

No. 792,145.

PATENTED JUNE 13, 1905.

N. H. & W. A. MILLER.

HOMINY MACHINE.

APPLICATION FILED MAY 7, 1904.

2 SHEETS—SHEET 1.

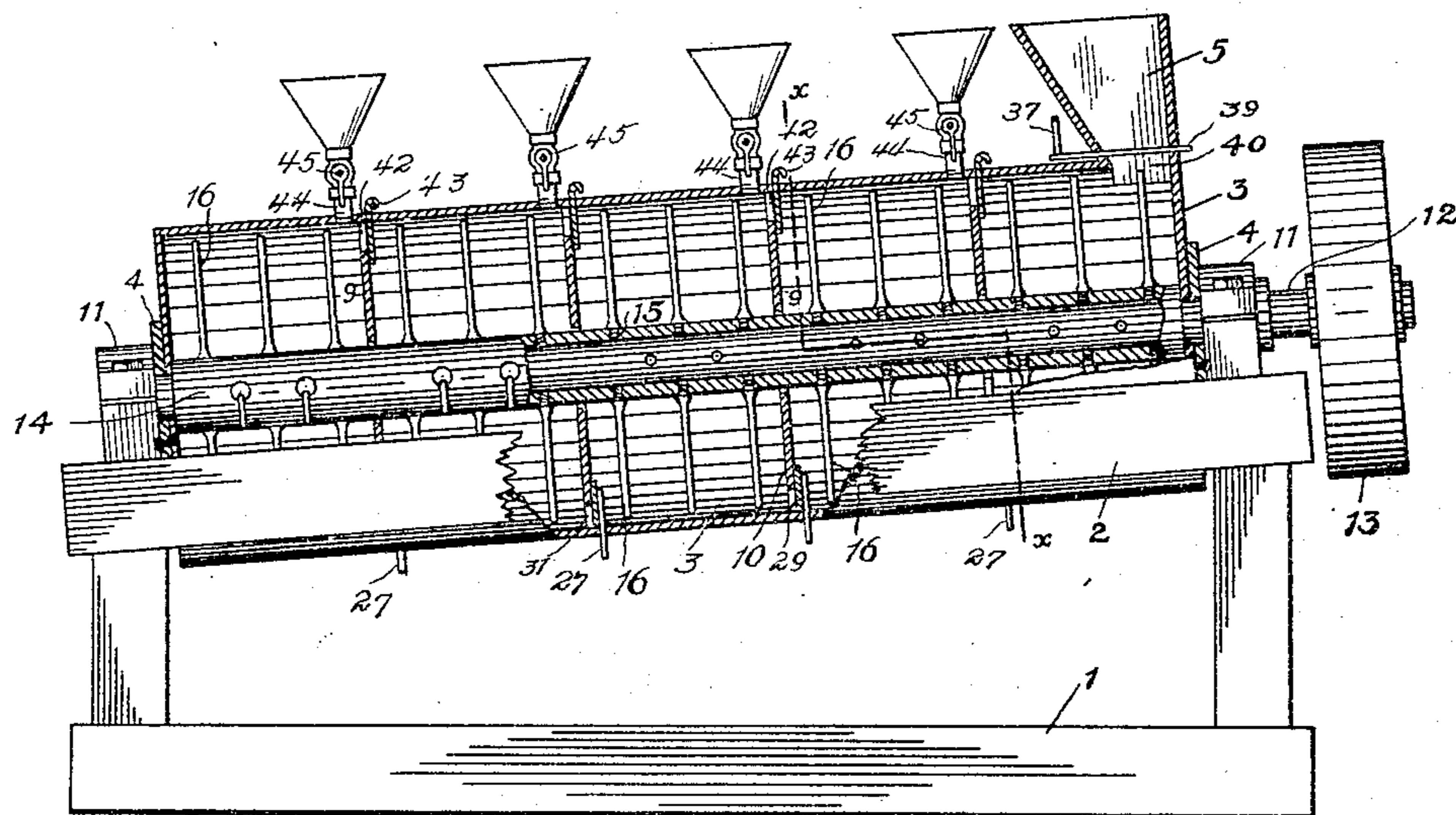


Fig. 1.

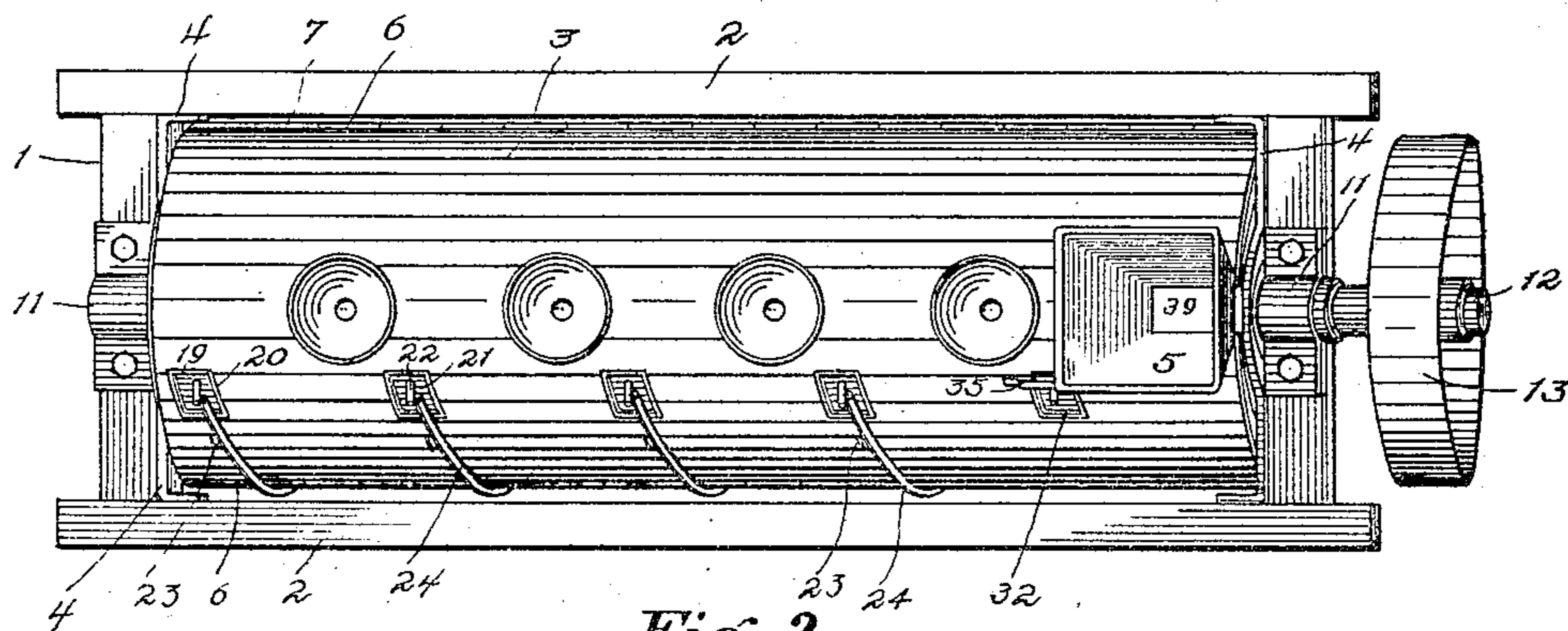


Fig. 2.

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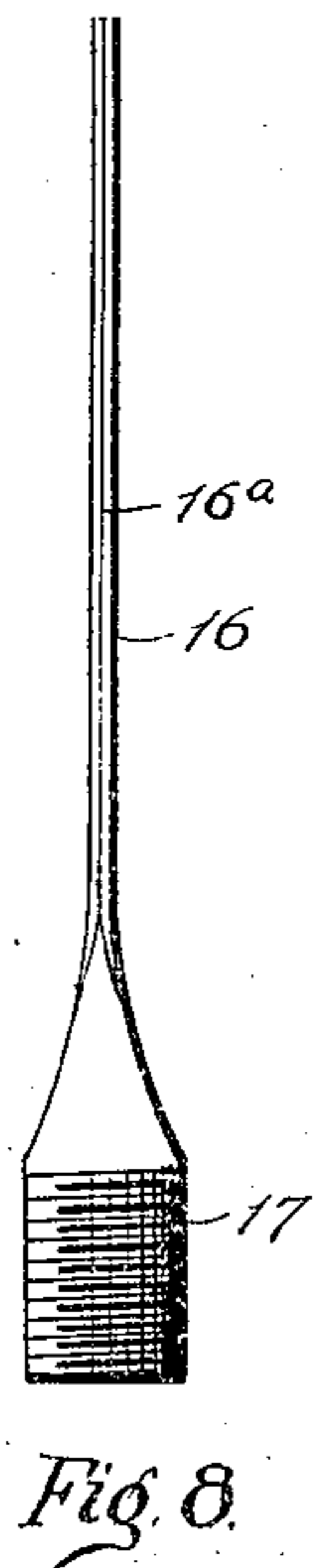
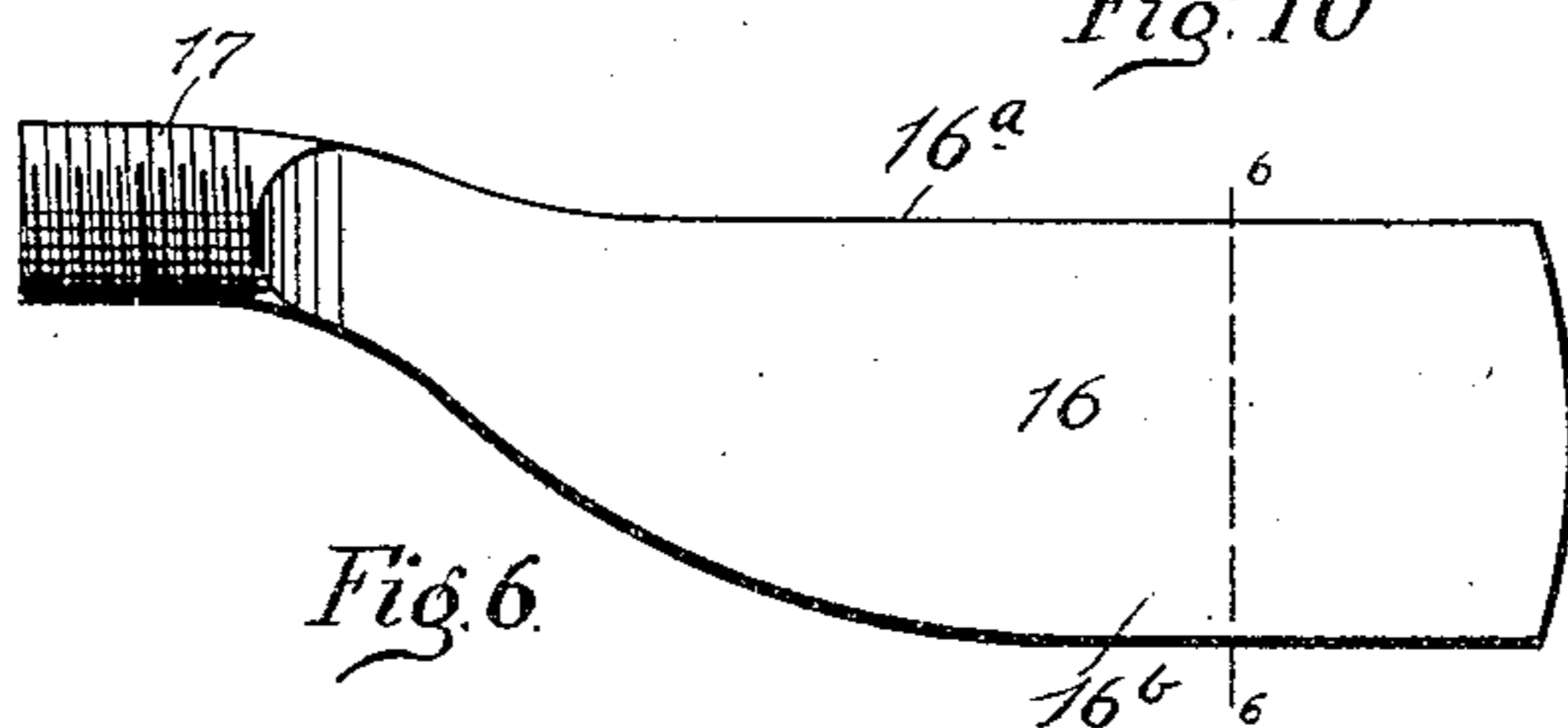
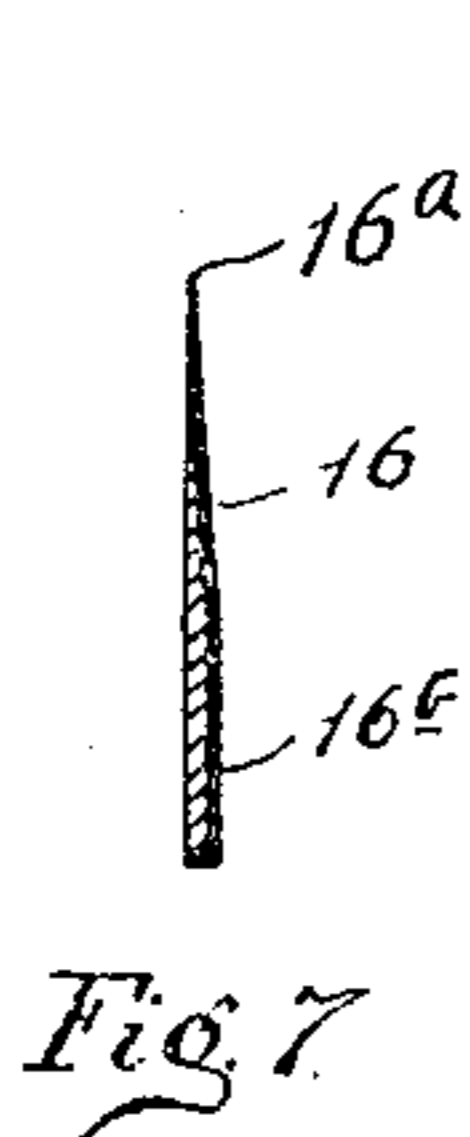
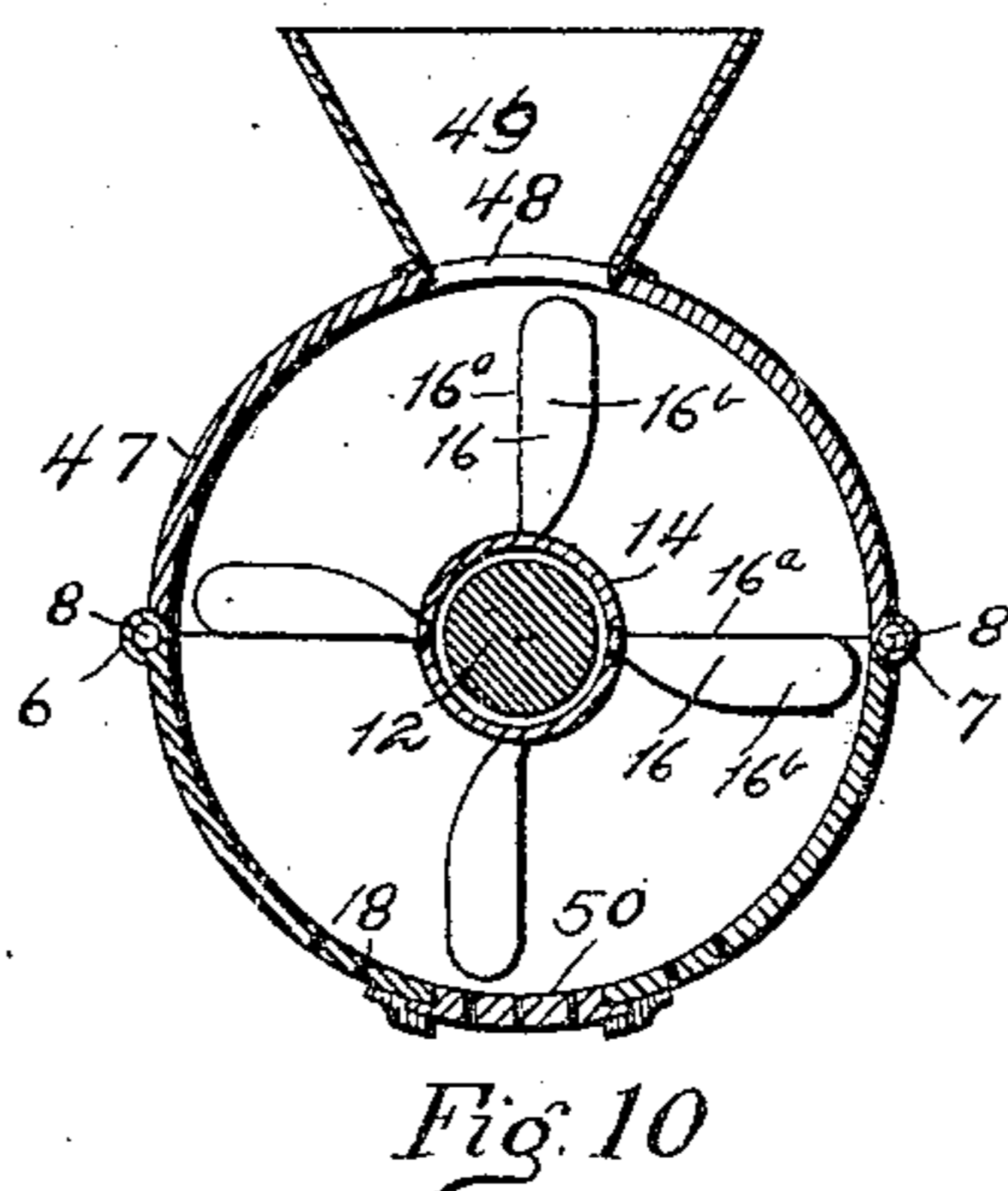
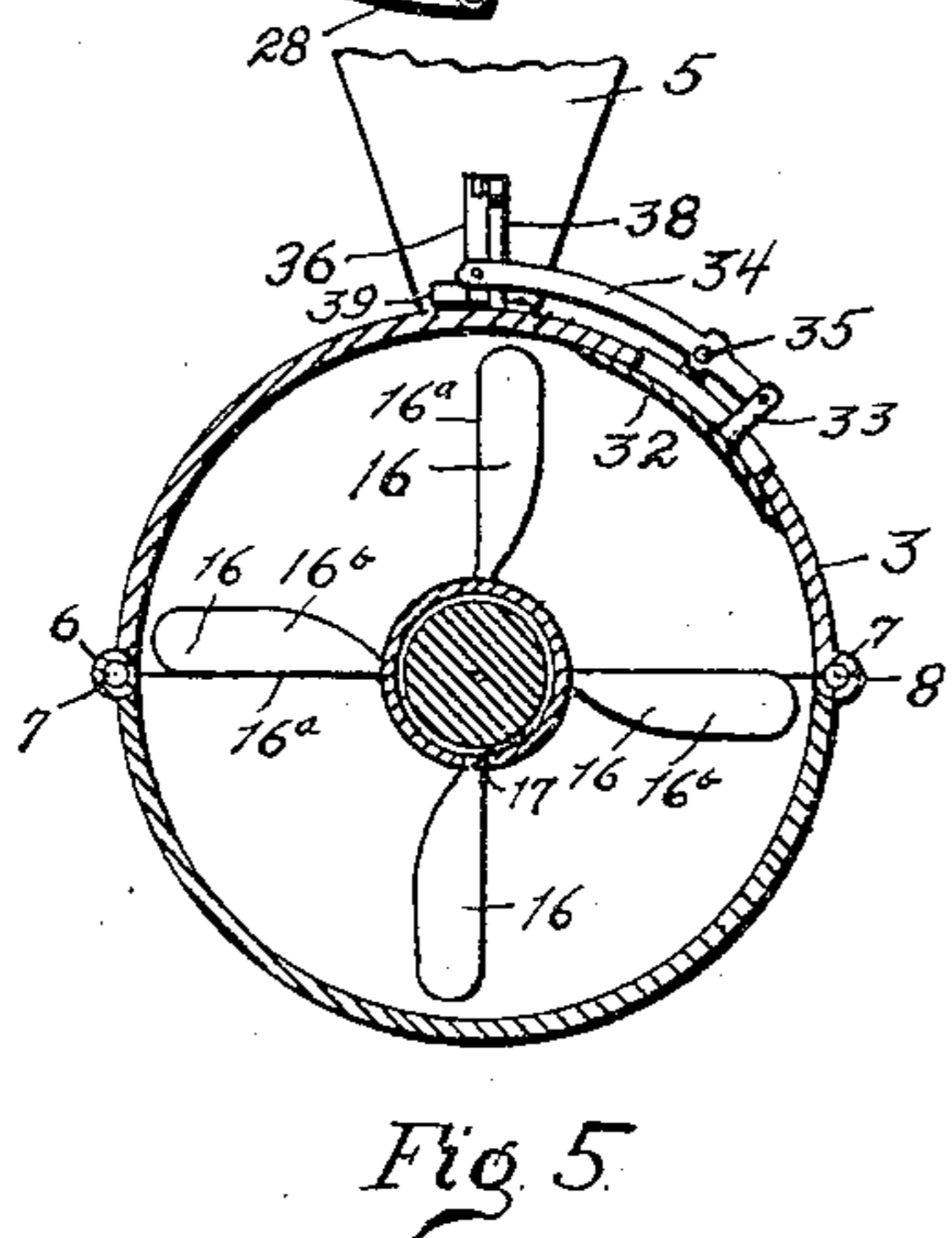
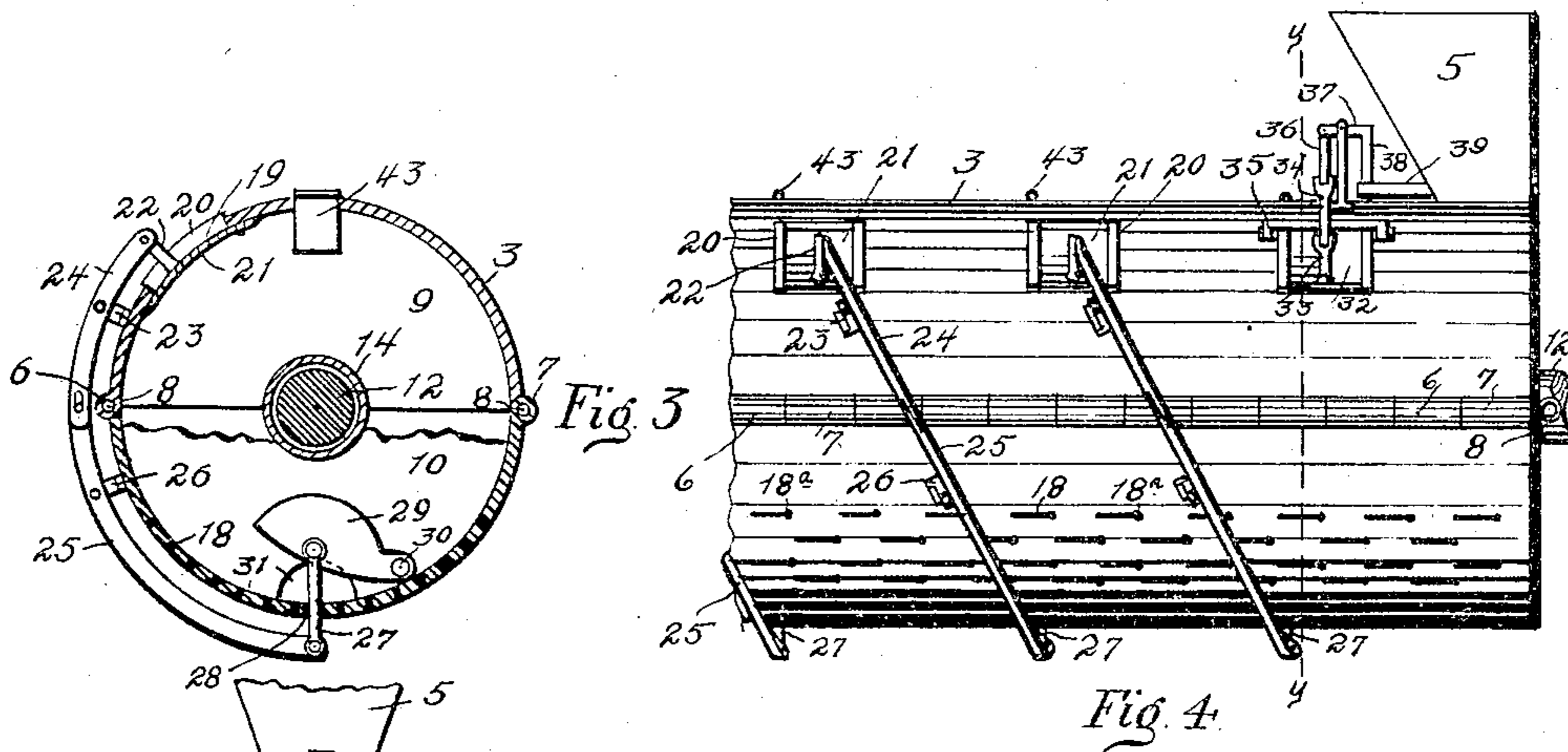
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2 SHEETS—SHEET 2.



# UNITED STATES PATENT OFFICE.

NATHAN H. MILLER AND WILLIS A. MILLER, OF PLEASANTVILLE, OHIO.

## HOMINY-MACHINE.

SPECIFICATION forming part of Letters Patent No. 792,145, dated June 13, 1905.

Application filed May 7, 1904. Serial No. 206,901.

*To all whom it may concern:*

Be it known that we, NATHAN H. MILLER and WILLIS A. MILLER, citizens of the United States, residing at Pleasantville, in the county of Fairfield and State of Ohio, have invented a certain new and useful Improvement in Hominy-Machines, of which the following is a specification.

Our invention relates to a new and useful improvement in hominy-machines.

The object of the invention is to provide a superior means for producing hominy of a very high grade.

Another object of the invention is to provide means whereby the corn may be thoroughly treated without breaking the same and without detracting from the flavor of the finished product.

Finally, the object of the invention is to provide a device of the type set forth that will be strong, durable, and efficient and one whose several parts will not be liable to get out of working order.

With the above and other objects in view the invention consists of the novel details of construction and operation, a preferable embodiment of which is described in the specification and illustrated in the drawings, wherein—

Figure 1 is a front elevation of the machine, partly in section to show the interior construction and arrangement of the cylinder and its parts. Fig. 2 is a top plan view of the machine. Fig. 3 is a transverse sectional view of the cylinder, taken on the line *x x* of Fig. 1, with the knives and water-feeding mechanism removed. Fig. 4 is a partial front elevation of the cylinder. Fig. 5 is a transverse sectional view of the cylinder on the line *y y* of Fig. 4. Fig. 6 is a detail elevation of one of the cutting-knives. Fig. 7 is a transverse sectional view on the line 6 6 of Fig. 6. Fig. 8 is a view in elevation of the cutting-face of the knife. Fig. 9 is a front elevation of a modified form of cylinder, partly in section; and Fig. 10 is a transverse sectional view of the modified form shown in Fig. 9.

In the drawings the numeral 1 designates the frame, which is provided with inclined top rails 2, between which the cylinder 3 is sup-

ported by suitable brackets 4, secured to the top rails. The cylinder is arranged on an incline, so that corn fed into the hopper 5 will be readily carried through the cylinder and discharged by any suitable means at the lower end thereof. The cylinder is preferably formed of two semicircular sections having hinged members 6 and 7 formed along their meeting edges, through which rods 8 are passed to hold said sections together. Thus it will be seen that by removing one of the rods 8, as hereinafter described, the upper section may be readily swung upward and backward upon the lower section, to which it is hinged by the opposite rod 8. Disposed at regular intervals throughout the cylinder are segmental plates 9 and 10, arranged in pairs and adapted to divide the interior of the cylinder into compartments. Passing through the cylinder and supported in bearing-boxes 11, mounted on each end of the frame 1 is a shaft 12, which carries at one end a drive-wheel 13, by which it is rotated. Disposed about the shaft within the cylinder and secured thereto is a hub 14, having a plurality of screw-threaded openings 15, arranged longitudinally of the hub in staggered relation to each other. Thin-bladed knives 16, having the screw-threaded shanks 17, which engage the openings 15, project from the hub and terminate in close proximity to the inner surface of the casing. It is to be observed that the knives are provided with a cutting or tool edge 16<sup>a</sup> and a feather or guiding portion 16<sup>b</sup>, which prevents them from turning or twisting as they are carried around the cylinder through the corn. The lower section of the casing is provided with a series of keyhole-slots 18, which act in conjunction with the knives to peel the hull from the grain. The enlarged or rounded portion 18<sup>a</sup> of the slots is of such diameter as to allow the cap of the grain to drop through, while the elongated portion of the slot is quite narrow. The cylinder is formed in each compartment adjacent the segmental plates 9, at the lower ends thereof, with openings 19, upon each side of which is struck up guard-flanges 20. Riveted upon the inner side of the cylinder and of greater length than the opening 19 are dia-

phragms 21, secured to the cylinder at their upper ends and carrying an upright post 22. The diaphragm is of such width as to be readily pressed upward and outward between the flanges 20. Pivoted upon a bracket 23 is a segmental lever 24, pivotally connected with the post 22 at one end and coupled at its opposite end to a curved arm 25, fulcrumed upon a bracket 26, and pivotally connected at its lower end to a vertical link 27, which passes through an enlarged opening 28 in the central bottom portion of the casing. The link 27 is pivotally connected at its upper end to a gate 29, hung upon a pivot 30, secured to the lower plate 10 and which is adapted to normally stand above the opening 31 in said plate. It will be readily seen that pressure applied upon the diaphragm 21 will swing the lever 24 and the arm 25, so as to close the gate 29, and thus prevent further supplying of corn to the compartment, and thereby relieve the pressure therein.

Of course it is to be understood that the mechanism just described is provided in each compartment, and it is also to be observed that the diaphragm is arranged at the lower end of the compartment, while the gate is arranged at the lower end of the next compartment near the hopper and on the opposite side of the segmental plate 10, so that when the pressure in said first-named compartment becomes too great the gate is closed. The compartment directly under the hopper is similarly arranged with a diaphragm 32, which supports a post 33, having pivotal connection with a lever 34, fulcrumed upon a yoke 35 and pivotally connected at its free end to a link 36. The link 36 is pivotally connected to a bell-crank lever 37, fulcrumed upon a standard 38 and connected at its lower end with a slide 39, which is adapted to cover the opening 40 between the hopper and the cylinder. This slide is so arranged as to normally uncover the opening 40, when, upon the pressure in said compartment becoming excessive, the diaphragm 32 is forced outward, thus forcing the lower end of the lever upward and the upper end thereof downward, which through its pivotal connection with the bell-crank lever swings the same toward the hopper, which in turn moves the slide and covers the opening 40, thereby cutting off the supply of corn from the compartment, and upon pressure therein being relieved the parts will return to their normal positions and the slide withdrawn, thereby uncovering the opening. It is to be understood that the relieving of the pressure in the compartments is effected through the removing of the hulls and soft parts from the corn by the knives and the slots, which matter is cut and rubbed into meal and the like, which passes through the slots and openings in the bottom of the cylinder.

It is thought from the foregoing descrip-

tion that the operation of the device, which is as follows, will be readily understood. Corn being fed into the hopper 5 passes into the cylinder and through the openings 31 in the several plates, thus completely filling and densely massing in the compartments about the knives, which are carried therethrough by means of the hub 14, which is rotated by the shaft 12. In order to facilitate the passing of the grain from one compartment to the other, openings 42 in the upper portions of the plates 9 are provided. These openings are normally covered by slides 43, which are inserted through the casing and may be readily withdrawn to uncover the openings; but when the machine is running it will be found that the openings 42 will be unnecessary. Therefore the slides are inserted to cover the same. The grain is moved bodily around the cylinder by the knives, which at the same time move through the grain. The action of the knives, which it is understood are maintained in a sharpened condition, is to remove the soft part, which comprises the germ, and to act to peel off the hulls. This peeling of the hulls and removing of the cap is further accomplished by the slots 18, over which the grain is bodily moved and through the enlarged openings 18<sup>a</sup> of which the caps will drop. The rapid and continual bodily movement of the grain in rubbing against the surface of the cylinder creates a frictional heat which rises to such a degree as to vaporize the moisture in the corn, which liberates the sugar also contained therein. When this frictional heat has reached such a state as to vaporize the moisture in the grain, a small quantity of water is introduced into each compartment through the pipes 44, communicating with the top of the casing and having arranged therein turning-plugs 45, by which the quantity of water may be regulated. The action of this water upon the hot grain is to chill the same, and thus contract and shrivel the hulls, but without affecting the shell or hard part of the corn, and thus it will readily be seen that the knives and slots will easily remove the remaining contracted and shriveled portions of the hulls. The water admitted to each compartment not only assists in the removal of the hulls, but acts in conjunction with the moisture contained in the corn to liberate and dissolve the sugar, which percolating through the mass of corn highly flavors the same. It is to be understood that the operation of the machine is a continuous one and that the grain once being started through the machine will be successively treated thereby and discharged at the opposite end with the hulls and all soft parts removed and in condition to be subjected to the cleaning process. The pressure-relieving devices, which have been previously described, are thought to need no further description other than it might herein be stated

that were it not for such pressure devices the cylinder might probably burst or that the corn would become so densely massed in the compartments that it would be impossible to turn the knives. However, the knives offer very little resistance to the body of grain, as they are quite thin and only offer enough resistance to the mass to assist in turning the same bodily. It is readily discernible that there is no centrifugal action in this machine and that the knives pass through the mass of grain, cutting the hulls therefrom, but do not break or scatter the corn, as is common in machines now in use.

In Figs. 9 and 10 we have shown our knives applied to what is known as a "charge-mill." The cylinder 47 is formed with an opening 48, above which is supported a hopper 49, by which the corn is fed into the cylinder and is treated in the manner above described. The cylinder 47 is provided in its bottom with a longitudinal slide 50, which may be withdrawn to empty the cylinder when the grain has reached its finished state.

Having now fully described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a hominy-machine, a cylinder having slots, thin-bladed knives revolving in the cyl-

inder, and means operated by the pressure of the grain for regulating the passage of the grain through the cylinder.

2. In a hominy-machine, a cylinder having slots, thin-bladed knives revolving in the cylinder, means operated by the pressure of the grain for regulating the passage of the grain through the cylinder, and means for regulating the feeding of the grain into the cylinder.

3. In a hominy-machine, a fixed cylinder having keyhole-slots, plates arranged within the cylinder to divide the same into compartments, a hub rotatably mounted in the cylinder, knives projecting from the hub, means acting in conjunction with the plates to regulate the passage of grain through the compartments, means for regulating the feeding of the grain to the cylinder, and means for supplying water to the compartments.

4. In a hominy-machine, the combination with a cylinder having keyhole-slots, of a plurality of knives having thin offset blades each provided with a tool edge.

NATHAN H. MILLER.  
WILLIS A. MILLER.

In presence of—

ONA MANSPERGER,  
L. M. HEISTON.