(No Model.)

H. W. VIETMEYER.

FEED GRINDING MILL.

No. 379,549. Patented Mar. 13, 1888.

Fig. 1.

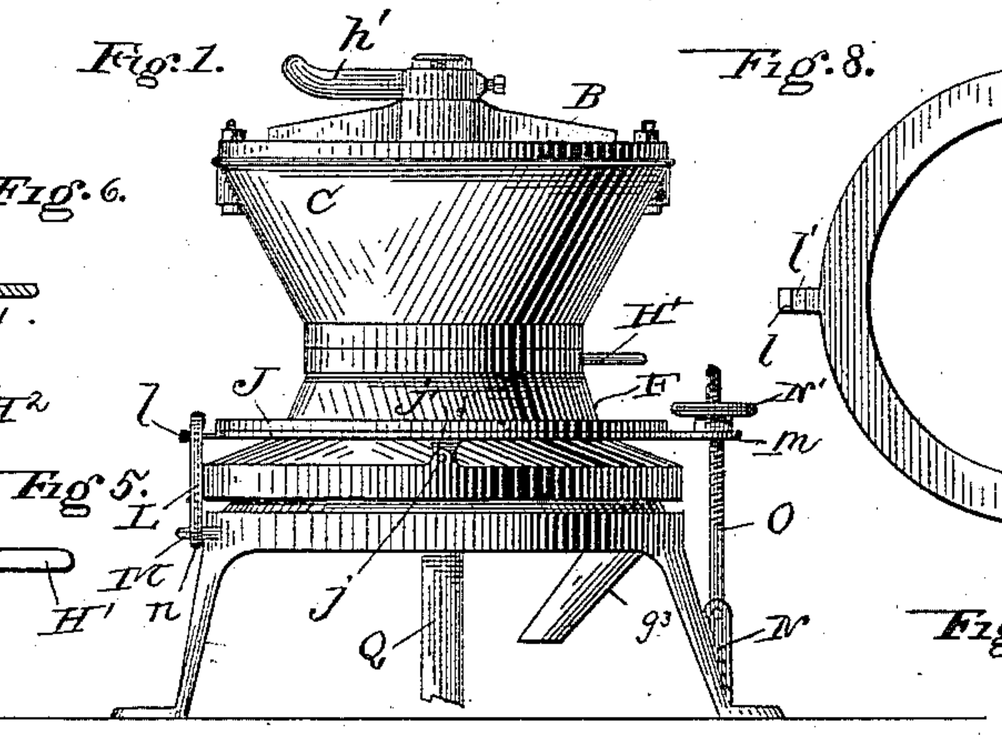


Fig. 8.

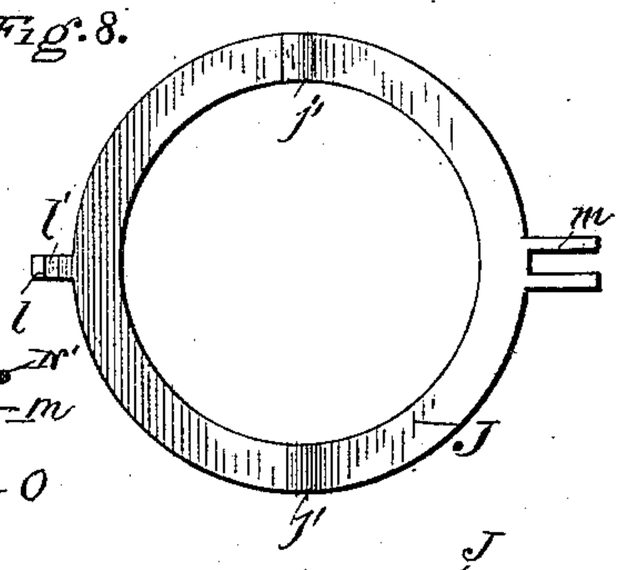


Fig. 6.

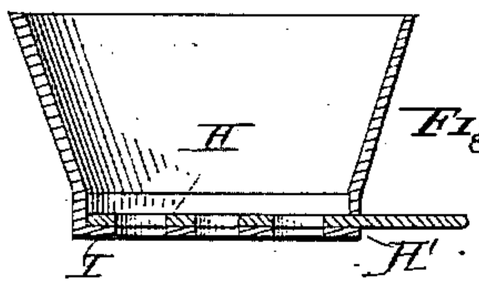


Fig. 5.

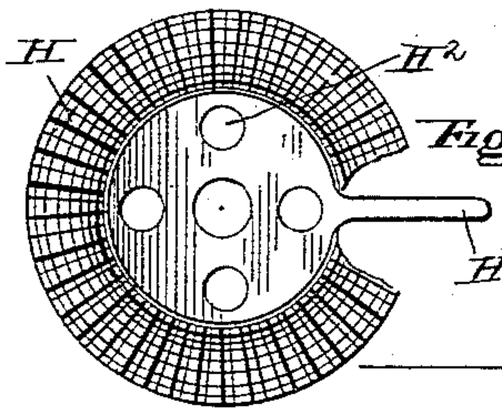


Fig. 7.

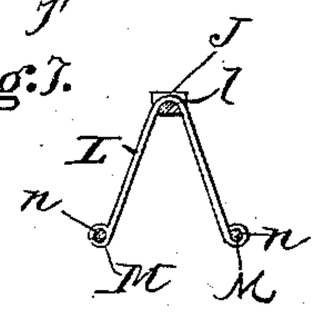
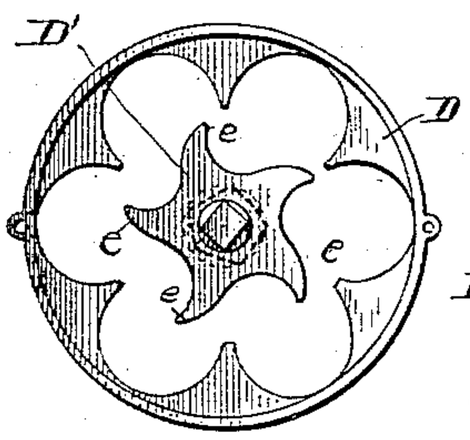
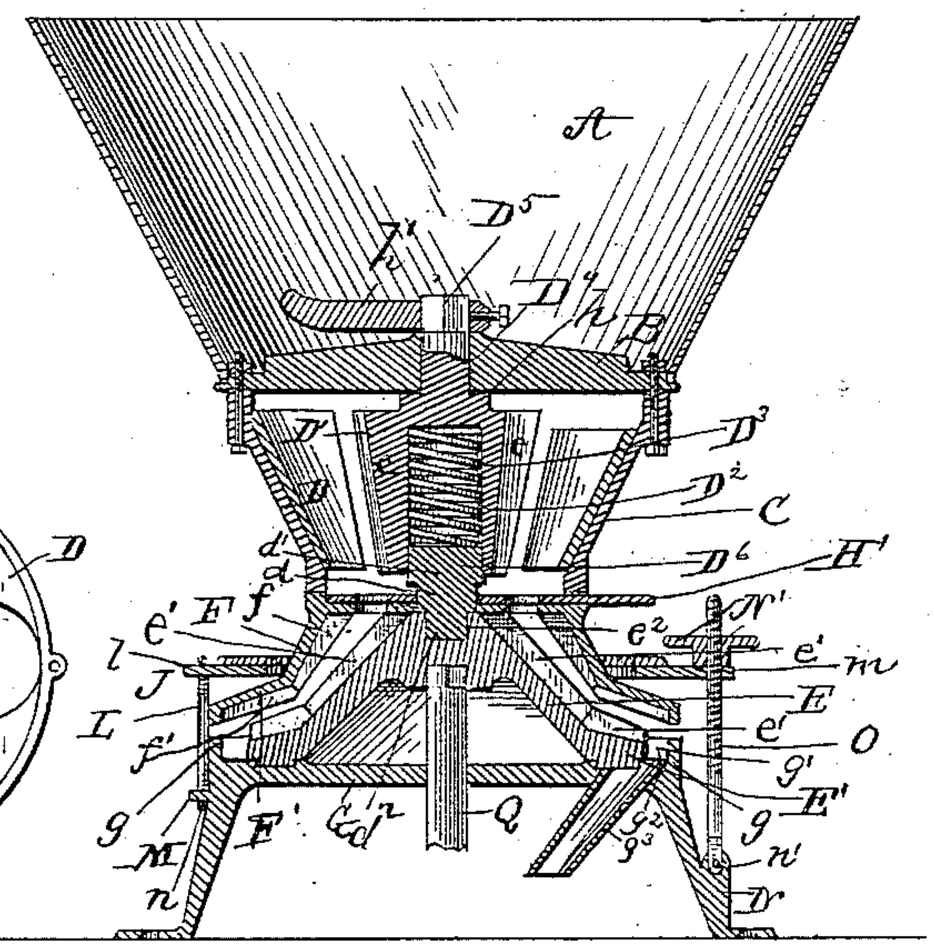


Fig. 2.

Fig. 4.

Fig. 3.





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UNITED STATES PATENT OFFICE.

HENRY W. VIETMEYER, OF FREEPORT, ILLINOIS, ASSIGNOR OF ONE-HALF TO THE UNION FOUNDRY, OF MANSFIELD, OHIO.

FEED-GRINDING MILL.

SPECIFICATION forming part of Letters Patent No. 379,549, dated March 13, 1888.

Application filed December 13, 1886. Serial No. 221,446. (No model.)

To all whom it may concern:

Be it known that I, HENRY W. VIETMEYER, a citizen of the United States, residing at Freeport, in the county of Stephenson, State of Illinois, have invented certain new and useful Improvements in Feed-Grinding Mills, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to feed-grinding mills; and it consists in the construction and combination of parts, which will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 represents a side elevation of the mill with the hopper removed, and Fig. 2 a central vertical section thereof. Fig. 3 is a top plan view of the upper shell and the cob-breaker. Fig. 4 is a side elevation of the cob-breaker detached. Fig. 5 is a top plan view of a plate provided with openings for regulating the feed from the upper to the lower shell. Fig. 6 is a vertical section of the upper shell, also showing a section of the feed-regulator shown in Fig. 5. Fig. 7 is an elevation of the yoke which engages the pin on the outer ring for holding the lower shell and connected parts in position. The ends of the pins to which the arms of said yoke are engaged are shown in this view. Fig. 8 is a plan view of a ring provided with a pin for engaging the yoke and a slotted arm. Said ring is also provided with lugs or pivotal seats.

The same letters indicate the same or like parts in the several views.

The letter A indicates a hopper placed on top of the mill.

B is a cross-bar having its outer ends bolted to the upper sides of the upper shell, C.

D represents wings or flanges on the inner side of the shell C. These wings project inwardly and diminish in size from the top downward.

D′ indicates the cob-breaker, located in the upper shell and adapted to rotate therein. A large opening, D^2, is formed within the cob-breaker and extends nearly to the top thereof. A strong spiral spring, D^3, is located in said opening.

D^4 is a circular projection on the upper end of the breaker, which is formed integral therewith, and D^5 is a rectangular extension formed integral with the circular projection.

D^6 is a spindle-block having a circular part, d, and rectangular ends d' d^2. The end d' fits into the opening D^2 in the under side of the cob-breaker. The spiral spring D^3 is interposed between the end of the spindle-block and the top of the opening in the breaker. The cob-breaker is provided with a series of wings, e. These wings taper from the top downward, so as to conform to the inner edges of the wings D—that is to say, so that the edges of the two sets of wings shall be an equal distance apart. There may be any number of wings in the shell C; but six is preferable. When said shell is provided with six wings, there should be but five wings on the breaker—that is to say, there should be a different number of wings on the shell from those on the breaker—so that when the breaker is rotated but one of the inner wings at a time can be opposite an outer wing of the shell, as shown in Fig. 3.

In order to maintain the full strength of the cob-breaker, the angular opening therein should conform to the number of wings thereon. When four wings are employed, the opening should be rectangular. Should there be five wings, the opening would conform to the shape shown in dotted lines, Fig. 3.

E represents a cone having an outer circumferential flat ring, E′, formed integral therewith. The face of said cone and ring is formed with grinding-teeth e' e'. The upper end of this cone is provided with a socket, e^2, into which the lower rectangular end, d^2, of the spindle-block fits.

F represents the lower shell, having a flaring edge, F′, formed therewith. The inner side of said shell and edge is provided with grinding-teeth f f'.

G represents the base-plate of the mill. This plate is provided with upwardly-turned flanges g. The part E′ of the cone E is mounted and rotates in a circular groove in the upper face of the plate G. An annular space, g', is formed between the outer edge of the ring E′ and the inner face of the flange g. There is an opening, g^2, formed in the base-plate for the exit of the feed after grinding. g^3 is a spout for conveying the feed out of the mill after having passed through said opening.

The cob-breaker D′ is provided with a shoul-

der, *h*. The circular part D^4 of said breaker passes through a circular opening in the cross-bar B. The rectangular end D^5 of the breaker is provided with a stirrer or agitator, *h'*, by which the contents of the hopper are kept in motion and caused to drop within the upper shell without clogging.

H represents a circular plate provided with a handle, H', and openings H^2.

I represents the bottom of the upper shell. This bottom is provided with a series of openings which register with the openings in the plate H. Said bottom and plate are each provided with a central opening for the reception of the circular part *d* of the spindle-block D^6. A small horizontal slot is formed in the side of the mill, through which the handle H' projects. The plate may be turned on the bottom by means of the handle H'. By this means the bottom openings may be wholly or partially closed, so as to regulate the supply of grain admitted from the upper to the lower shell. This is advantageous when grinding shelled corn and oats.

It will be observed that the cob-breaker is immediately mounted on the top of the spiral spring, that the cross-bar B is mounted on the shoulder *h* of said breaker, and that the hopper A and the upper and lower shells and their wings and teeth, respectively, are supported on the bar B.

J represents a ring which encircles the lower shell. This ring is pivotally mounted on lugs *j*, formed on opposite sides of the lower shell. The ring is provided with two recessed lugs, *j'*, which respectively rest on the lugs *j*. The ring is also provided with a projection, *l*, on one side and a bifurcated arm, *m*, on the opposite side.

L represents a yoke which fits into a recess, *l'*, on the upper side of the projection *l*.

M M are pins formed on the side of the mill below the shells. These pins are engaged in the looped ends *n* of the yoke L.

N represents a recessed lug on a leg of the mill, provided with openings for the reception of a wooden pin, *n'*.

O is a rod provided with an opening in its lower end. Said end fits into the recessed lug N, and is pivotally secured therein by means of said wooden pin. The upper end of the rod O is screw-threaded and provided with a screw-threaded nut, N'. The upper end of said rod below the nut fits into the bifurcated arm *m*. The rod may be moved in and out of the arm without removing the nut. When the ring is mounted on its pivotal lugs, the yoke engages with the ring projection *l*, the rod O engages with the bifurcated arm *m*, and the nut is screwed down. The outer shell of the mill is firmly held and prevented from turning when the mill is in operation. By screwing down on the nut all those parts of the mill which are supported by the spiral spring are drawn and held down against the stress of said spring. The grinding adjustment is effected by the nut N'—that is to say, by tightening the nut the grinding-teeth on the lower shell and cone are brought nearer together, so as to grind the grain finer, and by loosening said nut a reverse effect is produced. It will thus be seen that the ring J is, in fact, and has the function of a lever. The pivotal arrangement of the ring and connected parts permits a yielding movement of the shells, adapting them to uneven pieces that may find their way to the grinding parts. Should any foreign substance of a refractory nature be presented to the grinding parts, the wooden pin *n'* will immediately give way, so as to relieve the grinding parts, and thereby prevent liability of injury to the mill. The grinding-teeth on the lower shell and cone decrease in size from the top downward to the lower and outer rings, the object being to gradually diminish the size of the pieces of cob as they pass downward, so that said pieces may be passed between and further reduced by said outer grinders. The cone is provided with two sets of grinding-teeth. The lower shell is also provided with two sets of teeth, *f f'*.

The letter Q represents a vertical shaft having a rectangular upper end which fits into a rectangular socket in the under side of the cone-shaped grinder E. Motion is imparted to the mill through the medium of the shaft Q. By rotating this shaft the cone E and its grinding-teeth are rotated. This action also imparts rotary motion to the spindle-block D^6, the cob-breaker, and its wings.

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

1. The combination of the upper and lower grinding-shells oppositely flared and secured together, a cob-breaker situated within the upper shell, a grinding-cone within the lower shell, a shaft carrying said cone, and a spring supported by the shaft and carrying the upper and lower shells, said shaft, lower cone, and breaker being connected and rotating together, and said shells being vertically movable relative to the shaft.

2. The combination of a lower rotary grinding-cone, a spring, and an upper rotary cob-breaker, said breaker being mounted on the spring, an arm mounted on the breaker, a shell supported by said arm, a ring pivotally connected with the outer side of the said shell, and means for holding the ring in position, substantially as described.

3. The combination, with the lower grinding-cone and the cob-breaker connected therewith and rotated thereby, of upper and lower shells surrounding said breaker and cone, a central spring supporting said shells, diametrically-opposite bearing-points carried by the shells on each side of said central spring, and adjusting devices bearing upon both of said points for pressing said shells evenly against the stress of the spring, substantially as set forth.

4. The combination of a spring and a grinding-shell with a rotary grinding-cone mounted within said shell, a ring pivotally connected

with said shell, said ring being permanently fastened on one side and adjustably secured on the opposite side, and a threaded nut and bolt engaging with the adjustably-secured side of the ring, whereby the shell may be drawn toward the cone or released, substantially as described.

5. The combination of a spring, a grinding-shell, and an arm supporting said shell and supported by the spring, with a rotary grinding cone mounted within said shell, a ring pivotally connected with the shell, said ring being permanently fastened on one side, a rod connected with the ring opposite the fastened side, and a frangible pin engaging the lower end of the rod, substantially as and for the purpose set forth.

6. The combination of an upper and a lower shell with a rotary grinding-cone mounted within the lower shell, the bottom of the upper shell being provided with openings, a rotary feed-regulator provided with openings which register with the said bottom openings, a spindle-block mounted on said cone and passing through said regulator, and a spring above the block and supporting the shells, substantially as set forth.

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

HENRY W. VIETMEYER.

Witnesses:
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JOHN COATES.