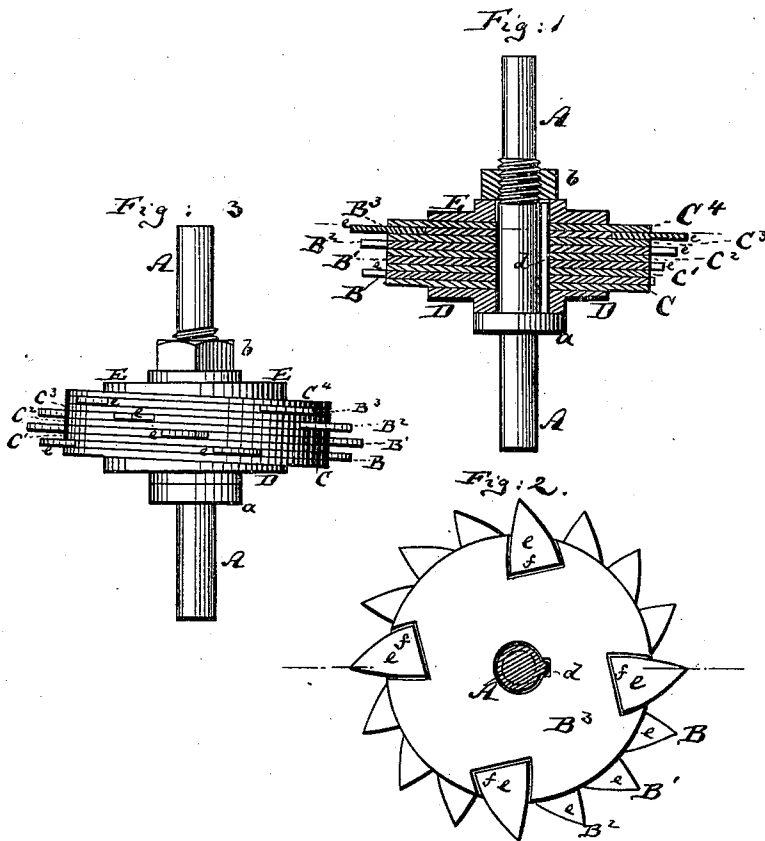


O. COOGAN.
GRINDERS FOR BARK MILLS.

No. 179,401.

Patented July 4, 1876.



Witnesses:

A. Moraga.
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Inventor:

Owen Coogan
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UNITED STATES PATENT OFFICE

OWEN COOGAN, OF PITTSFIELD, MASSACHUSETTS.

IMPROVEMENT IN GRINDERS FOR BARK-MILLS.

Specification forming part of Letters Patent No. **179,401**, dated July 4, 1876; application filed February 21, 1876.

To all whom it may concern:

Be it known that I, OWEN COOGAN, of Pittsfield, Berkshire county, Massachusetts, have invented an Improved Grinder for Bark-Mills, of which the following is a specification:

Figure 1 is a central section of my improved grinder for bark-mills. Fig. 2 is a transverse section of the same, showing the plane of one of the toothed blades. Fig. 3 is a side view of the grinder.

Similar letters of reference indicate corresponding parts in all the figures.

This invention has for its object to improve the construction of grinding-tools used in bark-mills; and consists, first, in a new construction of recessed blades for the reception of the tapering shanks of the removable teeth, and in their combination with interposed washers, which hold the teeth in place; and, secondly, in setting said blades and washers oblique upon the carrying-shaft, all substantially as hereinafter more fully described.

In the accompanying drawing, the letter A represents the shaft of the grinder. *a* is a shoulder or flange firmly affixed to said shaft, or otherwise securely held in place on the same. *B*¹ *B*² *B*³, &c., are the toothed grinding-blades; *C*¹ *C*² *C*³ *C*⁴, &c., the washers placed against the faces of said blades, respectively; and *D* and *E* are oblique-faced plates, between which the several blades and washers are contained—that is to say, the plate *D* rests against the shoulder *a*, the washer *C* against the plate *D*; the blade *B* against the washer *C*, and so forth, the last washer, *C*⁴, being confined in place by the plate *E*, which, in turn, is held fast by a nut, *b*, or equivalent device, on the shaft, all as clearly indicated. The shaft *A* has a feather, *d*, or equivalent groove, extending from the flange *a* to the nut *b*, for holding the blades *B*¹, &c., and the plates *D* and *E*, from turning loose on it.

The inner faces of the plates *D* *E* (I mean those in contact with the washers) are inclined to the shaft, but parallel to each other, so that the entire grinding-drum between them is similarly inclined on the shaft, as

shown in Fig. 3. By this inclination I cause the grinding-blades to be effective along the entire breadth of the grinding-drum, and to sweep the spaces occupied by the washers.

If the drum *B* *C*, &c., were set at right angles on the shaft, the grinder would be ineffective at the places where its washers are contained; but by the oblique position the projecting cutters, which are formed on the blades *B*¹, &c., acquire a degree of lateral sweep sufficient to cover the spaces occupied by the washers. This feature of my invention is applicable to other than bark-grinders.

The washers *C*¹, &c., are of about the same diameter as the blades *B*¹, so that they cover the dovetail-shaped recesses, which are cut into the blades at their edges, and the corresponding tooth-shanks inserted therein—that is to say, each blade *B*¹, &c., carries a series of projecting teeth, *e e*, of which each has an enlarged shank, *f*, which is loosely inserted in the recess of the blade. In this position the teeth are solely confined by the washers. If the washer is lifted off a blade, the teeth are thereby at once loosened, and can be taken out for repairs or replacement; yet when the washers are applied, the teeth are firmly held to their respective blades.

The teeth should be of steel, but the blades may be of iron. The teeth of the different blades are so set that in the complete grinder they will project in spiral lines from the circumference of the grinder, as indicated in Fig. 3.

By this arrangement but one or two teeth will operate simultaneously, and yet a perfect full grinding action be obtained.

The first and last washers, *C*¹, may be dispensed with, provided the plates *D* and *E* are made sufficiently large to aid in confining the teeth of the blades *B*³ in position.

As to the number of blades and washers, and of teeth in the blades, the invention is not confined or limited.

I claim as my invention, and desire to secure by Letters Patent—

1. The blade *B*, made with the dovetail-shaped recesses along its edge, and combined with the detachable teeth *e e*, which are held

in place by the washers C C¹, substantially as herein shown and described.

2. The rotary grinding-drum set oblique on the shaft A, substantially as and for the purpose herein shown and described.

3. The combination of the feathered shaft A with the plates D E, having inclined inner

faces, and with the cutting-blades B B¹, &c., and washers C C¹, &c., substantially as herein shown and described.

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Witnesses:

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