

H. A. HANNUM.
COMMINUTING MACHINE.
APPLICATION FILED DEC. 27, 1910.

1,011,342.

Patented Dec. 12, 1911.

Fig-1-

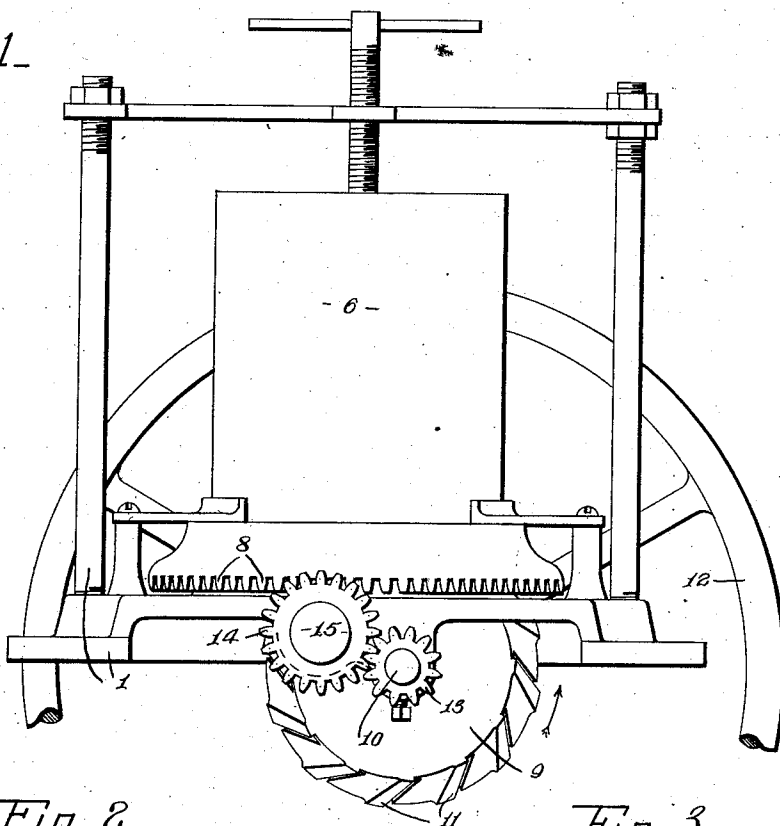


Fig-2-

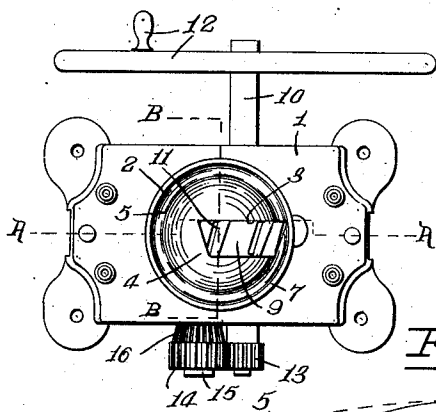


Fig-3-

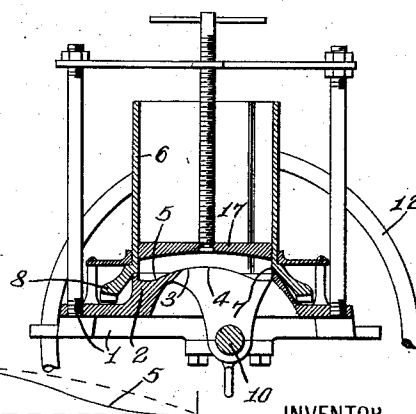


Fig-4-

WITNESSES:

Chas. H. Young,
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Fig-5-

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UNITED STATES PATENT OFFICE.

HENRY A. HANNUM, OF CAZENOVIA, NEW YORK.

COMMUNUTING-MACHINE.

1,011,342.

Specification of Letters Patent.

Patented Dec. 12, 1911.

Application filed December 27, 1910. Serial No. 599,360.

To all whom it may concern:

Be it known that I, HENRY A. HANNUM, of Cazenovia, in the county of Madison and State of New York, have invented a certain new and useful Comminuting-Machine, of which the following is a specification.

My invention relates to comminuting or grinding machines and particularly to constructions whereby packing of the comminuted or partly comminuted material at the bottom of the hopper is prevented, and whereby there is minimum friction between the material being comminuted and the bottom of the hopper, and the invention consists in the combinations and constructions hereinafter set forth and claimed.

In describing this invention reference is had to the accompanying drawing in which like characters designate corresponding parts in all the views.

Figure 1 is an elevation of this comminuting machine. Fig. 2 is a plan thereof on a reduced scale, parts being removed. Fig. 3 is a vertical sectional view thereof on a reduced scale. Figs. 4 and 5 are diagrammatic views along lines "A—A" and "B—B," Fig. 2, illustrating the curvature of the upper face of the hopper bottom, the curvature of the hopper bottom of a machine on which my present machine is an improvement, being shown in dotted lines.

1 is the frame of this machine; 2 is the stationary bottom of the hopper, the bottom being supported by the frame and having a slot 3 extending from the edge of the bottom toward the center thereof, the bottom also having a spherically-curved convex surface 4 approaching the slot at the opposite sides and one end thereof, and a conically or spherically-curved, annular concave surface 5 continuous of the convex surface, and extending between such convex surface and the edge of the bottom.

6 is the cylindrical shell or wall of the hopper, said wall coacting with a bead 7 at the edge of the bottom, said shell being formed with an external annular toothed flange or gear ring 8.

9 is the cutter head mounted on and rotatable with a main actuating shaft 10 which is journaled in the frame 1 and extends horizontally crosswise of, and beneath the hopper bottom 2. The cutter head 9 projects through the slot 3 and is provided with peripheral inclined cutters 11. The shaft is

rotated in such direction as to move the portion of the cutter head projecting above the bottom of the hopper from the edge of such bottom toward the center thereof, as indicated by the arrow in Fig. 1.

12 is a handle or crank mounted on one end of the shaft 10, and 13 is a gear on the other end thereof, the gear 13 meshing with the gear 14 mounted on a stud 15, supported by the frame, the gear 14 being fixed to a bevel gear 16 which meshes with the gear ring 8 to actuate the shell 6 of the hopper.

17 is a follower movable downwardly in the hopper for forcing the material being comminuted as bones, toward the bottom and cutter head, the follower being substantially the same as that shown in my patent No. 470,395 March 8, 1892.

In machines of this kind, as shown in my patent and in dotted lines Figs. 4 and 5, the bottoms have been formed convex throughout their entire extent in order that a maximum surface of the cutter head might be used above the bottoms, and the comminuted or partly comminuted material packs around the edge of the bottom and forms in a solid ring shaped mass. In this machine, owing to the arrangement of the convex and concave surfaces of the bottom, the portion of the bottom between the convex surface near the slot and the margin of the bottom, is depressed below a surface generated by a straight line tangent to such convex surface and the edge portion of the bottom and moving about the axis of the hopper or high portion of the bottom as a center, so that bones or other material being comminuted bear on the bottom only at two points, thus reducing the frictional contact between the matter being comminuted and the bottom; and owing to the direction of movement of the rotary cutter head, the packing of material along the margin of the bottom is prevented.

What I claim is:

1. A comminuting machine comprising a hopper having its bottom formed with a high central portion and a low portion around the high portion, and a slot opening through the high portion thereof, the portion of the bottom between the slot and the edge of the bottom being depressed below a surface generated by a straight line touching the high portion of the bottom and the edge thereof and moving about the high

portion as a center, and a rotary cutter head projecting through the slot, substantially as and for the purpose described.

2. A comminuting machine comprising a hopper having its bottom formed with a slot and with an annular concave upper surface and a spherically-curved convex surface continuous of the concave surface and approaching the slot, and a rotary cutter head projecting through the slot above the convex surface thereof, substantially as and for the purpose set forth.

3. A comminuting machine comprising a hopper having its bottom formed with a slot, and with a spherically-curved convex surface approaching the slot, and an annular concave surface between the convex surface and the edge of the bottom and continuous of the convex surface, and a rotary cutter head projecting through the slot and above the convex surface, substantially as and for the purpose specified.

4. A comminuting machine comprising a hopper having its bottom formed with a slot extending from the edge toward the center of the bottom and terminating near the center of the bottom, and a rotary cutter head projecting through the slot into the hopper the cutter head being located near one side of the hopper so that its periphery runs close to such side, the portion of the cutter head above the bottom moving from the edge toward the center of the bottom, substantially as and for the purpose set forth.

5. A comminuting machine comprising a hopper having a non-movable bottom formed with a slot extending from the edge toward the center of the bottom and terminating

near the center thereof and with a convex upper surface approaching the slot and terminating short of the edge of the bottom, the portion of the bottom between the apex of the upper surface and the edge of the bottom being depressed below a surface generated by a straight line tangent to the convex portion of the bottom and to the edge portion thereof, and moving about the axis of the hopper as a center, and a rotary cutter head projecting through the slot into the hopper, a portion of the cutter head above the bottom moving from the edge toward the center of the bottom, substantially as and for the purpose specified.

6. A comminuting machine comprising a hopper having a non-movable bottom formed with a slot extending from the edge thereof toward the center, and with a convex upper surface approaching the slot, and a concave surface between the convex surface and the edge of the bottom, and continuous of the convex surface, and a cylindrical shell mounted on the bottom and movable about an axis, and a rotary cutter head projecting through the slot in the hopper, the portion of the cutter head above the convex surface moving from the edge of the bottom toward the center thereof, substantially as and for the purpose set forth.

In testimony whereof, I have hereunto signed my name in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 14th day of December, 1910.

HENRY A. HANNUM.

Witnesses:

S. DAVIS,

G. B. SMITH.