No. 647,129. Patented Apr. 10, 1900.

J. BEALL.

HOMINY MILL.

(Application filed Dec. 1, 1899.)

(No Model.)

Fig. 1.

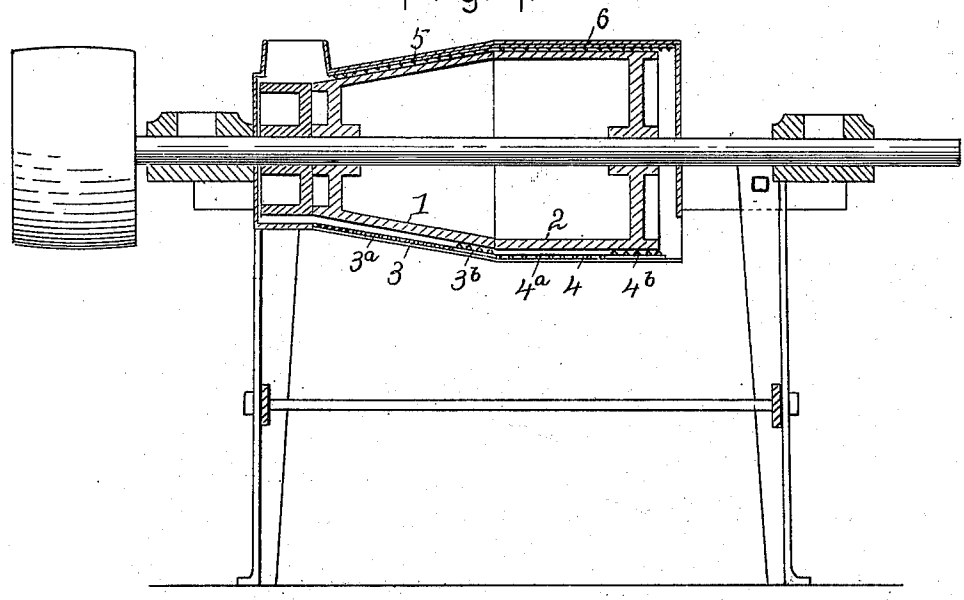


Fig. 2.

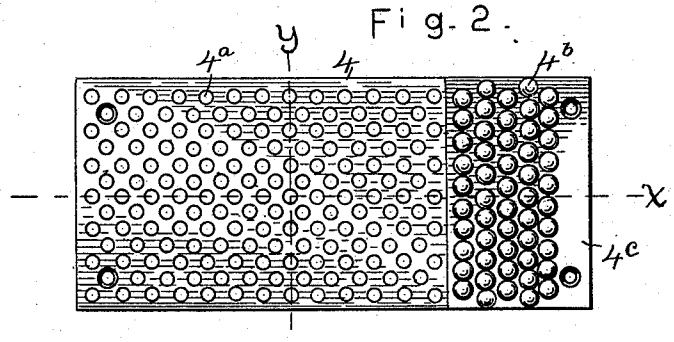


Fig. 3.

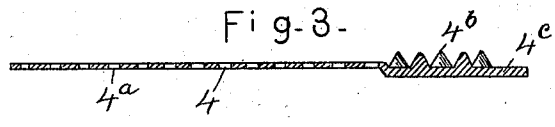
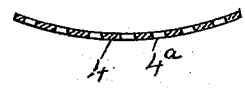


Fig. 4.



Attest
Nora Graham
Ina Graham

Inventor
JOHN BEALL.
by L. P. Graham
his attorney.

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UNITED STATES PATENT OFFICE.

JOHN BEALL, OF DECATUR, ILLINOIS, ASSIGNOR OF ONE-HALF TO HUGH CREA, OF SAME PLACE.

HOMINY-MILL.

SPECIFICATION forming part of Letters Patent No. 647,129, dated April 10, 1900.

Application filed December 1, 1899. Serial No. 738,841. (No model.)

To all whom it may concern:

Be it known that I, JOHN BEALL, of the city of Decatur, county of Macon, and State of Illinois, have invented certain new and useful Improvements in Hominy-Mills, of which the following is a specification.

This invention relates to machines for breaking, degerminating, and scouring cereals in which a side (or sides) of the concave is perforated to permit the escape of the treated stock; and its purpose is to retard the grain in the operative part of the machine until it is completely treated. The retarder does not entirely prevent the passage of the stock, but it breaks, degerminates, scours, or otherwise treats the material that passes through it, and it holds the greater part of the stock in the machine until it has been reduced sufficiently for the scourings to pass through the perforations in the plates of the concave. The invention is applicable to vertical machines in which grinding, breaking, or scouring compartments are disposed alternately with discharging-compartments and to horizontal machines in which the upper part of the concave acts to reduce the grain and the lower part of the concave is perforated to permit the escape of the scourings. It is exemplified in the structure hereinafter described, and it is defined in the appended claims.

In the drawings forming part of this specification, Figure 1 is a longitudinal vertical section through a machine embodying my improvement. Fig. 2 is an enlarged detail in plan of a perforated plate and a retarder therefor. Fig. 3 is a section on line x in Fig. 2. Fig. 4 is a section on line Y in Fig. 2.

The machine illustrated is similar to that described in Letters Patent of the United States No. 628,516, granted to me July 11, 1899, in which a cone and a cylinder are used conjointly for reasons described in the patent; but the present invention is independent of such arrangement and of other details of construction, the representation of my former invention being used as a matter of convenience merely.

In the machine shown the cone is represented at 1 and the cylinder at 2. The upper part and the sides of the concave for the cone and for the cylinder are supplied with inwardly extending protuberances 5 and 6, used to coöperate with the cone and the cylinder in breaking, degerminating, and scouring the grain, and the lower part of the concave is perforated in part and in part provided with retarding protuberances. For convenience the operative plates of the concave are made detachable from the shell of the concave, so that a worn plate may be easily replaced, and in this case a perforated discharge-plate for the cone is shown at 3 and a perforated discharge-plate for the cylinder is shown at 4. These plates are smooth on their inner surfaces as far as they are perforated; but on the lower or discharge end of each is a set of inwardly-extended protuberances 3^b and 4^b, which retard the grain. The protuberances prevent rapid passage of the grain to an extent to compel the reduction of nearly all the stock and the discharge of the scourings through the perforations, and whatever grain passes through the retarder is completely reduced therein. The retarding protuberances are located above the discharge end of the cylinder, and all the grain they retard is held in the operative part of the machine, where it is repeatedly subjected to the protuberances in the upper part of the concave until the scourings make their escape through the perforated plates and the hominy is passed gradually through the retarder.

The perforations of the plate 3 are shown at 3^a and those of the plate 4 are shown at 4^a. The retarding protuberances are preferably conical, and they are close enough together to prevent the passage of insufficiently-reduced stock and to properly reduce whatever stock is submitted to them. The reducing protuberances in the upper part of the concave are also preferably conical, as shown at 5 and 6; but that is not material to this invention.

The inner surface 4^c of the retarding portion of the perforated plate is set back from the cylinder slightly farther than is the smooth inner perforated surface, so as to give space for the bases of the cones without unduly restricting the passages between the cones, and the cones are alternately disposed

so that the grain must pass through the retarder in zigzag directions.

In this particular case the retarder and the perforated plate are cast in one piece; but they may be made separate and fitted together in the machine in an obvious manner without affecting the operation of the machine or the principle of the invention.

In the embodiment of the invention illustrated in the drawings there are virtually two complete retarders and two dischargers, one for the cone and the other for the cylinder, so that my invention is set forth in duplicate. It is obvious, however, that the plate shown in detail is representative of the invention and that it may be used on the cylinder alone or on cylinders of machines somewhat different from that described.

I prefer to place two plates like that shown in the drawings one beside the other in the under side of the concave of a horizontal machine; but this is merely a matter of preference, and in vertical machines I place the plates between grinding-compartments in the usual manner.

I claim—

1. The combination, in a hominy-mill, of a cylinder, a concave having a perforated, internally-smooth discharge-plate interposed between grinding-surfaces of the concave and a set of retarding protuberances projecting inwardly at the lower, or discharge, end of the plate, substantially as set forth.

2. The combination, in a hominy-mill of a cylinder, a concave having a perforated, internally-smooth plate interposed between grinding-surfaces of the concave and a set of inwardly-projecting conical protuberances arranged alternately, or zigzaggingly at the lower or discharge end of the perforated plate.

3. The combination, in a hominy-mill of a cylinder, a concave having a perforated, internally-smooth discharge-plate interposed between grinding-surfaces of the concave, a plate or surface at the lower end of the perforated plate set back from the cylinder farther than is the perforated plate and a set of inwardly-extending protuberances on such set-back surface, substantially as described.

4. The combination, in a hominy-mill of a cylinder, a concave having grinding-surfaces and a perforated, internally-smooth discharge-plate interposed between grinding-surfaces of the concave, such plate having a band of inwardly-projecting protuberances to retard the grain in contact with the smooth surface of the plate.

JOHN BEALL.

Witnesses:
HARRY H. CREA,
H. C. KEPLER.