SPENDELOW & HENEAGE.

Grain Drier.

No. 82,170. Patented Sept. 15, 1868.

Fig. 1

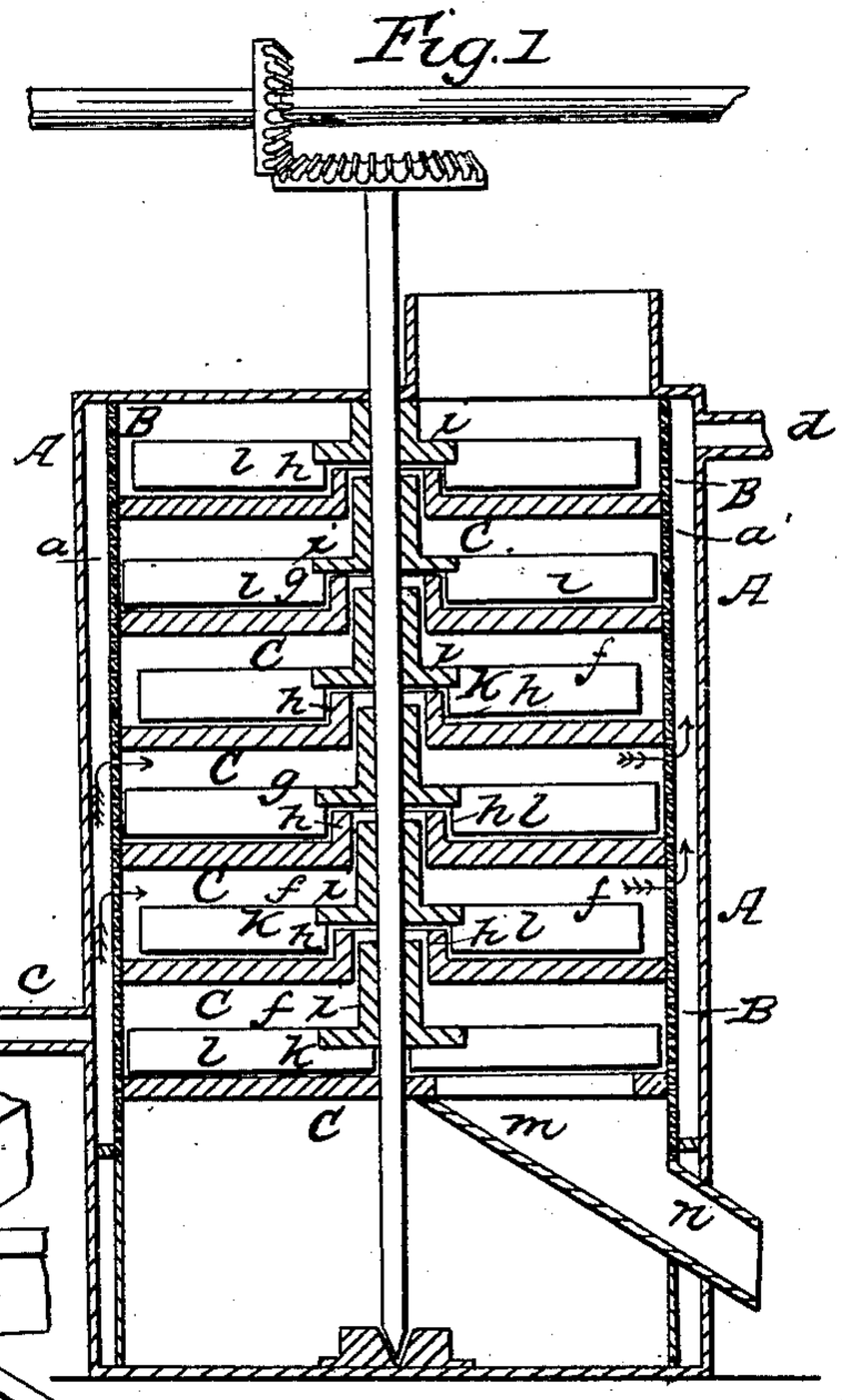


Fig. 3.

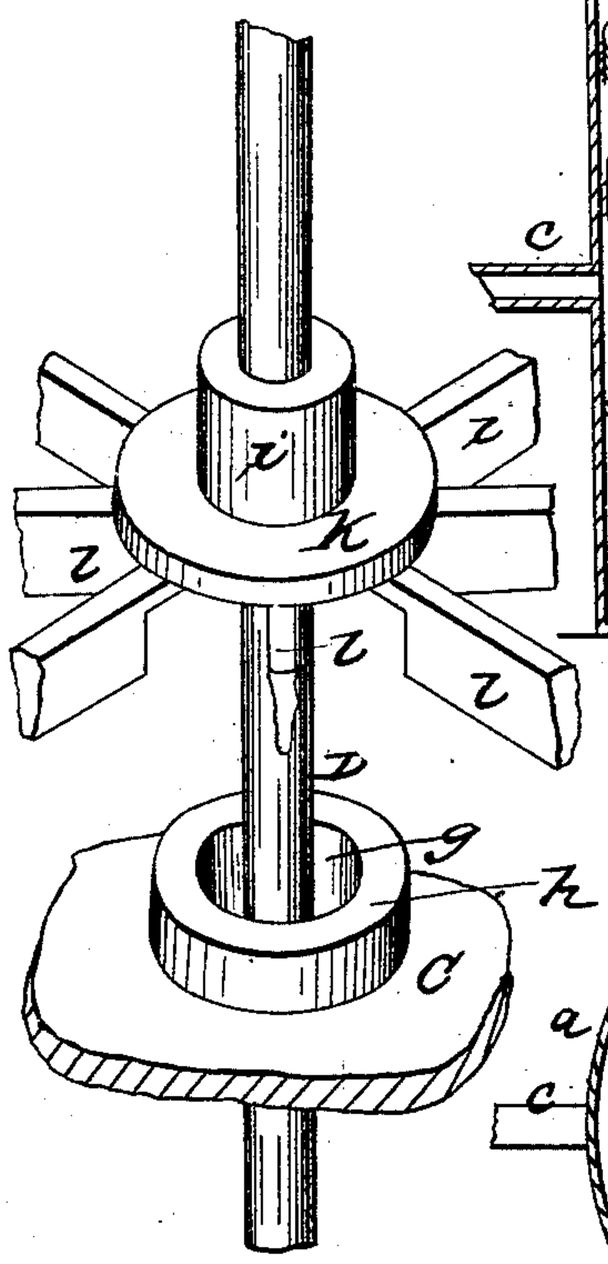


Fig. 4

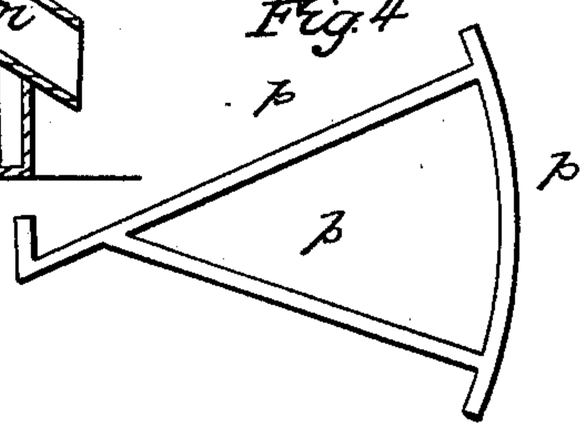
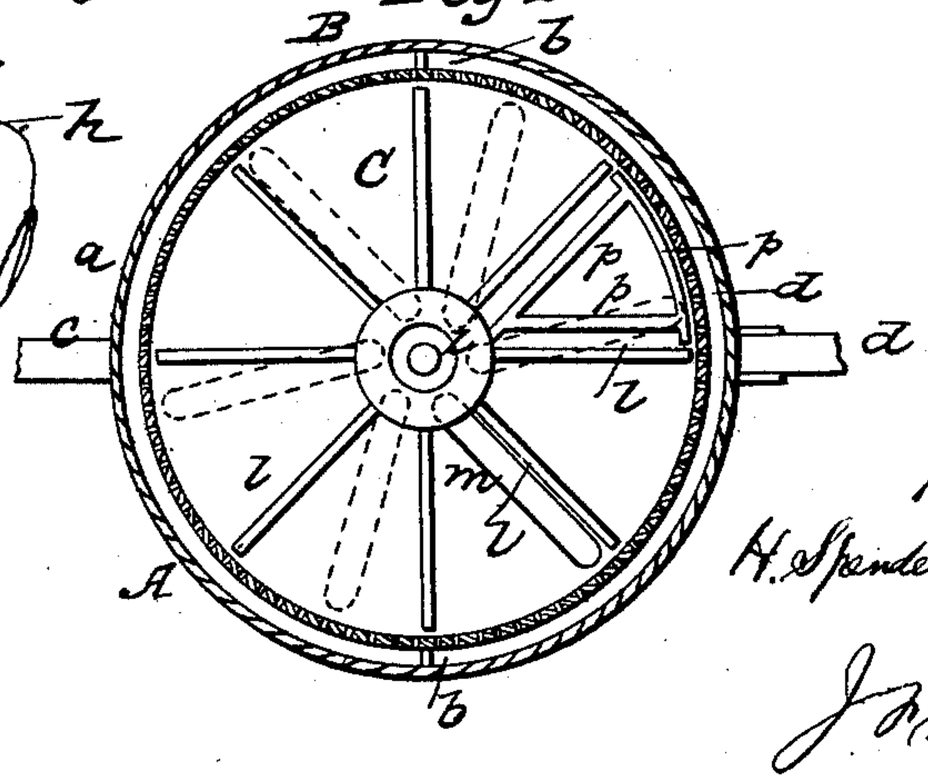


Fig. 2



WITNESSES

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HENRY SPENDELOW AND ROBERT HENEAGE, OF BUFFALO, NEW YORK.

Letters Patent No. 82,170, *dated September* 15, 1868.

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 we, HENRY SPENDELOW and ROBERT HENEAGE, of the city of Buffalo, county of Erie, and State of New York, have invented a certain new and useful Improvement in Malt and Grain-Driers; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

Figure 1 is a central vertical section of our improved drier.

Figure 2, a horizontal section.

Figure 3, a perspective view, showing the arrangement between the disks for preventing the upward flow of air.

Figure 4, a plan of one of the spreaders.

Like letters of reference indicate corresponding parts in all the figures.

Our invention consists in the special construction of the apparatus, whereby the air is made to pass horizontally through the chambers, between the disks or drying-floors, instead of passing upward vertically, as in other arrangements.

In the drawings, A indicates the outer or closed cylinder; B, the inner or perforated cylinder; and C C C, a series of disks or grain-drying floors, horizontally crossing the area of the inner cylinder, and situated at suitable distances apart.

The jacket-space between the outer and inner cylinders is divided into two equal flue-spaces or compartments, *a a'*, by vertical partitions *b b*, which extend from top to bottom, as clearly shown in fig. 2. Thus the only passage from induction-pipe *c* to eduction-pipe *d* is from side to side, horizontally through the chambers *f f*, between the disks or drying-floors.

The disks or drying-floors have central eyes, *g g*, formed by annular flanges *h h*, through which eyes pass the spindle or shaft D, receiving motion at the top by gearing, banding, or any other suitable means. To the shaft are secured hubs *i i*, having disk-plates, *k k*, resting closely over the top of flanges *h h*, thereby cutting off the connection or passage vertically between the several chambers *f f*. With these hubs are also connected sweep-arms *l l*, extending radially over the drying-floors, and resting closely thereon. The arms of the several floors are made to alternate or "break joints" in position, for the purpose of more effectually sweeping the material under treatment before them.

Intermediate with the several arms of each set, we locate a device, which we denominate the "spreader," the same being composed of thin bars, *p p p*, of triangular form, attached, by hook or otherwise, to the hubs. These spreaders are placed flat on the drying-floor, in advance of the arms, and serve to distribute the malt or grain equally over a large surface, and hold it in that condition, and thereby prevent the massing or piling that would otherwise occur by the action of the arms themselves.

The drying-floors have each a radial slot, *m*, standing in line with the sweep-arms as they approach it, and through which the malt, grain, or other material under treatment, falls from one floor to another.

These slots gradually recede in position from the top floor to the bottom one; that is, the successive slots are situated one a little back of another, so that the malt or grain, as it falls from above, will strike on a closed surface of the disks. On each floor, therefore, the material has a clear sweep of the whole circle before it falls to the next. In this manner, the passage from top to bottom is very circuitous, and the material, before it reaches the discharge-spout *n*, becomes thoroughly dried. We are also enabled to place the whole apparatus in a very compact and concentrated form, which renders it very cheap, comparatively.

The great advantage we claim in this invention is the horizontal passage of the air from side to side, through the closed chambers *f f*, thereby preventing the steam generated in the bottom from ascending into the top. The radical fault with other driers of this class has been, that the passage has been open from bottom to top, and the large amount of moisture raised at the base ascends through the whole mass of malt or grain, thereby keeping the upper portion constantly saturated with moisture. In such apparatus, the grain is discharged in a damp state, and frequently has to be run through a second time.

By making the chambers *f f* closed, and drawing the air horizontally from flue-space *a*, it will be seen that we remedy this difficulty, since the steam from any one chamber can escape only outward into the flue-space, and not upward into the other chambers. The malt and grain thus gets drier and drier in its passage downward, and is discharged completely cured.

The disk-plates *k k*, in combination with the flanges *h h*, are essential in covering the eyes through which the shaft passes, and therefore insuring the closing of the chambers.

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

1. The arrangement, in combination with the closed chambers, of the disk-plates *k* and raised flanges *h*, in the manner and for the purpose herein set forth.

2. The combination, with the arms *l l*, of the spreaders *p p p*, arranged as described, and operating in the manner and for the purpose specified.

3. The arrangement, in combination with the drying-floors C and arms *l l*, of the series of slots *m m*, receding in position, so as to leave a closed surface in the succeeding floor below each slot, as herein set forth.

In witness whereof, we have hereunto signed our names in the presence of two subscribing witnesses.

HENRY SPENDELOW
ROBT. HENEAGE.

Witnesses:

J. R. DRAKE,
ALBERT HAIGHT.