(No Model.)

E. H. & C. MORGAN.

FEED GRINDING MILL.

No. 270,826. Patented Jan. 16, 1883.

Fig 1.

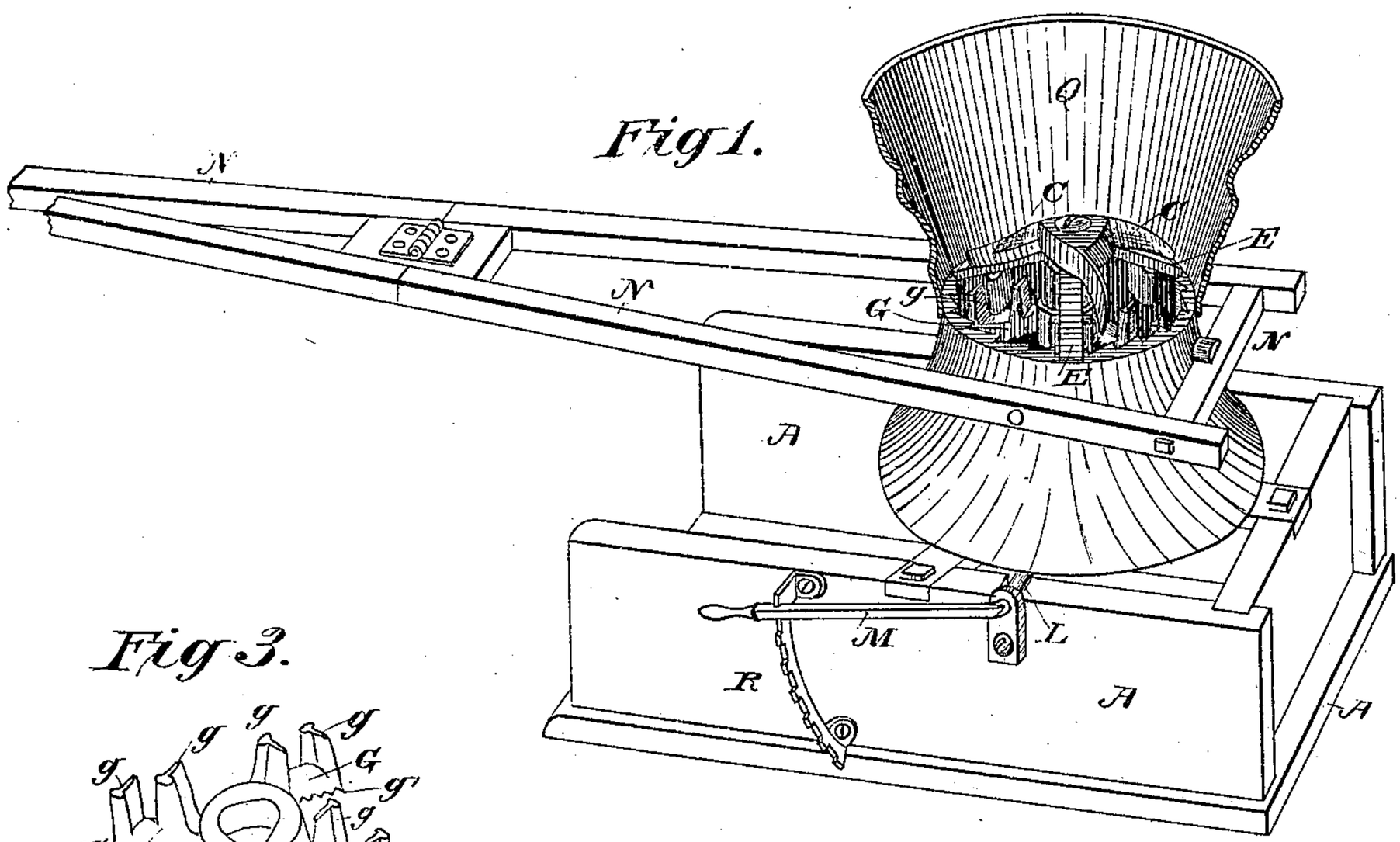


Fig 3.

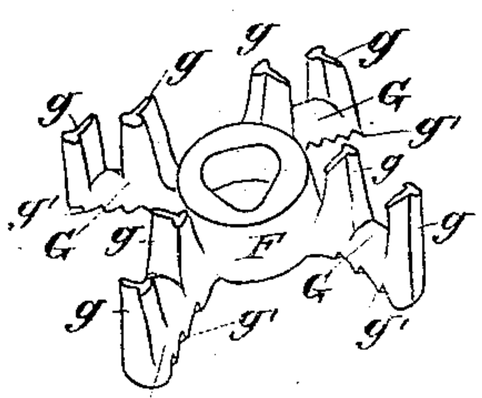
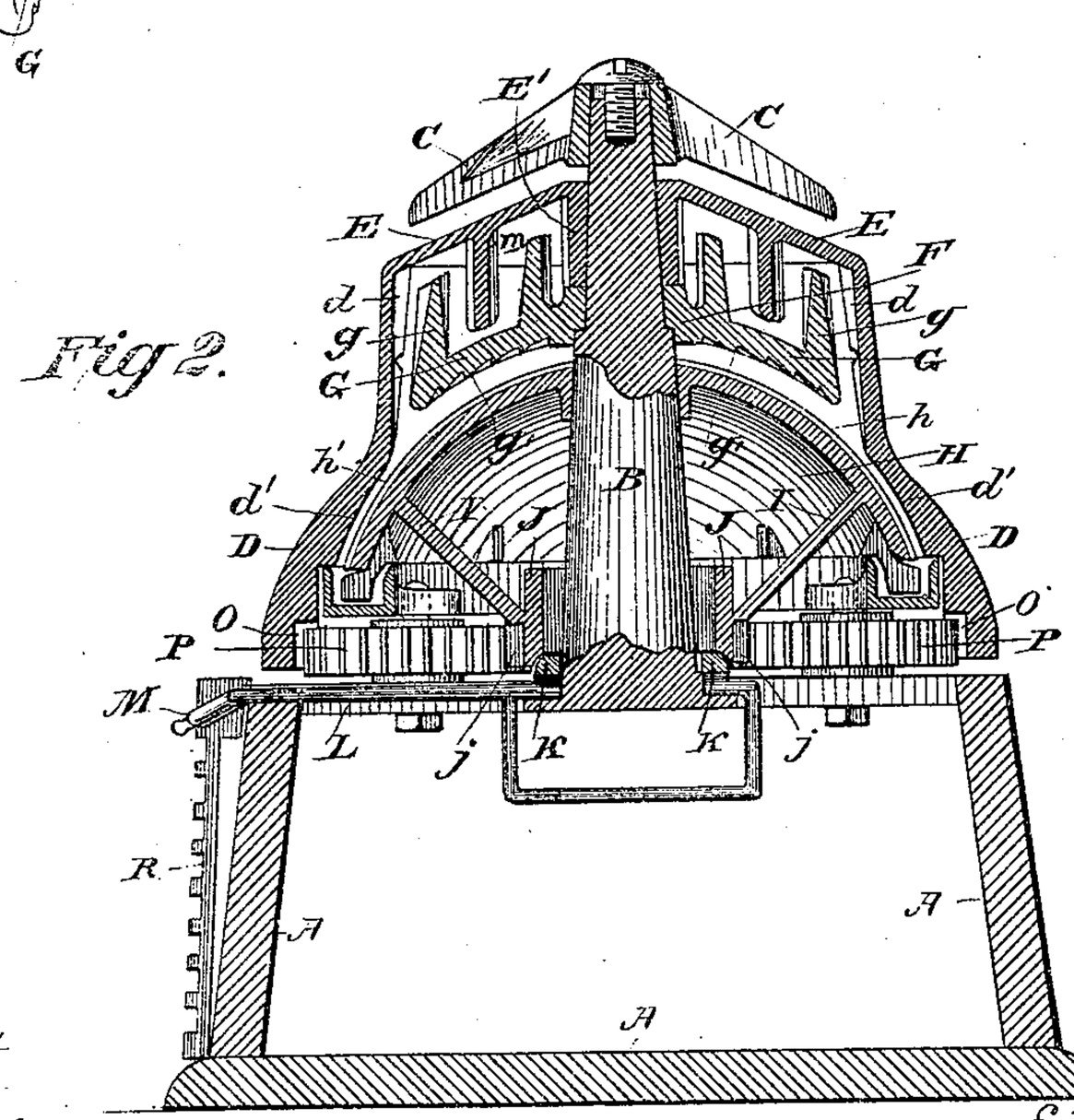


Fig 2.



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UNITED STATES PATENT OFFICE.

EDGAR H. MORGAN AND CHARLES MORGAN, OF FREEPORT, ILLINOIS, ASSIGNORS TO MICHAEL LAWVER, ANTOINETTE MORGAN, AND ALICE MORGAN, ALL OF SAME PLACE.

FEED-GRINDING MILL.

SPECIFICATION forming part of Letters Patent No. 270,826, dated January 16, 1883.

Application filed February 1, 1882. (No model.)

To all whom it may concern:

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

Our improved mill has the customary grinding-shell carrying the hopper and revolved by a sweep, to which the team is attached. To the lower part of the shell is fixed a cogged rim gearing through intermediate pinions with a cogged rim on the bottom of the grinding burr or cone, which is thus rotated within the grinding-shell in a direction opposite to the rotation of the latter.

This invention relates to that class of feed or corn grinding mills in which an outer shell provided with grinding-teeth surrounds an inner toothed cone for grinding the material fed between said cone and shell by their rotation in opposite directions, the reduced material being delivered into an annular trough located at the base of the grinding-surfaces and fed to a discharge-opening by the action of scraper-blades carried by the cone.

The object of the invention is to produce a mill of the class mentioned, in which better provision is made than heretofore for effecting a thorough and expeditious grinding of the material without increasing the diameter of the mill, better means being also provided for crushing the material prior to its passage between the grinding-surfaces, a simplified and superior construction and arrangement of parts being also characteristics which distinguish it from mills of an analogous construction.

The invention consists in an outer revolving shell having grinding-teeth operating in connection with teeth of an oppositely-revolving inner cone, which is capable of being adjusted to and from stationary grinding-arms radiating from a central hub, and having concave corrugated bottom surfaces and top surfaces provided with vertical teeth. An upper series of vertical corrugations of the outer shell operate conjointly with the outer teeth of the stationary arms to effect the first grinding of the material before its passage between the shell and cone, and a series of pendent teeth on arms carried by the outer shell operate between the teeth of the stationary arms, and serve to crush the corn or other material and feed it between the grinding-surfaces to prevent the clogging of the mill. A rock-shaft arranged below a bearing-washer of the inner revolving cone has eccentric terminations, which serve to raise and lower said cone when the rock-shaft is turned. The advantage of this adjusting device is that it is exterior to the hopper and mill, so as to leave the hopper free for the feeding of the grain without obstruction, and permit the operator to adjust the mill while in operation with great ease and facility, and with the hopper full of grain.

In order that the invention may be fully understood, we will proceed to describe it in detail with reference to the accompanying drawings, in which—

Figure 1 is a perspective view of the mill. Fig. 2 is a vertical section of the same. Fig. 3 is a perspective view of the toothed hub detached.

A A represent various parts of the foundation and stationary frame of the mill; B, the center-post, to the upper part of which may be fixed customary breaking-arms C.

D is a revolving shell flaring downward, provided with teeth *d d'* on its inner surface, and having arms E, which may be cast in one piece with the said casing and with its hub E', by which it is journaled on the center-post B.

To the center-post B, beneath the arms E of the rotary casing, is fixed a stationary hub, F, having arms G, provided with upwardly-projecting teeth *g*, interposed between similar teeth, *m*, projecting downward from the under surfaces of the shell-arms E, and on the under surfaces of the fixed arms G are smaller teeth *g'*, corresponding with the teeth *h* on the upper part of the conical burr H, which latter is mounted by its arms I I and hub J to turn upon the center-post, and rests, through the

medium of an annular washer, K, on an eccentric horizontal shaft, L, having suitable bearings in the foundation of the mill, and extending to the exterior thereof, where it receives a suitable wrench or lever, M, for turning the shaft in order to raise or lower the burr, so as to bring the fine grinding-teeth *h'* on the lower margin of the burr to any required proximity with the teeth *d'* of the shell, and thus regulate the fineness of the grinding. The adjusting-lever M is fixed in any position in which it is set by means of a rack, R. The rock-shaft is journaled in seats below the annular washer which supports the grinding-cone, and these journaled portions of the shaft have eccentrics or wedge-shaped projections located directly under the bearing-washer. By turning the rock-shaft more or less these eccentric terminations are caused to exert a lifting-pressure upon the bearing-washer, and thus the grinding-cone is elevated or adjusted, as heretofore stated.

The shell D is rotated in customary manner by a sweep, N, for the attachment of the team, and drives the conical burr H by means of internal cogs or teeth, O, on its lower margin meshing with gears P, which run on stationary studs, and in turn gear with the cogs or teeth *j*, surrounding the hub J of the burr. The hopper is shown at Q carried on top of the shell.

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

1. The combination of the revolving vertically-adjustable grinding cone or burr H, the hub F, provided with radiating arms G, having concave corrugated bottom surfaces, *g'*, and upper vertical teeth, *g*, and the outer revolving shell, D, having bottom corrugations, *d'*, upper corrugations, *d*, and transverse arms E, provided with hub E', and pendent teeth *m*, with the mill-base, feed-hopper, and central standard, B, as and for the purpose set forth.

2. The combination of the rock-shaft L, having eccentric journals, and the bearing-washer K, resting thereon, with the grinding-cone, and a shaft-locking device, as and for the purpose set forth.

EDGAR H. MORGAN.
CHARLES MORGAN.

Witnesses:
HENRY KARCHER,
JACOB MAURER.