No. 669,346. Patented Mar. 5, 1901.

E. J. PICKERING.

WHEAT STEAMER.

(Application filed Aug. 16, 1900.)

(No Model.)

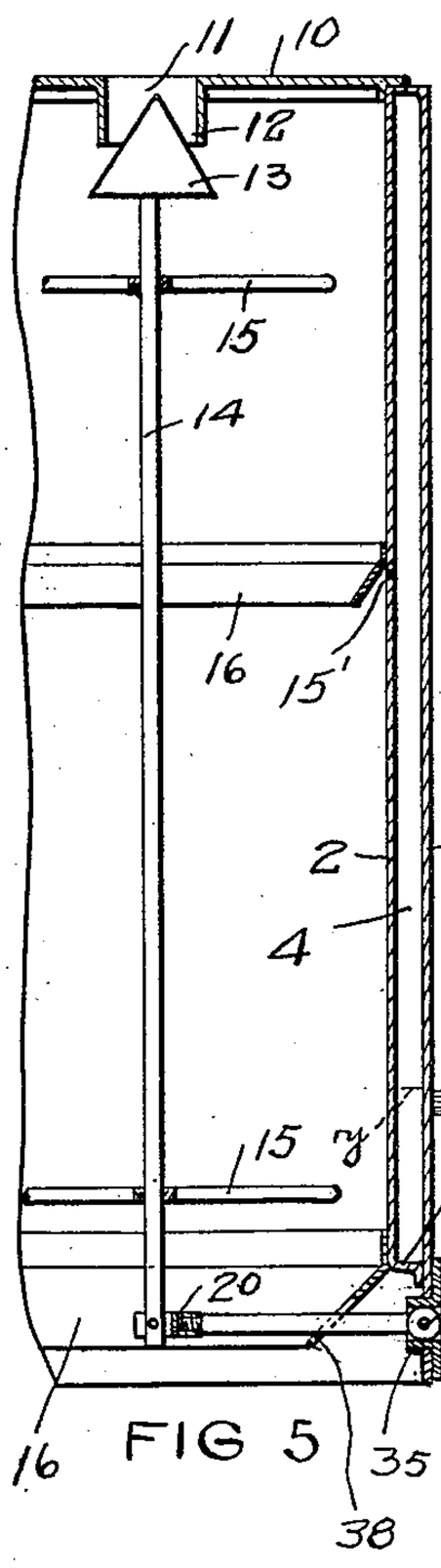

FIG 5

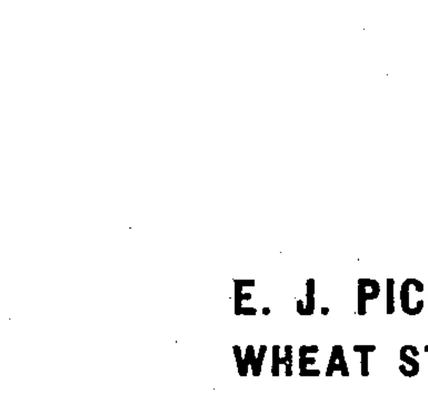

FIG. 4

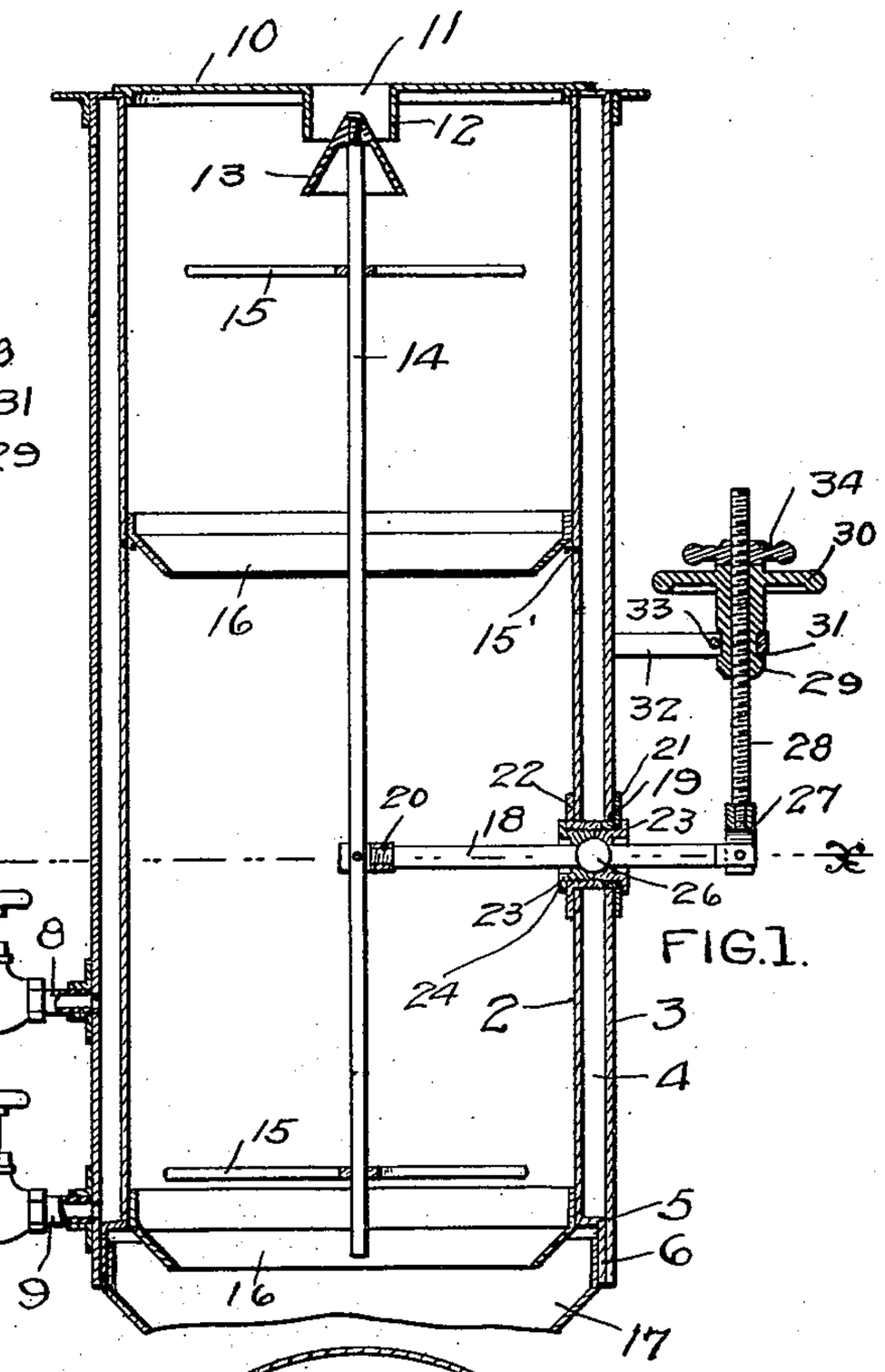

FIG. 1.

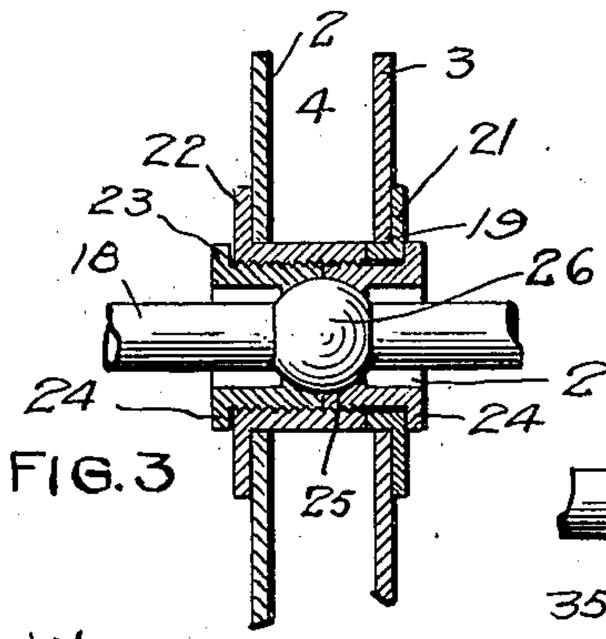

FIG. 3

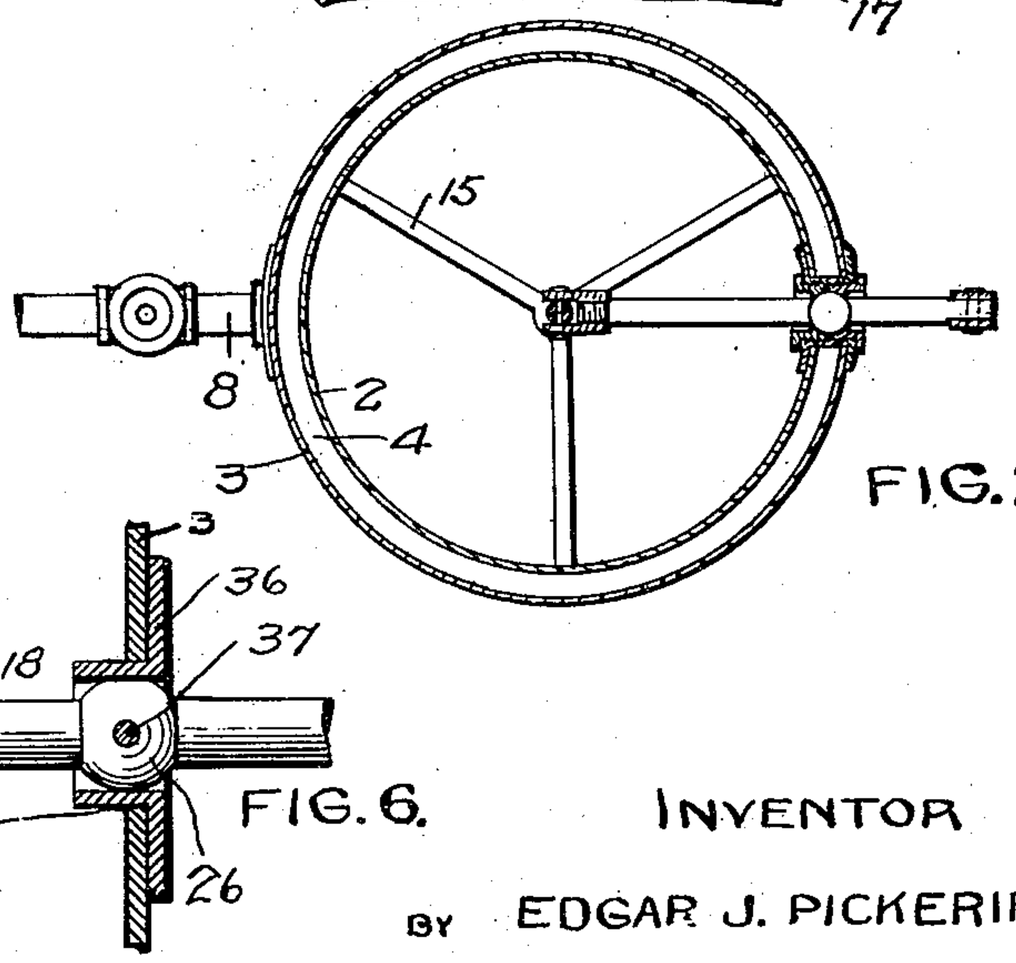

FIG. 2

FIG. 6.

WITNESSES.

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EDGAR J. PICKERING, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO JAMES J. GERBER, OF SAME PLACE.

WHEAT-STEAMER.

SPECIFICATION forming part of Letters Patent No. 669,346, dated March 5, 1901.

Application filed August 16, 1900. Serial No. 27,058. (No model.)

To all whom it may concern:

Be it known that I, EDGAR J. PICKERING, of Minneapolis, Hennepin county, Minnesota, have invented certain new and useful Improvements in Wheat-Steamers, of which the following is a specification.

My invention relates to devices for moistening or steaming wheat preparatory to grinding the same. In machines of this kind as usually constructed the wheat-inlet valve is connected with a regulating device at the discharge end of the machine, that is designed to be operated by the weight of the wheat that backs up into the machine to automatically close the inlet-valve and shut off the flow. The automatic features of these machines have been found objectionable, as the grain frequently lodges on the inlet-valve or on or around the regulator, preventing their operation and the flow of wheat until the machine has been opened and the obstruction removed, an operation involving considerable time and labor.

The primary object, therefore, of my invention is to avoid this objection to the wheat-steamer in general use and provide means whereby the attendant without opening the machine may positively and accurately control the inlet-valve and regulate the inflow of wheat or other grain that may be passed through the machine.

The invention consists generally in various constructions and combinations, all as hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a vertical section of a wheat-steamer embodying my invention. Fig. 2 is a horizontal section on the line $x\,x$ of Fig. 1. Fig. 3 is a detail of the steam-tight joint provided in the walls of the steamer. Fig. 4 is a detail of the bracket whereon the mechanism for operating the valve-lever is supported. Fig. 5 is a vertical section showing a modified construction of the mechanism for operating the inlet-valve, and Fig. 6 is a detail of the steam-tight joint shown in Fig. 5.

In the drawings, 2 represents an inner cylinder or shell inclosed by an outer cylinder or jacket 3, between which and said inner cylinder a space is provided, forming a steam-chamber 4. This space is closed at the top of the cylinder by a suitable means and at the bottom by an outwardly-turned section 5 of the inner cylinder, said section having a depending flange 6, fitting within the lower end of the jacket. A steam-supply pipe 8 and a discharge-pipe 9 for the water of condensation are provided in the wall of the jacket. The top of the cylinder 2 is closed by a cover 10, having an inlet-opening 11, beneath which is a depending flange 12. Below said flange I arrange a conical inlet-valve 13, adapted to close the opening 11 and having a stem 14, that is vertically slidable in guiding-spiders 15, secured at intervals to the walls of the cylinder 2. The wheat flowing in through the opening 11 strikes the surface of the conical valve 13 and is deflected thereby in a thin sheet toward the sides of the cylinder. At a point preferably about half-way between the top and bottom of said inner cylinder I provide in its walls a series of small steam ports or openings 15′, communicating with the steam-chamber, and through which the steam enters the inner cylinder to moisten the wheat. Over these openings I provide a conical deflector or shelf 16, whereon the stream of wheat falls as it is deflected outwardly by the conical valve, and from thence is directed toward the center of the cylinder. At the bottom of the cylinder I prefer to provide a second conical shelf or funnel corresponding to the one described, beneath which, fitting within the flange 6, is a discharge-funnel 17.

For operating the inlet-valve to regulate the flow of wheat into the machine I provide a lever 18, projecting through holes 19 in the inner and outer cylinders and having a threaded inner end to fit a threaded socket in a fork or block 20, that is pivotally connected to the stem 14.

To prevent leakage of steam around the lever 18 at the point where it passes through the cylinders, I provide a flanged bushing 21, fitting within the hole in the outer cylinder, and a second flanged bushing 22, within the hole in the inner cylinder. The bushing 22 is interiorly threaded to receive the threaded bushing-nuts 23, fitting within the same, and

said nuts are provided with flanges 24, the one on the outer nut bearing upon the flanged bushing 21 and locking the same firmly against the end of the inner bushing 22. The outer nut 23 is arranged to overlap the joint between the bushings 21 and 22 and prevent leakage of steam from the chamber between the cylinders. Each of the bushing-nuts 23 is provided with a valve-seat 25, and a ball 26 is provided on the lever 18, adapted to bear upon the seats 25 and when the nuts are adjusted form a steam-tight joint therewith and prevent escape of steam from the interior of the machine. This ball-joint, however, while being steam-tight, permits the vertical oscillation of the lever to close or open the inlet-valve. Any suitable means may be provided for oscillating said lever; but I prefer to provide a block 27, pivotally connected to the outer end of said lever and having a socket to receive the end of a threaded rod 28, on the upper end of which I arrange a stud 29, having a suitable handle 30. Near the lower end of said stud I provide an annular groove 31 to receive the looped outer end of a bracket or support 32. The stud is held in position in the loop by a pin 33. Above the stud on the threaded rod I provide a thumb-nut 34, by means of which the stud may be locked against accidental movement. To operate the inlet-valve, the operator revolves the stud on its support, causing the threaded rod to ascend or descend, oscillating the valve-lever and raising or lowering the inner valve. This construction permits the attendant to have positive control over the inlet-valve and accurately regulate the supply of wheat or other grain to the steamer. If the machine should become clogged through overloading or for any other cause, the operator can quickly shut off the flow of wheat to the machine without the necessity of removing the machine-cover or disconnecting any of its parts.

In Fig. 5 I have shown a modification of the means for operating the inlet-valve, which consists in providing a hole 35 in the wall of the outer cylinder below the steam-chamber. Within this hole I arrange a flanged bushing 36 and provide a lever corresponding to the one heretofore described, having a ball adapted to fit within said bushing and secured therein by a pin 37. This pin prevents longitudinal movement of the lever, but permits it to be oscillated vertically to open or close the inlet-valve. The lever is operated by a mechanism corresponding to that heretofore described. The inner end of the lever passes through a slot 38 in the lower deflecting-funnel, said slot permitting the vertical oscillation of the lever as the valve is operated. The joint last described will prevent moisture from escaping from the inner cylinder, but is not designed as a steam-tight joint, and it is not essential that it should be, as it is located below the steam-chamber and is not subjected to such steam-pressure as may be at times therein.

In various ways the mechanism for operating the valve-lever and the details of the joint between said lever and the cylinder-walls may be modified, and I therefore do not wish to be confined to the details of construction herein set forth.

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

1. A wheat-steamer, comprising inner and outer cylinders or shells having a space between them forming a steam-chamber, steam supply and exhaust pipes for said chamber, a cover for said inner cylinder having a suitable inlet-opening, a vertically-movable inlet-valve provided within said inner cylinder and adapted to close said opening, a stem for said valve movable within guides in said cylinder, a bushing fitting within a hole in the wall of said steamer, a lever 18 pivotally connected near one end to said stem and projecting through said bushing, a ball 26 secured on said lever within said bushing and preventing the escape of steam from the interior of said steamer but permitting the free vertical oscillation of said lever, and means for oscillating said lever to open and close said valve.

2. A wheat-steamer, comprising inner and outer cylinders having a space between them forming a steam-chamber, steam supply and exhaust pipes leading through the wall of said outer cylinder into said chamber, a cover for said inner cylinder having a suitable inlet-opening, a vertically-movable inlet-valve provided within said inner cylinder and adapted to close said inlet-opening, a stem for said valve vertically movable in guides in said inner cylinder, a lever connected to said stem and projecting through the walls of said cylinders and through said steam-space, a steam-tight universal joint provided between said lever and the walls of said cylinders within said steam-chamber and preventing the escape of steam from said chamber and said inner cylinder while permitting the free vertical oscillation of said lever, and means for operating said lever to open and close said valve, substantially as described.

3. A wheat-steamer, comprising an inner and outer cylinder having a space between them forming a steam-chamber, inlet and outlet pipes for said chamber, a cover for said inner cylinder having a suitable inlet-opening, a vertically-movable valve adapted to close said opening, a stem for said valve movable in guides in said cylinder, a lever pivotally connected with said stem and projecting through the walls of said cylinders and through said steam-space, a ball provided on said lever between the walls of said inner and outer cylinder, a flanged bushing provided in said walls and inclosing said ball, bushing-nuts provided within said flanged bushing

and having seats for said ball forming a steam-tight joint therewith but permitting the free vertical oscillation of said lever, and means for operating said lever to open and close said valve, substantially as described.

4. In a machine of the class described, the combination, with concentric cylinders having a space between them forming a steam-chamber, a cover for the inner cylinder having an inlet-opening, a vertically-movable valve adapted to close said opening a lever pivotally connected with the stem of said valve and projecting through a hole in the walls of said cylinders, a universal steam-tight joint provided between said lever and said cylinder-walls preventing the escape of steam from said chamber and inner cylinder but permitting the free vertical oscillation of said lever, a threaded rod pivotally connected to the outer end of said lever, a stud having a threaded opening to receive said rod, means supporting said stud on the cylinder-wall and permitting its revolution but locking it against vertical movement, whereby when said stud is operated said threaded rod will be raised or lowered and said lever oscillated to open or close said valve, substantially as described.

5. In a machine of the class described, the combination, with concentric cylinders having a space between closed at the top and bottom to form a steam-chamber, a cover for the inner cylinder having an inlet-opening, a vertically-movable valve closing said opening, a stem for said valve movable in guides in said inner cylinder, a lever pivotally connected with the stem of said valve and projecting through a hole in the walls of said cylinders, flanged bushings 21 and 22 provided within said hole, adjustable bushing-nuts 23 provided within said flanged bushings and provided with valve seats or bearings, a ball 26 provided on said lever and bearing upon said valve-seats and adapted to form therewith a close joint to prevent the escape of steam from said chamber while permitting the free vertical oscillation of said lever to raise and lower said valve, and means for operating said lever, substantially as described.

6. A wheat-steamer, comprising inner and outer cylinders or shells having a space between them forming a steam-chamber, steam supply and exhaust pipes for said chamber, a cover for said cylinders having a suitable inlet-opening, a vertically-movable inlet-valve provided within said inner cylinder and adapted to close said opening, a stem for said valve, a bushing provided in the wall of said steamer, a lever pivotally connected to said stem and projecting through said bushing to a point outside said steamer, a ball secured on said lever within said bushing and preventing the escape of moisture from said steamer, means preventing the longitudinal movement of said lever, means for oscillating the same vertically, and means for locking said lever in any desired position, substantially as described.

7. A wheat-steamer, comprising concentric cylinders or shells having a steam-chamber between them provided with suitable steam supply and exhaust pipes, a cover for the inner cylinder having a suitable inlet-opening, a vertically-movable inlet-valve provided within said inner cylinder and adapted to close said opening, a stem for said valve, a lever pivotally connected to said stem and projecting through a bushed opening in the wall of said steamer, a ball provided on said lever within said opening and adapted to close the same against the escape of moisture from the interior of said steamer but permitting the free vertical oscillation of said lever to operate said valve, and means for operating said lever and locking the same in any desired position, substantially as described.

In witness whereof I have hereunto set my hand this 10th day of August, 1900.

EDGAR J. PICKERING.

In presence of—
RICHARD PAUL,
M. C. NOONAN.