C. R. JOLITZ.

GRINDER.

APPLICATION FILED MAR. 13, 1918.

1,301,449.

Patented Apr. 22, 1919.

2 SHEETS—SHEET 1.

FIG. 1.

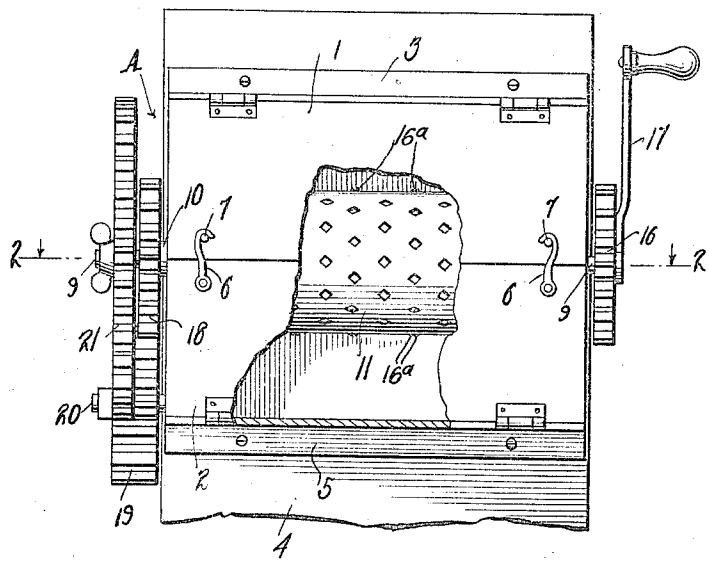
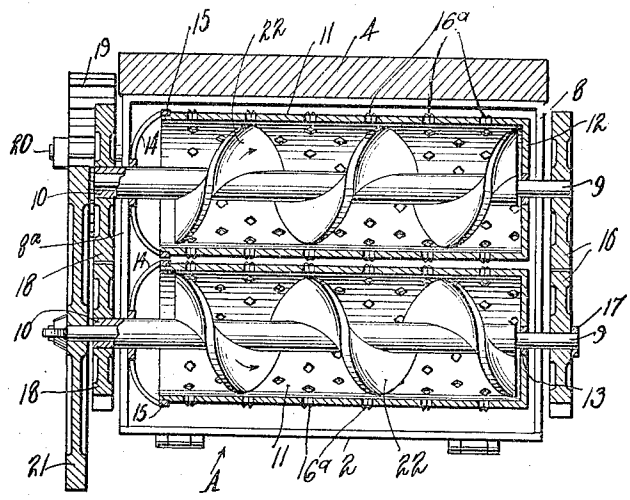


FIG. 2.



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2 SHEETS—SHEET 2.

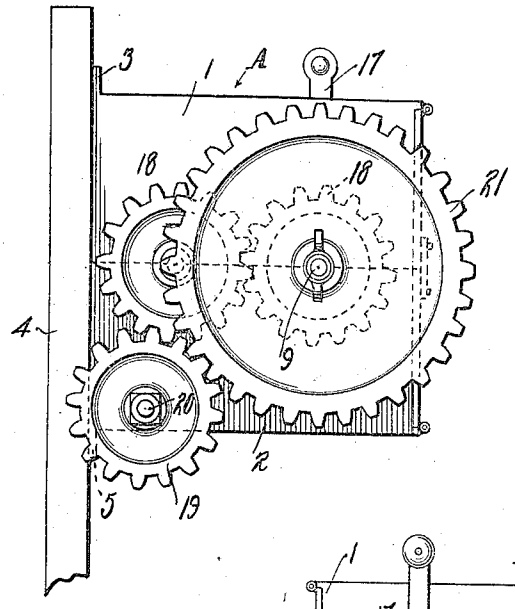


FIG. 3.

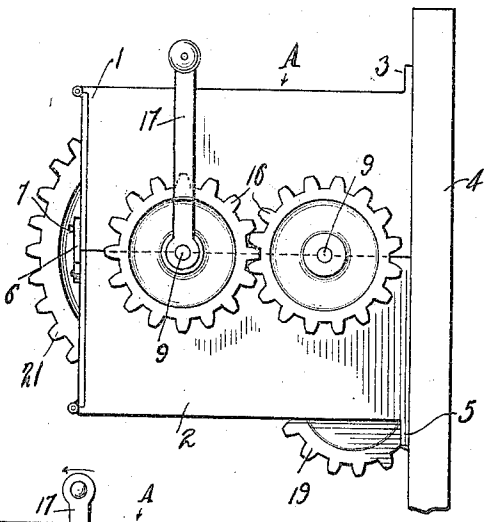


FIG. 4.

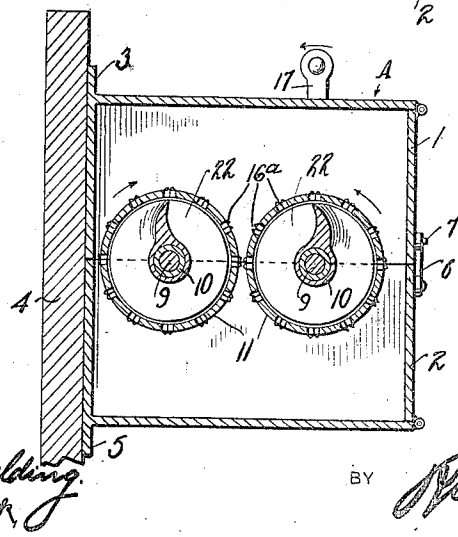


FIG. 5.

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GRINDER.

1,301,449. Specification of Letters Patent. Patented Apr. 22, 1919.

Application filed March 13, 1918. Serial No. 222,159.

To all whom it may concern:

Be it known that I, CHARLES R. JOLITZ, a citizen of the United States, residing at Denver, in the county of Denver and State of Colorado, have invented certain new and useful Improvements in Grinders, of which the following is a specification.

This invention relates to grinding machines, and more particularly to a machine for grinding bone and similar material.

One of the main objects of the invention is to provide a machine of the character stated of simple construction and operation having means for grinding bone and similar material and for conveying the ground products to one end of the machine simultaneously with the grinding operation. A further object is to provide a machine having a casing and two grinding rollers mounted therein in parallel spaced relation, these rollers being provided with coöperating grinding members and perforations whereby as the material is ground, it is directed into the interior of the rollers or cylinders which are hollow, supplemental means being provided within the cylinders for directing this ground material toward one end thereof. Another object is to provide a grater having grinding drums positioned closely adjacent each other and provided on their outer surfaces with grinding teeth, these teeth being positioned adjacent perforations in the drum so as to direct the ground material into the same, and screw conveyers mounted within the drum so as to direct the ground material toward one end thereof, means being provided for rotating the drum and the conveyer oppositely so as to grind the material and convey it toward one end of said drum. Further objects will appear from the detailed description.

In the drawings:

Figure 1 is a front view of a grinding machine constructed in accordance with my invention, the casing being partly broken away,

Fig. 2 is a section taken substantially on line 2—2 of Fig. 1,

Fig. 3 is an end view,

Fig. 4 is an end view taken from the opposite end to Fig. 3,

Fig. 5 is a transverse section.

The casing designated generally by A which incloses the grinding mechanism is composed of the upper section 1 and the lower section 2. This upper section is provided with a vertical flange 3 which is secured to a suitable base 4 by screws or in any other suitable manner, the lower section being provided with a similar flange 5 which is also secured to the base. Section 2 is provided, on its front face with spaced hooks 6 which engage over pins 7 projecting from the front of upper section 1 thus securing the front walls of the two sections together. By removing the screws from flange 3, the upper section may be readily removed so as to permit access to the interior of the casing for repairs, cleaning, and other purposes, and to permit the ground material to be removed from the casing. The end plate 8 of lower section 2 is provided, in its upper edge, with two spaced arcuate recesses which receive the parallel operating shafts 9 which extend longitudinally of the casing. End plate 8^a is also provided in its upper end with two spaced arcuate recesses which are in alinement longitudinally of the casing with the recesses in end plate 8, and receive sleeve shafts 10 which are rotatably mounted on shafts 9. The end plates of upper section 1 of the casing are provided in their lower edges with recesses which coöperate with the recesses of the end plate of the lower section and fit snugly about the upper portions of the shafts 9 and sleeve shafts 10 so as to maintain the same in proper operative position, the shafts also serving to assist in maintaining the sections of the casing in proper relation. By removing the upper section 1, the shafts and the various members carried thereby to be later described, may be readily removed from the lower section 2 of the casing thus permitting easy removal of the ground material which collects in the lower end thereof. A foraminous grinding drum 11 is mounted about each of the shafts 9 in concentric spaced relation thereto. This drum is provided at one end with an integral closure disk 12, the central portion of which is thickened to provide an integral collar 13 which is secured to shaft 9, thus securing the drum to the shaft for rotation therewith. A spider 14 is provided adjacent the other end of the drum, the arms of this spider carrying a ring 15 which is secured to the other end of the drum, which is open, thus permitting ready discharge of the ground material from the drum. The two drums are disposed in parallel relation, and are positioned closely ad-

jacent each other. Each drum is provided with outwardly projecting grinding teeth 16ª which are positioned closely adjacent the perforations of the drum. These teeth may be formed by making the drum of malleable material and then punching the perforations therein, the burs around the perforations constituting outwardly directed teeth in the usual manner or, if preferred, the drums may be formed by casting from suitable material, the teeth being cast contiguous to the perforations. By placing material to be ground in the upper portion of the casing on the drums, and then rotating these drums toward each other, this material may be quickly ground and the major portion of the ground material will pass through the perforations into the drum.

A spur gear 16 is secured on one end of each operating shaft 9 adjacent end plate 8 of lower section 2, the two spur gears intermeshing. An operating crank 17 is secured to the outer shaft 9 so that, by rotating this crank in a clockwise direction the two drums will be rotated inwardly toward each other, the teeth of the drums serving to cut away or grind any material which is placed in the upper portion of the casing so as to be supported by the drums. Also, the drums act to move this material into position between the upper portions of the drums and supported thereby, and to retain it in this position during the grinding operation, so as to be acted upon to best advantage.

The sleeve shafts 10 project through the other end of the casing, and a spur gear 18 is secured on the outer end of each of these shafts. These gears intermesh, and the inner one of these gears is in mesh with a face gear 19 rotatably supported by a stub shaft 20 secured to end plate 8ª of lower section 2. Face gear 19 meshes with a spur gear 21 which is secured on the other end of the shaft 9 to which shank 17 is secured. This spur gear 21 is of approximately twice the diameter of gears 16, and spur gears 18 and face gear 19 are of the same diameter as gears 16. When shaft 9 is rotated, spur gear 21 will be rotated in the same direction and will act to rotate face gear 19 in the opposite direction, the gears 21 and 19 thus being rotated in the same directions as the drums 11. As the inner spur gear 18 meshes with face gear 19 in advance of the axis thereof, it will be rotated oppositely thereto, or oppositely to the inner drum 11, and the outer spur gear 18 will be rotated oppositely to the outer drum 11. Each of the sleeve shafts 10 carries a screw conveyer 22 which is so directed as to force material which collects in the drum toward the open end of the drum so as to discharge this material into the lower section 2 of the casing. These screw conveyers will be rotated approximately four times as fast as the drums, thus insuring that the material which collects in the drum is removed immediately so as to prevent all possibility of jamming of the screw in the drum thus insuring accurate operation and preventing interference with the grinding of the material positioned above the drums. The ground material collects in the lower section of the casing beneath the drums and, when it is desired to remove this material, the upper section 1 of the casing may be removed after which the shafts 9 together with the gears and drum and the sleeve gears and screws carried thereby may be readily lifted from the lower section so as to permit ready access thereto for the removal of the ground material. After this material has been removed, the grinding members may be replaced and the upper section secured in position, the material to be ground being placed on the drums so as to be supported thereby before replacing the upper section. If desired, the front walls of the two sections, may be hingedly secured to the top and bottom of the casing, respectively, thus providing hinged doors which may be opened outwardly so as to permit ready access to the interior of the casing for placing the material to be ground upon the rollers and for removing the ground material, though I do not deem the provision of these doors essential to the invention.

What I claim is:

In a machine of the class described, the combination with a casing, parallel sleeve shafts journaled through one end thereof and having intermeshing gears on their outer extremities, parallel solid shafts journaled through the other end of the casing and extending into the sleeves, these solid shafts also having intermeshing gears on their outer extremities, and means for applying power to one of said solid shafts; of hollow foraminous grinding drums, each having one end closed and fast on one of said solid shafts and its other end open, spiral conveyers mounted on said sleeve shafts within the drums, and means for connecting one of the solid shafts with one of the sleeve shafts so that the conveyers rotate in a reverse direction to their respective drums and more rapidly.

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

CHARLES R. JOLITZ.

Witnesses:
HARRY H. REIFF,
BERTHA SASSENBERG.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."