No. 666,587. Patented Jan. 22, 1901.

W. A. WOOLSEY.

KNOCKDOWN CRATE.

(Application filed July 26, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

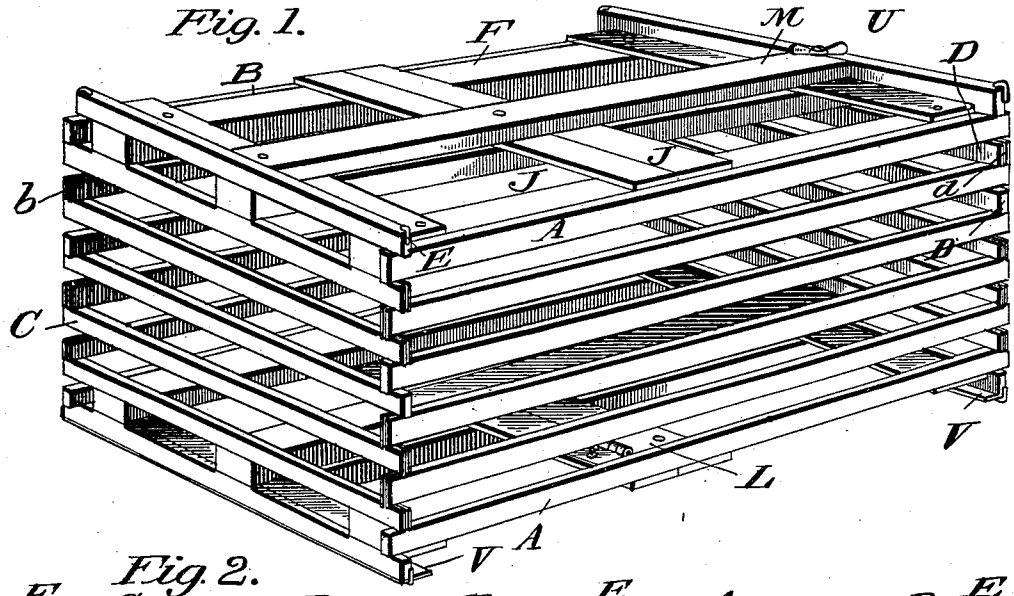


Fig. 2.

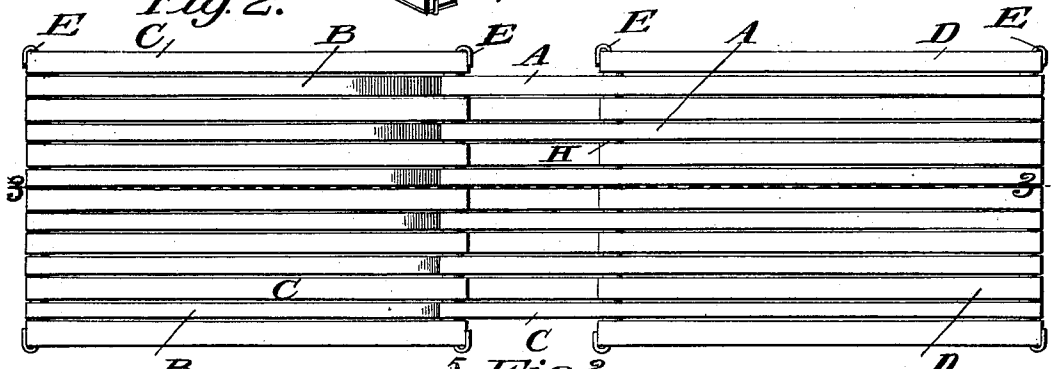


Fig. 3.

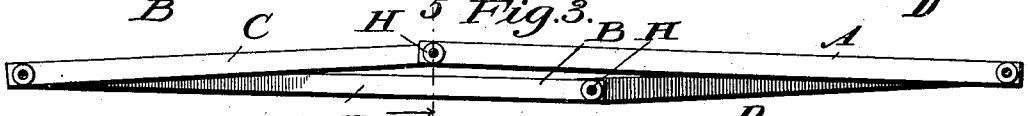
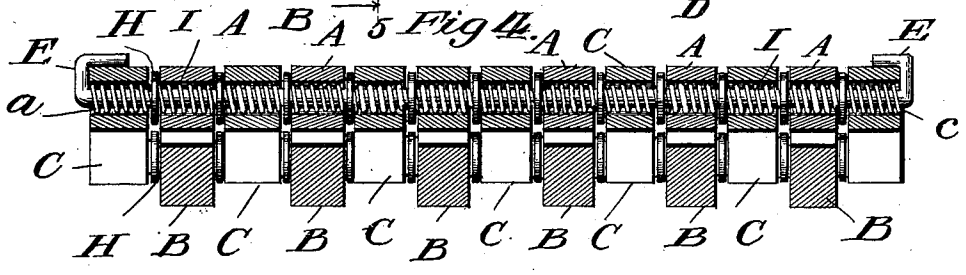


Fig. 4.



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(Application filed July 26, 1900.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 5.

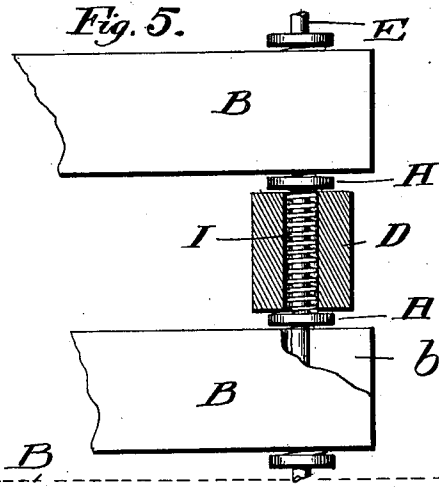


Fig. 9.

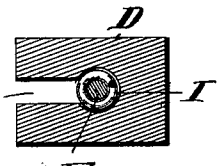


Fig. 6.

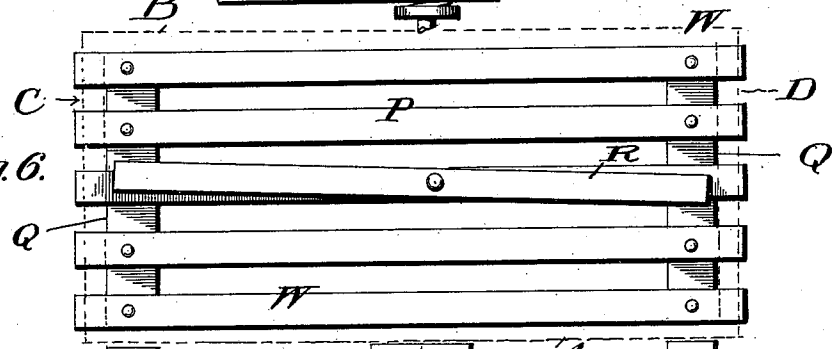


Fig. 7.

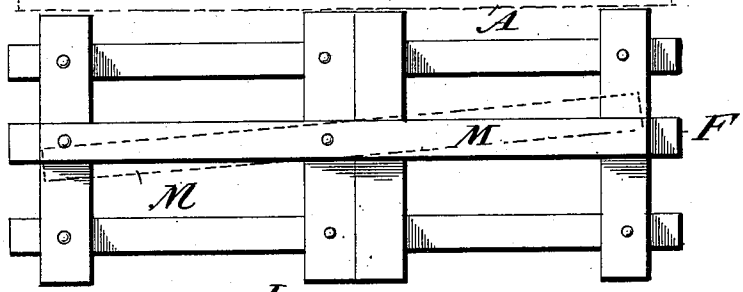
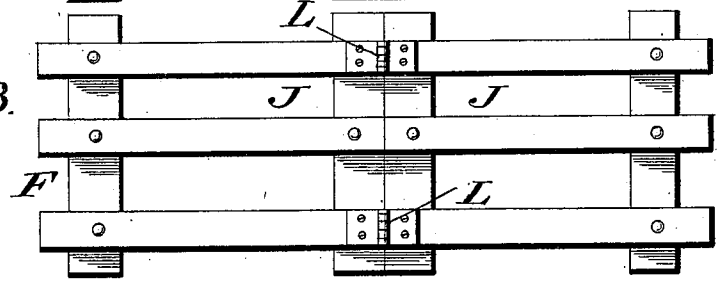


Fig. 8.



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UNITED STATES PATENT OFFICE.

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KNOCKDOWN CRATE.

SPECIFICATION forming part of Letters Patent No. 666,587, dated January 22, 1901.

Application filed July 26, 1900. Serial No. 24,932. (No model.)

To all whom it may concern:

Be it known that I, WARREN A. WOOLSEY, of Ypsilanti, in the county of Washtenaw and State of Michigan, have invented certain new and useful Improvements in Knockdown Crates; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

This invention is an improvement in knockdown crates; and its objects are to provide a simple strong collapsible crate with removable top and bottom and adjustable partitions, if desired, and the body of the crate may be made of slats and connected at the corners in such manner that the crate may be collapsed, the slats being so connected at the corners as to permit of the expansion and contraction of the slats without distorting the crate, and the whole being so constructed that the crate can be very rapidly collapsed or knocked down without the employment of any tools.

The invention therefore consists in the novel construction of the crate and the novel combination of the parts thereof hereinafter claimed, and illustrated in the accompanying drawings and described with reference thereto.

In said drawings, Figure 1 is a perspective view of a complete crate in extended position. Fig. 2 is a view showing the crate collapsed or knocked down. Fig. 3 is a longitudinal section through the same on line 3 3, Fig. 2. Fig. 4 is an enlarged detail sectional view showing the manner of connecting the side and end slats of the crate at the corners. Fig. 5 is an enlarged sectional view of Fig. 3 on line 5 5, Fig. 3. Fig. 6 is a view of one of the partitions detached. Fig. 7 is a view showing the top. Fig. 8 is a view showing the bottom. Fig. 9 is a detail cross-section.

The sides of the crate are composed of a number of parallel slats A B. The ends of the crate are composed of a number of parallel slats C D, the ends of which interlock and alternate with the side slats A B in log-cabin style. Through the interlocked ends of these slats, at the corners of the crate, pass rods or wires E, which hinge the sides and ends together. The ends of the outermost slats A and C are perforated at *a c* for the passage of the rod E, and, if desired, one or more intermediate bars A C may be used, the ends of these bars being similarly perforated for the passage of the wires E, and in this manner the sides are held firmly together. The ends of the bars B and D are slotted, as shown at *b* and *d*, so that they can be easily slipped onto the wires in assembling the crate; but when all the end rods E are in place these slats C D are securely held in position while being free to expand and contract without necessarily affecting the position of the rods E. Preferably metal washers H are strung on the rods E between the ends of the slats. As an additional provision for expansion, coiled springs I are slipped in the holes *a c* in the slats A C or in all the slats and project slightly beyond the bars against the washers H. These springs while normally holding the interlocking ends of the slats close together will permit expansion thereof lengthwise of the rods. These provisions for expansion of the slats of the crate constitute a very useful feature thereof, as the crates are subjected to all sorts of weather, and unless such arrangement was made the slats would warp and become distorted and the utility of the crate be impaired. The cover F of the crate is also preferably made of slats and in two transverse halves J, composed of longitudinal pieces or slats connected by transverse pieces. The halves are hinged together on the under side, as at L, and on one-half is a longitudinal bar M, which may be rigidly fastened to one-half thereof, as in Fig. 7, or pivoted thereon, as in Fig. 6.

To put the top in place, the outer ends of the halves J are slipped between the outermost bars C D of the end pieces, as shown, and then the top is flattened out and the bar M turned until its end is caught under a button U or plate V, attached to the outer end bars C D, as shown in the drawings. So long as the bar M is held in this manner, the top is securely held and cannot be folded or removed. When it is desired to remove the top or bottom, it is simply necessary to spring the bar M around or release it from the fastening U or V. Then the cover can be folded, as indicated in the

drawings, and easily removed. The bottom of the crate can be made in the same manner as the top.

The crate may be provided with removable partitions W, only one being shown in the drawings, however. This partition consists of a number of longitudinal slats P, connected by end pieces Q, the slats P being substantially as long as the side bars of the frame, so that when the partition is slipped in the crate it can be supported on the end bars, as indicated in the drawings by dotted lines in Fig. 6. On the partition is pivoted a bar R, which after the partition is placed in position can be turned to a longitudinal position in the crate, as shown, in which position its ends will abut against the end bars of the crate and effectively prevent backward or forward movement of the partition, thus locking the same securely in place. It is obvious that if desired these partitions might be utilized for the tops and bottoms of the crate, and in some instances the latter might be used for partitions therein.

Having thus described my invention, what I claim as new is—

1. In a knockdown crate, the combination of the sides and ends composed of a series of longitudinal slats, and wires transfixing the interlocked ends of the slats at the corners and uniting the same, the intermediate slats having open slots whereby they are strung upon the wires and the outer slats having their ends solid and perforated for the passage of the connecting-wire, and washers strung on said wire and interposed between the slats, for the purpose and substantially as described.

2. In a knockdown crate, the combination of the sides and ends composed of a series of longitudinal slats interlocking at the corners in log-cabin style, and wires transfixing the interlocked ends of the slats and uniting the same, the inner slats having open slots whereby they are strung upon the wires and the outer slats having their ends solid and perforated for the passage of the connecting-wire, and springs in the perforations of the solid slats to permit expansion of the crate, for the purpose and substantially as described.

3. In a knockdown crate, the combination of the sides and ends composed of a series of longitudinal slats interlocking at the corners in log-cabin style, and wires transfixing the interlocked ends of the slats at the corners and uniting the same; with a removable cover consisting of two slat-sections hinged together at their center, and a bar attached to one of said sections adapted to hold the same extended, substantially as described.

4. In a knockdown crate, the combination of the sides and ends composed of a series of longitudinal slats interlocking at the corners in log-cabin style, wires transfixing the interlocked ends of the slats at the corners and uniting the same, the intermediate slats having open slots whereby they are strung upon the wires and the outer slats having their ends solid; with a cover consisting of two slat-sections hinged together at their center, a bar attached to one of said sections adapted to hold the same extended, and devices on the ends of the crate to engage said bar.

5. In a knockdown crate, the combination of the sides and ends composed of a series of longitudinal slats interlocking at the corners in log-cabin style, and wires transfixing the interlocked ends of the slats at the corners and uniting the same, washers strung on said wires and interposed between the slats; with a removable cover and bottom, each consisting of two transverse sections hinged together at their inner ends adapted when extended to have their outer ends engaged between the adjoining end bars of the crate, and bars respectively attached to one section of the cover or bottom and adapted when the cover is depressed or flattened to engage retaining devices on the ends of the crate and thereby lock the cover and bottom in position, substantially as described.

6. In a knockdown crate, the combination of the sides and ends composed of a series of longitudinal slats interlocking at the corners in log-cabin style, and wires transfixing the interlocked ends of the bars at the corners and uniting the same, the intermediate slats having open slots whereby they are strung upon the wires and the outer slats having their ends solid and perforated for the passage of the connecting-wire, and springs in the perforations of the solid bars to permit expansion of the bars; with a removable cover consisting of two transverse sections hinged together at their inner ends adapted when extended to have their outer ends engaged between the adjoining end bars of the crate, a bar attached to one section of the cover and adapted when the cover is depressed or flattened to engage retaining devices on the ends of the crate and thereby lock the cover in position, all substantially as described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

WARREN A. WOOLSEY.

In presence of—
EDWARD P. ALLEN,
T. L. TOWNER.