H. H. BEACH.

Grain Drier.

No. 56,348. Patented July 17, 1866.

Fig. 1

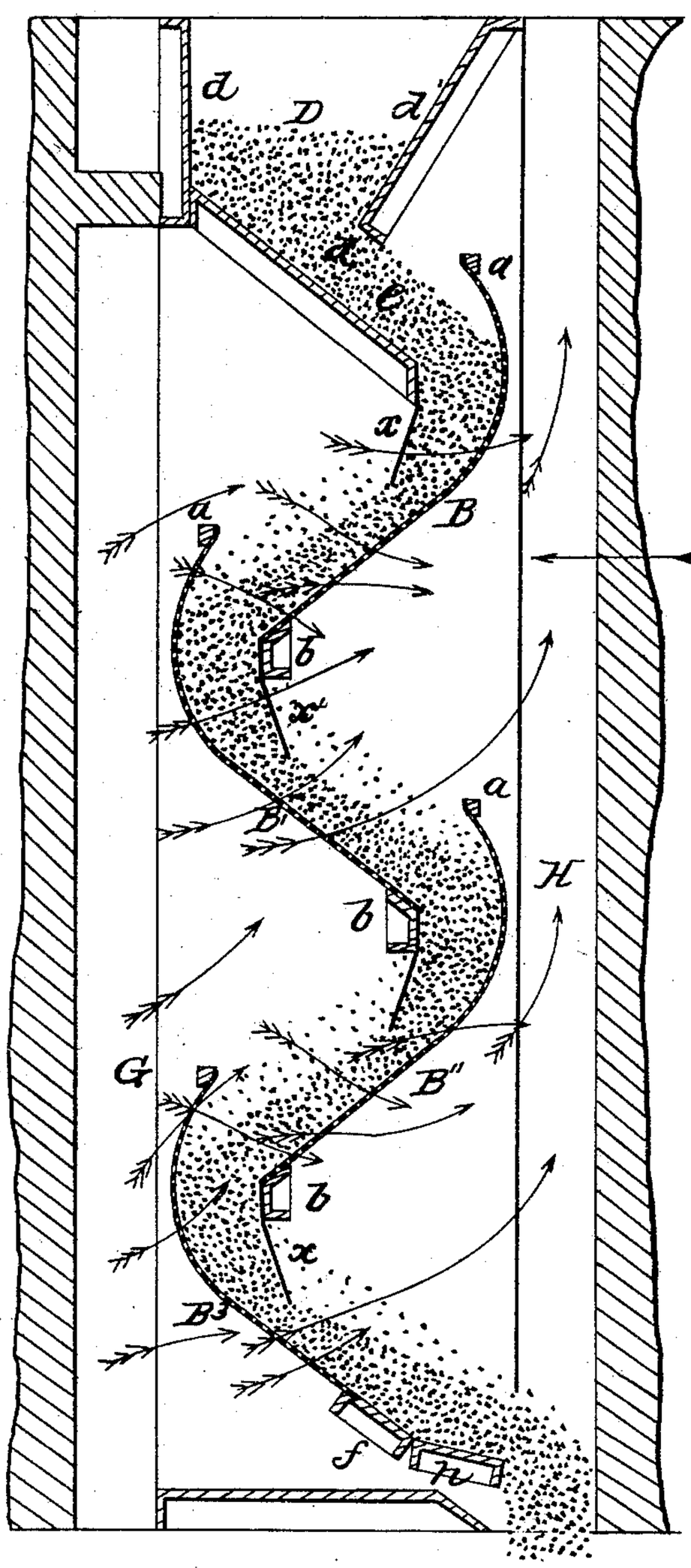
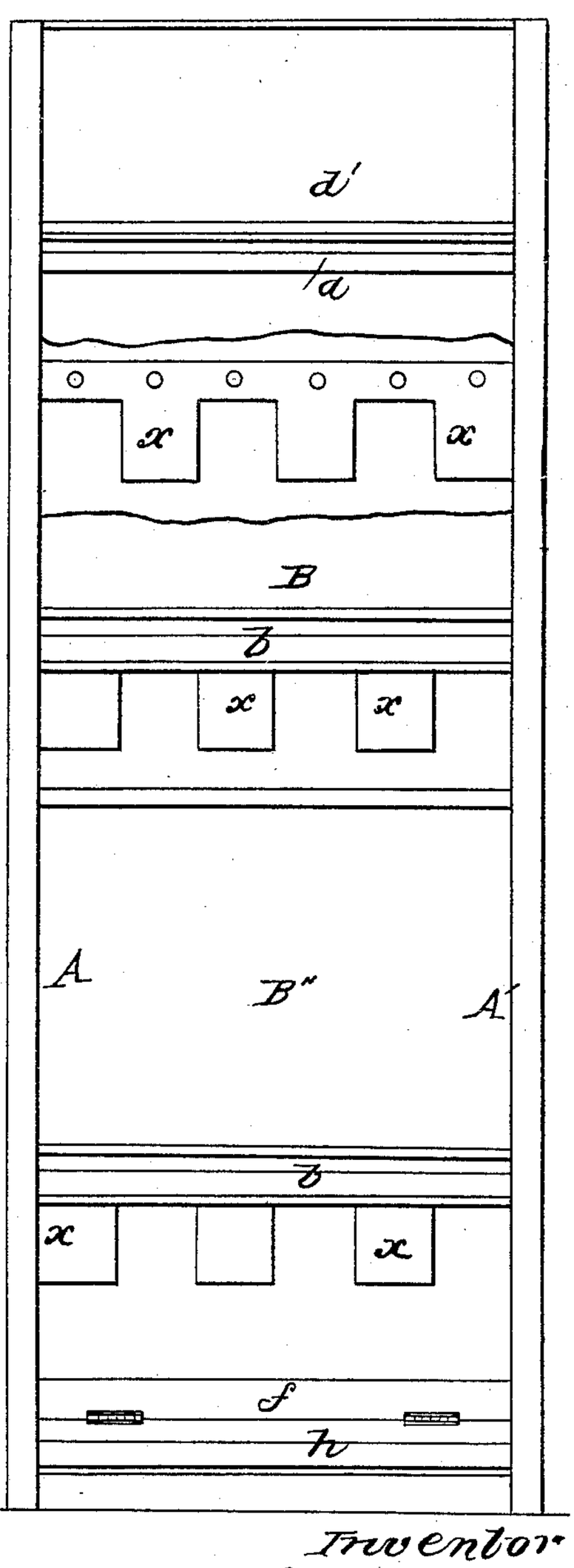


Fig. 2



Witnesses
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UNITED STATES PATENT OFFICE.

HENRY H. BEACH, OF ROME, NEW YORK.

GRAIN-DRIER.

Specification forming part of Letters Patent No. **56,348**, dated July 17, 1866.

To all whom it may concern:

Be it known that I, H. H. BEACH, of Rome, Oneida county, New York, have invented certain Improvements in Apparatus for Drying Grain; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My improved grain-drying apparatus consists of a series of inclined perforated plates and a flue for receiving heated air, which passes through the grain to the atmosphere, the whole being arranged substantially as described hereinafter, so that the heated air, after passing once through the stratum of grain and being charged with the moisture from the latter, is at once carried off.

My invention further consists of certain vanes, described hereinafter, for disturbing the stratum of grain at different points as it pursues its course down the inclined planes, thereby causing the kernels to be thoroughly exposed to the drying action of the heated air.

In order to enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation.

On reference to the accompanying drawings, which form a part of this specification, Figure 1 is a vertical section of my improved grain-drying apparatus, and Fig. 2 a section on the line 1 2, Fig. 1.

Between the two fire-proof walls A and A′ are arranged a series of inclined perforated plates, B B′, &c., each of which is curved at the upper end, and there secured to a cross-bar, *a*, the lower end being secured to a cross-bar, *b*.

A hopper or receiver, D, is formed at the upper end of the drier by the vertical plate *d* and inclined plates *d′* and *d″*, there being an opening, *e*, between the latter plates for the escape of the grain to the first inclined and perforated plate, B.

The lowest plate, B‴, is secured to an inclined cross-piece, *f*, to which is hinged a plate, *h*, the latter being used in the present instance to regulate the escape of the dried grain from the apparatus.

On one side of the drier is a flue, G, into which heated air is either forced from below or is carried upward by an exhaust-fan properly situated, and on the opposite side is a similar flue, H, for the escape of the heated air to the atmosphere. As the flue G is closed at the top, the heated air has no means of escaping to the flue H other than through the perforations of the plates B B′, &c.

As the grain pursues its course down the first inclined plate, B, the heated air, in endeavoring to escape from the flue G to the exit-flue H, must pass in the direction of the arrows, first through the stratum of grain traversing the plate, and then through the perforations of the plate itself. As the grain traverses the next plate, B′, the heated air passes first through the perforations of that plate, and then through the stratum of grain to the flue H, and this is continued until the grain makes its exit at the bottom of the drier. Thus the heated air, having once passed through the stratum of grain on one inclined plate, is carried off with whatever moisture it may have absorbed through the flue H to the atmosphere, instead of being permitted to repass through the grain while thus charged with moisture. This immediate disposal of the heated air, rendered comparatively useless as a drying medium by the absorption of moisture from the grain, is an important feature of my invention.

The kernels of grain in their passage down the several inclined planes have a tendency to retain the same relative position to each other throughout—a circumstance which would materially interfere with the attainment of the desired drying effect but for the vanes *x*, the first of which is secured to the end of the inclined plate *d″* and the others to the cross-bars *b*. These vanes are so arranged that they must penetrate the stratum of grain at every point where the latter has passed one inclined plane and commenced its descent down the next, as seen in Fig. 1.

It will be seen on reference to Fig. 2 that the spaces between the vanes are as wide, or about as wide, as the vanes themselves, and that the vanes at the end of one inclined plane are opposite to the spaces between the vanes of the next inclined plane. Hence as the grain commences its course down the plane B the stratum will be penetrated and disturbed by the vanes *x*, the latter forming, as it were, a channel in the stratum, while as the grain

passes down the plane B′ the vanes *x′* will form channels in the stratum at points between the channels formed by the upper vanes, *x*, and this is continued until the grain leaves the drier. This disturbance of the grain at alternate points causes the kernels to be repeatedly turned, and every portion of the grain is consequently exposed equally to the action of the heated air.

I claim as my invention and desire to secure by Letters Patent—

1. The within-described grain-drier, composed of the inclined perforated plates B B′, &c., and flues G and H, the whole being arranged substantially as and for the purpose herein set forth.

2. In combination with the above, the vanes *x x′*, &c., arranged substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY H. BEACH.

Witnesses:
G. S. PALMER,
GEO. J. SCOTT.