(No Model.)

H. B. STEVENS.

HULLING MACHINE.

No. 425,111. Patented Apr. 8, 1890.

Fig. 1.

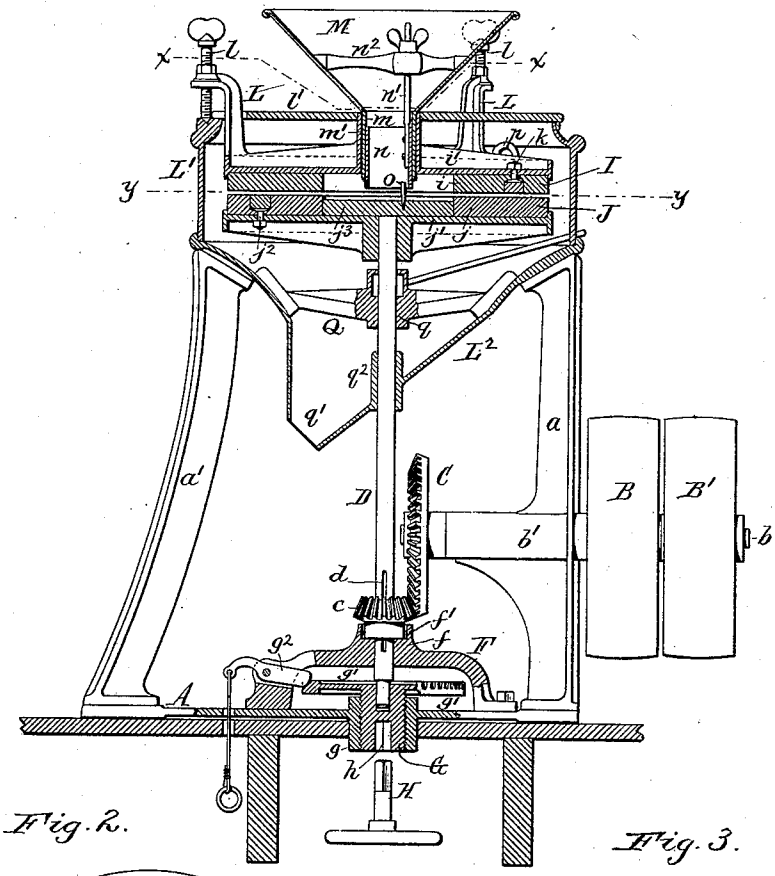


Fig. 2.

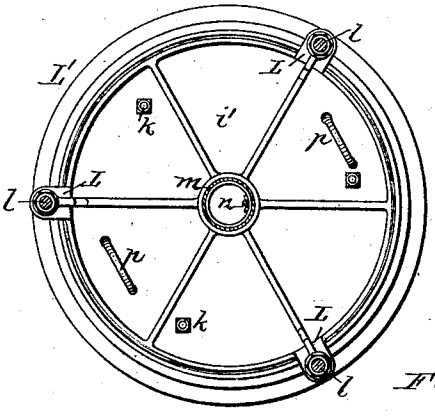


Fig. 3.

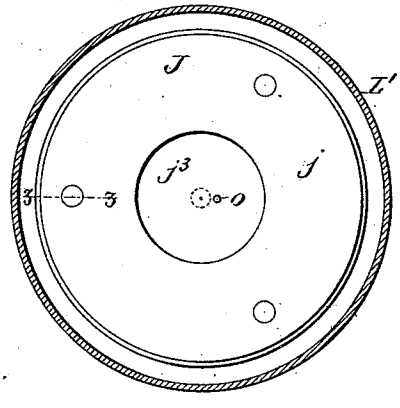
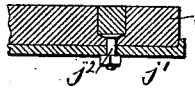


Fig. 4.



Witnesses:

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UNITED STATES PATENT OFFICE.

HENRY B. STEVENS, OF BUFFALO, ASSIGNOR TO THE GEORGE L. SQUIRE MANUFACTURING COMPANY, OF EVANS, NEW YORK.

HULLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 425,111, dated April 8, 1890.

Application filed October 4, 1886. Serial No. 215,210. (No model.)

To all whom it may concern:

Be it known that I, HENRY B. STEVENS, of the city of Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Hulling-Machines, of which the following is a specification.

My invention relates to that class of hulling-machines which are more particularly designed for hulling rice and which are provided with a stationary stone and a revolving stone of disk form.

Natural stones which are adapted for hulling rice are rare, and they are only efficient when comparatively large stones are used. Such stones are expensive and render the hulling-machines in which they are used so costly that they are beyond the means of small planters. Such stones also require frequent dressing, which makes it expensive to keep the machines in working order.

The principal object of my invention is to overcome these difficulties by a construction of the machine which permits of the use of artificial stone for the hulling-disks.

Another object of my invention is to provide improved devices for feeding the grain to the machine, adjusting the hulling-disks, and discharging the grain from the machine.

My invention consists of the improvements which will be hereinafter fully set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a sectional elevation of a hulling-machine provided with my improvements. Fig. 2 is a horizontal section in line $x\,x$, Fig. 1, with the cover of the curb removed. Fig. 3 is a horizontal section in line $y\,y$, Fig. 1. Fig. 4 is a vertical section in line $z\,z$, Fig. 3, on an enlarged scale.

Like letters of reference refer to like parts in the several figures.

A represents the base-plate of the machine, and $a\,a'$ the legs, resting on the base-plate.

b represents the horizontal driving-shaft, journaled in a bearing b', formed on the leg a, and provided at its outer end with tight and loose pulleys B B'.

C is a bevel-wheel secured to the inner end of the shaft b and meshing with a bevel-pinion c, which is mounted upon the vertical spindle D by means of a feather d, which moves loosely in a long groove in the shaft, so that the spindle can be vertically adjusted in the pinion.

F represents a bridge-tree secured to the base-plate A and provided with a bearing f, in which the spindle D is journaled.

f' represents an oil-cup formed in the upper side of the bridge-tree F and surrounding the hub of the pinion c above the bearing f.

G represents a step-bearing, in which the lower end of the spindle is supported and which is provided with an external screw-thread. The latter engages in an internally-threaded hub g, formed on the base-plate A, so that by turning the step-bearing G the latter and the spindle are raised or lowered. The step-bearing G is provided at its upper end with a hand-wheel g', by which it can be turned. This hand-wheel is provided in its rim with notches, in which engages a latch or stop-pawl g^2, pivoted to the bridge-tree F, whereby the step-bearing is held against accidental displacement.

h is an angular socket formed in the under side of the step-bearing G, and H is a wrench or key, which can be inserted into said socket for turning the step-bearing from below the floor on which the machine is mounted. When the hulled grain is spouted from the machine to the floor below, the operator, standing on the lower floor, can adjust the spindle upon releasing the latch g^2, which is for this purpose provided with a pull-rope depending through an opening in the floor.

I represents the upper stationary hulling-disk, and J the lower rotary disk, which latter is secured to the upper end of the spindle D. The upper disk I is composed of an annular hulling-plate i, composed of artificial stone and made comparatively light or thin, and a metallic supporting-plate i', to the under side of which the stone plate i is secured by a suitable cement or glue and by bolts k. The heads of the latter are countersunk in the stone plate to such a depth that the plate will be practically worn out when it has become worn to the heads of the bolts. The metallic plate i' is provided at its periphery with upwardly and outwardly extending arms L, which carry vertical set-screws l, by which the plate is supported upon the curb

L′. The latter rests in turn upon the upper edge of the delivery-hopper L^2, to which it is secured by suitable bolts. The hopper L^2 is arranged underneath the hulling-disks and is supported by the legs a a'.

M represents the feed-hopper, resting upon the top plate l' of the curb L′ and provided with a discharge-tube m, which enters a sleeve m', projecting upwardly from the central eye of the supporting-plate i' of the upper hulling-disk.

n represents a tubular feed-gate arranged in the discharge-tube m of the feed-hopper and made vertically adjustable therein by an adjusting-screw n', which is secured to the gate n and passes through a bridge-piece n^2, secured in the feed-hopper.

The lower hulling-disk J consists of a similar annular hulling-plate j, of artificial stone, made comparatively light or thin, and a metallic supporting-disk j', to which the stone plate j is secured by a suitable cement or glue and by countersunk bolts j^2. The lower hulling-disk J is provided with a central feed-plate j^3, whose surface is depressed below the surface of the annular stone plate j and which receives the grain from the feed-gate n.

O represents a pin or agitator secured to the lower hulling-disk and projecting into the feed-gate for the purpose of agitating the grain in the latter and facilitating the discharge of the grain.

p represents handles formed on the upper hulling-disk I for lifting it from its supports when desired. The top plate l' of the curb L′ rests loosely on the rim of the latter to permit the removal of the hulling-disks.

Q represents a bridge-tree secured to the inner side of the delivery-hopper L^2 and provided with a bearing q, in which the upper portion of the spindle is journaled. The hopper L^2 is provided on one side of the spindle with a discharge-spout q', through which the hulled grain escapes.

q^2 represents a bearing formed in the lower portion of the delivery-hopper L^2 for the support of the spindle.

The annular stone plates of the hulling-disks, when made of artificial stone, may be molded of any desired diameter and thickness for large or small machines, thus rendering it possible to produce hulling-machines of this kind at a comparatively small cost. These artificial-stone disks can be molded of emery, corundum, quartz, or any suitable material which is most efficient in hulling rice or the particular kind of grain for which the machine is designed. They remain in working condition for a long time without re-dressing, and they are easily removed when worn out.

The upper disk I is adjusted or trammed by means of the screws l and the lower disk J by means of the adjustable step G. These adjusting devices enable the operator to regulate the position of the disks to a nicety, which is very important in hulling rice, because different kinds of rice require different adjustment of the disks, the differences in the various positions of the disks being very fine and yet very important in their effect upon the operation of hulling.

The oil which is supplied to the cup f' at the upper end of the bearing f lubricates the latter and the base of the pinion c, as well as the adjustable step G.

I claim as my invention—

1. The combination, with the lower disk J and spindle D, of a fixed screw-nut g, the screw-threaded step-bearing G, provided with a notched hand-wheel g', a stop-pawl g^2, engaging with said wheel, a socket h, formed on the under side of the step-bearing, and a detachable wrench H, adapted to be inserted in said socket for adjusting said bearing from below, substantially as set forth.

2. The combination, with the lower disk J and the pinion c, of the spindle D, capable of longitudinal movement in said pinion, a bridge-tree F, provided with a bearing f below said pinion, an oil-cup f', arranged above said bearing and surrounding the lower portion of the pinion, a fixed screw-nut g, arranged below said bridge-tree, a screw-threaded step-bearing G, arranged in said nut and receiving the lower end of said spindle, a hand-wheel g', secured to said bearing, and a stop-pawl g^2, engaging in notches formed in the rim of said hand-wheel, substantially as set forth.

Witness my hand this 25th day of September, 1886.

H. B. STEVENS.

Witnesses:
OSCAR SCHAUB,
JNO. J. BONNER.