

No. 706,945.

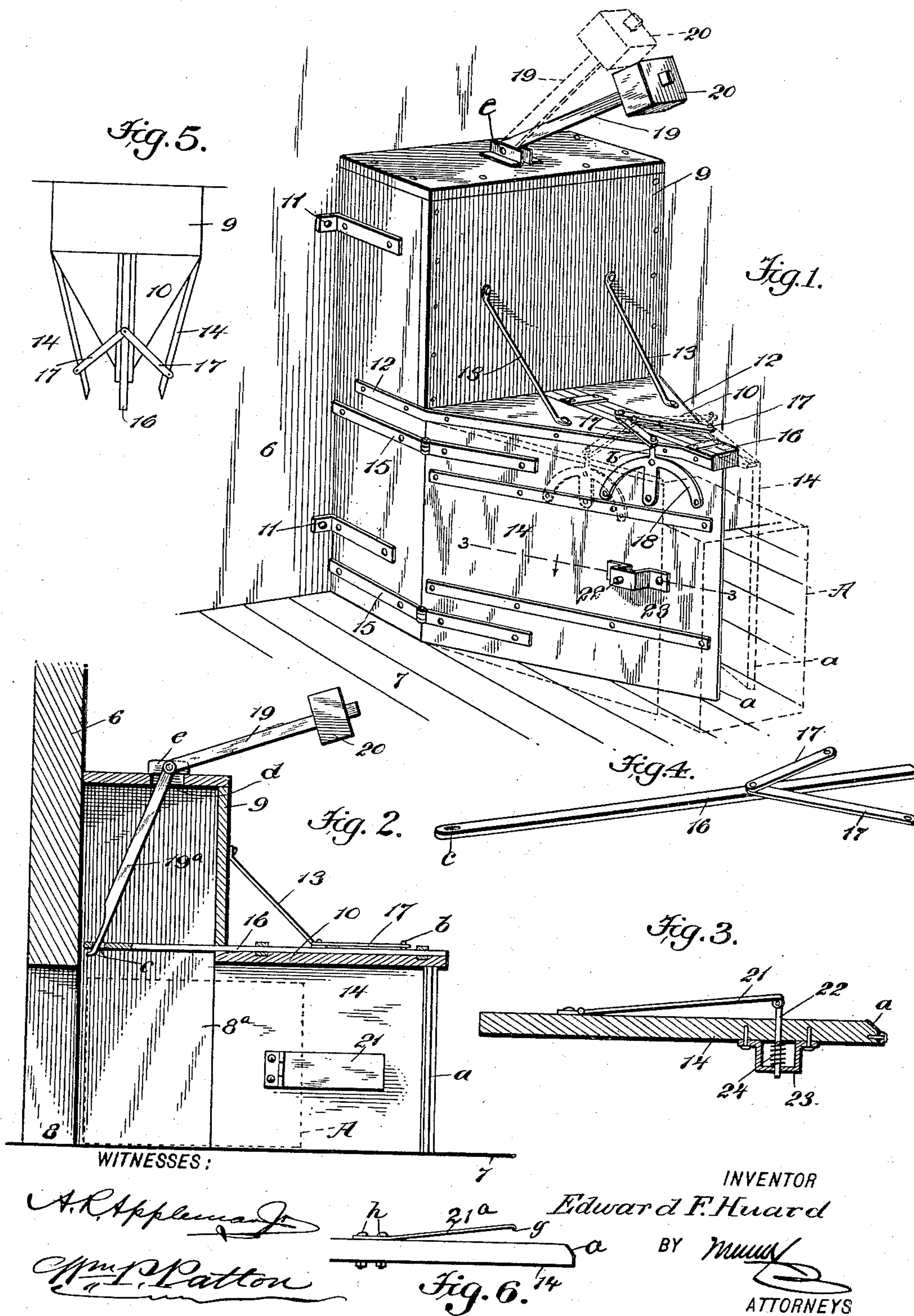
Patented Aug. 12, 1902.

E. F. HUARD.

MEANS FOR AUTOMATICALLY CLOSING SWINGING DOORS.

(Application filed May 29, 1901.)

(No Model.)



UNITED STATES PATENT OFFICE.

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MEANS FOR AUTOMATICALLY CLOSING SWINGING DOORS.

SPECIFICATION forming part of Letters Patent No. 706,945, dated August 12, 1902.

Application filed May 29, 1901. Serial No. 62,350. (No model.)

To all whom it may concern:

Be it known that I, EDWARD F. HUARD, a citizen of the United States, and a resident of Springfield, in the county of Greene and State of Missouri, have invented a new and Improved Means for Automatically Closing Swinging Doors, of which the following is a full, clear, and exact description.

This invention relates to closures for ice houses or vaults, and has for its object to provide a self-closing door which guards the opening through which blocks of ice are introduced into the house or vault, preventing an improper rise in temperature and the accumulation of fog in the air-space of the house or vault due to such a cause.

The invention consists in the novel construction and combination of parts, as is hereinafter described, and defined in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a perspective view of the invention in position for use and illustrating the operation thereof by dotted lines. Fig. 2 is a sectional side elevation of the improvement applied. Fig. 3 is an enlarged sectional plan view of a swinging door constituting a feature of the invention. Fig. 4 is an enlarged detached perspective view of a door-closer device. Fig. 5 is a diagrammatic view of the door-operating mechanism in part; and Fig. 6 is plan view in part of a swinging door, showing a modified means for cushioning the impact of ice-blocks upon the inner side of the door.

The side wall 6 and floor 7 (shown partially in Fig. 1) represent the interior of an ice house or vault for the storage of blocks of ice, and in the wall 6 an aperture 8 is formed for the introduction of the blocks of ice within the vault. The lower edge of the preferably-rectangular aperture 8 is in the same plane with that of the upper surface of the floor 7, and thus facilitates the free entrance of ice-blocks therethrough.

A box-like antechamber 9 is provided, which incloses the aperture 8^a and extends above it a proper distance. The inner upright wall of the antechamber 9 is furnished with an open-

ing corresponding in form and dimensions with the aperture 8 and is positioned directly opposite it, as indicated in Fig. 2 at 8^a.

A horizontal wing-wall 10 is extended inwardly from the inner side of the antechamber 9 in the same plane with that of the upper edge of the aperture 8. The side edges of the wing-wall 10 converge from the point of its junction with the wall of the antechamber and nearly meet at their opposite terminations, giving a substantially triangular shape to said wing-wall. The antechamber 9 is firmly secured upon the upright wall 6 by knee-braces 11 or other available means, and the wing-wall 10 is held in position by the braces 12, that are secured upon the sides of the antechamber and edges of the wing-wall. The braces 12 are reinforced by the stay-rods 13, which extend diagonally between the inner upright wall of the antechamber 9 and the upper surface of the wing-wall 10 and have their ends respectively secured thereto at spaced distances apart, whereby the wing-wall is maintained firmly projected and supported parallel with the floor of the vault. Two similar rectangular doors 14 are provided to inclose the space directly below the wing-wall 10. At one edge each door 14 is strongly hinged, as at 15, upon the inner vertical edges of the antechamber 9, which define the opening 8^a therein. The doors 14 have their upper and lower edges respectively engaged closely with the floor 7 and the lower surface of the wing-wall 10 at and near the side edges thereof when the doors are completely closed.

The free edges of the doors 14 are similarly beveled, and each beveled edge is covered with a suitable joint-strip *a*, (see Fig. 3,) so that the joints around the doors are practically sealed when the doors have contact at their front edges.

A slide-bar 16 is held to reciprocate longitudinally on the wing-wall 10 at its transverse center, and two similar link-bars 17 are lapped and pivoted at one end upon the slide-bar.

Upon each door 14 a bracket-arm 18 is secured near the outer edge thereof, and said arms each have a journal-stud *b* upwardly projected therefrom, whereon the perforated ends of respective link-bars 17 are loosely mounted. The slide-bar 16 extends through an opening in the inner wall of the ante-

chamber 9, of suitable length for efficient service, and near the inner extremity thereof a vertical perforation *c* is formed.

A bent rock-arm 19 has one member 19^a projected loosely through a small orifice *d*, formed in the top wall of the antechamber 9, and at the inner end of said member a finger is formed, which is loosely inserted through the perforation *c*, as clearly shown in Fig. 2. The bent arm 19 is pivoted at its angle upon a suitable support *e*, and the outer member thereof may with advantage be inclined away from the wall 6 of the storage-vault.

Upon the outer portion of the rock-arm 19 a weight 20 is mounted and secured, and it will be seen that said block from its weight will move the inner member 19^a of the rock-arm toward the front of the antechamber 9 and draw upon the slide-bar 16, so as to pull the doors 14 toward each other, and thus cause them to close, and thereby seal the space inclosed by the antechamber, wing-wall, and doors. Upon the doors 14, at suitable points, preferably near the free edges of the same, buffer-plates 21 are hinged by one end. The free ends of the buffer-plates 21 are near to the free edges of the doors 14, and upon each of said ends a guide-rod 22 is hinged, each guide-rod 22 projecting loosely through a perforation in the door 14, whereon the buffer-plate 21, carrying said rod, is hinged.

A looped bracket-plate 23 is secured upon each door 14 over the perforation therein, and an alined perforation is formed in each bracket-plate, through which a respective guide-rod 22 extends, as is clearly shown in Fig. 3. Upon the portion of each guide-rod 22 that occupies a bracket-plate 23 a coiled spring 24 is mounted, and one end of each spring is affixed upon the rod, which adapts the spring to push the guide-rod toward the buffer-plate and rock said plate away from the door 14, that carries the buffer-plate, this being the normal adjustment of the buffer-plates.

In use the aperture 8 may receive ice-blocks from an ordinary chute or said blocks may be slid into the chamber 9 through the aperture from any other suitable support.

Each ice block A (indicated by dotted lines in Figs. 1 and 2) is successively moved into the antechamber 9 and caused to impinge upon the buffer-plates 21. The spring-pressed buffer-plates 21 cushion the impact of the ice-block and prevent injury to the doors 14, and when said plates are forcibly pressed upon they yield and the two doors are opened, permitting the block of ice to pass the doors and enter the vault, where the successively-introduced ice blocks are packed in the usual manner.

The doors 14 close instantly after the passage between them of each ice block, which will prevent an improper introduction of air of higher temperature into the vault, which if freely pervading the vault would rapidly

melt the ice blocks exposed thereto and cause the production of dense fog in the vault, which is very objectionable.

In Fig. 6 the buffer-plate 21^a is in the form of a flat spring, one end of which is secured by bolts *h* upon the inner side of the door 14, so that the body of the spring, which is bent slightly near the point of attachment, may project at its free end away from the door, the extremity *g* of the spring buffer-plate being bent toward the door, so as to round the end of the spring. The modified form of the buffer-plates, which in duplicate are placed oppositely upon the doors 14, provide simple means for cushioning the impinge of ice-blocks that are pushed through the closing device into the vault, and this form of buffer may in some cases be preferred.

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

1. The combination with an apertured wall of an ice-holding vault or the like, of a box-like antechamber in communication with said vault-opening and having an exit-opening that alines with the vault-opening, hinged twin doors arranged to normally seal said exit-opening from the antechamber into the vault, and means for automatically closing said doors after the passage of an ice block through said chamber, substantially as described.

2. The combination with an apertured wall of an ice-holding vault or the like, of a box-like antechamber in communication with said vault-opening and provided with an exit-opening that alines with the vault-opening, a wing-wall extended over said exit-opening of the antechamber, twin doors disposed in converging relation and mounted to swing toward or from the wing-wall, and means for automatically closing said doors, substantially as described.

3. The combination with an apertured wall of an ice-holding vault or the like, of a box-like antechamber in communication with said vault-aperture and having an exit-opening in line with the vault-aperture, a wing-wall projected over said outlet-opening in the antechamber, converging twin doors held to swing toward and from each other, and when closed having their upper edges closely contacting with the wing-wall, and their forward edges sealed by a joint strip when in contact, and means to automatically close the doors, substantially as described.

4. The combination with a vault-wall having an inlet-opening, of a box-like antechamber in communication with said opening and provided with an exit-opening in alinement with the vault-opening, converging doors arranged to normally swing inwardly and to lie in the path of blocks of ice which are adapted to traverse said antechamber, and means for automatically closing said doors across the exit-opening from the antechamber, substantially as described.

5. The combination with a vault-wall having an inlet-opening, of a box-like antechamber in communication with said opening and provided with an exit-opening in alinement
5 with said vault-opening, converging doors arranged to swing inwardly toward each other and provided on the facing surfaces with yieldable buffers that lie in the path of blocks
10 of ice arranged to traverse the antechamber and to impinge said buffers, and means for automatically closing said doors across the exit-opening from the antechamber, substantially as described.

6. In combination with a wall having an

opening therein, a horizontally-disposed wing- 15
wall projecting inwardly from said wall, twin doors arranged normally in converging relation and lying in the path of objects which pass through said wall-opening, and means
20 for automatically closing said doors toward the wing-wall and toward each other.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWARD F. HUARD.

Witnesses:

G. D. CLARK,

PERRY T. ALLEN.