

(No Model.)

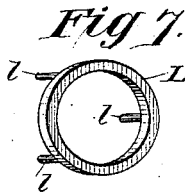
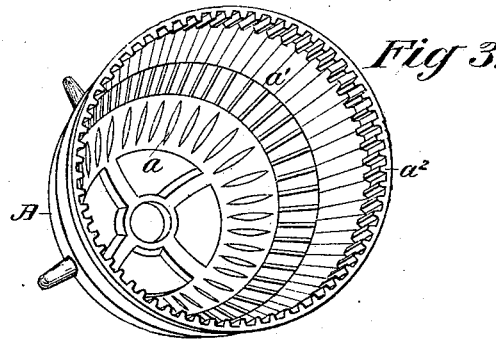
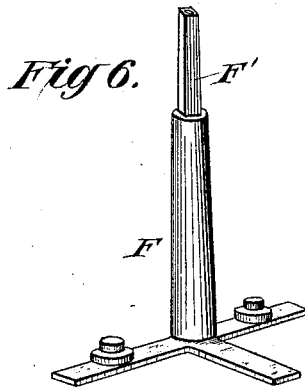
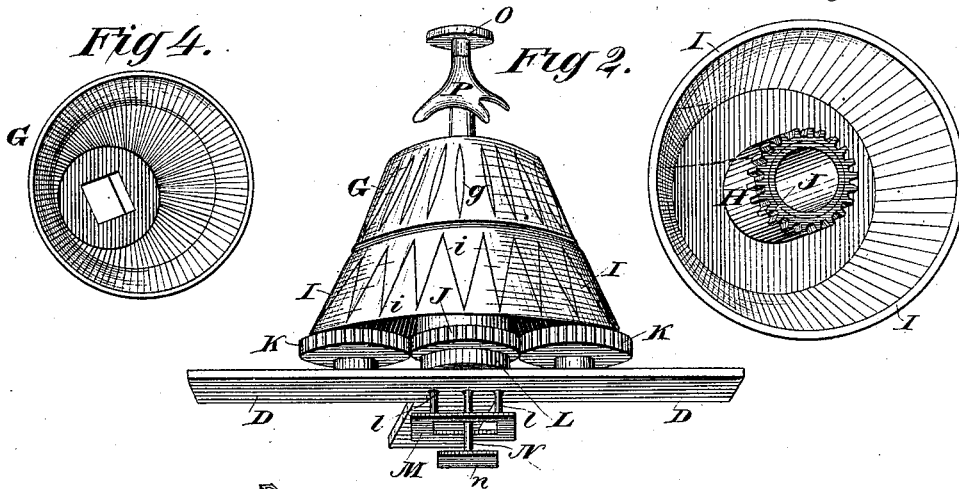
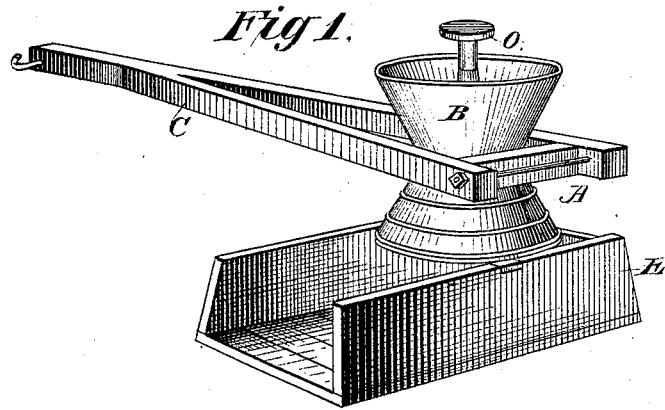
2 Sheets—Sheet 1

E. H. & C. MORGAN.

FEED GRINDING MILL.

No. 247,678.

Patented Sept. 27, 1881.



Attest:
Geo. P. Smallwood Jr.
L. M. Hopkins

Inventors:
Edgar H. Morgan
and Charles Morgan.
 BY *Knights Bros.*
atly.

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2 Sheets—Sheet 2.

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Fig 8.

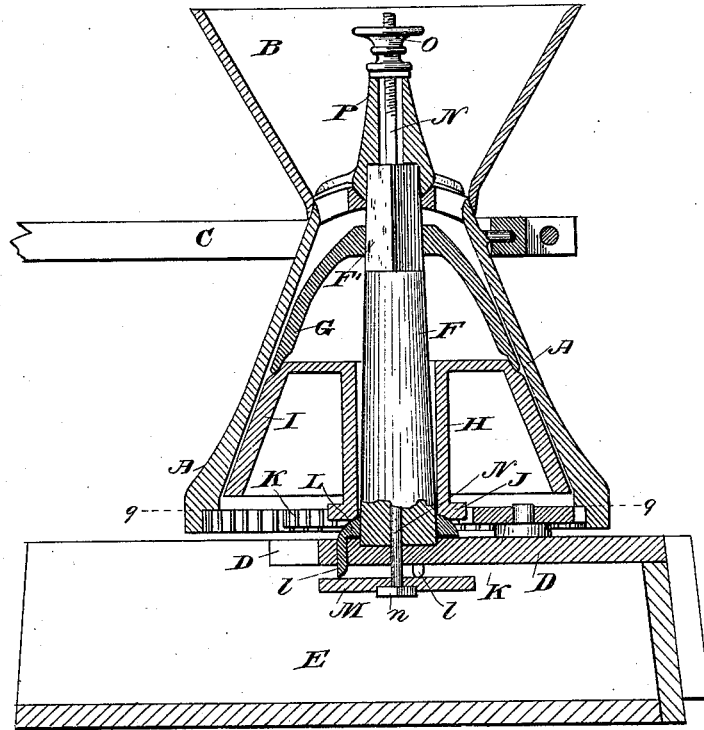
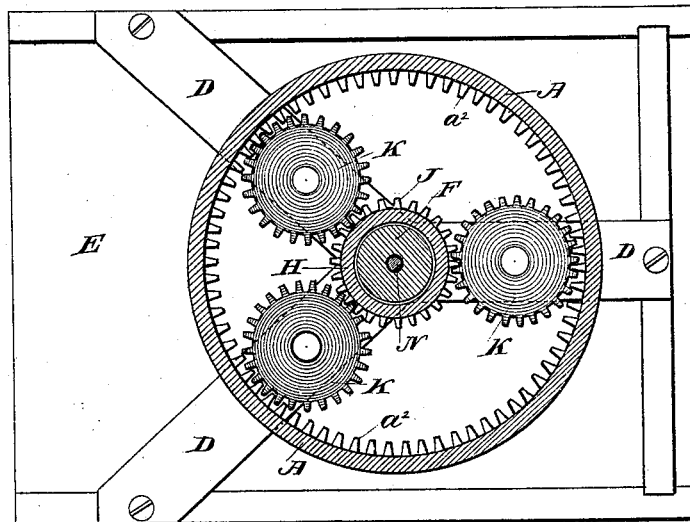


Fig 9.



Attest:
 Geo. T. Smallwood Jr.
 L. M. Hopkins

Inventors:
 Edgar H. Morgan.
 Charles Morgan.
 BY *Knights Bros.* attys.

UNITED STATES PATENT OFFICE.

EDGAR H. MORGAN AND CHARLES MORGAN, OF FREEPORT, ILLINOIS.

FEED-GRINDING MILL.

SPECIFICATION forming part of Letters Patent No. 247,678, dated September 27, 1881.

Application filed April 14, 1881. (No model.)

To all whom it may concern:

Be it known that we, EDGAR HAZEN MORGAN and CHARLES MORGAN, citizens of the United States, both residing at Freeport, in the county of Stephenson and State of Illinois, have invented Improvements in Feed-Grinding Mills, of which the following is a specification.

Our invention relates to the class of feed-grinding mills in which the shell is rotated by an arm or sweep and works on a conical core or grinding-burr.

Our improvements particularly consist in dividing the cone-shaped burr into two parts, the upper and narrower portion being fixed on a stationary central core, around which the lower and wider portion is made to rotate by a cog wheel or rim formed on a sleeve or hollow shaft, which may be cast in one piece with the said lower burr, the rotation of the shell imparting a reversed rotation to the said lower burr through the medium of cog-wheels gearing with an internal rim on the lower margin of the shell, and with the aforesaid cogged rim which is formed on the hollow central shaft of the lower burr.

Our improvements further consist in devices for adjusting the lower burr up or down within the shell, so as to graduate the fineness of the grinding, said devices consisting of a central bolt supported at its upper end by an adjusting-nut resting on a bearing within the hopper of the mill, and having on its lower end a square head which supports a washer, on which rest the legs of a second washer forming the bearing of the running-burr, as hereinafter described.

In the accompanying drawings, Figure 1 is a perspective view of the complete mill. Fig. 2 is a perspective view, on a larger scale, of the burrs and driving-gear and supporting-beam without the shell. Fig. 3 is a perspective view of the shell in inverted position. Fig. 4 is a perspective view of the under side of the upper or stationary burr. Fig. 5 is a perspective view of the under side of the lower or running burr. Fig. 6 is a perspective view of the central cone and supporting-beam. Fig. 7 is a perspective view of the annular bearing of the lower or running burr. Fig. 8 is a vertical section of the entire mill. Fig. 9 is a horizontal section on the line 9 9, Fig. 8.

A represents the hollow conical shell of the mill, formed on its inner surface with the customary breaking and grinding teeth, a a' , also with a cogged rim, a^2 , within its lower margin.

B is the customary hopper, attached to the grinding-shell A; C, the sweep or arm for the attachment of the team or animal to rotate the said shell and hopper.

D is a cruciform bearing-beam, mounted on the bed or base E, within which the ground material falls.

F F' represent the central core, the upper part, F', of which is made square for the reception of the stationary upper burr, G, while the lower part, F, is round and receives the central hollow shaft or sleeve, H, which is cast in one piece with or firmly secured to the running-burr I.

On the lower margin of the sleeve or hollow shaft H is a cog wheel or rim, J, for rotating the said shaft and bearing I through the medium of transmitting cog-wheels K, which are rotated by the internal cogged rim, a^2 , of the grinding-shell A. The lower face of the hollow shaft H rests on an annular washer or bearing, L, supported by legs l , which pass through apertures prepared for them in the bearing-beam D, and rest on a plate, M, formed on its under surface with a square recess to receive the square head n of a vertical bolt, N, which is threaded at its upper end to receive an adjusting-nut, O, resting upon a bearing, P, supported from the top of the core F F', and formed with three or more arms, so as to steady it in central position within the hopper B.

From the above description it will appear that the turning of the nut O forward or back will raise or lower the burr I within the shell A, so as to accurately graduate the fineness of the grinding or to take up the wear of the bearings and grinding-surfaces.

The stationary burr G is formed on its periphery with suitable ribs or teeth, g , for breaking the ears, in connection with the teeth a of the shell A, and the running-burr I with suitable grinding-teeth, i , working in connection with the teeth a' of the shell A.

Our mill possesses a great advantage over other feed-mills, in that by running the lower part of the grinding-burr in the opposite direction to the shell, while the upper part remains stationary, we produce a comparatively

slow motion in the upper part of the mill, where the breaking of the ears is performed, and a more rapid relative movement in the lower part, where the final grinding is performed. We are thus enabled to do more and better work in less time and with less power, and effectually prevent the choking of the mill, which is liable to occur in mills where a too rapid motion of the breaking portion forwards the broken material to the grinding-surfaces below more rapidly than the latter can comminute and discharge it.

Having thus described our invention, the following is what we claim as new and desire to secure by Letters Patent:

1. In a mill constructed as described, the combination, with a cone divided into an up-

per stationary and a lower revolving portion, of a shell and means for producing a more rapid action relative to the shell in the lower than in the upper portion, as set forth.

2. In a grinding-mill, the rotating shell A, fixed cone or burr G, and rotating burr I, constructed and combined substantially as and for the purposes set forth.

3. The combination, with shell A and burr I, of the adjusting-bolt N n, supporting-plate M, bearing L, with its legs l, and the hollow supporting-shaft H of said burr I.

EDGAR HAZEN MORGAN.
CHARLES MORGAN.

Witnesses:

ELIAS BAMBERGER,
HENRY W. VIETMEYER.