

(No Model.)

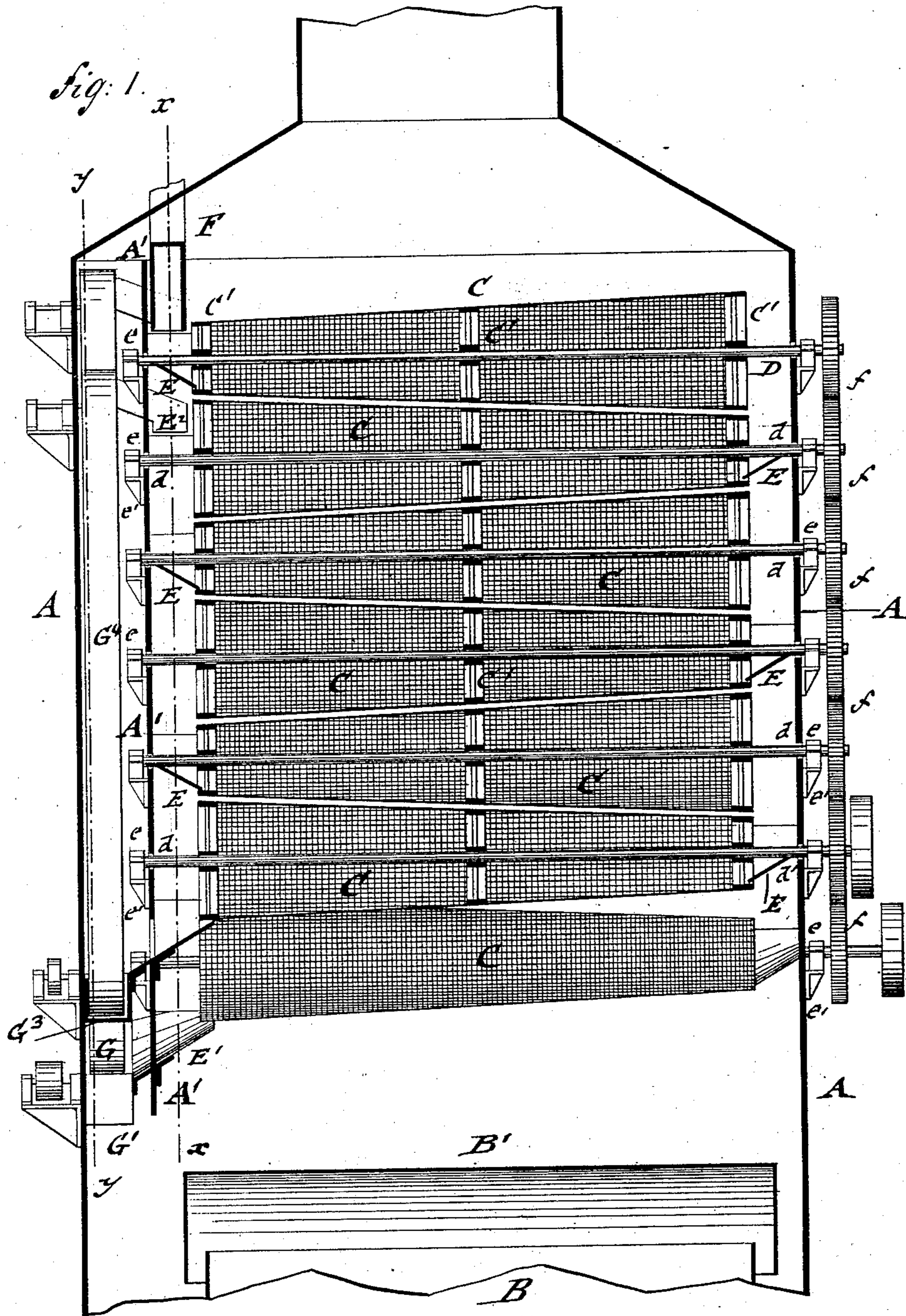
2 Sheets—Sheet 1.

H. HERRMANN.

MALT DRIER.

No. 294,232.

Patented Feb. 26, 1884.



WITNESSES:

A. Schehl.
Otto Risch.

INVENTOR

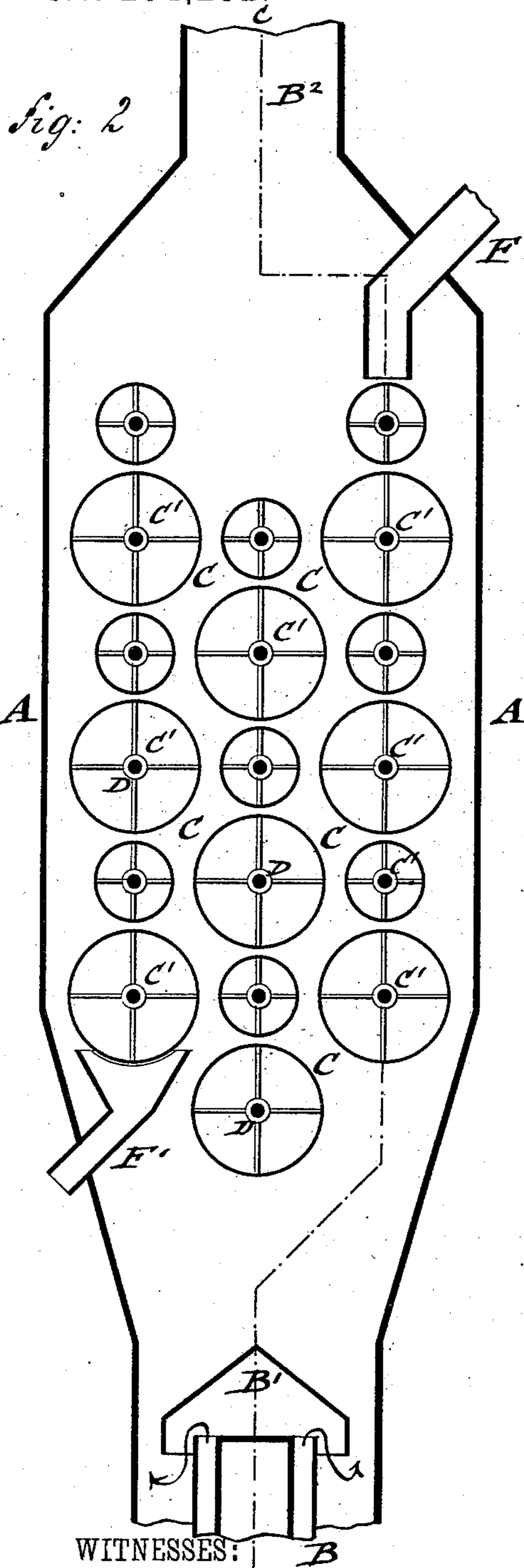
Henry Herrmann
BY *G. P. & R. R.*
ATTORNEYS.

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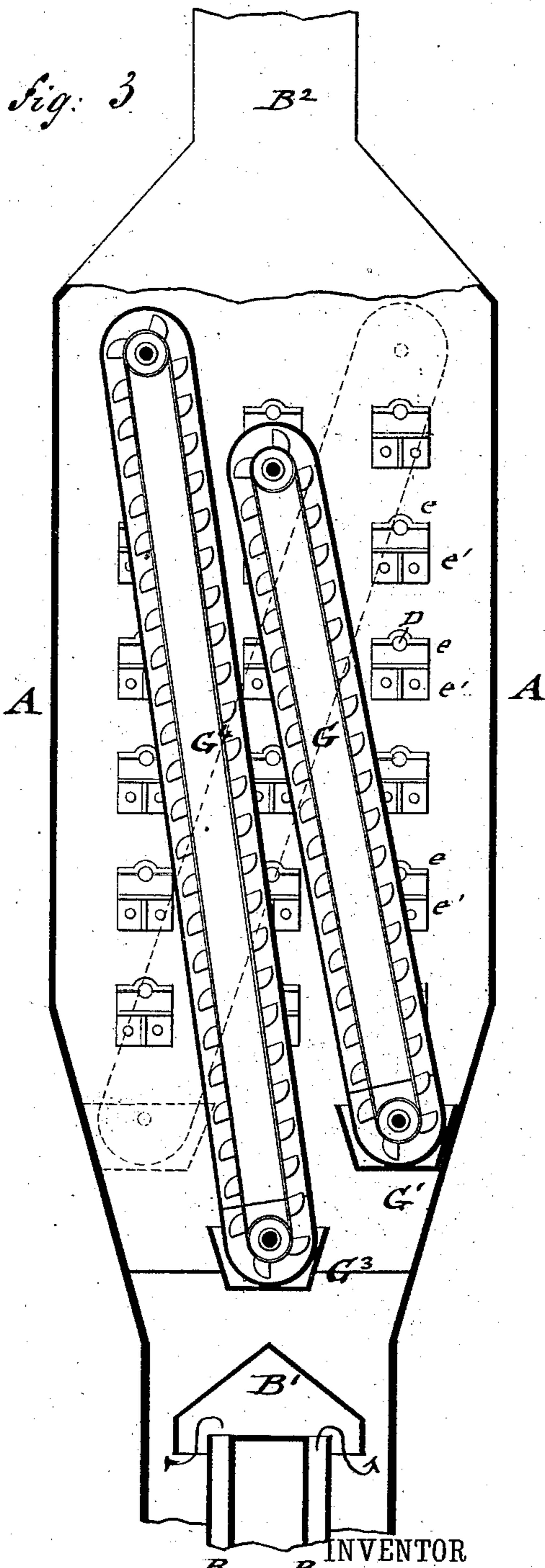
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UNITED STATES PATENT OFFICE.

HENRY HERRMANN, OF BROOKLYN, NEW YORK.

MALT-DRIER.

SPECIFICATION forming part of Letters Patent No 294,232, dated February 26, 1884.

Application filed May 19, 1883. (No model.)

To all whom it may concern:

Be it known that I, HENRY HERRMANN, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Malt-Drying Apparatus, of which the following is a specification.

This invention relates to a malt-drying apparatus, in which the malt is dried by a continuous process after passing through the germinating or sprouting stage.

The invention consists, principally, in the combination, with an exterior casing, of two or more vertical series of conically-tapered horizontal rotary drums, the drums of each series and the adjacent drums of adjoining series being arranged so that the smaller ends alternate with the larger, both in vertical and lateral directions, means for conducting the malt from drum to drum of a series, and an elevator or elevators for conveying the malt from the lower drum of one series to the upper drum of another series. By this construction the apparatus combines the properties of compactness, simplicity, and efficiency.

In the accompanying drawings, Figure 1 represents a vertical longitudinal section on line *c c*, Fig. 2, through my improved malt-drying apparatus; and Figs. 2 and 3 are vertical transverse sections of the same, respectively, on lines *x x* and *y y*, Fig. 1.

Similar letters of reference indicate corresponding parts.

A represents an exterior casing of suitable sheet metal, which is contracted at the lower part and connected by suitable air-flues to the furnace or other source of heat from which air, heated to the proper temperature required for drying, is supplied. The air-flues B are provided with a hood, B', that serves as a deflecting and distributing diaphragm for the heated air. The upper part of the casing A is also contracted, and forms a chimney or uptake, B², by which an upward draft is established through the middle portion of the casing A.

In the middle, wider part of the casing A are arranged one or more vertical tiers of wire-cloth drums, C, which are made of conically-tapering shape, which form takes up less space and is better adapted to shed the malt from one drum to the next adjoining drum of the

same tier. The drums C are supported by spider-frames C', the hubs of which are keyed to central shafts, D, which pass through openings *d* of one of the transverse end walls of the casing A, and of a transverse partition-wall, A', near the opposite end wall of the same, the shafts being supported in bearings *e*, outside of the transverse end and partition walls, which bearings are supported on brackets *e'*, secured to said walls. The drums of each vertical tier receive slow rotary motion by a series of intermeshing gear-wheels, *f*, applied to the outer ends of the shafts D, the lowermost shaft of each tier being connected by pulley-and-belt transmission from a power-shaft near the apparatus. In case drums of cylindrical shape are employed, they are supported at suitable angles of inclination, but in alternately-opposite directions to each other, so that the malt can pass successively from one drum to the other of each tier. By using drums of conical shape the shafts are supported in horizontal position and the drums arranged close to each other in such a manner that alternately the wider end of one drum is vertically below the narrower end of the next drum. Fixed chutes E extend alternately from the end wall of the casing and the partition-wall A' into the narrower end of each drum C, said chutes serving to shed the malt that is dropped on the same from the wider end of the next adjoining drum above into the narrower end of the drum below. The malt is conducted through a trunk, F, that passes through the top of the casing A onto the chute E of the uppermost drum C, then conveyed through the same and dropped from the wider end of the chute E of the opposite wall, and from the same into the narrow end of the next drum, then through the third drum, and so on through all the drums of the tier. From the lowermost drum of the first tier of drums the malt is conducted by a chute, E', to a well, G', of a bucket-elevator, G, which extends in a diagonal direction from the lowermost drum of the first tier to the uppermost drum of the next adjoining tier, the buckets discharging into a hopper and inclined conveying-channel, G², into the narrower end of the uppermost drum of the next tier, then through the drums of this tier and over the chutes of the same to the lowermost drum, and

through a conveying chute at the lowermost part of the same to the well G^3 of a second elevator, G^4 , by which the malt is hoisted to the uppermost drum of the third tier, then passed 5 through the drums of this tier, and finally conveyed by a hopper and discharge-channel, F' , that passes through the casing, to a suitable storage-bin. The elevators G G^3 are located in the space between the partition-wall A' and 10 the opposite end wall of the casing A , and receive motion by suitable transmissions from a power-shaft. The sprouted malt is conducted from the malt-floors to the drying apparatus, and passed successively through the drums of 15 the same, by which it is continuously turned, so that every portion thereof is exposed to the drying action of the heated air till it is completely and uniformly dried when leaving the drying apparatus. When three tiers of drums 20 are arranged, it passes three times from the upper part of the casing, which has a lower temperature, to the lower part of the drier, where the temperature is higher, so that a gradual and uniform drying takes place without any formation of so-called "glass malt," 25 that is obtained when the malt is exposed to a too highly heated air. The small germs or sprouts are screened off through the meshes of the wire-cloth drums, and are finally conducted 30 over the inclined surface of the covering-hood to the lower part of the casing A , whence they are conducted off in a suitable manner.

By this apparatus a continuous drying of the 35 sprouted malt can take place without requiring the expensive drying-kilns and malt-turn-

ing appliances, so that the malt is thereby dried at considerable less expense for fuel than with the malt-kilns heretofore in use.

Having thus described my invention, I claim 40 as new and desire to secure by Letters Patent—

1. The combination, substantially as set forth, of a casing, two or more vertical series of conically-tapered horizontal rotary drums, the drums of each series and the adjacent drums 45 of adjoining series being alternately reversed, so that the smaller ends alternate with the larger, both in vertical and lateral directions, means for conducting the malt from drum to drum of a series, and an elevator or elevators for 50 conveying the malt from the lower drum of one series to the upper drum of another series.

2. The combination, substantially as described, of a casing, two or more vertical series of conically-tapered horizontal rotary drums, 55 the drums of each series and the adjacent drums of adjoining series being alternately reversed, so that the smaller ends alternate with the larger, both in vertical and lateral directions, means for conducting the malt 60 from drum to drum of a series, an elevator or elevators for conducting the malt from the lower drum of one series to the upper drum of another series, and means for supplying heated 65 air to said casing.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

HENRY HERRMANN.

Witnesses:

PAUL GOEPEL,
SIDNEY MANN.