(No Model.) 2 Sheets—Sheet 1.

G. H. OWENS.

CRATE.

No. 604,076. Patented May 17, 1898.

FIG. 1.

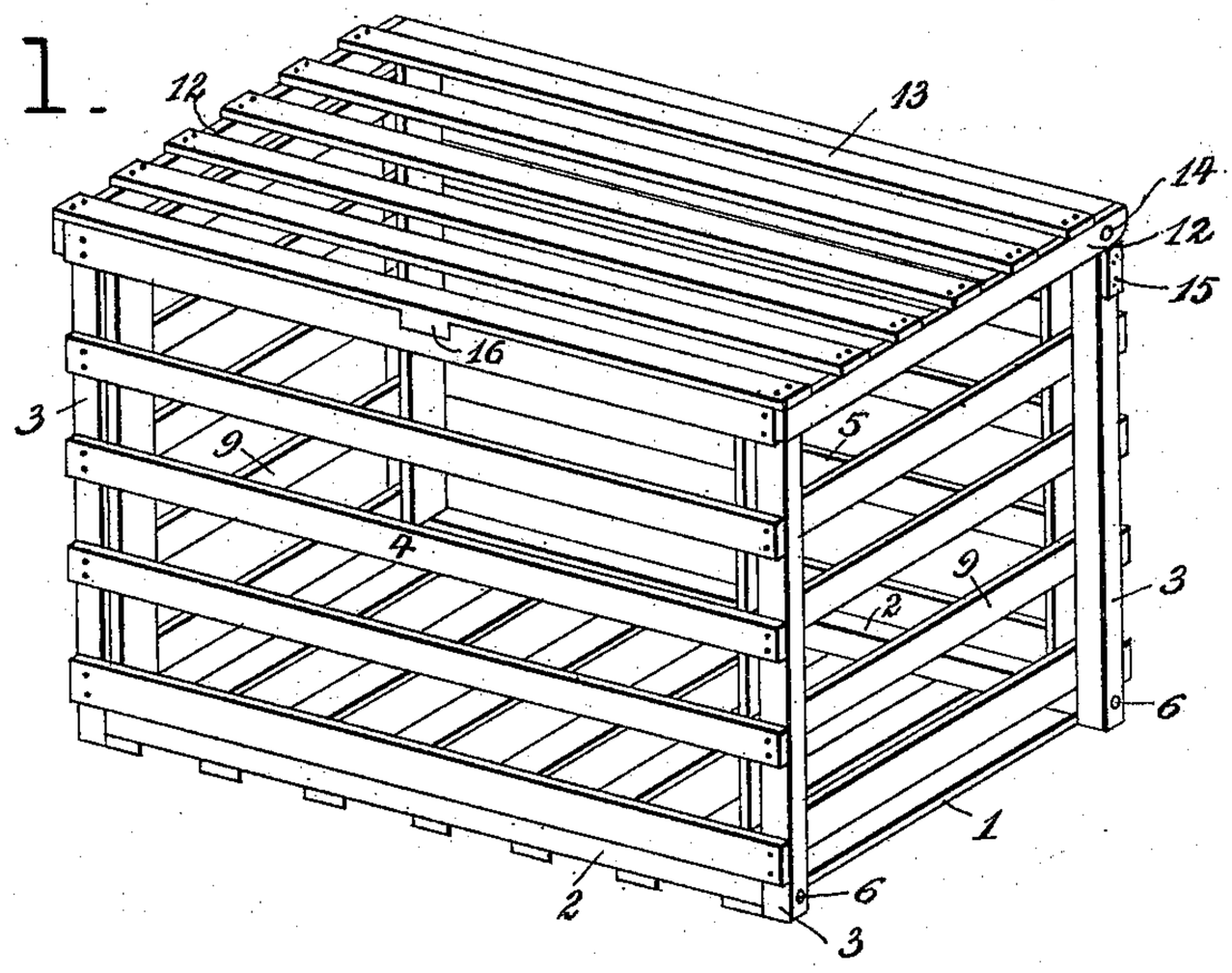
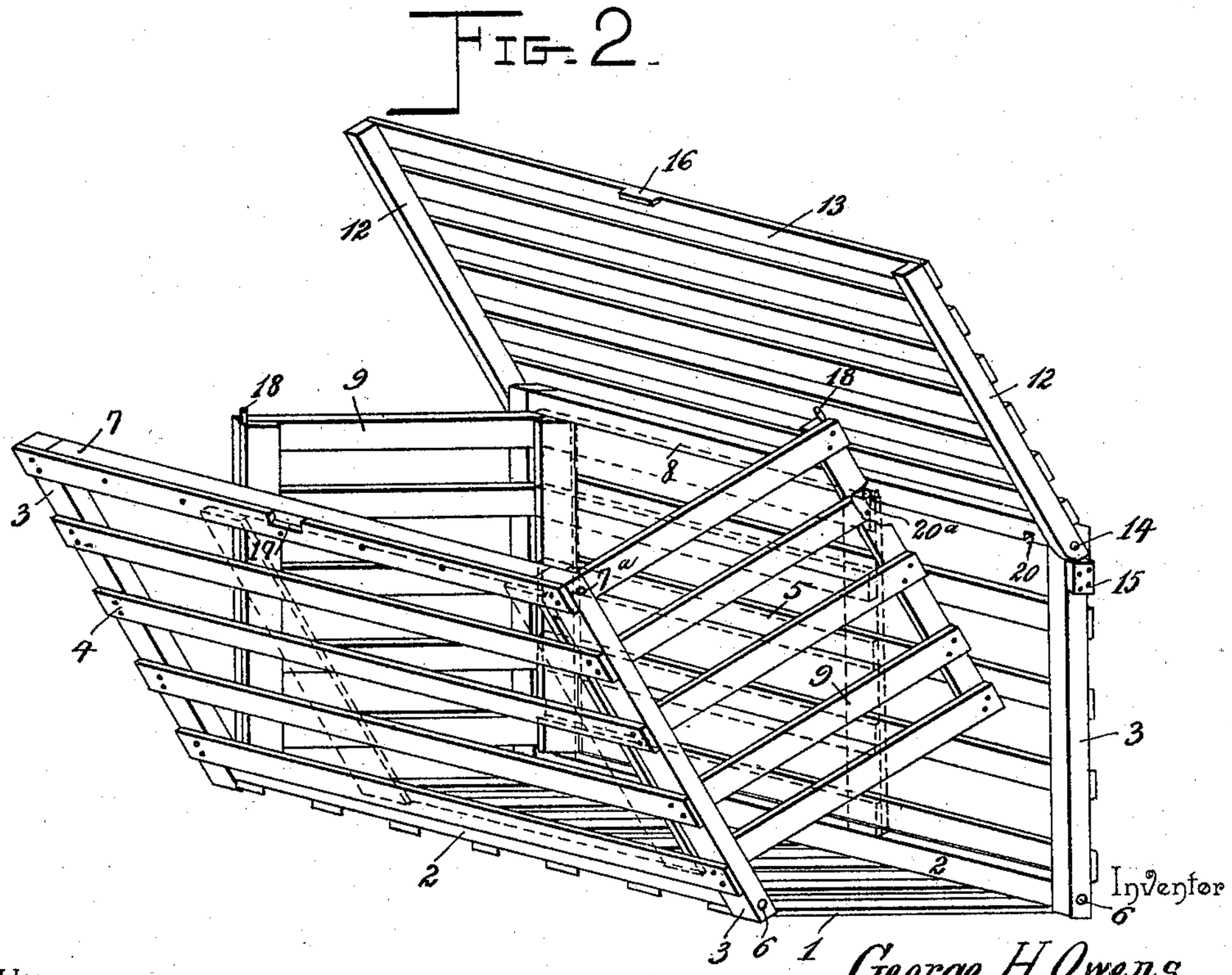


FIG. 2.



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(No Model.) 2 Sheets—Sheet 2.

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FIG. 3.

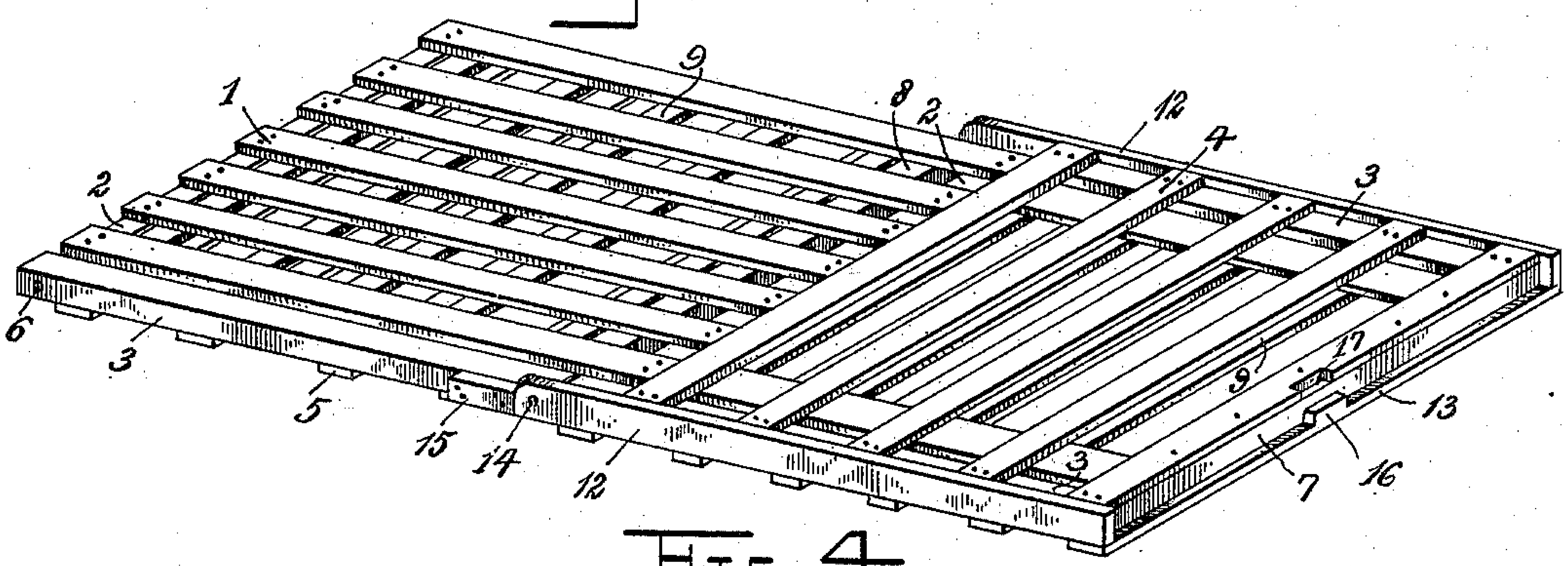


FIG. 4.

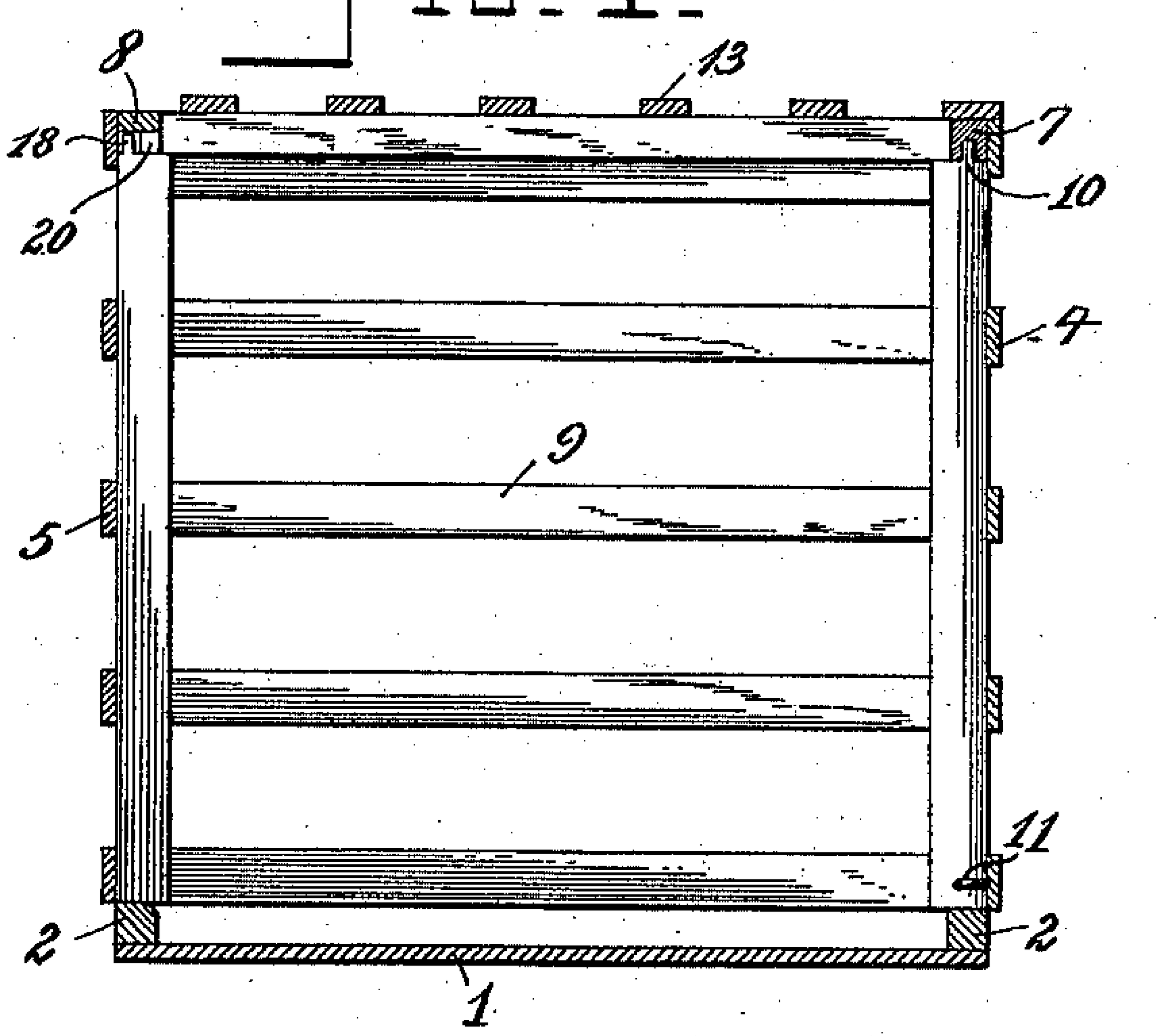
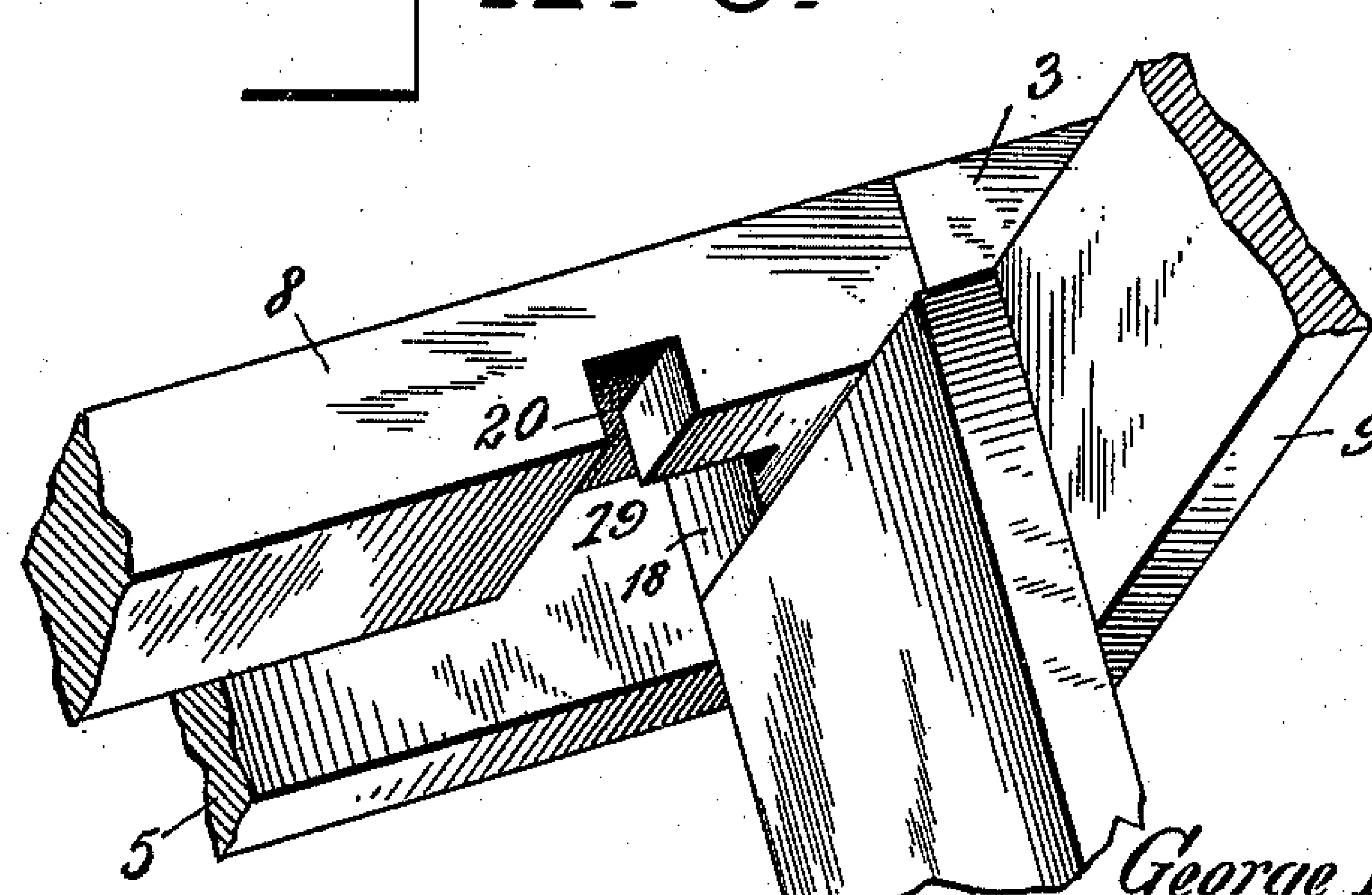


FIG. 5.



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UNITED STATES PATENT OFFICE.

GEORGE HARWOOD OWENS, OF ADDISON, NEW YORK.

CRATE.

SPECIFICATION forming part of Letters Patent No. 604,076, dated May 17, 1898.

Application filed May 28, 1897. Serial No. 638,572. (No model.)

To all whom it may concern:

Be it known that I, GEORGE HARWOOD OWENS, a citizen of the United States, residing at Addison, in the county of Steuben and State of New York, have invented a new and useful Crate, of which the following is a specification.

My invention relates to crates, and particularly to folding or collapsible crates for shipping poultry, produce, and other merchandise; and the object in view is to provide a simple and durable construction and arrangement of parts adapted to fold into such relative positions that when collapsed the package is of even thickness to provide for tiering a plurality of folded crates in compact form.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view, in its operative position, of a crate constructed in accordance with my invention. Fig. 2 is a similar view showing the ends disconnected from the side walls and the front side inclined outwardly, as in the operation of folding. Fig. 3 is a similar view showing the crate folded. Fig. 4 is a vertical sectional view taken contiguous to and parallel with the plane of one of the end walls with the parts in their operative positions. Fig. 5 is a detail view in perspective of a portion of one end of the crate, showing the joint between the free end of the end wall and the adjoining side wall.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

The crate illustrated in the drawings is of slatted construction adapted for poultry or large fruits or for containing boxes of smaller fruits; but it will be understood that the walls thereof may be made solid or otherwise constructed to suit the particular class of merchandise to be shipped therein.

In the drawings, 1 designates a bottom provided with side cleats 2, in contact with the extremities of which are arranged the end cleats 3 of the front and rear side walls 4 and 5. The side cleats 2 of the bottom are provided with terminal dowels or trunnions 6, which extend into suitable bearings in the projecting low extremities of the end cleats 3, and thereby pivot the side walls upon the floor or bottom to adapt them to occupy positions in the plane of said bottom. The side walls are also provided with top cleats 7 and 8, between which and the plane of the upper sides of the bottom cleats 2 are hinged the end walls 9, the upper edges of said end walls being provided at one end with trunnions or spindles 10, mounted in suitable bearings in the contiguous cleats 7, and being mounted contiguous to their lower edges in bearing-clips 11, secured, respectively, to the side walls. These end walls are of a height approximately equal to or less than the interval between the contiguous sides of the upper and lower cleats 7 and 2, and are also of a length less than the interval between the opposite end cleats 3 of the side walls, whereby when the crate is in the folded position, illustrated in Fig. 3 said end walls fold within the side walls, with their exposed surfaces flush with the corresponding surfaces of the cleats at the end and upper edges of the side walls. Furthermore, inasmuch as the cleats 2 on the bottom are equal in projection from the bottom with the cleats at the end and upper edges of the side walls it will be seen that when the side walls are in the horizontal plane of the bottom the end and upper cleats of the side walls will be flush at their exposed or upper surfaces with the corresponding surfaces of the cleats 2.

Hinged to the upper edge of the side wall 5 by means of depending flanges or cleats 12, arranged in contact with the outer surfaces of the end cleats 3, is a top or cover 13, terminal trunnions or spindles 14 being arranged at the upper corners of the side walls to fit in bearings in the flanges or cleats 12 to hinge the top thereto.

In the construction illustrated the several members constituting the framework of the crate and consisting of the cleats above mentioned are secured together by means of dowels formed integral with said members. For instance, the side cleats 2 of the bottom are provided with terminal reduced extensions constituting the dowels or trunnions 6 to adapt the side walls to fold or assume a position perpendicular to the bottom, and the top cleats 7 and 8 of the side walls are pro-

vided with terminal dowels to engage the side cleats 3. The dowels 7ª of the side wall 4 terminate flush with the outer surfaces of the cleats 3, but the corresponding dowels of the cleat 8 are extended beyond the outer surfaces of the side cleats 3 to form the trunnions or spindles 14. By means of this construction the only metal necessary to be employed is for the nails or similar securing devices by which the strips or other parts forming the body portions of the several walls are attached to the cleats.

Stop-blocks 15 are shown in the drawings attached to the outer sides of the cleats 3 on the side wall 5 to limit the downward movement of the top or cover to a position perpendicular to said side wall, and the free edge of the top is provided with a depending ear 16 to engage a corresponding recess 17 in the upper edge of the opposite side wall 4 when the members are in the operative position illustrated in Fig. 1. It will be understood that the side flanges or cleats 12 of the top fit down over the upper edges of the crate at the ends.

The means which I have illustrated in the drawings for securing the several members of the crate in their operative positions consist of upwardly-extending studs 18 on the free ends of the end walls for respective engagement with seats 19 in the upper cleats 7 and 8 of the opposite side walls. These seats are preferably of bayonet construction, having longitudinal portions arranged parallel with the side walls and having their open ends 20 located at intervals from the end cleats 3. Hence in setting up the crate the end walls are swung outwardly from the planes of the side walls until their studs 18 are arranged in registration with the openings or mouths 20 of the seats, whereupon the movement of the side walls to their operative or upright positions will force the studs into the seats in alinement with the longitudinal body portions thereof. Finally the end walls are pushed outwardly to cause the studs 18 to fit into the outer portions of the seats, and thereby lock the members in their normal positions until the end walls are again swung inwardly sufficiently to bring the studs in alinement with the openings 20. It will be seen that any outward strain applied by the contents of the crate will serve to lock the parts thereof more firmly in their normal positions. When the end walls are folded within the side walls, the studs 18 fit in openings 20ª, as shown in Fig. 2.

To fold the crate embodying my invention, the top is first elevated at its free edge to disengage the ear 16 from the upper edge of the contiguous side wall. The free ends of the end walls are then swung inwardly a distance equal to the lengths of the slots forming the bayonet-seats 19. The outwardly-swinging side wall is then folded outwardly, thus disengaging the studs 18 from the bayonet-seats and causing the members of the crate to assume the position indicated in Fig. 2. The outward swinging movement of the said outwardly-folding side wall is then continued until it reaches a horizontal position in the plane of the bottom wall, and the end wall, which is mounted upon said side wall, is folded inwardly to lie in the planes of the end and upper cleats 3 and 7 of said side wall. The other end wall, which is pivotally mounted upon the inwardly-folding side wall, is then folded to occupy a position in the planes of the upper end cleats of the inwardly-folding side wall, and then the said inwardly-folding side wall is swung over the bottom wall and is moved downwardly until it occupies a position parallel with said bottom wall, the top remaining extended and lying upon and parallel with the outwardly-folding side wall, whereby said top is arranged in the plane of the inwardly-folding side wall. The folded position of the crate is indicated in Fig. 3. In said Fig. 3, however, the crate is shown inverted to illustrate the fact that the flanges or cleats 12 of the top fit outside of the extremities of the outwardly-folding side wall to cause said side wall to lie in the planes of the cleats 12. This construction provides for the protection of the strips forming the side walls when the crate is folded.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described my invention, what I claim is—

1. A crate having a bottom, side walls hinged at their lower edges to the bottom above the plane of its outer surface, to fold respectively inwardly and outwardly, end walls each pivotally mounted at one side edge upon the extremity of one of the side walls, to fold inwardly in contact and parallel with said side wall, and a top hinged at one edge to and carried by the inwardly-folding side wall, and adapted to occupy a position in contact and parallel with the outwardly-folding side wall, whereby the end walls are inclosed between the top, bottom and side walls, substantially as specified.

2. A crate having a bottom provided at its side edges with inside cleats, side walls having inside vertical end cleats depending below the lower edges of said walls to abut against, and being pivotally mounted upon, the extremities of said side cleats above the plane of the bottom, proper, one of the side walls being adapted to fold outwardly to occupy a position in the plane of the bottom, and the other side wall being adapted to fold inwardly over the plane of the bottom, end walls each pivotally mounted upon a side wall and adapted to fold inwardly to occupy a position in the longitudinal plane of the end cleats thereof, and a top pivotally mounted upon the inwardly-folding side wall, to occupy a position in the plane thereof and parallel with the outwardly-fold-

ing side wall, whereby the end walls are inclosed between the planes of the top, bottom, and side walls, substantially as specified.

3. A crate having a bottom provided with side cleats, side walls having upper and end cleats, the lower extremities of the latter being pivotally mounted upon the extremities of said side cleats of the bottom, end walls pivotally mounted respectively upon the side walls to fold inwardly into the planes of the upper and end cleats thereof, and provided at their free ends with upwardly-projecting studs to engage seats in said upper cleats, and hold the side walls in their upright or normal positions, and a top pivotally mounted upon one of the side walls and provided with a depending ear to engage the upper edge of the other side wall, substantially as specified.

4. A crate having a bottom, and side walls hinged at their lower edges to the bottom to fold respectively inwardly and outwardly, end walls pivotally mounted respectively upon the extremities of the side walls to fold inwardly in contact and parallel therewith, and a top hinged to and carried by the inwardly-folding side wall, and adapted to occupy a position in contact and parallel with the outwardly-folding side wall, said top being provided with depending end flanges spaced apart an interval greater than the length of the side walls, to occupy positions outside of the extremities of said side walls when the crate is folded, substantially as specified.

5. A crate having a bottom, side walls hinged at their lower edges to the bottom to fold respectively inwardly and outwardly, end walls pivotally mounted respectively upon the extremities of the side walls to fold inwardly in contact and parallel therewith, means for limiting the outward swinging movement of the end walls when the side walls are in their normal positions perpendicular to the plane of the bottom, and a top hinged to and carried by the inwardly-folding side wall and adapted to occupy a position in contact and parallel with the outwardly-folding side wall, said top being provided with depending end cleats spaced apart at an interval greater than the length of the side walls, and also having at its free edge a depending ear to engage a recess in the upper edge of the outwardly-folding side wall, substantially as specified.

6. A crate having a bottom, side walls hinged at their lower edges to the bottom to fold respectively inwardly and outwardly, end walls pivotally mounted respectively upon the side walls to fold inwardly in contact and parallel therewith, upper inwardly-extending cleats on the side walls, provided respectively at the ends opposite to the pivotal points of said end walls with bayonet-seats of which the inlet-openings are offset inwardly from the planes of the normal positions of the end walls, an upwardly-extending stud carried by each end wall contiguous to its free edge and adapted to enter the bayonet-slot in the upper cleat of the opposite side wall from that upon which said end wall is mounted, and each end wall being also adapted to swing outwardly at its free end after its stud is engaged with said slot, and a top hinged to and carried by the inwardly-folding side wall, substantially as specified.

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

GEORGE HARWOOD OWENS.

Witnesses:
EUGENE WADE,
C. C. MARTIN.