

(No Model.)

S. G. STEIN.
OATMEAL MACHINE.

No. 249,804.

Patented Nov. 22, 1881.

Fig 1.

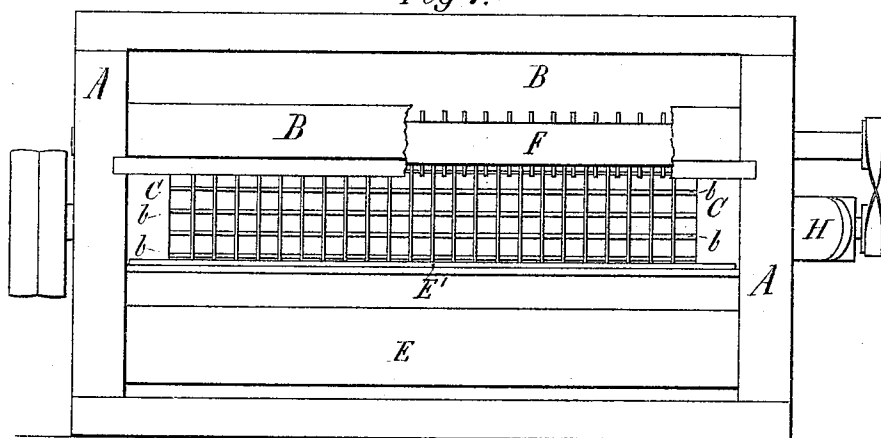


Fig 2.

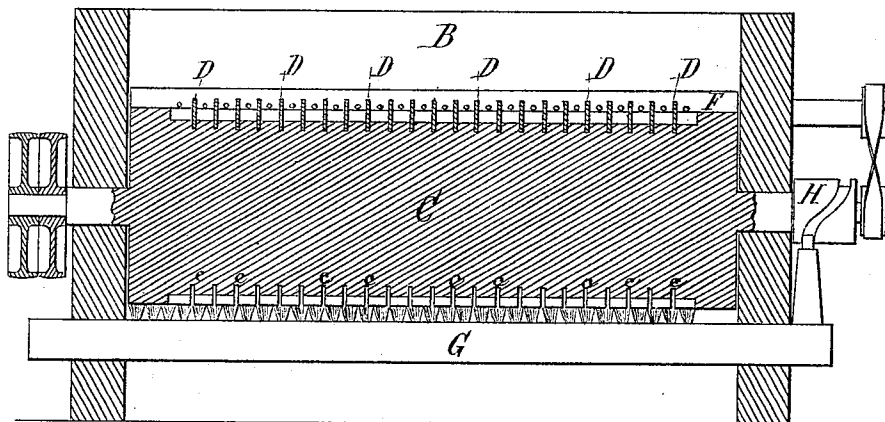
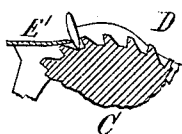


Fig 3.

Fig 4.



Witnesses:
J. P. Theo. Lang.
Robt. L. Fenwick.

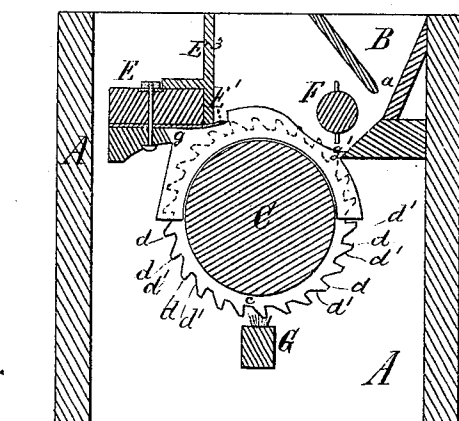
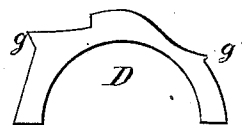


Fig 5.



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UNITED STATES PATENT OFFICE.

SIMON G. STEIN, OF MUSCATINE, IOWA.

OATMEAL-MACHINE.

SPECIFICATION forming part of Letters Patent No. 249,804, dated November 22, 1881.

Application filed August 1, 1881. (No model.)

To all whom it may concern:

Be it known that I, SIMON G. STEIN, a citizen of the United States, residing at Muscatine, in the county of Muscatine and State of Iowa, have invented a new and Improved Oatmeal-Machine, of which the following is a specification.

This invention relates to that class of oatmeal-machines which cut cleaned oats, known as "groats," into oatmeal by a knife acting upon the oats in a direction transverse to their longest diameters, the respective oats being presented singly to the knife.

The nature of my invention consists, first, in an oatmeal-machine which combines in its construction a revolving cylinder provided with beveled grooves or depressions running lengthwise with its axis, and having transverse kerfs extending around it, and stationary segmental parting-plates of a greater width or depth than the grooves, at certain points, which plates are affixed to the bottom of the hopper and to the knife-support, and made to enter the kerfs and to extend out beyond the highest surface of the cylinder, near the points where the oats are cut, whereby the cylinders can be very cheaply manufactured, and also cells for the respective oats can be provided with very deep side walls, and these cells can have surfaces for the respective oats to rest against, which are specially adapted for firmly sustaining the oats while being cut, freely discharging the cut product into a receiver, and facilitating the passage backward and entrance into succeeding empty cells of the portions of oats which require to be cut again; second, in the combination, with the cylinder having grooves and kerfs, and with the parting-plates extending from the hopper, of a stationary knife; third, in the combination of a roller provided with projecting pins of any suitable form, or equivalent devices, with the hopper and cylinder having separated cells, whereby the oats are more effectually placed in proper attitude for entering the cells of the roller; fourth, in the combination of a longitudinal brush, means for reciprocating the same, with the longitudinally and transversely grooved cylinder, the brush traversing the longitudinal grooves of the cyl-

inder and cleaning the adhering oatmeal therefrom without any undue obstruction.

In the accompanying drawings, Figure 1 shows a top view of the machine with a portion of the hopper broken away; Fig. 2, a vertical longitudinal central section of the same; Fig. 3, a vertical transverse section of same; Fig. 4, an enlarged detail section of a portion of the cylinder with cells, and of the knife; and Fig. 5, one of the parting-blades detached from the machine.

The case A of the machine may be in form of an oblong chest, open at top and bottom, as shown, or of any other suitable form and construction. Within this case, on one side, near the top, a hopper, B, is provided, said hopper having its rear side movable up and down in oblique grooves, for the purpose of regulating the feed or discharge of oats to the cylinder. The bottom board of this hopper is beveled off or inclined on its rear or inner edge, in order that it shall conduct the oats properly upon a cellular feed-roller, hereinafter described. Alongside this hopper, opposite the discharge-passage *a* and inclined or beveled edge of the bottom board of the hopper, a cylinder, C, is arranged. This cylinder has a shaft, which rests in bearings in the case and revolves with the cylinder. The periphery of the cylinder is grooved longitudinally, as shown at *b*, and it is also formed with kerfs *c*, which extend entirely around the cylinder. The grooves are of a width and depth adapted to form cells, each of which is in connection with the parting-plates, hereinafter described, suited for holding a single oat, and the kerfs are placed just far enough apart to cut the grooves up into portions of a length suitable for forming cells of the proper size. The grooves have a slight "undercut," as shown at *d*, into the surface of the cylinder, and they also have an upward-beveled surface from the base of this undercut, as shown at *d'*. This form of the groove presents the oats to the knife while they are standing in the cells in the most proper position for being cut into oatmeal, the knife being enabled thereby to act with a slightly-diagonal cut upon the oats.

Into the kerfs *c* parting-plates D are fitted

snugly. These plates are of segmental or other suitable form, and are attached to the bottom board of the hopper and to the knife-support E by means of beveled shoulders *g* and *g'*, as shown, or in any other suitable manner. In order to set the parting-plates in position, and have their beveled shoulders *g g'* rest upon corresponding beveled surfaces of the bottom board of hopper B and of knife-support, the knife-support is made in two parts, and the lower part is adjusted to a position under the shoulder *g*, and then screwed up against said shoulder and against the knife E', hereinafter described. The bolts or screws which fasten the knife-blade in position serve for uniting the two parts of the knife-support, and also for keeping the lower part of the knife-support in firm bearing contact against the parting-plates. The parting-plates are quite thin, and they extend up from a point near where the cutting takes place beyond the periphery of the cylinder C sufficiently to form high side walls to the cells which, by means of the grooves and these plates, are formed in the surface of the cylinder. The shoulders *g g'* are formed on the parting-plates, as seen in Figs. 3 and 5, at points between their longest diameter, and therefore when the parting-plates are in position and clamped by the screws or bolts of the knife-support they cannot move upward or downward; but by loosening the bolts and separating and removing the parts of the knife-support and the knife-blade said plates can be removed readily.

Between the cylinder and the hopper may be applied an agitating-roller, F, having pins or suitable devices projecting from its surface. The pins of this roller act upon the oats as they are fed from the hopper, and assist in adjusting them, respectively, to the proper attitudes for entering the respective cells of the cylinder. This roller might be dispensed with; but it serves a useful purpose when provided, and I prefer to use it.

Above but in rear of the shaft of the cylinder a knife-blade, E', having a cutting-edge which is at a slight inclination from the horizon, is arranged upon the support E. The edge of this knife extends the whole length of the cylinder, and very nearly touches the surface of the same.

Beneath the cylinder a cleaning-brush, G, is arranged, and it is caused to reciprocate in the grooves of the cylinder by means of any suitable device. In the drawings, a cam, H, is shown for producing the movement of the brush, said cam being applied to the shaft of the cylinder, as shown, or in any appropriate manner. The cells of the cylinder, not having side walls, when they pass beyond the parting-plates, can be cleaned very effectually by the brush G. The surfaces of the cellular portions of the cylinder being beveled, a very narrow longitudinal edge is formed between the respective cells, and owing to this the main body portions of a line of oats will readily fall back into succeeding empty cells the moment the cutting operation

takes place, and these body portions will be again cut when brought in contact with the knife, and thus the oats will be cut up into oatmeal by successive cutting operations, while supported in succeeding cells.

The operation is as follows: The oats, being supplied from the hopper, are deposited upon the cellular roller either directly or by aid of the pin-roller. Part of the cells having respectively received oats standing in upright positions, the cylinder in its revolution presents the oats to the knife, which cuts off a sufficient portion for forming oatmeal. The larger pieces of the oats fall back and find position again in empty succeeding cells, while the cut product passes down below the knife and glides out of the cell into a suitable receiver. As the cylinder revolves, the brush cleans out the cells and prevents the machine from becoming clogged. The feed from the hopper must be so regulated as to have a suitable portion of the cells properly supplied, leaving a portion unfilled. In case the oats, after being once or twice cut by the knife, cannot in falling back find empty cells, they will fall back to the discharge-passage of the hopper, stop the inflow of oats, and enter the cells at that point and be carried around again to the knife.

A number of the cylinders, knives, pin-rollers, hoppers, and cleaning-brushes may be placed in a single frame or case, and be operated by suitable gearing and motive power.

The parting-plates have their upper edges eccentric to the grooved cylinders, and by this means these plates do not extend quite as high as the highest portions of the grooved cylinder at the point where the pin-roller F is applied, and in rear of this point, or, in other words, as they extend toward the knife, they gradually rise above the cylinder. The object of this is to allow the projecting parts of the cylinder to bring the groats more effectually toward the knife from underneath the hopper.

Above the knife and knife-support and attached to the frame of the machine a partition, E³, is provided, and by means of the same such portions of the oats being cut as stand above the knife-blade are arrested, deflected, and caused to fall backward upon the cylinder C, so as to enter into such cells thereof as may be empty, to be brought again in contact with the knife. Thus an undue accumulation upon the knife-blade of the larger pieces of cut oats is prevented, and the operation of cutting all the pieces to the proper size greatly enhanced.

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

1. In an oatmeal-cutting machine, the combination, with a revolving cylinder provided with longitudinal grooves or depressions and transverse kerfs, of fixed parting-plates, substantially as and for the purpose described.

2. The combination of the revolving cylinder having grooves and kerfs, stationary part-

ing-plates, and a knife, substantially as and for the purpose described.

3. The pin-roller F and hopper B, having the inclined conducting-edge, in combination with
5 a revolving cylinder provided with separated cells in its periphery, substantially as and for the purpose described.

4. The combination of the revolving cylinder having grooves and kerfs with the brush

G and means for reciprocating the same, the 10 brush being arranged below the cylinder, its bristles extending into the grooves and kerfs of the cylinder along the whole length thereof, substantially as described.

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Witnesses:

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