

(No Model.)

J. F. WINCHELL.

FEEDING CRUSHER FOR CRUSHING AND GRINDING MILLS.

No. 407,885.

Patented July 30, 1889.

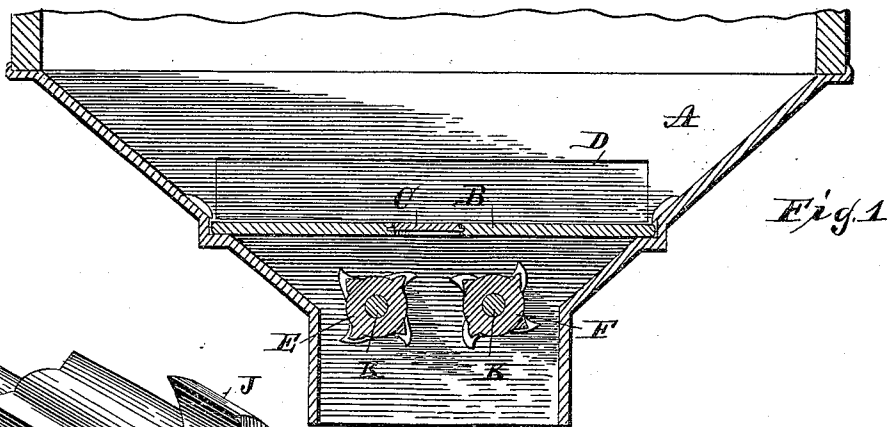
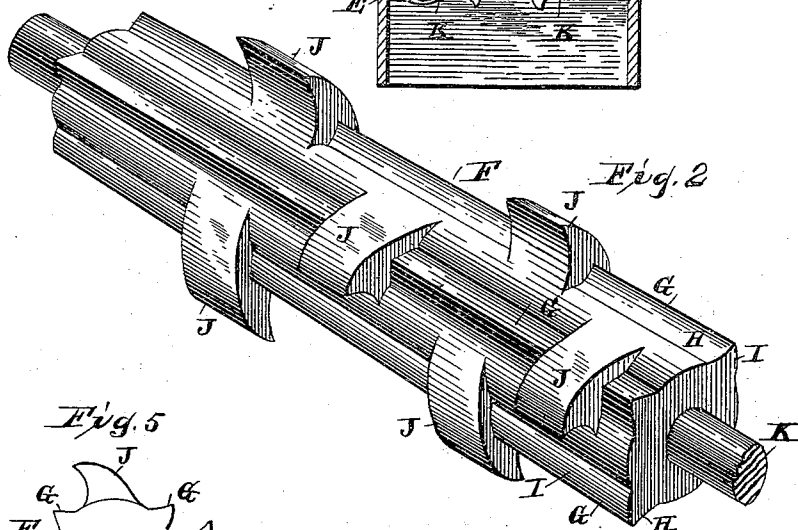
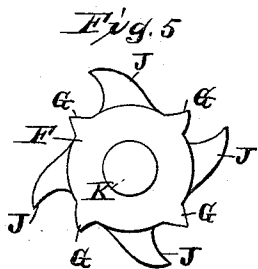
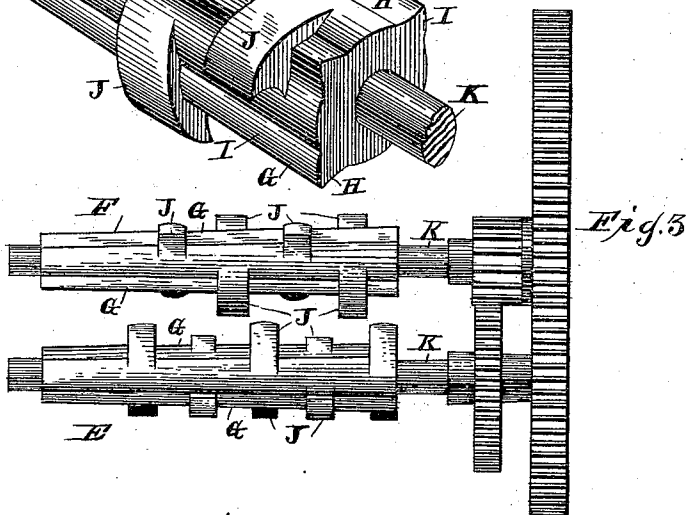
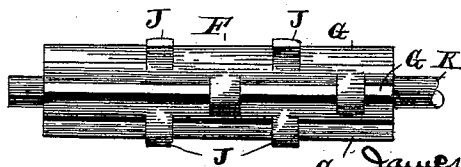


Fig. 4



WITNESSES

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UNITED STATES PATENT OFFICE.

JAMES F. WINCHELL, OF SPRINGFIELD, OHIO, ASSIGNOR TO THE FOOS MANUFACTURING COMPANY, OF SAME PLACE.

FEEDING-CRUSHER FOR CRUSHING AND GRINDING MILLS.

SPECIFICATION forming part of Letters Patent No. 407,885, dated July 30, 1889.

Application filed February 25, 1888. Serial No. 265,293. (No model.)

To all whom it may concern:

Be it known that I, JAMES FRANK WINCHELL, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Feeding-Crushers for Crushing and Grinding Mills, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to improvements in crushing and grinding mills, and has special reference to the construction of the feeding-crushers, and is designed to be used in connection with the mechanism shown and described in applications filed by me August 11, 1887, Serial No. 246,685, and September 17, 1887, No. 249,981, both for improvements in crushing and grinding mills, and also as a special form of feeding-crushers with the mill patented to me March 15, 1887, No. 359,588.

The object in view and to be accomplished by the present form of feeding-crusher is that of reducing and feeding corn-cobs with the grain and shucks on them and preventing the shucks from winding round the crushers.

With this object in view, the invention consists in certain peculiarities and characteristics, hereinafter more fully described, and pointed out in the claims.

In the accompanying drawings, forming a part of this specification, and on which like reference-letters indicate corresponding parts, Figure 1 represents a vertical sectional view of a hopper, its cut-off, and my improved feeding-crushers mounted therein; Fig. 2, a detail enlarged perspective view of one of the crushers detached; Fig. 3, a plan view of a pair of crushers arranged as in Fig. 1; Fig. 4, a similar view showing a modification in the shape of the crushers; and Fig. 5, an end view of the crusher, as represented in Fig. 2.

The letter A designates a metallic hopper of any approved construction, but preferably of that shown, and provided with a transverse cut-off B and a supplemental cut-off C, as more fully set forth and shown in my application filed September 17, 1887, and above alluded to. The plate D is also used to lock the cut-off in a given position. These devices, however, form no part of the present invention.

The letters E and F designate my improved feeding-crushers, the same being similarly constructed and mounted side by side either in the lower portion of the hopper A, as suggested in Fig. 1, or in some other convenient portion of the mill. The shafts of these crushers are provided with pinions, respectively, and these pinions mesh with each other, so that the crushers rotate positively one with respect to the other. The pinions may be of equal or unequal diameter. As seen in Fig. 3, the crushers are of tapering form, with their smallest ends associated with each other. This presents a gradually-narrowing space between the feeding-crushers, measuring toward their other ends. The manner of tapering the crushers in connection with the superimposed cut-off is fully explained in my application last above alluded to. The crushers may, however, be of equal diameter at either end, as suggested in Fig. 4. At several points around the periphery—say four—the cylindrical body of the crusher is provided with longitudinal ribs or beads G, whose cross-section is approximately V-shaped, with the advanced side slightly concave and the following side slightly convex, as seen at H and I in Fig. 2. While these last characteristics of the ribs are not indispensable, they are still preferred, as they enable the ribs to more readily grasp, draw upon, and partially mangle the shuck. The longitudinal continuity of these ribs is broken by the presence of the feeding and crushing lugs or protuberances J. These protuberances may be of various forms, as suggested in Fig. 2 and in the drawings of the patent above alluded to. Their arrangement with respect to the ribs or beads G and with respect to each other is preferably that shown in Fig. 2, in which the protuberances at diametrical points and extending beyond diametrical ribs are in the same vertical plane, while the intermediate protuberances, circumferentially speaking, are between and out of the same vertical plane with respect to the other protuberances, but in the same plane with respect to themselves. I have found by actual usage in the trade that the herein-described feeding-crushers practically feed and partially reduce the cobs and the shucks on them and avoid the

wrapping and entanglement of the latter with themselves. The action upon the shuck and the prevention of its unduly winding on the crushers is due, primarily, to the presence 5 of the ribs, and, secondarily, to the ribs combined with the protuberances. As the crushers rotate toward each other, the ribs and protuberances draw the shuck down, tearing and disintegrating it and crushing the interior 10 cob and grain. The presence of the ribs, however, does not interfere with feeding and crushing the cobs without the shuck and with or without the grain, but is rather an advantage. It should be observed that the 15 body of the crusher, the ribs, and the teeth are preferably integral and of cast-iron. The shafts K are usually constructed of wrought-iron and fitted to a central longitudinal hole in the crushers.

20 It will be seen on reference to Fig. 5 that the protuberances may be located between the longitudinal ribs instead of projecting from the ribs. In either case the protuberances extend radially beyond the ribs.

25 The reason the shucks are prevented from winding and accumulating round the crushers is, that the constantly incoming ears being severally engaged by the somewhat sharpened edges of the ribs cause the latter to cut 30 through and mangle such stray pieces of shuck as may have started to wind round the crushers.

Having thus fully described my invention, what I claim as new, and desire to secure by 35 Letters Patent, is—

1. In a crushing and grinding mill, a feeding-crusher consisting of a cylinder-like body having integral longitudinal peripheral ribs terminating in comparatively sharp edges, and integral radial protuberances, the latter 40 projecting beyond the former.

2. In a crushing and grinding mill, a feeding-crusher consisting of a cylindrical body, longitudinal peripheral ribs approximately 45 V-shaped in cross-section, and radial protuberances extending from the ribs.

3. In a crushing and grinding mill, a feeding-crusher constructed of a cast-iron cylindrical body and a shaft upon which it is secured, and having longitudinal peripheral 50 ribs terminating in a reduced edge, and radial protuberances extending from the ribs, the said ribs and protuberances being integral with the body.

4. In a crushing and grinding mill, a feeding-crusher consisting of a body, longitudinal 55 peripheral ribs terminating in reduced edges, and radial protuberances extending from the ribs, and so arranged that the protuberances at diametrical points stand in the 60 same vertical plane with respect to each other, but out of the same plane with the next set of protuberances.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES F. WINCHELL.

Witnesses:

CHASE STEWART,
G. W. STEPHAN.