(No Model.) 2 Sheets—Sheet 1.

E. C. ENGELBERG.

RICE HULLING MACHINE.

No. 383,285. Patented May 22, 1888.

Fig. 1.

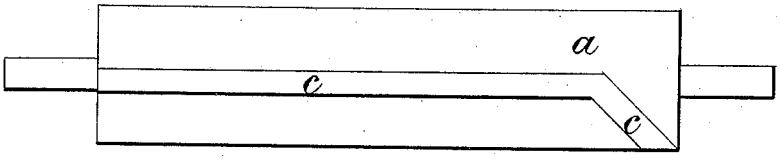


Fig. 2.

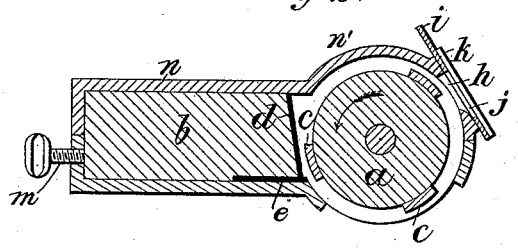


Fig. 3.

Fig. 4.

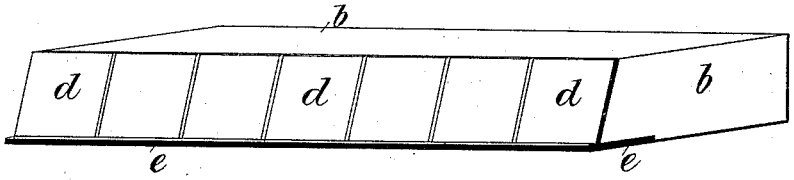
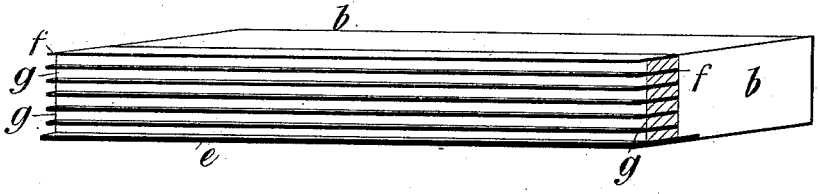


Fig. 5.



Witnesses.
Geo. N. Rea.
Robert Everett.

Inventor.
Evaristo C. Engelberg.
By James L. Norris.
Atty.

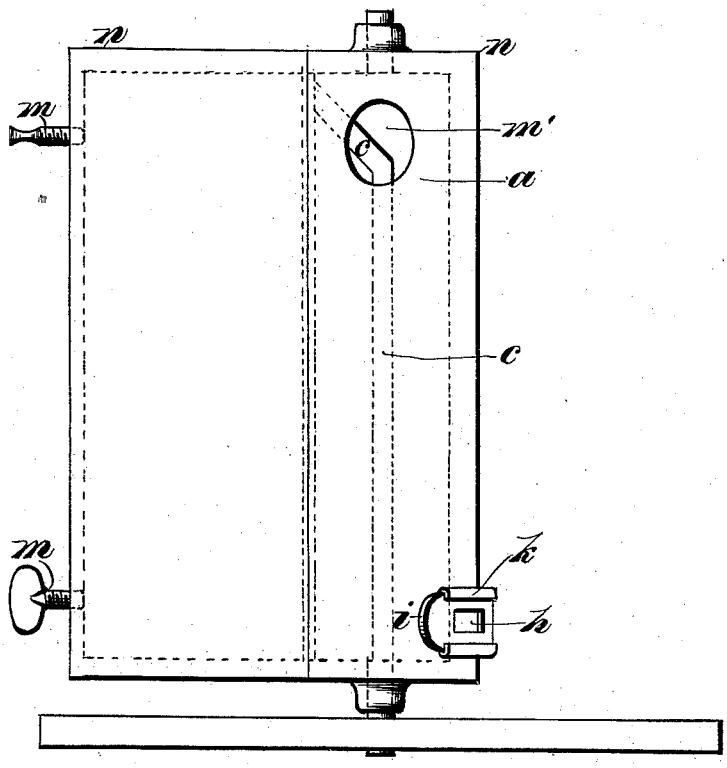
(No Model.) 2 Sheets—Sheet 2.

E. C. ENGELBERG.

RICE HULLING MACHINE.

No. 383,285. Patented May 22, 1888.

Fig. 6.



Witnesses.
Robt Swatt.
Geo. W. Rea.

Inventor:
Evaristo C. Engelberg.
By James L. Norris.
Atty.

UNITED STATES PATENT OFFICE.

EVARISTO CONRADO ENGELBERG, OF PIRACICABA, BRAZIL.

RICE-HULLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 383,285, dated May 22, 1888.

Application filed October 8, 1886. Serial No. 215,702. (No model.)

To all whom it may concern:

Be it known that I, EVARISTO CONRADO ENGELBERG, mechanical engineer, a subject of the Emperor of Brazil, and a resident of Piracicaba, in the Province of São Paulo, Empire of Brazil, have invented new and useful Improvements in Rice-Hulling Machines, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to improvements in rice-hulling machines of the kind or class described in the specification of former Letters Patent dated May 4, 1886, No. 341,324, and is designed to make such machines more stable and regular in their working than heretofore and to increase their durability.

The invention consists in the features of construction and combination of devices, hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is a plan of the hulling-cylinder. Fig. 2 is a transverse section of the machine through the discharge-opening. Fig. 3 is an elevation of the slide for regulating the size of the outlet or discharge opening. Fig. 4 is a perspective view of the block against which the rice is hulled. Fig. 5 is a similar view showing a modification of my invention, and Fig. 6 is a top plan view showing the relative positions of the inlet and outlet openings.

a is the hulling-cylinder. *b* is the block which constitutes a surface against which the rice is hulled.

According to my present invention the bars *c* on the cylinder *a*, instead of being arranged spirally or at an angle with the axis of the cylinder, as described in the specification of the said former patent, are arranged parallel with the shaft throughout the greater portion of their length, the remaining portion of their length at the end of the roller nearest the feed-opening *m'*, Fig. 6, being at an angle of forty-five degrees, more or less, with the axis of the cylinder, as shown in Fig. 1.

The inclined portions of the bars *c* are located directly under the feed-opening *m'*, whereby such inclined portions of the bars rapidly act upon and throw or advance the rice upon the parallel parts of the bars and toward the discharge end of the cylindrical case *n'*, which is provided with a hulling-surface formed, as herein shown, of a block, *b*, of peculiar construction, which, as regards the function of the inclined portions of the bars *c*, may be of any suitable construction, so long as such hulling-surface of the cylindrical casing *n'* co-acts with the hulling-cylinder constructed as described and shown.

By the rapidity with which the inclined portions of the bars *c* take up the rice and move it to the parallel portions of the bars and toward the discharge end of the casing the hulling-power of the machine is doubled or more than doubled with reference to the machine constructed as in my aforesaid Letters Patent.

As here shown, the hulling-surface of the cylindrical casing comprises a block, *b*, which, instead of being composed of stone or concrete, as heretofore, is formed of a piece of wood of the required shape. As shown in Fig. 4, the narrow surface of this wood block against which the rice is hulled is provided with a series of iron or other metal plates, *d*, separated or placed at equal distances—one-twentieth of a meter, more or less—apart, thus forming projections, in front of which the cylinder revolves, as shown in Fig. 2. On the lower surface of the said block is fixed a steel bearing bar or plate, *e*, resting on the bottom of the case *n* and joined to or bearing against the lower edges of the plates *d*. The bearing-bar *e*, being fixed to the horizontally-sliding block *b*, is adjustable therewith through the medium of the set-screws *m*, whereby said bar *e* and plates *d* can be moved with the block to and from the cylinder *a* to slightly vary the space between the said bar and plates and the bars *c* on the cylinder.

According to the modification of my invention shown in Fig. 5, the block *b* is provided upon one edge with iron or other metal plates *f* and strips, *g*, of wood, placed alternately one above another, as shown, so that they present a rough surface against which the rice is pressed and hulled, principally by the friction caused by the accumulation of rice between the said block and the cylinder. Both of these forms of blocks give excellent results with respect to duration and efficacy.

A slide, *i*, Fig. 3, having an aperture, *j*, formed in it, is arranged to slide in guides *k* over the outlet-opening *h*. By moving this slide so as to cause the opening therein to correspond more or less with the opening *h* in the

casing the rate of the discharge can be increased or diminished, as desired. In this manner the required pressure can be immediately regulated without it being necessary to approach the block *b* toward or withdraw it from the cylinder.

The machine is adapted to be operated by means of a crank-handle on a fly-wheel secured to one journal of the cylinder; but obviously other means can be employed to revolve the cylinder.

Having thus described my invention, what I claim is—

The combination, with the horizontal cylindrical casing having a hulling-surface, a feed-opening at one end, and a discharge-opening at the other end, said discharge-opening being provided with a sliding plate having an opening to control the pressure and discharge of the material, of the horizontal hulling-cylinder *a*, having the projecting bars *c*, arranged parallel with its axis throughout the greater part of their length, and inclined at one end at an angle of about forty-five degrees directly beneath the feed-opening of the cylindrical casing, substantially as described.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

EVARISTO CONRADO ENGELBERG.

Witnesses:
JULES ZERAND,
CH. BAILLE.