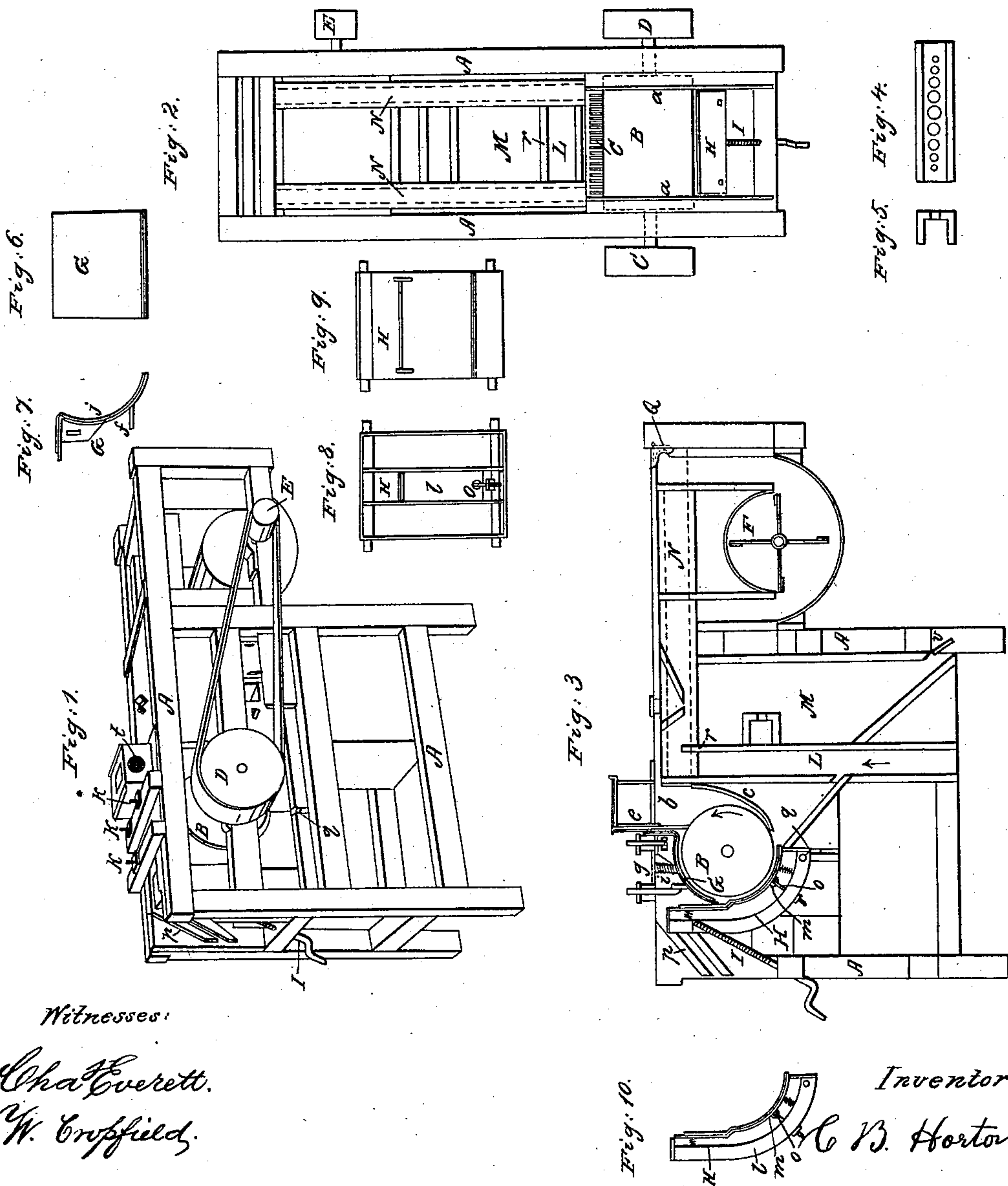


C. B. HORTON.

Rice Cleaner.

No. 29,788.

Patented Aug 28, 1860.



Witnesses:

Cha Everett.
W. Croffield.

Inventor:

Fig. 10. C. B. Horton.

UNITED STATES PATENT OFFICE.

CHASE B. HORTON, OF ELMIRA, NEW YORK.

MACHINE FOR HULLING AND POLISHING RICE.

Specification of Letters Patent No. 29,788, dated August 28, 1860.

To all whom it may concern:

Be it known that I, CHASE B. HORTON, of Elmira, in the county of Chemung and State of New York, have invented certain
5 new and useful Improvements in Machines for Hulling and Polishing Rice; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in
10 which—

Figure 1 is a perspective view of the machine; Fig. 2 a top view; Fig. 3 a vertical section; Fig. 4 a front view of an air valve;
15 Fig. 5 a vertical section of the same; Fig. 6 an inside view of the upper concave; Fig. 7 a vertical section of the same; Fig. 8 an outside view of the lower concave; Fig. 9 an inside view and Fig. 10 a vertical section of
20 the same.

The letters of reference indicate the same parts in the different figures.

My invention relates to that class of machines in which rice is separated from its
25 hulls and inner coverings and pearled or polished ready for market.

A suitable frame work A sustains the various parts of the machine.

B is a cylinder made of what is called
30 "flint sandstone." It is caused to revolve upon a horizontal axis placed transversely near one end of the machine. It carries upon a prolongation of one of its journals a pulley C, to which the driving power is
35 applied, and upon the other another pulley D, which, by means of a band connecting it with the pulley E, communicates an accelerated motion to the fan F. The cylinder B, extends on each side through close fitting
40 apertures in the cheeks A, which prevent the grain or refuse from passing over the ends of the cylinder and clogging its motion. The rice is fed through a suitable tube provided with a slide, into the hopper
45 b, which is placed in the rear of the axis of the cylinder. A curved grating or screen c, forms the bottom of the hopper, and allows dust and dirt to pass through. When the hopper is filled with rice, about one third of
50 the surface of the cylinder will be in contact with the grains and if the slide e, as shown in Fig. 3 is closed down to the cylinder and the latter put in motion the grains in contact with the cylinder will be carried upward,
55 rotating upon their axes while the remainder of the contents of the hopper will de-

scend to occupy their places and to be in its turn elevated. A complete circulation is thus produced in the mass. The mutual
60 attrition of the grains and that produced by the action of the stone cylinder breaks and detaches the hulls, and if continued long enough completes the pearling or removal of the inner coats of the rice, but this result is expedited by raising the slide e sufficiently
65 to allow one layer of rice to pass under the concaves I am about to describe.

The upper concave G is made of flexible steel plate f, so curved and placed in position as to be concentric with the cylinder B.
70 This plate is supported on the back by a coiled spring i, bearing against or attached to the plate g, which is fixed to the top of the machine, and forms in conjunction with the spring a highly elastic flexible concave
75 which bears with moderate force upon the rice and readily yields to varying pressure caused by irregularities in the size of the grain or in the supply, without crushing it. The inside of the steel plate has a lining or
80 apron of leather (j,) extending over its whole surface secured at its upper edge but free at its lower edge. The leather lining in connection with the yielding pressure insures sufficient friction to cause the grains
85 of rice to revolve upon their longer axes when the cylinder is in motion. The concave G is suspended by hooks k, the lengths of which are adjustable by means of nuts upon screw threads at their upper ends.
90 These regulate the distance of the surface of the concave from the cylinder, but admit of its yielding when required. The lower concave H is also so constructed and arranged concentric with the cylinder B as to
95 exert a yielding pressure upon the rice capable of regulation by the set screw I. It is composed of an outer piece of cast iron l, suitably ribbed for strength as shown in
100 Fig. 8 and a curved steel plate m, as shown in Fig. 10. The plate is held in its curved position and also regulated in its form by a bolt O, passing through l, and provided with a screw thread and nut. This plate
105 has also a leather lining or apron fixed at its upper edge and free at the bottom. Pins projecting from the edges of l, at both top and bottom traverse in grooves p and q. The latter are vertical and are so placed that when the concave is moved to or from the
110 stone no opening is left through which the grain can escape. The grooves p are in-

clined. The apparatus for separating the offal from the polished rice, is placed on the same frame and in the rear of the hulling and polishing machinery before described.

5 It consists of a fan case containing a revolving fan in connection with certain chambers, passages and apertures which will be more particularly described.

10 When the machine is in operation the cylinder revolves in the direction of the dart and the rice after going through the manipulations described, leaves the cylinder at the lower end of the concave H, thoroughly hulled and polished, but mixed with the
15 hulls and other refuse; it then passes down an inclined plane and through an aperture into the vertical tube L, where it meets a strong upward current of air which separates and carries upward everything but the
20 heavy grain, which falls at once into a proper receptacle. The light grains, hulls, dust and other refuse pass over the partition *r*. Here it is deflected downward by the pitch boards *s* and falls into the chamber
25 M whence it is discharged when sufficient weight has accumulated in the chamber to overcome the resistance of the valve *v* which is kept closed by the external pressure of the air, when the fan is in operation. The cur-
30 rent of air passes from the chamber M into the fan case whence it is driven up and through two horizontal tubes N into the hopper in proximity to the cylinder, where

its function is, to keep the grain from heating. The air finally escapes through the
35 wired apertures *t*. The admission of air into the chamber M, is regulated by slides upon each side of the machine. Another slide is placed upon the top of the machine between the pitch boards *s* to regulate the strength
40 of the current at that point. A valve Q can be opened for the egress of the air when it is desired that it should not pass through the tubes N.

I do not claim rubbing surfaces of india
45 rubber or its compounds, but

What I claim as my invention and desire to secure by Letters Patent of the United States, is,

1. Constructing the concaves of hulling
50 machines of flexible steel plates having a flexible lining constructed as described in combination with elastic springs in the manner and for the purpose specified.

2. The combination of the hopper *b*, cyl-
55 inder B and screen C, or its equivalent, when so constructed and arranged in relation to each other, that the motion of the cylinder shall cause a circulation of the grains in the manner and for the purpose set forth.
60

In testimony whereof I have signed my name to this specification.

C. B. HORTON.

In the presence of—
CHAS. EVERETT,
W. CROFFIELD.