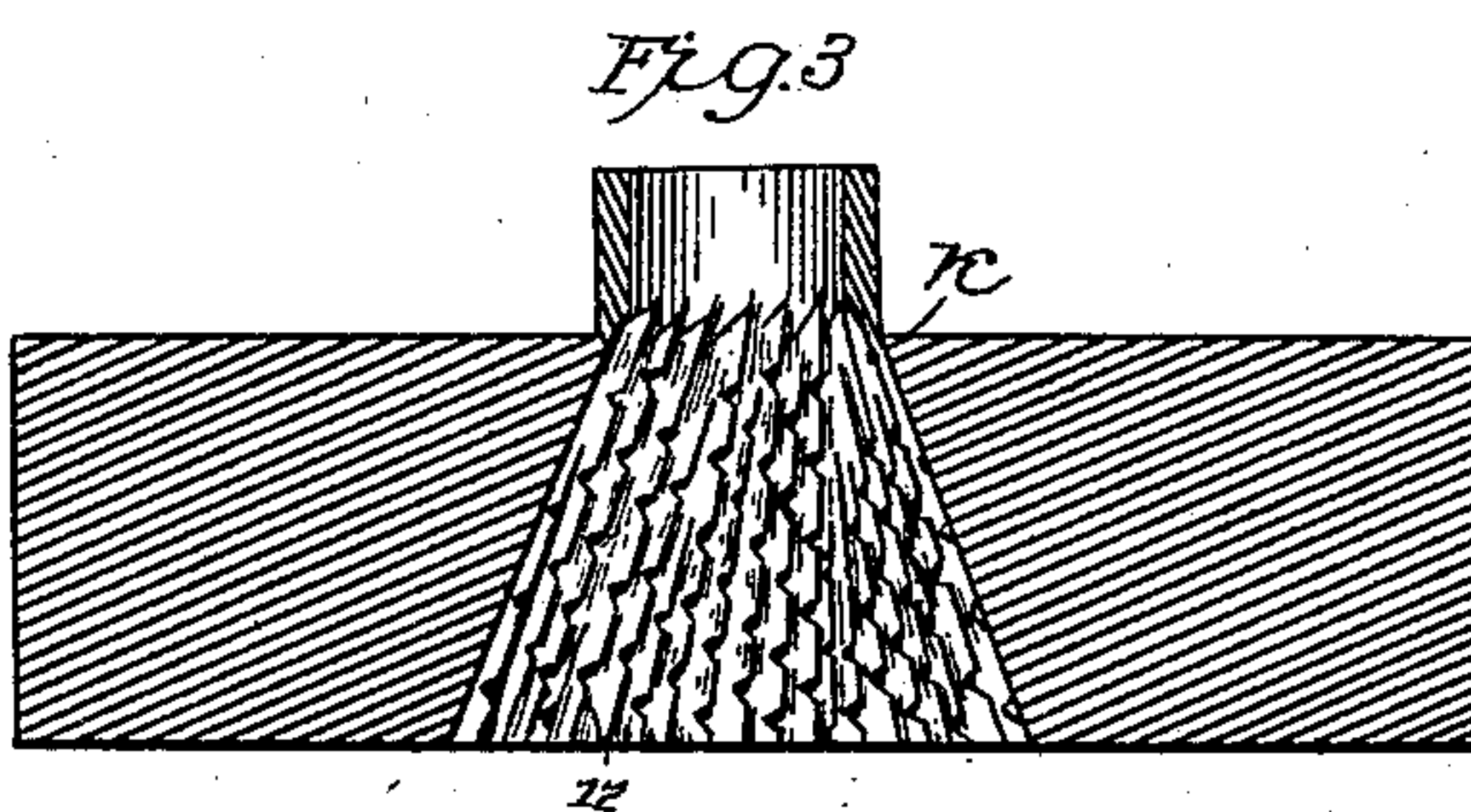
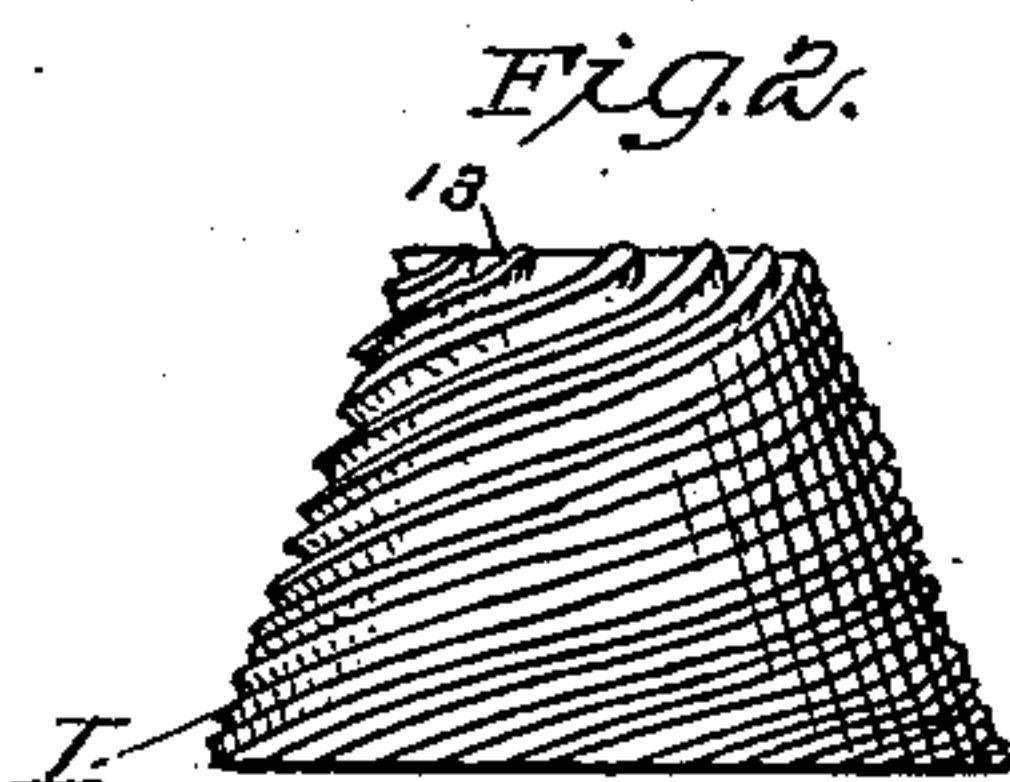
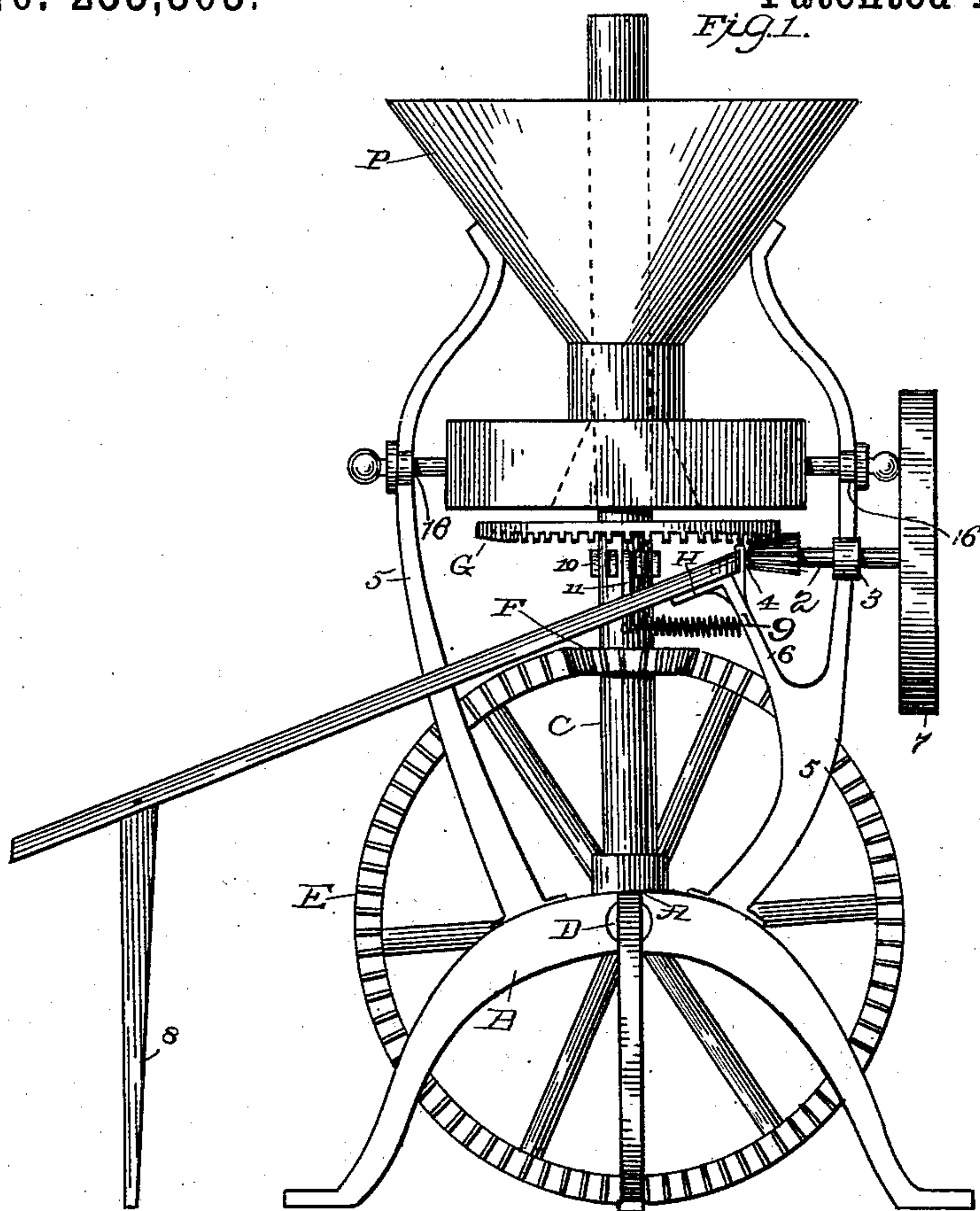


(No Model.)

J. MATZNER.  
GRINDING MILL.

No. 255,303.

Patented Mar. 21, 1882.



Witnesses:  
L. W. Suby  
Walter Donaldson

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Johann Matzner,  
by Eli Spear  
Attorney



# UNITED STATES PATENT OFFICE.

JOHANN MATZNER, OF MOUNT PLEASANT, DISTRICT OF COLUMBIA.

## GRINDING-MILL.

SPECIFICATION forming part of Letters Patent No. 255,303, dated March 21, 1882.

Application filed December 22, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, JOHANN MATZNER, of Mount Pleasant, in the District of Columbia, have invented a new and useful Improvement in Grinding-Mills; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates to an improvement in mills intended more especially for grinding wheat, but adapted to be used for reducing to a pulverized form many other substances; and it consists principally in the peculiar construction of the grinding-cone and shell for a more complete pulverization of the grain than heretofore, as fully hereinafter described.

In the drawings, Figure 1 is a side elevation of the entire device. Fig. 2 is a separate view of the revolving grinding-cone, and Fig. 3 a view of the stationary shell.

A represents a standard or frame, mounted on any desired number of legs, B, of which three are here shown. This standard forms a bearing for a vertical shaft, C, and also for a counter-shaft, D, passing transversely, and having at one end a crown-wheel, E, which engages with a bevel-gear wheel, F, on the vertical shaft C, and gives such shaft a continuous rotation.

Keyed on the shaft C is a crown-wheel, G, which gears with a pinion on a shaft, 2, running in bearings 3 4 in arms 5 6 of the main frame. The shaft 2 has mounted upon its outer end a fly-wheel, 7, which regulates and steadies the motion. The arm 5 forms a supporting-guide, on which slides one end of a shaking screen, H, the other end of which is pivoted to a support, 8. A spring, 9, connects the screen to the arm 5.

On the vertical shaft C are arranged teeth 10, which, as the shaft revolves, strike against a pin, 11, on the screen, and impel the screen in one direction, the spring immediately returning it. A constant reciprocating or shaking movement is thus given the screen by the rotation of the shaft.

The cone and shell I and K are shown separately in Figs. 2 and 3. The cone I is mounted on the shaft C, so as to turn with it. It is provided with circumferential spiral grooves of peculiar construction. Each of these grooves

runs completely around the circumference of the cone. Both the size and pitch of the spiral vary, the grooves becoming finer as they approach the bottom or base of the cone. Around the top of the cone is a row of notches, 13, one for each spiral groove. As shown in Fig. 2, the pitch of the spiral decreases as it approaches the bottom, and consequently the feeding of the grain is not so rapid and the pulverization more complete.

The rotating cone I runs in connection with a stationary shell, K. (Illustrated separately in Fig. 3.) It is internally a little greater in diameter than the cone I, and is held stationary by being bolted to the arms 5 5. It is, however, adjustable vertically in slots 16 in such arms, and may be held at any point in the slot by a jam-nut.

The inside of the shell K is formed into grinding and cutting ribs 17, of slightly spiral pitch, as shown. In each of these ribs are formed notches, the notches of any two following ribs being placed alternately, as shown. The ribs between the notches are formed into sharp cutting-edges, so that the particles, after being caught and held by one of the notches, are torn by the opposite cutting-edge on the next rib, at the same time being carried down toward the discharge-opening. This combined cutting, grinding, and tearing motion is very effective, and the peculiar arrangement, construction, and relative action of the grooves and ribs of my movable and stationary grinding-surfaces are the main features of my invention. The construction of the grooves in the cone, whereby such grooves are carried completely around the circumference of the cone at a varying pitch, accomplishes the grinding of the grain throughout the entire revolution of the cone, each particle being carried completely around the cone and down at a decreasing rate of speed as it grows finer until discharged.

P is a hopper, of common or ordinary construction, supported by the arms 5 5, or in any other suitable manner.

The pulverized material, leaving the grinding-surfaces, falls upon the shaking screen, the ground material passing through into any suitable receptacle, the refuse and worthless

matter being carried over the end of the screen and discharged.

Power may be applied to the counter-shaft D in any suitable manner; but I prefer to connect by belt to a horse-power, though when other power is accessible it could be used.

It will be understood that the vertical adjustment of the stationary shell in the arms is necessary in grinding material of different grades of coarseness.

Having thus described my invention, what I claim is—

1. The shell K, having the spiral ribs, each rib being provided with a series of notches, the notches in any two adjacent ribs being arranged alternately.

2. The cone I, having the spiral grooves, each of such grooves extending entirely around its circumference and decreasing both in diameter and pitch toward the base.

3. The combination of the stationary shell K, having the spiral ribs and notches, as described, with the spirally-grooved cone I, mounted on the shaft C, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHANN MATZNER.

Witnesses:

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