No. 664,852. Patented Jan. 1, 1901.

W. W. GREEN.

CENTRIFUGAL GRINDING MACHINE.

(Application filed Feb. 12, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1

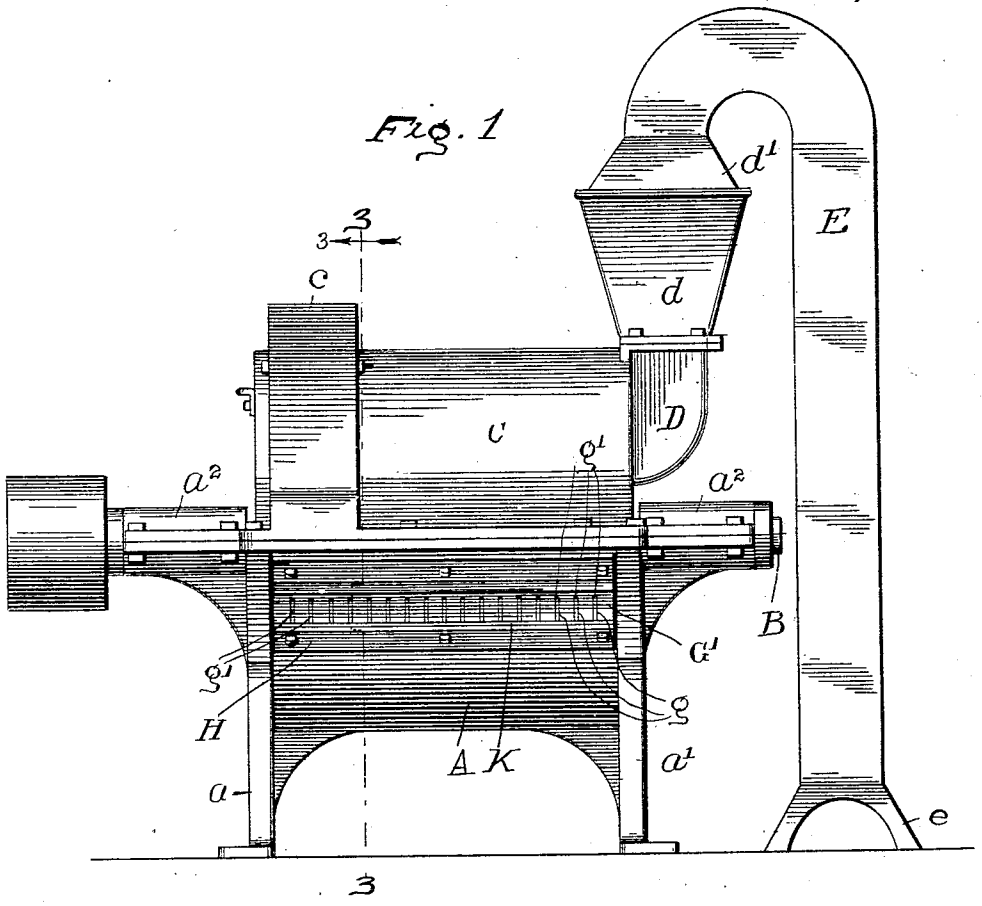
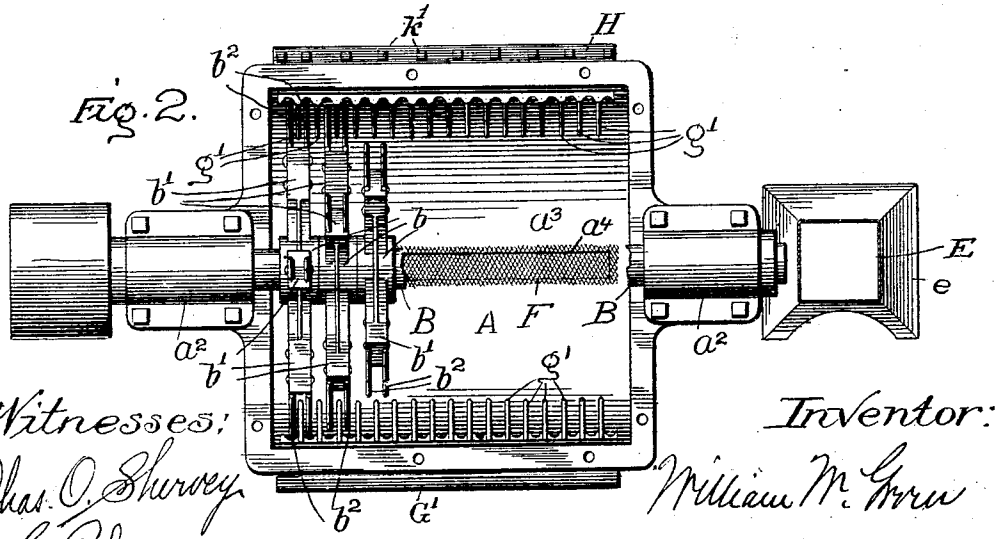


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

FIG. 3.

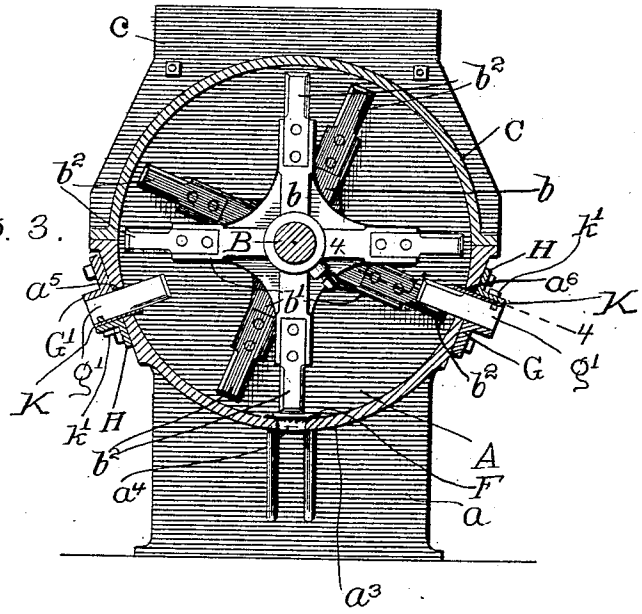


FIG. 4.

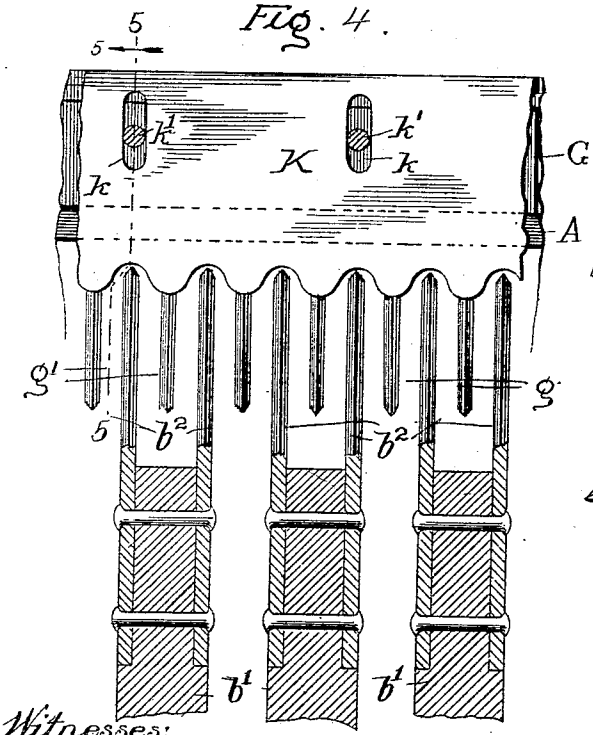
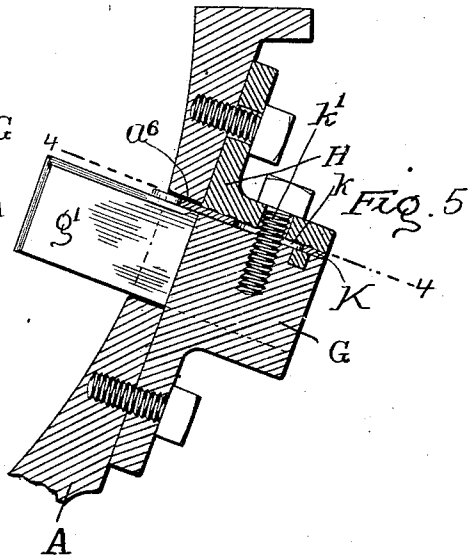


FIG. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM W. GREEN, OF CHICAGO, ILLINOIS.

CENTRIFUGAL GRINDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 664,852, dated January 1, 1901.

Application filed February 12, 1900. Serial No. 4,884. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM W. GREEN, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Centrifugal Grinding-Mills, of which the following is a specification.

My invention relates to certain improvements in centrifugal grinding-machines especially intended for grinding feathers into down, but which will also grind almost any known material.

The first object of the present invention is to provide means for protecting the machine against the entrance of articles likely to injure the cutting parts thereof, the second to provide means for the escape of fine dirt, sand, and dust which may be carried in on the material to be ground, and the third to provide an adjustable device adapted to compensate for the wearing and consequent shortening of the rotating knives.

To such ends and others incidental thereto the invention consists in certain novel characteristics hereinafter described, the essential features of which are pointed out in the claims at the end of this specification.

In the drawings, Figure 1 is a side elevation of a complete machine; Fig. 2, a plan view of the same with the cover removed; Fig. 3, a transverse vertical section in the line 3 3 of Fig. 1 looking in the direction of the arrow 3; Fig. 4, an oblique section in the line 4 4 of Fig. 3 looking downward upon said section, showing the parts upon a larger scale; and Fig. 5 is a vertical detail section in line 5 5 of Fig. 4 looking in the direction of the arrow 5.

Referring to the drawings, the frame of the machine is shown as made up of an upwardly-concave semicylindrical base A, provided with legs a a' at its opposite ends and having boxes a^2 a^2, in which is journaled the shaft B of the grinder. Upon this base is a semicylindrical cover or top C, inclosing, together with the base, a cylindrical interior chamber in which the operation of grinding is performed. At one end of this cover is a discharge-opening c, preferably directed radially from the machine, and at the other end of the chamber is an inlet-spout D, upon which is a hopper d, provided with a converging cover d', from which extends a curved spout E, terminating at a level preferably below the top of the machine and here shown as having an open base e to receive the material to be ground. In the lower part of the casing a^3, which forms a part of the base, is a longitudinal opening a^4, preferably at the bottom, covered by a fine screen F, the opening being sufficiently limited as to lateral extent to avoid interfering with the draft or suction of the machine. Upon opposite sides of this opening are shown two other longitudinal openings a^5 a^6, adjacent to which, upon the outside of the casing, are secured knife-supporting blocks G G', G being below the opening and G' above the opening, so as to face in both cases in a direction opposite to that in which the central shaft rotates. These blocks are slotted transversely, as seen at g, to receive a series of knives g', and angle-plates H are secured to the casing upon the opposite side of the respective openings from the knife-supporting block to assist in holding the knives in place. Between the angle-plates and the blocks are arranged adjustable compensating plates K, slotted at k and preferably serrated along their inner edges, the teeth of the serrations corresponding with the knives g'. Set-screws k', extending through the angle-plates, the slots in the compensating plates, and threaded in the knife-blocks, clamp the compensating plates between the angle-plates and said blocks.

The object of the compensating plates is to provide an adjustable interior for the casing adjacent to the stationary knives, so as to compensate for any wear upon the ends of the rotating knives, the plates being moved inward to keep the same distance between their inner edges and the rotating knives. Upon the central shaft B are mounted a series of spiders b, to the radiating arms b' of which are secured the rotating knives b^2, spaced to pass between the stationary knives g'. These spiders are set in the form of a screw conveyer, so as to force the material from the inlet to the outlet end of the casing, creating thereby a suction sufficient to draw the material to be operated upon upward against gravity through the spout c, thereby separating it from the heavy materials—such as

nails, stones, and the like—which would be likely to injure the operating parts of the machine. For this reason the feathers or other material are commonly thrown upon the floor adjacent to the lower end of the spout and allowed to be drawn into the machine by the suction thereof. The finer dust and dirt which adheres to the feathers, after being fully separated therefrom by the beating of the knives, sifts through the screen at the bottom of the casing, the centrifugal force developed and the narrowness of the opening in the casing at this point being such that the draft of the machine is not interfered with.

I claim as new and desire to secure by Letters Patent—

1. In a centrifugal grinding-mill, the combination with a cylindrical casing bearing a series of inwardly-projecting knives, of a series of knives alternating with the fixed knives and mounted to rotate within the casing, and a metal plate mounted upon the fixed knives, coacting with the ends of the rotary knives, and arranged for adjustment toward the same, substantially as set forth.

2. In a centrifugal grinding-mill, the combination with a cylindrical casing bearing a series of inwardly-projecting fixed knives, of a series of knives alternating with said fixed knives and mounted to rotate within the casing, and a serrated metal plate mounted upon the fixed knives with its interdental spaces in the paths of the rotary knives, and means for adjusting the distance of the plate from the knives last mentioned.

3. In a centrifugal grinding-mill, the combination with a cylindrical casing having a narrow longitudinal slot at the bottom and bearing fixed inwardly-projecting knives, of knives mounted to rotate within the casing and alternating with the fixed knives, a screen covering said narrow slot, a feed-opening at one end of said casing, a discharge-opening at the opposite end, and means for discharging through the latter opening air in excess of that entering through said slot; whereby sand and the like may drop through said screen while all lighter materials pass out through said discharge-opening.

In witness whereof I have hereunto set my hand, at Chicago, in the county of Cook and State of Illinois, this 3d day of February, A. D. 1900.

WILLIAM W. GREEN.

Witnesses:
PAUL TORIOERG,
G. A. SCHNEIDER.