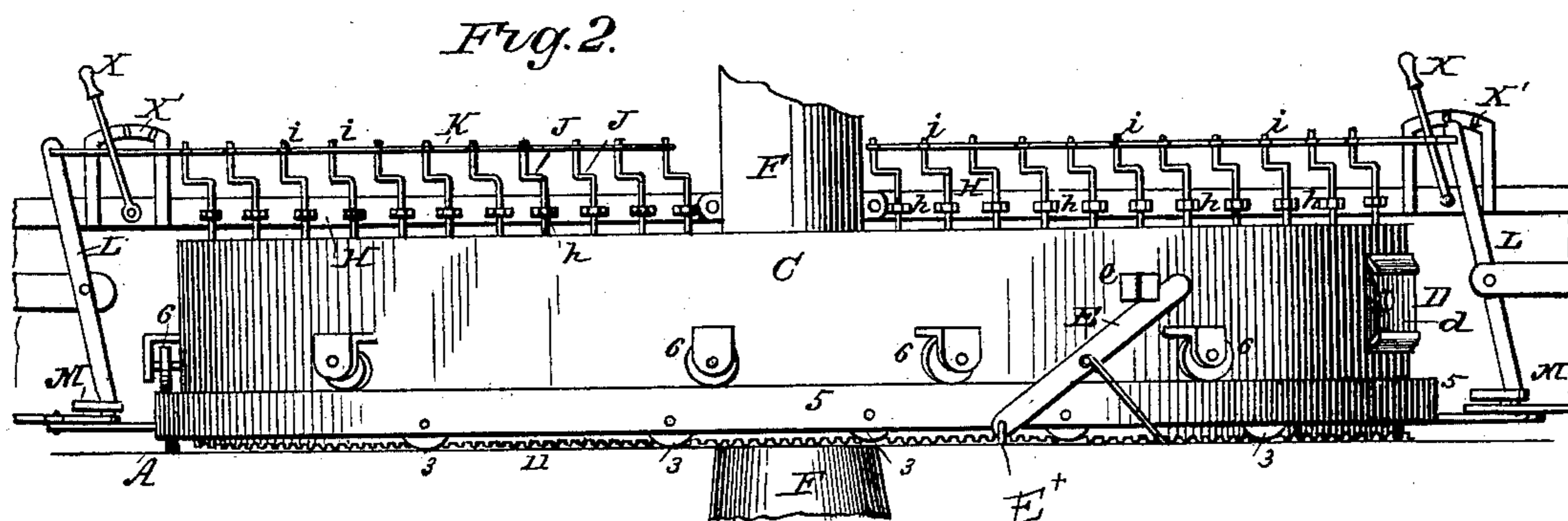
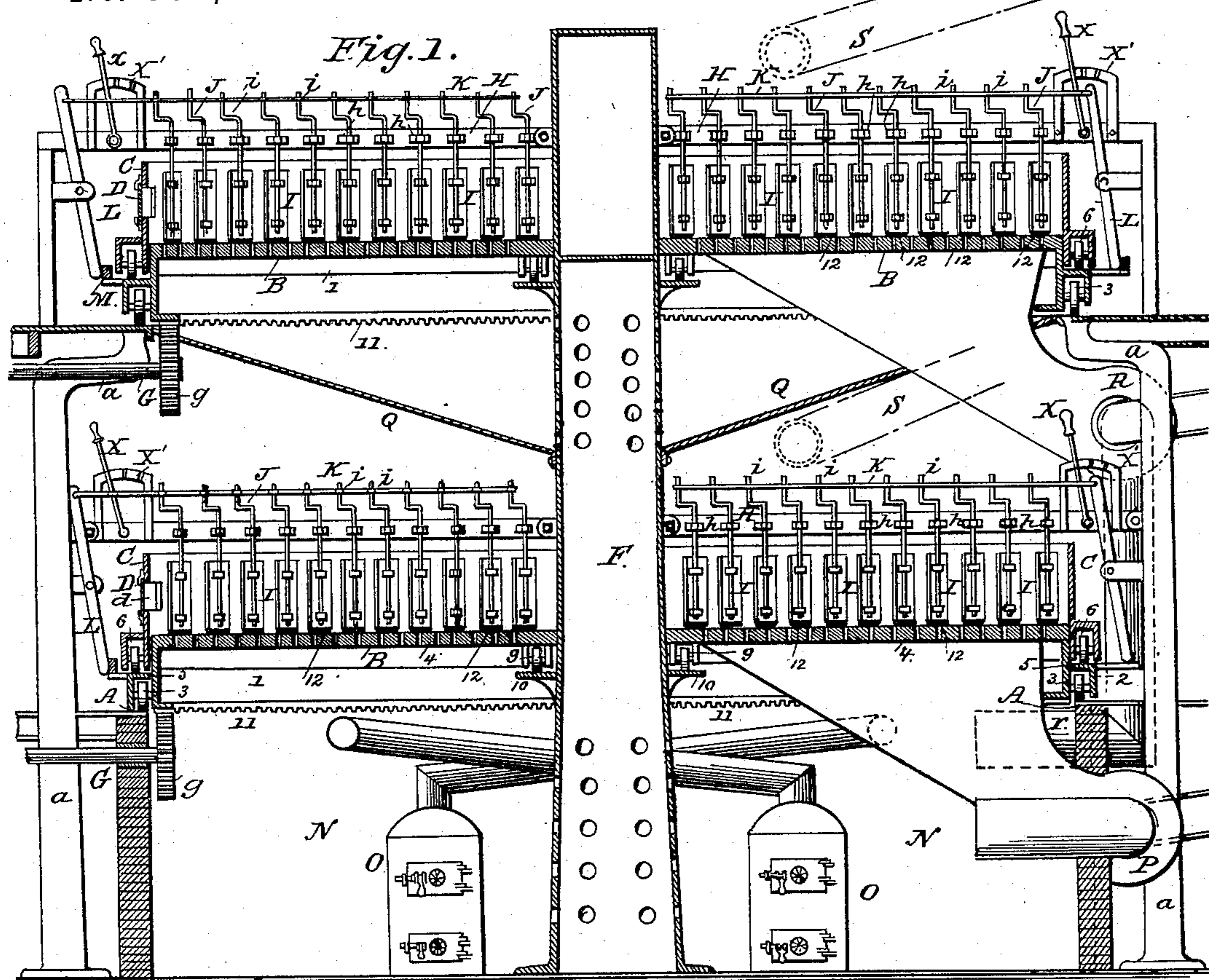


2 Sheets—Sheet 1.

No. 359,284.

Patented Mar. 15, 1887.



INVENTOR:

WITNESSES:
Fred G. Dieterich
 P. B. Turpin.

INVENTORS:
J. M. Plummer
BY Munn & Co.
ATTORNEYS.

(No Model.)

2 Sheets—Sheet 2.

W. S. PLUMMER.
APPARATUS FOR DRYING MALT.

No. 359,284.

Patented Mar. 15, 1887.

Fig. 3.

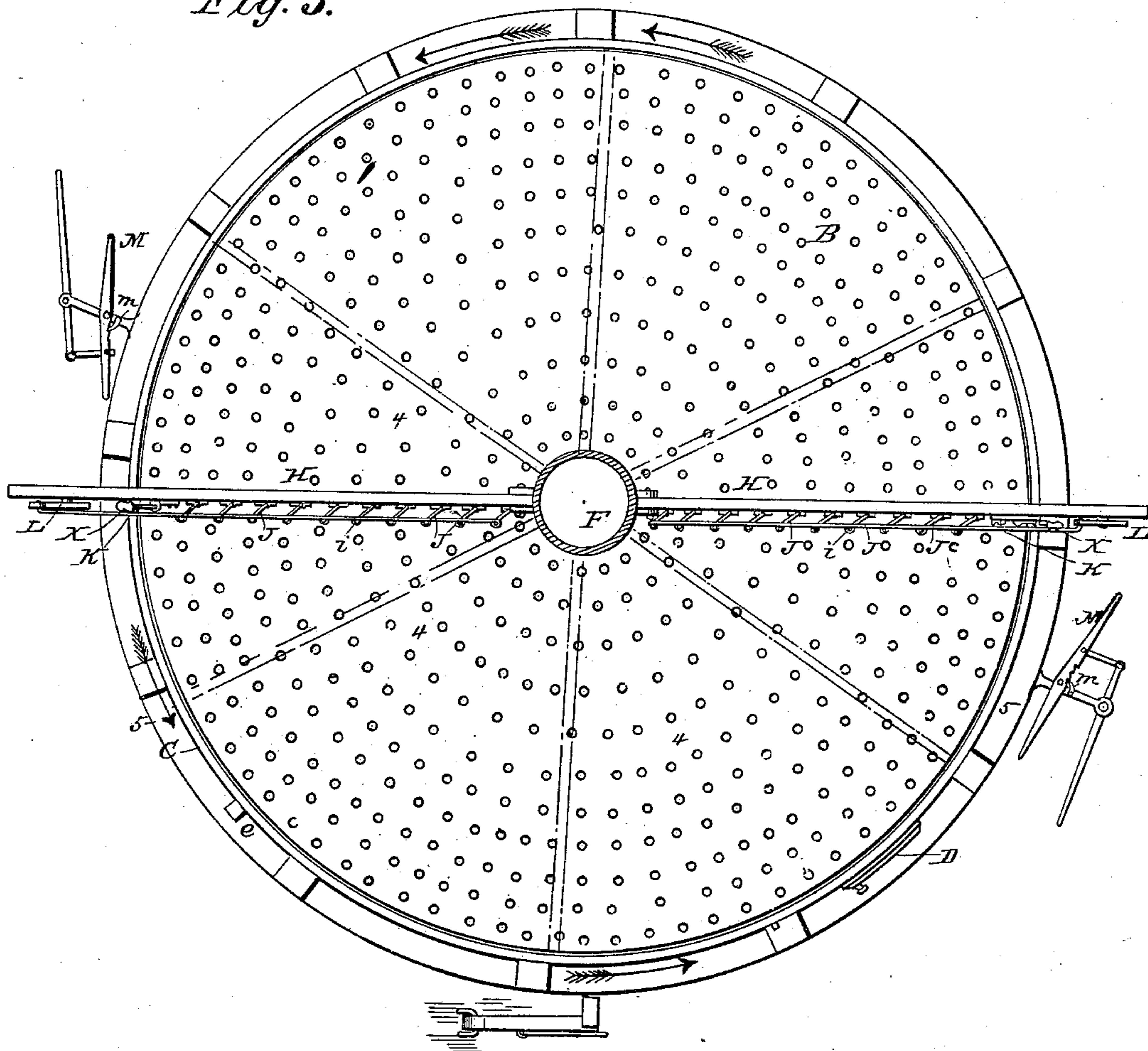


Fig. 4.

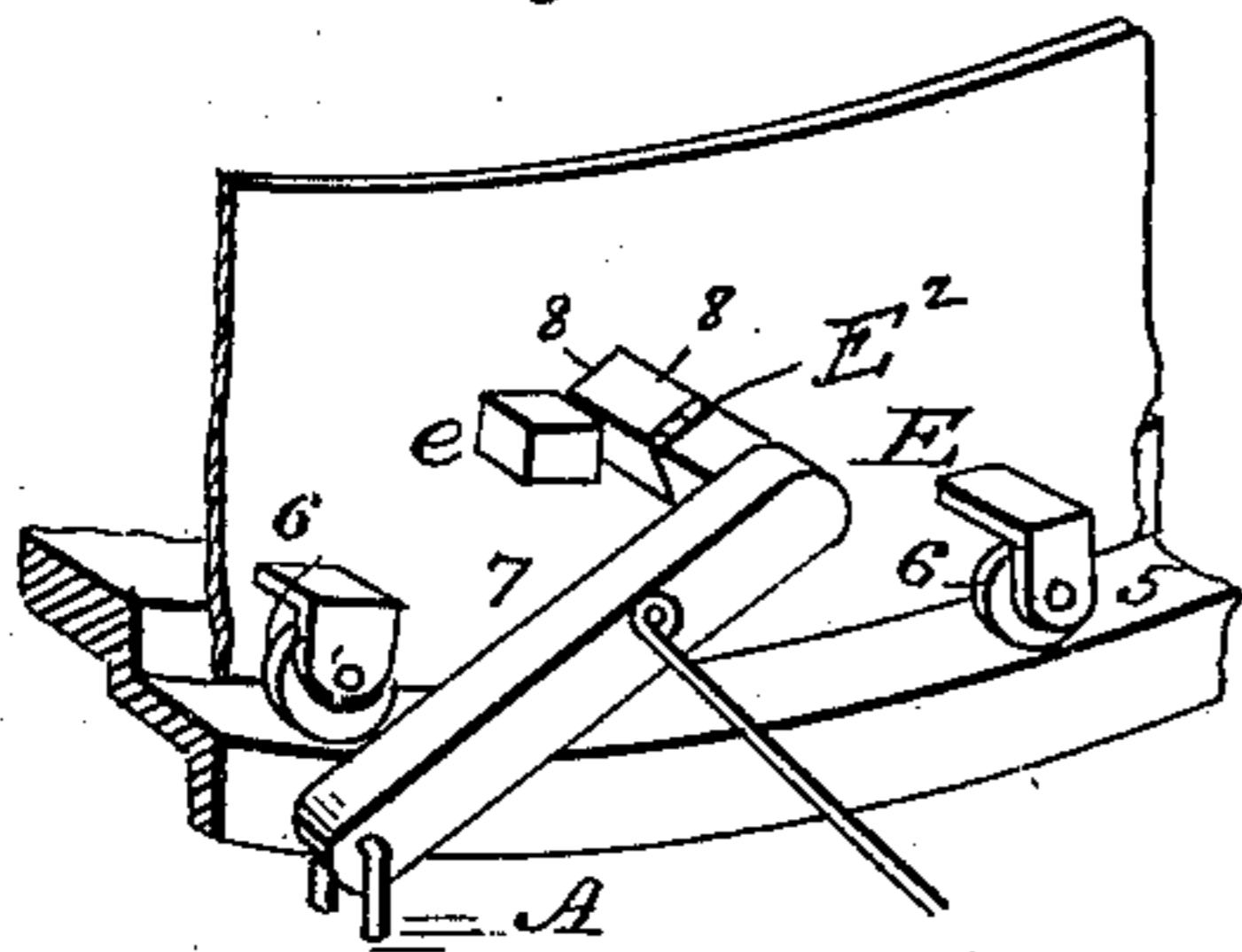
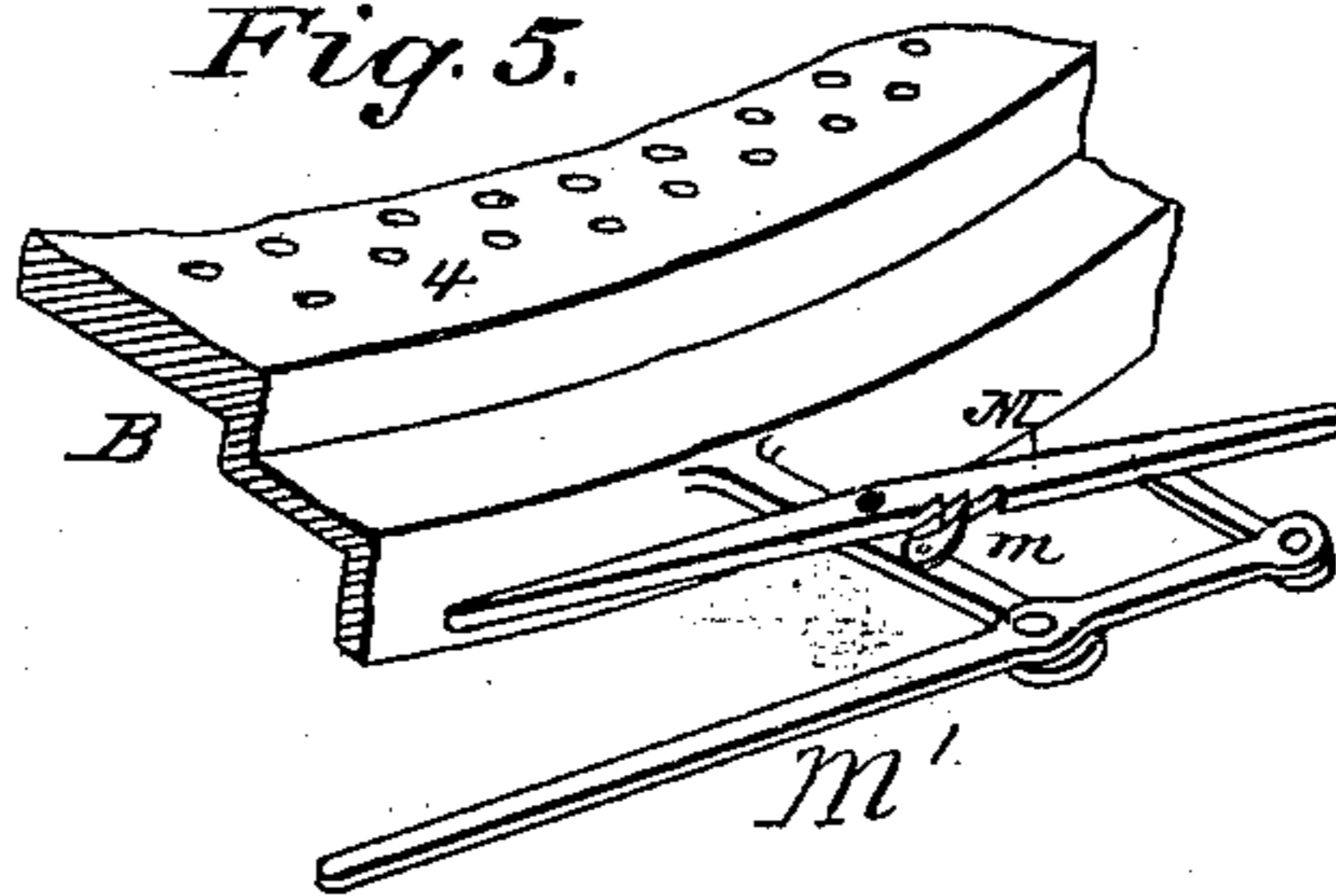


Fig. 5.



WITNESSES:

Fred G. Dietrich
P. B. Surpin.

INVENTOR:

Wm S. Plummer
BY *Munn & Co*

ATTORNEYS.

UNITED STATES PATENT OFFICE.

WILLIAM S. PLUMMER, OF ROCHESTER, NEW YORK.

APPARATUS FOR DRYING MALT.

SPECIFICATION forming part of Letters Patent No. 359,284, dated March 15, 1887.

Application filed April 24, 1886. Serial No. 200,103. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. PLUMMER, of Rochester, in the county of Monroe and State of New York, have invented a new and
5 useful Improvement in Apparatus for Drying Malt, of which the following is a specification.

My invention is an improved drying apparatus intended especially for drying malt; and it consists in certain features of construction
10 and novel combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the drawings, Figure 1 is a vertical section of an apparatus constructed according to
15 my invention. Fig. 2 is a detail side elevation of a portion thereof. Fig. 3 is a partial top plan view of the apparatus. Fig. 4 is a detail view illustrating the stop mechanism for the rim. Fig. 5 is a detail view illustrating the rim-door.
20

In Fig. 1 the apparatus is provided with two floors, arranged one above the other and constructed alike, so that the description of one will answer for both. The apparatus is in
25 practice inclosed in a suitable building or cover. The lower floor is supported on a track, A, mounted on a brick or masonry foundation, while the upper floor is supported on a track mounted on standards *a*, as shown; but
30 the tracks for such floors may be supported in any suitable manner. The floor B comprises a framing of radial arms, 1, a depending flange, 2, having bearings for its supporting-rollers 3, and the bottom 4, perforated, as shown, and
35 preferably formed in sections. I form the rim 2 with a horizontal annular flange, 5, projected outwardly and adapted to serve as a track for the rim-tube C, which encircles the floor and fits closely against the outer edge thereof.
40 This rim C projects above the floor and has, as shown, roller 6 bearing on the flange 5. The tube C also has an opening, D, provided with a gate, *d*, by which it may be closed, and the rim is also provided with a projection, *e*, or
45 otherwise adapted for engagement by the latch E, by which the rim-tube may be held from turning. In the present instance the latch has a main portion, 7, pivoted at E' to the framing, and a button portion, 8, pivoted
50 or hinged at E² to the main portion and mov-

able into position to engage the projection *e*, and so stop the rim from turning.

Manifestly the form of the latch may be varied, and in so modifying the latch a device similar to button 8 might be pivoted to the
55 framing and be capable of adjustment into the path of projection *e* to stop the rim. It is my purpose to arrange these latch devices in such position relative to opening D that when the rim-tube is stopped the opening or openings
60 will be at the end of the wickets, presently described.

It will be noticed that the outer edge of the floor is supported by its rollers 3 bearing on the track. At its inner or central portion the
65 floor encircles a standard, F, and has rollers 9, bearing on a track, 10, projected from the standard. When two or more floors are employed in series—one above the other—I prefer to form the standard (a tube) perforated, as
70 shown, and adapted to serve as a flue for conveying the hot air from the heating-chamber to the upper floor or floors.

The floors may be turned by driven shafts G, having gear-wheels *g*, meshing racks 11 of
75 the floor, or in other suitable manner desired. Supporting bar or bars H are fixed above the floors, being usually secured at their inner ends to the standard and at their outer ends to the framing, as shown. These bars have
80 bearings *h* for the shafts *i* of wickets or gates I. The lower edges of the wickets rest close against the floor, and, where desired, such edges may be provided with shoes 12, of rubber, leather, or other material suitable to give
85 the desired wiping or scraping action against the drying-floor. Cranks J are provided on shafts *i* and have their wrists connected with an adjusting-link, K, by moving which the wickets may be adjusted to any desired angle
90 with reference to line of movement of the revolving floor. Manifestly, instead of cranks on the shafts, they might have gear-pinions and the adjusting-bar be formed with rack-teeth to mesh the same; but the construction
95 as shown is preferred. By adjusting the wickets first to one and then to another or reverse angle, the entire body of malt on the floor will be stirred. While the adjusting-
100 bar might be moved by hand, it is preferred

to actuate it automatically by means of trip mechanism. In the construction shown levers L are pivoted between their ends to the framing, and have their upper ends connected
5 with the adjusting-bars and their lower ends arranged to be engaged by trips or cams M M, by which they are moved alternately in and out, effecting an adjustment of the wickets. I also provide means, preferably a pawl, *m*, as
10 shown, by which the trips may be secured, when desired, in position to operate the levers, or be released to have no effect on such levers when it is desired to discharge the malt.

For convenience in moving the trips, I pivot
15 a lever, M, adjacent to and connected with said trips, as most clearly shown in Fig. 5.

In Fig. 3 the trips or cams are clearly shown out of engagement with the levers L, while in Fig. 1 the said trips are shown in engagement
20 with the said levers.

In operation, as the drying-floor is revolved, the trips M pass one along the inner side of the levers L, and press the lower end of such levers outward, and the following trip passes
25 along the outer side of the lower end of such levers, and the lever or levers are consequently oscillated on their pivots to set the wickets to different positions.

It will be noticed that the wickets when in-
30 clined in one direction will serve to direct the malt inward toward the center, while in the opposite inclination they will direct it outward.

When it is desired to discharge the malt, the trips are thrown out of position for engaging the levers, and the wickets are set to the last arrangement above described, where they may be held, if a fastening is needed, by lever *x* and rack *x'*, as shown in Fig. 1. The
40 rim-tube is then stopped, with its discharge-openings in proper relation with the wickets, so that the malt or other material being dried will be discharged through the said openings, and, if desired, it may be passed through suitable chutes to any desired point. It is preferred to support the rim-tube so it may revolve with the floor, so that the friction of the malt against said tube will be avoided during the drying operation, and, by providing means
50 for stopping such tube when desired, the malt may be discharged through its openings. The perforations through the floors are made sufficiently small to prevent the passage of the malt and yet permit the air from below to be forced through them and through the malt. In the chamber N, below the lower floor, I provide heating devices, as O O, which may have pipes ranged within said chamber to increase the heating capacity of the said devices.

60 A blower, P, is arranged to receive heated air from chamber N, and, being operated by suitable connections with the drive-power, forces said heated air upward through the lower floor. Between the floors—when more
65 than a single floor is used—I arrange a partition, Q, which, preferably, is conical in shape and inclines upward on its undersurface toward

its outer edge. This partition serves to prevent any vapors arising from the lower floor coming in contact with and retarding the drying
70 of the malt on the upper floor.

It will be noticed that the heat passes up from the chamber N through the tubular standard to the upper floor. Manifestly, the number of floors may be increased, if so desired.

To provide for the forcible application of heated air to the upper floor, I provide a blower, R, having a pipe, *r*, extending from its receiving end to the heating-chamber, to receive hot air from said chamber, and such
80 blower is arranged to discharge the hot air against the bottom of the upper floor, as will be understood from Fig. 1.

To supply the material to be dried to the floors, I prefer to employ chutes S, partially
85 shown in Fig. 1, and extending in position to discharge the malt at or near the centers of the floors.

In practice I design to make the drying-floors from twenty-four to forty feet in diameter.

Having thus described my invention, what I claim as new is—

1. The combination of the revolving drying-floor, the supporting-bar extended thereover, a
95 series of wickets, shafts fixed to said wickets, journaled in the supporting-bar and formed with cranks, a bar connecting said cranks, a lever connected with said bar, an adjustable trip arranged to engage said lever, and a lever, *x*, and rack *x'*, substantially as set forth.

2. The combination, with a revolving drying-floor, of a rim-tube having a discharge-opening and devices whereby to direct the material on said floor out of said opening, substantially as set forth.

3. The combination of a drying-floor suitably supported, whereby it may be revolved, a rim-tube, also suitably supported, whereby it may revolve, and having a discharge-opening, a latch whereby to lock said rim-tube from turning, and devices whereby to direct the material on the floor out of the opening in the rim-tube, substantially as set forth.

4. In a drying apparatus, the combination
115 of the drying-floor suitably supported, whereby it may be revolved, and having an annular flange, 5, and the rim-tube supported on said flange and adapted to be revolved, substantially as set forth.

5. The combination, with the revolving floor, the wickets, and a support to which said wickets are pivoted, of a rod or bar connected with said wickets, a lever connected with said rod or bar, and a cam-like trip or trips for engaging and operating said lever, substantially as set forth.

6. The combination of the rim-tube having a discharge-opening, the floor, a support extended thereover, a series of wickets pivoted
130 to said support, a bar connected with said wickets, a lever connected with said bar, and a trip, said trip being adjustable, whereby it may be set to operatively engage said lever

or set clear of such operative engagement, substantially as set forth.

5 7. The combination of a drying-floor suitably supported, whereby it may be revolved, a rim-tube which may be held from turning with said floor, such tube having a discharge-opening, devices whereby to direct the material on said floor out of the discharge-opening, and a support for said devices, said support
10 being fixed with relation to said movable floor, substantially as set forth.

15 8. In a drying apparatus, the combination, substantially as described, of the drying-floor, a series of movable or adjustable wickets, a trip, and intermediate connections arranged to

engage and be operated by the trip and having a joint or connection with the wickets, whereby the revolution of the floor will effect automatically an adjustment of the wickets, substantially as set forth.

20 9. The combination of the perforated floors, arranged one above the other, imperforate partition extended between said floors, and a tubular standard extended through said floors and partition and perforated, substantially as
25 set forth.

WILLIAM S. PLUMMER.

Witnesses:

ZIMRI L. DAVIS,
ROSE C. OBERLIES.