R. RAYSON.

AIR CIRCULATING APPARATUS FOR THE PRESERVATION OF ALIMENTARY SUBSTANCES.

APPLICATION FILED MAY 8, 1912.

1,068,272. Patented July 22, 1913.

Fig. 1.

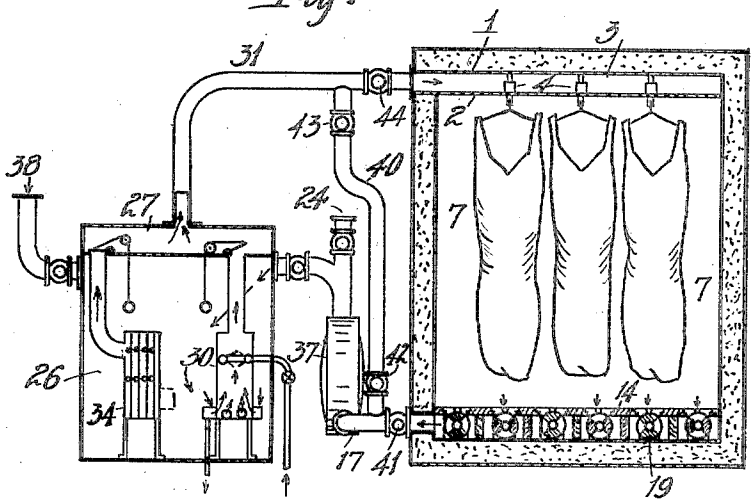


Fig. 3.

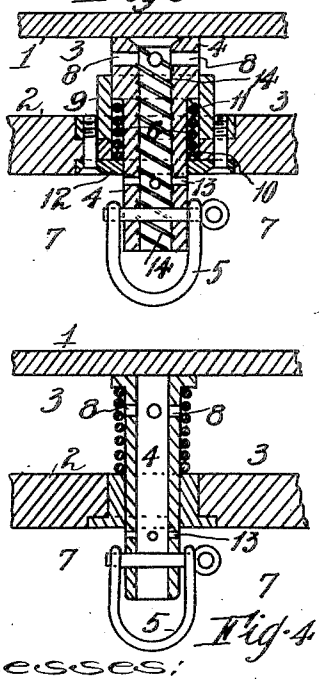
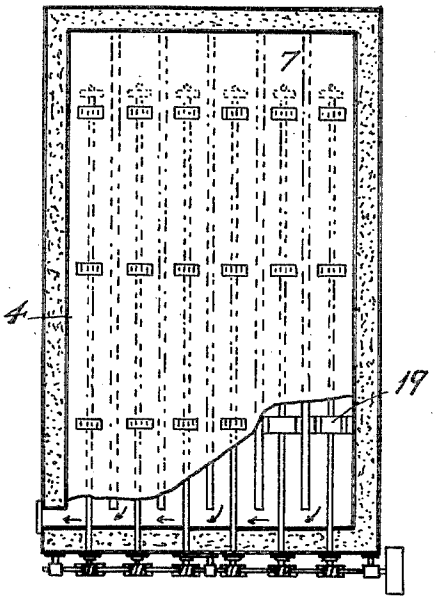


Fig. 4.

Fig. 2.



Witnesses:

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AIR-CIRCULATING APPARATUS FOR THE PRESERVATION OF ALIMENTARY SUBSTANCES.

1,068,272. Specification of Letters Patent. Patented July 22, 1913.

Application filed May 8, 1912. Serial No. 695,961.

To all whom it may concern:

Be it known that I, RUSSELL RAYSON, a subject of the King of Great Britain, residing at "Wainui," Raleigh street, Windsor, near Melbourne, Victoria, Australia, refrigerating engineer, have invented certain new and useful Improvements in Air-Circulating Apparatus for the Preservation of Alimentary Substances, of which the following is a specification.

This invention relates to air circulating apparatus employed for the preservation of alimentary substances and consists of improvements whereby the air in the storage chamber is circulated from a compartment in the ceiling toward the floor thereof through intermediary valvular hanging devices of novel construction.

Figure 1 is a vertical section through one of the storage chambers and showing diagrammatically suitable means for maintaining the desired circulation of air therethrough. Fig. 2 is a plan view of said chamber. Fig. 3 is a vertical section to a larger scale through the ceiling of the chamber and also through one of the valvular hanging devices located in said chamber, and Fig. 4 is a similar view showing a slightly modified form of such tubular hanging device.

In these figures 7 designates the cooling or defrosting chamber, to the ceiling compartment 3 (situated between the upper ceiling 1 and under or false ceiling 2) of which air is delivered, such air passing through a chamber 26 containing a cooler 30 and a heater 34 of any suitable construction, and through either of which such air may be directed as required, and then proceeding by chamber 27 and pipe 31 to the ceiling compartment 3, the circulation in the chamber 7 being maintained by drawing off air through valves 19 in the floor 14 of such chamber by means of fan 37. This fan may deliver the air so drawn off either to the atmosphere through pipe 24, or direct the same to the chamber 26 containing the heater or cooler, whence it may proceed back by chamber 27 and pipe 31 to the ceiling compartment 3 if desired. Fresh air from the atmosphere will enter chamber 26 by pipe 38.

The suction pipe 17 leading to the fan 37 and delivery pipe 31 leading to ceiling compartment 3 are preferably connected by a by pass 40, and the cocks 41, 42, 43, and 44 are provided for the purpose of enabling the air to be cut off from the chamber 7 and circulated through chamber 26 when desired.

The air supplied to the ceiling compartment 3 passes to the chamber 7 through valves in the under or false ceiling 2, said valves being adapted to support the bodies, such as meat carcasses for instance, or other substances to be treated.

Heretofore tubular hanging devices have been employed for this purpose, each of the same having a spring around it located within the ceiling compartment and adapted to close the end of the device and prevent air entering the chamber until said hanging device was loaded, as for instance by suspending a carcass therefrom by means of a hook, and continuous circulation could only be effected by entering the chamber and after drawing down the device securing the same by a pin or the like. By this invention however means are provided so that for storing alimentary substances or de-frosting the same when not suspended from the hook device, a continuous but reduced circulation of air through the tubular hanging device or valve is provided for as well as a full circulation through the same when the devices are loaded. In addition the mounting of the spring in relation to the valvular means is such that it may be easily got at when broken, while means are provided for a more satisfactory dispersion of the air into the chamber. These improvements in the tubular hanging device 4, are shown in detail in Figs. 3 and 4.

The lower end of the tubular hanging device, or tube 4, is fitted with a shackle 5 to receive the carcass or other body or material to be preserved or de-frosted. A spring 6 normally maintains the upper end of tube 4 applied to the under side of the upper ceiling 1 so as to close the bore of said tube, as shown in the drawings, until the weight of the body or material to be treated applied to the lower end of said tube, by overcoming the tension of spring 6 pulls the tube 4 down and so permits the cooling or de-frosting medium to enter the top of the bore and to pass down and issue from the lower end thereof into the cooling or defrosting chamber 7.

The upper portion of the open-ended tube 4 which is located within the ceiling compartment 3, is provided with one or more lateral holes 8 communicating with the bore of said tube, and which holes are open to said compartment 3 when the upper end of tube 4 is closed by contact with the upper ceiling 1, by which means a continuous reduced current of air to the chamber 7 is insured.

When the upper end of tube 4 is opened by the weight suspended from shackle 5 at its lower end overcoming the tension of spring 6, the holes 8 preferably become closed so that the air will pass through the tube only directly through the bore from the top thereof.

The closing of holes 8 may be effected either as illustrated in Fig. 3 or in Fig. 4, in the latter of which spring 6 surrounds the portion of tube 4 situated in the ceiling compartment 3 and on the descent of the tube the convolutions of said spring by their near approach or coming in contact will cut off said holes from the surrounding space and so prevent air entering same therefrom.

In Fig. 3 a sleeve 9 projects up from the under ceiling 2 and through it the upper portion of tube 4 works, so that the holes 8 in the latter will be closed on the descent of said tube under the weight of the body suspended from shackle 5 at its lower end. Spring 6 is inserted through an opening 10 in the under ceiling 2 and bears on shoulder 11 formed on the portion of tube 4 situated within sleeve 9, said opening 10 being closed by a retaining cover plate 12 which is removably secured to the underside of the bottom 2 of ceiling compartment 3, *i. e.* the false ceiling of the chamber 7. By this construction if a spring breaks it can be removed and another substituted by simply detaching said retaining plate 12.

The tube 4 toward its lower end is provided with lateral openings 13 situated just below the under surface of false ceiling 2 when said tube is in its highest position, said holes insuring the issue of air laterally under the ceiling so as to carry off any moisture which might otherwise be deposited and accumulate thereon.

The bore of tube 4, as shown at 14, is rifled for the purpose of insuring a more satisfactory diffusion or dispersion of the air as it issues from the bottom of the bore of the tube and circulates over the carcasses or other bodies or substances suspended in chamber 7, than would be attained by a hanging tubular valvular device formed with a smooth bore.

I claim:—

1. In an apparatus for preserving alimentary substances, the combination, with a storage chamber having a compartment in its ceiling, and means for introducing air into said compartment and withdrawing it from the bottom of said chamber; of a valve for controlling the passage of the air between said compartment and chamber comprising an open-ended tube movable vertically through an opening in the bottom wall of the compartment and having its upper portion extending into the latter and its lower portion extending into the chamber, a spring engaged with said tube for normally holding the same in raised position, with its upper end in contact with the top wall of said compartment, to prevent the passage of air through said end, and means connected to the lower portion of said tube for suspending the alimentary substance therefrom, whereby the weight of the suspended substance will depress said tube and uncover said end, to permit the passage of air through said end, the said upper portion of said tube being provided with a lateral air inlet adjacent to said end to permit a continuous but reduced circulation of air through said tube when the same is in its raised position.

2. In an apparatus for preserving alimentary substances, the combination, with a storage chamber having a compartment in its ceiling, and means for introducing air into said compartment and withdrawing it from the bottom of said chamber; of a valve for controlling the passage of the air between said compartment and chamber comprising an open-ended internally-rifled tube movable vertically through an opening in the bottom wall of the compartment and having its upper portion extending into the latter and its lower portion extending into the chamber, a spring engaged with said tube for normally holding the same in raised position, with its upper end in contact with the top wall of said compartment, to prevent the passage of air through said end, and means connected to the lower portion of said tube for suspending the alimentary substance therefrom, whereby the weight of the suspended substance will depress said tube and uncover said end, to permit the passage of air through said end, the said upper portion of said tube being provided with a lateral air inlet adjacent to said end to permit a continuous but reduced circulation of air through said tube when the same is in its raised position.

3. In an apparatus for preserving alimentary substances, the combination, with a storage chamber having a compartment in its ceiling, and means for introducing air into said compartment and withdrawing it from the bottom of said chamber; of a valve for controlling the passage of the air between said compartment and chamber comprising an open-ended tube movable vertically through an opening in the bottom wall of the compartment and having its upper

portion extending into the latter and its lower portion extending into the chamber, a spring engaged with said tube or normally holding the same in raised position, with its upper end in contact with the top wall of said compartment, to prevent the passage of air through said end, and means connected to the lower portion of said tube for suspending the alimentary substance therefrom, whereby the weight of the suspended substance will depress said tube and uncover said end, to permit the passage of air through said end, the said upper portion of said tube being provided with a lateral air inlet adjacent to said end to permit a continuous but reduced circulation of air through said tube when the same is in its raised position, and the lower portion of said tube being provided with a lateral air outlet situated at a point just below the lower side of the said bottom wall of said compartment.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

RUSSELL RAYSON.

Witnesses:
EDWARD N. WATERS,
WILLIAM HERBERT WATERS.