

No. 707,805.

Patented Aug. 26, 1902.

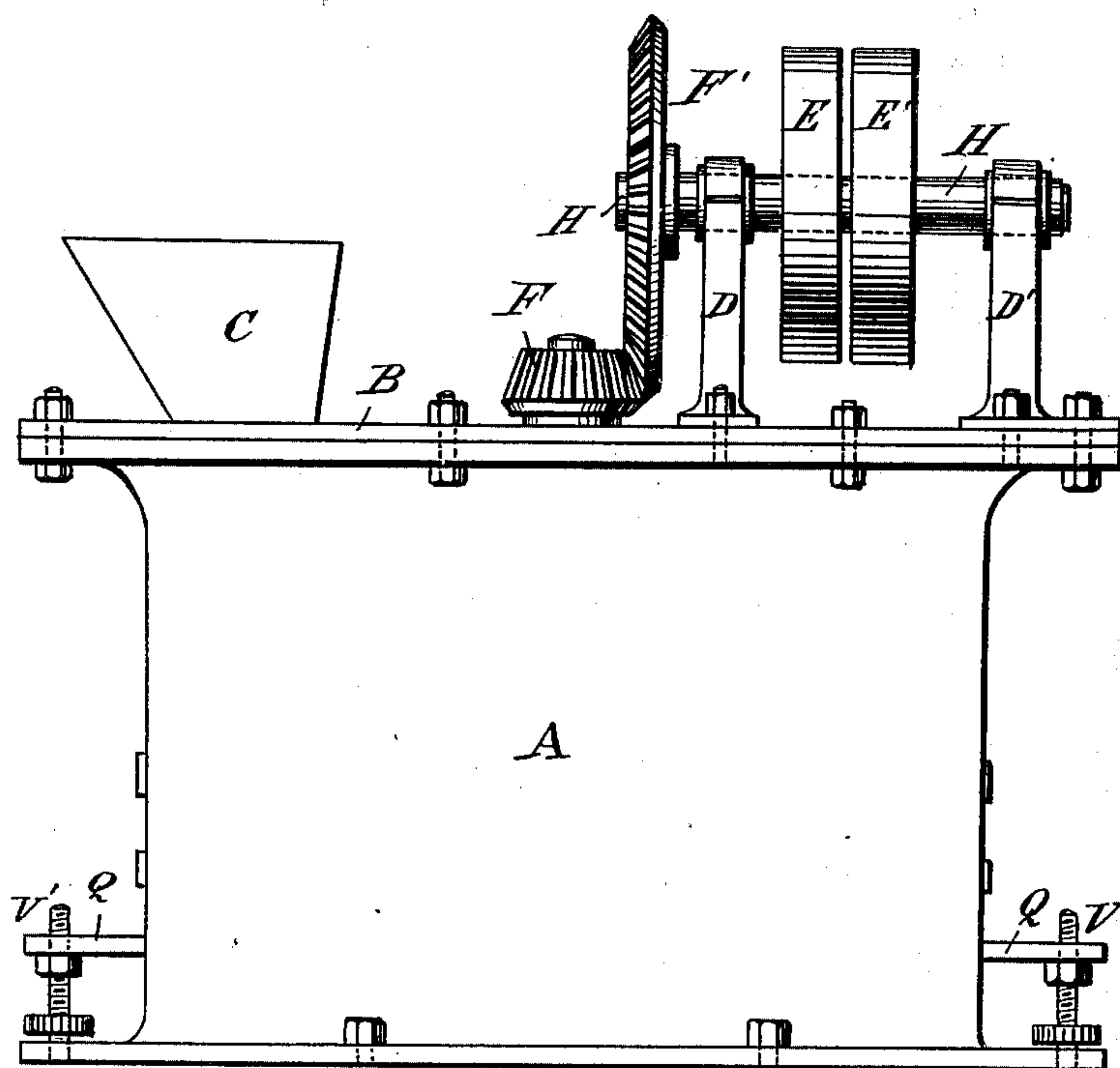
A. THIRION.
MILL.

(Application filed Apr. 11, 1901.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.



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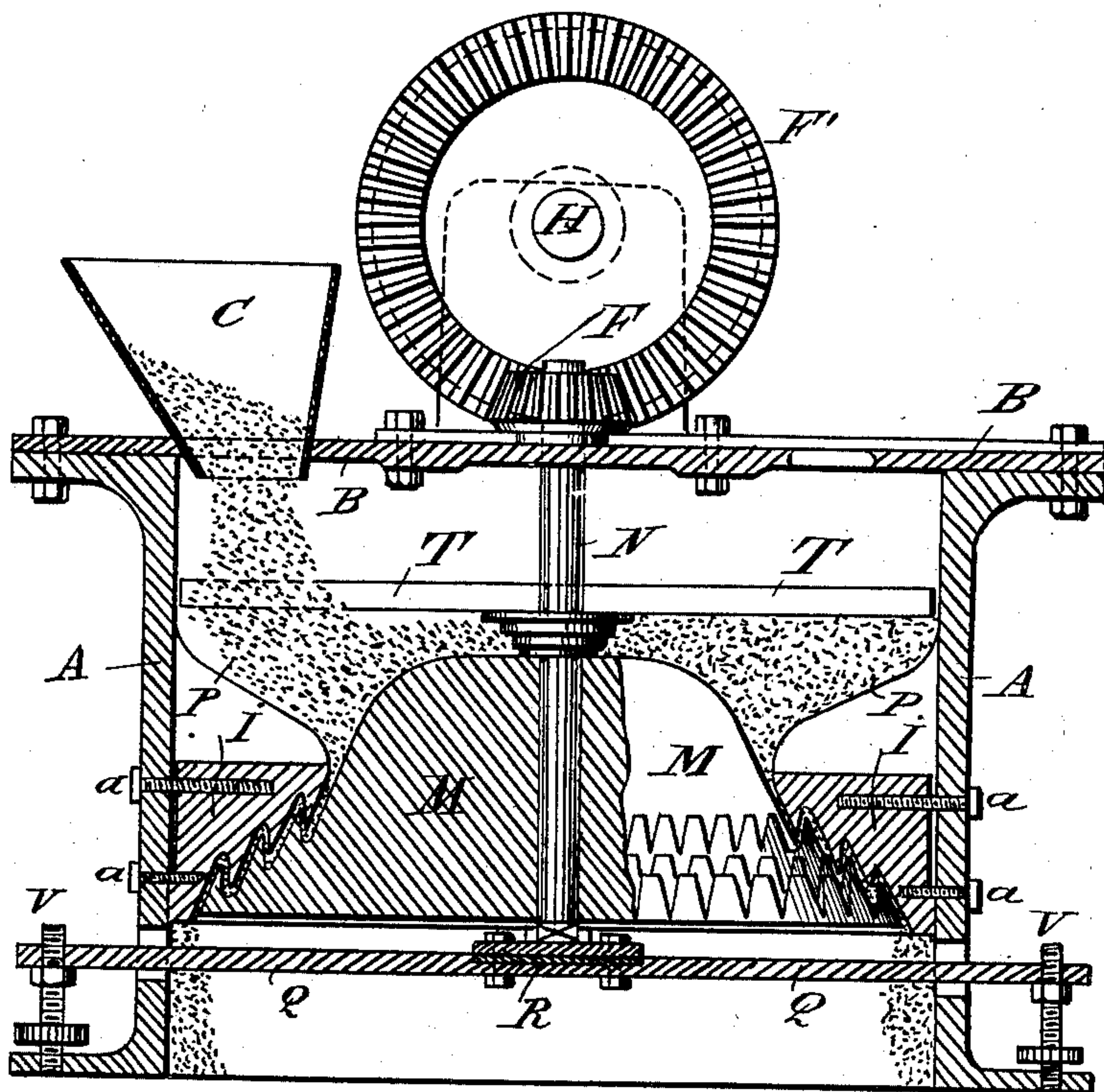
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(Application filed Apr. 11, 1901.)

(No Model.)

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Fig. 2.



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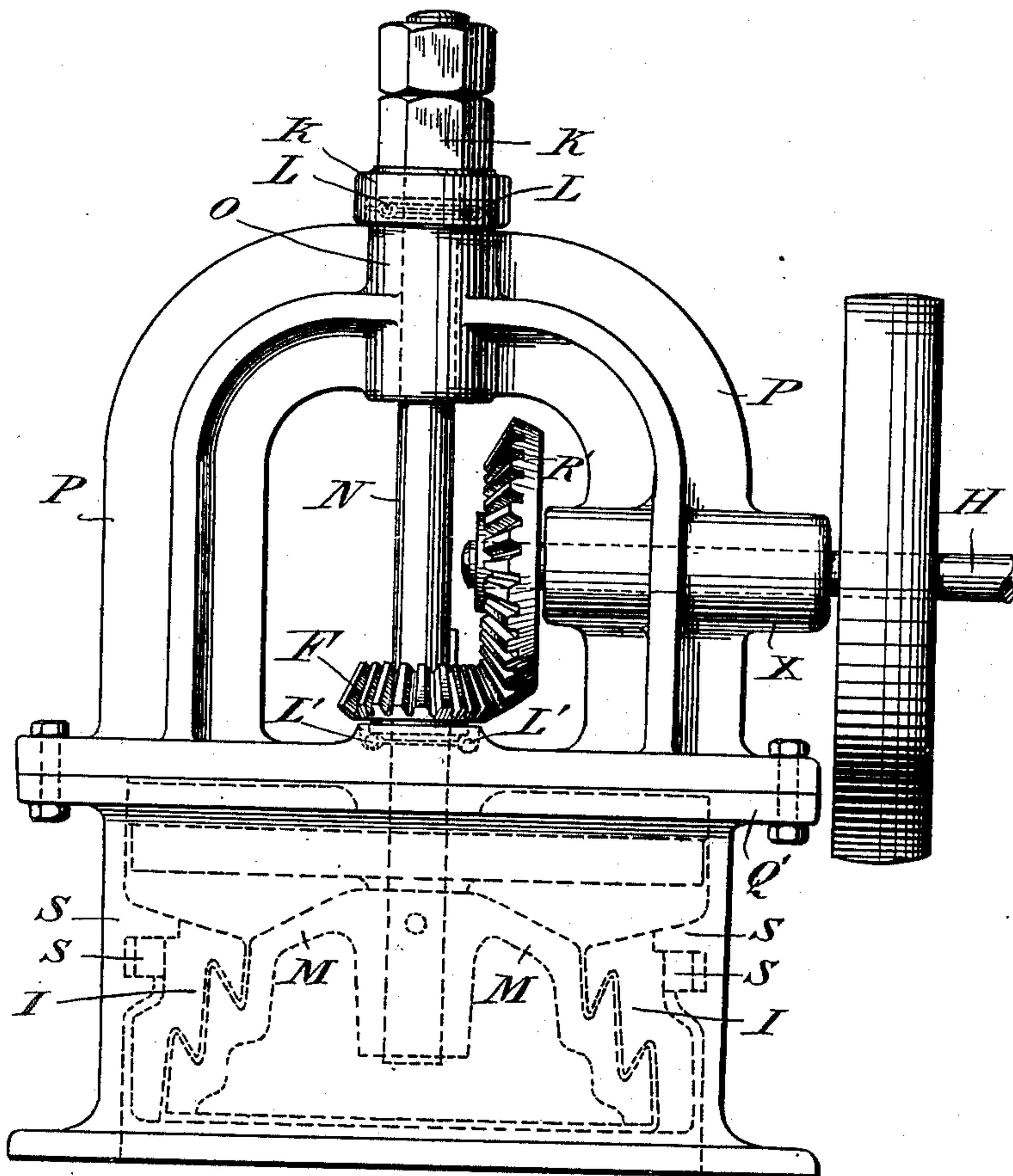
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(Application filed Apr. 11, 1901.)

(No Model.)

3 Sheets—Sheet 3.

Fig. 3.



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UNITED STATES PATENT OFFICE.

AUGUSTE THIRION, OF PARIS, FRANCE.

MILL.

SPECIFICATION forming part of Letters Patent No. 707,805, dated August 26, 1902.

Application filed April 11, 1901. Serial No. 55,342. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTE THIRION, a citizen of the French Republic, and a resident of Paris, France, have invented certain new and useful Improvements in Mills, of which the following is a specification.

The object of my present invention is to provide a mill adapted to grind all kinds of dry or oleaginous grains, chicory, sugar, and the like or any other similar materials, such as cocoons of silkworms.

A further object of the invention is to enable a uniform product to be obtained and to greatly economize the consumption of power by reason of the particular arrangement of the working parts, the improved mill being adapted to be constructed in all sizes, so as to be transportable or not.

The invention consists of the construction and novel combination of parts fully described and claimed hereinafter.

In the accompanying drawings, forming a portion of this specification, Figure 1 is an elevation of a mill constructed in accordance with my invention. Fig. 2 is a vertical central section of same. Fig. 3 shows a modified form of construction.

Referring now to the drawings, and particularly to Figs. 1 and 2, A represents a cylinder, preferably made of cast-iron and provided with a cover-plate B, having two or more air-vents, into one of which is placed the hopper C for the reception of the grains. The cover of said cylinder supports two bearings D D', in which is journaled the actuating-shaft H, carrying pulleys E E' and bevel gear-wheel F'.

Secured within the mill by means of high-pitch screws *a* is an inverted circular steel cup I, provided with annular rows of teeth with their bodies described on the arc of the annulus, having curved points and arranged like steps, so that their cutting edges are adapted to decorticate and grind grains. Rotatably arranged in said cup I is a cone M, also made of steel and provided with stepped teeth corresponding to the teeth of the cup I and engaging the intermediate spaces between the latter. However, the section of the teeth of the cone is slightly modified with respect to those of the cup in order to en-

able same to complete the grinding of grains. The cone M is secured to a vertical shaft N, extending through said cone, and the lower end of which, made of tempered steel, is stepped in a bearing R. Said shaft is actuated through the medium of the pinion F, splined on said shaft to slide therealong and meshing with the gear-wheel F'. The shaft N may be adjusted vertically in order to enable grains to be ground in a more or less coarse or fine manner. Said vertical adjustment is effected by means of two adjusting graduated screws V V', adapted to raise or lower the steel bar Q, carrying the bearing R. Said upward or downward movement is not imparted to the pinion F by reason of its special arrangement, enabling the same to remain in mesh with the wheel F'.

Arranged within the mill and above the working parts thereof is a distributor T, receiving grains from the hopper C. Said distributor is secured to and actuated by the vertical shaft N and made of about the same diameter as the cylinder A. The distributor is provided with a suitable wire-cloth, leaving passage for the grains, which are uniformly distributed to the working parts by the rotation of the distributor. This distributor has a dual function, since it receives supports, and carries around the berries of grain delivered by the hopper, sifting them uniformly and circumferentially into the casing P, and since also it will intercept stones, pieces of hard material, and other objects which might injure the machine and prevent their reaching the grinder.

In order to prevent grains from dropping upon the cup I, a circular casing P is provided, said casing being made of thin sheet-iron and yieldingly applied against the inner wall of cylinder A and the upper edge of the cup I.

In the modified form shown in Fig. 3 both adjusting-screws V V', the bar Q, the bearing R, and the bearing-point at the lower end of the shaft N are omitted. Said arrangement is substituted by a grooved nut K, into which extends the vertical shaft N. Splined on the latter is the pinion F, and pinned to the lower end of said shaft is the cone M. The actuation of said nut enables the cone

M to be brought nearer to the cup I, at the same time insuring the vertical position of the shaft N. The pinion F, being splined to said shaft N, does not partake of its vertical movements, but slides therealong and remains in mesh with gear-wheel F', being confined between the bevel of said wheel and its own ball-bearings, below referred to.

Arranged within the nut K is an antifriction ball-bearing L, supporting the entire weight of the working parts and serving as a substitute to the lower bearing described in connection with Figs. 1 and 2. Said balls are constantly immersed in a suitable lubricant. Another antifriction ball-bearing L' is inserted between the pinion F and the cover-plate of the cylinder A.

In order to support the grooved nut K and secure the vertical position of the shaft N, I provide an arched frame P, having two sleeves—a vertical bearing-sleeve O and horizontal bearing-sleeve X—and suitably secured to the plate Q of the cylinder A.

In the modified form the cup I is not secured to the cylinder by means of screws. The latter are omitted and substituted by four overlapping projections S, two of which are made integral with the cylinder, while the two other projections are made integral with the cup.

Having fully described my invention, what

I claim, and desire to secure by Letters Patent, is—

In the improved grinding-mill, the combination with a cylindrical casing and perforated cover-plate removably secured on the same of a stationary inverted cup within the casing, stepped annular rows of grinding-teeth, having curved bodies described in the arc of the annulus on the inner wall of said cup, a rotatable grinding-cone arranged in said cup, correspondingly-stepped annular rows of curved grinding-teeth on the outer wall of said cone and extending into the intermediate spaces between the teeth of said cup, a vertical shaft carrying said cone and suitably journaled in bearings, means for actuating said shaft, a hopper mounted on the cover-plate of the casing, a circular screen arranged beneath said hopper and secured to and rotating with said vertical shaft to uniformly distribute grains to the cup and cone, means for preventing grains from dropping upon the upper surface of the cups, and means for adjusting said shaft vertically, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in presence of two witnesses.

AUGUSTE THIRION.

Witnesses:

ADOLPHE STURM,
EDWARD P. MACLEAN.