J. L. WILSON.

GRAIN-REDUCING APPARATUS.

No. 192,208. Patented June 19, 1877.

Fig. 1.

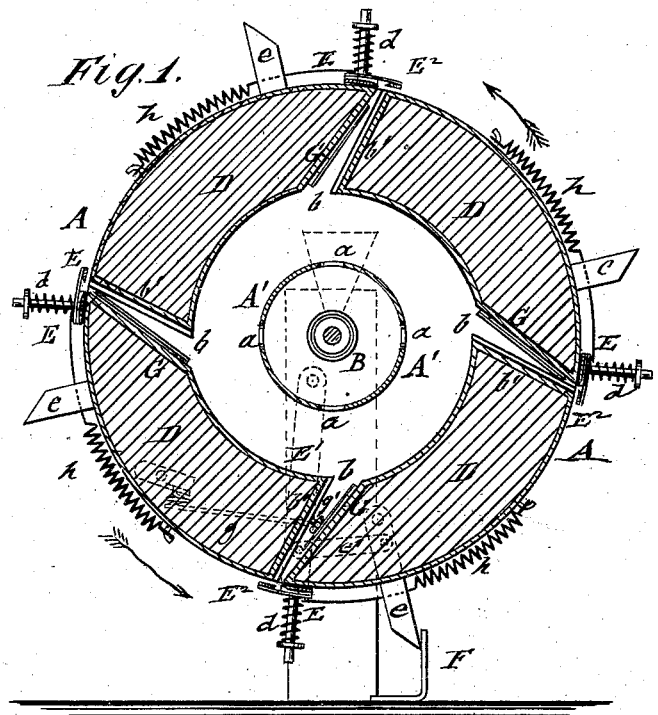


Fig. 2.

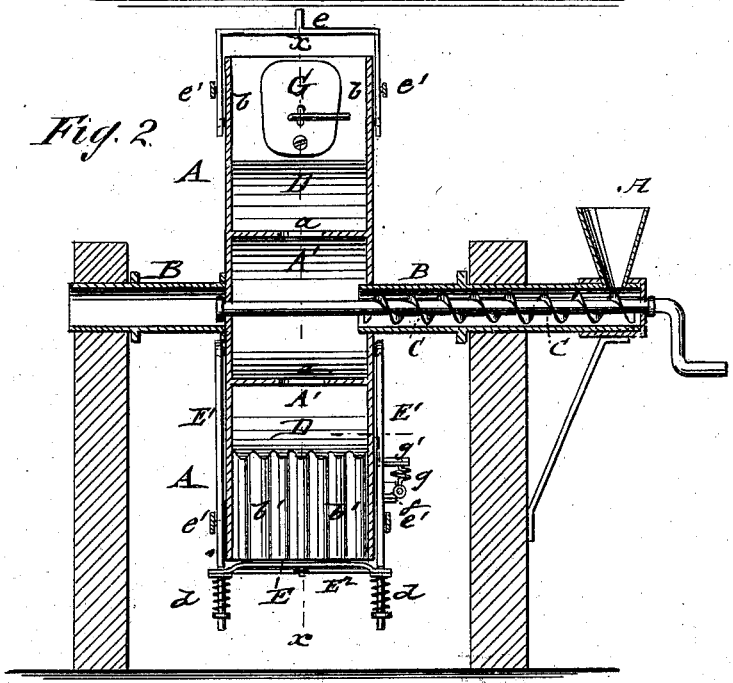
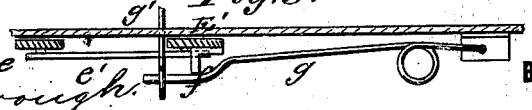


Fig. 3.



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UNITED STATES PATENT OFFICE.

JAMES L. WILSON, OF WOODSTOCK, ONTARIO, CANADA, ASSIGNOR TO JOHN FORREST, OF SAME PLACE.

IMPROVEMENT IN GRAIN-REDUCING APPARATUS.

Specification forming part of Letters Patent No. **192,208**, dated June 19, 1877; application filed May 12, 1877.

To all whom it may concern:

Be it known that I, JAMES L. WILSON, of Woodstock, in the Province of Ontario and Dominion of Canada, have invented a new and Improved Grain-Crushing Machine, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a vertical longitudinal section of my improved grain-crushing machine, taken on line *x x*, Fig. 2; Fig. 2, a vertical transverse section of the same; and Fig. 3, a detail side view of the mechanism for working the agitators.

Similar letters of reference indicate corre sponding parts.

This invention relates to an improved machine for converting the hulled kernels of oats or other grain into a coarse meal. This is ordinarily done by crushing the grain between rollers or grinding it with millstones, and afterward screening it into different grades of meal. The objection to these methods of crushing is that a large percentage of the grain is reduced to a fine flour, which of much less value than the coarse meal.

The object of this invention is to make a meal of superior quality and to avoid the loss of any part of grain in flour. This is accomplished by means of a rapidly-revolving cylinder divided into several sections, the faces of which have numerous parallel grooves from the hollow interior space to the circumference, which cause the grain to pass along the grooves, and to be presented endwise to reciprocating knives, the grain being retained for their action by guards in the holes or openings. The grain is fed to the interior of the cylinder in suitable manner, and from the same to the exit grooves and openings, the exit-passages having laterally-moving agitators to prevent the clogging of the grain in the grooves.

In the drawing, A represents a cylinder that is rapidly revolved by a hollow shaft, B, turning on suitable standards, the grain being fed from a hopper to the hollow shaft B, and along the same, by a revolving feed-screw, C, or in any other approved manner, to an interior drum, A′, of the cylinder, and through openings *a* of the same into a hollow space around the drum. The outer solid portion of the cylinder is divided into sections D, which communicate from the hollow space around the drum A′ with the circumference of the cylinder by channels *b*, that diminish in width to the exit slots or openings, which are about the size of the grain, so as to allow the free outward passage of the same. The faces of the sections D are provided with parellel grooves *b′*, as shown in Fig. 2, along which the grain passes.

E E are the knives, that are mounted into pivoted frames E^1, extending sidewise along the cylinder to the circumference of the same, the knives being pressed by spiral springs *d* on the cylinder, so as to pass close over the exit-holes of the channels or passages *b*. In front of the knives E are arranged guards E^2, which are placed at a short distance from the exit-holes, to prevent the grain from leaving the cylinder and exposing it to the cutting-knives. The knives E are operated by means of radial pivot-arms *e*, which are brought, during the revolutions of the cylinder, in contact with a fixed stop or plate, F, said pivot-arms being connected by links *e′* with the pivot-frames E^1 of the knives, so as to carry the latter forward to cut the grain.

The pivot-frames E^1 bear, by lugs *f*, against spring-rods *g*, which operate, by connecting-rods *g′*, the agitators G, that are pivoted to the inner ends of the channels *b*, to the face opposite the grooved faces of the same. The forward motion imparted to the knife-frames E^1 produces also the moving of the agitators across the channels by the contact of the lugs *f* with the spring-rods, as shown in Fig. 3, the spring-rods returning the agitators, together with the knife-frames, by the action of spiral springs *h* as soon as the radial arms *e* have passed over the fixed plate F. The agitators serve to keep the passages free in case they should get filled up too much, and admit the grain to pass freely along the grooves.

The machine requires less power to do a given amount of work than stones, and makes a better quality of meal with much less percentage of loss.

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

1. The combination, in a grain-crushing machine, of the revolving cylinder, to which the grain to be cut is fed from the interior, and which is provided with grooved and tapering exit-channels, with the intermittently-sliding and spring-acted knives and guards, guided along the circumference of the cylinder, and with a fixed actuating stop plate, substantially in the manner and for the purpose set forth.

2. The combination of the cylinder A, having grooved and tapering exit-channels for conducting the grain from the interior to the circumference, with the cutting-knives E E and guards E^2 E^2, attached to pivoted frames E^1, and operated by pivot-arms *e* and fixed stop-plate F, substantially as specified.

3. The combination of the exit-channels of the cylinder with pivoted and laterally-moving agitators G, to prevent clogging of channels, substantially as set forth.

4. The combination of the cylinder A, having tapering and grooved exit-channels *b*, with the pivoted agitators G, connecting-rods *g'*, spring-rods *g*, spring-acted knife-frames E^2, links *e'*, pivot-arms *e*, and stop-plate F, to work agitators and knives by the contact with stop-plate, substantially in the manner and for the purpose described.

JAMES L. WILSON.

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