

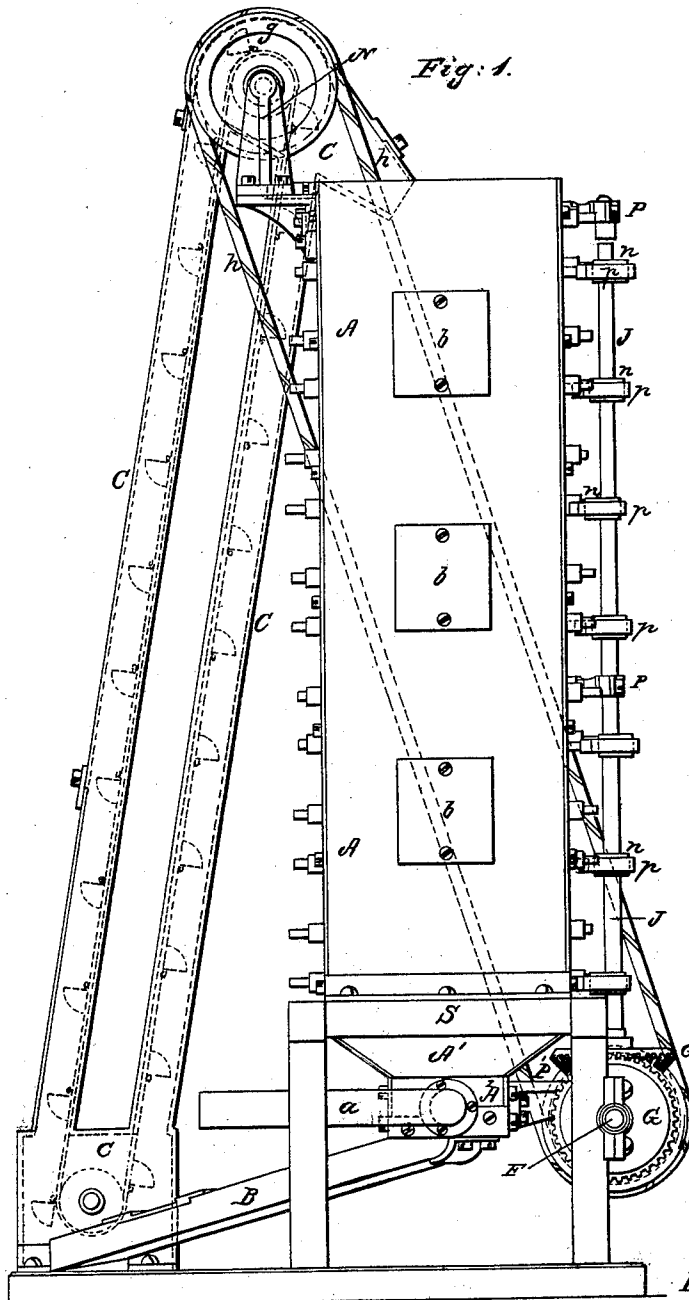
H. WALKER.

Grain Drier.

3 Sheets—Sheet 1.

No. 86,192.

Patented Jan'y 26, 1869.



Witnesses:

R.T. Campbell
R.T. Campbell

Inventor:

Hiram Walker.
by Mason Fennick & Lawrence.

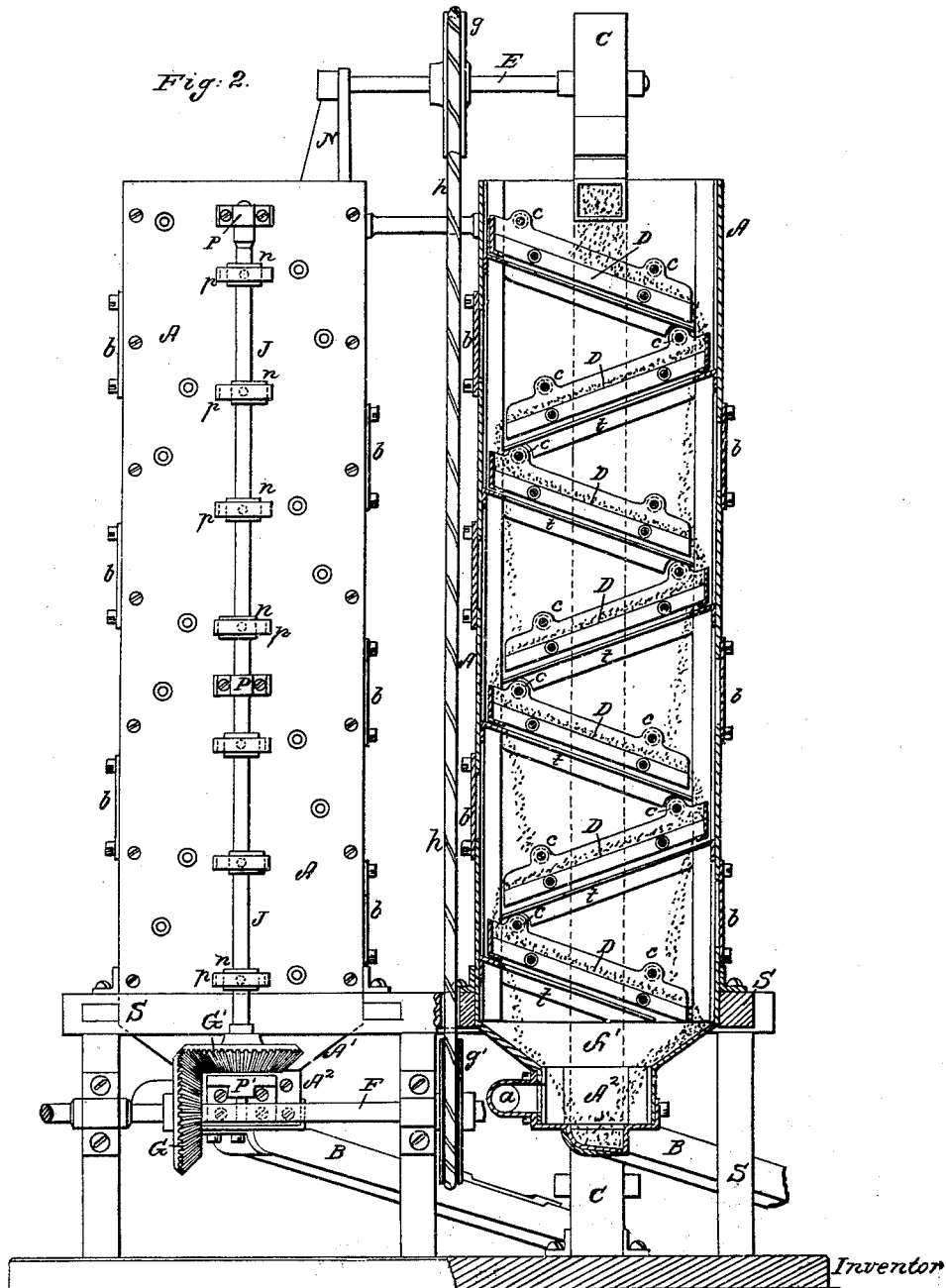
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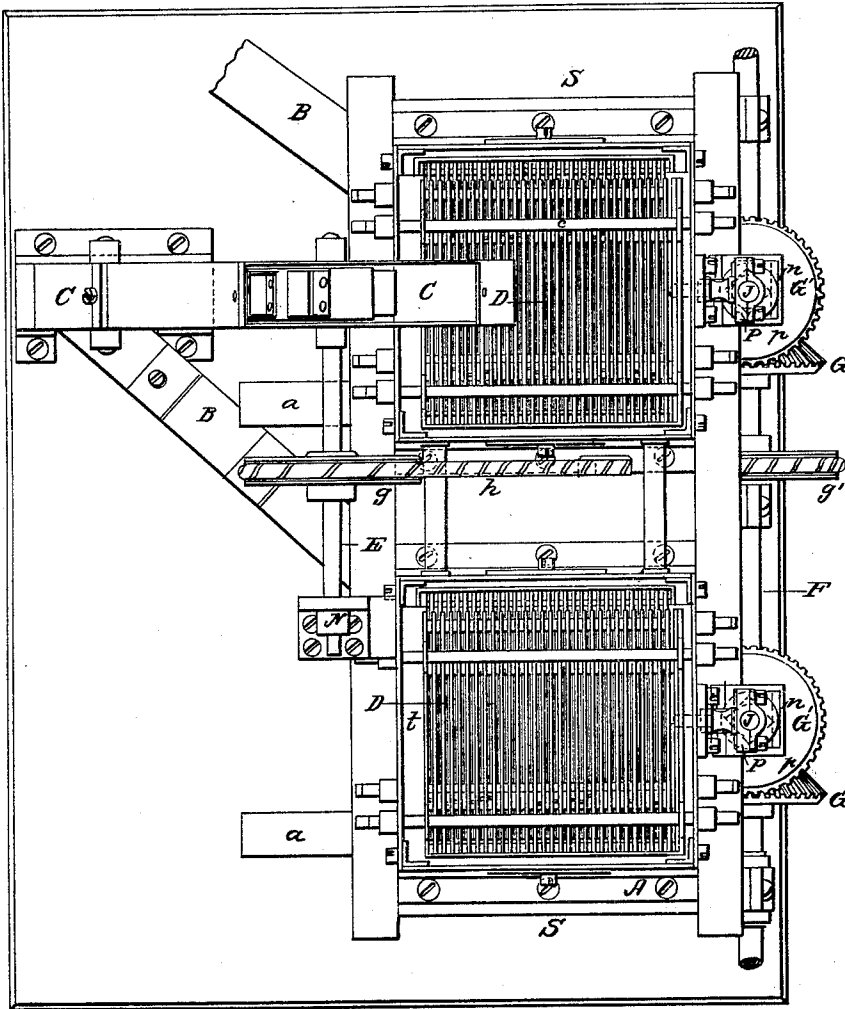
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Fig: 3.



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United States Patent Office.

HIRAM WALKER, OF DETROIT, MICHIGAN.

Letters Patent No. 86,192, dated January 26, 1869.

IMPROVEMENT IN GRAIN-DRIERS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, HIRAM WALKER, of Detroit, in the county of Wayne, and State of Michigan, have invented a new and improved Method of Drying Grain; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1, plate 1, is an elevation of one end of the apparatus.

Figure 2, plate 1, is a side elevation of the apparatus, showing two of the drying-cases, one of which is represented in section.

Figure 3, plate 2, is a top view of two of the drying-cases and their appurtenances.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to a new and improved method of drying grain which has become accidentally damp or wet from exposure in vessels, in its transportation from one point of country to another.

The invention is intended to provide a safe and speedy method of drying grain in very large quantities, without liability of over-heating, or otherwise injuring it. To this end,

The nature of my invention consists in an apparatus which is adapted for receiving grain from a vessel, elevating it, and subjecting it alternately to the action of warm or cool blasts of air, at the same time keeping the grain continually in motion, until it is finally delivered into the bins or other receptacles in a storehouse, as will be herein explained.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In the accompanying drawings, I have represented only two drying-cases, A A, through which the grain is conducted; but in practice, several of such cases will be employed, and the grain will be successively conducted through them, on its way from a vessel to the bins.

Each drier consists of an upright rectangular case, A, made of metal, or other suitable material, and terminates in a contracted base or bottom, A¹ A², from which an inclined trunk, B, leads to the bottom of the elevator C, of a succeeding case.

Each case has arranged within it a number of screens, D, which are applied one above another, and inclined in such manner that the grain, in descending, flows from one screen to another throughout the entire series, and is finally deposited into the contracted base A A¹, from which it flows off through the inclined trunk B.

The screens D are hung and held in proper position by means of horizontal rods c c, the ends of which pass freely through the sides of the case, which rods allow the screens to receive lateral shaking-movements from cams n n upon a vertical shaft, J.

These cams or eccentrics n act upon the screens

through the medium of yokes p, which are connected by short rods, passing through the case A, to the several screens.

As the screens are required to receive lateral shaking-movements, it is necessary to make them somewhat less in width than the case A containing them; and to prevent the escape of grain over the sides of these screens, they are flanged; and to prevent the currents of air from passing up outside of the screens, there are provided, underneath, narrow ledges or shelves t t, shown in figs. 2 and 3, which ledges or shelves are secured to the sides of the case A.

Between each two or pair of screens, D D, an opening is made through the wall of case A, for the purpose of obtaining access to the screens, for cleaning and other purposes, and to each opening a tightly-fitting door, b, is applied, to prevent the entrance of air during the drying-process.

The grain to be dried is suitably elevated and deposited into the upper end of the first drying-case of the series, and, while descending to the chamber A², it is subjected to the agitating-action of the screens, and also to the action of heated currents of air, which enter through pipe a, and rise through the case A.

From the chamber A² the grain escapes, through an inclined trunk, B, to the base of an elevator, C. It is thence elevated and discharged into the succeeding case A at the upper end of the same.

As the grain, after leaving the first heating-case, would be too warm to subject it to another heating-action, I introduce dry, cool air into the second case, at its bottom, and thus reduce the temperature of the grain as it is passed over the screens in this case.

As the grain reaches the bottom of this second case, it is conducted off through a trunk, B, to another elevator, which raises and discharges it into the upper end of a third drying-case, constructed like those shown, where it is again-subjected to the action of the heated current of air.

In this manner the grain is alternately subjected to the action of heated and cool blasts of air, on its way from a vessel or other place to the receiving-bins, and it is conducted through this drying-operation in a continuous thin stream, and kept in constant motion, so as to allow the currents of air to act freely and thoroughly upon it.

The elevators C, as well as the drying-cases, all stand in one line, and are sustained by a frame-work, S.

The elevator-buckets all receive motion from a single line-shaft, F, acting through the medium of belt-wheels g' g', and a shaft, E, which shaft F is also adapted to serve as a means for communicating motion to the vertical cam shafts J, through the medium of spurred gearing G G'.

By this method, I am enabled to successfully handle large quantities of wet grain, and dry it thoroughly, and with great facility, in its passage from a vessel to the place of storing it.

The number of drying-cases and their size will of

course be regulated by the amount of grain to be handled and the rapidity which may be found necessary in handling it.

The air may be heated either by a furnace, or by steam, and will be furnished to the hot-air drying-cases by a fan or blower, or other suitable means, and the cold air in like manner to the cold-air cases.

The operation of the screens is to distribute the grain over a large area of surface, at the same time to shake it steadily and continuously, so that the mass of grain may be dried throughout before the operation ceases.

Having described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

1. The employment, together, of hot-air drying-cham-

bers, furnished with suitable agitating and carrying-devices and air-cooling chambers, furnished with suitable agitating and carrying-devices, in such a manner that the grain, after being passed through a heating-chamber, will also be passed into a cooling-chamber, and thus be alternately heated and cooled, until it has become thoroughly dried or prepared for the market, substantially as described.

2. The arrangement of mechanism, substantially as herein described and shown, for treating grain, in the manner set forth.

HIRAM WALKER.

Witnesses:

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FRANK H. WALKER.