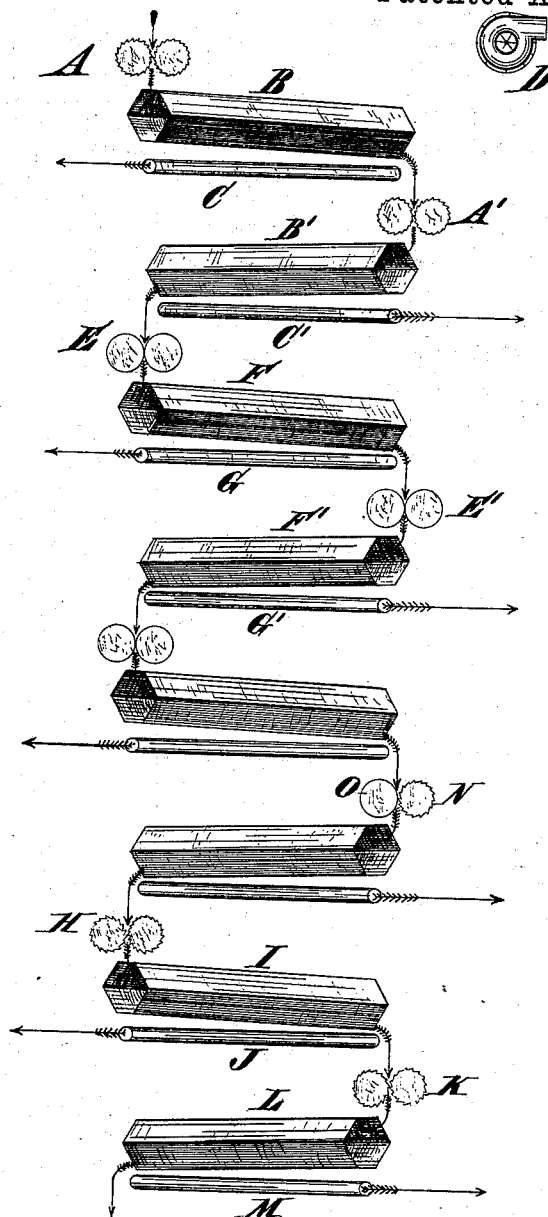


(No Model.)

U. H. ODELL.
PROCESS OF GRADUAL REDUCTION OF GRAIN.
No. 263,204.

Patented Aug. 22, 1882.



Attest
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UNITED STATES PATENT OFFICE.

UDOLPHO H. ODELL, OF DAYTON, OHIO.

PROCESS OF GRADUAL REDUCTION OF GRAIN.

SPECIFICATION forming part of Letters Patent No. 263,204, dated August 22, 1882.

Application filed April 23, 1882. (No model.)

To all whom it may concern:

Be it known that I, UDOLPHO H. ODELL, a citizen of the United States, and a resident of Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in the Process of Gradual Reduction of Grain to Middlings and Flour, of which the following is a specification.

My invention relates to the process of making flour by the gradual reduction of the grain to remove the bran from the flour or middlings preparatory to the final finishing pass by means of a series of reduction-rolls.

In the process of gradual reduction it is desirable, first, to split the wheat longitudinally in the line of the crease to remove the germ, and also the dirt and impurities liable to lodge therein which cannot easily be removed by scouring or brush machines. It is desirable to avoid cutting or breaking the bran too fine in these reduction steps, as it will become mixed with and discolor the flour, leaving specks which cannot be entirely removed by middlings-purifiers and bolting-machines. I have discovered that by using corrugated rolls to do the splitting, sifting out the middlings and flour, and removing the loosened dirt and bran by aspirators, and then passing the split and broken kernels between smooth-faced or non-cutting rolls to further reduce the wheat by a squeezing or crushing instead of a cutting process, then removing the flour and middlings, then passing the tailings of this reduction through corrugated rolls set closer for stripping the remaining particles of flour from the bran, then bolting it, I obtain better flour than by any other of the processes now known to me to be in use.

The accompanying drawings illustrate one mode of carrying out my process.

A represents a set of corrugated rolls; B, a reel; C, a conveyer of ordinary construction for discharging from the reel-hopper the fine material separated from the tailings by the reel.

D represents an aspirator or suction-fan connected with the reel for removing the bran and dirt loosened from the wheat by the first reduction. As wheat varies in size it is difficult to split or break open all the kernels without crushing any of them by one pass. Hence it is desirable to use two sets of splitting-rolls,

the first to reduce the coarser kernels and the secondary set for splitting the finer ones. A' B' C' represent a secondary set of such rolls and separators. A third set may be in some cases necessary; but two sets of cutting-rolls will properly perform the first step of splitting the grain.

E represents a set of smooth-faced or non-cutting reduction-rolls for crushing the split grain; F, a reel into which the grain is carried; G, a conveyer used in the reel-hopper for discharging the flour and middlings. E', F', and G' represent a similar set of crushing-rolls and a separating-reel and conveyer for still further crushing reduction.

H represents a set of corrugated rolls; I, a reel; J, a conveyer for making the separation of the material reduced by the rolls H. K represents a similar set of corrugated rolls, with accompanying reel L and conveyer M. In most cases two sets of corrugated rolls for completely cleaning or stripping the bran will be required. With very hard wheat one set will sometimes do the stripping.

The preferred mode of carrying out this process is to employ two sets of corrugated or splitting rolls, with accompanying reels and aspirator to perform the first or splitting part of the process, two sets of crushing or non-cutting rolls with bolting-reels, and two sets of corrugated rolls and accompanying separators to strip or separate the flour and middlings from the bran for the finishing or last set of the gradual-reduction process. The flour and middlings separated by the reels are of course conveyed into some suitable receptacle for further treatment in the ordinary manner. Ordinarily an aspirator will only be required in connection with the corrugated rolls used to perform the splitting or first step of the process. Each reel may, however, be provided with an aspirator, if desired. Each of these sets of crushing-rolls, with its separating devices, may be used as a single mill, or two or more may be combined on one frame, if desired.

N O represent a non-cutting set of rolls, made of one corrugated and one smooth-faced roll, and may be used in the secondary step of my process; but the result would not be as good as that obtained by the smooth-faced rolls.

By means of the process herein described I am not only enabled to make a better separation and produce better flour, but I also am enabled to produce the result with a less number of separating devices.

Another modification, and a part of my invention and discovery which can be carried on with very hard wheat, consists of the employment of a series of non-cutting corrugated rolls for the first step of my process in lieu of the cutting corrugated rolls herein shown, the other parts and steps of the process being the same as above described.

I do not desire to limit myself to the mode of arranging the separating devices, as it is obvious that the rolls and reels may be constructed separate from each other, provided the steps of the operation are carried out as herein described.

I claim—

1. The process herein described of gradually reducing and separating grain, which consists in first passing the grain through corrugated rolls to split the grain, then removing the bran

and dirt by a fan, then passing the split grain to a reel for separating the flour and middlings, then passing the same through smooth-faced rolls, then passing the tailings from the reel through cutting corrugated rolls to strip the adhering particles of flour from the tailings, and finally bolting the tailings, substantially as set forth.

2. The process herein described of the gradual reduction of grain, which consists in first passing it through cutting corrugated rolls, then through smooth-faced rolls and separating devices to separate the material after each reduction, then through corrugated rolls and separating devices for completing the gradual reduction and removal of the bran, substantially as set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

UDOLPHO H. ODELL.

Witnesses:

C. H. L'HOMMEDIEU,
JNO. E. JONES.