DOLE & FRASER.

Flour Drier.

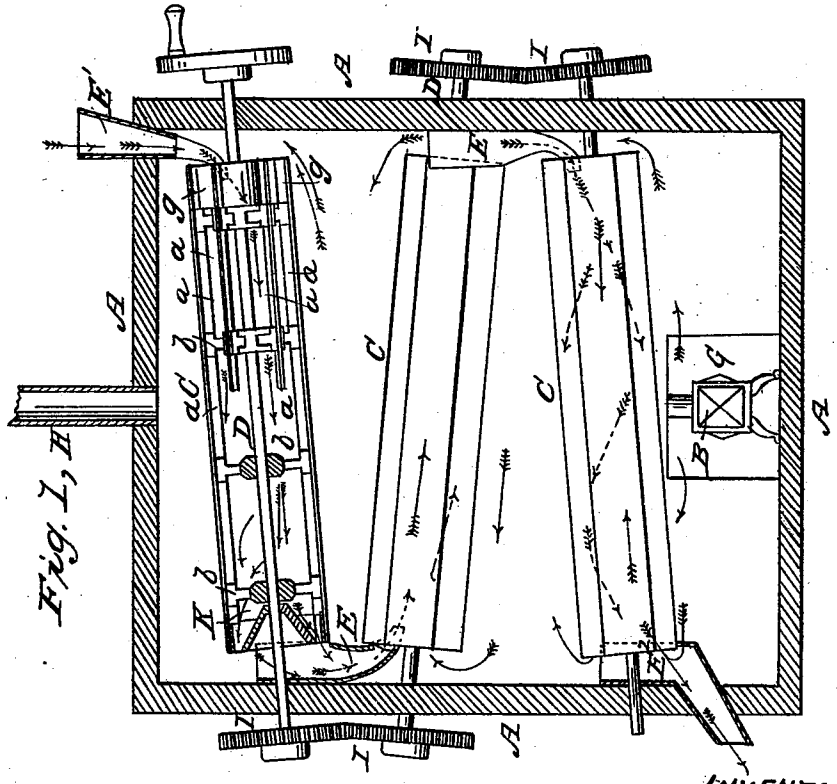
No. 38,816. Patented June 9, 1863.

Fig. 3,



Fig. 2,

Fig. 1,



WITNESSES;

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UNITED STATES PATENT OFFICE.

W. H. DOLE AND D. R. FRASER, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN REELS FOR DRYING FLOUR.

Specification forming part of Letters Patent No. **38,816**, dated June 9, 1863.

To all whom it may concern:

Be it known that we, W. H. DOLE and D. R. FRASER, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Drying Flour, Meal, and other Ground Substances; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical longitudinal section of our flour-drier. Fig. is a vertical transverse section of the same. Fig. 3 is a perspective view of the conical compresser.

The same letters of reference in the three figures indicate corresponding parts.

In the operation of drying ground substances—such as flour and meal—great injury and loss have been experienced from these substances being scorched and having a bitter taste imparted to them by the hot metal with which they have been allowed to come in contact. Attempts have been made to remedy this great evil by heating cylinders with steam and hot air instead of by direct flame-heat, but never to my experience has the end desired been fully realized, as flour is more or less impaired and scorched by coming in contact with metallic surfaces during the process of expelling the moisture. To effectually dispense with the agent which causes this deterioration of the flour, and still organize a machine which will dry the flour and meal in the safest and most thorough manner—*i. e.*, so that it will keep for any length of time in any climate perfectly sweet and sound in every particular, and without the burnt taste which it gets from coming in contact with hot metal—is the object of our invention.

The nature of our invention consists in circulating the flour or meal by means of revolving inclined cylinders, composed of wood and cloth or other similar materials, which do not impart a scorched or bitter taste to the flour through a circulating body of hot air, within a chamber or room furnished with inlets and outlets for the flour, and with hot-air inlets and outlets, all as will be hereinafter described.

To enable others skilled in the art to make and use our invention, we will proceed to describe its construction and operation.

A A designate the walls of a building or drying-room; B, a furnace to heat the air in the room; C C C, three revolving reels, constructed with open ends, and arranged on shafts D D D, which successively are inclined in opposite directions, as represented. There may be any appropriate number of these reels.

E E E E′ E² are spouts for making a continuous train of the reels from the supply to the discharge-openings of the drying-room or building, as represented.

G H are the inlet and outlet openings for hot air and vapor.

The several reels are geared so as to run together by means of wheels I I I I, as shown, or by cone-pulleys and belt-gearing. The reels are represented as made of brass, but this is not the case in practice, as we specially design to dispense with metal in the construction of the reels. The reels, therefore, are to be constructed of wood and surrounded by cloth or other fibrous or textile flour or meal tight fabric. We also prefer to have the shafts and spouts of wood.

Each reel should be constructed with ribs or shelves *a a*, which are arranged on the outer ends of radial arms *b b*, and the whole inclosed by the flour or meal tight fabric or textile material.

In order to sufficiently but not unduly concentrate the flying flour or meal at the discharge end of each reel, and thus introduce it in a body or in a collected but not compressed quantity into the different reels, a conical device, K, made of wood, is placed on each shaft, as represented. These cones are of a much smaller diameter at their largest or base portion than the reels, in order that the flour may discharge freely enough to continuously pass from one reel to another. These cones are a valuable auxiliary in connection with flour-driers, as they insure the bringing together of the flour after it has been lifted and separated in each reel.

The operation is as follows: The flour or meal enters at the spout E′ and falls upon the plain portion of the reel at *g*, and from thence slides to the ribs or shelves, and is caught by the same and lifted through and separated in a body of hot air circulating through the reels, as indicated by the arrows, until it arrives at the cone K, when it is concentrated, in a loose condition, however, and discharged in quantity into the succeeding reel, where it is in like manner lifted and separated in a body

of hot air, and so the operation continues until the flour discharges in a dried state at the spout E^2. The hot air comes from the opening G, and the vapor and gases expelled from the flour pass off along with the spent hot air through the opening or chimney H.

In our flour-drier we might employ conical reels placed on horizontal shafts. In that case the base of the cones should be set successively at opposite ends of the drying-chamber. The connection-spouts would be used about as represented.

It will be noticed that we dry flour and meal by bringing the same in contact with nothing but circulating hot air, cloth, and wood, and thus obviate the importation of a scorched taste to these articles, as experienced when they are dried on metal surfaces. With our plan we do not alter the taste of the flour or its condition, otherwise than to take the gas and moisture out of it and leave it perfectly dry, and so as to keep sweet for any length of time and in any climate. That this is the result of our operation upon flour we know from practical tests.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. Drying flour and other similar ground substances by means of reels of the character substantially as described, and hot air circulated through such anti-metallic reels, for the purpose set forth.

2. The employment of cones or their equivalents, in connection with flour drying-reels, in the manner substantially as and for the purpose described.

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Witnesses:
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