(No Model.)

E. SCHRÖDER.

CONSTRUCTION OF CELLARS FOR COOLING AND VENTILATION.

No. 290,483. Patented Dec. 18, 1883.

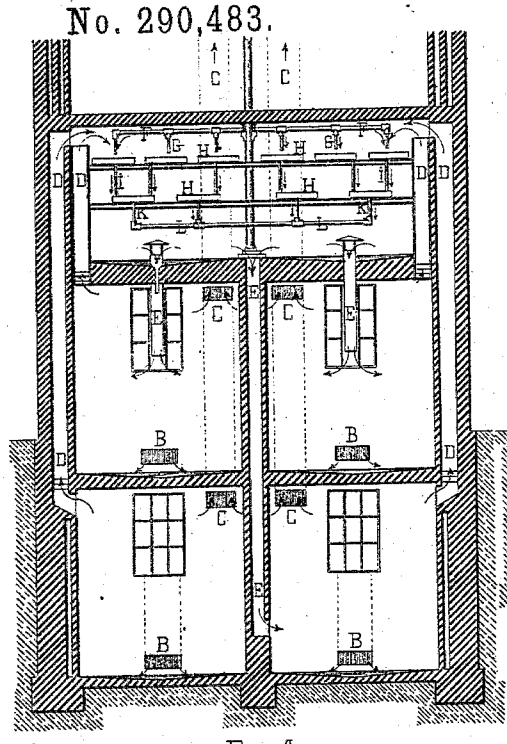


Fig. 1

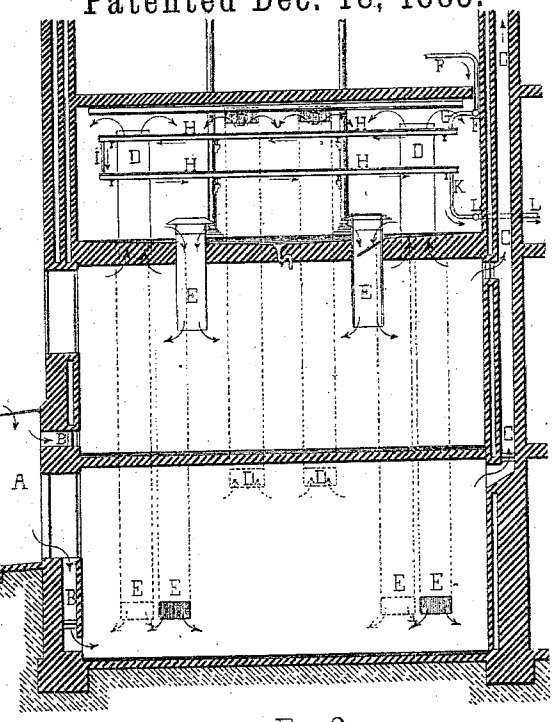


Fig. 2

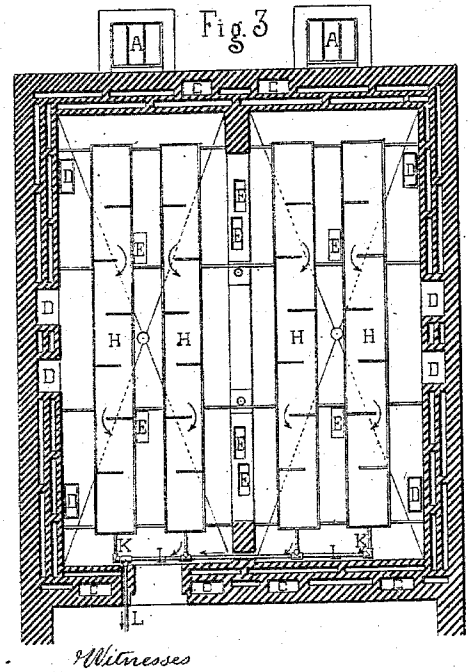


Fig. 3

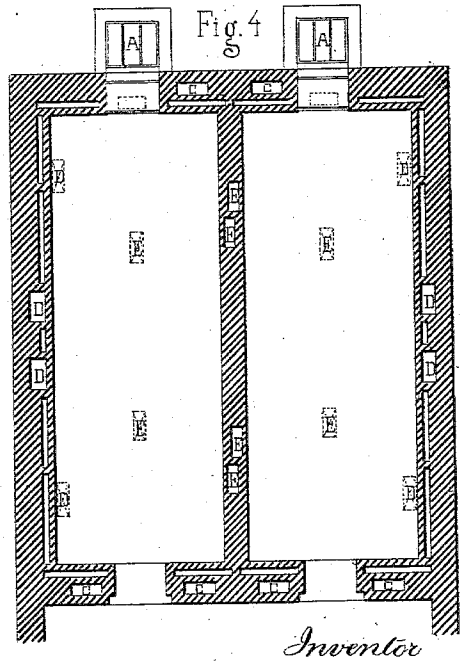


Fig. 4

Witnesses

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UNITED STATES PATENT OFFICE.

EMILE SCHRÖDER, OF GENEVA, SWITZERLAND.

CONSTRUCTION OF CELLARS FOR COOLING AND VENTILATION.

SPECIFICATION forming part of Letters Patent No. 290,483, dated December 18, 1883.

Application filed June 14, 1883. (No model.)

To all whom it may concern:

Be it known that I, EMILE SCHRÖDER, brewery architect, residing at Geneva, in Switzerland, have invented a new and useful Improvement in the Construction of Cellars with Artificial Cooling and Natural Ventilation, of which the following is a specification.

Cellars and buildings particularly constructed and adapted for cooling and ventilating purposes have heretofore been made, and in connection with these ice and various cooling-fluids have been employed to cool the warm air coming from the apartments containing the articles to be cooled, and air passage-ways have been provided both for the ascending currents of warm air and the descending currents of cold air.

In the cooling apparatus heretofore used difficulty has been experienced in keeping the cellars and building both cool and dry, the vapors produced from the melting ice tending to keep the cellars damp.

In cooling apparatus in which liquid that is not likely to freeze is employed, the disadvantage exists from the liability of ice forming upon the pipes, &c., and lessening the effect of the liquid in the pipes, &c.

My invention consists in means or apparatus for artificially cooling which offers the following advantages: First, the premises in question are at the same time cooled and dried; second, the cooling-machine may be stopped at any time without any damage ensuing from the water of condensation, as I am enabled to remove the same at pleasure; third, the temperature of the premises to be cooled may be regulated at will in every part by means of my particular arrangement of air-passages and slides or dampers, the result of which is that only the required amount of cold air is made use of. The cooling vessels or pipes are laid in a room above the cellar or premises to be cooled. The said room is separated from the under space to be cooled by a floor made of materials that are bad conductors of heat, in order that any condensation of vapors against the vault of the cellar might be avoided. Moreover, this floor is duly laid with asphalt, and inclined, so as to permit the water freely to flow outside. The air which has been brought in contact with the cooling vessels or pipes is led through appropriate channels or passage-ways into the middle of the apartment to be cooled. Other channels ending in the highest part of the ceiling of the cellar or other apartment conduct the warm air to the cooling-chamber, where it circulates round the cooling-vessels, becoming cooled by taking up the cold vapors, and then returning cooled and dried into the cellar, the nature of the cold air causing it to descend.

In the drawings, Figures 1 and 2 are vertical sections of my cooling apparatus in different directions. Fig. 3 is a horizontal section of the cooling-chamber, and Fig. 4 is a horizontal section of the first floor of the building.

In the room which I call the "cooling-chamber" are the cooling-vessels H, resting on iron beams. The incongealable liquid flows through a pipe, F, and its branches G (see Fig. 2) into the upper cooling-vessels, from which it runs through corresponding appropriate pipes into the lower cooling-vessels. The liquid is run out through the branches K and the main pipe L, in order to be driven by means of a pump into the cooling-machine again. There might be placed, in case of necessity, a third or even a fourth row of cooling-vessels in the cooling-chamber, according to the extent of the space to be cooled.

The floor, made of materials which are bad conductors of heat, is inclined and provided with a drain-pipe for the removal of the condensed vapors. Fresh air is admitted from outside into the apartments through the grated openings A and passage-ways B.

The passage-ways E lead the cooled and dried air to the middle of the apartment underneath, from which the warm air is conducted through the passage-ways D over the cooling-vessels in the cooling-chamber. The passage-ways C are used as exits for any gas which might have been cooled in the apartments, together with the superfluous warm air. All the above-mentioned passage-ways are provided with air-tight slides or valves, which regulate the passage of air or shut up the same entirely.

Above the cooling-chamber, or in any other more convenient place, there can be placed an ice-house with a supply of ice, which is connected with the space to cool, in the same manner as the cooling-chamber, through appropriate passage-ways. This ice-house may serve

the purpose of supplying the place of the cooling-chamber, in case of a stoppage in the working of the cooling-machine.

Upon reference to the figures of the drawings it will be observed that similar letters of reference are used upon the warm-air passage-ways leading from the ceilings of the apartments to the cooling-chamber, and also similar letters upon the cold-air passage-ways leading from the cooling-chamber down to the apartments below.

In this apparatus a continuous circulation of the cooling-liquid is maintained, and a large surface of it is exposed to cool the heated air as it escapes from the passage-ways D, and a continuous circulation of air is maintained in the apartments containing articles to be kept in a state of preservation, the warm air being conducted by passage-ways D to the cooling-chamber, and when cooled being returned by the passage-ways E to the apartments below.

I claim as my invention—

1. The combination, with a building for refrigerating purposes, of the inlet air-openings A, passage-ways B, warm-air passage-ways D from the ceiling of each apartment to the upper part of the cooling-chamber, the cold-air passage-ways E from the cooling-chamber floor descending into the apartments below, the escape air and gas passage-ways C, the pipes F G K L and vessels H in the cooling-chamber for containing the cooling-liquid and for keeping up a continuous circulation of said liquid, an inclined floor to said cooling-chamber, and a reserve chamber above the cooling-chamber, substantially as and for the purposes set forth.

2. The combination, with a building for refrigerating purposes, of the inlet air-openings A, passage-ways B, warm-air passage-ways D from the ceiling of each apartment to the upper part of the cooling-chamber, the cold-air passage-ways E from the cooling-chamber floor descending into the apartments below, and regulating dampers or valves in said passage-ways, the series of flat shallow vessels H, connected by pipes I, for containing the cooling-liquid, the pipes F G, for supplying the cooling-liquid, and the pipes K L, for drawing off said cooling-liquid, as and for the purposes set forth.

EMILE SCHRÖDER.

Witnesses:

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JAMES VANCHE.