

(No Model.)

W. AGER.
GRAIN SCOURER.

No. 405,937.

Patented June 25, 1889.

Fig. 1.

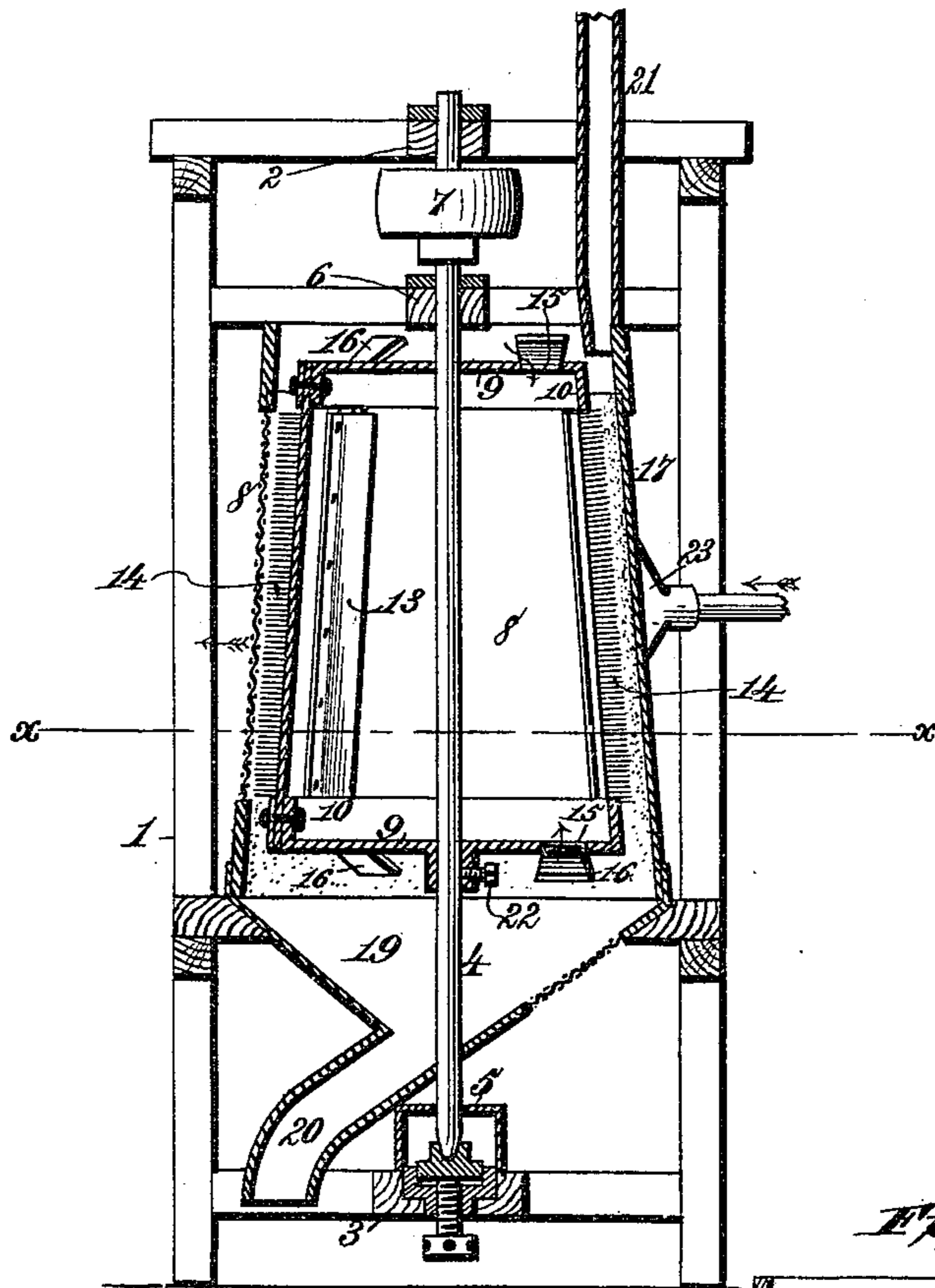


Fig. 3.

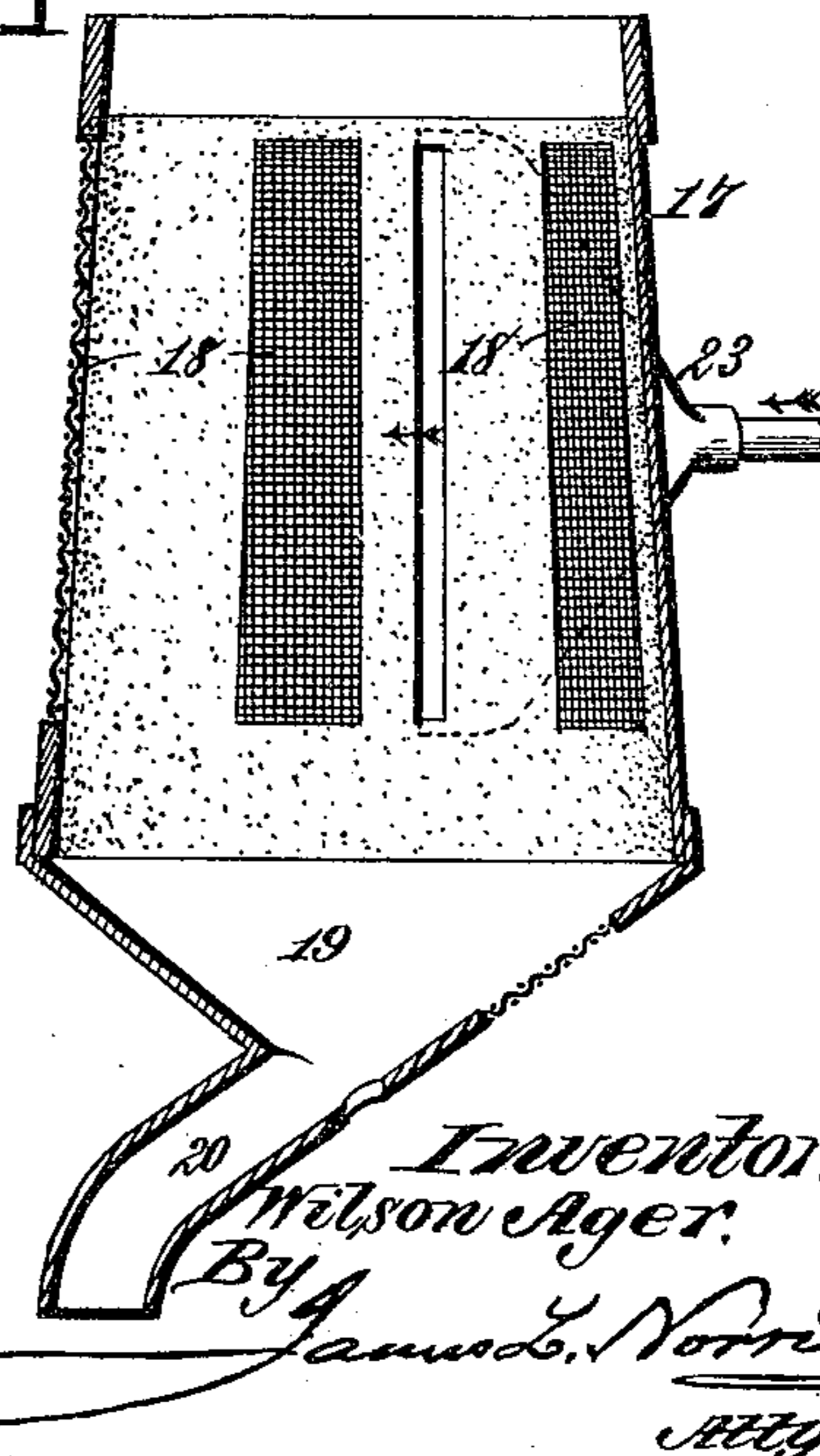
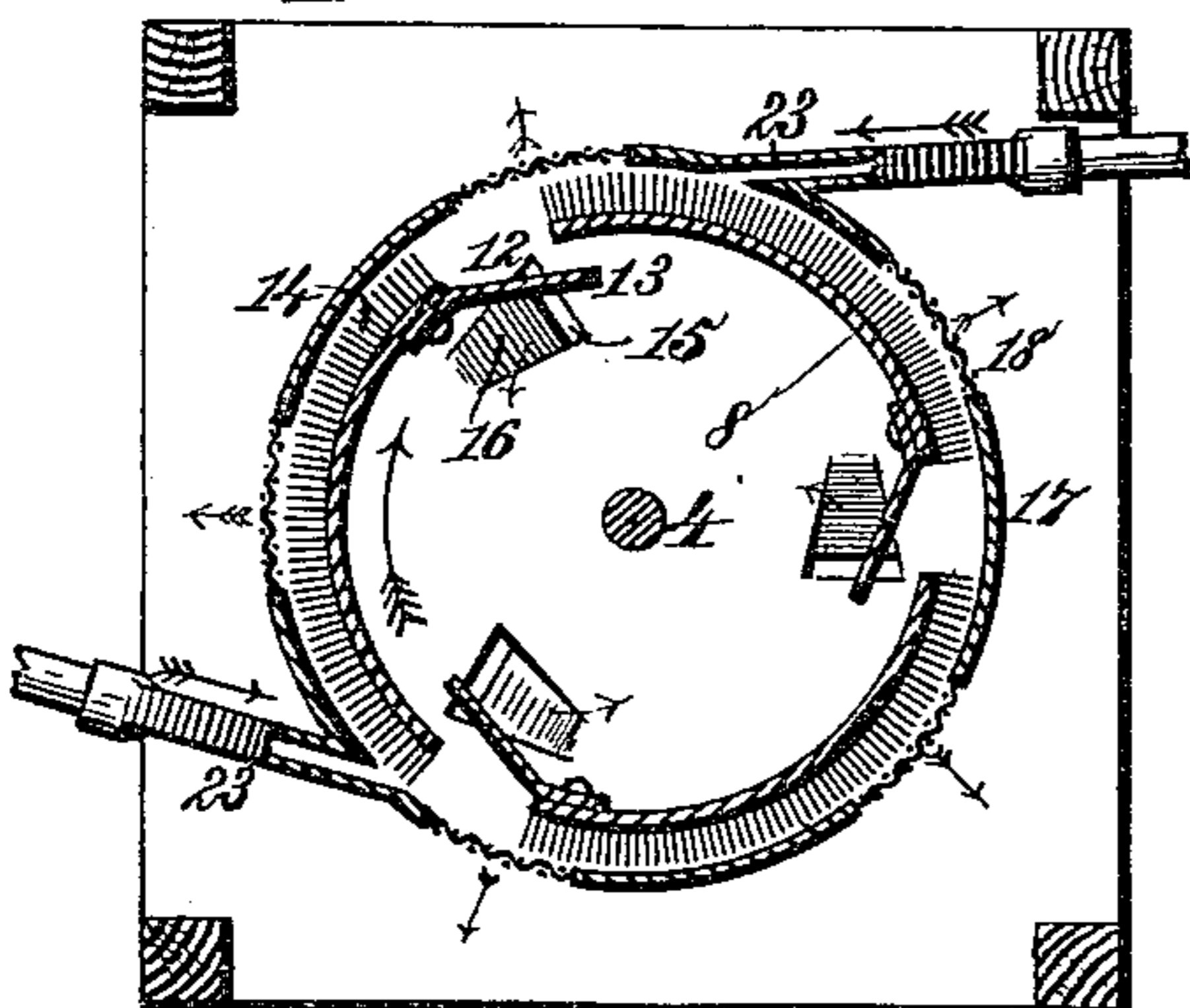


Fig. 2.



Witnesses:
Robert G. Smith,
Geo. H. Rea.

Inventor:
Wilson Ager.
By *James L. Norris*
Att'y

UNITED STATES PATENT OFFICE.

WILSON AGER, OF BLOOMSBURG, PENNSYLVANIA.

GRAIN-SCOURER.

SPECIFICATION forming part of Letters Patent No. 405,937, dated June 25, 1889.

Application filed January 5, 1889. Serial No. 295,529. (No model.)

To all whom it may concern:

Be it known that I, WILSON AGER, a citizen of the United States, residing at Bloomsburg, in the county of Columbia and State of Pennsylvania, have invented new and useful Improvements in Machines for Scouring and Decorticating Cereals, of which the following is a specification.

My invention relates to machines for scouring and decorticating cereals, and the purpose thereof is to provide simple means whereby the heating of the decorticating-surfaces under the friction of a full load and high speed shall be prevented and the operation of the decorticator rendered more rapid and perfect.

Heretofore an upright decorticator has been used, consisting of an outer stationary drum having its inner face provided with an imperforate abrading-surface, provided at intervals with openings covered by wire-gauze, said drum being combined with an interior revolving cylinder having bristles on its outer face and provided with blast-openings in the cylindrical wall, said drum having air-forcing devices at one or both ends, whereby air is drawn into the interior revolving cylinder and forced thence through its blast-openings and through the gauze coverings in the outer drum. This is substantially the organization of the decorticating-mill patented to me March 18, 1884, No. 295,471. While this decorticator gives excellent results, experience has demonstrated that when running at high speed and with a full load the abrading-surface of the outer cylinder is liable to heat under the friction produced, the air-current induced by the internally-directed blast being insufficient to reduce this temperature to a proper degree under the conditions named. I have found, however, that by introducing air from the exterior of the outer cylinder and forcing it between said cylinder and the revolving drum in a direction opposite, or substantially so, to the direction of revolution, whence it escapes through the gauze-covered openings in the drum, I am able not only to reduce the temperature to a low point, but to materially increase the internal induced current and more effectually expel the dust, while the mill may also be run at a

very high speed and with a full load without overheating.

My invention consists in the several novel features of construction and new combinations of parts hereinafter fully set forth, and then definitely pointed out in the claims which follow this specification.

In the said drawings, Figure 1 is a central vertical section of a decorticator embodying my invention. Fig. 2 is a horizontal section of Fig. 1 on the line *x x*. Fig. 3 is a detail section of the exterior cylinder, showing the connection of one of the external blast devices.

In the said drawings, the reference-numeral 1 indicates any suitable supporting-frame by which the operative parts are supported, said frame having upper and lower cross beams or braces 2 and 3, upon the latter of which is stepped a vertical shaft 4, the bearing being protected by a hood 5. The upper end of the shaft is supported in a suitable bearing in the cross-beam 2, which is braced by a tie-beam 6, or in any suitable manner. A band-pulley 7 is mounted on the shaft 4 between the cross-beams 2 and 6 and a similar support above.

Upon the shaft 4 is keyed or otherwise mounted a cylinder 8, which in general outline is preferably a frustum of a cone. This cylinder is provided with heads 9, having circular flanges 10, to which is bolted the body of the cylinder composed of any suitable material and provided with openings 12, which are partly covered by interior flaps 13, mounted on one edge of said openings and so placed as to leave longitudinal apertures between the free edges of the flaps and the other edges of said openings, said apertures being upon the side toward which the cylinder revolves. The outer face of the cylinder is covered, with the exception of the openings 12, with short closely-set bristles 14, for which tampico or any equivalent material may be substituted. In each cylinder-head are formed openings 15, over which are inclined plates 16, their free ends pointing in the direction of rotation. These openings are placed as nearly as possible to the periphery of the drum, in order that the rotation of the latter may impart the greatest possible speed, where-

by the air is driven or drawn into the interior of said cylinder at one or both ends.

Surrounding the cylinder 8 and concentric therewith is a drum 17, having its wall parallel to that of the cylinder and separated therefrom by a short space. This outer drum is supported upon the frame above and below and is composed of any suitable material provided upon its interior face with an imperforate abrading-surface formed of emery, Derbyshire stone, or other similar material. In the wall of this drum are formed two, three, or more openings 18, running vertically and covered by wire-gauze of suitable fineness, these openings extending preferably to a point not far from the lower end of the drum, which is provided with a cone-shaped receptacle 19, emptying into a chute 20, through which the grain, after being decorticated and scoured, is conducted to suitable receptacles below.

The decorticator is supplied by means of a hopper-trough 21, through which the cereal is fed from a reservoir above, from which it passes into the decorticator at the upper end of the drum and cylinder, as seen in Fig. 1. The operation of the mill may be regulated by simply adjusting the inner cylinder 8 vertically by means of the set-screw 22. As the grain passes between the revolving cylinder and outer drum, the rapid rotation of the latter draws a strong current of air into its interior, whence it is expelled through the openings 12 in said cylinder, and thence through the gauze-covered openings in the drum, driving off the dust, but allowing the scoured grain to descend into the chute below.

Entering the outer drum at one, two, three, or more points are fan-shaped conveyers 23, the longitudinal openings whereof extend vertically through the wall of the drum at suitable intervals. These conveyers are preferably arranged to deliver their blast in a direction nearly or quite tangent to the inner or revolving cylinder, though this feature is capable of considerable variation. The direction of the air-blast delivered thereby is also contrary to the direction of rotation of said cylinder, whereby the force of the internally-induced current is increased, while the surface of the drum is cooled and retained at a low temperature and the dust and similar foreign matter expelled through the screened openings with great force and rapidity. I have shown in the drawings two of these conveyers only; but I wish it to be understood that I may employ any desired number, the usual construction being from two to six, according to the size and capacity of the mill. I may also introduce the auxiliary blast from the side through the edges of the screened

openings or through openings in the solid wall of the drum between these apertures. The form of the conveyers is also susceptible of considerable variation, as I by no means confine myself to a fan-shaped device, but may use any duct, or even a series of ducts, by which air may be introduced from the outside. I may also use the outside air-blast alone in place of the internally-induced current produced by the rotation of the cylinder 8.

What I claim is—

1. In a decortivating apparatus, the combination, with an outer drum and an inner revolving cylinder, both provided with suitable abrading-surfaces, of air-blast conductors entering the wall of the outer drum for delivering air-currents in a direction opposite to the revolution of the inner cylinder, substantially at a tangent to said cylinder, substantially as described.

2. In a decortivating apparatus, the combination, with an outer drum and an inner revolving cylinder, both provided with abrading-surfaces, of means for inducing an air-current within the cylinder, which is provided with openings in its cylindrical wall, and air-blast conductors entering the wall of the outer drum in a direction substantially tangential to the cylinder and opposite to the direction of its revolution, substantially as described.

3. In a grain-decortivating apparatus, the combination, with an outer drum having an inner imperforate abrading-surface provided at intervals with foraminous openings, of an inner revolving cylinder having blast-openings in its walls, and provided with means for inducing an air-current within the cylinder, and air-blast conductors passing through the outer drum for delivering air-blasts in a direction substantially tangential to the cylinder and opposite to its direction of revolution, substantially as described.

4. In a grain-decortivating apparatus, the combination, with an outer drum having an inner abrading-surface provided with foraminous openings at intervals, of an inner revolving cylinder having blast-openings in its wall and provided at its ends with hooded air-forcing openings, and air-blast conductors entering the outer drum in a direction contrary to the direction of revolution of the inner cylinder, substantially as described.

In testimony whereof I have affixed my signature in presence of two witnesses.

WILSON AGER.

Witnesses:

JAMES L. NORRIS,
JAMES A. RUTHERFORD.