

No. 648,205.

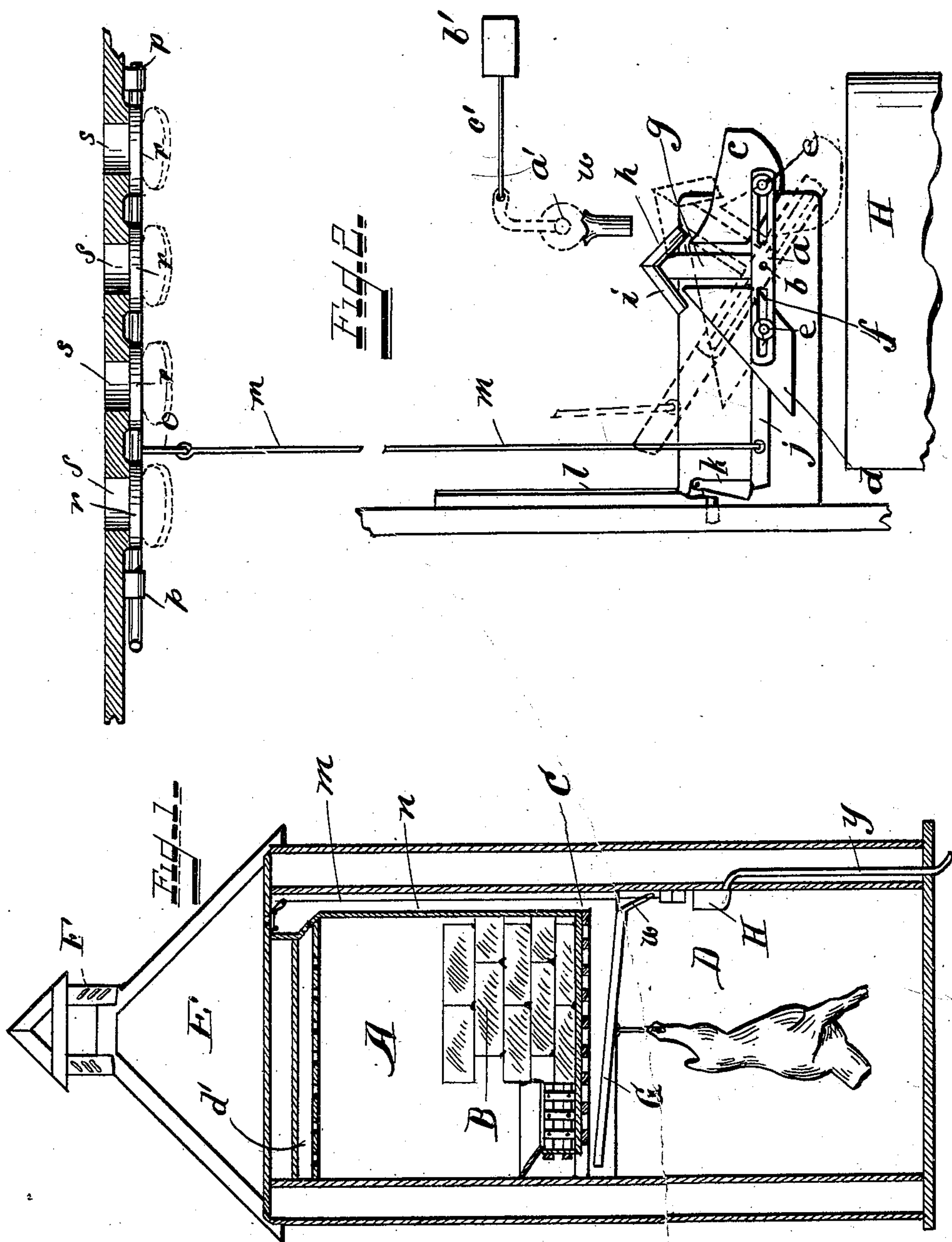
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VENTILATING APPARATUS FOR REFRIGERATORS.

(Application filed Feb. 5, 1900.)

(No Model.)



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VENTILATING APPARATUS FOR REFRIGERATORS.

SPECIFICATION forming part of Letters Patent No. 648,205, dated April 24, 1900.

Application filed February 5, 1900. Serial No. 3,946. (No model.)

To all whom it may concern:

Be it known that I, JOHN HERREL, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have
5 invented certain new and useful Improvements in Automatic Ventilating Apparatus for Refrigerators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings,
10 forming part of this specification.

My invention relates to an apparatus for automatically opening and closing one or a series of valves discharging from the top of a refrigerating room or chamber in a cold-storage system or in an ordinary refrigerator, the
15 apparatus being controlled by a flow of water either from the melting of the ice used for refrigeration or where the system is one of brine and ammonia pipes from a constant and
20 regulated flow of water from any other suitable source of water-supply; and it has for its object the provision of simple and efficient means for effecting the discharge of the warmer air from the upper part of the refrigerating-chamber at intervals determined
25 where ice is used upon the rapidity of its melting and where a brine-ammonia system is used upon the temperature of the upper part of the refrigerating-chamber.

30 The novelty of my invention will be hereinafter set forth, and specifically pointed out in the claims.

In the accompanying drawings, Figure 1 is a sectional elevation of so much of a cold-storage house as is necessary to indicate the
35 location of the parts embodying my invention. Fig. 2 is an enlarged detail side elevation of the actuating mechanism by which the warm-air-discharging valves are regulated.

40 The same letters of reference are used to indicate identical parts in all the figures.

In Fig. 1 is shown a very simple form of a double-compartment cold-storage house or refrigerator, in which A is the upper compartment for the storing of the ice B, which rests
45 upon a floor or division-wall C, forming the roof of the refrigerating-compartment D. E is a top compartment under the roof from which a ventilator F opens. All of these
50 parts may be of the usual or any suitable construction.

Within the refrigerating-chamber D, near its upper end and conveniently located on one side of the wall, is a frame *a*, Fig. 2, normally

horizontal and pivoted, as at *b*. To this frame 55 are secured two buckets *c d*, which are adjustable toward and from the center of the frame by means of thumb-screws *e*, passed through slots *f* in the horizontal arm of the frame. Extending upward from the frame *a* 60 is a vertical arm *g*, carrying two spouts *h i*, the former discharging into the bucket *c* and the latter into the bucket *d*. Extending from the frame on one side is a latch-piece *j*, normally engaging with a pivoted latch *k*, 65 which in this instance is pivoted to a slide in guides *l* though any other suitable form of latch might be employed. The function of this latch-piece *j* and latch *k* is to hold the buckets normally level or in the position of 70 the solid lines of Fig. 2 until such time as the bucket *c* has received sufficient water to overweight the parts and cause the tilting of the buckets and frame *a*. This tilting raises the latch *k* and its slide until the arm or piece *j* 75 is freed from the latch *k* and the bucket *c* is discharged of its water. The latch at once drops back to its former position and the parts are in the position shown by the dotted lines, Fig. 2, and then the opposite bucket *d* 80 begins to receive water until it becomes overweighted and causes the parts to tilt in the opposite direction to discharge the bucket *c*, whereupon the latch-piece *j* again swings under and becomes engaged with the latch *k*, 85 as will be readily understood.

Extending up from the latch-piece *j* or any suitable part of the frame *a* through a space *n*, Fig. 1, opening from the top of the refrigerating-chamber D and discharging into the 90 chamber E, is a cord or wire *m*, connected to a lever *o* on a rock-shaft *p*, to which is secured a series of valves *r*, covering a series of openings *s* in the top wall of the passage *n*. It is preferable that passage *n* should occupy one 95 side of the refrigerating and ice chambers, so that when the valves *r*, which extend at intervals the entire length of such sides, are open they may discharge the warm air from the top of the refrigerating-chamber into the 100 space E above the ice-chamber.

In Fig. 1, G is a trough for conducting the water of the melted ice into a discharge-nozzle *w*, directly above the spout *h*, which receives it and conveys it into the bucket *c*, 105 where it gradually accumulates until its preponderating weight tilts the frame *a*, raises the latch-piece *j* until it clears and is released

from the latch *k*, whereupon the valves *r*, being released and acting by their own gravity, drop to the position shown by the dotted lines of Fig. 2 and open the passage-ways *s* to permit the escape of the warm air from the top of the refrigerating-chamber up into the chamber E. The moment the frame *a* is tilted by the descent of the loaded bucket *c* the contents of said bucket are discharged into a suitable receiver H, which carries off the water through any convenient outlet, as a pipe *y*. The frame, with its buckets, now occupies the position shown by the dotted lines in Fig. 2 and the nozzle *w* will discharge its water into the spout *z*, thus conveying it to the bucket *d*, which when the latter has become sufficiently filled will overbalance the frame *a* and restore the parts to the position shown by the solid lines of Fig. 2, the bucket *d* being emptied by the tilting movement and the latch-piece *j* being reengaged by the latch *k*.

Thus it will be seen I have provided a very simple automatic means for opening and closing the valves *r* at intervals, dependent upon the speed with which the ice in the chamber A melts, for of course it will be understood that when the latch-piece *j* reengages the latch *k* the valves will be thereby closed.

Again, as seen in Fig. 2, I have illustrated by dotted lines a means of actuating the buckets from a constant source of water-supply other than that from the melting of ice, which will be found useful in cold-storage plants, where brine and ammonia pipes are employed. Here I have put a cock *a'* in the nozzle *w*, controlled by a rod or arm leading to any suitable thermostat *b'* near the top of the refrigerating-chamber in such manner that the thermostat, which may be of the usual or any suitable construction, will open or close the cock to a greater or less extent, regulated by the temperature of the top of the refrigerating-chamber, and in this case of course the water-supply may be taken from any suitable source, as from a hydrant.

It is to be observed that by means of the slots *f* and thumb-screws *e* the buckets *c d* may be independently adjusted to or from the pivotal point to suit the best requirements of action of the apparatus—that is to say, they may be so adjusted that the valves will open and remain open a longer or shorter period of time, according as the adjustment is made, which will be readily understood.

Having thus fully described my invention, I claim—

1. In ventilating apparatus for refrigerators, the combination of a source of water-supply, a pair of water-receptacles connected pivoted and arranged to tilt simultaneously and into which the water from the source of water-supply can be directed alternately, a valve-outlet from the top of the refrigerating-chamber containing one or a series of coacting valves, latch mechanism coacting with a pair of water-receptacles, and a connection between said water-receptacles and valve or

valves, whereby when the receptacles are tilted in one direction the valve or valves are opened, and whereby when they are tilted in the opposite direction the valve or valves are closed, substantially as described.

2. In ventilating apparatus for refrigerators, the combination of a source of water-supply, a pair of adjustable water-receptacles connected pivoted and arranged to tilt simultaneously and into which the water from the source of water-supply can be directed alternately, a valve-outlet from the top of the refrigerating-chamber containing one or a series of coacting valves, latch mechanism coacting with the pair of water-receptacles, and a connection between said water-receptacles and the valve or valves, whereby when the receptacles are tilted in one direction the valve or valves are opened, and whereby when they are tilted in the opposite direction the valve or valves are closed, substantially as described.

3. In ventilating apparatus for refrigerators, the combination of a source of water-supply, an automatic governor therefor, a pair of water-receptacles connected pivoted and arranged to tilt simultaneously and into which the water from the source of water-supply can be directed alternately, a valve-outlet from the top of the refrigerating-chamber containing one or a series of coacting valves, latch mechanism coacting with the pair of water-receptacles, and a connection between said water-receptacles and the valve or valves, whereby when the receptacles are tilted in one direction the valve or valves are opened, and whereby when they are tilted in the opposite direction the valve or valves are closed, substantially as described.

4. In ventilating apparatus for refrigerators of the character described, the combination of the frame *a*, buckets *c d* adjustably secured thereto, means for conveying water into said buckets alternately, the latch-arm *j*, the pivoted latch *k*, the vent-passage *n*, the series of valves *r* covering openings *s* in the top of said vent-passage, and the connecting rod or cord *m* between the valves *r* and the latch-piece *j*, substantially as described.

5. In ventilating apparatus for refrigerators of the character described, the combination of the frame *a*, buckets *c d* adjustably secured thereto, means for conveying water into said buckets alternately, the latch-arm *j*, the pivoted latch *k*, the vent-passage *n* extending from the refrigerating-chamber to the chamber E, the collecting-chamber *d'* above the ice-chamber opening into the chamber *n* near its top, the series of valves *r* covering openings *f* in the top of said vent-passage, and the connecting rod or cord *m* between the valves *r* and the latch-piece *j*, substantially as described.

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