(No Model.) 2 Sheets—Sheet 1.

G. & A. RAYMOND.

GRINDING MILL.

No. 258,867. Patented May 30, 1882.

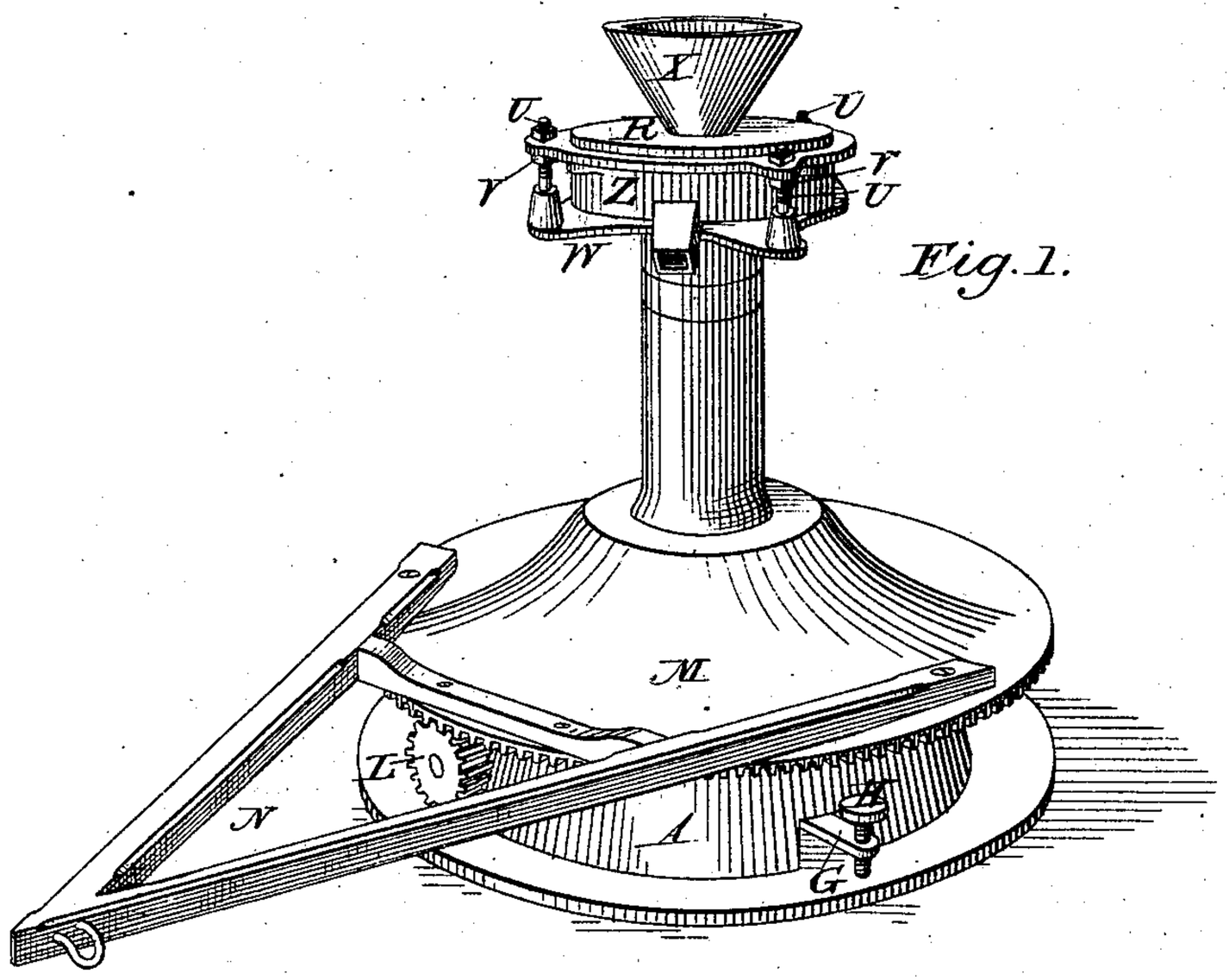

Fig. 1.

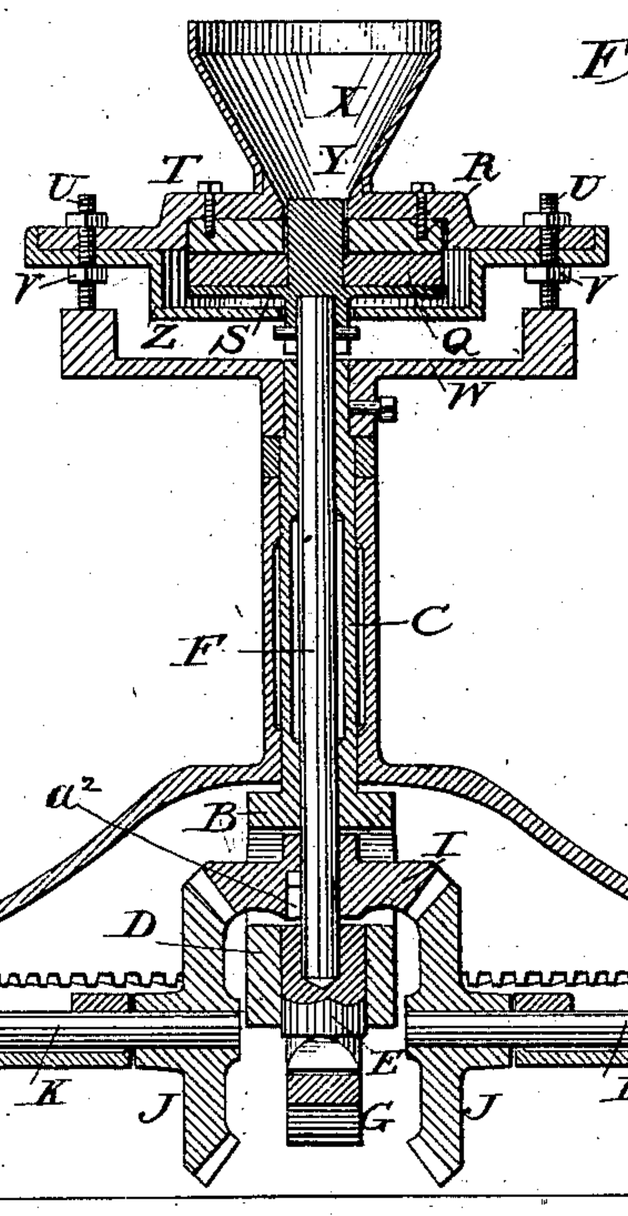

Fig. 2.

Attest.

Sidney P. Hollingsworth.

Newton Wyckoff.

Inventor.

George Raymond

Albert Raymond

By Philip & Dodge

Atty

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

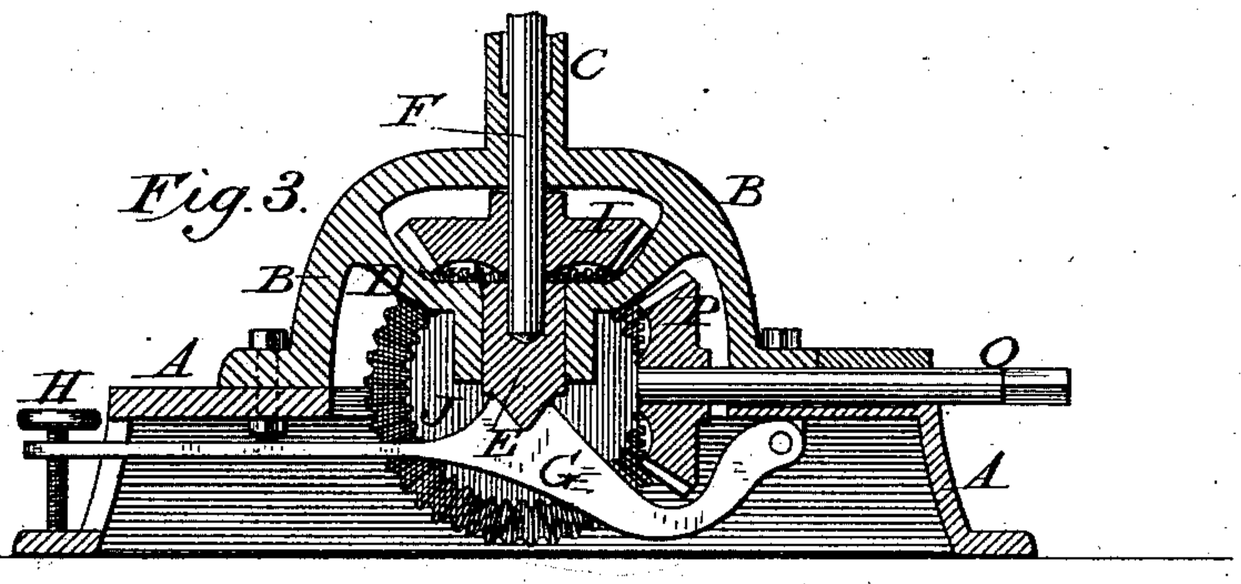
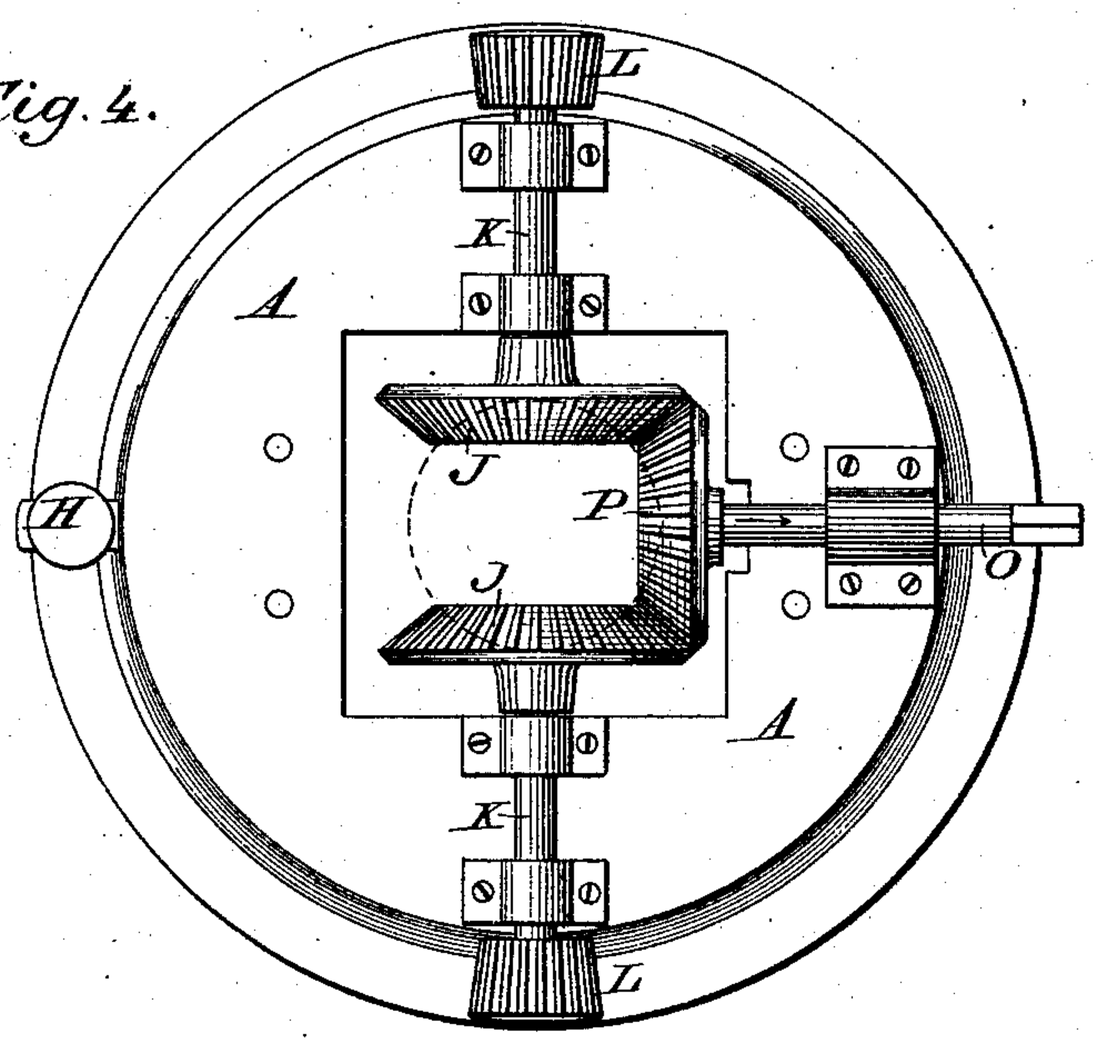


Fig. 4.



Attest.

Sidney P. Hollingsworth.

Newton Wyckoff

Inventors.

George Raymond

Albert Raymond

By D. T. Dodge

Atty.

UNITED STATES PATENT OFFICE.

GEORGE RAYMOND AND ALBERT RAYMOND, OF CHICAGO, ILLINOIS, ASSIGNORS OF ONE-HALF TO ORVILLE H. TOBEY, OF SAME PLACE.

GRINDING-MILL.

SPECIFICATION forming part of Letters Patent No. 258,867, dated May 30, 1882.

Application filed July 12, 1881. (No model.)

To all whom it may concern:

Be it known that we, GEORGE RAYMOND and ALBERT RAYMOND, of Chicago, in the county of Cook and State of Illinois, have invented certain Improvements in Grinding-Mills, of which the following is a specification.

This invention relates more particularly to the construction of portable horse-power mills wherein horizontal grinding-disks are employed, although certain features of the invention are adapted for use in mills differing in construction from that shown in the drawings.

Our invention relates to a mill in which a base-frame is provided with a tubular post from which the upper grinding-disk and hopper are sustained, and through which the spindle of the lower grinding-disk passes downward to a driving-gear located in the base and arranged to apply the power equally upon opposite sides of the spindle.

The invention consists in certain combinations and peculiarities of construction hereinafter described.

Referring to the accompanying drawings, Figure 1 is a perspective view of our improved mill; Fig. 2, a vertical central section through the same in line with the driving-shafts; Fig. 3, a vertical central section through the base of the mill at right angles to the plane of Fig. 2; Fig. 4, a top plan view of the base of the mill, illustrating its form and the manner in which the gearing is sutained thereon.

A represents the base portion of the mill, constructed preferably in a flat circular form and provided with a central opening to admit the driving-gear. This central opening is spanned by means of a bridge-tree or bar, B, which is either cast upon or bolted firmly to the base, and which sustains at the center an upright tubular post or standard, C, designed to sustain the driving-shaft and the interior grinding mechanism as well as the gear-plate through which motion is imparted to the machine. The bridge-tree B, which rises above the base, as shown, is provided on the under side with a cross-bar, D, as clearly represented in Figs. 2 and 3. Within the bearing D we seat a vertical adjustable step, E, to sustain the lower end of the mill-spindle F, which latter extends upward therefrom loosely through the center of the post or standard C. The step E is supported upon an adjusting-lever, G, one end of which is connected to the under side of the base-frame, while the opposite end is supported by a vertical adjusting-screw, H, as clearly represented in Fig. 3, so that by turning the screw the spindle and the lower grinding-disk attached thereto may be adjusted vertically.

Around the lower end of the spindle, between the bridge B and bar D, we mount a beveled pinion, I, connected loosely to the mill-spindle by means of a vertical spine or feather, a^2, this pinion serving to impart motion to the spindle, but at the same time permitting the latter to be adjusted vertically through it. Motion is imparted to the spindle-driving pinion I from two vertical pinions, J, engaging in opposite sides thereof and mounted upon the inner ends of two horizontal shafts, K. The shafts K are seated in bearings upon the base-frame A, and extend outward to opposite sides of the same, where they are each provided with a beveled pinion, L. Motion is communicated to the pinions L by means of a large rotary plate, M, mounted upon and around the central standard or post, C, and provided on its under side with peripheral gear-teeth which engage with the pinions L.

It will be observed that the plate M is provided with an upright central neck or sleeve, whereby it is given a long steady bearing upon the central post, and thus caused to travel easily and smoothly.

To the plate M we secure in any suitable manner, but preferably in the manner represented, a sweep, N, extending outward and adapted to be operated by means of a horse or other draft-animal. The sweep being drawn around by means of the animal causes the rotation of the plate M, and the latter in turn transmits motion through the pinions L and shafts K and pinions J to the spindle-driving pinion I, the arrangement being such that the power is applied equally to opposite sides of the last-named pinion, whereby the parts are caused to rotate easily and without undue side strain upon the other. This application of the

power to both sides of the spindle is a matter of importance, since it prevents the usual tendency of the spindle and its bearings to wear rapidly on one side, thereby destroying the adjustment of the grinding-disks and causing one to run at an angle or inclination to the other.

For the purpose of transmitting motion from the grinding-mill to a corn-sheller or other machine, as well as to permit the application of power to the mill from other sources when required, we provide the mill with an additional horizontal shaft, O, arranged in the base at right angles to the driving-shaft and provided on its inner end with a beveled pinion, P, which gears into the two pinions J, as shown.

It will be understood that ordinarily the shaft O and pinion P are not called into action. In order that the pinion P may be thrown out of gear, this shaft will be arranged to be adjusted endwise, as indicated in the drawings.

Passing now to the grinding devices proper, they will be seen to consist of two horizontal disks, Q and R, the faces of which will be toothed or dressed in any ordinary or suitable manner. The lower disk, Q, is bolted firmly to the upper side of a plate, S, which latter is provided with a sleeve or hub pinned or otherwise secured firmly to the upper end of the mill-spindle F. The upper and stationary disk, R, is bolted firmly to the under side of the plate T, which latter may be supported by nuts V upon three vertical screws, U, extending upward from a frame, W, which is screwed rigidly upon and sustained by the upper end of the central post, C, as clearly represented in Figs. 1 and 2. By adjusting the nuts V the disk R may be raised, lowered, and leveled quickly and with perfect accuracy. The hopper X for supplying the corn or other material to the mill has its lower end seated around the top plate, T, which is flanged to receive it, as represented in Fig. 2. The upper grinding-disk is provided, as usual, with a central eye or feed-opening, and the lower disk or the spindle is provided with a central hub, Y, to assist in feeding the material from the hopper between the disks, this hub being made of any ordinary or suitable form. This central hub, which is usually fluted or made of spiral form, serves to agitate and loosen the mass of material, and thus insure its descent in a manner familiar to those skilled in the art.

For the purpose of confining the dust and meal and delivering the latter at a single point we provide a curb or casing, Z, which extends around and beneath the grinding-disks, and which at its upper edge fits closely against the under side of the top plate, T, as shown in the drawings, the plate and curb forming jointly a tight casing. Curb Z is provided on one side with a delivery-spout, as shown. The curb may be sustained by means of bolts passing downward from the top plate, T; or it may be sustained by means of extra nuts applied to the screws U. In order that the curb may be lowered sufficiently to give an unobstructed view between the working-faces of the stones, the frame W is made of such shape as to permit the curb, when released, to drop down thereon until its upper edge is below the working-faces of the disks. This construction of the parts is a matter of great convenience, inasmuch as it permits a ready inspection of the grinding-surfaces without destroying their adjustment, and admits of the operator adjusting them with very great nicety and accuracy while exposed to view.

Having thus described our invention, what we claim is—

1. In a grinding-mill, the combination of a base-frame provided with the tubular upright post or standard, the driving-gear mounted upon said frame, the geared plate mounted upon the central post, the vertical central spindle, the revolving disk attached to the spindle, and the stationary grinding-disk, and devices, substantially such as shown, connecting the stationary disk with and supporting it from the tubular post, as described and shown.

2. In a disk-action grinder, the combination of a base-frame having a tubular post thereon, a central vertical spindle mounted within the post and provided with a grinding-disk at the upper end, two horizontal driving-shafts geared to the spindle upon opposite sides of its axis, and a revolving peripherally-toothed driving-plate mounted on an axis concentric with the mill-spindle and engaging with pinions upon the outer ends of the two driving-shafts, whereby the power is applied uniformly upon the two sides of the spindle.

3. In a grinding-mill, the base-frame provided with a central opening, the central tubular standard sustained above the openings by the bridge-tree, and bearings for two horizontal shafts located upon opposite sides of the opening below the level of the bridge-tree.

4. The combination of the base-frame provided with the central opening, the bridge-tree, and the tubular standard upon the latter, the central spindle, the pinion upon the lower end of the spindle, the two vertical pinions engaging with opposite sides of the spindle-pinion and sustained by outwardly-extending shafts, and the central spindle-adjusting lever, G, located between the vertical pinions beneath the bridge-tree, as shown and described.

5. In a grinding-mill, the base-frame provided with the bridge-tree, and the tubular standard thereon, in combination with the horizontal shafts provided with beveled pinions on their two ends, the vertical central spindle provided with the beveled pinion upon its lower end, and the revolving toothed plate mounted upon and around the central standard, and provided at its outer edge with teeth engaging with the pinions upon the outer ends of the horizontal shaft.

6. The base-frame, the bridge-tree, the central standard upon the latter, and the cross-bar D, in combination with the central vertically-adjustable mill-spindle and its driving-

pinion mounted between the bridge-tree and bar D, as shown, having a sliding connection with the spindle.

7. The base-frame provided with the central opening, the bridge-tree spanning the same, and the tubular post or standard sustained upon the bridge-tree, in combination with the cross-bar beneath the bridge-tree, the vertical spindle, its driving-pinion, and the adjustable step for the spindle seated in bearing B, substantially as shown.

8. In combination with the two grinding-disks and the curb or casing Z, the sustaining-frame W, constructed as described, to permit the curb to be dropped below the grinding-faces of the disks.

9. The combination of the two grinding-disks, the spindle, the frame W, the vertical screws, the top plate, and the curb or casing, substantially as shown.

GEORGE RAYMOND.
ALBERT RAYMOND.

Witnesses:
FREDERICK C. GOODWIN,
ORIN H. QUEAL.