D. H. SOUTHWORTH.

Rice Cleaner.

No. 63,320. Patented March 26, 1867.

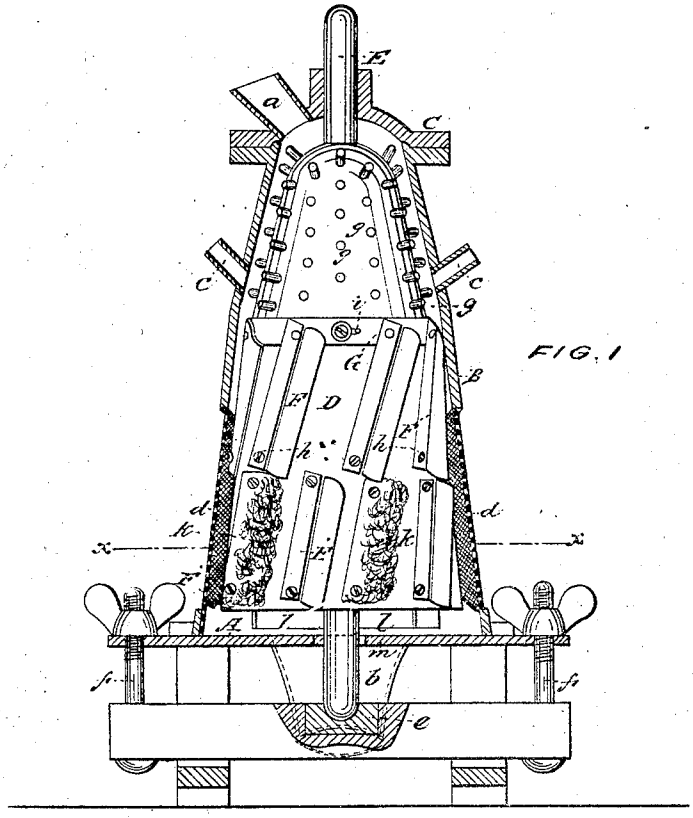
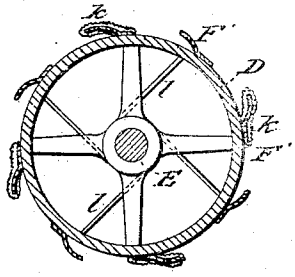


FIG. 1

FIG. 2



WITNESSES:

J. W. Coombs

G. W. Reed

INVENTOR:

D. H. Southworth

per his Attorneys

Brown Coombs & Co

United States Patent Office.

D. H. SOUTHWORTH, OF NEW YORK, N. Y.

Letters Patent No. 63,320, *dated March* 26, 1867.

IMPROVEMENT IN RICE-HULLING MACHINES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, D. H. SOUTHWORTH, of the city, county, and State of New York, have invented a certain new and useful Improvement on Machines for Cleaning, Pearling, and Polishing Rice and other grain, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification, and in which—

Figure 1 represents a vertical section of a machine constructed according to my invention; and

Figure 2, a horizontal section of the revolving hub in said machine, through the line *x x*, in fig. 1.

Like letters indicate like parts in both figures.

The nature of my invention consists in a peculiarly constructed mill or machine, specially adapted for cleaning, pearling, and polishing rice, but also applicable to operating on other kinds of grain, in which are embraced the following features: firstly, a combination of stirring-pins or teeth with lower spring-plates or rubbers; secondly, elastic plates or rubbers secured in a spiral manner on a conical drum or hub, and of a shape in their transverse section approximating an ellipse in part; thirdly, spirally adjustable plates or rubbers so arranged; fourthly, the combination of such upper elastic plates with lower ones faced with a soft polishing material; and fifthly, in an arrangement whereby air is admitted from beneath, and caused to produce a centrifugal current, to expel the dust from the grain.

Referring to the accompanying drawing, A represents the base of the machine supported on suitable framework, and having mounted upon it a conical or tapering case, B, smallest end uppermost, and which may be made up in vertical or other sections bolted together. This case is covered by a cap, C, provided with a grain-feeding spout, *a*, while the base A is furnished with a delivery aperture, *b*. The upper portion of said case may have dust spouts, *c*, and its lower portion be constructed for the most part of screens *d*. Working freely within said case, and so as to leave an annular space between them, is a conical or correspondingly tapering perferably hollow cast-iron drum or elongated hub, D, made fast to a vertical shaft, E, and revolving with it in the direction indicated by arrow in fig. 2. Said shaft may be driven by belt or gear in any suitable manner, and should be made to rest on a step, *e*, carried by a cross-beam or brace arranged so as to be vertically adjustable, which may be effected by means of screws, *f*, for the purpose, by raising or lowering the conical hub D, of adjusting the latter with its stirrers, beaters, and rubbers to work in closer or in more distant proximity to the interior of the case B, according to the description of grain to be acted upon and other circumstances. The upper part of this hub D is armed with pins or teeth, *g*, which serve, as they revolve, to agitate, stir, and mix the grain, and, by the rubbing of it together, to partly clean the same, the dust and other extraneous matter passing off by the spouts *c*. The remaining or lower portion of the hub is provided with spirally arranged elastic plates, F F′, in upper and lower rows or sets, the lower set being preferably more or less intermediate of the upper row. These elastic plates are not only spiral and of a conical character, from their arrangement on the hub D, but their acting or beating surfaces are of partially elliptical shape in their transverse section, and it is desirable that they should be of such an elastic character as to yield to the pressure of the grain in their action upon it. The upper row F of such spring-plates, and, it may be, the lower row also, if necessary, are pivoted at their lower ends, as at *h*, to the drum D, and at their upper ends to a ring, G, arranged to turn on the hub and be secured at any particular set by means of screws and slots, as at *i*. By thus varying the incline or spiral set of the plates F, the passage of the grain through the mill is retarded or expedited at pleasure, and the amount of friction of such plates on the grain increased or diminished to suit different descriptions or qualities of grain; rice, barley, and rye usually requiring more friction that wheat. The upper row of plates F serves to beat and rub the grain, while the lower row F′ answers more particularly to pearl and polish it; they being faced or covered with sheep-skin having the wool on it, or other soft material *k*. Secured to the bottom of the hub D are vanes or blades *l*, which serve, in connection with the conical drum, by air entering at an aperture, *m*, in the base-plate, to produce a centrifugal current which will blow out the dust through the screens *d*, while the cleaned and pearled and polished grain will be delivered at the aperture or spout *b*.

Machines constructed as described are not only effective, compact, and portable, but may be adjusted to suit almost any description of grain, including rice, barley, wheat, coffee, and others.

What I claim as my invention, and desire to secure by Letters Patent, is—

The conical drum D, provided with a series of pins or teeth, *g*, and elastic plates and rubbers, F F′, on its periphery, arranged and operating essentially as specified.

D. H. SOUTHWORTH.

Witnesses:

A. LE CLERC,

J. W. COOMBS.