S. SANFORD.

Oatmeal-Machine.

No. 221,744. Patented Nov. 18, 1879.

Fig. 1.

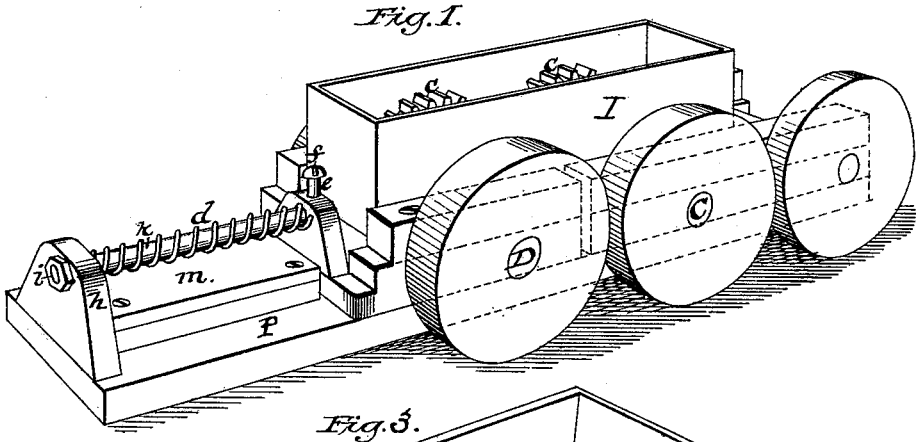


Fig. 3.

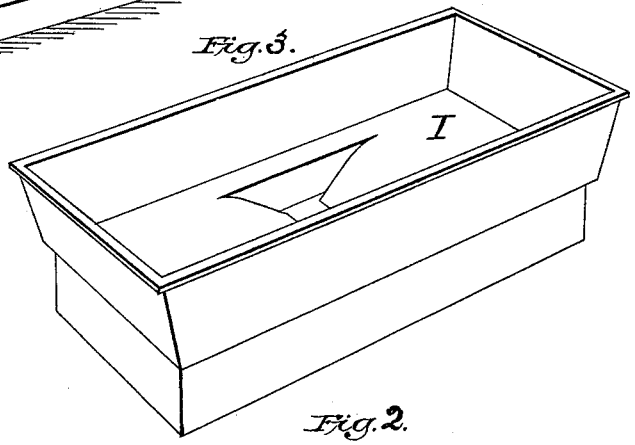
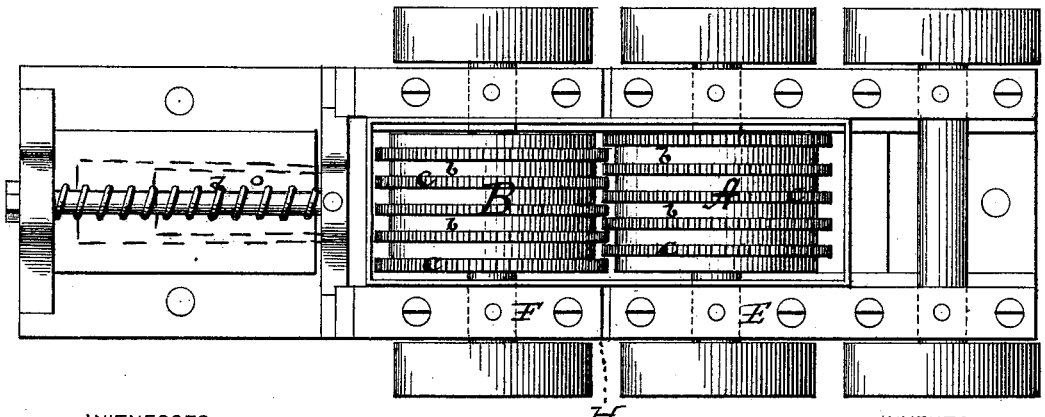


Fig. 2.



WITNESSES

John A. Rees

J. Tyler Powell

INVENTOR

S. Sanford

by Dewey Cann & Kane

ATTORNEYS.

UNITED STATES PATENT OFFICE.

SYLVESTER SANFORD, OF PREEB, WISCONSIN, ASSIGNOR TO N. B. BROWN AND W. S. TAYLOR, OF CEDAR RAPIDS, IOWA.

IMPROVEMENT IN OATMEAL-MACHINES.

Specification forming part of Letters Patent No. **221,744**, dated November 18, 1879; application filed May 16, 1879.

To all whom it may concern:

Be it known that I, SYLVESTER SANFORD, of Preeb, in the county of Brown and State of Wisconsin, have invented a new and valuable Improvement in Oatmeal-Machines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a perspective view of my improved machine. Fig. 2 is a plan view of the same. Fig. 3 is a perspective view of the hopper detached.

My invention relates to a machine of the class in which the grain is fed between horizontally-revolving rollers, and acted upon by cutters on the peripheries of the rollers.

My object is to cut the grain apart transversely in such manner as to form coarse grits, insure the cutting of each grain into one or more parts, and avoid the waste occasioned by in part pulverizing the grain into minute particles. Therefore, my invention consists of two revolving solid wheels or rollers, having a series of annular parallel grooves and cutting teeth or knives formed on their periphery, arranged on separate shafts, parallel with each other, and at such distance apart that the cutting-teeth of each roller will fit into the annular grooves of the opposite roller, so that the oats as they are fed to and carried along in the annular grooves of the respective rollers, are cut apart transversely by the teeth of the opposite rollers, in combination with a guide rod or rods and a yielding device, so that by means of the guide-rod the distance between the surfaces of the rollers can be adjusted, and by means of the yielding device one of said rollers is rendered yielding, as will be hereinafter more fully set forth.

In the annexed drawings, forming a part of this specification, the letters A B are the solid wheels or rollers, which are mounted upon the axles C D, respectively, revolving in bearings E F, connected to the supporting-frame H.

The rollers A B are operated by band-pulleys, or other suitable mechanism, to rotate them in opposite directions with equal velocity. These rollers are each provided with a series of annular parallel grooves, *b*, formed in their periphery, of such size and depth as to receive the grains of oats, hold and present them lengthwise, and a series of annular cutting teeth or knives, *c*, formed on their periphery for cutting the presented grains of oats in the grooves, as fully shown in Fig. 2 of the drawings.

The cutting-teeth *c* of the rollers are arranged opposite to the grooves *b* of the respective rollers, and project into said grooves at the points of contact of the two rollers. (See Fig. 2 of the drawings.)

A suitable hopper, I, is arranged upon the frame to receive the shelled oats to be reduced and present them to the feeding and cutting rollers. The grain will fall into the annular grooves of the respective rollers and assume the proper position to be acted upon. The grains are carried along by the revolution of the rollers until they reach the point at which the cutting-teeth act upon them, when they are transversely cut across by being caught between the said teeth and the bottom of the grooves in the respective wheels or rollers. As the wheels or rollers revolve in opposite directions, the teeth, when acting upon the oats, move in a direction corresponding to that in which the oats are carried by the rollers, and thus, as both rollers move at the same rate of speed, there is no rubbing or grinding action, but every grain is cut apart once, twice, or oftener, according to its size, substantially in the same manner that a substance is severed by the gradual approach of the opposite edge of a pair of shears. The cut oats or grits thus formed are discharged beneath the machine from between the rollers into a suitable receptacle.

The cutting teeth or knives *c* are arranged on the periphery of the rollers with the points at distances apart equal to about one-third or one-half the length of an average-sized grain of oats, and the annular grooves in the rollers are of such size and shape as to prevent the oats being received crosswise therein, and so carried to the cutters in a position to be acted upon in the direction of the length of the grains, or, possibly, pass between them uncut.

By this construction of the rollers I obtain a cutting and a resisting surface to each roller, and between the rollers a resisting and cutting surface extending from end to end of the rollers, thereby securing a double feed and cut.

The roller B, journaled in the frame H, is capable of a sliding movement, and can be adjusted to any desired distance from the roller A, in order to determine the coarseness of the grits or the division of the oats, by means of the rod *d*, secured at one end to the bracket *e* of the frame H, through the medium of a set-screw, *f*, or otherwise secured. This rod passes through a stationary bearing, *h*, which is secured to the end of the frame, and is provided with screw-threads and nut *i*, and inclosed within the spiral spring *k*, or its equivalent elastic cushion.

The lower and rear end of the sliding frame H is provided with a plunger or rod, *o*, as indicated by dotted lines, working into the chamber *m*, arranged on the platform or foundation P, between the brackets supporting the rod above.

The principal object of the elastic device is to render the combined feeding and cutting roller B yielding, so that in case any very hard substance gets between the cutting-surfaces the roller can give, and injury to the machine is avoided.

I am aware that rolls of equal diameters, revolving in opposite directions with a differential velocity, and similarly constructed on their outer surfaces to the rolls used in my invention, have heretofore been employed; and I am also aware that a yielding and adjustable frame carrying a roll has heretofore been used, and I therefore lay no claim, broadly, to such inventions, my claim being confined to the construction and combination of parts specifically set forth therein.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, in a machine for making oaten grits, of two solid rollers revolving in opposite directions with the same velocity, and provided with a series of annular grooves separated by a series of cutting-teeth formed on their peripheries, mounted on separate shafts parallel with each other, in such manner that the cutting-teeth of each roller will fit into the annular grooves of the opposite roller, a single guide-rod, and a single yielding device, substantially as and for the purpose set forth.

2. A machine for making oaten grits, consisting of the two rollers A and B, each roller being provided with a plurality of annular grooves and cutting-teeth, *c*, arranged alternately, adjustable frame H, rod *d*, spiral spring *k*, and set-screw *f*, substantially as described.

3. In a machine for making oaten grits, the combination of the rolls A B, constructed as described, and the stationary frame in which the roll A is journaled, with the adjustable and yielding frame H, having the piston *o*, sliding in guides in the platform P, perforated brackets *e h*, set-screw *f*, rod *d*, spring *k*, and adjusting-nut *i*, the whole arranged and constructed to operate in the manner and for the purpose set forth.

S. SANFORD.

In presence of—
W. S. TAYLOR,
J. S. ANDERSON.