

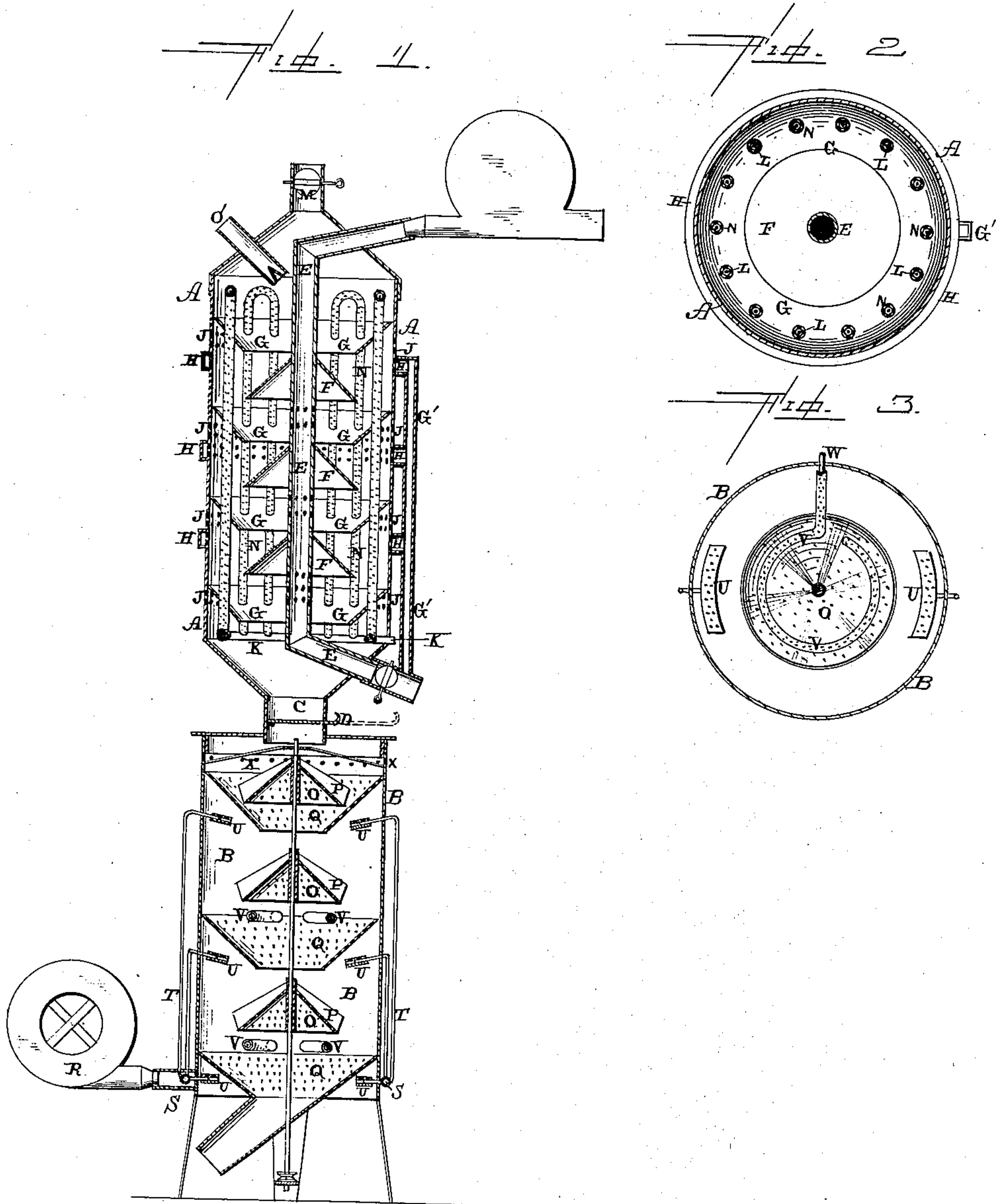
(No Model.)

C. F. SHEDD.

GRAIN DRIER.

No. 334,987.

Patented Jan. 26, 1886.



WITNESSES.

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UNITED STATES PATENT OFFICE.

CHARLES F. SHEDD, OF FAIRFIELD, NEBRASKA.

GRAIN-DRIER.

SPECIFICATION forming part of Letters Patent No. 334,987, dated January 26, 1886.

Application filed November 20, 1885. Serial No. 183,444. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. SHEDD, of Fairfield, in the county of Clay and State of Nebraska, have invented certain new and useful Improvements in Combined Grain Scourer, Drier, and Cooler; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in combined grain scourer, drier, and cooler; and it consists in, first, the combination of a hot-air pipe with branch pipes which extend around the body or frame, and through which body or frame are made perforations to admit the heated air to the grain; second, the combination of the perforated inclosing body or frame with the cones and funnels which are arranged therein, and the steam-pipes, the perforations through the inclosing-frame being made just under the tops of the funnels; third, the combination of the revolving cones, the funnels, the blower, and the pipes which conduct the cold air into the inclosing-frame, so as to cool the grain; fourth, in the arrangement and combination of parts, which will be more fully described hereinafter.

The object of my invention is to combine a grain scourer, drier, and cooler in a single machine, so that damp and musty grain can be passed in at the top of the machine, dried, scoured, and then cooled, so as to be ready for shipment or storage.

Figure 1 is a vertical longitudinal section of a machine embodying my invention. Fig. 2 is a horizontal section taken through the grain-drier. Fig. 3 is a similar view taken through the cooler.

A represents the body or frame of the grain-drier, and B the body or frame of the grain-cooler, the two being connected directly together by the pipe C, which is provided with a cut-off valve, D, so as to regulate the flow of the grain from the drier into the cooler.

Passing through the side of the lower portion of the grain-drier A is the hot-air pipe E, which may lead from the furnace and hot-air chamber, or from any suitable source from which a current or draft of hot air may be

obtained. In this pipe, outside of the grain-drier A, is placed a suitable valve, so as to regulate the suction of the fan, which is connected with its upper end. This pipe E extends up through the center of the grain-drier to its top, and through which top it passes outward, where it is connected to a suction-fan. This pipe is perforated inside of the grain-drier, so that the fan can draw away all of the moist air contained in the grain-drier as fast as it is formed from the damp grain which is passing through the body or frame A. Upon this central perforated pipe, E, are placed any suitable number of cones, F, and arranged in the frame at any suitable distance below these cones are the funnels G, the cones and funnels serving to alternately spread and then gather the falling grain in such a manner that the rising currents of hot air will act upon the grain to the very best advantage.

Rising from the hot-air pipe, outside of the frame or cylinder A, is a vertical pipe, G', which connects with the pipe E outside of the valve or damper, and which pipe G' is connected with the flat pipes H, which extend around the body or cylinder A horizontally just over the series of perforations through which the hot air which is introduced into the flat pipes passes. The hot air as it passes into the frame A acts upon the falling grain for the purpose of drying it. All of that hot moist air which rises up under the funnels passes out through the perforations J, which are made through the frame A just below the top edges of the funnels. All of that hot moist air which rises up under the cones is drawn through the perforations in the central pipe, E, by means of the suction-fan connected thereto.

Also passing through the lower portion of the body or cylinder A is a steam-pipe, K, which extends around the inside of the frame, and from which rises any suitable number of pipes L, which are incased in perforated metal coverings N, for the purpose of preventing the grain from coming in actual contact with the steam-pipes. The steam may be taken directly from the boiler or any other source that may be preferred. The heat from these steam-pipes serves to heat the interior of the grain-drier, in addition to the hot air which is drawn in through the flat pipes H, and thus the damp,

moist grain which is passing through the body or cylinder A is subjected to heat which is sufficiently intense to thoroughly dry the grain before it escapes from the drier.

5 In the top of the body or cylinder A is placed a suitable damper, M, by means of which the escape of the heated air from the cylinder may be regulated. As the grain passes through the spout O' it drops alternately from the cones
10 to the funnels and from the funnels back to the cones, being scoured by frictional contact with the parts with which the grain comes in contact, and at the same time being heated sufficiently to drive off all moisture. The
15 grain after reaching the bottom of the drier may be retained any length of time by the valve D, which controls the flow from the drier into the cooler.

In the cooler is placed a revolving vertical
20 shaft, which carries the perforated cones O, which have the wings P formed upon their tops, for the purpose of throwing the grain outward and around when the cones are made to revolve. Under these cones are placed the per-
25 forated funnels Q, which serve to catch the grain as it falls from the cones in the usual manner. These cones and funnels are made of perforated material, so that the air which is forced into the cooler by the fan R will pass
30 up through the parts and act directly upon the grain as it is falling.

The blower R, for driving currents of cold air into the cooler, has connected to it the pipe S, which extends around the cooler, and has a
35 number of branch pipes, T, projecting upward from it along the sides of the cooler. These pipes T extend upward and pass through the sides of the cooler, and terminate in nozzles U inside of the cooler, just under the fun-
40 nels. These nozzles serve to direct the cold air in an upward direction, so as to act upon the falling grain so as to thoroughly cool it. Also under all of the funnels, or under the lower ones only, are placed perforated circular
45 pipes V, through which currents of air are forced upward through the cones, so as to act

directly upon the grain while it is passing down over them. These circular perforated pipes are connected to the pipes W, which also extend up from the pipe S.

Through the top of the cooler B are made suitable perforations, X, through which the currents of air can freely escape. As the grain falls back and forth from the cones to the funnels it is subjected to blasts of cold air, and
55 all of the dust and dirt is blown away through these openings in the top of the cooler. By the time the grain reaches the bottom of the cooler it is cleaned, ready to be shipped or stored in bins.

Having thus described my invention, I claim—

1. The combination of the inclosing-frame, the hot-air pipe, the air-pipes which lead there-
65 from and extend around the frame, the cones, and the funnels, the frame being perforated both to admit the hot air from the pipes and to allow the damp hot air to escape, substantially as shown.

2. The combination of the body of the heater, the cones, the funnels, and the perforated cen-
70 tral pipe having a suction-fan connected to its upper end with the steam-pipes and the pipes for forcing the hot air into the frames, substantially as described.

3. The combination of the perforated cones and funnels with the blower, the air-pipes con-
75 nected thereto, and the nozzles through which the blasts of cold air are discharged under the funnels, substantially as specified.

4. The combination of the revolving per-
80 forated cones, the blower, the pipes connected thereto, and the circular perforated pipes which are placed under the cones, substantially as set forth.

In testimony whereof I affix my signature in
85 presence of two witnesses.

CHARLES F. SHEDD.

Witnesses:

IRA TITUS,
M. C. JOSLYN.