adjusted until the slats of the cover fit in between the spaces of the slats of the bottom, as is clearly shown in Fig. 4, and the tie rods 15 are placed in the grooves of the various sections being held in place by the spring keepers or hooks 14 and in this manner the said rods are not liable to become lost and are always at hand for use.

I desire it to be understood that in practice the slats 22 are arranged closer together than shown, and said slats 22 are also much closer to the slats 21, so as to render the top stronger than it appears.

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

1. In a knockdown crate, independent side and end sections having interlocking knuckle connections, which connections are provided with vertically alining longitudinal grooves, retaining members carried by said section located between their knuckles, tie rods received by the grooves of the knuckles and said retaining members, a removable top section in two parts slidable one upon the other and adapted to be inserted between the side and end sections and expanded to retain said members in place, a locking device carried by one top section for engagement with the other, and a removable bottom supported by the body of the crate.

2. In a knockdown crate, interlocking and separable side and end sections, each section being constructed of end standards, and horizontal slats secured to the standards, the ends of the slats extending beyond the outer longitudinal edge of the standard, the projecting ends of the slats of adjoining sections being one above the other and said projecting ends being provided with alining grooves, tie rods passed through the grooves of the interlocking projecting ends of the slats, locking devices for the rods, a separable top constructed in sliding sections, and adapted to be inserted between the side and end sections and expanded to retain said members in place and a removable bottom supported by the said side and end sections.

3. In a knockdown crate, a body composed of separable side and end sections, each consisting of standards and slats crossing the standards and extending beyond the outer longitudinal edges of the outer standard, said projecting ends of the slats constituting knuckles, the knuckles of one section having interlocking connection with those of an abutting section, said knuckles being provided with alining longitudinal grooves, retaining members located between said knuckles, tie rods passed through the retain-

ing members entering the said grooves, and a sectional slidable top for the body, and adapted to be inserted between the side and end sections and expanded to retain said members in place and a removable bottom therefor.

In testimony whereof I have signed my

name to this specification in the presence of two subscribing witnesses.

ANTON WILLIMAN.

Witnesses:

FRED W. STRAY,
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