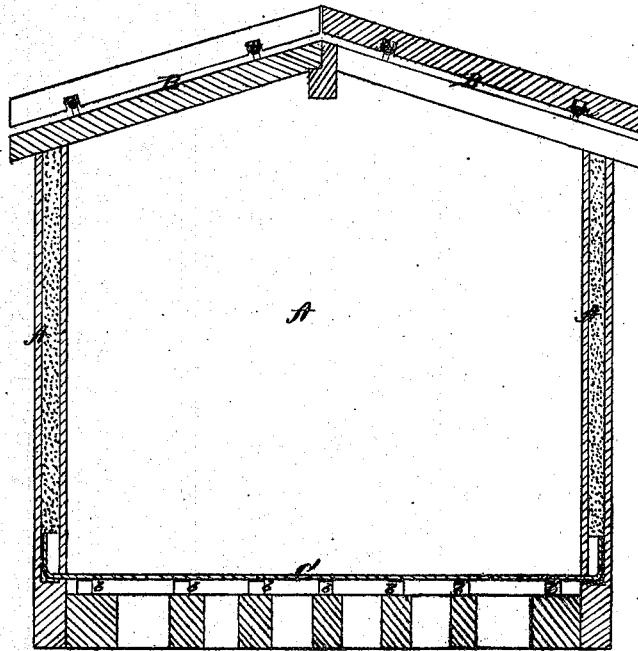


T. J. Bigger,

Manf. Ice.

No. 112,409.

Patented Mar. 7. 1871.



Witnesses
for E. Hutchinson
C. L. Evers

Inventor.
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attys.

UNITED STATES PATENT OFFICE.

THOMAS J. BIGGER, OF KANSAS CITY, MISSOURI.

IMPROVEMENT IN THE MANUFACTURE OF ICE.

Specification forming part of Letters Patent No. 112,409, dated March 7, 1871.

To all whom it may concern:

Be it known that I, THOMAS J. BIGGER, of Kansas City, in the county of Jackson and in the State of Missouri, have invented certain new and useful Improvements in Apparatus and Process for Making Ice; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

The nature of my invention consists in the construction of an ice-house, and in a new process of manufacturing ice, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawings, which represent a vertical section of my ice-house.

My ice-house is made of non-conducting material, except the floor. The sides A A are hollow, and the space between filled with sawdust or sawdust and charcoal. The roof B may be set on slides (half-round iron bars) *a a*, so that the one half may slide onto the other, and so make the house open to cold air, which descends. Wheels with hollow grooves, to run on the iron bars *a a*, will enable the half of the roof to be easily slid on the other.

A projection on one of the sides of the roof, or a small second roof supported from ends and center of the building, and extending two feet on each side of top of sliding roof, will exclude any rain and ventilation on top of ice.

There should be a small door on one end of the house, the bottom of which should be above the square of the building.

This is to admit the hose conveying water.

The floor C is made of iron, made tight, and set on non-conducting-pins *b b*, which should cover as little of the surface of the floor as possible, and leave a larger surface exposed to the room underneath. The floor should have sufficient fall to carry off the water at one point.

The tube which carries off the water should terminate in a vessel to be kept full of water, or at least sufficient water in it to cover the mouth of the tube with water and so exclude

the air. This vessel could overflow into a larger vessel, and the latter then be carried off for use as ice-water, or run into sewer.

The iron floor C should extend underneath the inner wooden lining of the walls, underneath the sawdust or filling, and be fastened to the outer wall.

The inner lining should be tight, fine flooring, tongued and grooved, and placed perpendicularly, so that the water or wastage from the ice during summer may run down between it and the ice to the iron floor underneath. There might be perforated iron pipes, or a wooden trough with holes in it, placed around the iron floor and through the center, and conducting to the tube which carries off the waste water.

After the ice-house is filled with ice, the ice should be covered on top with fifteen or twenty inches, or two feet, of sawdust, which should be kept well tramped down on top all summer. As the ice wastes, the space between it and the wall should be kept tightly filled with sawdust. The ice-house should be placed over the room designated to be cooled, forming entire or part of ceiling of such room, the size to be determined by the requirements of the business.

The principal feature, however, which I claim as new, is: "Conveying the water into the ice-house, and there freezing it."

This can be done when the thermometer stands 32° or below. It should be done in one of two ways.

Either run in, say, an inch or two inches of water on the floor, covering the entire floor this depth; then, having the roof or doors open, wait till this is frozen into solid ice; then run in an inch or two inches more water on top of this ice; wait till it is frozen solid ice; then add more water, and so on until the house is filled to square with one solid block of ice.

Another way is to attach to the end of hose conveying the water a nozzle with holes in it similar to a can for watering flowers. This will make the water fall in a spray, and the workman can direct it wherever required on the surface, taking care to let it fall only as fast as the ice has been perfectly formed of the water he threw on it previously. With

the thermometer well below 32° this water will freeze as fast as it runs from the hose. Of course this can only be done while the thermometer is below freezing point. When it gets higher the house should be closed up.

The advantages of this system are: Having a solid block of ice, it will last much longer during the summer than cakes packed in the usual size and having more surface exposed to the air; and the ice can be made at a small cost once the house is there.

The house would be required, in any event, so that its cost should not be added to the way cost of the ice. The cost of ice in this would be merely conveying the water into the house, and one man to attend to it running in the right place.

A thousand tons of ice could thus be made in a few days of freezing weather at a cost of five cents per ton or less.

The water could be procured from cisterns

placed higher than the ice-house, and so run in without any cost, once having the water, which is generally plenty round houses or manufactories where ice would be made in this way. Or, if the water be lower than the ice-house, it could be raised by a force-pump or carried from any point by pumps.

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

An ice-house constructed, as described, of double sides A A, sliding roof B, and iron bottom or floor C, for freezing ice, substantially as herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 26th day of December, 1870.

THOMAS J. BIGGER.

Witnesses:

J. J. DAVENPORT,
DAVID LOW.