(No Model.) 2 Sheets—Sheet 1.

E. G. GOOD.

Grinding Mill.

No. 231,222. Patented Aug. 17, 1880.

Fig. 1.

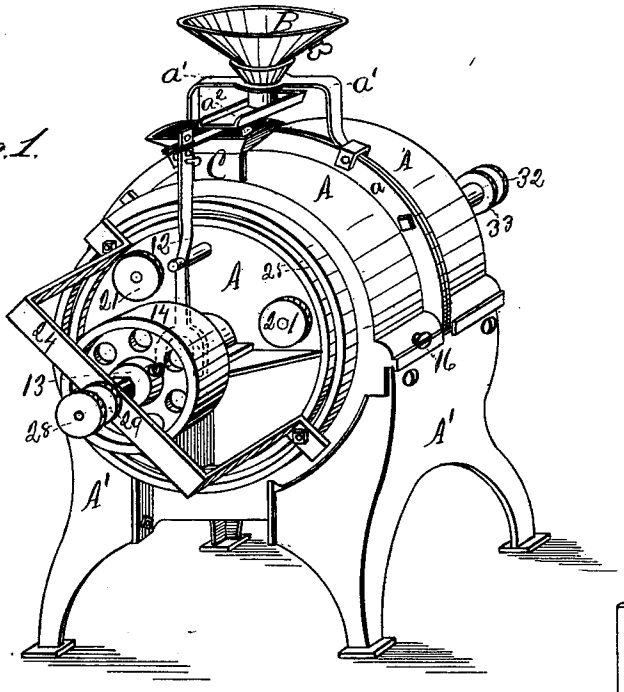
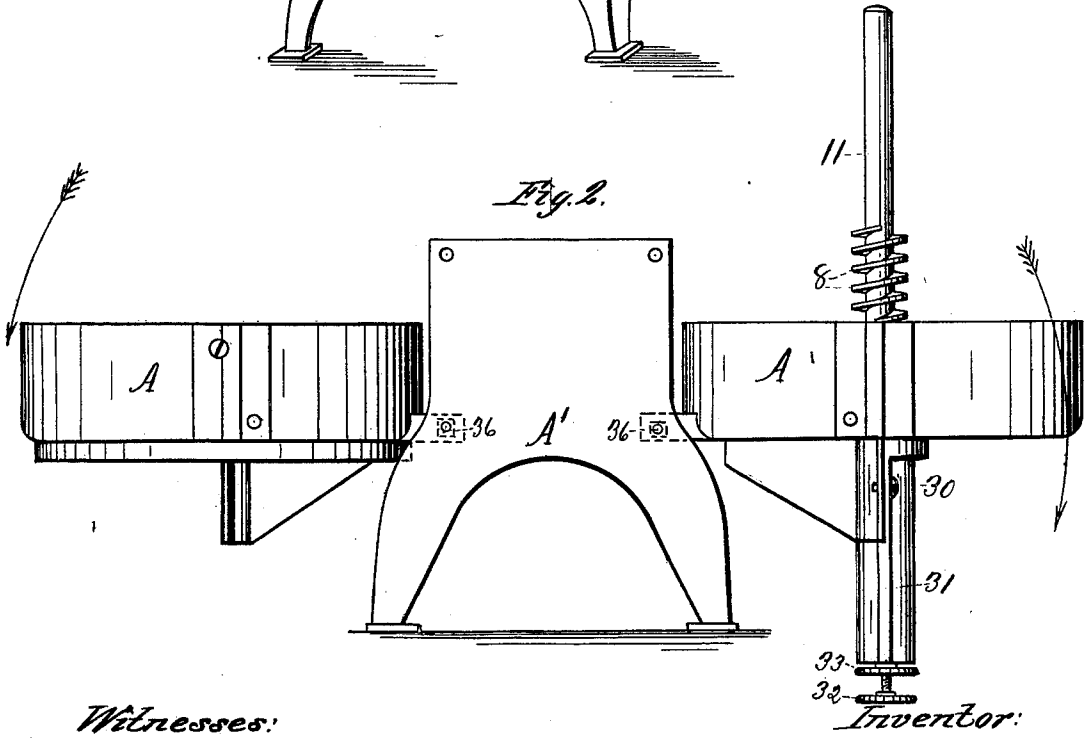


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

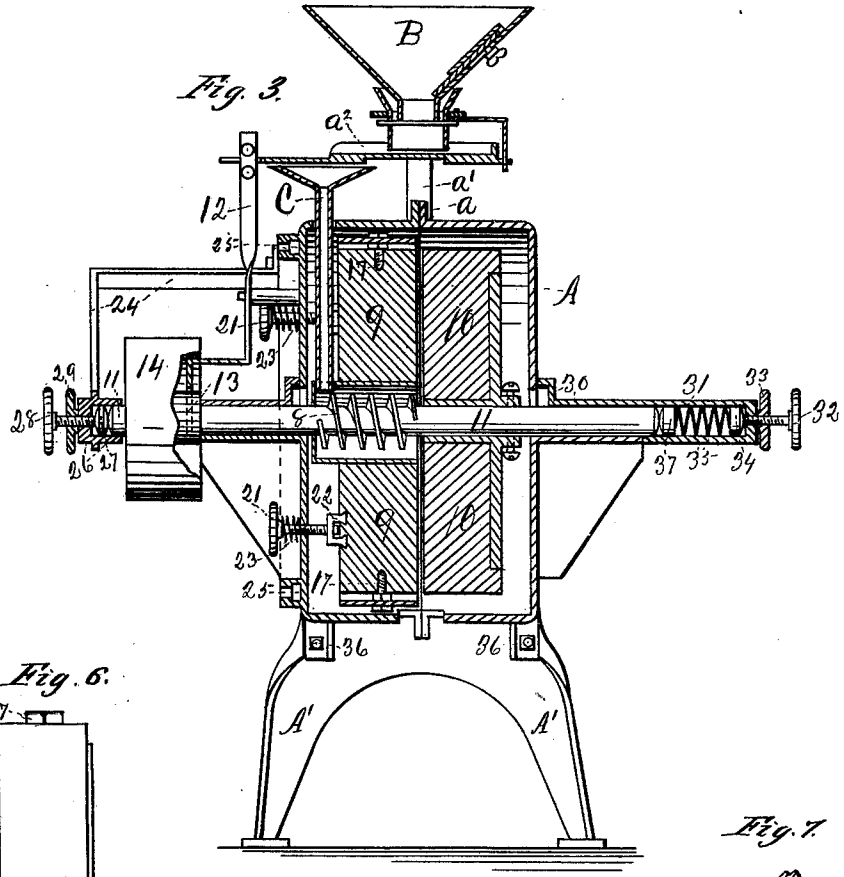


Fig. 6.

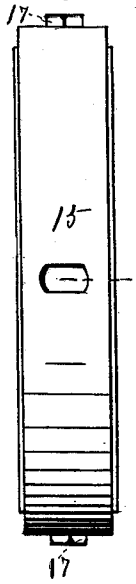


Fig. 7.

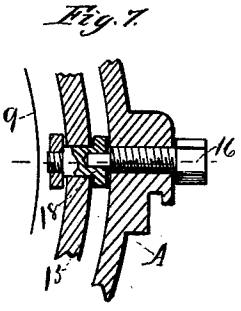


Fig. 4.

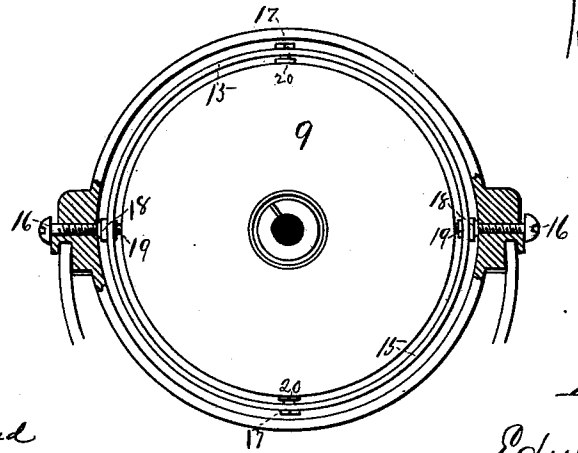
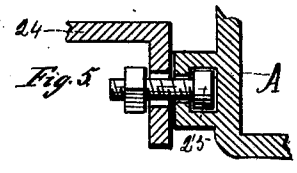


Fig. 5.



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UNITED STATES PATENT OFFICE.

EDWARD G. GOOD, OF CHICAGO, ILLINOIS, ASSIGNOR TO CHARLES C. HOLTON, OF SAME PLACE.

GRINDING-MILL.

SPECIFICATION forming part of Letters Patent No. 231,222, dated August 17, 1880.

Application filed March 22, 1880. (No model.)

To all whom it may concern:

Be it known that I, EDWARD G. GOOD, of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in a Portable Grinding-Mill; and I hereby declare the following to be a full, clear, and exact description of the invention, that will enable others skilled in the art to which it appertains to construct and make use of the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, forming a part of this specification.

The object of this invention is the construction of a grinding-mill adapted for general purposes, and the arrangement of the different parts in such a manner as to readily permit of a convenient and accurate adjustment of the burr-stones relative to each other, which are made to revolve in a vertical plane; and it consists of certain novel features, as will be hereinafter more fully explained in detail, and set forth in the claims.

Figure 1 is an elevation in perspective. Fig. 2 represents the mill opened out, the grinding-surfaces of the burr-stones facing upward. Fig. 3 is a vertical section. Fig. 4 is a face view of the stationary or non-revolving stone; and Figs. 5, 6, and 7, enlarged details.

On referring to the drawings, A represents the outer case inclosing the grinding-stones, and A′ the legs supporting the outer casing. This case is divided into two parts or halves through the center on a vertical line, the inner edges being turned at right angles, and when joined together form the flange *a*, as shown in Fig. 1 of the drawings.

B represents the hopper, which is supported in proper position by means of the bracket *a′*, the lower ends of which are attached to the central flange, *a*.

The horizontal vibrating spout a^2 conveys the grain from the hopper to the vertical spout C, which conducts the grain to the spiral conveyer 8, and which, in turn, discharges the grain onto the grinding-surfaces of the stones 9 and 10. The spiral conveyer 8 is coiled around the operating-shaft 11, and is attached rigidly thereto.

The upper end of the shaker-arm 12 has proper connection with the horizontal spout a^2, and the lower part of this shaker-arm having bifurcated ends, which are made to embrace the inner hub-projection, 13, of the pulley 14. This hub, having an eccentric action, communicates a vibratory motion to the arm 12 and the horizontal spout a^2, thereby gradually and regularly feeding the grain to the mill.

The running-stone 10 is attached rigidly to the shaft 11, and the stationary or bed stone 9 is suspended in the circular frame or ring 15, said ring being supported in proper position between the case A and the stationary stone 9 by means of the bolts 16, and the stationary stone being, in turn, suspended on the inside of the ring 15 by means of the bolts 17, as shown in Fig. 4 of the drawings, this arrangement forming a universal joint, by means of which the stationary stone has an automatic adjustment relative to the running-stone, thereby keeping the grinding-surface of the stones the same distance apart all the way around.

The bolts 16 form the pivotal centers for the ring 15, and are inserted from the exterior of the case A, the points of these bolts having a bearing against the bushings 18. These bushings, having a square shoulder, are made to fit into an oblong aperture in the ring 15, as shown in Fig. 6 of the drawings, thereby adapting these parts to a vertical adjustment when the stone is placed in a horizontal position. The inner ends of these bushes, which project through the ring 15, are threaded for the reception of the lock-nuts 19, which securely holds these parts to the required adjustment.

The bolts 17 are inserted from the outside of the ring 15 and have a pivotal bearing in the stationary stone, and are supplied with lock-nuts 20, placed between the ring and the stone, as shown in Fig. 4 of the drawings.

The hand set-screws 21, of which there are three, are inserted in that end of the case A holding the stationary stone, and pass through the clamp or clamps 22, which are dovetailed into the stone in the manner shown in Fig. 3 of the drawings. The inner ends of these set-screws have a bearing on the outer surface of the stationary stone, and are for the purpose of holding the stone back to its bearings in the universal joint, thereby effectually pre-

venting the stones from running together and destroying or marring the grinding-surfaces should the mill become empty. The spiral springs 23 are coiled about the set-screws 21, for the purpose of imparting a slight elasticity to these parts, and yield a trifle to the wabble of the stone in its universal bearings when adjusting itself to a uniform distance from the running-stone.

The bracket 24 has two projecting arms, which are bolted to the case A in the manner shown in Fig. 1 of the drawings. The bolts holding this bracket to the end of the case A move in the annular groove 25, for the purpose of allowing the bracket to be adjusted to different positions relative to the pulley 14, so as not to interfere with and admit of the driving-belt leading off at any desired angle therefrom. This bracket has formed integral therewith the socket-bearing 26, which is made to engage with one end of the shaft 11, this socket having a hexagon-shaped recess for the reception of the hexagon-shaped bearing-button 27, which remains stationary while the shaft is revolving. This bearing-button is placed between the end of the shaft and the point of the set-screw 28, and presents a large bearing-surface for the end of the shaft, and prevents these parts from becoming heated, as they usually do when the set-screw has a direct bearing in the end of the shaft. By means of this hand set-screw the revolving or running stone may be brought nearer to or removed farther away from the stationary stone, as may be required. The inside hand-wheel, 29, acts as a lock-nut to these parts.

Constructed integral with the bearing-cap 30 is the socket-extension 31, the inner end of which fits onto the end of the running shaft 11, as shown in Fig. 3 of the drawings. In the outer end of this socket-extension is inserted the hand set-screw 32, and provided with lock-nut 33. The inner end of the set-screw 32 bears on the loose disk 34. Next to this is the spiral spring 35, and then the hexagon-shaped bearing-button 37, which forms a bearing for this end of the running shaft, and all arranged as shown in Fig. 3 of the drawings.

The spiral spring 35 is for the purpose of allowing a lateral movement of the running-stone while in motion, in case any hard substance or foreign matter accidentally gets into the mill, which movement would allow any foreign matter to escape without causing any injury to the grinding-surfaces of the burr-stones.

Setting up the hand set-screw 32 in order to get the proper tension on the spring 35 does not in the least change the position of the running-stone, as that is entirely controlled and regulated by the set-screw on the opposite end of the shaft.

The pivotal bearings 36 admit of the two parts forming the case A being turned down to a horizontal position, leaving a burr-stone in each half of the case, as shown in Fig. 2 of the drawings.

When it is desired to gain access to the interior of the mill, the hopper, spouts, brackets, and pulley should be first removed, and, in fact, all the parts that will prevent that end of the shaft from passing through its bearing in the case A when the mill is opened out. Next take the bolts out of the center flange, and then the tap-bolts inserted at each corner, near the top of the legs, and which pass through the legs into the case. The mill can now be easily opened out by two persons, stationed at each end of the case, the shaft and running-stone remaining in one part of the case, and the stationary stone resting in the other part, the grinding-surfaces of the stones facing upward.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a grinding-mill, the combination, substantially hereinbefore described, of the set-screws 16, the bushings 18, the ring 15, having elongated apertures for the reception and adjustment of the bushings 18, and the lock-nuts 19, substantially as herein set forth.

2. In a grinding-mill, the combination, with the end of the case A, having the annular groove 25, of the bracket 24, having the socket-bearing 26 constructed integral therewith, adapting the same to engage with the pulley end of the shaft 11, substantially as set forth.

3. In a grinding-mill, the combination, with the ring 15, the tap-bolt 17, the bushings 18, and the set-screws 16, of the stationary stone 9, the clamp or clamps 22, hand-screws 21, and the spiral springs 23, arranged and operating in the manner and for the purpose described.

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