(No Model.)

J. F. WINCHELL.

HULLING MILL.

No. 343,514. Patented June 8, 1886.

Fig. 2.

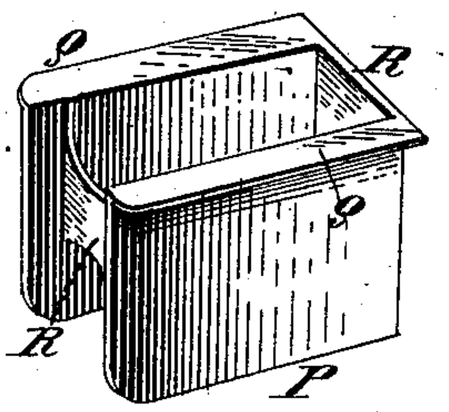


Fig. 1.

Fig. 3.

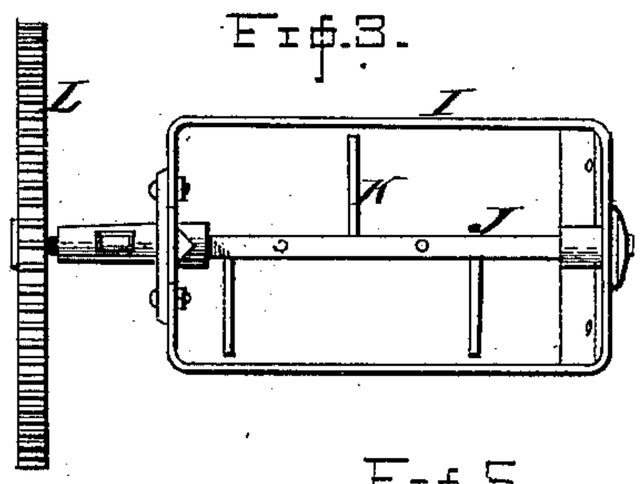


Fig. 4.

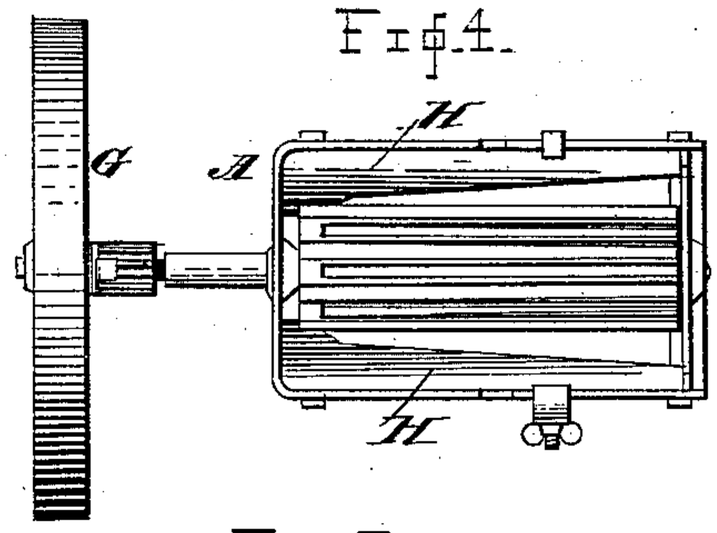


Fig. 5.

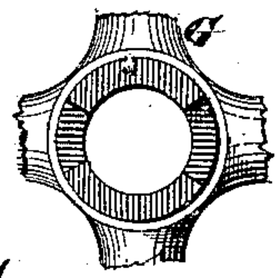
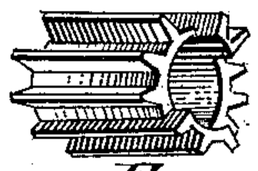


Fig. 6.



WITNESSES

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HULLING-MILL.

SPECIFICATION forming part of Letters Patent No. 343,514, dated June 8, 1886.

Application filed January 25, 1886. Serial No. 189,679. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. 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 Hulling-Mills, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in hulling-mills having special reference to hulling cotton-seed; and it has for its objects, first, to provide a feeding and an agitating mechanism adapted to be used in conjunction with the crushing and grinding mechanism embodied in my application for Letters Patent on improvements in grinding-mills, filed November 9, 1885, Serial No. 182,241; and, second, to provide a means of reducing the width of the chamber in which the crusher is placed, this reduction being for the purpose of preventing the seed from arching in said chamber over the crusher.

In the accompanying drawings, forming a part of this specification, and on which like reference-letters indicate corresponding features, Figure 1 represents a vertical sectional view of the machine generally, showing a portion thereof in side elevation; Fig. 2, a detached perspective view of the bushing-frame for reducing the size of the chamber; Fig. 3, a plan view of the agitator mechanism; Fig. 4, a like view of the feeding mechanism; Fig. 5, a view of the wheel-hub, showing a clutch; and Fig. 6, a detached perspective view of a clutch-pinion which engages with said hub.

The construction and arrangement of the frame, the casing, the main shaft, and the grinding heads and plates, as also the adjusting mechanism for the shaft, are the same in the present case as in my application above alluded to. The crusher having the angular lugs and offset ends which engage with the correspondingly-shaped ends of the bars on the rotating grinding-head, and of the sleeve (with which devices the crusher engages) is the same as that also set out in the above-named application. Therefore a minute and detailed description of the machine generally, exclusive of the features peculiar to the organization necessary to hull seed, is superfluous in this place. Furthermore, the machine generally, with the exceptions just noted, is used interchangeably with the devices peculiar to the hulling of seed and the devices peculiar to the grinding of grain and the reduction of larger substances, as corn-cobs, &c., as also described and shown in the above-cited application.

The present novelty, then, consists in the devices peculiar to the machine when organized for hulling purposes, and of said devices in their combined relation to the remainder of the machine. With this statement I will proceed to describe the hulling-machine in the attitude in which these prefaratory remarks place it.

The letter A designates a box or casing, preferably of cast-iron, constructed to fit upon the portion B of the upper section, C, of the casing. Within this box is mounted a feeding-roller, D, provided on its periphery with an alternating series of longer and shorter grooves slightly deeper at one end than at the other, the ribs or edges left between the grooves serving to effect a forced feed of the cotton-seed. This roller is supported by a shaft, E, having bearings in the box A, and provided with a fixed clutch-pinion, F—that is to say, a pinion having one end constructed with offsets, so as to form a clutch-surface, and with a band or belt wheel, G, whose hub has a corresponding clutch-surface which engages with the clutch-pinion.

The object in forming the pinion F separately from the band-wheel G and in locking the two together is because in fitting the wheel and pinion to the shaft in manufacture the pinion is not infrequently broken. Were it a part of the wheel a breakage of the pinion would also cause a loss of the wheel, which would involve an expense greatly in excess of the mere loss of the pinion.

Rotary motion is imparted to the feeding-roller by a belt passing over the wheel G and the sleeve-pulley G′ on the main shaft of the mill. The box has inclined tapering inner walls, H, which guide the seed to the roller, and which reduce the space between the roller and the walls proper of the box.

The letter I designates the box of the agitating mechanism, the same being constructed

to fit upon and engage with the upper edge of the feeding-box, and in which is mounted a shaft, J, having a number of radial agitators, K, and carrying a gear-wheel, L, which meshes with the clutch-pinion F on the shaft E, whereby rotary motion is imparted to the agitator.

Upon the agitator-box I is fitted the hopper M, having, if desired, a hinged flap, N, which, when the machine is hulling seed and grinding grain, is not used, but is thrown up out of the way, being brought into use only when larger substances are being reduced, as explained in the application to which reference has already been made. The function of the hopper in the present instance is to feed a collected quantity of seed to the agitator-box, whence it is conducted into the feeding-box, and thence into the chamber O, within the frame of the mill proper. This chamber, when of sufficient size for grinding grain and reducing larger substances, is found to be unnecessarily large for hulling seed, as the difference in the nature of the seed when too much space is allowed them causes them to work into the form of an arch in the chamber and to feed from thence in an irregular manner. To overcome this, I reduce the area of said chamber about the crusher. For this purpose I provide a detachable bushing-frame, P, constructed, preferably, of cast-iron, and consisting of two side plates having wings Q, which fit within the portion B of the casing proper of the mill, while the plates extend down into and rest upon the chamber O, and come comparatively near the crusher, leaving just space enough for the seed to be drawn by the crushing-lugs. The plates are joined together by end pieces, R. It should be observed that the function of the crusher and its lugs is to draw down the seed and convey them to the grinding-head, and that it is merely called a "crusher" for the sake of uniformity of names, this being the name properly given it when the machine is acting upon larger substances. The lugs on the crusher are preferably of angular form, the angle of one side differing from that on the other, as explained in my application, filed February 27, 1886, for improvements in crushing and grinding mills, Serial No. 193,464. It should also be observed that the chamber O may be made smaller and the bushing frame P omitted should the frame of the machine be constructed with special reference to hulling. After the seed reach the crusher they are conveyed or drawn between the grinding-plates, and acted upon and discharged from the casing in the manner set out in said application.

The crusher may have lugs of various forms, or may have a rib or ribs on the exterior in lieu of the present form of lugs.

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

1. In a hulling-mill, the combination, with the crusher having lugs, the casing and the chamber of the main frame, and the bushing-frame fitted within the chamber, of the feeding-box and roller, the agitating mechanism, the hopper, and mechanism for gearing said roller and agitating mechanism together and for connecting them with the crusher so as to rotate therewith.

2. In a hulling-mill, the combination, with the crusher having lugs, the casing and the chamber of the main frame, of the feeding-box, and the grooved roller, the agitating mechanism, the hopper, and mechanism for gearing said roller and agitating mechanism together and for connecting them with the crusher so as to rotate therewith.

3. In a hulling-mill, the combination, with the main frame having a casing and chamber, the main shaft, the grinding heads and plates, the driving-pulley and sleeve, and the crusher having lugs with angular sides, of the bushing-frame, the feeding box and roller, the agitating mechanism, the hopper, and mechanism for gearing said roller and agitating mechanism together and for connecting them with the crusher so as to rotate therewith.

4. The combination, with a feeding-box, of a distinct agitating-box mounted upon it, a grooved roller mounted in said feeding-box and having a shaft provided with a pinion, and a band-wheel which is connected with the pinion, and the shaft mounted in said agitating-box and having arms and a gear-wheel which meshes with the pinion on the roller-shaft.

5. In a hulling-mill, the combination, with the main frame having the chamber and an upper casing, of the crusher, and the bushing-frame fitted within said casing and chamber.

6. In a hulling-mill, the combination, with the agitating mechanism and its gear-wheel, of the feeding mechanism, a pinion on its roller-shaft, and a belt-wheel on said shaft clutching with said pinion.

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

JAMES F. WINCHELL.

Witnesses:
A. A. SEATMAN,
CHASE STEWART.