

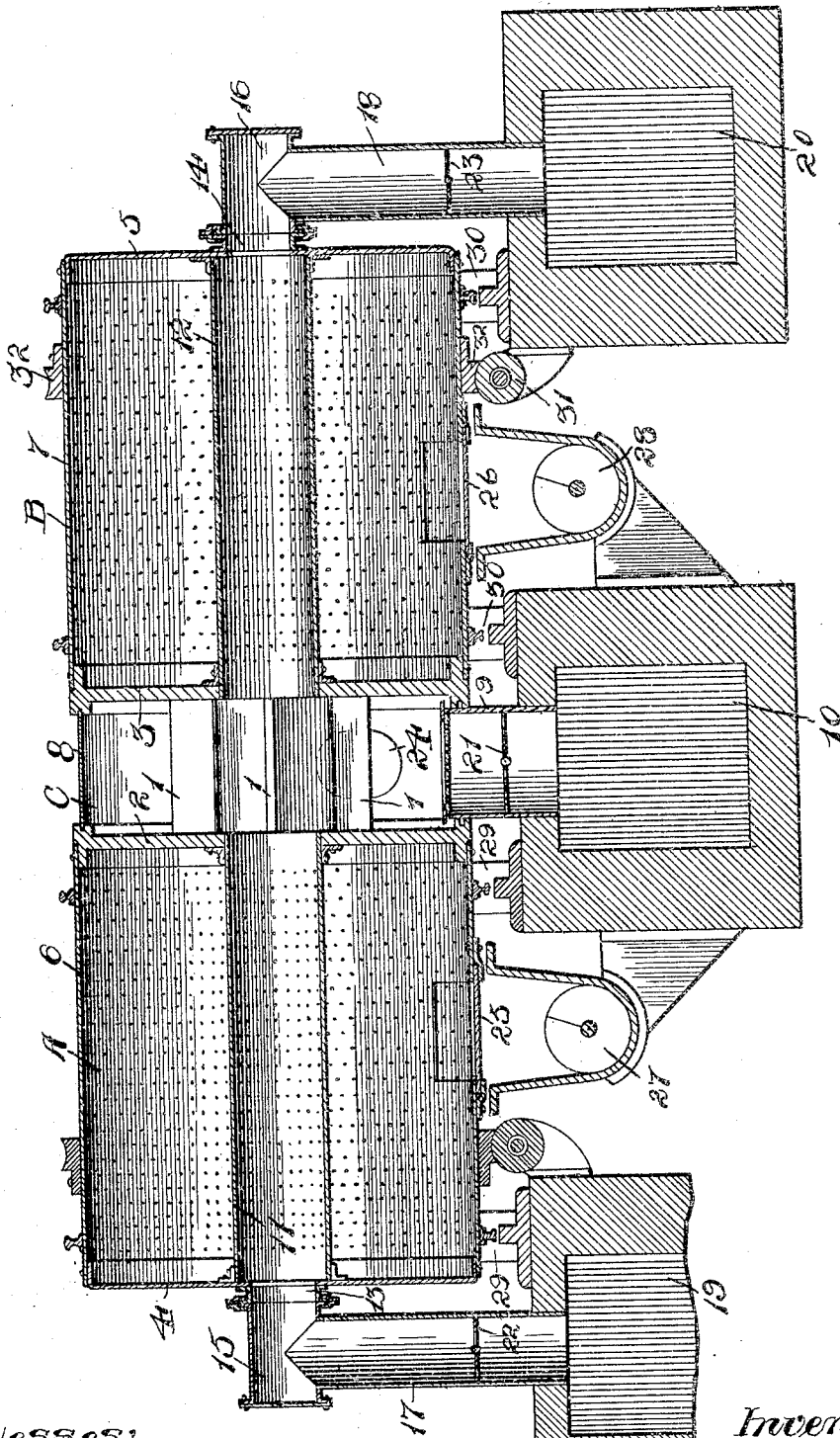
958,822.

W. H. PRINZ.
MALTING APPARATUS.
APPLICATION FILED AUG. 22, 1903.

Patented May 24, 1910.

2 SHEETS—SHEET 1.

Fig. 1



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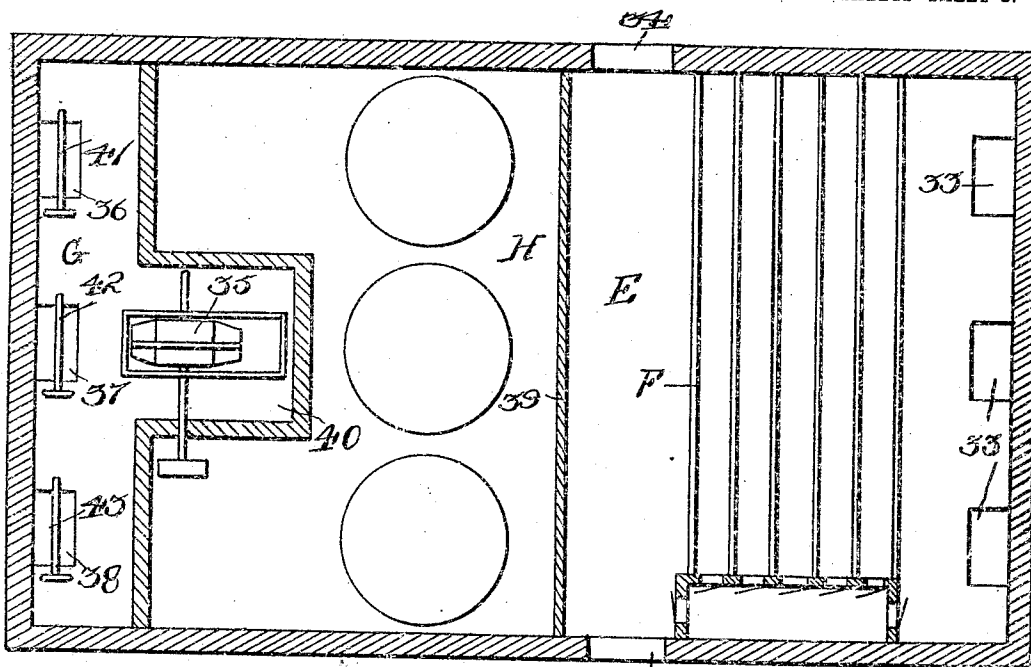


Fig. 2.

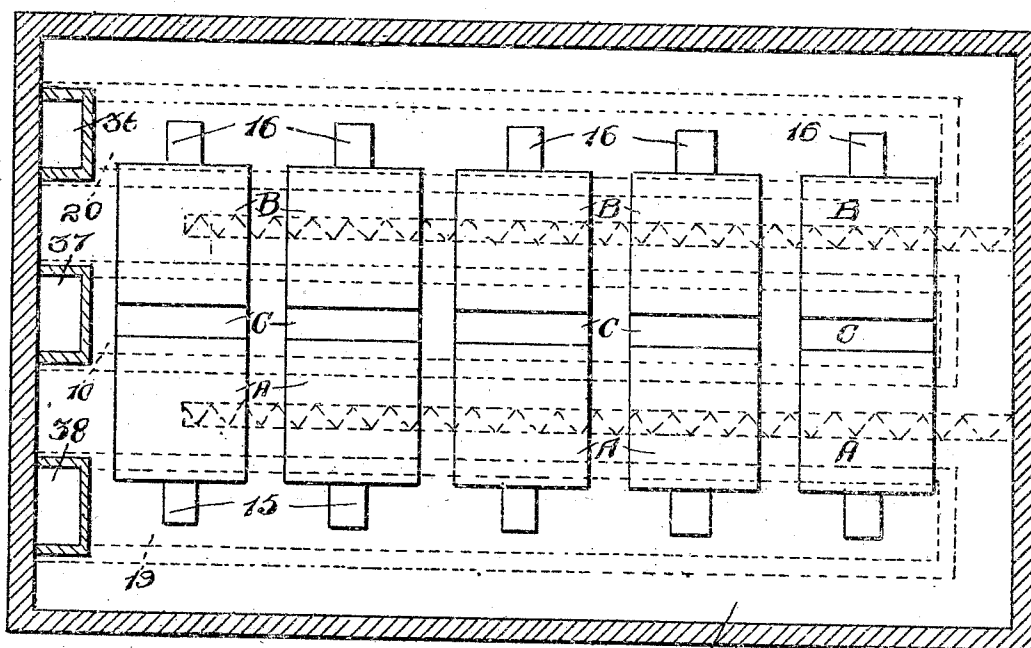


Fig. 3.

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UNITED STATES PATENT OFFICE.

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MALTING APPARATUS.

958,822.

Specification of Letters Patent.

Patented May 24, 1910.

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To all whom it may concern:

Be it known that I, WILLIAM H. PRINZ, a citizen of the United States, residing at Chicago, 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 apparatus for malting grain, and particularly to apparatus involving a rotary drum divided into a plurality of malt compartments, with means for supplying attemperated air to the grain in the compartments, which generically forms the subject matter of my application for patent of even date herewith, Serial Number 170,414. The apparatus described in my said application, specifically considered, involves the application of attemperated air to the grain in the malt compartments of a sectional perforated drum, by pressure, the air being introduced into the drum through conduits disposed axially in the malting compartments and passing out through the shell of the drum into the malting room.

My present invention has for its object to provide means for supplying attemperated air to the malt in a drum having the construction described in my said application, by suction, instead of by pressure, so that the air enters the malting compartments through the perforations in the shell thereof, and thence passes through the malt from circumference to center. I accomplish this object as hereinafter described and as illustrated in the drawings.

What I regard as new is set forth in the claims.

In the drawings, Figure 1 is a longitudinal sectional view of the drum and the conduits connected therewith; Fig. 2 is a horizontal sectional view of the attemperator floor; and Fig. 3 is a horizontal sectional view of the malting room.

In my application of even date herewith, above referred to, I have described in detail the construction of my improved sectional drum; and therefore I deem it unnecessary to describe said drum specifically herein, except in so far as may be necessary to a full understanding of its general construction.

Referring to the drawings, A—B indicate the malting compartments of the drum, and C an intermediate compartment. The

malting compartments A—B are adapted to rotate in unison, being connected rigidly together by plates 1, connected with heads 2—3, respectively, at the inner ends of the drum sections forming the compartments A—B.

4—5 indicate the heads at the outer ends of the compartments A—B, respectively. The heads 2—3, 4—5 are imperforate, except at the axis of the drum. The heads 2—4 of the compartment A are joined by a perforated shell or casing 6, while the heads 3—5 of the compartment B are connected by a perforated shell or casing 7. The heads 2—3 are connected by an imperforate shell or casing 8, which is non-rotary, being connected at its lower end to a flue or conduit 9 connected with an air tunnel 10.

11—12 indicate perforated conduits arranged axially in the compartments A—B, respectively, their ends being secured to the heads of their respective compartments.

13—14 indicate external extensions of the conduits 11—12, respectively, which extensions are joined to stationary conduits 15—16, respectively, which communicate through conduits 17—18, respectively, with tunnels 19—20, respectively. By this construction, by suction applied to the tunnels 19—20, air within the compartments A—B may be exhausted through the conduits 11—12; also, by suction applied to the tunnel 10, air in the compartments A—B may be exhausted through compartment C. The conduits 9, 17 and 18 are provided with valves 21—22—23, respectively, so that the flow of air through them may be regulated.

24 indicates a manhole through the casing 18, which is closed by a suitable cover. Similarly, the shells 6—7 of the compartments A—B are provided with suitable openings closed ordinarily by covers 25—26.

27—28 indicate conveyers for conducting off the malt discharged from the drum. The drum is mounted upon suitable supporting rollers, not shown, carried by supports 29—30, respectively, shown in my application above referred to, and is driven by any suitable gearing, such as worms 31 and worm wheels 32, also fully described in my said application.

D indicates the malting room, in which a series of drums are arranged side by side, as shown in Fig. 3, said drums all being in communication with the different tunnels 19, 10, 20.

E indicates the attemperator room, and F a sectional attemperator therein, which is preferably of the construction described in my said application.

33 indicates a series of openings in the floor of the attemperator room, to afford communication between said room and the malting room D. Where the attemperator room is immediately above the malting room, the passages 33 are simply holes cut in the floor, but they may be extended conduits, if necessary.

34 indicates openings in the wall of the attemperator room for the admission of external air thereto. It will be observed that the attemperator F is between the openings 34 and the passages 33, so that air entering the attemperator room through the openings 34 must pass through the attemperator before entering the malting room through the passages 33.

G indicates what may be termed the exhaust room, since it contains the fan 35 by which air is exhausted from the drums.

36—37—38 indicate flues affording communication between the room G and the tunnels 20, 10, 19, respectively, as shown in Fig. 2.

H indicates the steep-tank room, which is preferably separated from the rooms E—G by partitions 39—40, respectively.

41—42—43 indicate valves in the flues 36—37—38, respectively. Said valves are of the ordinary butterfly type, and serve to regulate the flow of air through their respective flues.

It will be understood that the fan 35 discharges into the open air, its inlet end being connected with the exhaust room G. By this construction, by operating the fan 35, air is exhausted from the room G, thereby creating suction through the flues 36—37—38 and exhausting the air in tunnels 19, 10, 20. The result is that air is exhausted from the compartments A—B—C, causing a flow of air into the compartments A—B through the perforated walls thereof, the air entering the said compartments from the malting room, which continuously receives a supply of fresh air from the attemperator room through the passage 33. Since the suction is applied to the compartments A—B by means of the conduits 11—12, which are connected at both ends to the suction apparatus, it will be seen that suction is applied equally throughout the length of the malting compartments A—B and that the air flows in the same direction through the malt in the different compartments; consequently the grain therein is uniformly subjected to the action of the fresh air.

I wish it to be understood that my invention is not restricted to the specific details of the construction described, except in so far as they are particularly claimed.

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

1. A malting apparatus, comprising a plurality of coaxial rotating malting compartments, means connecting said compartments so that they rotate in unison, and suction mechanism connected with both ends of each of said compartments for causing fresh air to flow in the same direction through the malt in each of said compartments.

2. A malting apparatus having a plurality of coaxial malting compartments, an intermediate compartment between adjacent malting compartments and communicating therewith, and means for simultaneously exhausting air from said compartments.

3. A malting apparatus, comprising a plurality of rotary coaxial malting compartments, a stationary intermediate compartment between adjacent malting compartments and communicating therewith, means connecting said malting compartments so that they rotate in unison, and means for exhausting air from said compartments.

4. A malting apparatus, comprising an externally-imperforate intermediate compartment, rotating malting compartments at opposite sides of said intermediate compartment and communicating therewith, said malting compartments being externally perforated, and means for exhausting air from said compartments.

5. A malting apparatus, comprising an imperforate intermediate compartment, rotating malting compartments at opposite sides of said intermediate compartment and communicating therewith, said malting compartments being perforated, and means connected with both ends of each of said malting compartments for exhausting air therefrom.

6. A malting apparatus, comprising an imperforate intermediate compartment, perforated malting compartments at opposite sides of said intermediate compartment and communicating therewith, perforated air conduits extending through said malting compartments, and means for exhausting air from said intermediate compartment.

7. A malting apparatus, comprising an imperforate intermediate compartment, perforated malting compartments at opposite sides of said intermediate compartment and communicating therewith, perforated air conduits extending through said malting compartments, and means connected with said intermediate compartment and with the outer ends of said perforated conduits for exhausting air from said malting compartments.

8. A malting apparatus, comprising a malting room, means for attemperating air, means for conducting attemperated air to said malting room, a plurality of rotary perforated malting compartments coaxially dis-

posed in said malting room, and exhaust mechanism connected with both ends of each of said malting compartments for causing fresh air to flow in the same direction through the malt in said compartments.

9. A malting apparatus, comprising a malting room, a malting appliance in said room comprising a plurality of perforated rotary malting compartments coaxially disposed, means for attemperating air, means for conducting attemperated air into said malting room, and exhaust mechanism connected with both ends of each of said compartments for causing fresh air to flow in the same direction through the malt in each of said compartments.

10. A malting apparatus, comprising a malting room, a malting appliance therein having an intermediate stationary compartment, perforated rotary malting compartments at opposite sides of said stationary compartment and communicating therewith, means for supplying attemperated air to said malting room, and means connected with said stationary and rotary compartments for exhausting air therefrom.

11. A malting apparatus having a plurality of malting compartments, an intermediate compartment in communication with said malting compartments, and suction mechanism for causing air to flow in the same direction through the malt in said malting compartments.

12. A malting apparatus having a plurality of rotary malting compartments, a stationary intermediate compartment in communication with said malting compartments, and suction mechanism for supplying air to said malting compartments.

13. A malting apparatus, comprising a malting room, means for conducting attemperated air to said malting room, a plurality of rotary malting compartments coaxially

disposed in said malting room, and means connected with both ends of said malting compartments for simultaneously exhausting air therefrom.

14. A malting apparatus, comprising a malting room, means for conducting attemperated air to said malting room, a plurality of rotary malting compartments, a stationary intermediate compartment communicating with said rotary malting compartments, and means connected with the outer ends of said malting compartments and with said intermediate compartment for exhausting air therefrom.

15. A malting apparatus, comprising a malting room, a rotary malting appliance therein comprising an externally-perforated malting compartment, one or more air conduits communicating with said malting compartments, and means for forcing attemperated air from said malting room through the malt in said compartment and out through said conduit or conduits.

16. A malting apparatus having a plurality of coaxial rotary malting compartments, an intermediate stationary compartment communicating with said rotary compartments, means connecting said malting compartments so that they rotate in unison, and suction mechanism for supplying air to said compartments.

17. A malting apparatus having a plurality of coaxial rotary malting compartments, an intermediate stationary compartment between adjacent malting compartments and communicating therewith, and means for exhausting air from said malting compartments.

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