

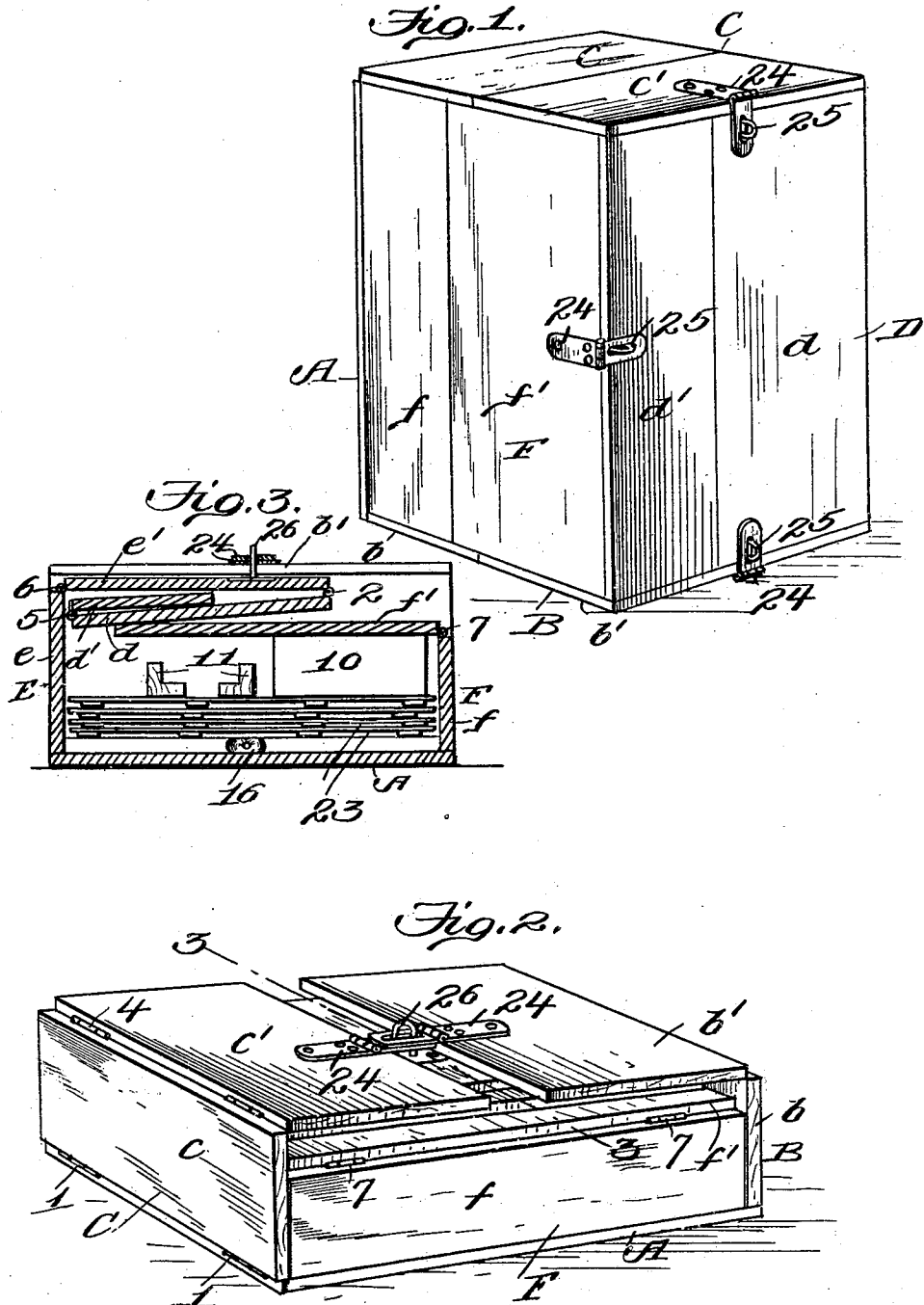
E. F. CRAMER.  
REFRIGERATOR.

APPLICATION FILED SEPT. 16, 1908.

939,891.

Patented Nov. 9, 1909.

2 SHEETS—SHEET 1.



Witnesses:  
*W. H. Nesler*  
*J. D. Keifer*

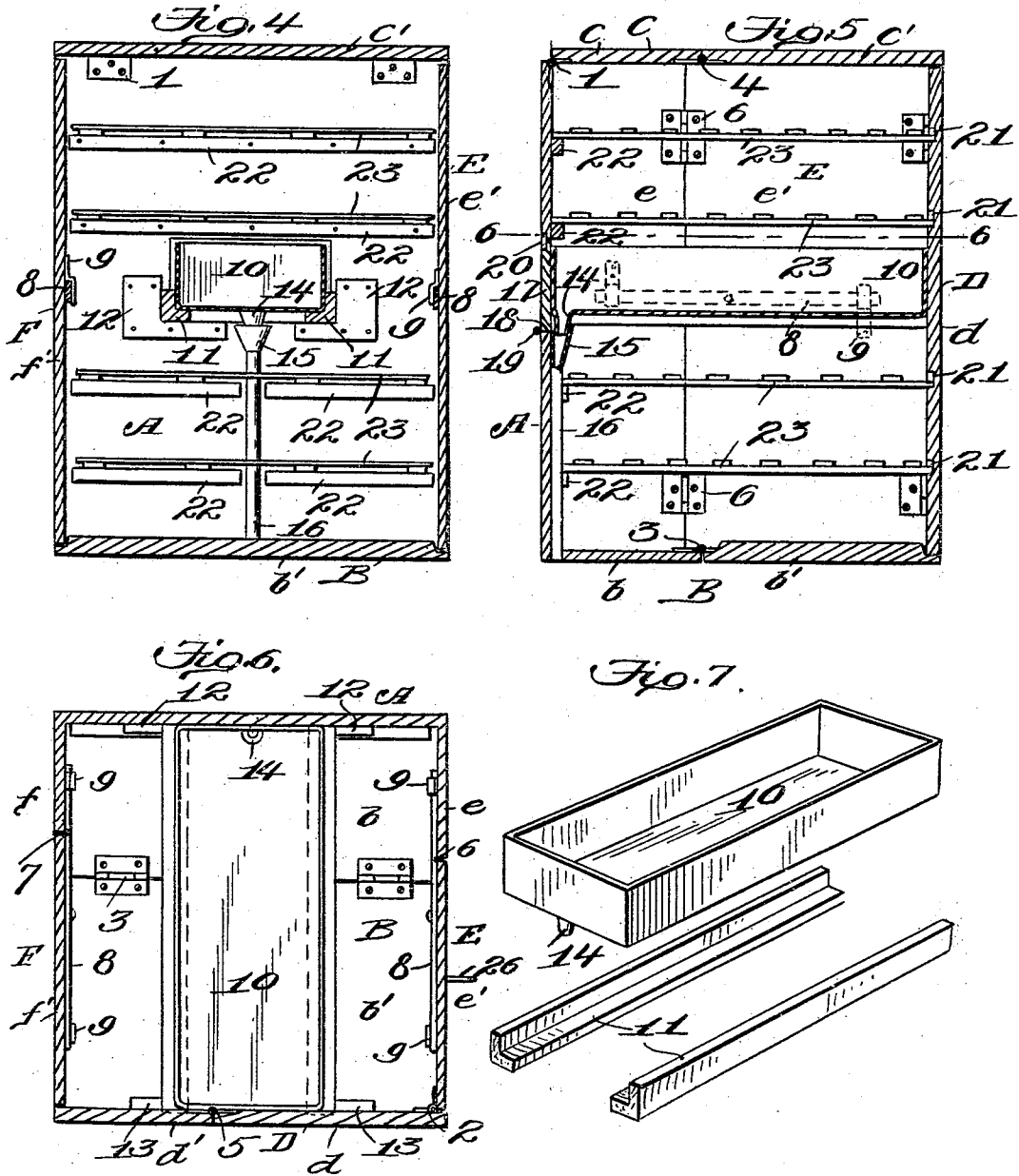
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*Edward F. Cramer*  
By *James L. Norris*

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# UNITED STATES PATENT OFFICE.

EDWARD F. CRAMER, OF SATSOP, WASHINGTON.

## REFRIGERATOR.

939,891.

Specification of Letters Patent.

Patented Nov. 9, 1909.

Application filed September 16, 1908. Serial No. 453,300.

To all whom it may concern:

Be it known that I, EDWARD F. CRAMER, a citizen of the United States, residing at Satsop, in the county of Chehalis and State of Washington, have invented new and useful Improvements in Refrigerators, of which the following is a specification.

This invention relates to new and useful improvements in refrigerators, and more particularly to a refrigerator having its walls made in hingedly connected sections whereby the structure is collapsible and may be readily set up for use or "knocked down" when out of use.

The refrigerator has novel characteristics of such nature as to adapt it more especially for use in the transportation of perishable goods such as berries or fruits, although it may be used with equal advantage for household purposes. In its use for transportation purposes, the structure is of course shipped "set up" with the goods contained therein and is returned "knocked down". When "knocked down" the proportions are such that the structure occupies comparatively small space; in fact three or four of the refrigerators when "knocked down" will not take up more room than that taken up by a single refrigerator when "set up".

The invention aims primarily to provide a folding refrigerator in which the parts are assembled and related in a novel manner and in which novel structural features are presented, such novel features of structure residing more particularly in the locking means for the hingedly connected sections and in the supporting means for the ice pan, the latter being removable.

Incident to the above objects, a structure is provided which is of marked simplicity and inexpensiveness, strong and practical and readily "set up" or "knocked down".

The structural details will be fully explained in the following description, which is to be read in connection with the annexed drawings, illustrating a preferred and advantageous embodiment of the invention, while the novel features of structure and arrangement will be set forth in the claims hereunto appended.

In the said drawings:—Figure 1 is a perspective view of the refrigerator "set up" as in use. Fig. 2 is a similar view of the refrigerator "knocked down" as out of use. Fig. 3 is a transverse section of the refrigerator "knocked down", the view being taken

on the line 3—3 of Fig. 2. Fig. 4 is a vertical transverse section of the refrigerator set up. Fig. 5 is a vertical longitudinal section thereof. Fig. 6 is a horizontal section on the line 6—6 of Fig. 5, looking downwardly, the supporting shelves being removed for clearness of illustration, and Fig. 7 is a detailed perspective view of the ice pan and its supporting bars, in detached relation, but in the natural disposition of their assemblage.

Similar characters of reference refer to similar parts throughout the several views. In the following description, the terms descriptive of the walls, as "front", "rear", "bottom", "top" and "side" are to be understood as applying to the refrigerator when "set up" and not when "knocked down", since, in this latter assemblage, the relation of the walls is changed, the rear wall becoming the bottom, the front wall being folded in, certain sections of top and bottom walls becoming the end walls and the other sections thereof forming the top, and the side walls having sections thereof remaining as such, and having sections folded in.

In order that the parts may be more clearly distinguished, capital letters will be used to refer to the walls *per se*, corresponding small letters to the sections making up the walls, and numerals to the other structural details.

The rear wall is designated by the letter A and is made in one solid section, while the remaining walls are each made up of two hingedly connected sections. The bottom wall is designated by the letter B and its sections *b* and *b'*; the top wall is designated by the letter C and its sections, *c* and *c'*; the front wall is designated by the letter D and its sections, *d* and *d'*; and the side walls and their sections are designated by the letters E, *e* and *e'*, and F, *f* and *f'*, respectively.

The wall sections *b*, *c* and *f* are fixedly secured to the wall A, while the section *c* is hingedly secured to the wall A as at 1. In like manner the wall section *d* is secured to the section *e'* by hinges 2, and the sections *b'*, *c'*, *d'*, *e'* and *f'* are secured to the corresponding sections *b*, *c*, *d*, *e* and *f* by hinges 3, 4, 5, 6 and 7.

Means are employed for locking the corresponding sections *d* and *d'*, *e* and *e'* and *f* and *f'* in extended relation and such means

preferably comprises bars 8, pivoted to one of each pair of sections as *d*, *e'* and *f'*, and having operative engagement at their ends in keepers 9 provided on each of the sections above named, the members of each corresponding pair of said keepers being oppositely arranged.

The ice pan is designated by the numeral 10 and is preferably of elongated rectangular form. Said pan, as above intimated is supported for removal, and the supporting means illustrated more particularly in Figs. 4 and 7 preferably comprises angle bars 11, which may be of any suitable material and are arranged in confronting relation so as to afford seats for the pan 10 at each side thereof, said pan resting loosely on said angle bars, which owing to their arrangement hold the pan from lateral displacement. The bars 11 are in turn removably supported at their ends in pairs of L-shaped brackets 12 and 13, the brackets 12 being secured to the wall A and the brackets 13 being secured to the sections *d* and *d'* of the wall D. As best shown in Figs. 4 and 5, the pan 10 at its end adjacent the wall A is formed with a depending drip nozzle 14 which projects into the flared mouth 15 of a drip tube 16, the latter being secured to the wall A and extending downwardly, the discharge end thereof being disposed in an opening in the section *b*. For the purpose of obtaining ready access to the pan 10, as when it is desired to replenish the supply of ice, a door 17 is employed, said door seating in an opening 18 formed in the wall A and being preferably hinged at one side as at 19 and secured at its other side by a suitable inset latching device 20. When the door 19 is opened the end of the pan may be lifted slightly and the pan pulled through the opening 18 and filled with ice, which latter owing to the proportions of the parts is preferably used in the form of small blocks. The sections *d* and *d'* of the wall D are provided at suitable intervals with transverse grooves 21, the grooves in one section alining with the grooves in the other section. Transverse cleats 22 are secured on the wall A at intervals corresponding to the intervals between the grooves 21. The cleats and the grooves together form a preferred means for supporting the shelves 23 upon which the berry boxes or other articles of transportation are placed, said shelves being of the well known slatted construction and having their front ends fitting and supported in the grooves 21 and their rear ends resting and supported on the cleats 22. The parts are so proportioned that space is provided above and below the pan 10 for the shelves 23.

Means are provided for locking to the wall D the adjacent side wall F and the top and bottom walls C and B, when the structure is set up, such means residing preferably in

hasps 24, secured to the wall sections *b'*, *c'* and *f'* and coöperating with correspondingly arranged staples 25 provided on the wall D and through which any suitable locking device may be engaged, as for instance a locking pin or shackle. The hasps 24 on the sections *b'* and *c'* also coöperate when the structure is knocked down with a staple 26, provided on the section *e'*, one of said hasps resting upon the other, as best shown in Figs. 2 and 3. It will thus be seen that when the structure is "set up", the wall sections will be locked in extended relation and the unconnected walls are likewise locked to the wall D. Consequently rigidity is assured and all tendency toward accidental collapse is positively prevented.

In the operation of "knocking down" or folding the structure, the pan 10 and its supporting bars 11, and the shelves 23 are first removed and the hasps 24 and bars 8 are disengaged. The structure is then positioned with its rear wall A (which may, for the purposes of this specification, also be termed the "main" wall) as a bottom and upon the latter the shelves 23, the bars 11 and pan 10 are placed, as shown in Fig. 3. The section *f'* is then folded in and rests upon the pan 10. The section *d'* is folded in under the section *d* and the latter is folded under the section *e'* which in turn is folded to lie upon the section *f'*, the sections *d* and *d'* intervening as is obvious. The sections *b'* and *c'* are then folded upon the section *e'*, the staple 26 of the latter projecting upwardly through the space occurring between said sections *b'* and *c'*. Finally as shown in Fig. 2, the hasps 24 of the sections *b'* and *c'* are passed over the staple 26, with which latter a padlock or other suitable fastening device may now be engaged.

It is to be noted that the opposed sections *b* and *c* are coextensive, but the section *e* of the wall E is of greater depth than the corresponding section *f* of the wall F, such relations being rendered necessary on account of the manner in which the sections are disposed when folded. It is also to be noted that the walls D, E and F are held between the walls B and C when the structure is set up, the wall B being a sort of support or base for the walls D, E and F which latter in turn support the wall C.

Having fully described my invention, I claim:—

1. In collapsible refrigerator structures, in combination, a main wall, wall sections connected thereto at its edges, wall sections hinged to the corresponding sections first named and forming, with the latter, complete walls, a wall opposite to the main wall and comprising hingedly connected sections, one of which is hinged to the adjacent section of one of said complete walls, and means for holding corresponding sections in ex-

tended relation against movement on their connecting hinges.

2. In collapsible refrigerator structures, in combination, a main wall, wall sections  
5 connected thereto at its edges, wall sections hinged to the corresponding sections first named and forming, with the latter, complete walls, a wall opposite to the main wall and comprising hingedly connected sections,  
10 one of which is hinged to the adjacent section of one of said complete walls, means for holding corresponding sections in extended relation, against movement on their connecting hinges, a removably supported  
15 ice pan, supporting means for said pan associated with one of said walls, and a drip tube secured to one of said walls and having communication with said pan and with the exterior of said structure.
- 20 3. In collapsible refrigerator structures, in combination, a rear wall A, a top wall C having a section *c* connected to the wall A and a section *c'* hinged to the section *c*, a  
25 bottom wall B having a section *b* connected to the wall A and a section *b'* hinged to the section *b*, side walls E and F, having respective sections *e* and *f* connected to the wall A and having respective sections *e'* and *f'* hinged to the corresponding sections *e*  
30 and *f*, a front wall D having a section *d* hinged to the section *e'* and having a sec-

tion *d'* hinged to the section *d*, and means for locking said walls against relative movement in their assembled relation.

4. In collapsible refrigerator structures, 35 in combination, a rear wall A, a top wall C having a section *c* connected to the wall A and a section *c'* hinged to the section *c*, a bottom wall B having a section *b* connected to the wall A and a section *b'* hinged to the  
40 section *b*, side walls *e* and *f*, having respective sections *e* and *f* connected to the wall A and having respective sections *e'* and *f'* hinged to the corresponding sections *e* and *f*, a front wall D having a section *d* 45 hinged to the section *e'* and having a section *d'* hinged to the section *d* and means for locking certain corresponding pairs of said sections in extended relation, said means  
50 comprising a bar pivoted to one of the sections of the pair to be locked and oppositely arranged keepers, one provided on each section of the pair, to receive the ends of said bar.

In testimony whereof I have hereunto set 55 my hand in presence of two subscribing witnesses.

EDWARD F. CRAMER.

Witnesses:

C. A. WILSON,  
JOHN B. CARLILE.