Sept. 19, 1950 K. KREBSER 2,522,829

STORAGE OF PROVISIONS

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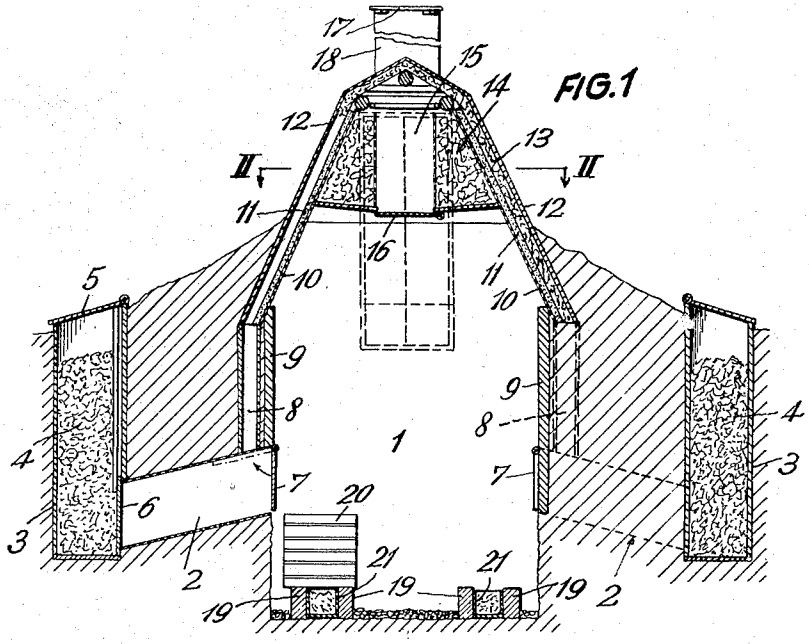


FIG. 1

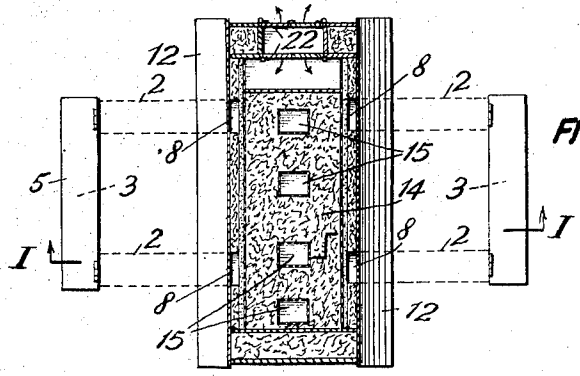


FIG. 2

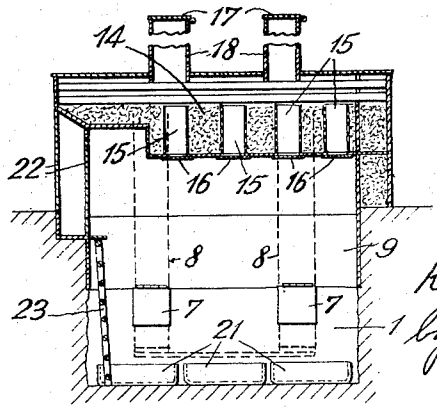


FIG. 3

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STORAGE OF PROVISIONS

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4 Claims. (Cl. 98—54)

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My present invention relates to improvements in storage pits, cellars, bins or silos used, in particular, for the storage of vegetable, fruit or cheese; and the objects of my improvements are first to supply an adequate amount of fresh air of suitable moisture content in dependence of outside atmospheric conditions, second to afford facilities for readily and cheaply constructing a storage pit or for adapting an existing cellar structure, and third, to afford means for keeping the humidity and temperature of the air constant in the pit or cellar.

I attain these and related objects by the pit or structure shown, in a single embodiment, in the accompanying drawing, in which

Fig. 1 is a vertical section on the line I—I of Fig. 2,

Fig. 2 a horizontal section on the line II—II of Fig. 1, and

Fig. 3 a vertical longitudinal section.

The storage room 1 proper is connected by a plurality of air ducts 2 to humidifier trenches 3 disposed parallel to the long sides of the structure. Said trenches are filled with an evaporator-humidifier material 4, e. g. living moss, and may be closed off against the atmosphere by the hinged covers 5. Drop gates 6 close the bottom of said trenches against the air ducts 2 while the latter may be closed against the room 1 by the swing gates 7. Uptakes 8, disposed back of the partly boarded side walls 9, connect the air ducts 2 with an evaporator-humidifier bin 14 situated under the roof of the structure.

The said gates 7, when raised, close off the bottom of the uptakes 8, while, when hanging free, they close off the ducts 2 against the room 1. The gates 7, therefore, act in the manner of a three-way valve to direct the incoming air either horizontally into the room 1 or vertically into the uptake 8.

The roof structure, in the embodiment shown, extends partly into the ground, and comprises the sheathing 12 covered with roofing felt, asbestos cement shingles or corrugated sheets, or a similar roofing material, the hygroscopic plates 11, the wire-mesh 10 supporting the latter, and the evaporator-humidifier filler in the said bin 14. The space between the roof sheathing 12 and the said plates 11 is also filled with an evaporator-humidifier material 13, e. g. moss. Four flues 15, to be closed by the hinged covers 16, connect the room 1 to the outside by way of the vents 18. The latter may be closed on top by the hinged covers 17.

The roofing felt, asbestos cement shingles or

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corrugated sheets, or similar roofing material, may yet be coated by an impregnating mass, and the latter may be sprinkled with a metallic powder, e. g. aluminium flakes. The floor of the storage room 1 receives a layer of sand, approximately one foot in depth, and sleepers 19 are laid thereon.

The stacked fruit boxes, crates or trays 20 rest on the sleepers 19, and porous-tile evaporators 21 which also may contain an evaporator-humidifier agent such as moss, are disposed between the said sleepers. The alley between the rows of boxes 20 is covered with a layer of quartz-sand approximately one foot deep.

A double door 22 and a ladder 23 give access to the storage room. If desired, the humidifier reservoirs 3, 14 and 21 are connected to a water supply, not shown.

In cool weather, outside air is admitted into the storage room 1 through the trenches 3 and the ducts 2. In this case, the gates 7 are swung open into their high position shown by the dot-and-dash line in Fig. 1, and the covers 5 and drop gates 6 also are open. The covers 16 and 17 may be open to induce a certain amount of air-circulation through the room 1.

In case of a rising outside temperature, when the humidity of the outside air decreases, the doors 7 are dropped; and the outside air then descends through the trenches 3, where it is adequately humidified and passes through the ducts 2 and the uptakes 8 into the top of the roof jacket 13. In case of a relatively high outside temperature, a very substantial evaporating and humidifying action is induced in the reservoir 14, which yet is increased when the sun is shining by the heating of the roof cover.

Since in such case all openings of the room 1 are closed, the reservoir 14 forms a buffer between the outside and the room 1. A certain adjustment of temperature and humidity only may take place through the hygroscopic plates 11. The temperature and humidity differences induced by this latter feature, amount, however, to only 2° F. between minimum and maximum or 2%, respectively, in the room 1.

In the structure shown and described, a sweating of the goods stored is prevented in consequence of the constant and relatively low temperature and the uniformly substantial humidity. Fruit, vegetable, cheese and like produce may, therefore, be stored therein over extended periods of time, retaining its fresh appearance, preventing decay, maintaining its weight and being improved in taste. In place of an individual pit or

silo structure, also a cellar of an existing structure could be provided with humidity reservoirs of the character and disposition shown and described, thereby attaining identical advantages for the goods stored. Should it be desired, e. g. in hot summers or in places having hot and dry climates, to attain still lower temperatures in the storage room, mechanical refrigeration means may be installed, thereby directly or indirectly cooling the air in the storage room. A liquid spray also could be provided for, cooling the water to be atomised, if such be necessary, by means of a refrigerator.

What I claim and desire to secure by Letters Patent is:

1. Storage structure of the class described, in combination comprising a storage room proper, evaporator-humidifier pits buried in the ground and disposed outside the structure and communicating with the atmosphere, air-supply ducts communicating with the bottom portions of said room and pits, an evaporator-humidifier bin disposed in the top part of the structure, said pits and bin containing loosely packed humidifying material and said bin acting as insulating buffer between atmosphere and storage room, air-uptakes communicating with said ducts and said bin, and closing means adapted to guide incoming air into the latter by detouring the storage room for the purpose described.

2. Storage structure of the class described, in combination comprising a storage room proper, evaporator-humidifier pits buried in the ground and disposed outside the structure and communicating with the atmosphere, air-supply ducts communicating with the bottom portions of said room and pits, an evaporator-humidifier bin disposed in the top part of the structure, said pits and bin containing loosely packed humidifying material and said bin acting as insulating buffer between atmosphere and storage room, air-uptakes communicating with said ducts and said bin, and closing means adapted to guide incoming air into the latter by detouring the storage room, and hygroscopic partition sheets on the long sides of the structure and shutting off said room from said uptakes for the purpose set forth.

3. Storage structure of the class described, in combination comprising a storage room proper, evaporator-humidifier pits buried in the ground and disposed outside the structure and communicating with the atmosphere, air-supply ducts communicating with the bottom portions of said room and pits, an evaporator-humidifier bin disposed in the top part of the structure, said pits and bin containing loosely packed humidifying material and said bin acting as insulating buffer between atmosphere and storage room, flues connecting the storage room with said bin, hinged covers for shutting off the latter from the storage room, and vents connecting said flues and said bin with the atmosphere.

4. Storage structure of the class described, in combination comprising a storage room proper, evaporator-humidifier pits buried in the ground and disposed outside the structure and communicating with the atmosphere air-supply ducts communicating with the bottom portions of said room and pits, an evaporator-humidifier bin disposed in the top part of the structure, said pits and bin containing loosely packed humidifying material and said bin acting as insulating buffer between atmosphere and storage room, air-uptakes communicating with said ducts and said bin, and closing means adapted to guide incoming air into the latter by detouring the storage room, and hygroscopic partition sheets on the long sides of the structure and shutting off said room from said uptakes, a roof sheathing spaced parallel to said hygroscopic partition to form a roofing jacket enclosing said uptakes, said jacket containing said humidifying material, and flues connecting the storage room with said bin and said vents.

KARL KREBSER.

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