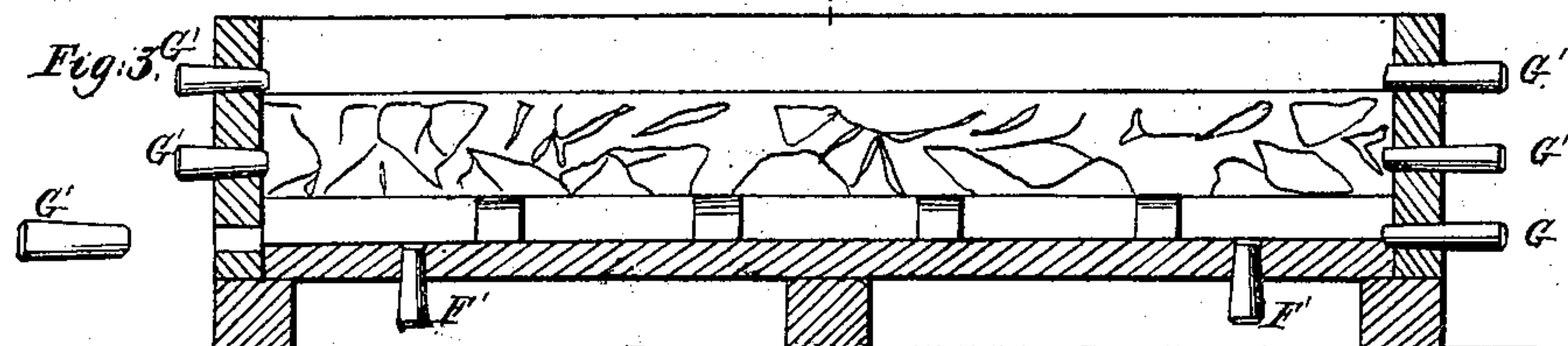
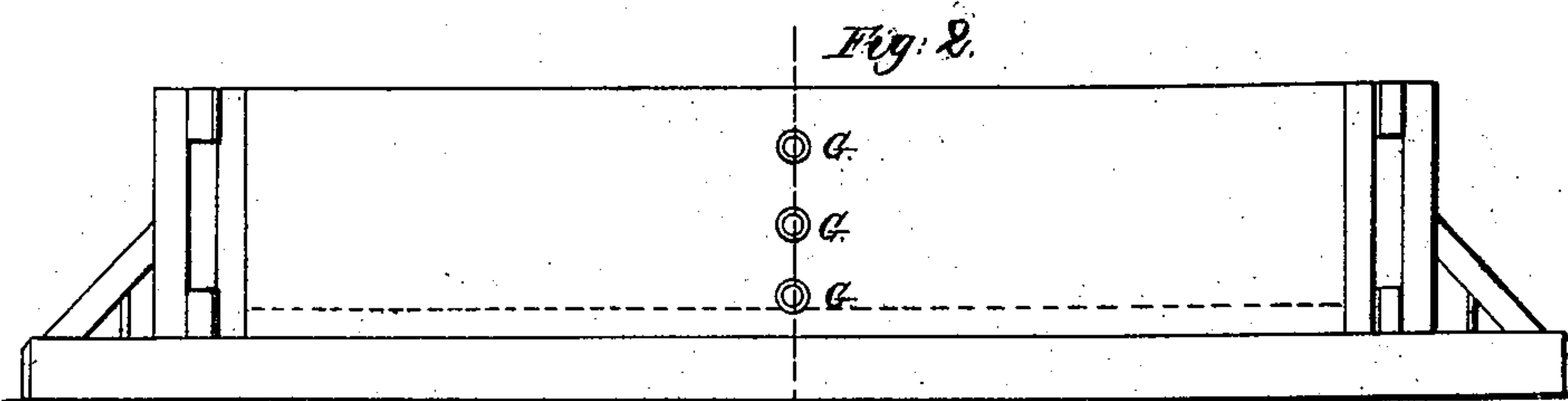
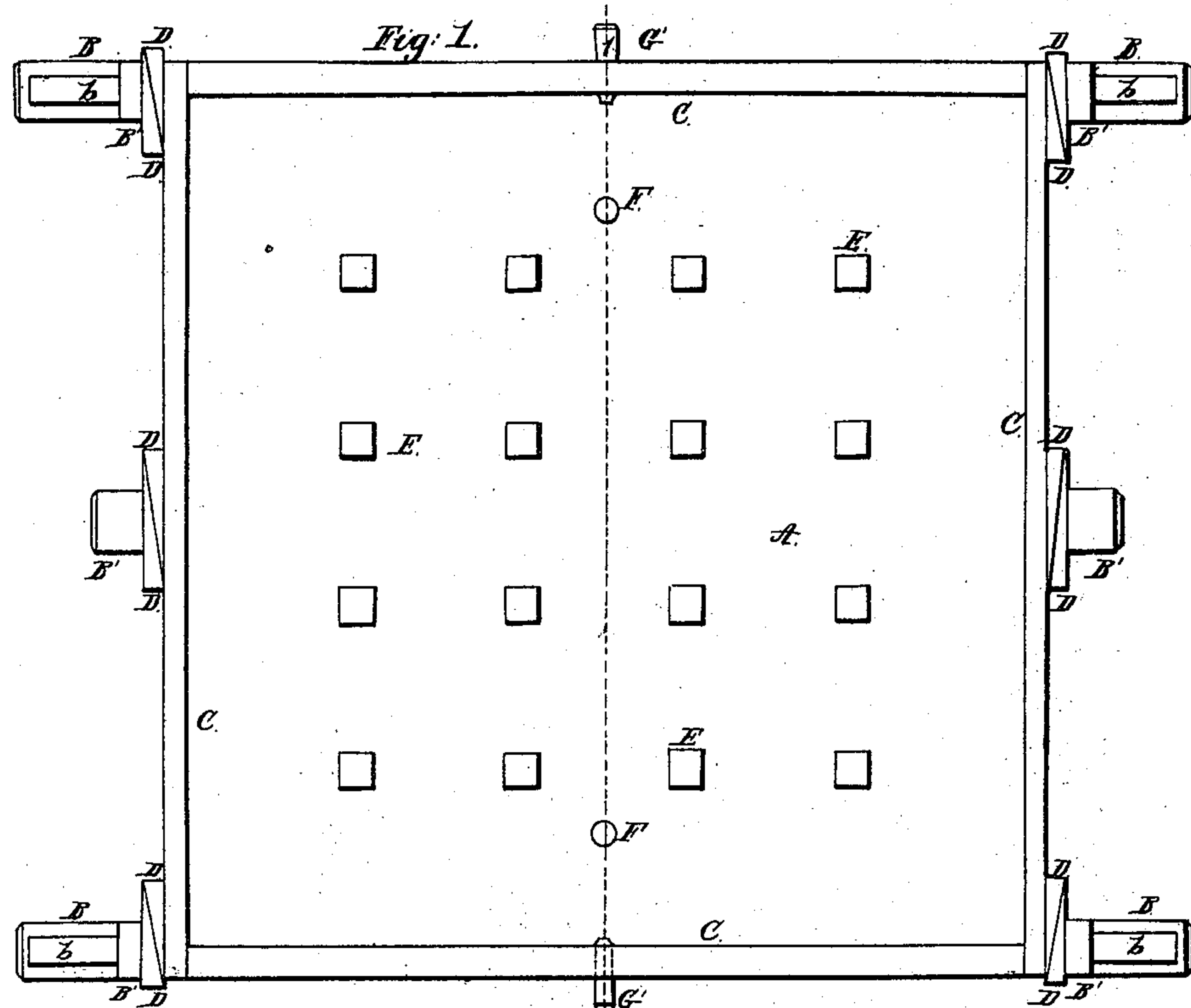


J. H. BUNNELL.
APPARATUS FOR MAKING ICE.

No. 40,551.

Patented Nov. 10, 1863.



UNITED STATES PATENT OFFICE.

JESSE H. BUNNELL, OF MASSILLON, OHIO.

IMPROVEMENT IN APPARATUS FOR MAKING ICE.

Specification forming part of Letters Patent No. 40,551, dated November 10, 1863.

To all whom it may concern:

Be it known that I, JESSE H. BUNNELL, of Massillon, in the county of Stark and State of Ohio, have invented a certain new and useful Improvement in Making Ice; and I do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a plan or top view of my improved apparatus. Fig. 2 is a side elevation thereof; and Fig. 3 is a vertical section taken in the lines *x x*, Figs. 1 and 2.

Similar letters of reference indicate corresponding parts in the several figures.

The object of this invention is to obviate the difficulty, delay, and expense occasioned by the adherence of ice to the floor of the vessel or vat in which it is formed, and also to provide an apparatus whereby more ready access may had to the ice when it is desired to separate it into blocks of suitable dimensions for transportation.

To this end the invention consists, first, in providing the floor of the vat or vessel in which the ice is to be formed with a number of blocks or studs in such a manner that the area of the surface upon which it rests and to which it is likely to adhere is diminished to such an extent that little or no difficulty will be experienced during the operation of disjoining or removing the same; second, in a novel arrangement of detachable or removable sides or walls; third, in a peculiar arrangement of ventages to be used in connection with my improved vat, all as will be hereinafter fully described.

To enable others skilled in the art to which my invention appertains to fully understand and use the same, I will proceed to describe its construction and operation.

In the accompanying illustration, A represents the floor of the vat or containing vessel, which may be made about one hundred feet square. This floor is supported upon rests or timbers B, the ends of which project somewhat beyond the edges of the floor and have standards B' rising from their upper side.

The standards B' may have strength and rigidity imparted to them by braces *b*.

C C C C are side pieces or walls of, say,

about one foot and a half in height, resting upon the timbers B and inserted between the standards B' and the edges of the floor A. By means of wedges D D these side pieces, C, may be held in such close proximity with the edges of the floor A and with each other at their respective ends that the inclosure thus formed may be rendered perfectly water-tight. Nailed or otherwise fastened to the floor A, within the inclosure, are a number of wooden blocks or studs, E, about one inch and a half square, situated at regular distances from each other.

F F are vents in the floor for letting off water, when desired, closed by cocks or plugs F' F'. G G G are similar vents in the walls or sides C, closed by corresponding cocks or plugs, G' G' G', the purpose of which will be hereinafter explained.

Operation: Water is first pumped or otherwise introduced into the vessel or inclosure until it is filled to the depth of about one inch and three-fourths. It is then submitted to the action of the atmosphere until nearly or quite all of that portion above the blocks or studs E is converted into ice, when the plugs F' F' are withdrawn and the remaining water allowed to pass out at the vents F F in the floor. The ice within the vat or vessel will thus rest upon the blocks or studs E E. Water is then pumped in upon the surface of the ice already formed to such a depth as will be thoroughly and effectually frozen, the vents and cocks or plugs G G' constituting gages for regulating the depth of the stratum it is designed to freeze to the ice below. When this stratum of water is converted into ice and solidly frozen to the layer beneath, another is introduced and allowed to freeze, and this operation is repeated until a block of the desired thickness is formed. The wedges D may then be withdrawn, the side pieces removed, and the ice divided into blocks of the required size by any suitable means.

From the above description it will be apparent that my improved apparatus may be much more economically employed than those heretofore in use for the following reasons: First, the studs or blocks with which the floor is provided almost wholly obviate the expenditure of time and power in disjoining the ice from the surface upon which it rests and to which

it has adhered; second, much labor and difficulty is avoided by the provision of the removable sides, in that the operation of sawing or severing the block into pieces of the required size is thereby greatly facilitated.

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

1. In combination with a box or vessel constructed substantially as herein described, the floor A, provided with the blocks or studs E, and cocks or vents F F', for the purpose of preventing contact and adhesion between the ice and the floor, as explained.

2. The movable sides C, constructed and secured, substantially as herein described, for rendering the ice accessible to the dividing or sawing apparatus.

3. In combination with the studded floor A E, a series of cocks or vents, F F' G G', arranged as and for the purposes specified.

JESSE H. BUNNELL.

Witnesses:

JAMES TRIMBLE,
W. D. ROBERTSON.