(No Model.) 2 Sheets—Sheet 1.

I. E. OVERPECK.

GRINDING MILL.

No. 483,363. Patented Sept. 27, 1892.

FIG. 1.

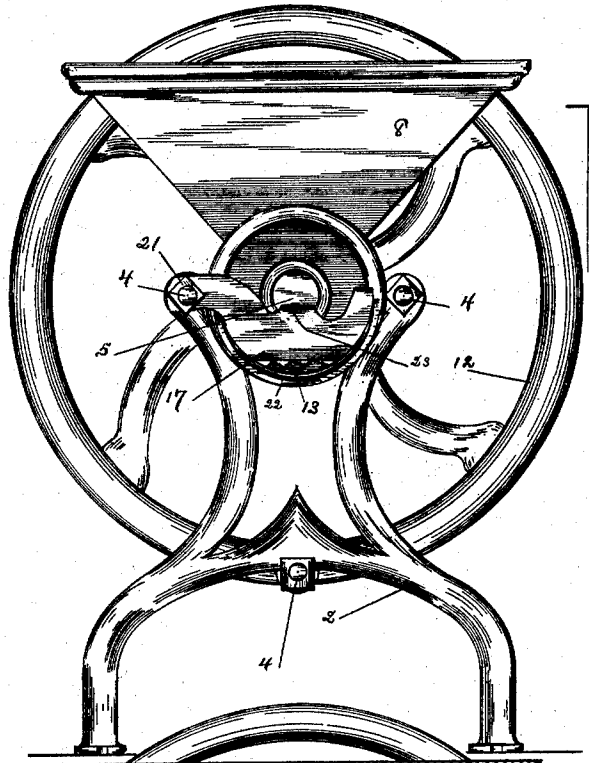
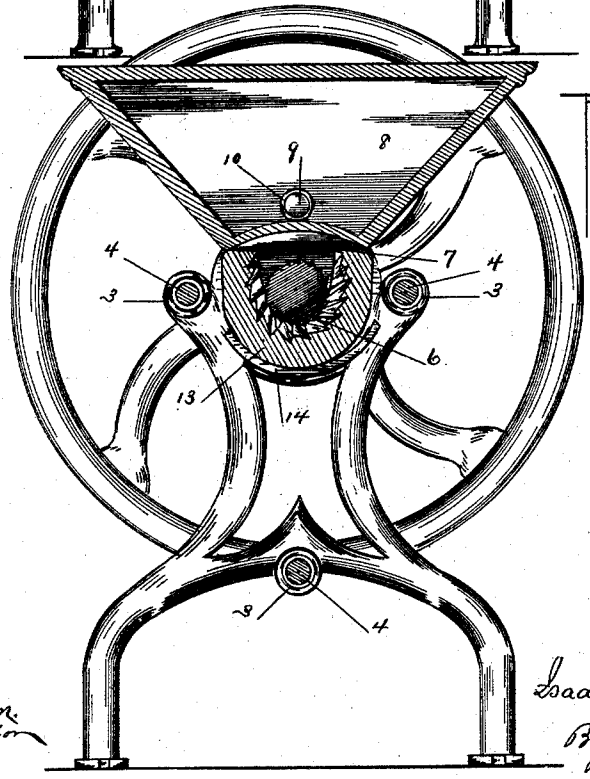


FIG. 2.



Witnesses
Chas. E. Riordon.
Jno. M. Riordon

Inventor
Isaac E. Overpeck
By W. S. Boyd
his Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

I. E. OVERPECK.

GRINDING MILL.

No. 483,363. Patented Sept. 27, 1892.

FIG. 3.

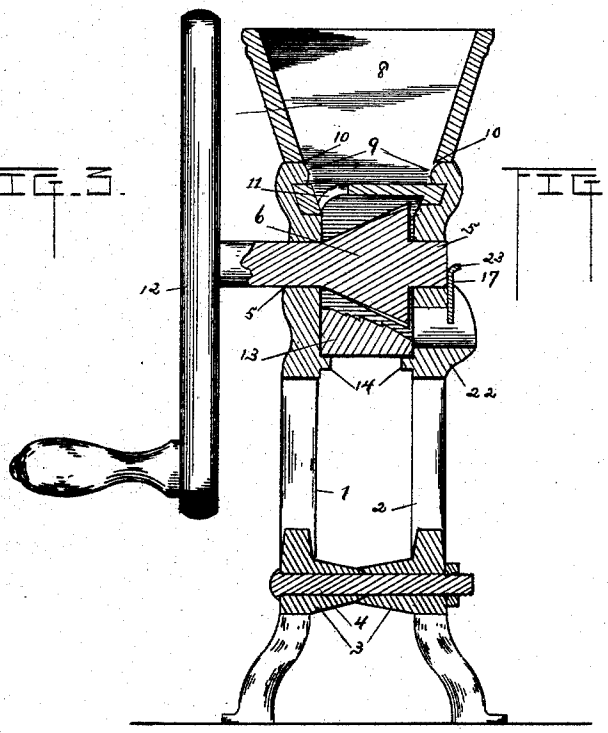


FIG. 8.

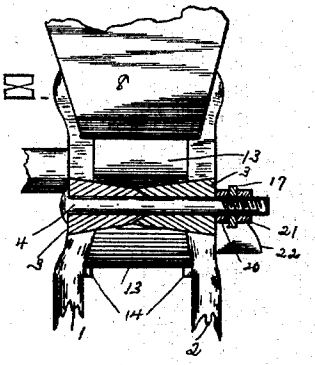


FIG. 5.

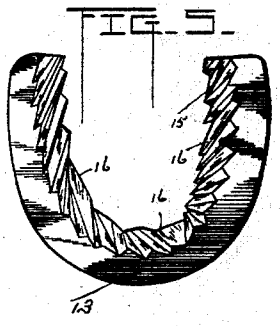


FIG. 4.

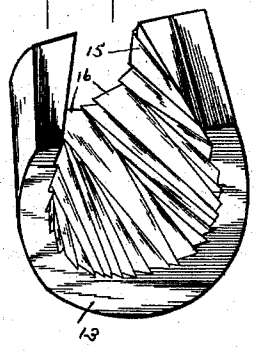


FIG. 6.

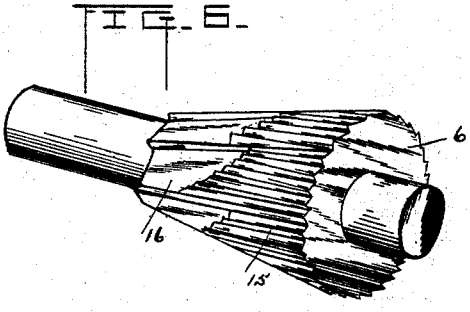
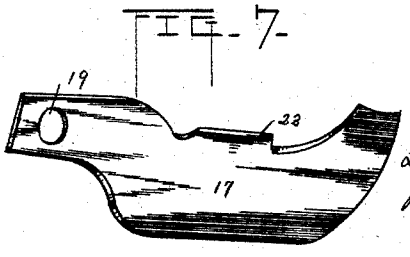


FIG. 7.



Witnesses
Chas. E. Riordon.
J. M. Riordon.

Inventor
Isaac E. Overpeck
By W. S. Boyd.
his Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ISAAC E. OVERPECK, OF OVERPECK, OHIO, ASSIGNOR TO EDSON L. OVERPECK AND FRANK M. WEHR, OF SAME PLACE.

GRINDING-MILL.

SPECIFICATION forming part of Letters Patent No. 483,363, dated September 27, 1892.

Application filed December 12, 1891. Serial No. 414,825. (No model.)

To all whom it may concern:

Be it known that I, ISAAC E. OVERPECK, a citizen of the United States, residing at Overpeck, in the county of Butler and State of Ohio, have invented certain new and useful Improvements in Grinding-Mills; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to grinding-mills, and more particularly to that class of such mills in which cornmeal, chicken-feed, &c., is ground; and it has for its object to produce such a mill as will be simple, compact, durable, easily operated and adjusted, and not liable to get broken or out of order.

With these ends in view it consists in the construction and arrangements of parts, as will be hereinafter more particularly set forth.

Referring to the accompanying drawings, in which the same reference-numerals indicate corresponding parts in each of the figures, Figure 1 is an end elevation of the mill complete. Fig. 2 is a vertical cross-section of the same. Fig. 3 is a similar view taken at right angles to Fig. 2. Fig. 4 is a perspective view of the concave. Fig. 5 is an end view of the same. Fig. 6 is a perspective view of the grinding-cylinder. Fig. 7 is a similar view of the gate or regulator; and Fig. 8 is a cross-sectional view of a portion of the mill, showing the manner of attaching the gate in position.

Numerals 1 and 2 indicate the framework of the mill, to which the other parts are connected. Each of these frame-pieces has three inwardly-projecting perforated lugs 3, which bear against each other with their inner ends and keep the frames at the proper distance apart. The contacting ends of each pair of lugs can be respectively pointed and concaved, so as to fit into each other, as shown in Figs. 3 and 8, and prevent their slipping or moving upon each other after they have been drawn together, thereby permitting of the perforations through them being cast, which, owing to the rough surfaces in casting, requires that the holes be made larger than the bolts 4, which pass through them. The lower ends of the frames are formed into legs, which diverge sufficiently to give the mill a good support, and, if desired, they may also be provided with notches or other means for securing the mill to a bed or base in the usual manner. The upper portion of each of the frames is provided with a hole or bearing 5, in which the grinding cylinder or roller 6 is journaled. Above each of the perforations 5 each of the frames is provided upon its inner face with an offset or shoulder 7, upon which the lower end of the hopper 8 rests when in position. The offset of the frame 1 may be made straight across; but the one in frame 2 is preferably made curved on the bottom to correspond with the curvature of the grinding-cylinder. Projecting inwardly from the inner face of each frame above the shoulder 7 is a lug 9, which passes through a hole 10 in the sides of the hopper and holds it in position when the frames are drawn toward each other by tightening the nuts upon the ends of the bolts 4. The hopper is preferably made integral or of one piece, with its bottom slightly curved upward to be out of contact with the cylinder, and is provided at one corner or end with an opening 11, through which the material passes to the cylinder below. A suitable wheel 12 or motor of any kind is secured to one end of the journal of the grinding-cylinder, which projects through the frame.

The concave 13 consists of a segmental or U-shaped piece of metal which is a trifle longer than the cylinder 6 and is clamped between the upper ends of the frames 1 and 2. The ends of the concave rest upon ledges 14 upon the inner faces of the frames, with its inner surface in close proximity to the exterior of the cylinder 6, and, like the cylinder, is provided with ribs or corrugations 15, which engage with and crush the grain in the usual manner. The bore or interior of the concave is made slightly conical or tapering, and the grinding-cylinder is also tapering, but to a greater extent, so that at the entrance between it and the concave directly under the opening in the bottom of the hopper there is plenty of room for the larger grains or pieces of material to be ground; but as they pass to-

ward the exit the space between the cylinder and concave gradually diminishes, thus causing the material between them to be ground smaller and smaller as it approaches the exit. To increase this space at the entrance between the cylinder and concave, only a portion of the ribs extend entirely the full length of either of them, while the remaining ones stop at various distances from the end. The portion of the cylinder and concave not occupied by the ribs can therefore be cut away, as at 16, which will give more room for the entrance of the grain or feed.

In order to change the mill for grinding coarse or fine, the concave can be moved laterally upon the ledges 14, so as to bring a portion of its inner surface closer to the surface of the cylinder to grind finer or to move it farther away from the cylinder to grind coarser. This is accomplished by unloosening the bolts 4 4 at the top of the frame until the concave is released and slipping it one way or the other, as desired, the ledges being preferably made slightly curved and of a larger radius than the exterior surface of the concave, as shown in Fig. 2, which will thus permit of the lateral movement of the concave. When the axis of the cylinder corresponds with the axis of the concave, the mill will grind as coarse as possible; but by shifting the concave so that the entrance between it and the cylinder is increased the distance between them upon the opposite side is correspondingly decreased and the mill will grind finer. The upper edges or sides of the concave extend up to the bottom of the hopper, which will prevent the escape of material from between it and the cylinder at that point. The change from coarse to fine can also be effected or assisted by means of a gate or regulator 17, which fits over the exit or discharge-opening 18 through the frame 2 at the larger end of the grinding-cylinder. This gate consists of a flat piece of metal pivotally secured upon one of the bolts 4 by means of a hole 19 in one end, which fits over the end of the bolt. The bolt is preferably made longer than the other bolts and is provided with two nuts 20 and 21, the inner one of which 20 binds the frames together and the outer one 21 holds the gate upon the bolt. By loosening the outer bolt the gate is loosened, so that its free end can be moved up or down to cover or uncover a greater or less amount of the discharge-opening, and thus regulate the escape of the material from between the cylinder and the concave. After the gate has thus been adjusted the outer nut 21 is screwed up against the gate, which clamps the end of it so tightly between the two nuts that the free end will stay in the desired position. The free end of the gate is made rounding to fit the curved shape of the spout 22, which projects from the bottom of the discharge; but the bottom or lower edge of it is preferably made straight, so as not to entirely close the discharge, even when it is closed down as far as it will go. A lip or flange 23 is formed upon its upper edge, by which it may be grasped for moving the gate in adjusting it and holding it while the nut 21 is being manipulated.

The discharge-opening is preferably made in a curve to correspond with the curvature of the cylinder and concave and can be made of any desired size, as the gate will regulate the amount of material to pass out from it. By making the discharge of the material smaller the contents of the mill will be retained longer, which will cause it to bank up within the mill, as it were, and be forced up the side of the concave where it is closest to the cylinder, and thereby be subjected to a further action by the cylinder and concave, and therefore be made smaller or finer than if the gate were more open and the material could escape the more quickly. This, in connection with the movement of the concave in relation to the cylinder, enables the mill to have a wide range of grinding, and consequently can be used for a great many purposes, and as the mill is so small and light and is particularly adapted for hand-power it renders the mill a very valuable device.

In the manner of constructing the different parts they are so simple and so well adapted for use with each other that they are easily made and not liable to become disarranged or broken after having been put together. Aside from the wheel for operating the mill and the bolts and nuts for holding it together there are only six pieces all told. Five of them—the two frames, the hopper, the cylinder, and the concave—can be cast and and put together with but very little, if any, hand or machine work, and the sixth piece or the gate can be stamped up out of a thin piece of sheet metal, thus making a very cheap machine to manufacture. However, I do not wish to limit myself to the exact form or construction of the parts as herein shown and described, as slight changes may be made without departing from the spirit of my invention, and I therefore reserve to myself the right to make such changes and alterations in the construction and arrangement of parts of the same as will come within the scope of my invention.

I claim—

1. In a grinding-mill, the combination of a frame, a grinding-cylinder journaled therein, a hopper above the cylinder, and a segmental concave secured between the sides of the frame and movable laterally relatively to the cylinder, said segment being greater than a semicircle and having its sides extended up to the bottom of the hopper, substantially as described.

2. In a grinding-mill, the combination of a frame, a grinding-cylinder journaled therein, a concave movable laterally relatively thereto, and an adjusting-gate for regulating the size of the discharge-opening, whereby the material may be retained within the mill and caused to

be carried up between the side of the cylinder and of the concave or be permitted to escape after only having passed down between the cylinder and concave to the outlet, substantially as set forth.

3. In a grinding-mill, the combination of a frame, one side of which is provided with a discharge-opening and a spout, a grinding-cylinder journaled in the frame, a concave clamped between the sides of the frame, bolts through the frame for holding it together, and a gate pivotally secured at one end to one of the clamping-bolts through the frame and having its free end adapted to regulate the size of the discharge-opening, substantially as set forth.

4. In a grinding-mill, the combination of a frame, the sides of which are each provided with inwardly-projecting perforated lugs, the inner ends of each pair of which are adapted to bear against each other, bolts through each pair of lugs, a grinding-cylinder journaled in the upper portion of the frame, a concave and a hopper clamped between said sides, and a gate for regulating the size of the discharge-opening, substantially as set forth.

5. In a grinding-mill, the combination, with a frame, the sides of which are each provided with a bearing and an offset and an inwardly-projecting lug above the bearing and a curved ledge below the bearing and with three inwardly-projecting perforated lugs, of a grinding-cylinder journaled in the bearings, a hopper secured in the offsets and a segmental concave upon the ledges partially surrounding the grinding-cylinder, the exterior surface of said concave being of a less diameter than the curvature of the ledges and laterally adjustable upon said ledges, bolts through the perforations of the lugs, and one of the sides being further provided with a discharge-opening between the bearing and the ledge and with a spout projecting outwardly from the bottom of said opening, substantially as set forth.

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

ISAAC E. OVERPECK.

Witnesses:
I. J. WEHR,
ARTHUR ZLYNES.