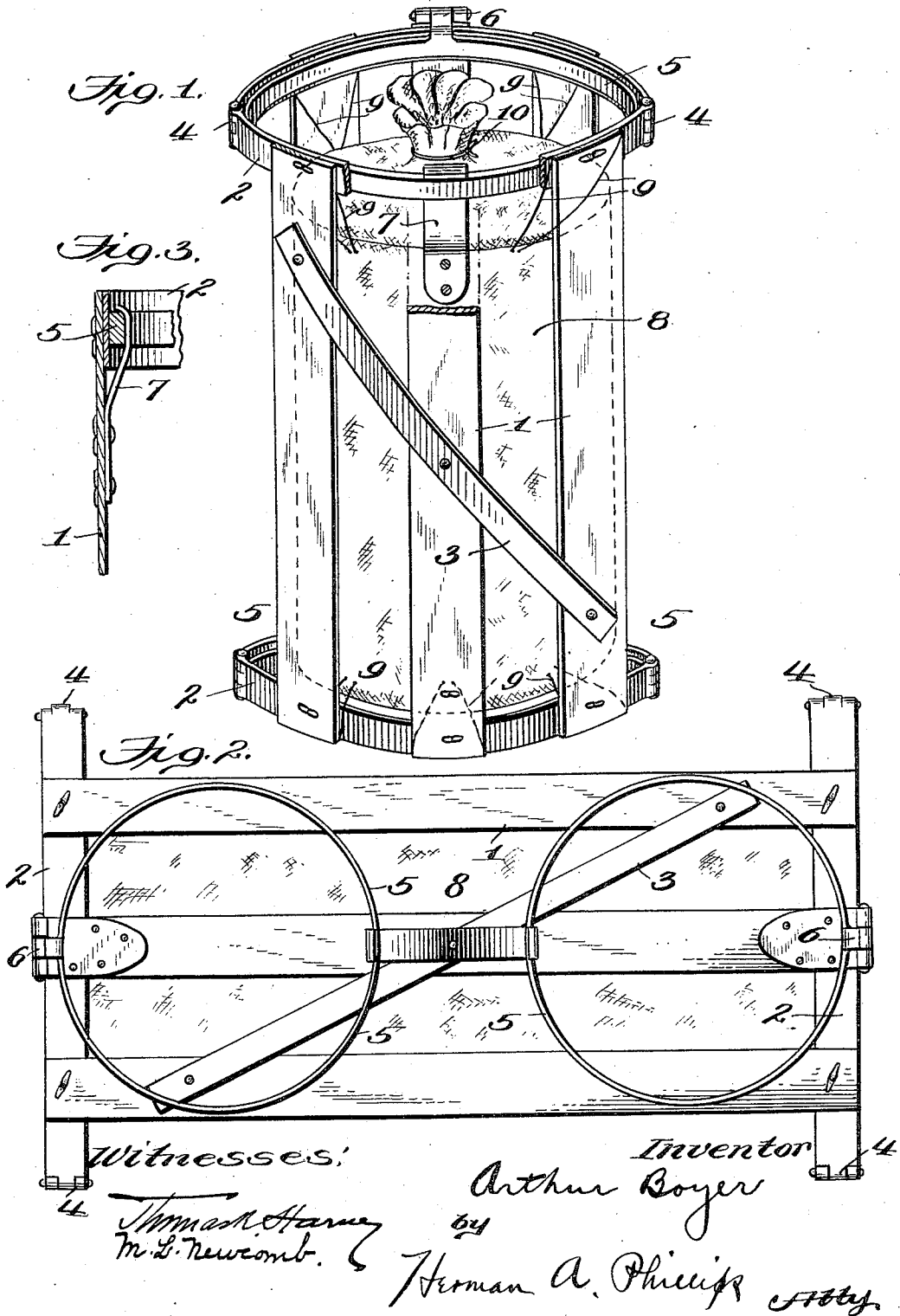


A. BOYER.
 COLLAPSIBLE SHIPPING CRATE.
 APPLICATION FILED JULY 31, 1912.

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ARTHUR BOYER, OF BIGGSVILLE, ILLINOIS.

COLLAPSIBLE SHIPPING-CRATE.

1,065,026.

Specification of Letters Patent.

Patented June 17, 1913.

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To all whom it may concern:

Be it known that I, ARTHUR BOYER, a citizen of the United States, residing at Biggsville, in the county of Henderson and State of Illinois, have invented certain new and useful Improvements in Collapsible Shipping-Crates, of which the following is a specification.

The present invention has reference to collapsible shipping crates, and it resides, briefly in the production of a highly improved and extremely efficient and durable article of the type stated which is designed primarily for shipping bunches of bananas and which may be manufactured at a low cost and readily and quickly collapsed and expanded.

The particular improvements, wherein the actual invention is comprehended, relate to the devices for maintaining the crate in expanded condition, and for holding the aforesaid expanding devices themselves in place.

An embodiment of the invention is illustrated in the accompanying drawing, wherein:—

Figure 1 is a perspective view of the improved crate in expanded condition; Fig. 2 is a plan view, showing the crate collapsed; and Fig. 3 is an enlarged detail view of one of the retaining devices.

The crate shown in said drawing consists of a collapsible body comprising a series of parallel slats or staves 1 which are fastened at their ends to a pair of rings 2 and are further connected together and braced by flexible metal strips 3 arranged spirally or diagonally, or in any other suitable manner, as many of these strips being used as may be considered advisable. Each of the afore-mentioned rings 2 preferably comprises a pair of semi-circular spring steel sections whose mutually-adjacent ends are hinged together as indicated by the numeral 4, such construction providing for the collapsing of the crate, since the hinge joints between the ring sections permit the latter to be folded directly upon each other, and the crate in consequence to be flattened out, as will be understood. The aforesaid ring sections have a tendency to straighten out, by reason of their construction from spring metal, and, in this way, facilitates the collapsing of the crate.

To maintain the crate in set-up or expanded condition and, also, to further

strengthen the same at its ends, there is provided a pair of stiff metal rings 5, each of which has a hinge connection 6 with the adjacent end of one of the staves 1, the hinge members on the rings extending outwardly across the spring collapsing rings 2, as shown. This particular mounting enables the expanding rings 5 to be swung bodily into and out of the operative position, according as the crate is to be expanded or collapsed. In the first instance, the expanding rings are moved into a position wherein they are encircled by and are concentric with the collapsing rings, so that the said collapsing rings exert their pressure directly upon them; and in the other instance they are swung bodily out of the crate until they lie flat on the staves as the crate is flattened out. The two positions just described are depicted, respectively, in Figs. 1 and 2.

Means is provided for retaining the expanding rings 5 in operative position, and such means may advantageously consist of spring catches 7 secured to the inner face of one of the staves 1 at the opposite ends thereof. These catches are preferably in the form of hooks which are adapted to engage over the adjacent expansion rings, in the manner represented in Fig. 3, the said expansion rings having an appreciably smaller width than the collapsing rings 2, so that the bill portions of the catches are thus remote from the outer edges of the rings 2 and the outer ends of the stave.

The two hinge joints 4 between the sections of the rings 2, at each end of the crate, are arranged at 90° to the corresponding hinge 6 and the catch 7, as shown in Fig. 1, to facilitate the engagement and disengagement of the last-mentioned element with and from the ring 5, incidental to the operations of expanding and collapsing the crate. Assuming that the crate is in the collapsed condition, represented in Fig. 2, and is to be expanded, it is necessary to press the joints of each ring 2 toward each other and then swing the expanding rings 5 outwardly of the crate and engage them with the catches 7; while to collapse the crate the expanding rings are disengaged from the catches and then swing inwardly of the crate, the two sectional spring rings 2 causing the crate to flatten out during the inward movement of the expanding rings.

The fruit or other articles to be shipped

are preferably contained in a sack or bag 8 of suitable textile or other material, the said bag being disposed within the crate and fastened to the upper and lower collapsing rings 2 by stitching 9, or the like. 5 The bag, as will be apparent, will collapse and expand with the crate and its mouth may be closed by a drawstring 10, whose ends may be tied together after the packing 10 of the bag has been completed. Where bananas are to be shipped, it is possible to insert a bunch into the open mouth of the bag and then to close the same by merely tightening the draw string. The crate may 15 then be shipped to its destination.

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

1. In a collapsible crate, the combination 20 with circular folding ends and staves attached thereto, of a ring for and hinged at each end of the crate and adapted to

swing bodily within the crate to hold the same expanded, means for holding the rings within the crate, and means for securing 25 said rings on the outside of the crate when the same is collapsed.

2. The combination in a collapsible crate, of a pair of hinged end rings and staves connecting them, a solid ring hinged at 30 each end of the crate with its hinge joint at right angles to the joint of the hinged rings, spring hooks on the end rings for holding the solid rings within the crate to expand the end rings, and spring hooks at the out- 35 side of the crate for holding said solid rings when the crate is in folded position.

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

ARTHUR BOYER.

Witnesses:

ALBERT P. McHENRY,
ALMA M. PEARSON.

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