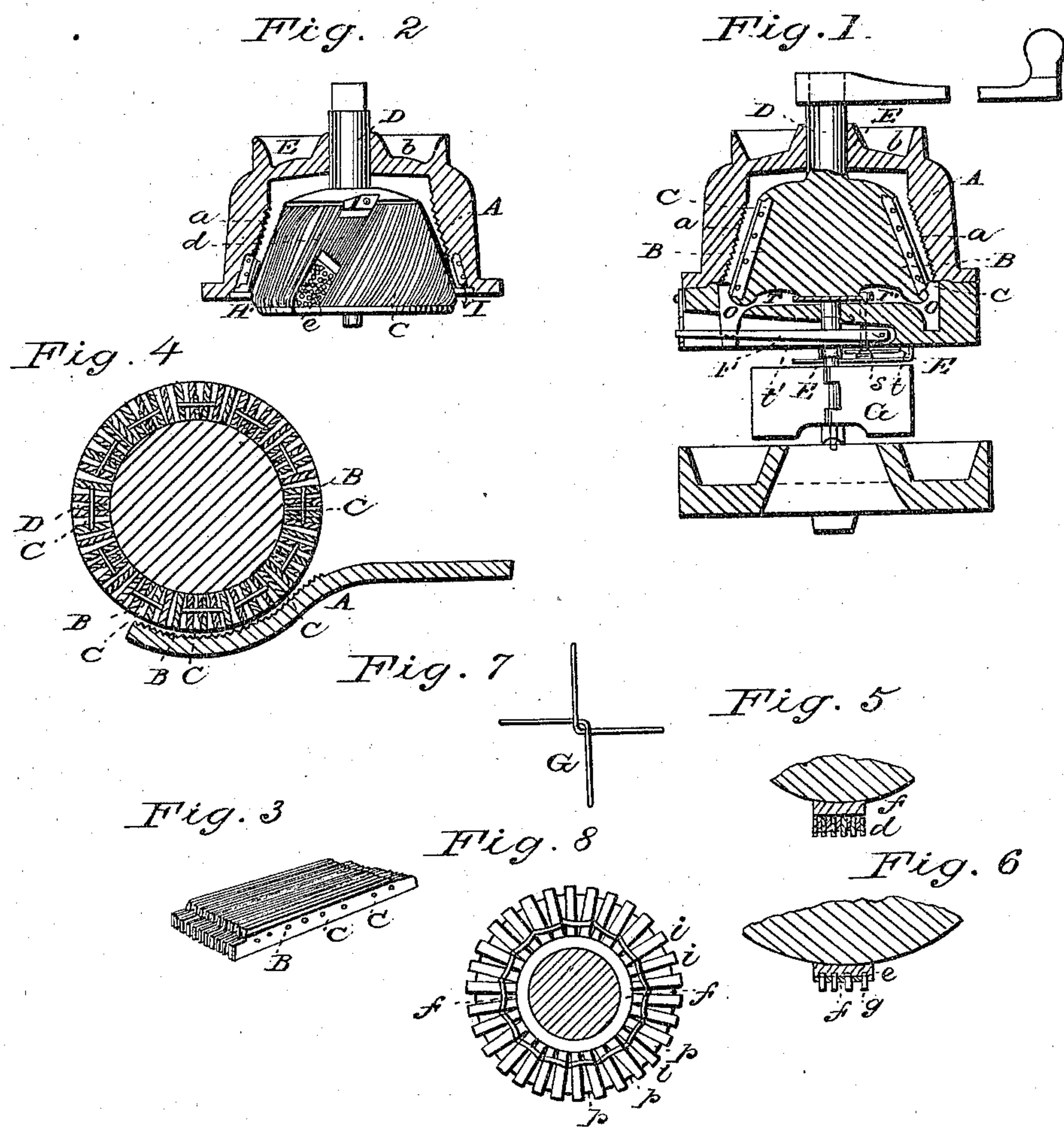


E. OSGOOD.

Rice Cleaner.

No. 97,222.

Patented Nov. 23, 1869.



Witnesses

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Letters Patent No. 97,222, dated November 23, 1869.

IMPROVEMENT IN MACHINES FOR HULLING RICE, COFFEE, &c.

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, ENOCH OSGOOD, of Boston, county of Suffolk, and State of Massachusetts, have invented a new and useful Improvement in a Machine for Hulling Rice, Coffee, and other grains, and for other purposes; and that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and letters of reference marked thereon, in which—

Figure 1 is a vertical section through the centre of my machine;

Figure 2 is a vertical section through the shell, taken at right angles to fig. 1, also showing the cone in elevation;

Figure 3 illustrates the construction of the covering of the cone, and the lining of the shell, with a metallic plate attached;

Figure 4 is a section through a cylinder and a part of a shell;

Figures 5 and 6 are details, showing the kinds of metallic yielding surfaces to be used instead of the cloth and rubber, when desired;

Figure 7 is an end view of the fan, showing its construction; and

Figure 8 is a section of the cone or roller, showing its construction in a different manner.

This invention relates to mills for hulling rice, coffee, and like substances, and the final polishing and cleaning the same ready for market at a single operation; and

It consists in the construction of the hulling and polishing-cone cylinder, and the shell or concave in which the cylinder revolves; and

It also consists in the peculiar construction of the fan, by which the husks are blown or separated from the kernels of rice or coffee.

In rice-growing districts, there has been a great want of a machine that will successfully take off the husk or hull from the rice-grains without breaking such grains in the operation of either hulling or polishing rice or coffee. When the kernels of either rice or coffee are much broken in hulling and cleaning, much of the market value of such rice or coffee is lost, as broken kernels will not sell for anything like the whole grains, hence the object is to so improve the hulling-mills that all the kernels will be unbroken. To attain this end, I construct my mill in the following manner:

A, in the drawings, represents the shell of the mill, made of any suitable material, and has its inner surface serrated or grooved, as at *a a*, at an angle of forty-five degrees, more or less, as may be desired, or such serrations may be at right angles with the axis of the cone, or parallel with same, and straight.

In this shell the cone-cylinder C is rotated by means of shaft D.

The body of the cone-cylinder may be of wood, metal, or other suitable substance, and to which is attached the elastic surface which comes in contact with the grains or kernels of rice or coffee to be hulled.

I have three different methods of covering the cone with elastic surfaces, one of which is shown in figs. 2 and 4, and is formed in the following manner:

Take cloth (linen is preferred) and rubber and build them to any desired thickness and vulcanize them together, so that the cloth and the rubber cannot be separated; cut such mass into pieces, and of the shape as shown in fig. 3, to fit into grooves in the cone, the strips of cloth being set on their edges on the cone, as seen at O O in fig. 1.

Between the sections of the covering of rubber and cloth, is placed a piece of metal, B, as seen in figs. 3 and 4. This metal plate has holes through it, so that small pins are driven through such holes into the cloth and rubber, but leaving the pin projecting far enough to force the next section of cloth and rubber upon it, as shown in said fig. 4, and thus cover the cone entirely between the shoulders with this elastic material, which makes a tough yielding surface, and one that is not soon worn by contact with the grain being hulled, and has the appearance when complete, as shown at C, fig. 2; or the rubber and cloth may be put on the cone by winding them around the cone edgewise, and pinning through the rubber and cloth into the flanges of the cone. Another mode to make the surface of the cone elastic is to place thin metallic plates, as seen at *d*, figs. 2 and 5, set edgewise upon a bed of rubber, *f*, that surrounds the cone. Another mode is to insert pins through a metal plate with their heads inside of the plate, and all bearing upon an India-rubber bed, as shown in fig. 6, where *f* is the rubber bed, and *e* the metal plate, and *g* the pins; and still another mode is to build up the cone or roller, as seen in fig. 8, in which the body is covered with rubber, *f*, and resting upon such rubber base is a series of pieces of leather, *i i*, with metal plates, *p p*, between them, the whole pinned together, as seen in dark blue lines in said fig. 8.

For polishing the rice after hulling, I insert in the inside of the lower portion of the shell cloth and rubber; similar to the covering of the cone, as seen at H', fig. 2, or brushes may be used instead, as seen at I, fig. 2.

I have a new construction of fan-blower, the fans of which are made from sheet-metal. Out of one sheet is cut a mortise in the centre, and upon the other is cut out spaces, each side of the centre to form a tenon, so that when the two plates are bent to form a right angle, one sheet so bent passes through the mortise made in the other, when the arbor, upon which they are fixed, is driven in tightly, as seen at G, figs. 1 and 7, and forms a light, cheap, and durable fan.

In order to give the fan motion, I attach to the lower side of the cone, upon shaft D, a spur gear-wheel, r , which gears into pinion r' , on shaft s .

Upon the lower end is wheel t , gearing into pinion t' , on the arbor of the fan, which arrangement gives the desired motion to the fan.

The parts thus constructed and placed together, as seen in fig. 1, the rice or other grain put in hopper b , motion is given to the cone C, the kernels with the husk on them pass between the cone and shell, and while in such passage, the action of the serrated unyielding surface of the shell with the yielding surface of the cone completely takes off all covering from the grains of rice, leaving such grains whole and ready to be polished, and as they pass lower down come in contact with the yielding surface of the shell and cone, and are there subject to so delicate a friction between the two yielding surfaces, as to completely eradicate all particles of the inner coating of the grains, or of any dust remaining. When the grain falls from between the cone and shell, it comes in contact with the blast of air created by the rapid revolutions of the fan, where all the husk and dust are sent away, and the clean, whole grains of rice fall into the proper receptacle, fit for packing for market.

I am aware that rubber, leather, sheep-skins, and other yielding substances have been used in hulling and polishing rice and other grains; but I am not aware that any elastic surfaces, such as I have described, have ever been used for such purpose.

I do not wish to confine myself in my claim to the use of such construction of cone as I have described for hulling rice or other grains, as it may be used for various other purposes where an elastic surface is

needed, as upon rollers having parallel sides and yielding surfaces, or where they have an irregular or other form, the invention is the same.

Having thus described my invention,

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

1. The cone or roller C, herein described, when constructed with yielding surfaces of thin metal plates, d , or their equivalent, set edgewise, arranged and applied as described, and resting upon or against a rubber bed, in the manner and for the purpose substantially as herein set forth.

2. The cone or roller C, herein described, when constructed with a yielding surface of rubber and cloth, or leather, set edgewise, substantially as and for the purpose herein set forth.

3. The cone or roller C, herein described, with a yielding surface of metal pins passing through a perforated metal plate, and resting upon or against a rubber bed, substantially as and for the purposes herein set forth.

4. The combination of the cone C, herein described, with the shell A, having an unyielding serrated surface, a , and yielding surfaces H, and brush I, constructed in the manner and for the purpose substantially as herein set forth.

5. The fan G, constructed of plates of thin sheet-metal, having slots through them, forming, when bent, mortises and corresponding tenons, and held together by a pin or arbor, substantially as herein set forth.

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Witnesses:

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