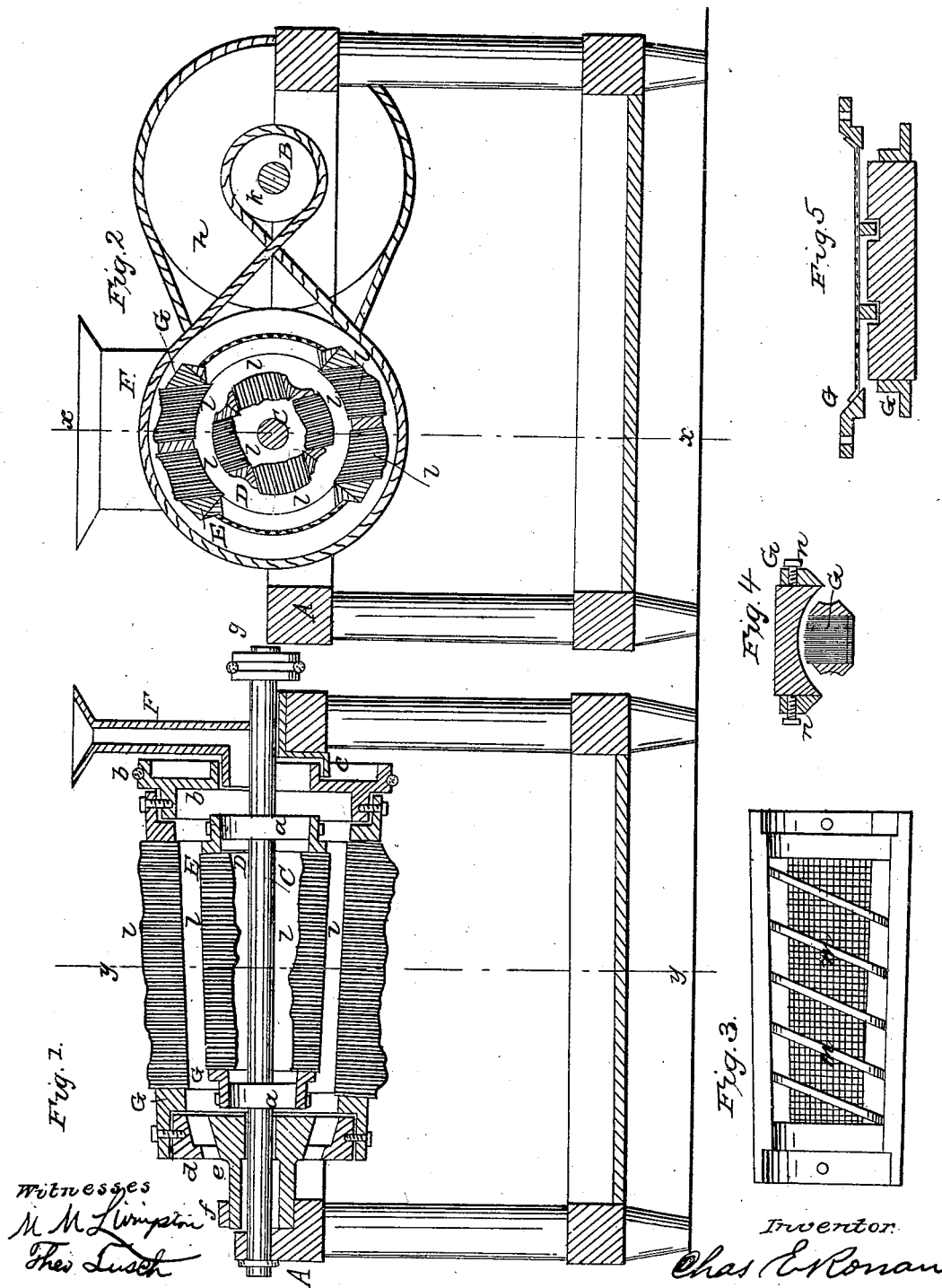


C. E. ROWAN.

Rice Cleaner.

No. 46,708.

Patented March 7, 1865.



UNITED STATES PATENT OFFICE.

CHARLES E. ROWAN, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN MACHINE FOR HULLING, CLEANING, AND POLISHING RICE.

Specification forming part of Letters Patent No. 46,708, dated March 7, 1865.

To all whom it may concern:

Be it known that I, CHARLES E. ROWAN, of Brooklyn, E. D., in the county of Kings and State of New York, have invented a new and improved Machine for Hulling, Cleaning, and Polishing Rice, &c.; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a longitudinal vertical central section of this invention, taken in the plane indicated by the line *x x*, Fig. 2. Fig. 2 is a transverse section of the same, the plane of section being indicated by the line *y y*, Fig. 1. Fig. 3 is an inside elevation of one of the open frames, provided with spiral flanges and covered with wire-gauze. Fig. 4 is a detached transverse section of two such frames when rigged up for cleaning or polishing rice or other similar articles. Fig. 5 is a longitudinal section of an open frame and polishing-frame detached.

Similar letters of reference indicate corresponding parts.

This invention consists in the employment or use of two cones, one inside the other, and revolving in opposite directions, or in the same direction and with different velocities, in contradistinction to two cylinders, said cones being provided with suitable rubbing-surfaces, arranged in such a manner that either one or both can be adjusted in a longitudinal direction, and the rubbing-surfaces can thereby set closer together or farther apart, as may be desired, to suit the operation to be performed. The rubbing-surfaces consist of a series of short pieces of wire set endwise into movable frames, or of brushes or stones or other suitable material secured in said frames in such a manner that each rubbing-surface can be adjusted independent of the others whenever it is desirable or necessary, and different rubbing-surfaces can be applied to the same cylinders or cones by removing one set of frames and substituting therefor another set.

A represents a frame of wood or any other suitable material, which forms the bearings for the driving-shaft B and for the shaft C on which the cones D E revolve. The ends of

these cones are open, and the inner cone, D, is secured to rings or collars *a*, which are firmly secured to the shaft C. The outer cylinder, E, is secured at one end to the hub of a pulley, *b*, which revolves in a suitable open bearing, *c*, and through which the rice or other article to be hulled or cleaned is introduced from the hopper F. The opposite or small end of the outer cone is secured to a disk, *d*, which revolves freely on the shaft *e*, being provided with a hub, *e*, that is fitted into a journal-box, *f*, secured to the frame A. Suitable belts, running over pulleys *g*, *h*, *k*, and *b*, impart motion to the two cones, either in the same or in opposite directions. If the two cones revolve in the same direction the circumferential velocity of the inner cone must be somewhat greater than that of the outer cone, or vice versa, so that the rice or other article to be cleaned will be exposed to the requisite friction between the outer surface of the inner and the inner surface of the outer cone.

The shaft C is adjustable in its bearings in a longitudinal direction, and by moving said shaft in the direction of the arrow marked on it in Fig. 1 the rubbing-surfaces are brought closer together, and by moving it in the opposite direction the rubbing-surfaces are brought farther apart, so that the same can be readily adjusted to suit different classes of work, which is a great advantage of my machine over machines in which two cylinders are used, one inside the other, and in which the rubbing-surface can either not be adjusted at all or only by a very tedious process.

Each of the cones D E is furnished with a series of open segmental frames, G, which are secured to their peripheries by screws or any other suitable and convenient means. Said segmental frames contain the material which constitutes the rubbing-surfaces, or some of them are covered with wire cloth or netting, the meshes of which are large enough to let the dirt and impurities escape.

For hulling rice or coffee the rubbing-surfaces are constructed each of a series of short pieces of steel wire, *l*, which are secured endwise in the frames, as clearly shown in Figs. 1 and 2 of the drawings. The advantage of this rubbing-surface consists in that it can be easily sharpened whenever it becomes dull simply by tapping the rear ends of the wires. In order to get the working ends of the wires

even, a plate of sheet or cast metal may be secured in the proper position, and after said wires have been adjusted they may be sharpened by a pick or other suitable tool, and if the rubbing-surface has worn out it can easily be renewed.

In order to feed the rice or other article to be treated by the rubbing-surfaces from the large to the small end of the cones, those frames which are covered with wire-cloth are provided on their inner sides with spiral flanges *m*, as clearly shown in Fig. 3 of the drawings.

For cleaning and polishing rice or other similar grain or articles the rubbing-surfaces may be constructed as shown in Fig. 4. The alternate frames of the outer cone are filled with a suitable stone, cut out in the proper shape, and said stone is held in place by set-screws *n*, so that the same can be adjusted toward or from the center, as may be desirable. The frames of the inner cone are filled with bristles or fibers of manila-grass or other similar material, fastened to a back of paste-board, wood, or other suitable material.

If desired, the frames of the inner cone may also be filled with stone, as shown in Fig. 5, but in that case the flanges *m* on the outer

surfaces, instead of being spiral, have to be made circular, and recesses cut into the stone give room to bring the two rubbing-surfaces close enough together to produce the desired result.

A machine of this construction is particularly intended for hulling, cleaning, and polishing rice, but it can also be used with advantage for hulling and cleaning coffee or other similar articles.

I claim as new and desire to secure by Letters Patent—

1. The combination of the two concentric cones D and E, provided with open removable frames G, and adjustable endwise in relation to each other, in the manner and for the purposes herein specified.

2. Constructing the rubbing-surfaces of steel wires *l*, set endwise in the frames G as herein shown and described, so as to admit of setting or repairing the rubbing surfaces by tapping the wires from the back, as explained.

CHAS. E. ROWAN.

Witnesses:

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THEO. TUSCH.