W. HESTON & C. PURDY.

Grain-Cutting Machine.

No. 227,626. **Patented May 18, 1880.**

Fig. 1.

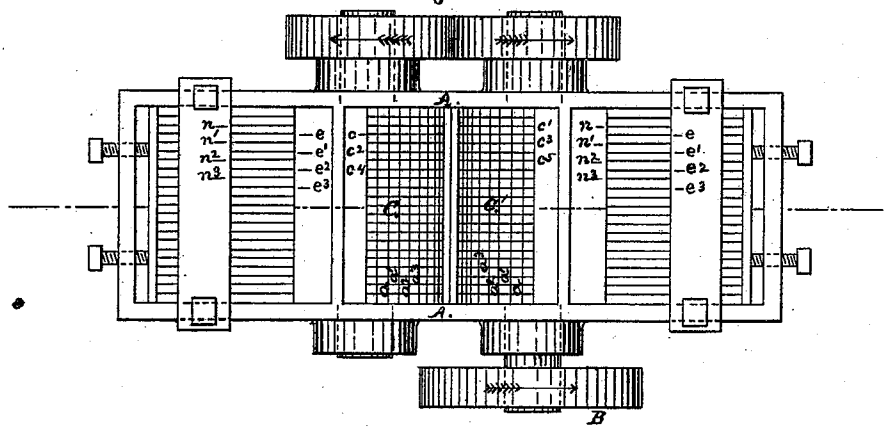


Fig. 2.

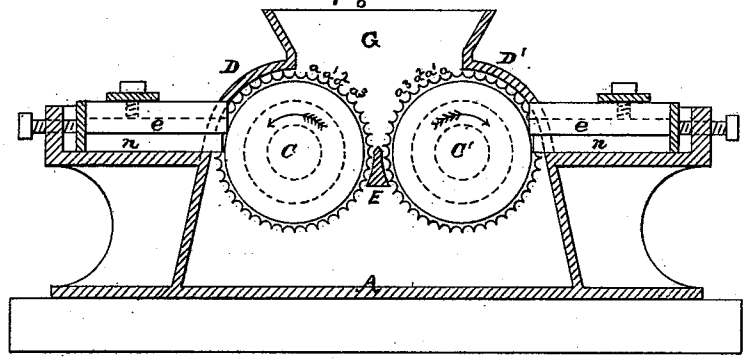
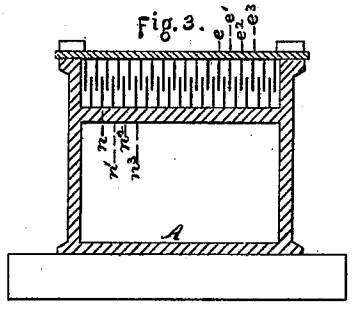


Fig. 3.



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UNITED STATES PATENT OFFICE.

WILLIAM HESTON, OF RAVENNA, AND CHESTER PURDY, OF CLEVELAND, OHIO; SAID PURDY ASSIGNOR TO SAID HESTON.

GRAIN-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 227,626, dated May 18, 1880.

Application filed April 21, 1879.

To all whom it may concern:

Be it known that we, W. HESTON, of the town of Ravenna, in the county of Portage and State of Ohio, and C. PURDY, of the city of Cleveland, in the county of Cuyahoga and State of Ohio, have jointly invented a new and useful Improvement in Grain-Cutting Machines, of which the following is a specification.

Our invention relates to that species of grain-cutting machines in which the kernels of grain are separated transversely into particles of a desired size.

In the drawings, Figure 1 is a top view of the machine. Fig. 2 is a side elevation of a longitudinal section of the machine. Fig. 3 is a rear-end elevation of the knives.

A is the frame of the machine. B is the driving-pulley, which is hung on a main shaft, and from which, by means of pinion-wheels, motion is communicated to the operating parts. C and C′ are corrugated cylinders having upon their faces longitudinal semi-annular grooves $a\ a'\ a^2\ a^3$ and transverse circumferential slits $c\ c'\ c^2\ c^3$.

D D′ are casings which partially inclose the cylinders C C′ and keep the kernels of grain from falling out of $a\ a'\ a^2\ a^3$ until they are brought in contact with the knives. E is a fitting between the cylinders, which prevents the grain deposited in the hopper from falling through between the cylinders. $e\ e'\ e^2\ e^3$ are the knives or crackers of the upper series or case, and $n\ n'\ n^2\ n^3$ are the knives or crackers of the lower series or cases. G is the hopper by means of which the grain is introduced to the cylinders.

The cylinders C C′ have an upward and outward motion in opposite directions. The kernels of grain fed into the hopper take a longitudinal position in the grooves $a\ a'\ a^2\ a^3$, which are deep enough to permit the kernels of grain to lie wholly within said grooves and of a width a little greater than the diameter of a cross-section of a kernel of grain to be cut.

By the motion of the cylinders above described the kernels of grain deposited in the hopper are carried in the grooves $a\ a'\ a^2\ a^3$, and retained therein by means of the casings D D′ until they are brought under the knives $e\ e'\ e^2\ e^3$, where, being pressed between the cylinder and the end of the knives, they are separated into two parts. These parts into which the kernels have been separated are carried in the same groove in which they were first cut, by the motion of the cylinders, until they each are brought under the knives $n\ n'\ n^2\ n^3$, when each part is separated in twain by the pressure of the cylinder against the knives, and the separated particles fall into a receptacle below.

The slits $c\ c'\ c^2\ c^3$ have a space between them equal to the length into which it is desired to cut the grain and one-half as great as the space between the knives of the upper case, and have a depth little greater than that of the grooves $a\ a'\ a^2\ a^3$.

The knives of the upper case or series are composed of thin narrow plates, which may be sharpened on the ends that come in contact with the cylinders, although that is not necessary, and are adjusted firmly in the frame A, so that the lower portion of their cutting or cracking ends will enter into the alternate slits $c\ c^2$, &c. The knives or plates are parallel, and have fittings between them to within a short distance of the ends that come in contact with the cylinders, which operate to stiffen the knives and to hold them in their respective positions. The knives of the lower case or series are arranged with respect to each other in a manner similar to that described for the knives of the first case or series; but the second case is so adjusted with respect to the first or upper case that the knives of the lower case will be below the spaces between the knives of the upper case, and so that the lower portion of their cutting or cracking ends will enter into the alternate slits $c'\ c^3$, &c., below the point in the cylinder at which the knives of the upper case enter into the alternate slits $c\ c^2$, &c.

The advantage gained by this arrangement of cases of knives is that a kernel of grain or a part of a kernel being separated into parts by one cut only at a time, there is no bruising or breaking of the particles so as to permit of the escape of the flour contained in the berry, which must occur when the kernel is cut by two knives simultaneously, as in such case the particles are compressed between the knives

and the particle so bruised that the flour escapes.

Our invention may be used either with one cylinder having the hopper directly above the cylinder or with two cylinders with the hopper arranged as in Fig. 2 of the drawings.

We do not claim as invented by us a corrugated carrying-cylinder whose corrugations are of the same depth, as we are aware that that is an old device; but

What we do claim is—

1. The combination of the rotary, grooved, and slitted feed-roll with a series of stationary smooth-edged knives so arranged with reference to the feed-roll that the edges of the knives and surface of the roll gradually converge, substantially as described.

2. Two or more series of knives, one series being above the other series, the knives of one series alternating with the knives of the other series with respect to their lateral positions, in combination with corrugated cylinders C C', or either of them, and the hopper G, substantially as shown and described.

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