A. NASH.

Grain Drier.

No. 168,101. Patented Sept. 28, 1875.

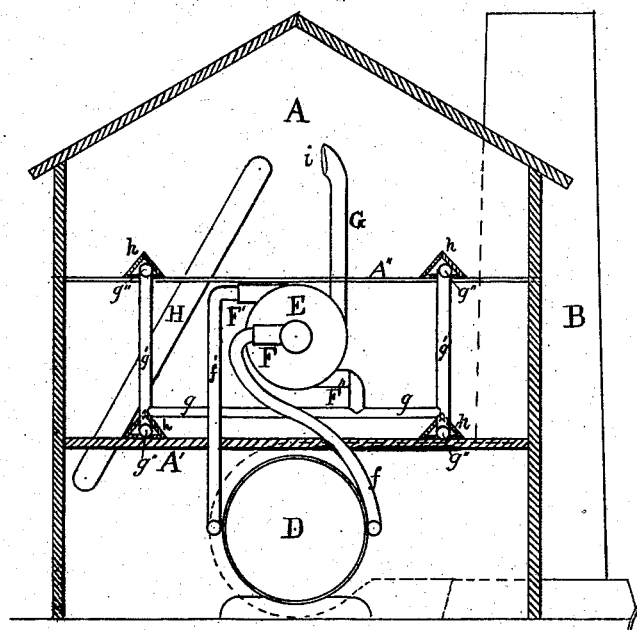


fig. 1.

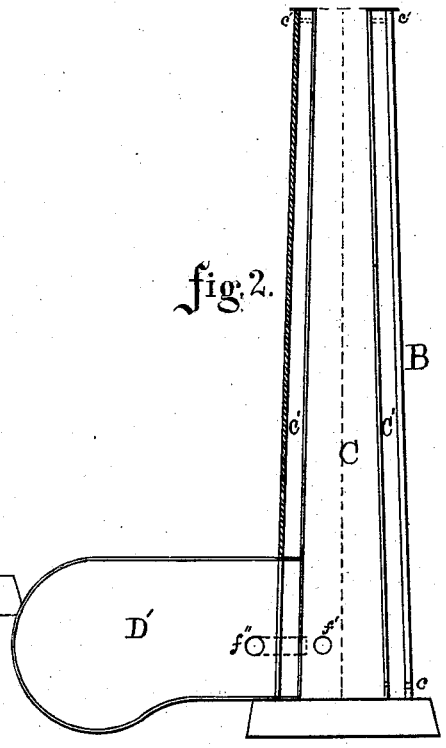
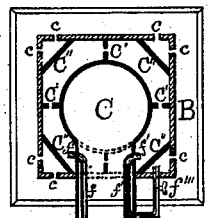
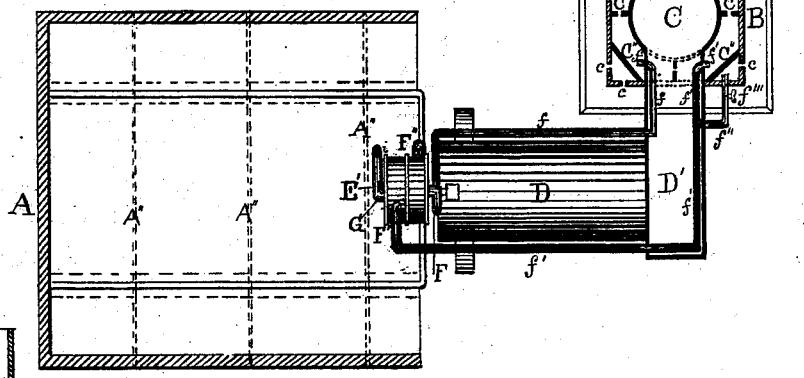


fig. 2.

fig. 5.

fig. 3.





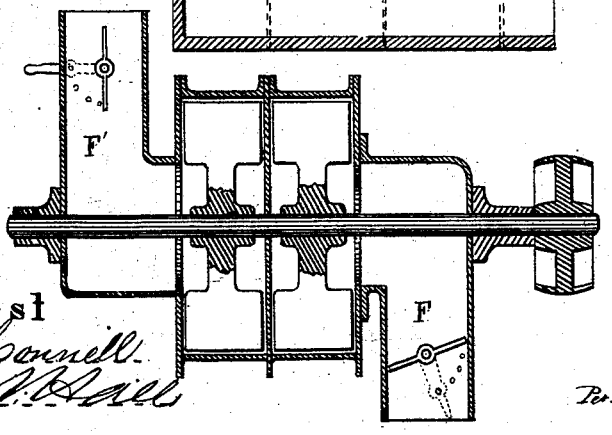


fig. 4.

Attest

C. M. Connell.

P. W. Ball

Inventor

Atkins Nash

Per Blanchard and Singleton.

Attorneys

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ADKINS NASH, OF LOGANSPORT, INDIANA.

IMPROVEMENT IN GRAIN-DRIERS.

Specification forming part of Letters Patent No. **168,101**, dated September 28, 1875; application filed August 10, 1875.

To all whom it may concern:

Be it known that I, ADKINS NASH, of Logansport, in the county of Cass and State of Indiana, have invented certain new and useful Improvements in Grain-Driers; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings and to the letters of reference marked thereon, which form a part of this specification.

Figure 1 is a transverse vertical section of a drying-house with the invention attached. Fig. 2 is a transverse vertical section of the chimney and hood from the boiler. Fig. 3 is a plan view of the whole arrangement. Fig. 4 is a section of the fans. Fig. 5 is a transverse section of one of the air-pipes.

This invention relates to improvements in grain-driers, as will be more fully described hereinafter.

A represents the frame of the drying-house, with its floor A′ and tie-rods A″, extending transversely at convenient distances apart and above the floor. B is the exterior chimney, in which is arranged the smoke-stack C, of sheet metal, which is connected and stayed to the exterior shell B by the four dividing-webs of metal C′ C′ C′ C′. In the four corners of the exterior chimney are partitions C″ C″ C″ C″, which do not extend all the way to the top of the chimney, but leave an air-space above them, and below the chimney-cover, as seen at *c′ c′*, Fig. 2. D is the boiler, and D′ the hood, through which is conveyed the smoke from the boiler to the stack, a side view of it being shown in Fig. 2. E is a fan-blower, arranged with two fans on the same shaft. F is the inlet-pipe, to which is connected an air-tube, *f*, which is continued alongside of the boiler, and thence into the hood, and with it into the chimney, where it passes into one of the air-chambers, as seen in Fig. 3 at *f*. F′ is another tube, being the outlet from the fan, and to it is attached an air-pipe, *f′*, which passes alongside of the boiler opposite to *f*, and thence within the hood to the stack, and ends in one of the air-chambers, as at *f′*. There is a branch pipe, *f‴*, outside of the hood, which ends in one of the corner air-chambers, and is controlled by a valve, *f‴*. F″ is a third tube of the fan, which connects with pipe *g*, extending across the house, as seen in Fig. 1, and to which are connected the vertical pipes *g′* and horizontal pipes *g″*, extending along the floor A′, in any desirable number, as also above these may be arranged other pipes to be supported on the tie-rods A′ A″. These pipes are pierced with small holes to permit the hot air to escape as it is forced from the fan. As a substitute for these metallic pipes, wooden ones may be used, such as are seen in Fig. 1, *h h*, and also a modification in Fig. 5, where a flap, *h′*, is hinged, so that it may open to permit the hot air to pass from the perforations in the side *h′* to the exterior. These wooden pipes have holes in the sides when placed upon floor A′, and in the bottom when placed on the tie-rods. These wooden pipes have the metallic pipes to enter at the end only, and not continue farther than for an effectual joint, and are used for economy. G is a tube, which is connected below with tube E′ of the fan, and is extended to the upper part of the drying-house, for a purpose which will be explained hereinafter. H represents an ordinary conveyer for grain. The chimney B being divided into an interior smoke-stack, the heat passing from the boiler D communicates a portion of caloric to the air surrounding the metal, which is prevented from escaping by a chimney-cover over the air-space. The air-spaces in the four corners are separated from the other parts by partitions C. These are intended for the admission of cold air from the exterior by holes at the bottom of the chimney, as at *c c*, Figs. 2 and 3. In that corner where pipe *f‴* enters, as before described, the holes are controlled by registers, so that the external air may be excluded or controlled. The partitions C″ of these cold air-chambers do not extend the whole length, but stop short near the top, to allow the air to pass over them into the hot-air chambers inside of them, as at *c′ c′*, Fig. 2. The suction-pipe *f*, which opens into the left-hand hot-air chamber, Fig. 3, by the action of the fan, conducts the heated air in that chamber, which is also connected to all of the three similar chambers by holes in the partitions C′ C′ into the fan, and thence by the outlet-pipe F′,

into pipes g, g', and g'', and through them into the drying-house among the material which may be there placed, being either grain, lumber, &c. The hot air of these chambers being drawn away, the cold air of the corner spaces will rush over partitions C'' C'' at c' c', and become heated as it passes down to the pipe f, being retarded in its fall and general course by the partitions C', so that it will become heated enough for drying purposes. The outlet-tube F, connected by the pipe f', extending along the boiler to the stack, and terminating by one branch at f' in the hot-air chamber to the right in Fig. 3, is for the purpose of driving the waste heated air which arises in the drying-house, and is drawn into pipe G through the mouth i, and conveyed by pipe f' again into the hot-air chambers, to be drawn by pipe f back to the house. Should the air in the corner cold-air chambers be not rapid enough in its upward movement to supply the fan by the valve f''' in the branch pipe, Fig. 3, the air from pipe f' may be partially thrown into the corner cold-air space, and thus force an upward movement, and by another valve, f'''', being placed at the junction of the branch pipe, the whole body of air may be turned into the branch, and excluded from the main stem at f'.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of the hot and cold air chambers with the smoke-stack and exterior shell of a chimney, whereby the cold air becomes gradually heated previous to being drawn into the drying-house, substantially as and for the purpose described.

2. In a drying apparatus, the combination of the conducting-tubes f f', fan-blower E, the hot and cold spaces, and smoke-stack of a chimney, all substantially as and for the purpose described.

3. In a drying apparatus, the combination of the smoke-stack with hot and cold air chambers, conducting-pipes f f' and fan-blower, and the outlet-pipes g g' g'' in a dry house or box, substantially as and for the purpose described.

4. In a drying apparatus, the combination of the fan-blower E, inlet-pipe f, and outlet-pipe f', pipes G and g, and hot and cold air chambers in a smoke-stack, to produce a continuous circulation, substantially as described.

In testimony that I claim the foregoing as my own invention I affix my signature in presence of two witnesses.

ADKINS NASH.

Witnesses:
THOMAS C. CONNOLLY,
C. M. CONNELL.