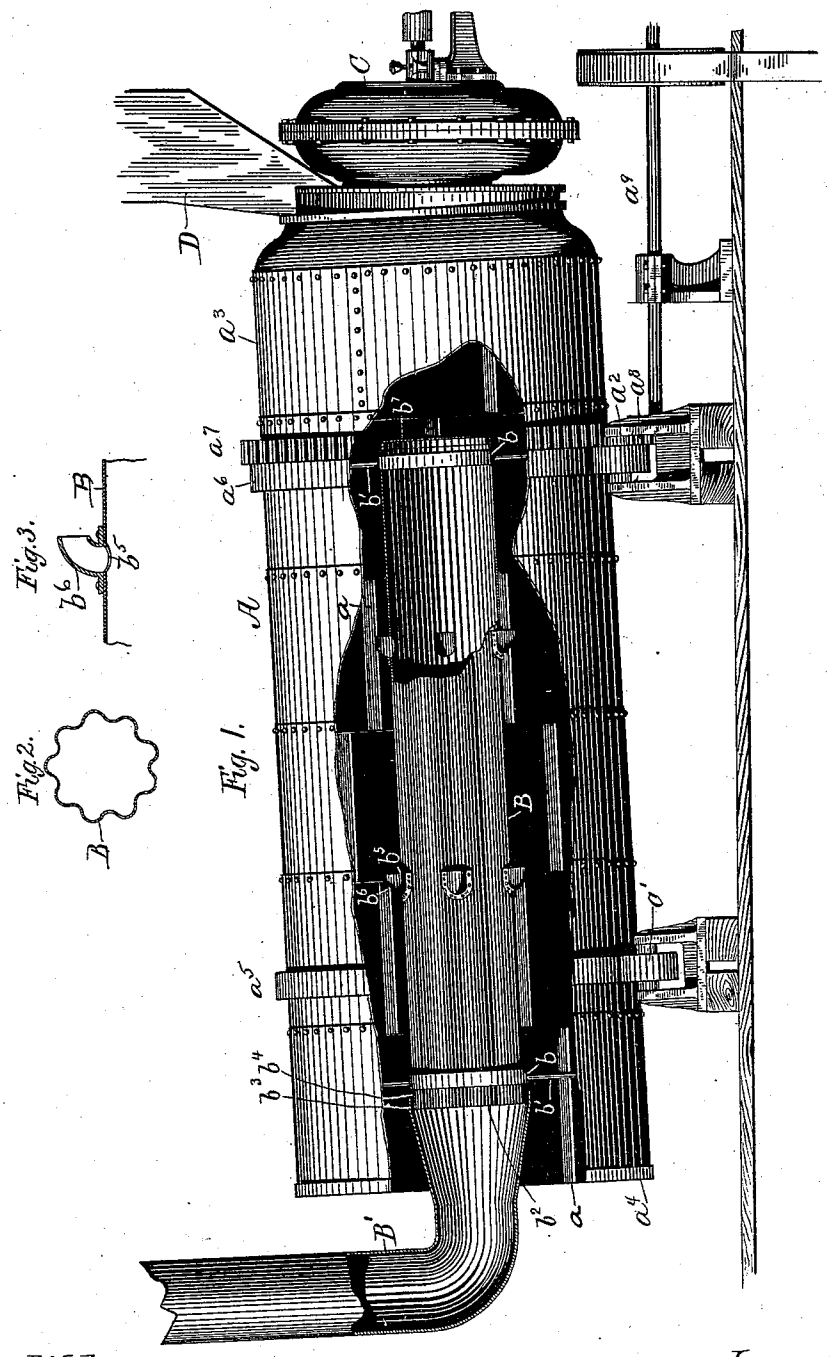
(No Model.)

J. M. CHARNOCK.

DRIER.

No. 423,670. Patented Mar. 18, 1890.



Witnesses
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N. PETERS. Photo-Lithographer. Washington, D. C.

UNITED STATES PATENT OFFICE.

JOHN M. CHARNOCK, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO HERSEY BROTHERS, OF SAME PLACE.

DRIER.

SPECIFICATION forming part of Letters Patent No. 423,670, dated March 18, 1890.

Application filed November 20, 1888. Serial No. 291,324. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. CHARNOCK, of Boston, in the county of Suffolk and State of Massachusetts, a citizen of the United States, have invented a new and useful Improvement in Driers for Drying Sugar, Grain, Meal, and other Materials, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

My invention relates to that class of driers comprising an inclined rotary drum or cylinder having internal lifting shelves or flanges and a central internal heat-distributing pipe or conductor, the invention consisting in the constructions and combinations, as hereinafter indicated by the claims.

In the drawings, Figure 1 is a view, principally in side elevation, of a machine embodying the features of my invention, a portion of the casing of the different parts being broken out to better illustrate the construction. Fig. 2 is a cross-section of the heat-conductor or distributing-pipe, and Fig. 3 is a sectional detail to show one of the opening covering-bonnets on said conductor or distributing-pipe.

A is the drum. It is preferably made of iron or steel plate and has arranged to extend from its inner surface the lifting shelves or buckets *a*. It is mounted upon the trucks or rollers a' a^2. The trucks a^2, being somewhat higher than the trucks a', cause the drum to be somewhat inclined from its upper or receiving end a^3 to its lower or discharging end a^4. The drum has suitable bearing rings or sections a^5 a^6, to bear, respectively, upon the rolls of the trucks a' and a^2. It also has the gear a^7, with which a pinion a^8 upon the shaft a^9 meshes, and by which it is slowly rotated. There is arranged in the drum A the cylindrical distributing conductor or pipe B, which is preferably supported centrally within the drum by rings *b* at each end and stay-rods *b'*. (See Fig. 1.) The lower end b^3 of this cylindrical conductor enters the end b^3 of a supply-pipe B'. This pipe B' extends from a blowing or supply fan or apparatus and enters the lower head of the drum, the drum turning about it, and is enlarged, as represented at Fig. 1, and shaped to receive the lower end b^2 of the cylindrical conductor and distributer B. Preferably the end b^2 is enough less in diameter than the section b^3 of the end of the conducting-pipe as to provide a narrow passage or outlet b^4, through which air fed into the drum by the pipe B' may escape. The cylindrical conductor B has at different points in its length openings b^5, which, preferably, are covered by bonnets b^6, preferably opening toward the upper end of the drum, (see Fig. 1,) and the upper end b^7 of the drum preferably is closed. By this construction the air, heated or otherwise treated, forced into the drum is caused to be distributed through such length or portions of the drum as may be desired. In the drawings I have represented it as distributed at the points b^4 and b^5. This construction is especially valuable in drums used for driers—that is, drums employing heated air for heating the interior conductor—in that the conductor is not only heated by the heated air which passes through it and the contents of the drums thereby dried by falling upon it and by the heat which it radiates in the drum, but there is a direct discharge of the heating medium into the drum at different points throughout the length of the drum, so that the material being dried is subjected to the direct action of the heated air upon it while it is in motion in the drum. To maintain and increase the circulation of the air thus introduced into the drum, I employ an exhausting apparatus for exhausting the air from the drum. This apparatus C is represented in Fig. 1 as attached directly to the upper end of the drum, and it comprises an exhaust-fan, there being an opening through the upper head of the drum from the drum-chamber to the fan. The material to be dried is fed to the drum through a feed-chute D, opening into the upper end of the drum, (shown in side elevation in Fig. 1,) and the material is discharged through an opening (not shown) in the lower head of the drum.

The apparatus herein described is adapted for a variety of purposes. It may be used as a drier, in which case heated air is caused to be fed into the drum and exhausted there-

from, as above specified; or as a cleaner or duster, in which air, either cool or at atmospheric temperature or heated, may be employed; or as a cooler, in which case cool air is introduced into the drum, as specified, or air of any desired temperature, moistened by the introduction of steam or in any other way, may thus be fed to the drum and caused to be circulated or drawn through it.

In Fig. 2 I have represented a section of the conductor B as made corrugated lengthwise. This is for the purpose of forming its surface to receive and hold the sugar, grain, or other material longer than it would if it were simply cylindrical or of uniform diameter throughout.

In Fig. 3 I have represented the escape-openings in the conductor as facing the upper end of the drum rather than the lower end, and for some purposes this construction is desirable. I would say, however, that the escape-openings may face the lower end of the drum instead of the upper without changing the spirit of the invention.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. The combination, with the inclined rotary drum or cylinder A, having internal lifting buckets or shelves, of the air-conductor B, having air-distributing openings b^5 at different points in its length, and the bonnets b^6, shielding said openings and facing toward the upper end of said drum or cylinder.

2. The combination, with the inclined drum or rotary cylinder A, of the longitudinally-corrugated rotary air-conductor B, having air-distributing openings b^5, and the bonnets b^6, shielding said openings and facing lengthwise of said conductor or in line with the ridges of its corrugations.

3. The combination, with the inclined rotary drum or cylinder A, of the longitudinally-corrugated air-conductor B, connected with said drum or cylinder to rotate therewith, and having covered or shielded air-distributing openings at different points in its length, said openings facing or opening lengthwise of said conductor or in line with the ridges of its corrugations.

JOHN M. CHARNOCK.

Witnesses:
A. T. COMPSON,
C. A. WHITE.