No. 614,499. Patented Nov. 22, 1898.

H. RAETZELL.

DRUM FOR GERMINATING AND DRYING MALT.

(Application filed Nov. 13, 1897.)

(No Model.)

Fig. 1.

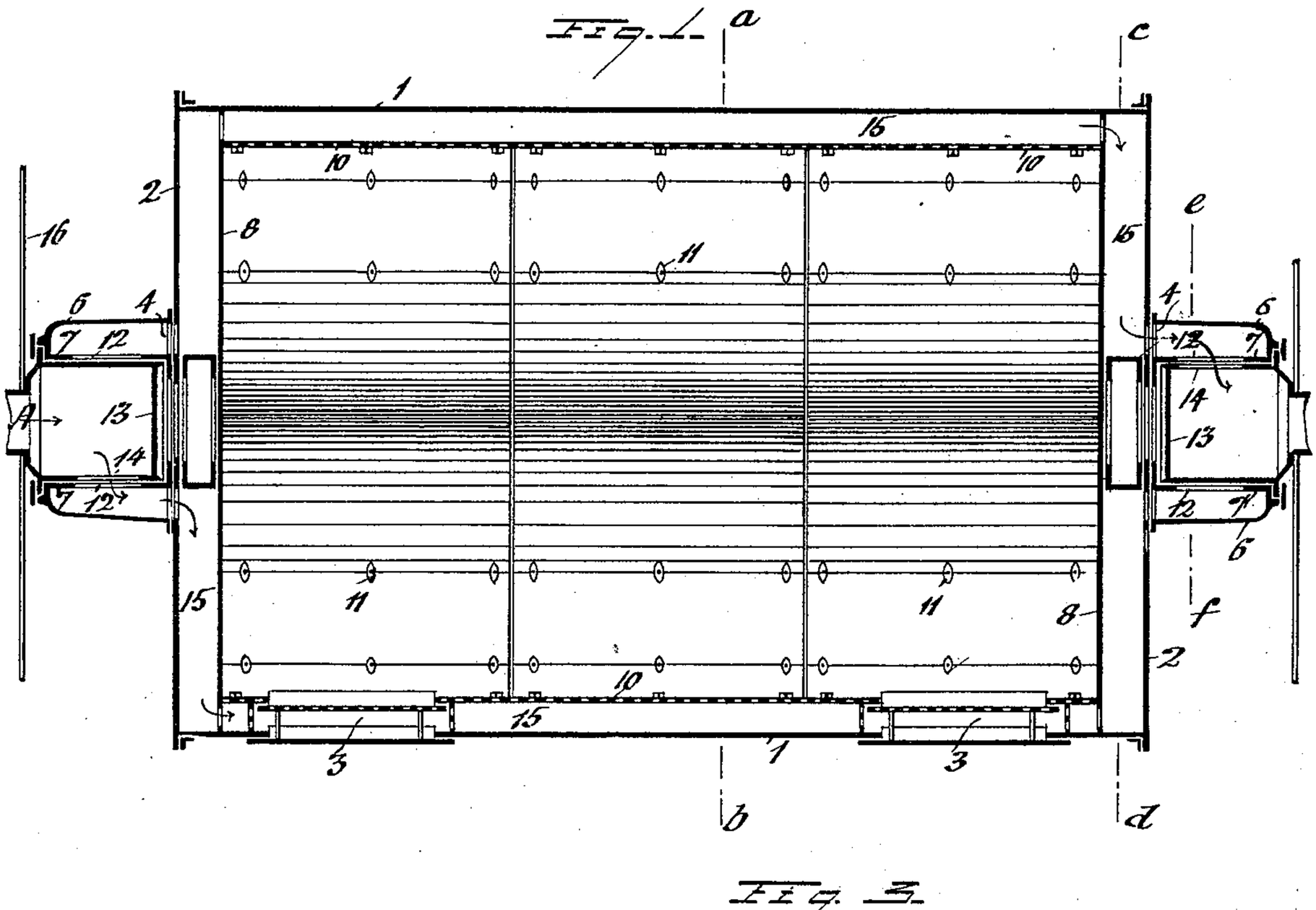


Fig. 2.

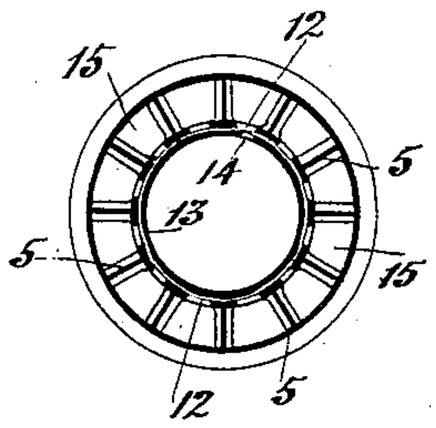
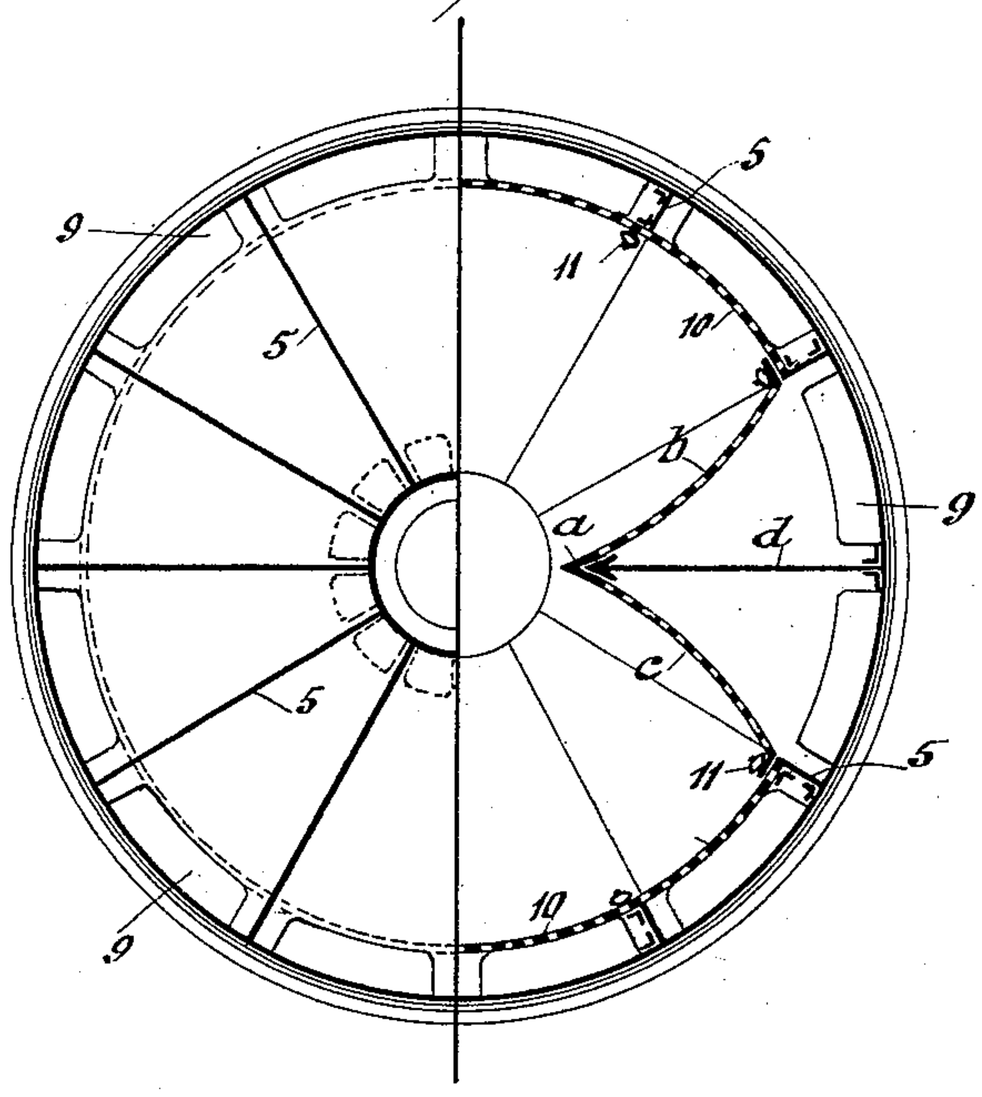


Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

HERMANN RAETZELL, OF BERLIN, GERMANY.

DRUM FOR GERMINATING AND DRYING MALT.

SPECIFICATION forming part of Letters Patent No. 614,499, dated November 22, 1898.

Application filed November 13, 1897. Serial No. 658,457. (No model.)

To all whom it may concern:

Be it known that I, HERMANN RAETZELL, a subject of the Emperor of Germany, and a resident of Berlin, Germany, have invented certain new and useful Improvements in or Relating to Drums for Germinating and Drying Malt, of which the following is a specification.

The hitherto-known drums for germinating and drying malt have nearly all the inconveniences that in consequence of their complicated construction they can be cleaned only with great difficulty. Besides, during the slow rotation of the drum and the consequent slow falling of the malt there is gradually formed in the interior a solid core which gets hot and which can only be destroyed again by hand, in order to prevent the malt from spoiling. For this reason in the present improvement there is arranged a hindrance in the interior of the drum, in order to avoid the formation of a solid core. In the annexed drawings there is shown an example of the construction of such a drum and of an air-introduction chamber or ventilating arrangement which appears the most convenient for the present case.

Figure 1 shows a longitudinal section of the drum. Fig. 2 is a cross-section on the line *e f*. Fig. 3 shows on the left a part cross-section on the line *c d*, Fig. 1, and on the right a part cross-section on the line *a b*, Fig. 1.

The arrangement of the drum is the following:

An exterior mantle 1 is closed laterally by ends 2, and the interior is made accessible by means of manholes 3. To this exterior drum there is connected a second interior drum by means of partitions 5, Figs. 2 and 3. These partitions lie in planes containing the axis of the drum, and therefore extend longitudinally along the sides of the drum and return toward the center at the ends of the drum. They thus divide the space between the inner and outer mantles of the drum into a number of separate longitudinal compartments 15. The inner mantle is for the greater part circular in cross-section, but does not follow a complete circle, since a part of its circumference is formed by two inwardly-projecting plates *b* and *c*, forming a reëntering angle the apex of which is divided by a partition *d*, which is consequently of larger depth radially than the partitions 5, though similar to them in other respects.

The holes 4 in the ends 2 of the drum open into annular domes 6 6, respectively, and the radial partitions 5 have their counter parts or prolongations in the said domes, so that the latter are also divided in direction of the axis of the drum into as many compartments as there are in the space between the mantles of the drum. The ends 8 of the inner drum extend to the mantle 1 of the outer drum and are provided with openings 9. The mantle of the inner drum is formed of perforated plates 10 and the two plates *b* and *c*, which are fixed on the partitions 5 *d* by means of thumb-screws 11.

The inner wall 7 of the dome 6 has openings which are of an equal number to the divisions formed by the partitions 5. In the domes 6 there are arranged hollow drums or pins 13, which are connected with the air-admission and air-escape pipes, respectively. These hollow pins 13 have an opening 14, which forms a connection so that air can pass between the said pipes connected to the hollow pins and the compartments 15. The fixed pins 13 form the bearings of the drum to be put into rotary movement in any known manner, and they can themselves be turned around their axes by means of handles 16, so that the openings 14, provided in the hollow pins 13, can be adjusted in such a manner that entrance or escape of the air can be effected at a desired place. In this manner, for instance, the air entering at A can pass in the direction of the arrows into the interior of the drum by adjusting the opening 14 (at the left side in the drawings) to the lowest position, and this air after having passed through the drum can be sucked out again by adjusting the opening 14, situated at the right side in the drawings, to the highest position. One can in this manner regulate at pleasure the air circulation in the interior of the drum and change at pleasure the entering and leaving points.

By the arrangement of the plates *b* and *c*, projecting in the interior of the drum, the whole malt is lifted to the one side during the rotation of the drum, and then it is dropped slowly, so that no solid core can be produced.

When the malt is left to stand after growing, the two plates *b* and *c* stand at the lowest point of the drum, so that two troughs are formed in which the malt lies, so that even when the malt is still complete ventilation is obtained by means of the perforations in the troughs thus formed and the core does not become hot, as in this arrangement the air-currents passing through the perforated plates cross one another and ventilate equally the whole of the malt. In the drying process also the green malt does not lie in a compact heap, but equally in the two troughs, so that here also the two crossing air-currents pass equally through the whole malt.

During the revolution of the drum the projecting plates form the device for turning the malt.

Having now described this invention, I claim—

In machinery for germinating and drying malt the combination with a rotary closed drum, of an interior perforated drum therein, the latter being cylindrical, with the exception of a longitudinal reëntering portion, partitions traversing the space between the exterior and interior drums dividing the said space longitudinally into compartments, and attaching the interior to the exterior drum, the said partitions being continued radially in the spaces between the ends of the inner and outer drums and means for controlling the admission of air to said compartments severally substantially as and for the purpose set forth.

In witness whereof I have signed this specification in presence of two witnesses.

HERMANN RAETZELL.

Witnesses:
WOLDEMAR HAUPT,
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