(No Model.)

W. H. SMITH.

HEATING AND STEAMING GRAIN.

No. 404,571. Patented June 4, 1889.

Fig. 1.

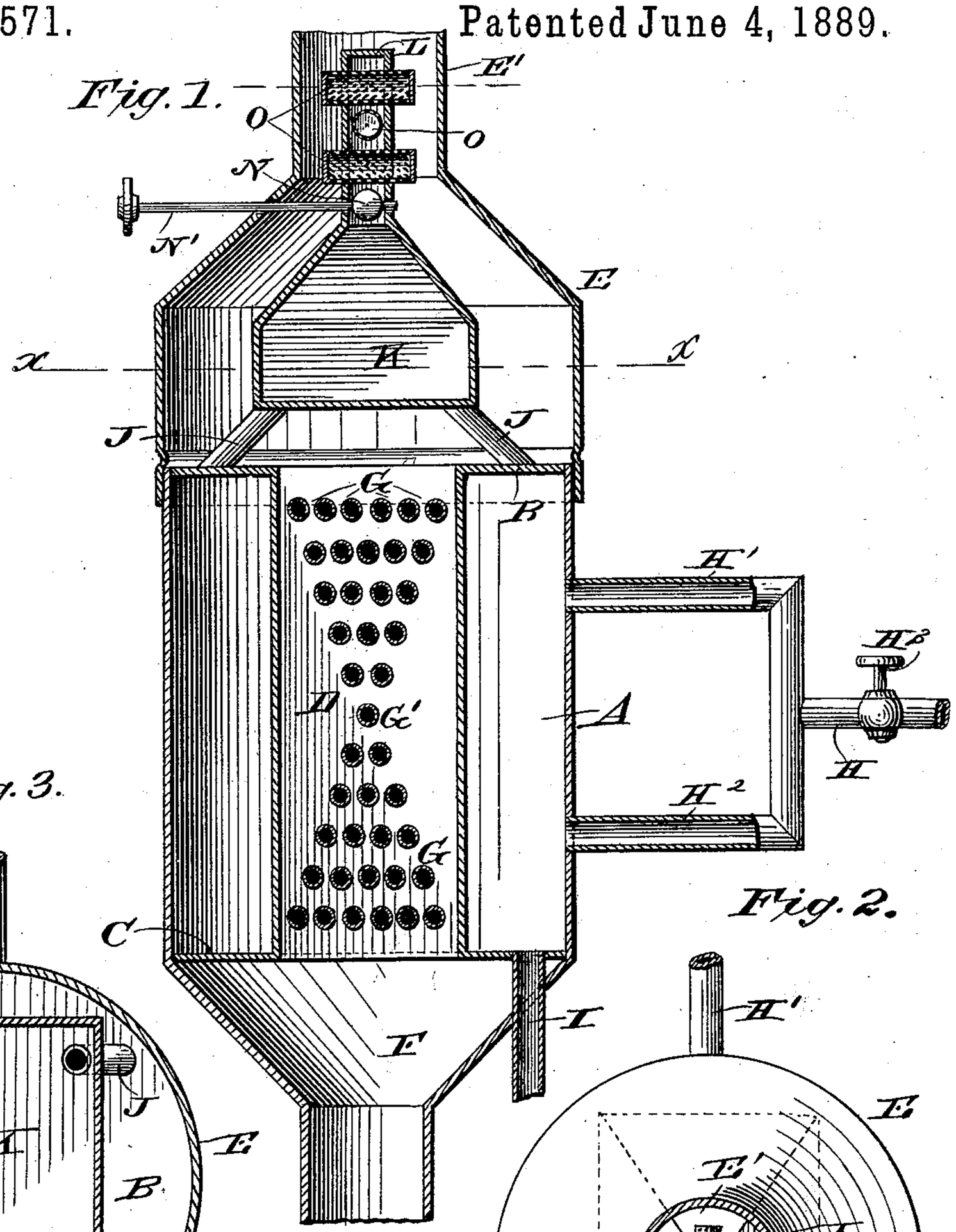


Fig. 2.

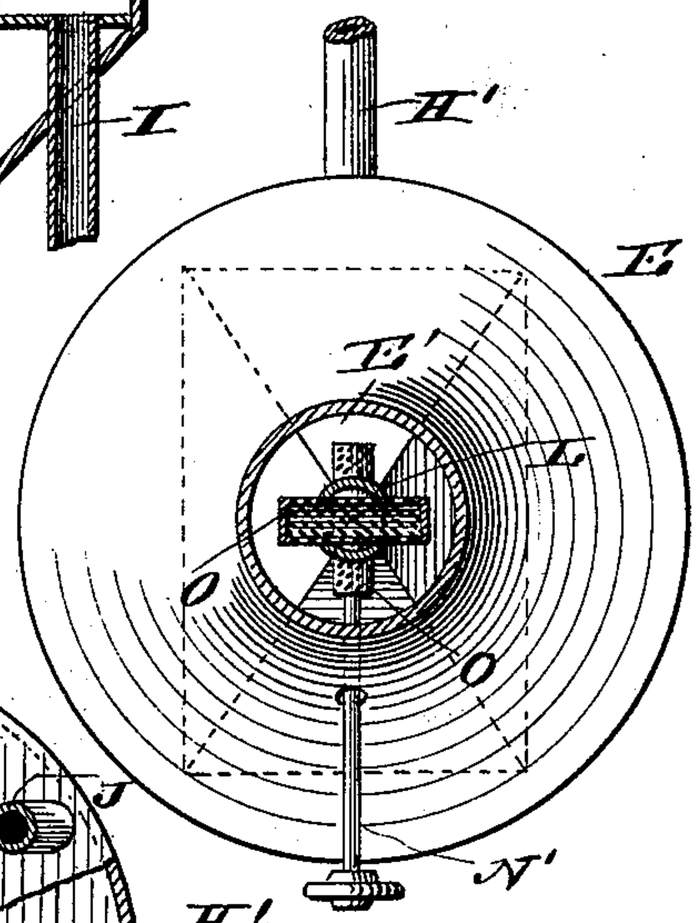


Fig. 3.

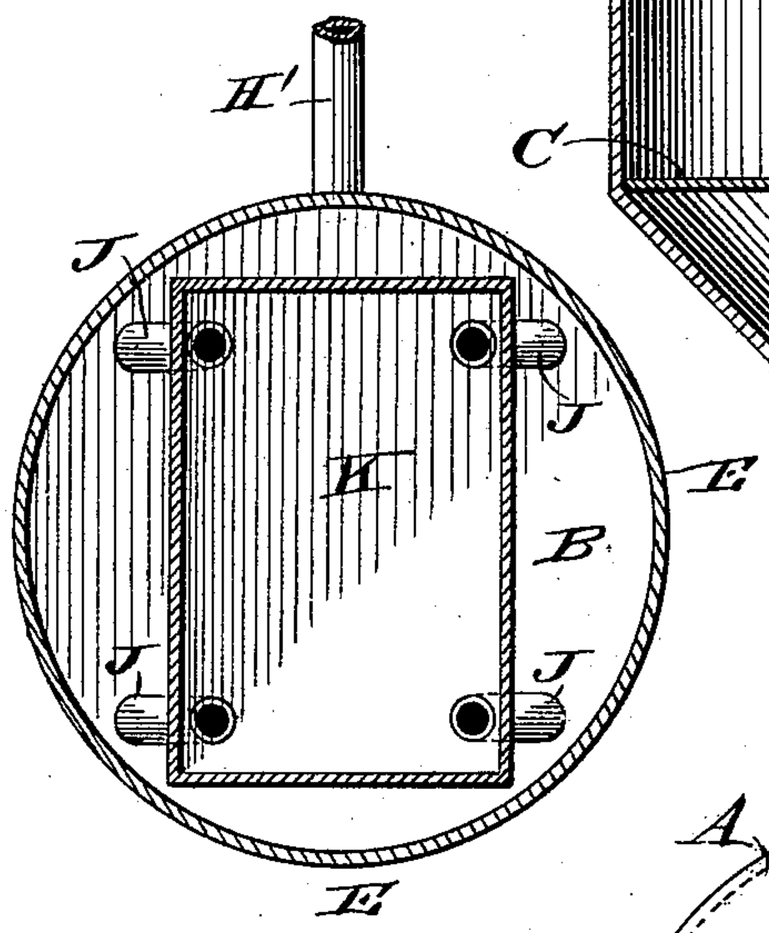
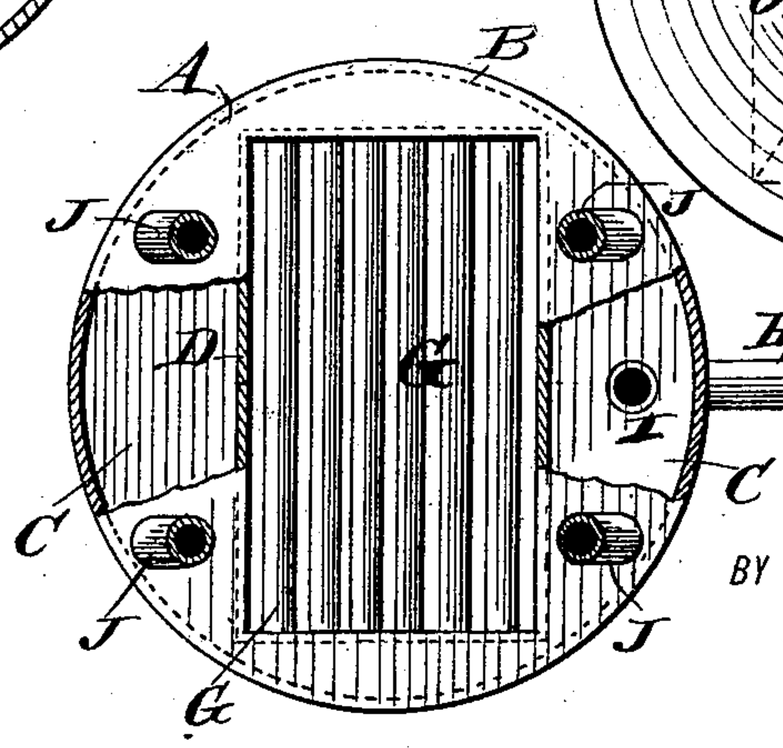


Fig. 4.



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WILLIAM H. SMITH, OF HICKMAN, TENNESSEE.

HEATING AND STEAMING GRAIN.

SPECIFICATION forming part of Letters Patent No. 404,571, dated June 4, 1889.

Application filed January 29, 1889. Serial No. 297,926. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. SMITH, of Hickman, in the county of Smith and State of Tennessee, have invented a new and Improved Apparatus for Heating and Steaming Grain, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved apparatus for heating and steaming grain, specially wheat, so as to toughen its hull and consequently produce a better bran, an increase of middlings, clearer flour, and whiter break-flour.

The invention consists in certain parts and details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional side elevation of the improvement. Fig. 2 is a plan view of the same with parts in section. Fig. 3 is a sectional plan view of the same on the line *x x* of Fig. 1, and Fig. 4 is a plan view of the improvement with the hood removed and parts broken out.

The improved device is provided with a steam-vessel A having a top B and a bottom C, in which is supported the drying-chamber D, located centrally in the vessel A and opening at its upper end into the hood E, held on top of the vessel A, and provided with a grain-inlet pipe E′. The upper end of the hood E flares inward, as shown in Fig. 1. The lower end of the drying-chamber D opens into the discharge-spout F, leading to the outside.

In the drying-chamber D are held the transversely-extending steam-pipes G, passing through the walls of the drying-chamber and opening at each end into the steam-vessel A, so that steam can circulate through the said pipes. The latter are preferably arranged as illustrated in Fig. 1, in which the pipes form two triangles, the apices of which meet in the center, while their bases form the top and bottom, so that the pipe G′ forms the apices of both triangles.

Into the steam-vessel A lead the supply-pipes H′ and H^2, connected with the pipe H, leading to a suitable source of steam-supply and provided with a valve H^3 for regulating the admission of steam to the vessel A. In the bottom C of the vessel A is held a pipe I, for carrying off the water of condensation.

From the top B of the vessel A lead the pipes J, supporting the steam-chest K and opening into the same. The steam-chest K is located directly above the upper opening of the drying-chamber D, and is similar in cross-section to the hood E. The upper end of the steam-chest K is connected with a pipe L, extending a short distance into the grain-supply pipe E′. In the bottom of the pipe L is held a valve N, secured on a valve-stem N′, extending through the hood E to the outside, so that the valve N can be opened or closed whenever desired.

In the pipe L are arranged a number of horizontally-extending perforated pipes O, projecting beyond the pipe L into the space formed between the pipes L and E′. Steam from the steam-vessel A can pass through the pipes J into the steam-chest K, and from the latter when the valve N is open into the pipe L and through the perforated pipes O into the grain-inlet pipe E′. The pipe L is closed at the top, as shown in Fig. 1.

The operation is as follows: The grain enters the device through the pipe E′ and passes through the space between the pipe L and the pipe E′ over the projecting perforated ends of the pipes O. When the operator desires to steam the grain, he opens the valve N, so that the steam from the steam-chest K passes through the perforated pipes O directly onto the grain. The latter, after leaving the perforated pipes O, passes into the flaring top of the steam-chest K, which heats the grain to a certain extent. The grain then passes over the top B of the steam-vessel A into the drying-chamber D and over the pipes G, through which passes the steam, as before described. The arrangement of the pipes G permits only a slow movement of the grain in its downward course, so that the grain is thoroughly heated and consequently dried before it is discharged from the drying-chamber D into the spout F.

When the operator only desires to heat and dry the grain, the valve N remains closed, so that no steam can escape into the grain through the perforated pipes O.

By thus treating the grain, especially wheat, I very materially toughen the hull, so that a better bran is produced in the after treatment of the grain. After treatment the grain, as before stated, produces an increase of middlings, clearer flour, and a whiter break-flour.

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

1. In an apparatus for heating and steaming grain, the combination, with a closed steam-vessel provided on top with a hood, of a drying-chamber located centrally in the said steam-vessel and opening at its upper end into the said hood, and a steam-chest located in the said hood above the said drying-chamber and in communication with the said steam-vessel, substantially as shown and described.

2. In an apparatus for heating and steaming grain, the combination, with a closed steam-vessel provided on top with a hood, of a drying-chamber located centrally in the said steam-vessel and opening at its upper end into the said hood, a steam-chest located in the said hood above the said drying-chamber and in communication with the said steam-vessel, perforated pipes held in the upper end of the said steam-chest and projecting into the inlet of the said hood, substantially as shown and described.

3. In an apparatus for heating and steaming grain, the combination, with a closed steam-vessel provided on top with a hood, of a drying-chamber located centrally in the said steam-vessel and opening at its upper end into the said hood, a steam-chest located in the said hood above the said drying-chamber and in communication with the said steam-vessel, perforated pipes held in the upper end of the said steam-chest and projecting into the inlet of the said hood, and a valve held in the said steam-chest for opening and closing the said perforated pipes, substantially as shown and described.

4. In an apparatus for heating and steaming grain, the combination, with a closed steam-vessel connected with a suitable source of steam-supply, a hood held on top of the said steam-vessel and provided with a grain-inlet pipe and a spout supported on the lower end of the said steam-vessel, of a drying-chamber held centrally in the said steam-vessel and opening at its upper end into the said hood and at its lower end into the said spout, pipes extending through the said drying-chamber into the said steam-vessel, a steam-chest held in the said hood above the said drying-chamber and in communication with the said steam-vessel, a pipe extending from the upper end of the said steam-chest, and perforated pipes extending transversely through the said pipe into the grain-inlet pipe, substantially as shown and described.

5. In an apparatus for heating and steaming grain, the combination, with a closed steam-vessel connected with a suitable source of steam-supply, a hood held on top of the said steam vessel and provided with a grain-inlet pipe, and a spout supported on the lower end of the said steam-vessel, of a drying-chamber held centrally in the said steam-vessel and opening at its upper end into the said hood and at its lower end into the said spout, pipes extending through the said drying-chamber into the said steam-vessel, a steam-chest held in the said hood above the said drying-chamber and in communication with the said steam-vessel, a pipe extending from the upper end of the said steam-chest, perforated pipes extending transversely through the said pipe into the grain-inlet pipe, and a valve held in the said pipe to connect the same with or disconnect it from the steam-chest, substantially as shown and described.

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