2 Sheets—Sheet 1.

G. H. CORMACK.

Oatmeal-Machine.

No. 220,059. **Patented Sept. 30, 1879.**

Fig. 1.

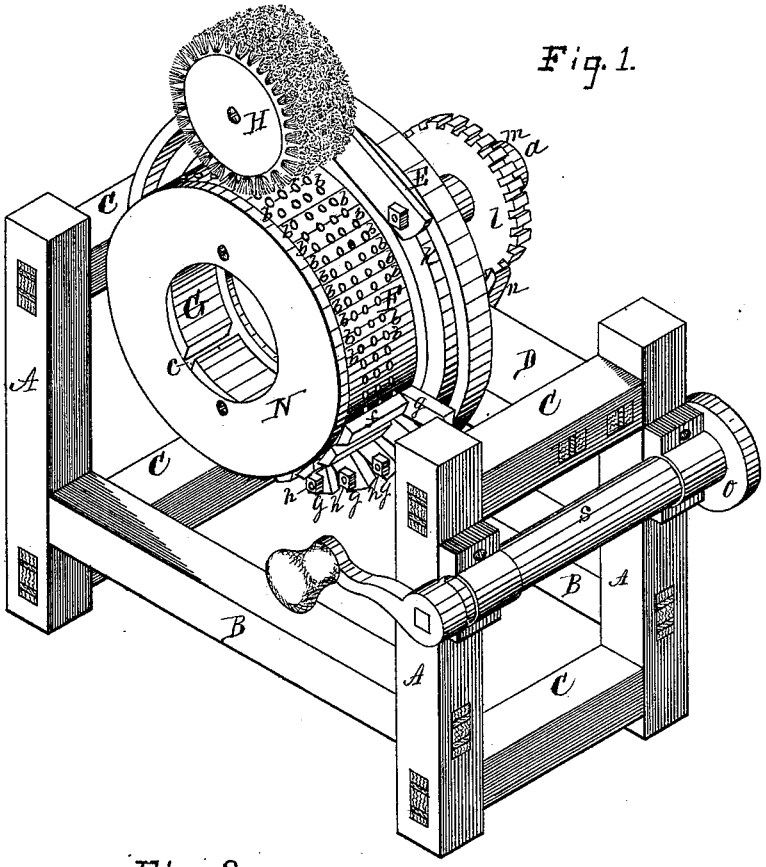

Fig. 2.

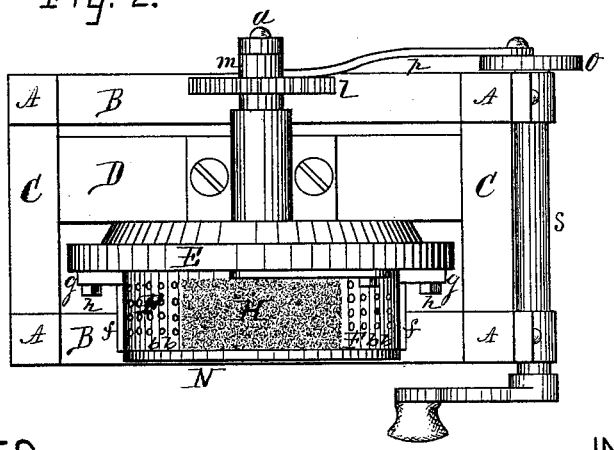

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Fig. 3.

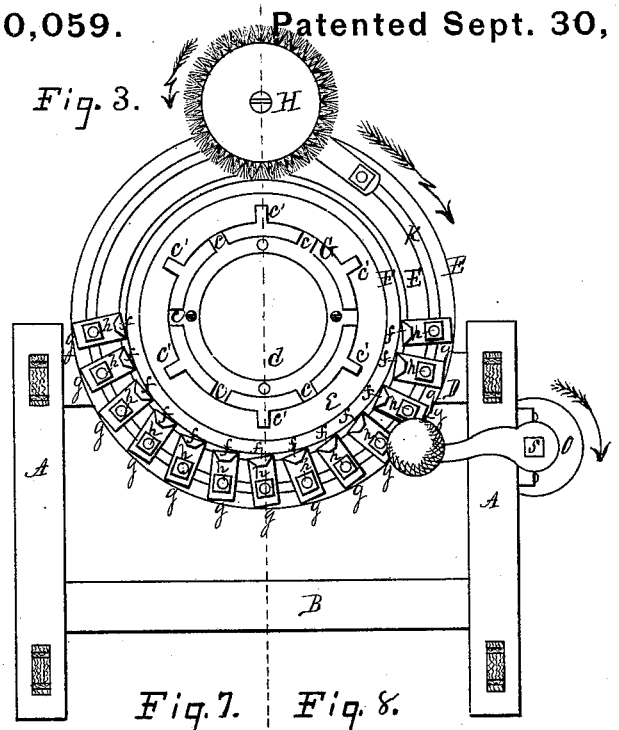


Fig. 7.

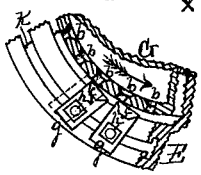


Fig. 8.

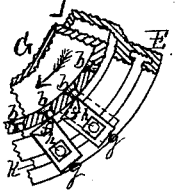
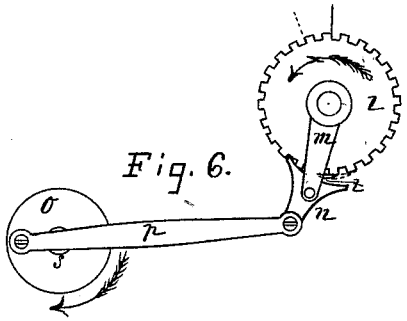


Fig. 4.

Fig. 5.

Fig. 6.



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UNITED STATES PATENT OFFICE.

GEORGE H. CORMACK, OF ROCKFORD, ILLINOIS, ASSIGNOR TO A. M. JOHNSTON & CO., OF SAME PLACE.

IMPROVEMENT IN OATMEAL-MACHINES.

Specification forming part of Letters Patent No. **220,059**, dated September 30, 1879; application filed December 30, 1878.

To all whom it may concern:

Be it known that I, GEORGE H. CORMACK, of the city of Rockford, in the county of Winnebago and State of Illinois, have invented a new and useful Improvement in Oat-Milling Machines, of which the following is a specification.

This invention relates to that class of machines employed in the manufacture of oatmeal or grits. Its purpose is to cut the oat-grains into small sections or grits after the chaffy hull or shuck has been removed from the grain, forming clean sharp grits with but little waste.

To this end I have designed and constructed the machine represented in the accompanying drawings, in which—

Figure 1 is an isometrical representation of my improved oatmeal-cutter, of which Fig. 2 is a plan view. Fig. 3 is a side elevation, in which the outside casing is omitted. Fig. 4 is a transverse vertical section on dotted line *x* of Fig. 3; and Figs. 5 and 6 are side elevations of the moving device, showing its extreme opposite positions. Figs. 7 and 8 are detached portions, showing the adjustability of the knives.

In the figures, A represents posts, into which are framed lengthwise beams B, and crosswise beams C, and a lengthwise beam, D, framed into the upper cross-beams. These parts, framed in the manner shown, form the supporting-frame, of rectangular form, on which is mounted my improved oat-mill.

E represents a disk, provided with a tubular hub projecting from its center, and fitted with flanges, by means of which the disk is fixed in a vertical position in the supporting-frame to the lengthwise beam D. The face of this disk is provided with a T-formed groove, as at *k*, which is designed to receive the heads of the bolts employed to fix the cutters in position on the disk.

At F is represented the perforated cylindrical rim, which carries the oat-grains against the edge of the cutters, by which they are cut into sections. This perforated rim is of pulley-like form, and in this instance is formed with a disk-like end, in the center of which is fixed a shaft, *a*, fitted to revolve in the tubular hub of the fixed disk E. This cylindrical rim is perforated at proper intervals with radial openings or holes, as at *b*, and in this instance are formed on a spiral line, which traverses the periphery of the cylinder; and their inner ends, on the inside of the cylindrical rim, are enlarged, substantially in the form known as a "counter-sink."

G is a cylindrical rim of less diameter than the perforated rim, and is placed inside thereof and concentric therewith, and is fixed in position to the disk-like end of the perforated rim. This inner rim, G, is provided with radial slots *c* at proper intervals, to connect the center chamber, *d*, with the outer chamber, *e*.

At *c'* are represented projecting ribs, which rise above and extend across the outer periphery of the rim.

The cutters are of right-angular form, one leg of which, as at *f*, is beveled on the outer corners, forming a cutting-edge on both edges of the face side. The other leg, *g*, of these cutters, is provided with a hole, elongated, which receives the screw-bolts *h*, by which the cutters are fixed in position on the disk E, with one of their cutting-edges adjusted closely to the outer face of the perforated rim, and the face of the cutters placed obliquely to the face of the rim, and when adjusted they are fixed in position by means of the screw-bolts *h*, the heads of which are received in the T-formed groove *k*, and their screw-threaded ends extend outward and through the elongated holes in the legs *g* of the cutters, and by means of screw-nuts in connection with the screw-bolts, the cutters, when adjusted, are fixed in position.

The relative angle of the face of the cutters with the face of the perforated rim will regulate the length of the sections of grits. This angle, and consequently the length of the sections of the grits to be cut, can be regulated by means of the adjustable cutters.

It will be seen that the cutters may be placed closer to or farther from each other to give the proper clearance for the escape or free discharge of the grits as cut, and they can be set with either edge to the perforated rim, which adapts the machine to be moved in either direction, and when the one edge of the cutters becomes worn from use the unworn edge can

be set to the perforated ring, and the movement of the rim may then be reversed and the cutting action produced on the unworn edges of the cutters, all of which will fully appear upon an inspection of the drawings.

At H is shown a brush fitted to revolve in contact with the periphery of the perforated rim on a suitable bearing, made adjustable, by means of which the brush can be placed in contact with the rim, in such a manner as to cause it to revolve therewith and the bristles of the brush to penetrate the openings in the rim to dislodge particles which have become lodged in the openings.

At *l* is represented a spur-toothed ratchet-wheel fixed to the portion of the shaft *a* which projects through the tubular hub of the fixed disk. *m* is a radial arm, pivoted on the shaft *a* outside of the ratchet-wheel, and its free end extends beyond the periphery thereof. To the free end of the radial arm *m* is pivoted a double-acting lever-pawl, *n*, having its outer arm connected to the wrist-pin of the crank-head *o* by a connecting rod, *p*. The crank-head *o* is fixed on the shaft *s*, which is fitted to revolve in bearings on the supporting-frame.

If a rotary motion be imparted to the crank-head, a vibratory motion will be imparted to the double-acting lever-pawl, and also to the pivoted radial arm, to which the pawl is pivoted by means of the connecting-rod. This movement will impart a forward intermitting jetting movement to the ratchet-wheel, and consequently to the perforated rim, equal to the angle contained or embraced in the space of two teeth and one space between the teeth, and a backward movement to the ratchet-wheel, and also to the perforated rim, equal to the angle contained in the space of one tooth of the ratchet-wheel. This backward intermitting movement of the ratchet and perforated rim is reduced to the less angle by means of the pawl-carrier *t*, fixed to the rear of the lower vertical center of the ratchet-wheel, which serves to carry the rearward-acting arm of the lever-pawl over one tooth and one space between the teeth. This jetting movement will cause the perforated rim to revolve and carry the openings over the cutters.

u represents an induction-spout, through which the oats are conducted into the center chamber, *d*, through the center opening in the outside casing N.

The usual devices, such as toothed gear wheels or pulleys and belts, may be employed in connection with the crank-head shaft to impart motion to the moving parts of the machine.

In operating my improved oat-mill, it having been put in connection with the prime mover, the grain to be operated upon is carried by the induction-spout through the center opening in the casing N into the center chamber, from which, by the jetting motion of the parts, it will be made to pass through the lengthwise radial slots in the inner rim into the outer chamber between the inner and outer rims, and the continued jetting or sifting movements of the parts will cause the grains to enter the holes in the outer perforated rim endwise, and the greater forward movement of the perforated rim will carry the grains over the inclined face of the cutters and against the cutting-edge of the next adjacent cutter, against which the grains will be cut in sections about equal in length to the difference between the forward and rear edges of the adjacent cutters. This operation will be continued with each series of holes passing each successive cutter within the cutting range, and the grits thus produced will drop from the cutters into a receiver prepared for their reception. After the series of holes carrying the grain to the cutters have passed the series of cutters, they will carry the grain toward the summit of the rim, and in their ascent most of the grains will drop from the holes onto the inner rim, and be carried by the projecting ribs over its summit to descend to the portion of the perforated rim, passing the cutters to be again subjected to the cutting process.

In the operation occasional grains will stick in the holes in the perforated rim, which, if permitted to remain, would accumulate and prevent the successful operation of the machine, to obviate which the crowning portion of the rim is made to pass under the rotary brush, the bristles of which will dislodge such adhering particles and cause them to drop onto the inner rim, to be carried over to the lower portion of the rim, passing the cutters to be again operated upon.

In the foregoing I have described the holes in the perforated rim as being produced on a spiral line traversing the cylinder. This feature subjects every portion of the edge of the cutters within the range of the perforations to the cutting action, the effect of which is to obtain the greatest amount of effective service from a given edge; but substantially the same results may be attained by producing the holes in the rim in zigzag or other regular or irregular form, so as to completely occupy the entire portion of the cutting-edge of the cutters embraced within the range of the holes in the revolutions of the rim.

I have also stated that the cutters may be so adjusted as to place their opposite cutting-edges in working contact with the perforated rim, in which instance the movement of the rim will require to be reversed, which will be readily accomplished by placing the pawl-carrier *t* to the opposite side of the lower vertical center of the ratchet-wheel, as represented in dotted lines at Fig. 6, which will carry the opposite arm of the lever-pawl over a space and a tooth on the opposite side of the vertical under center of the ratchet-wheel, which will cause the perforated rim to revolve in the opposite direction with the same back-and-forth jetting movement, as hereinbefore described.

I claim as my invention—

1. The combination, with a perforated mov-

ing rim and a fixed disk, of cutters, (one or more,) secured at one end to the fixed disk by adjustable fastening devices, adapted to change the relative angle of their face with the face of the moving rim to vary the length of the sections cut from the grains, to produce different grades of meal or grits, substantially as set forth.

2. A perforated cylindrical intermittingly-rotating rim having a back-and-forth jetting or sieving movement, in combination with a cutter or cutters operating to cut the grain into sections or grits.

3. The combination, with a perforated moving rim, of a double-edged cutter or cutters adjustably attached to permit either edge to be brought into operation, substantially as and for the purpose hereinbefore set forth.

4. The combination, with a perforated moving rim, of the concentric slotted inner rim, as and for the purpose hereinbefore set forth.

5. The combination, with the grooved fixed disk, of the perforated moving rim and the cutters adjustably fixed to the disk by means of the slotted rim and the screw-bolts, substantially as and for the purpose hereinbefore set forth.

6. The combination, with the perforated rim, of a toothed ratchet-wheel, shield, or pawl-carrier, *t*, and the double-acting lever-pawl operated by crank-head connection to impart a back-and-forth jetting and progressively rotary movement to the perforated rim, as and for the purpose set forth.

7. The combination, with the ratchet-wheel, of the double-acting lever-pawl operated by a crank movement, and the adjustable pawl-carrier operating to reverse the back-and-forth jetting movement of the ratchet-wheel, and of the perforated rim mounted on the ratchet-wheel shaft, as and for the purpose hereinbefore set forth.

8. In an oatmeal-machine, the combination, with a perforated moving rim and means for feeding grain upon the interior surface of the same, of cutters located in close proximity to the outer surface of said rim, and a rotary brush moving in contact with the outer surface of said perforated rim, and operating to dislodge any particles of grain from the perforations formed therein, substantially as set forth.

GEORGE H. CORMACK.

Witnesses:
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