(No Model.)

2 Sheets—Sheet 1.

F. A. EVANS.

WHEAT STEAMER.

No. 476,138.

Patented May 31, 1892.

Fig. 1.

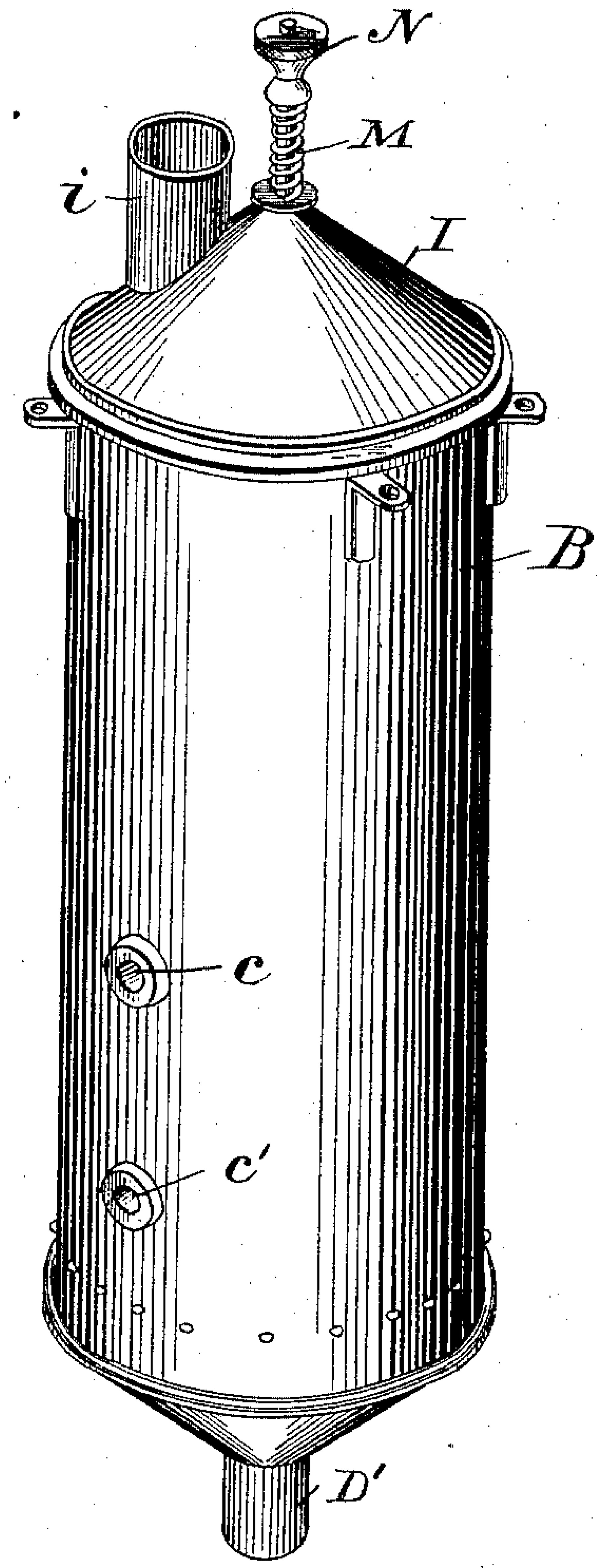
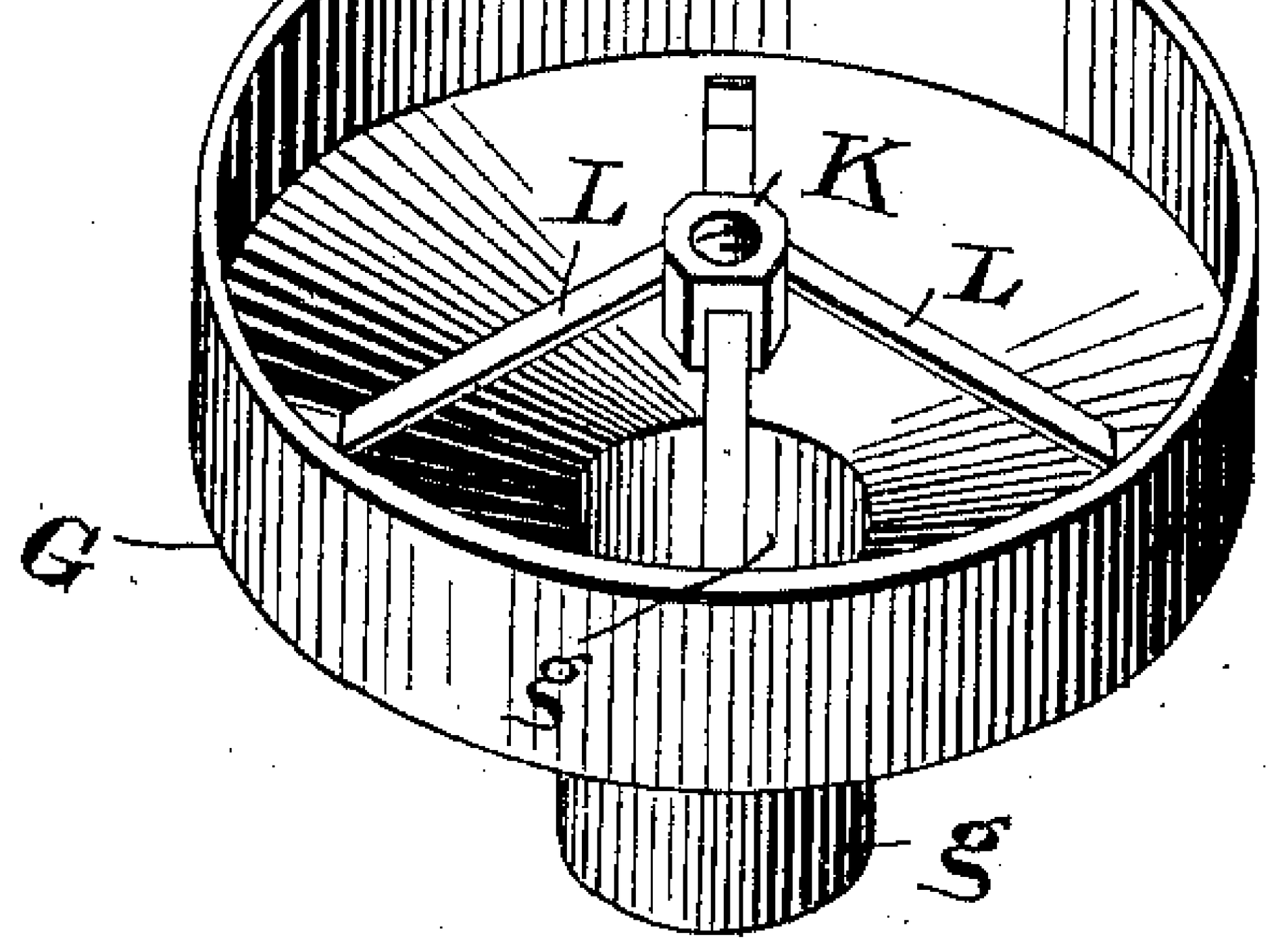


Fig. 4.



Witnesses

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(No Model.)

2 Sheets—Sheet 2.

F. A. EVANS.

WHEAT STEAMER.

No. 476,138.

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Fig. 2.

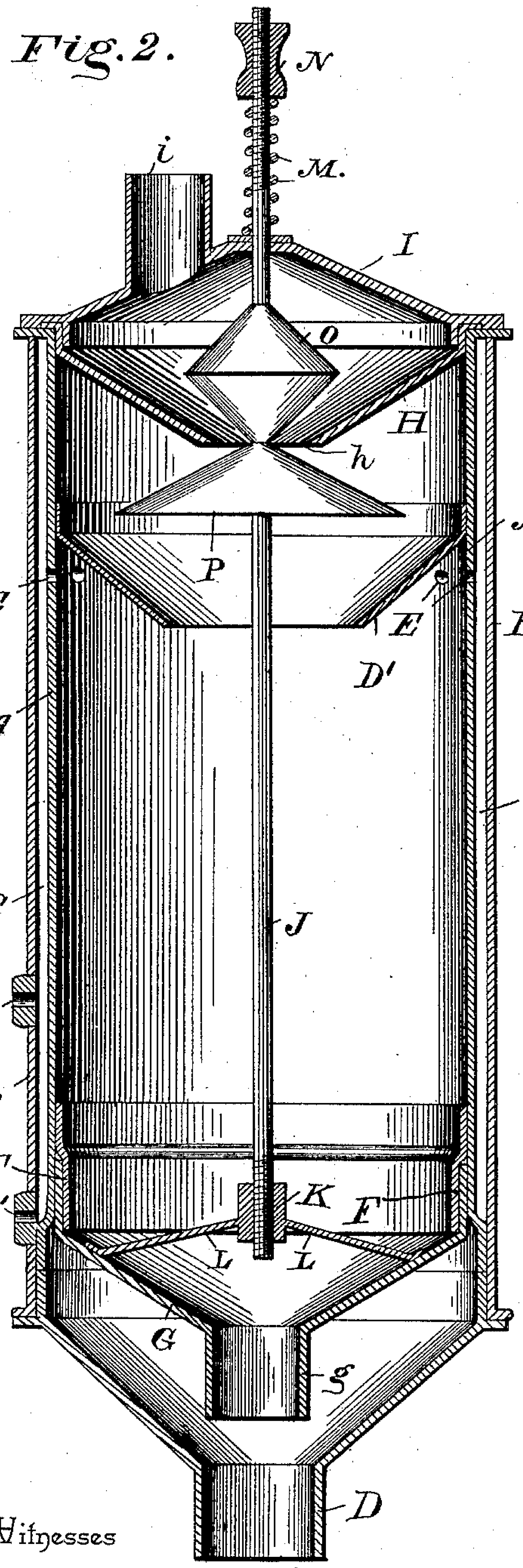
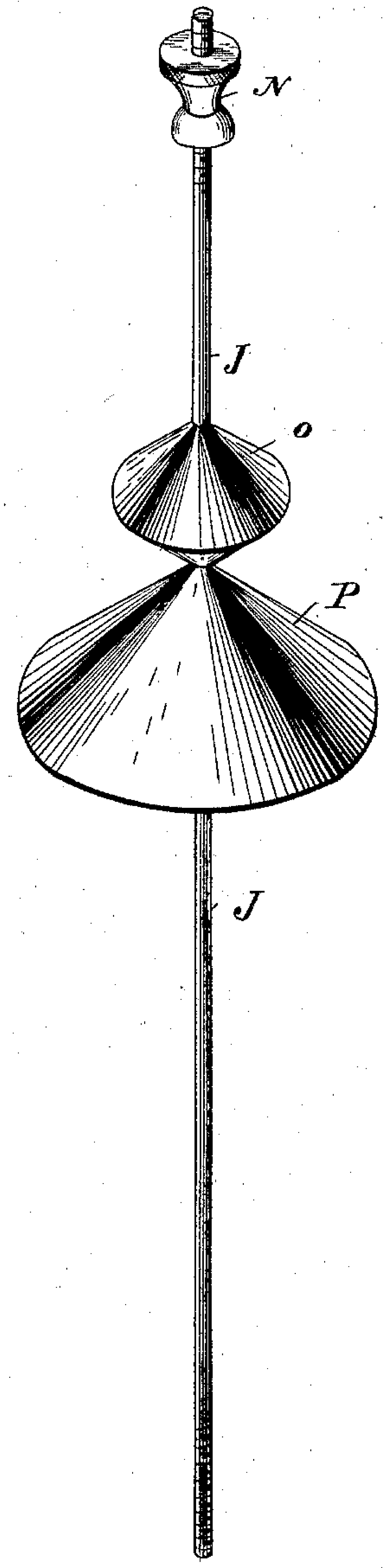


Fig. 3.



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UNITED STATES PATENT OFFICE.

FRANK A. EVANS, OF WATERVILLE, MINNESOTA.

WHEAT-STEAMER.

SPECIFICATION forming part of Letters Patent No. 476,138, dated May 31, 1892.

Application filed January 15, 1892. Serial No. 418,160. (No model.)

To all whom it may concern:

Be it known that I, FRANK A. EVANS, a citizen of the United States, residing at Waterville, in the county of Le Sueur and State of Minnesota, have invented a new and useful Wheat-Steamer, of which the following is a specification.

This invention relates to wheat-steamers; and it has for its object to provide an apparatus of this character which will thoroughly dampen or temper the wheat preparatory to the grinding thereof, and to this end to provide a steamer which will keep a steady flow of the wheat therethrough and at the same time automatically govern and regulate the said flow and in which when the rolls stop feeding the steamer will allow the wheat to back up and shut off the flow thereof.

With these and many other objects in view the invention consists in the novel construction and combination of parts arranged in the manner hereinafter more fully described, illustrated, and claimed.

In the accompanying drawings, Figure 1 is a perspective view of a wheat-steamer constructed in accordance with my invention. Fig. 2 is a vertical longitudinal sectional view of the same. Fig. 3 is a detail in perspective of the valve-rod. Fig. 4 is a similar view of the bottom regulating-pan.

Referring to the accompanying drawings, A represents an inner vertical cylinder surrounded and inclosed by the outer cylindrical jacket B, forming an inclosed steam and water space C, into which the steam is fed through the steam-inlet *c* and from which the water of condensation is discharged through the discharge-opening *c'*, both located in one side of the cylinder and having suitable piping connected therewith. The outer inclosing shell or jacket B extends below the inner cylinder A and terminates in a discharge-spout D, through which the dampened wheat is fed to the crushing or grinding rolls of an ordinary grinding-mill, adjacent to which the said steamer may be suitably fastened to any convenient point of attachment, so that the discharged wheat therefrom may pass directly to said rolls. The said discharge-spout D, instead of forming a continuation of the outer jacket B, may consist of a detachable bottom cap having a discharge-spout, as illustrated in the drawings, by means of which ready access may be had to the interior of the steamer for purposes of cleaning, &c. At a suitable point below the upper end of the main cylinder is located an annular downwardly-inclined deflecting-shelf D', rigidly secured to the walls of the inner cylinder. Directly under said deflecting-shelf D' and arranged in a circle in said inner cylinder A is a series of steam-injecting openings E, which by their arrangement are adapted to direct the steam conducted within the steam-space through the falling wheat as the same passes from said annular deflecting-shelf and drops through the body of the steamer. The water of condensation formed by the steam coming in contact with the walls of the cylinder falls to the bottom of the steam-space and is drawn or conducted off through the bottom discharge-opening *c'* above referred to.

Secured to the lower edge of the inner cylinder A is an offstanding guide-flange F, between which and said cylinder is designed to snugly fit and work the flange of the flanged regulating-pan G, provided with a discharge-spout *g*, working in the discharge-spout D. Said pan receives the wheat as it falls from the upper deflecting-shelf and according to the weight of the same regulates the flow of the wheat into and from the steamer.

A detachable hopper-pan H is fitted in the upper end of the steamer and is provided with a circular discharge-opening *h*. The said hopper-pan is inclosed by the conical cover I, provided with a receiving-opening *i*, through which the wheat enters into said hopper. A valve-rod J is adjustably secured at its lower end in the threaded socket K, supported centrally within the regulating-pan G by means of the cross-braces L. The said valve-rod extends through the body of the steamer and the inclosing conical cap I and is supported by the coiled spring M, resting against the top of said cover or cap and beneath the adjusting-nut N, working over the screw-threaded top end of said valve-rod. Carried by and secured to said valve-rod at a point within the hopper-pan is the double-cone regulating-valve O, adapted to fit within the discharge or valve opening *h* in the bottom of the hopper-pan.

The tension of the spring M, actuating or

controlling the valve-rod, is normally sufficient to hold the bottom regulating-pan G normally up within the guide-flange F and the said double-cone valve above the discharge-opening in the hopper-pan, so that the wheat entering may have an uninterrupted flow through the hopper-opening *h* and onto the conical spreading-disk P. The said conical spreading-disk P is secured at its apex to said valve-rod at the apex of the lower cone of said double-cone valve, and extending downwardly therefrom terminates short of the sides of the cylinder directly over the inclined deflecting-shelf D′. It will thus be seen as the wheat falls off of the cone-shaped spreading-disk and onto the downwardly-inclined annular deflecting-shelf that the same will fall in a fine and continuous stream from said annular shelf, so that as it passes therefrom the entering steam will thoroughly diffuse itself through the wheat and cause the same to be thoroughly dampened before passing to the grinding-rolls.

When a quantity of the wheat has backed up into the bottom regulating-pan G, the weight thereof will cause the said pan to drop and carry the double-cone valve O into the hopper discharge opening, and thus close the hopper from feeding, while at the same time it produces a steady flow of the dampened wheat, according to the amount taken away from below, and after the discharge of the dampened wheat the tension of the spring will draw the regulating-pan back into position and allow the hopper to feed the dry wheat into the steaming portion of the steamer, as already described.

The construction, operation, and advantages of the herein-described steamer are thought to be apparent without further description.

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

1. In a wheat-steamer, a steam-jacketed cylinder having a series of steam-openings communicating with the interior thereof and a guide at its lower end, a hopper-pan removably fitted in the upper end of the cylinder and provided with a circular discharge-opening, a conical cover inclosing said hopper, a vertically-movable regulating discharge-pan moving in the guide at the lower end of the cylinder, a spring-supported valve-rod connected with said movable pan, and a conical valve carried by said valve-rod within the hopper-pan and normally held above the discharge-opening therein, substantially as set forth.

2. In a wheat-steamer, the combination of a cylinder having a series of steam-openings and an offstanding circular guide-flange secured to its lower inner edge, a flanged regulating discharge-pan working under said guide-flange, a hopper having a circular valve-opening, a spring-supported valve-rod connected to said movable pan, and a double-cone valve secured to said valve-rod and working in and over said valve-opening, substantially as set forth.

3. In a wheat-steamer, the combination of a cylinder having a series of steam-openings, a movable regulating discharge-pan working in and over the lower end of the cylinder, an annular deflecting-shelf secured within the cylinder over the steam-openings, a hopper having a valve-opening, a spring-supported valve-rod connected to said movable discharge-pan, a valve secured to said valve-rod within the hopper, and a spreading-disk connected with said valve-rod and located over said annular deflecting-shelf, substantially as set forth.

4. In a wheat-steamer, the combination of a cylinder having a series of steam-openings, a movable regulating discharge-pan inclosing and working within the lower end of said cylinder, an annular deflecting-shelf secured within the cylinder over the steam-openings, a hopper having a valve-opening, a spring-supported valve-rod connected to said movable discharge-pan, a double-cone valve carried by said valve-rod over and within said valve-opening, and a conical spreading-disk secured at its apex to said valve-rod directly below said valve and extending laterally to a point over said deflecting-shelf, substantially as set forth.

5. In a wheat-steamer, a jacketed cylinder inclosing a steam-space and provided with a series of interior steam-openings, a movable regulating discharge-pan working in and over the lower end of the cylinder, a deflecting-shelf secured within the cylinder over the steam-openings, a hopper having a valve-opening, a spring-supported valve-rod connected to said pan, a valve secured to said valve-rod within the hopper, and a spreading-disk connected to said valve-rod and located over said deflecting-shelf, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

FRANK A. EVANS.

Witnesses:
BERT L. BLAIR,
H. E. BLAIR.