W. H. PRINZ.

MALTING APPARATUS.

APPLICATION FILED OCT. 6, 1906.

**958,825.**

**Patented May 24, 1910.**

2 SHEETS—SHEET 1.

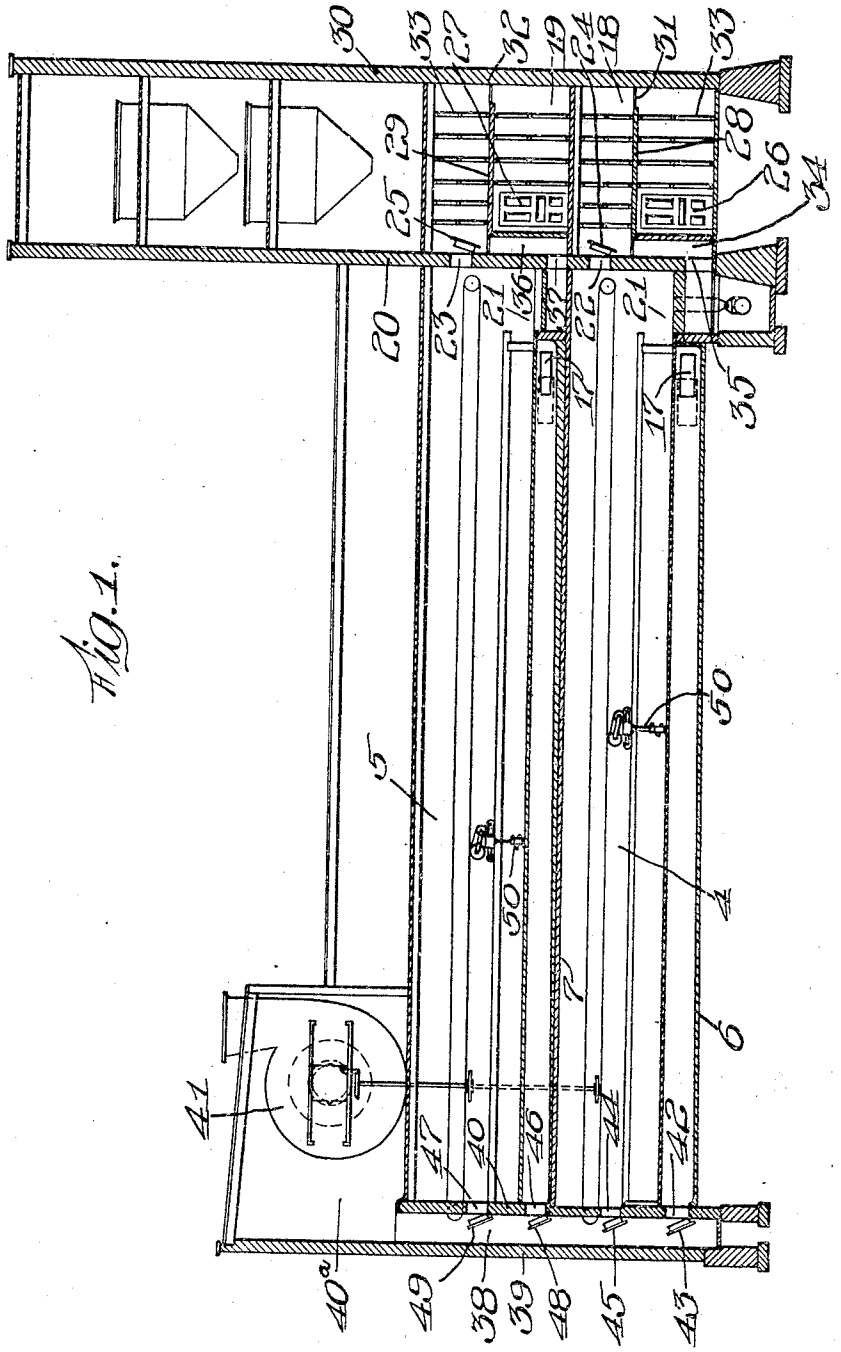


Fig. 1.

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2 SHEETS—SHEET 2.

Fig. 2.

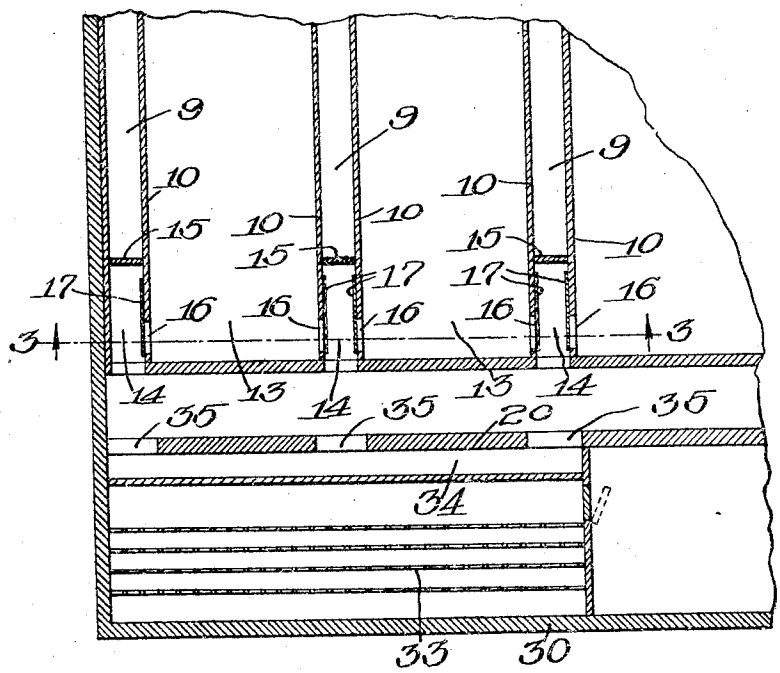
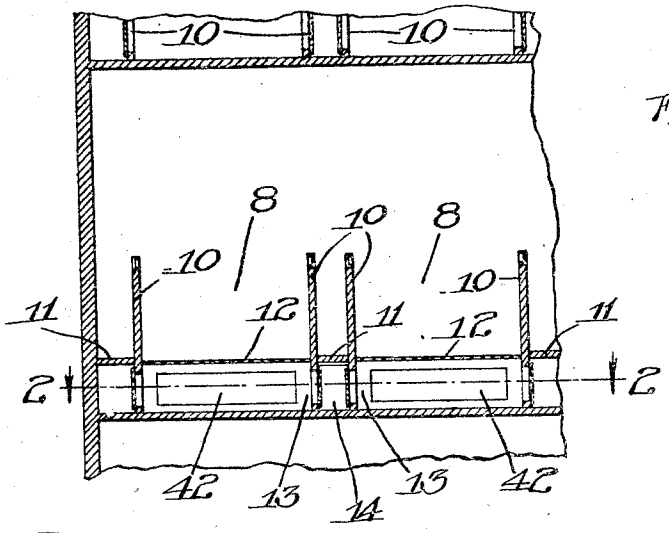



Fig. 3.

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# UNITED STATES PATENT OFFICE.

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## MALTING APPARATUS.

958,825. Specification of Letters Patent. Patented May 24, 1910.

Application filed October 6, 1906. Serial No. 337,784.

*To all whom it may concern:*

Be it known that I, WILLIAM H. PRINZ, a citizen of the United States, residing at Oak Park, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Malting Apparatus, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to malt houses, and has for its object to provide a new and improved arrangement by which the ventilation of the grain or malt may be more efficiently secured and controlled. In practice, unless care is exercised, too much air may be used, thereby reducing the moisture in the grain, retarding its growth and producing an inferior product. Furthermore, the use of too great a volume of air causes waste on account of the greater power consumed in forcing it through the malt.

By my invention I provide for ventilating the malting compartments above the malt to carry off heat arising from the germinating grain and also for ventilating the space underneath the floor of the malting compartment to carry off the carbonic acid gas that settles in such space,—these results being secured at the same time that I provide for ventilating by currents of air passing either upward or downward through the malt, as may be desired.

In the accompanying drawings, which illustrate one embodiment of my invention,—Figure 1 is a sectional view of the malt house; Fig. 2 is a horizontal sectional view on line 2—2 of Fig. 3, illustrating the arrangement of the ventilating channels in plan; and Fig. 3 is a partial vertical section on line 3—3 of Fig. 2.

Referring to the drawings, 4—5 indicate the lower and upper compartment rooms, respectively. Obviously, one or more compartment rooms may be provided, which may be either one above another, as shown in the drawings, or arranged in any other suitable way.

6 indicates the floor of the lower compartment room, and 7 the floor of the upper compartment room, which, in the arrangement shown, is also the ceiling of the lower compartment. The compartments are of the well-known type, extending longitudinally of the room and arranged side by side with gangways between, as best shown in Figs. 2 and 3, in which 8 indicates the compartments, 9 the gangways, and 10 the partitions which form the gangways,—as best shown in Fig. 2.

11 indicates the floors of the gangways, as shown in Fig. 3.

12 indicates the floors of the compartments, which are perforated, as shown in Fig. 3.

13 indicates channels beneath the compartment floors, and 14 channels below the floor at one end of each of the gangways, as shown in Figs. 2 and 3. Partitions 15, shown in Fig. 2, form the ends of the channels 14, said partitions being placed near the inlet ends of said channels, as shown, so that said channels extend only a short distance under the gangway floors.

16 indicates ports in the partitions 10 affording communication between the channels 14 and 13. Valves 17 are provided by which said ports may be closed, when desired. Said valves are preferably sliding gates, as shown in Fig. 1.

18—19 indicate attemperator rooms for supplying attemperated air to the compartment rooms 4 and 5, respectively.

20 indicates a wall separating the attemperator rooms 18—19 from the compartment rooms 4—5, as shown in Fig. 1. Said wall is placed a short distance from one end of the compartments 8 so as to provide transverse gangways 21, as shown in Fig. 1.

22—23 indicate ports affording communication between the upper portions of the attemperator rooms 18—19 and the compartment rooms 4—5, respectively. Said ports are provided with valves 24—25 by which they may be controlled.

26—27 indicate doors through which atmospheric air may be admitted to the lower portions of the attemperator rooms 18—19.

28—29 indicate horizontal partitions in the attemperator rooms 18—19, which are placed immediately above the level of the upper margins of the door openings, and which extend toward the outer wall 30 of the building but terminate a short distance therefrom, forming passages 31—32, as shown in Fig. 1. By this construction air entering through the doors 26—27 passes

back toward the wall 30, thence up through openings 31—32, and then forward in a direction opposite to its original course.

33 indicates attemperators of any suitable construction in the attemperator rooms.

34 indicates a passageway leading from the upper portion of the attemperator room 18 to openings 35 in the wall 20, which communicates with the channels 14 under the gangways 11 of the lower compartments. Similarly, 36 indicates a passageway which connects the upper portion of the attemperator room 19 with the channels 14 of the upper compartment through openings 37 in the wall 20.

38 indicates a flue at the opposite ends of the compartment rooms from the attemperator rooms, said flue being formed between the end wall 39 of the building and the adjacent end wall 40 of the compartment rooms. Said flue is closed at its lower end and communicates at its upper end with an exhaust chamber $40^a$ having a fan 41, or other suitable means, for creating a current of air.

42 indicates ports connecting the channels 13 under the lower malting compartments with the flue 38. 43 indicates valves for said ports.

44 indicates ports connecting the upper portion of the lower compartment room with the flue 38, and 45 indicates valves for said ports 44. Similarly, the upper compartment room is provided with ports 46 and 47 corresponding with the ports 42 and 44, respectively, and it is similarly equipped with valves 48 and 49.

By the construction described, air from the attemperator room 18, for example, may, if desired, be caused to flow through the upper part of the lower compartment room, thence out through flue 38 without passing through the malt,—this being accomplished by opening valves 22 and 45 and closing valves 17 and 43. Or, air may be caused to flow from the lower attemperator room through the channels 13 below the lower malting compartment floors, and thence out through flue 38, this being done by closing valves 22 and 45 and opening valves 17 and 43. These operations may also be conducted simultaneously, if desired. Again, air from the attemperator room may be caused to pass through the malt either upward or downward at pleasure, since by opening valves 24 and 43 and closing valves 17 and 45 the attemperated air may pass into the upper portion of the compartment room, thence down through the malt into the channels 13, and thence out through ports 42. If valves 24 and 43 are closed and valves 17 and 45 opened the attemperated air will pass down through passageways 34 and channels 14 to the channels 13 under the compartment floors, thence up through the malt and out through ports 44. Similar operations may be conducted in the upper compartment room. It will thus be seen that the flow of air through the compartment rooms, channels, and malt is under complete control of the operator, who may regulate the ventilation of the malting compartments and channels at pleasure.

50 indicates malt turners for agitating the grain in the malting compartments, the construction of which forms no part of my present invention.

I wish it to be understood that my invention is not restricted to the specific construction illustrated and described, as it includes generically the subject-matter of the broader claims.

That which I claim as my invention and desire to secure by Letters Patent is,—

1. A malt-house having a malting compartment room, a plurality of compartments in said compartment room, said compartments having perforated floors, means operating in said compartments for stirring the malt therein, gangways between adjacent compartments, air channels under said compartment floors, air channels under said gangways, an attemperator room, and means for delivering air from said attemperator room either to the channels under the compartment floors or to the channels under the gangways.

2. A malt-house having a malting compartment room, a plurality of compartments in said compartment room, said compartments having perforated floors, means operating in said compartments for stirring the malt therein, gangways between adjacent compartments, air channels under said compartment floors, air channels under said gangways, an attemperator room, means for delivering air from said attemperator room either to the channels under the compartment floors or to the channels under the gangways, and valved openings between said channels.

3. A malt-house having a compartment room, a plurality of compartments therein, said compartments having perforated floors, means operating in said compartments for stirring the malt therein, an attemperator room, a valved opening between said attemperator room and the compartment room above the compartments, a valved outlet from said compartment room above the compartments, channels under the compartment floors, and valved outlets communicating with said channels.

4. A malt-house having a compartment room, a plurality of compartments therein, said compartments having perforated floors, means operating in said compartments for stirring the malt therein, an attemperator room, a valved opening between said attemperator room and the compartment room

above the compartments, a valved outlet from said compartment room above the compartments, channels under the compartment floors, valved outlets communicating with said channels, gangways between said compartments, channels under said gangways, and means for admitting air from said attemperator room to the latter channels.

5. A malt-house, having a compartment room, a plurality of compartments therein, said compartments having perforated floors, means operating in said compartments for stirring the malt therein, an attemperator room, a valved opening between said attemperator room and the compartment room above the compartments, a valved outlet from said compartment room above the compartments, channels under the compartment floors, valved outlets communicating with said channels, gangways between said compartments, channels under said gangways, means for admitting air from said attemperator room to the latter channels, and valved openings between the channels under the compartments and those under the gangways.

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