No. 778,854. PATENTED JAN. 3, 1905.

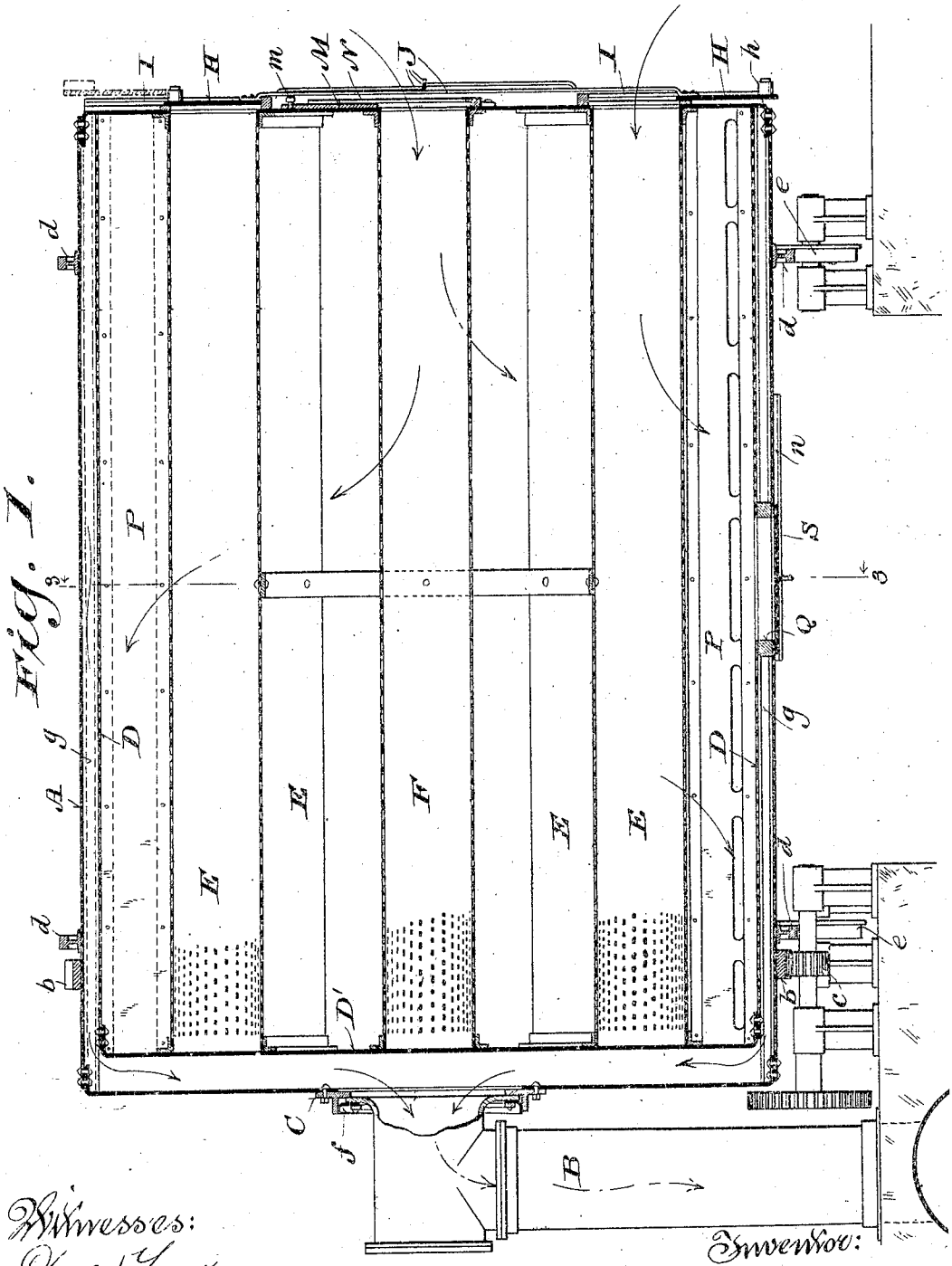
F. B. GIESLER.

MALTING DRUM.

APPLICATION FILED APR. 18, 1903.

3 SHEETS—SHEET 1.

Fig. 1.



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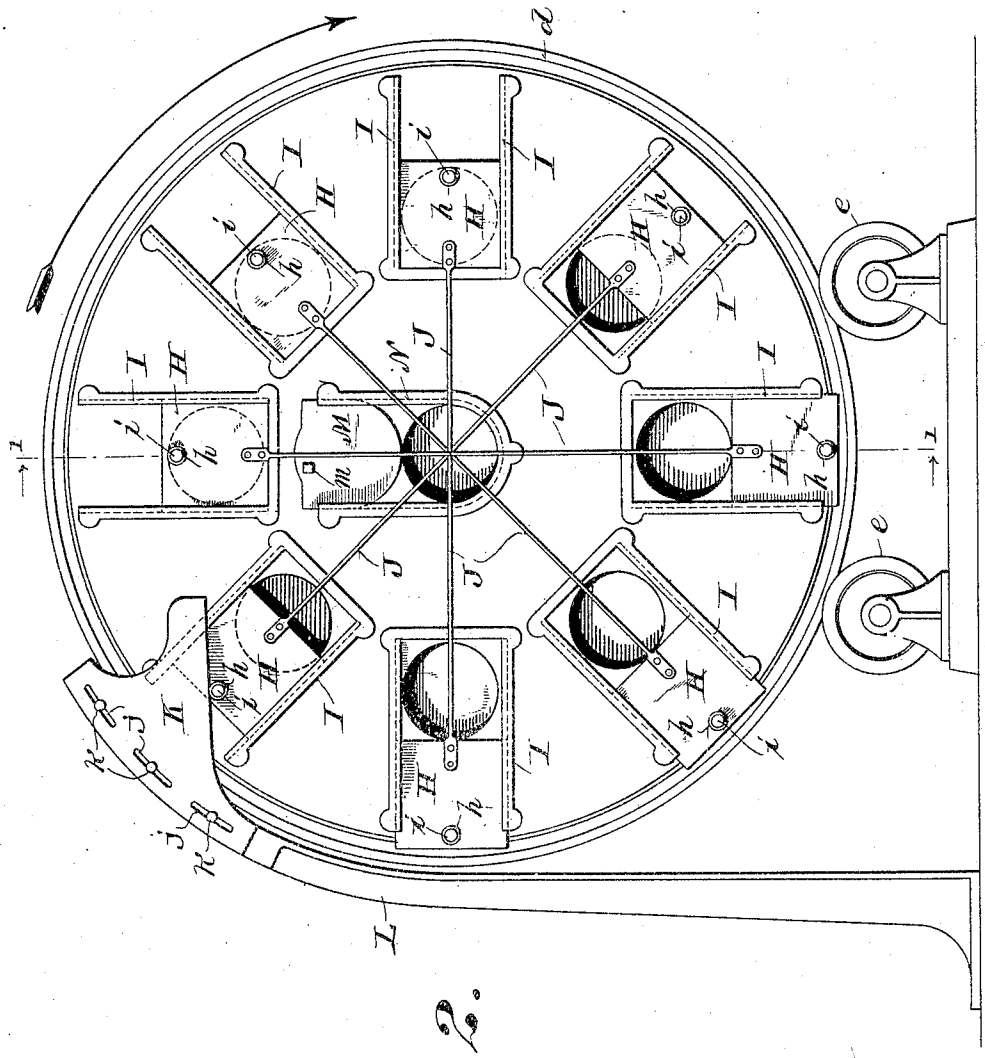


Fig. 2.

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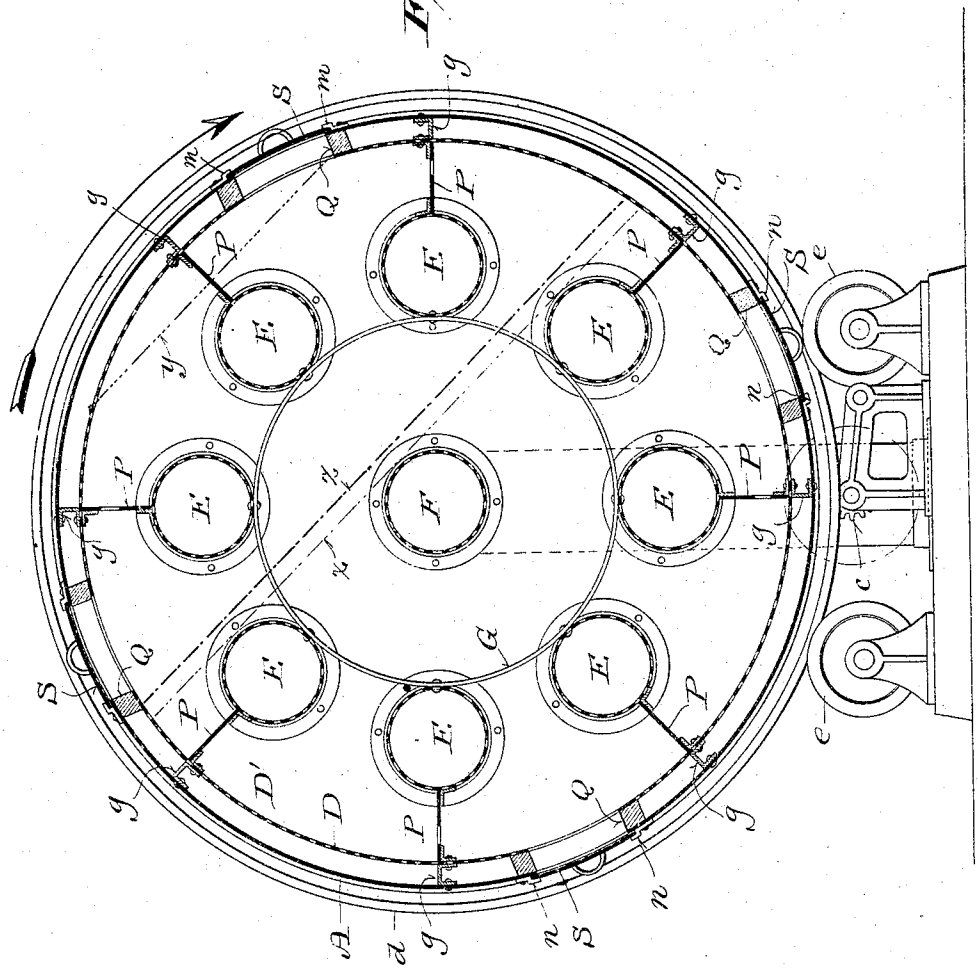
F. B. GIESLER.

MALTING DRUM.

APPLICATION FILED APR. 18, 1903.

3 SHEETS—SHEET 3.

Fig. 3.



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No. 778,854. Patented January 3, 1905.

UNITED STATES PATENT OFFICE.

FRANKLIN B. GIESLER, OF MILWAUKEE, WISCONSIN.

MALTING-DRUM.

SPECIFICATION forming part of Letters Patent No. 778,854, dated January 3, 1905.

Application filed April 18, 1903. Serial No. 153,156.

To all whom it may concern:

Be it known that I, FRANKLIN B. GIESLER, a citizen of the United States, and a resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Malting-Drums; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention has for its object to provide simple economical pneumatic malting-drums and to obtain the best results in the process of converting grain to malt, said invention consisting in what is hereinafter particularly set forth with reference to the accompanying drawings and subsequently claimed.

Figure 1 of the drawings represents a central longitudinal section view of my improved pneumatic malting-drum, the plane of this view being indicated by line 1 1 in the second figure; Fig. 2, an elevation of one end of the drum, and Fig. 3 a transverse section of said drum on the plane indicated by line 3 3 in the first figure.

Referring by letter to the drawings, A indicates the main or outer non-perforated sheet-metal circular shell of my improved pneumatic malting-drum, the same being provided with exterior spur-gear and track rings. The gear-ring *b* is in mesh with a pinion *c* of suitable motor mechanism, and the track-rings *d* are in contact with flanged wheels *e*, that have their axles mounted in suitably-arranged bearings. The drive-end head of shell A is provided with a central opening in register with the open flaring end of an arm of an air-exhaust flue B, said end of the flue-arm being within a ring flange of an annular plate C, fast on said head of the drum. To make the junction of the flue-arm and ring flange of said plate air-tight, a gasket *f*, of rubber, leather, or other suitable material, is fastened on the flare of said flue-arm to impinge said flange.

Within the shell A, against longitudinal angle-iron spacers *g*, is a perforated sheet-metal circular shell D, that abuts at one end against the head of the former shell that is farthest from the outlet to the flue aforesaid, the other end of the inner shell being a solid head. The longitudinal dimension of the perforated inner shell is such that air-space is left between it and the drive-end head of the outer non-perforated main shell. Set in the shell D lengthwise of the same are a series of perforated tubes E, each of which is closed at one end by the head D′ of said shell, that is parallel to the drive-end head of the shell A, and a central perforated tube F is also set in the shell D to be closed at one end by the head D′ aforesaid. The other ends of the several tubes communicate with openings provided in the adjacent head of the outer main shell A of the drum. To stiffen the tubes E, and thereby hold them in proper position, a ring G is made fast to said tubes, approximately midway of their ends. The drumhead-openings in communication with the tubes E are controlled by slides H in guide and stop frames I, with which the drum is provided, and said openings are in pairs diametrically opposite one another. The slides are connected in pairs by rods J, that cross one another at the axis of the drum, and when said drum is rotating one of the head-openings in each pair will be alternately opened and closed due to shift of the corresponding rod-connected slides. To prevent sticking of the slides and insure the shift of same, a cam K is shown supported by a stanchion L to be in the path of antifriction-rollers *h*, mounted on outer lateral pins *i*, with which said slides are provided. To vary the time at which each pair of the slides will be automatically shifted, the cam K is made adjustable, it being herein shown provided with segmental slots *j*, engaged by set-screws *k*, that extend into the aforesaid stanchion. The central opening in the head farthest from the drive end of the drum is regulated as to area or closed by means of a slide M, for which said head of the drum is provided with a guide-frame N, and this slide is held in manually-adjusted position by a set-screw *m* or other suitable means.

Plates P are arranged between the perforated shell D and perforated tubes E, lengthwise of same, and while these plates may be all apertured or not it is preferable, as herein shown, to have them alternately apertured.

At suitable intervals of their circumference the shells A D of the drum are shown connected by frames Q, surrounding suitable

openings, for which doors S are provided, these doors being preferably of the sliding variety in guides *n*, provided on the main shell of said drum.

In practice the space within the confines of the perforated shell D is charged with steeped grain to be malted, the quantity of said grain being such as to barely cover the central perforated tube F, after which rotation is imparted to the drum in the direction of the large arrows shown in Figs. 2 and 3. By a suction-fan (not shown, but connected at some convenient point with the flue B) attemperated moist air from an inclosure containing the drum is drawn through the then uncovered openings in the drum-head that is farthest from the drive end of said drum. The air then passes through malt-covered perforated tubes and takes its nearest course toward the perforated shell D, through which it passes into adjacent space and is finally drawn off through the exhaust-flue aforesaid. The drum being in rotation, the material therein is constantly shifting throughout the length of shell D obliquely of the same, the obliquity of the steeped grain being indicated by dotted line *x* in Fig. 3. Owing to the automatically-shifting slides H, a minority of the perforated tubes E within the germinating-space for the grain are cut off from inflow of air, there being a successive shift of said slides in pairs. At the start and for a time in the early stages of the germinating process the slide M, controlling the admission of air to the central perforated tube F, is secured in closed position; but thereafter said slide is secured in open position until the grain has been converted to green malt, which product fills the shell D to the degree indicated by dotted line *y* in Fig. 3. By closing the slide M for a suitable time and then opening the same the air has its flow through only such of the perforated tubes in shell D as are sufficiently embedded in the germinating barley. After the grain has been germinated to green malt heated dry air is substituted for the attemperated moist air and similarly circulated in the drum. When the green malt has shrunk in volume to the degree indicated by dotted line *z* in Fig. 3, the slide M is secured in closed position to prevent the heated dry air from escaping through the comparatively thin layer of malt then covering the central perforated tube F, and after the malt is thoroughly dried and cured it is ready to be discharged through the drum-openings that up to this time have been closed by the doors above specified. The shifting and mixing of the material in shell D is facilitated by the radial plates P, and these plates being all or alternately apertured they do not interfere with the discharge of the dried and cured malt.

From the foregoing it will be understood that the drum is surrounded by air at the desired degree of temperature whether it be cool moist air or heated dry air, and a current of this air being continuous through said drum by means of suction the best results are obtained. It is also to be understood that for a drying operation the air-current may be in a direction opposite that above described.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A malting-drum comprising a series of perforated longitudinal tubes in pairs diametrically opposite one another and communicating with drumhead-openings, and coupled slides controlling said openings.

2. A malting-drum comprising a series of perforated longitudinal tubes in pairs diametrically opposite one another and communicating with drumhead-openings, coupled slides controlling said openings, and a cam arranged in the path of devices projecting from the several slides.

3. A malting-drum comprising a series of perforated longitudinal tubes in pairs diametrically opposite one another and communicating with drumhead-openings, coupled slides controlling said openings, and a cam adjustable in the path of devices projecting from the slides.

4. A malting-drum comprising a series of perforated longitudinal tubes one of which is axial of the drum and the others in pairs diametrically opposite one another, all being in communication with drumhead-openings, a manually-adjustable slide controlling the axial drumhead-opening, and coupled automatic slides controlling the other drumhead-openings.

5. A malting-drum comprising a series of perforated longitudinal tubes having communication with drumhead-openings, guide and stop frames adjacent to said openings, and slides engaging the frames.

6. A malting-drum comprising an inner perforated shell closed at both ends but of such dimensions as to be surrounded by air-space communicating with like space within the drum at an end of same open to a flue, and perforated longitudinal tubes set in the shell to communicate with openings in the drumhead farthest from said flue.

7. A malting-drum comprising an inner perforated shell closed at both ends but of such dimensions as to be surrounded by air-space communicating with like space within the drum at an end of same open to a flue, perforated longitudinal tubes set in the shell to communicate with openings in the drumhead farthest from said flue, and plates intermediate of said shell and tubes lengthwise of same.

8. A malting-drum comprising an inner perforated shell closed at both ends but of such dimensions as to be surrounded by air-space communicating with like space within the drum at an end of same open to a flue, perforated longitudinal tubes set in the shell to communicate with openings in the drumhead

farthest from said flue, and alternately-apertured plates intermediate of said shell and tubes lengthwise of same.

9. A malting-drum comprising an inner perforated shell closed at both ends but of such dimensions as to be surrounded by air-space communicating with like space within the drum at an end of same open to a flue, perforated longitudinal tubes set in the shell to communicate with openings in the drumhead farthest from said flue, and slides controlling said drumhead-openings.

10. A malting-drum comprising an inner perforated shell closed at both ends but of such dimensions as to be surrounded by air-space communicating with like space within the drum at an end of same open to a flue, perforated longitudinal tubes set in the shell to communicate with openings in the drumhead farthest from said flue, one of these tubes being axially of the drum and the others in pairs diametrically opposite one another, a manually-adjustable slide controlling the axial drumhead-opening, and coupled slides controlling the other drumhead-openings.

11. A malting-drum comprising an inner perforated shell closed at both ends but of such dimensions as to be surrounded by an air-space communicating with like space within the drum at an end of same open to a flue, perforated longitudinal tubes set in the shell to communicate with openings in the drumhead farthest from said flue, one of these flues being axially of the drum and the others in pairs diametrically opposite one another, plates intermediate of said shell and the diametrically opposite tubes lengthwise of same, a manually-adjustable slide controlling the axial drumhead-opening, and coupled automatic slides controlling the other drumhead-openings.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

F. B. GIESLER

Witnesses:
N. E. OLIPHANT,
E. W. HELLER.