J. C. THILL.

AUTOMATICALLY CLOSING CHUTE.

APPLICATION FILED APR. 18, 1921.

1,405,955. **Patented Feb. 7, 1922.**

Fig 1.

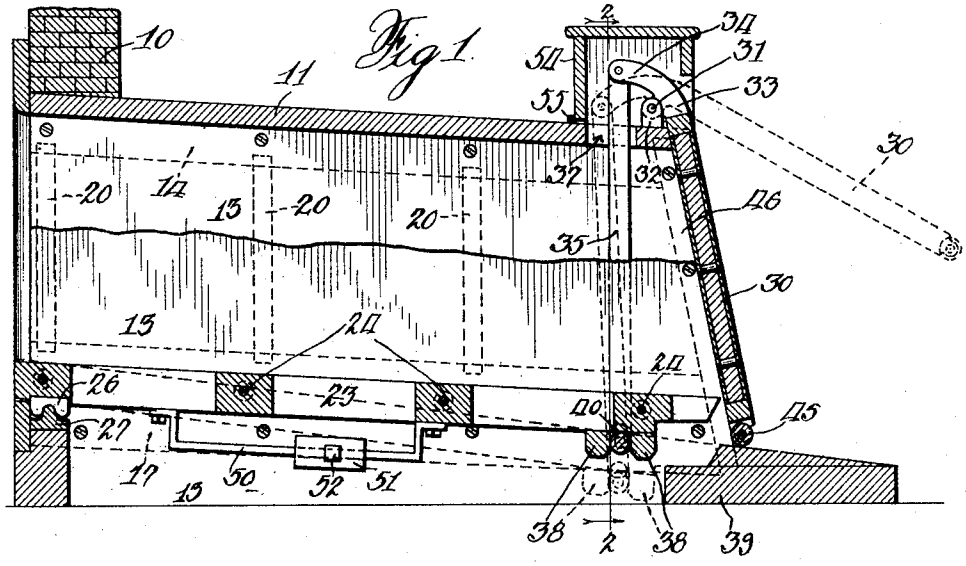


Fig 2.

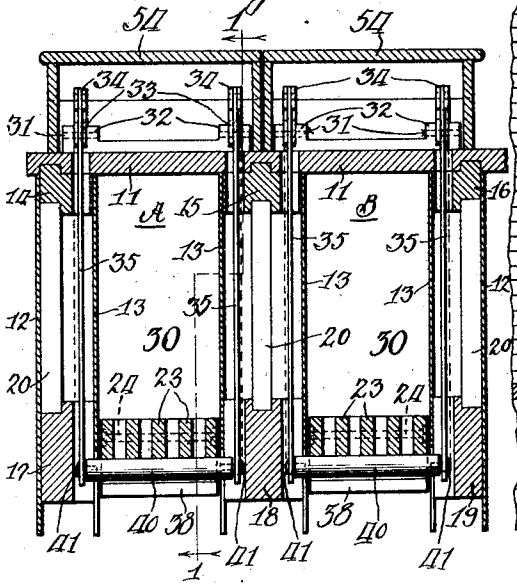
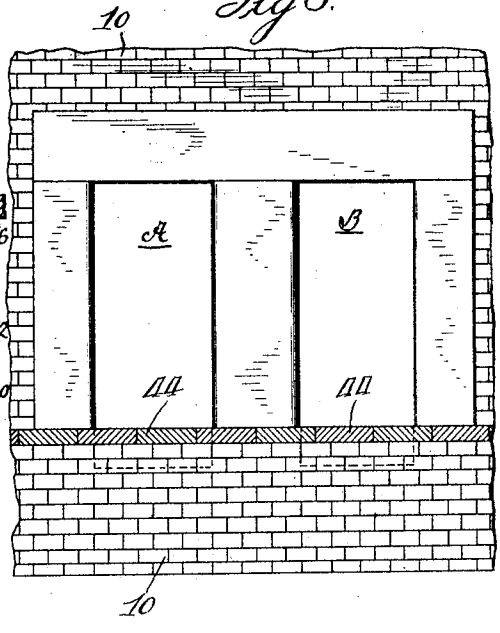


Fig 3.



Witness:
Dave S. Magnuson.

Inventor:
John C. Thill
By Luther Johns.
Atty.

UNITED STATES PATENT OFFICE.

JOHN C. THILL, OF FOX LAKE, ILLINOIS.

AUTOMATICALLY-CLOSING CHUTE.

1,405,955. Specification of Letters Patent. **Patented Feb. 7, 1922.**

Application filed April 18, 1921. Serial No. 462,470.

To all whom it may concern:

Be it known that I, JOHN C. THILL, a citizen of the United States, residing at Fox Lake, Lake County, Illinois, have invented certain new and useful Improvements Relating to Automatically-Closing Chutes, of which the following is a specification.

The present improvements have an important application in the ice making industry, in which practice after a cake of ice has been made and released from its container in a comparatively warm room it is necessary to transfer it to a cold room for preservation. These rooms are usually side by side with a thick insulating wall between them. In common practice an opening is provided in the building wall mentioned for the passage of the ice therethrough and in some cases a manually controlled door and in other cases manually controlled loose flaps of fabric are provided to cover the opening to prevent transference of temperature from one room to the other. It has also been suggested to provide an automatically-opening-and-closing door operated by the cake of ice itself, as witness the patent to Stevenson, No. 714,619 of November 25, 1902, according to which suggestion the cake of ice impinges the door, forcing it open and allowing the cake to pass through the chute, the door thereupon closing by gravity.

The objections in practice to the several suggestions heretofore made include the labor involved in the manual operations and the destructive effect upon the ice and the door mechanism in the device of the patent mentioned.

The chief object of the present improvements is to provide a chute and door device for purposes of the general character described in which the door will automatically open and close at the desired time in so gentle and easy a manner as to avoid undue strains upon the parts and thus provide a satisfactory operation and long service. It is an object also to provide a chute and door device which will effectively maintain the desired insulation between the two rooms. Another feature of advantage is in the provision of adjustment means for securing the desired substantially balanced relation between the door and the weight which controls its opening movement according to different weights of the article passing through the chute. Another object is to provide a form of chute and door device which may be arranged with others side by side so as to occupy relatively small space. A further object is to provide a device having the advantages pointed out and which is of simple construction and of few parts. Other objects and advantages will appear hereinafter.

In the accompanying drawings, which form a part of this specification. Figure 1 is a vertical longitudinal section on the broken line 1—1 of Fig. 2, in the direction of the arrows; Fig. 2 is a vertical transverse section on the line 2—2 of Fig, 1; and Fig. 3 is a face view of the two chute devices shown as if viewed from the ice making room.

The two chute devices A and B are alike in all respects. Like reference characters are applied to like parts in all figures.

The wall 10 will be understood as dividing the ice-making room from the storage room, the chute extending into the latter. Each chute includes a plank top wall 11, an outer side wall 12, and a pair of inner side walls 13, these side walls being in my practice of galvanized iron. There are upper longitudinal frame parts 14, 15 and 16 and lower longitudinal frame parts 17, 18 and 19 against which these metallic side walls are secured. A plurality of upright frame parts 20 are secured to the upper and lower longitudinal frame parts, according to practices well understood, in the relationship shown by Figs. 1 and 2. It will be clear from Fig. 2 that dead air spaces are thus provided between the outer and inner walls 12 and 13 respectively and between the middle pair of inner walls 13, which dead air spaces serve to insulate the passageways of the chutes respectively from the space outside.

The walls of the chute device are so closely associated with the building wall 10 at the opening therein through which the chute device extends that temperature from one compartment may not escape there to the other.

Within the chute device there is a pivotally mounted bottom or slide 23 formed of a plurality of wooden strips set edgewise and held together as by bolts 24 in spaced-apart relation, the slide structure thus being relatively light and at the same time relatively strong and also being well ventilated so that it may readily dry out after a period of use. This movable bottom 23 is pivotally mounted at its upper end on a substantially horizontal axis, the means shown being a

scends under a weight of an object moving through the chute on said bottom.

3. The combination of walls forming a substantially tight chute having an inlet opening and an outlet opening, a movable bottom in said chute, said bottom extending from near the intake opening downwardly to a place near the outlet opening, said bottom being pivotally mounted near its upper end on a substantially horizontal axis for swinging up-and-down movements, a door normally closing the outlet of the chute, said door being pivotally mounted on a substantially horizontal axis near its upper end, lever means connected to said door and extending rearward beyond the axis of swinging movement of the door, and link means connecting said lever means with said bottom for opening the door when said bottom descends under the weight of an object moving through the chute on said bottom.

4. The combination of walls forming a substantially tight chute having an inlet opening and an outlet opening, a movably mounted bottom member in said chute, said bottom member extending from near the intake opening downwardly to near the outlet opening, said bottom member being pivotally mounted near its upper end on a substantially horizontal axis whereby its lower end may move up and down, a pivotally mounted gravity-controlled swinging door member normally closing the outlet of the chute, means operatively connected to said bottom member and to said door member for opening the door member when said bottom member descends under a weight of an object moving through the chute on said bottom member, and a movably mounted adjustment weight carried by one of said pivotally-mounted members for causing said door member to open under the influence of various different weights upon the bottom member.

5. In a device of the character described, the combination of walls forming a chute, a downwardly inclined bottom within the chute, said bottom being pivotally mounted at its upper end so that its lower end may move in up and down directions on the pivot means, a pivotally mounted door normally closing said chute near the lower end of said bottom, said door being pivoted at its upper end portion so as to swing outwardly away from the ends of the chute walls respectively, a pair of levers connected to the door at its upper end portions and extending beyond the pivot means for the door, said levers being at opposite sides of the door, means for supporting the lower end portion of said bottom, said means including a pair of links extending upward at the sides respectively of said bottom and operatively connected to said levers respectively, the arrangement being such that when said door is closed said bottom is in its elevated position, said door being arranged to close automatically by gravity in the absence of additional weight on said bottom.

JOHN C. THILL.