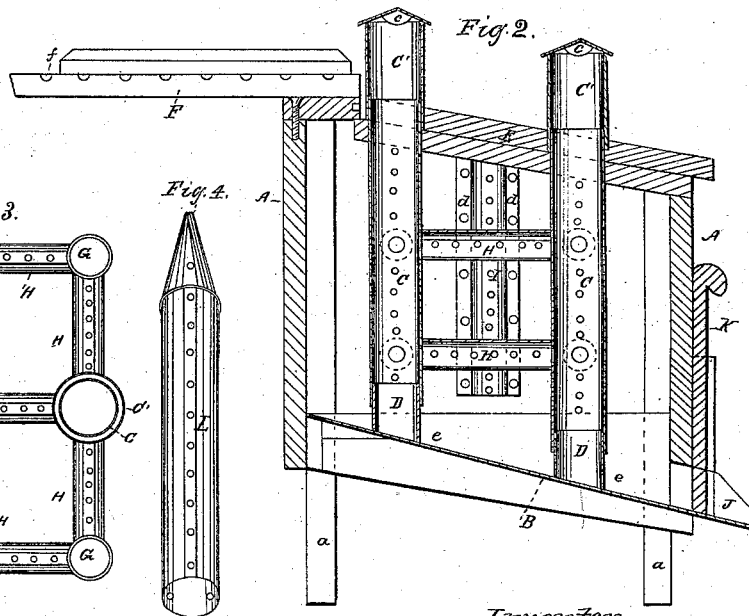
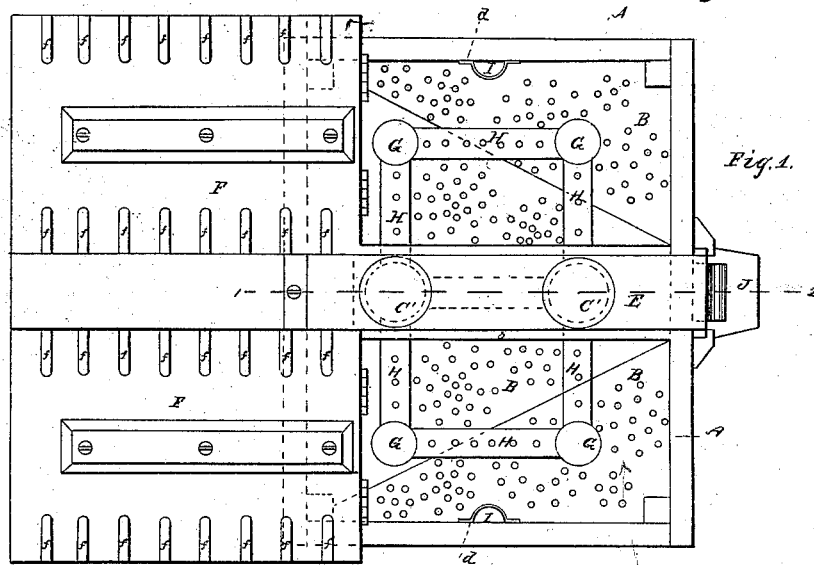


J. Shone,
Grain Ventilator,

N^o 54,969.

Patented May 22, 1866.



Witnesses
Stephen Ustick
Alfred A Young

Inventor
John Thone

UNITED STATES PATENT OFFICE.

JOHN SHONE, OF BLACKWOODTOWN, NEW JERSEY.

MODE OF VENTILATING GRAIN.

Specification forming part of Letters Patent No. 54,969, dated May 22, 1866.

To all whom it may concern:

Be it known that I, JOHN SHONE, of Blackwoodtown, in the county of Camden and State of New Jersey, have invented a new and Improved Mode of Ventilating Grain; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a plan or top view of the improved bin with the covers F F thrown up for the purpose of showing the interior arrangement of the bin. Fig. 2 is a vertical section of the same at the red line 1 2 of Fig. 1. Fig. 3 is a view of the vertical tubes C and G and horizontal tubes H in connection in an inverted position. Fig. 4 is a perspective view of one of the vertical tubes L inverted.

Like letters in all the figures indicate the same parts.

The nature of my invention consists of a perforated bottom and series of perforated tubes for expelling the heat which arises from grain when stored in bins, constructed and arranged substantially as follows.

A is the body of the bin. B is the bottom, which is represented of sheet-iron perforated to allow the cold air to circulate through the grain, it being elevated by means of the legs *a*. I usually construct the bottom, however, of wood with large holes at suitable distances apart, which I cover with perforated metallic plates, the bottom being well supported by strong bars beneath it, secured at their ends to parallel sides of the bin.

C C are perforated tubes, which are connected with the bottom at their lower ends by means of the hollow metallic studs D D, which are made fast to the bottom. These tubes have protecting cap-pieces C', which extend above the top of the bin. Their lower ends fit in corresponding holes in the cross-piece E, which has rabbets *b* for the support of the inner edges of the covers F F. The said cap-pieces have large openings *c*, to allow the heated air as it passes into the main and conducting tubes C to flow freely out of the same.

With the tubes C, I combine other vertical perforated tubes, G, and horizontal perforated tubes H, having a sufficient number throughout the bin to carry off all of the heated air.

The tubes should be open at their lower ends to effect a free discharge of the dust which passes into them through the perforations. The horizontal tubes H have slots in their under sides, as seen in Fig. 3, for the same purpose.

There are vertical perforated tubes I I for carrying off the heated air at the sides of the bin. I have represented but two; but in practical operation there should be several on each side. These tubes are open on the side next the side of the bin, and have flanges *d*, which are secured to the bin by means of screws or or tacks.

There are openings *e* in the front sides of the studs D, which allow the dust which may pass through the perforations into the tubes C to escape as the grain is drawn out of the bin from the bottom of the same by means of the chute J. K is a gate for closing the chute.

For the purpose of a uniform discharge of the grain throughout its whole area, I make the bottom B to descend from the back and ends of the bin to the chute J, as represented in the drawings.

There are grooves *f* in the under sides of the covers F F for the exit of heated air. Instead of making them in the covers they may be made on the edges of the bin, if desired.

I provide for the discharge of the grain from the bottom of the bin, as above described, for the purpose of agitating the grain throughout the entire mass to enliven it, which is prevented by taking out from the top of the bin in the usual way.

The operation is as follows: As the grain commences heating the cold air passes up from beneath the bin into the body of the same, through the perforations in the bottom B, and expels the hot air through the perforations in the series of tubes above described, and by means of the exit-openings *c* of the cap-pieces C' it is drawn into the main tubes C, and passes up the same and escapes through the exit-openings *c*, which operation continues while the grain is in a heated state.

Bins constructed in the usual manner may have my improvement attached to them by altering the bottom to conform to the above description. Instead of constructing the tubes as described for this purpose there may be a suitable number of tubes L, (see Fig. 4,) which I make pointed at one end for the purpose of

running them down into the body of the grain in bins already filled.

Having thus fully described my improved mode of ventilating grain, what I claim therein as new, and desire to secure by Letters Patent, is—

1. Combining with the main tubes C C the auxiliary vertical tubes G and horizontal tubes H, constructed, arranged, and operating substantially in the manner and for the purpose hereinbefore described.

2. The combination of the cap-pieces C' with

the main tubes C, substantially in the manner and for the purpose specified.

3. Combining the perforated tubes I with the sides of the bin, substantially as and for the purpose set forth.

In testimony that the above is my invention I have hereunto set my hand and affixed my seal this 6th day of October, 1865.

JOHN SHONE. [L. S.]

Witnesses:

STEPHEN USTICK,
JOHN WHITE.