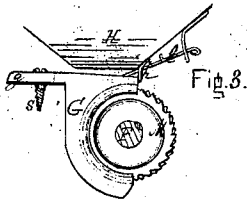
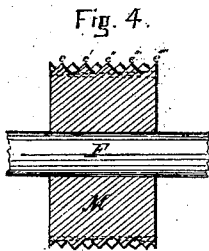
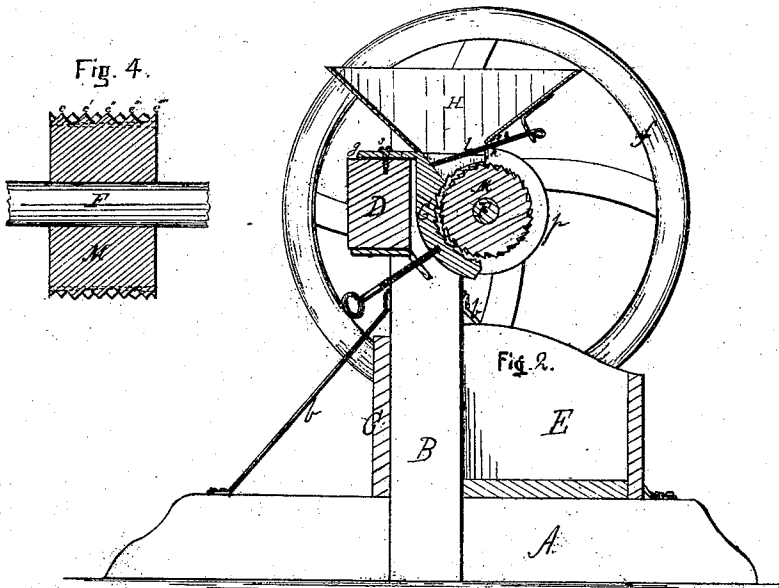
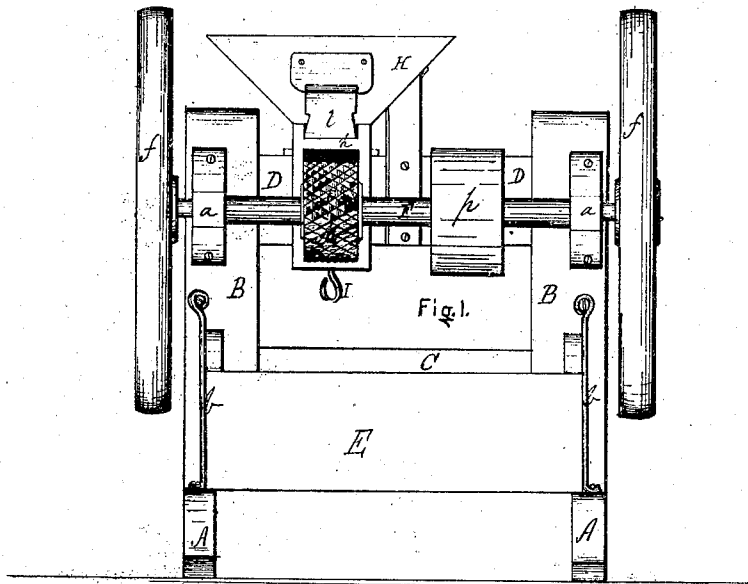


E. C. & E. D. LITTLE.
GRINDING MILL.

No. 113,179.

Patented Mar. 28, 1871.



Witnesses.
Dr. H. Ellsworth,

Inventors.
E. C. Little
E. D. Little
By Hill + Ellsworth
attys.

United States Patent Office.

EDWIN D. LITTLE AND EDGAR C. LITTLE, OF SHABONAS GROVE,
ILLINOIS.

Letters Patent No. 113,179, dated March 28, 1871.

IMPROVEMENT IN GRINDING-MILLS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that we, EDWIN D. LITTLE and EDGAR C. LITTLE, of Shabbonas Grove, in the county of De Kalb and State of Illinois, have invented certain Improvements in Grinding-Machines; and we declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, in which—

Figure 1 is a front elevation;

Figure 2, a vertical section in line *xx* of fig. 1; and

Figure 3, a side view of the concave and cylinder, detached.

Figure 4 is a transverse section of the cylinder *M*, showing the teeth on an enlarged scale.

Similar letters of reference indicate like parts.

This invention relates to the class of metallic grinding-mills, and consists in an improved construction of the several operative parts of the mill for the purpose of rendering its action more effective, and of enabling said parts to be more perfectly adjusted to each other than heretofore.

In the drawing—

A A represent the base, consisting of two parallel frame pieces, and

B B are posts attached thereto, supported by braces *b b*, and connected by cross-timbers *C D*, the latter very strong, and let into the sides of the posts so as to receive a firm support therefrom.

On the front side of the machine is a receptacle, *E*, which rests upon the base-timbers *A A*, and is supported laterally by the posts *B B* and braces *b b*, for the purpose of receiving the material that has been ground in the mill.

F is a shaft, running in boxes *a a*, attached to the front side of the posts *B B*, and provided with one or more fly-wheels *f f*, and with a belt-pulley, *p*, by which the shaft is driven.

M is a metallic grinding-cylinder, keyed to the shaft *F*, and corrugated on its convex surface by means of two sets of oblique grooves *e e* and *e' e'*, which intersect each other so as to leave diamond-shaped projections or teeth between them, as shown in fig. 1.

The grooves are formed by first cutting square across the face of the cylinder, and then cutting a line obliquely in opposite directions, *e e' e'*.

The front walls of each groove thus formed are abrupt, and the rear walls sloping, which so modifies the shape of the teeth that the highest front of each one is at the salient angle at the center of its front wall.

The forward end of each groove is cut deeper into the metal of the cylinder than the rear end, the effect of which is a tendency to force the grain or other material toward the middle of the cylinder, causing it to be more thoroughly pulverized, and keeping it from wedging down between the ends of the cylinder and the side of the concave.

G is the concave, adapted to the shape and size of the cylinder, and mounted upon the cross-beam *D*, to which it is secured by means of screw-bolts *s s* passing through a flange, *g*, of the concave.

The bolts are set in slots, either in the flange or the timber, preferably the former, by which arrangement the concave can be adjusted toward or from the cylinder, to grind fine or coarse.

Another screw-bolt, *I*, may be employed under the beam *D*, for the purpose of adjusting the lower end of the concave with relation to the cylinder without changing the position of the upper end.

The simplest arrangement of such screw is to pass it through a plate, *i*, attached to the beam, and let its end bear against the rear side of the concave.

By screwing it up it will force the concave toward the cylinder, and when unscrewed again the concave, either by its own weight or by the pressure of the material between it and the cylinder, will fall back to its former position.

The two ends of the concave can thus be adjusted with relation to the cylinder independently of each other, and so as to produce almost any desired effect upon the material passed through the mill, from merely cracking the kernels to completely pulverizing them, while the side walls of the concave, made semi-annular in shape, and embracing the ends of the cylinder, as shown in fig. 3, render it capable of said adjustment without allowing the grain or other material to escape over the ends of the cylinder.

H is a hopper, supported upon suitable standards, and provided with a flange, *h*, which closes the open front of the concave above the cylinder, and with an inclined adjustable gate, *l*, by which to regulate the feed.

The general construction herein described combines simplicity, economy of material, and strength, while the construction of the cylinder and concave renders the machine more effective, and more easily and perfectly adjustable, according to the work to be performed by it.

So far as the operation of the concave is concerned it will work equally as well with a vertical stone grinding-wheel as with one composed of metal, al-

though the metallic wheel on its part is better for many purposes than any other.

Having thus described our invention,

What we claim as new, and desire to secure by Letters Patent, is—

1. The cylinder M in the grinding-mill herein described, having the graduated diamond-shaped teeth *e e'* constructed as shown and described, for the purpose set forth.

2. The arrangement, in the grinding-mill herein

described, of the cylinder M and adjustable concave G, hopper H, cut-off *l*, frame A B, and fly-wheels *f*, when all constructed and operating as shown and described, for the purposes set forth.

EDWIN D. LITTLE.
EDGAR C. LITTLE.

Witnesses:

JOHN DIXON,
E. A. REYNOLDS.