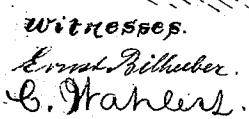


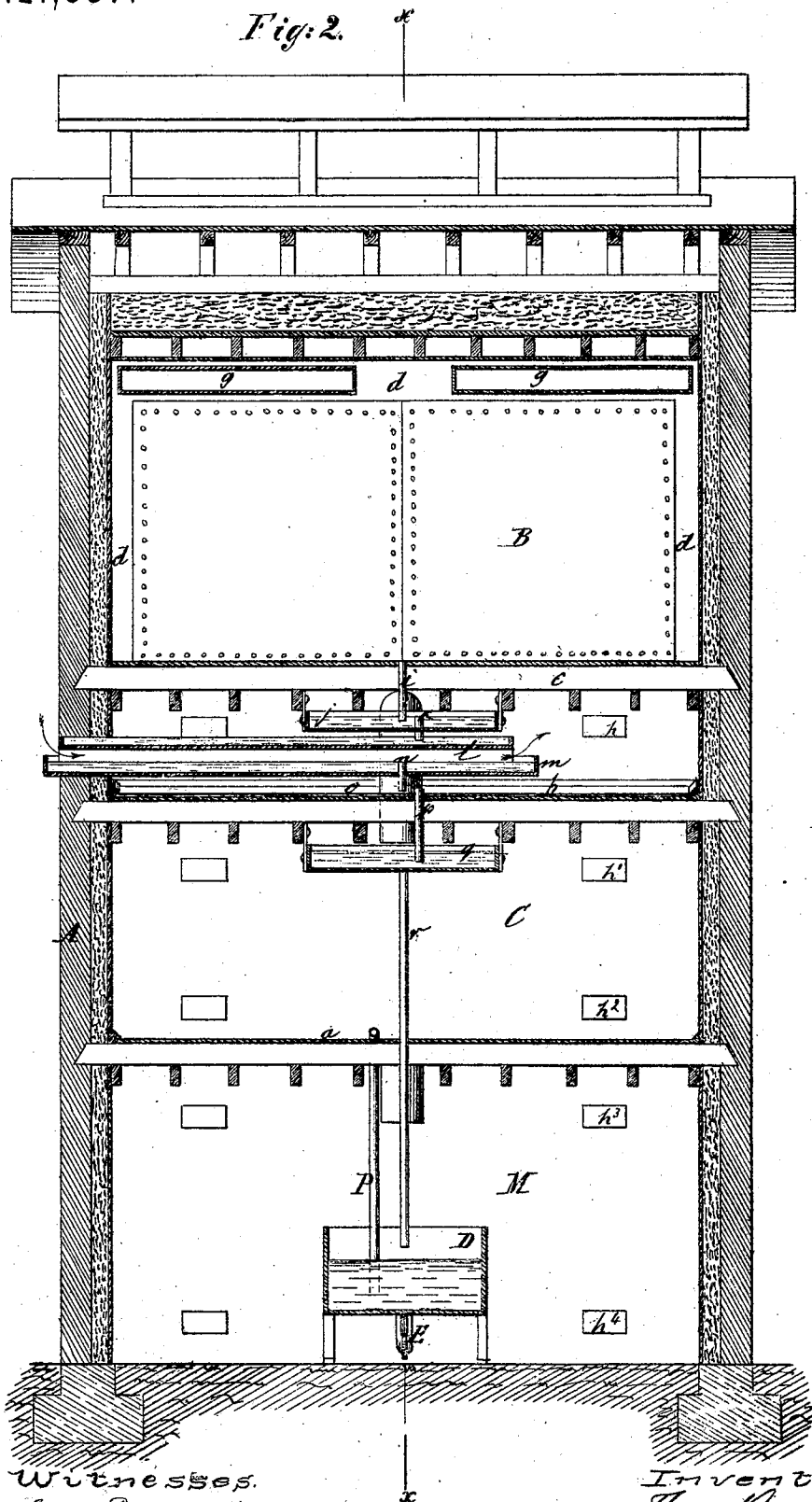
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Fig: 2.



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IMPROVEMENT IN MALT-HOUSES.

Specification forming part of Letters Patent No. 121,387, dated November 28, 1871; antedated November 13, 1871.

To all whom it may concern:

Be it known that I, THEODORE KRAUSCH, of the city, county, and State of New York, have invented a new and Improved Malt-House; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which drawing—

Figure 1 represents a vertical section of this invention, the line *xx*, Fig. 2, indicating the plane of section. Fig. 2 is a similar section taken in the plane indicated by the line *yy*, Fig. 1.

Similar letters indicate corresponding parts.

This invention relates to a malt-house which is constructed with an ice-chamber and with steam-pipes and ventilating-pipes, and with an air-trunk containing a steam-nozzle, in such a manner that by means of the ice-chamber and of the steam-pipes the temperature in the malt-house can be kept at the required point of 50° Fahrenheit throughout the whole year, the ice-chamber being set in requisition during the hot season and the steam-pipes during the cold season, and, at the same time, by the steam-nozzle, the air-trunk, and ventilating-pipes, the interior of the malt-house is always properly ventilated and a uniform temperature established throughout the entire building. With the ice-chamber is combined a lateral air-channel immersed in the ice-water, so that the air sucked in through said lateral air-channel is brought down to the required temperature before passing into the malt-chambers. In the malt-house is placed a sprinkling mechanism composed of a fan-blower, the box of which is supplied with water kept at the proper temperature of 50°, and which connects with a suitable hose in such a manner that by the revolution of the fan-blower the water contained in its case is beaten up, and the air drawn in by said blower is saturated with moisture, and in this condition expelled through the hose which conducts the same to the several malt-chambers or bins.

In the drawing, A designates a building provided with double walls and an intervening air-space, or otherwise constructed so as to exclude the external air from the same in the best possible manner. Said building is provided with three (more or less) floors, *a b c*, and on the top

floor is placed the ice-chamber B. This ice-chamber is surrounded by an air-space, *d*, and its outside walls are made of sheet metal or other good conductor of heat, so that the cooling effect of the ice is readily transmitted through said walls to the air in the surrounding air-spaces *d*. This air-space communicates, through one or more apertures, *e*, near its bottom, with air-channels *f*, which extend down on the inner sides of the building, as seen in Fig. 1; and these air-channels also communicate, by means of pipes *g*, with the upper portion of the said air-space *d*, so that by applying suction to said air-channels the cold air from the air-space *d* can be drawn out either at the top through the pipes *g*, or at the bottom through the apertures *e*, or both at top and bottom. Suitable dampers may be applied to open or close the apertures *e* and pipes *g*. In the air-channels *f* are openings *h h¹ h² h³ h⁴*, which can be opened or closed by suitable dampers, and which lead into the several stories of building, as shown in Fig. 1. The bottom of the ice-chamber B is inclined toward a pipe, *i*, which carries off the ice-water. This pipe extends through the top floor *c* into a reservoir or trap, *j*, provided with an overflow-pipe, *k*, which leads into the concave top of a trough, *l*, that extends out through the side of the building, (see Fig. 2,) and is open at the bottom, its edges being made to extend down into a gutter, *m*, which is provided with an overflow-pipe, *n*, to carry the ice-water down into a flat sheet-metal pan, *o*, which rests directly upon the timbers of the floor *b*, so that the air in the chamber or bin C, between the floors *a* and *b*, comes in contact with the cold bottom of said pan. From this pan the ice-water passes off through a pipe, *p*, extending down through the floor *b*, and dipping into a reservoir, *q*, from which extends an overflow-pipe, *r*, down through the floor *a* into a vessel, D, situated on the ground-floor. This vessel communicates, through a pipe, *s*, with the case of a fan-blower, E, the air-spout *u* of which leads into an air-vessel, F, from which the saturated or moist air is carried off through a pipe, G, and hose H, the hose being so arranged that it can be carried to either of the floors or malt-bins in the building. On one side of the building A rises an air-trunk, I, from which extend three branch-pipes, J K L, into the interior of the building—one close down to the ground, one close below the floor *a*, and one close below

the floor *c*, as shown in Fig. 1. The pipe *L* is provided with an elbow passing down through the floor *b* and opening into the top of the bin *C*, while the end of pipe *K* is T-shaped, opening upward into the bin *C* and downward into the lower story *M*. Suitable dampers allow of opening or closing the pipes *J K L*. In the air-trunk *I* is placed a steam-nozzle, *N*, which is supplied with steam through the pipe *O*; and from this pipe extends a branch-pipe, *P*, which terminates in the water-tank or vessel *D*, and also another branch-pipe, *Q*, which serves to heat the lower story. By admitting steam in the pipe *P* the temperature of the bin *C* and that of the water in the tank *D* can be raised to the desired degree in the cold season, and the temperature of the water delivered to the fan-blower and used for sprinkling the malt can be easily kept at the most advantageous point.

In the hot season, when the temperature in the interior of the malt-house has to be regulated by means of ice, the ice-chamber *B* is supplied with ice, and by starting the steam-nozzle *N* the current of air created in the air-trunk produces a suction, and by regulating the dampers *h h¹ h² h³ h⁴* the cold air from the air-space *d* surrounding the ice-box can be made to pass through either or all the stories of the building, the course of the air being indicated by arrows in Fig. 1. At the same time the ice-water passes down through the pipes *i k n p r*, and air is drawn in through the trough *l* into the space between the floors *b* and *c*, and this air is cooled by passing over the ice-water in the pan *o* and in the gutter *m*. By these means the cooling effect of the ice is economized. The temperature of the ice-water which collects in the reservoir *D* is raised to 50° by means of steam admitted through the pipe *P*, and then it is used for sprinkling the malt.

In winter-time the temperature in the building is regulated by steam-pipes *P Q*, and ventilation in the same is effected by the steam-nozzle *N*. In this case the reservoir *D* may be supplied with water from any desired source.

By these means the temperature in the interior of the building can be maintained throughout the whole year at the point most advantageous for the growth of the malt, and the malt can be sprinkled at any time and the proper ventilation can be maintained in the building without difficulty.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a malt-house, the arrangement of an air-trunk, *I*, steam-nozzle *N*, and pipes *J K L*, substantially as described.

2. The air-channels *f* and air-space *d*, surrounding the ice-chamber *B*, in combination with malt-bins *C*, air-pipes *J K L*, air-trunk *I*, and steam-nozzle *N*, substantially as described.

3. The air-trough *l* and water-pan *o*, in combination with the air-channels *f*, malt-bins *C*, pipes *J K L*, air-trunk *I*, and steam-nozzle *N*, substantially as set forth.

4. The sprinkling apparatus, composed of a water-reservoir, *D*, fan-blower *E*, air-chamber *F*, and hose *H*, substantially as set forth.

5. The steam-pipe *P*, in combination with the sprinkling apparatus, constructed as described.

6. The steam-pipes *P Q*, in combination with malt-bins *C*, air-pipes *J K L*, air-trunk *I*, and steam-nozzle *N*, substantially as set forth.

This specification signed by me this 3d day of May, 1871.

THEODORE KRAUSCH.

Witnesses:

W. HAUFF,
E. F. KASTENHUBER.

(19)