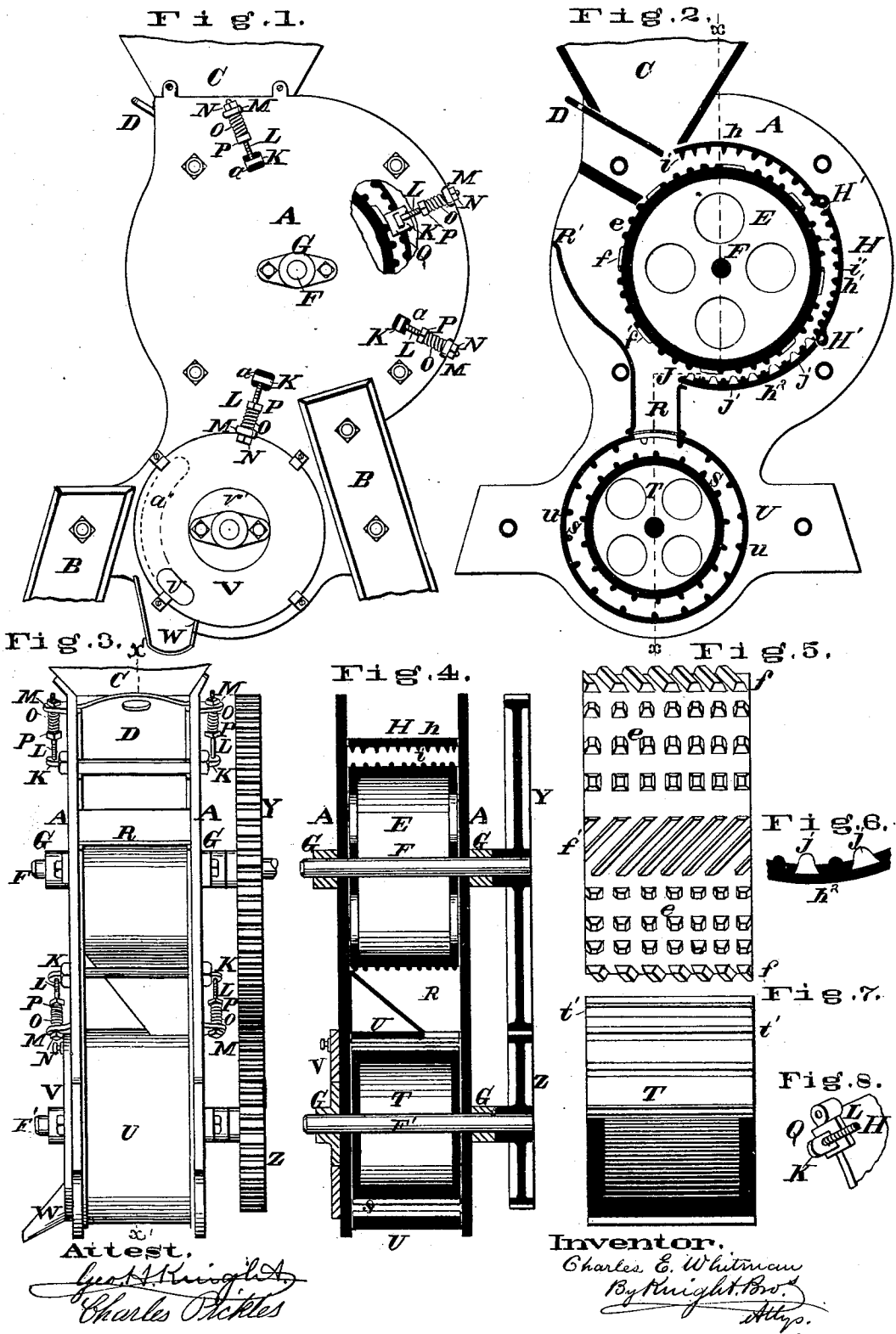


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MACHINE FOR HULLING AND POLISHING COFFEE.

No. 247,232.

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CHARLES E. WHITMAN, OF ST. LOUIS, MISSOURI.

MACHINE FOR HULLING AND POLISHING COFFEE.

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To all whom it may concern:

Be it known that I, CHARLES E. WHITMAN, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Machines for Hulling and Polishing Coffee, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My improvement relates to the class of machines in which the coffee-beans are passed between toothed metallic plates to remove the pericarp and membrane from the seeds.

My improvement consists, partly, in a cylinder rotating within a sectional yielding concave, and having its surface divided into toothed sections, between which there are ribs inclined in opposite directions alternately, so as to give a rolling movement to the beans, first in one direction and then in the other.

My improvement also consists in the manner of construction to enable the position of the concave sections to be determined from the outside of the machine. This consists in studs or lugs extending from the edges of the concave through slots or orifices in the case. These lugs give means for the attachment of the spring-bolts by which the concave is held in place.

In the drawings, Figure 1 is a side view. Fig. 2 is a section at $x'x'$, Fig. 3. Fig. 3 is an edge view. Fig. 4 is a section at xx , Fig. 2. Fig. 5 is a face view of the hulling-cylinder enlarged. Fig. 6 is an enlarged detail section of part of the finishing-section of the hulling-concave. Fig. 7 is a face view of the polishing-cylinder, half in section, enlarged. Fig. 8 is a perspective detail showing the lapping plate closing the orifices in the case, through which the connecting-lugs of the concave pass.

A is the case, supported on lugs B, or otherwise.

C is the hopper to receive the coffee-beans. The mouth of the hopper has a regulating slide or valve, D.

E is the hulling-cylinder upon the driving-shaft F, turning in bearings G.

Surrounding one-half of the hulling-cylinder, or more or less than one-half, is the yielding concave H, between which and the cylinder the coffee passes in being hulled and more

or less cleaned and polished. The concave H consists of three (more or less) sections, $h h' h''$, connected together by joints H'. Each section consists of a curved plate with teeth or ribs upon its concave or inner face. The teeth differ from each other as follows: The teeth i on the first part of the concave are pointed sufficiently to rupture the pericarp, and their points are at such a distance from the cylinder as to avoid danger of breaking the seeds. The concave gradually approaches nearer to the cylinder from the first end, at the hopper, to the last end, J, where the coffee leaves it and enters the chute R. The ends of the teeth i' are made more and more rounded from the first end to near the last end of the concave, so as to do no injury by scratching or breaking the seeds. The finishing part or section of the hulling-concave is not armed with teeth, but has in their place ribs j , of rawhide, wood, leather, or some other material softer than metal, that will not be liable to break the seeds. (See Figs. 2 and 6.) The hulling-cylinder has around its face spaces armed with teeth and with inclined ribs alternately. The teeth are marked e and the ribs f and f' . The ribs f incline in one direction, and those f' incline in another direction, so that the coffee is first rolled in one direction and then in another, and is thus equally hulled.

I will now describe the manner in which the concave of the huller is held in position in such manner as to be capable of yielding to pressure from the inside.

K are lugs cast upon the edges of the concave, such lugs extending out through apertures a in the case. The lugs have guide-bearings against the sides of the apertures in lines tangential to the cylinder E; but the apertures extend in direction radial to the cylinder sufficiently to allow the concave freedom to move toward and from the cylinder.

L are screw-bolts attached at the inner end to lugs K, and extending through lugs M, stationary upon the case.

Outside the lug the bolt carries a nut, N, which is screwed against the lug M to fix the inner position of the concave at that point.

O is a spiral spring surrounding the bolt L, and bearing at the outer end against the inner side of the lug M. The inner end of the spring

O bears against the nut P, which is screwed upon the bolt L, to regulate the tension of the spring O. Thus it will be seen that the nuts N and P give means for the adjustment of position of the concave and the force of the springs by which it is pressed inward.

Q are plates, through which the lugs K pass, said lugs being tightly fitted in the plates and the plates recessed in the edges of the concave. The plates Q slide freely against the inner sides of the case A and lap past the edges of the apertures *a* upon every side, so as to prevent the passage of material through said apertures. (See Figs. 1 and 8.)

R is a passage or chute extending from the huller to the polishing part of the machine. The material as it leaves the last section, *h*², of the huller-concave enters the chute R and passes into the polishing-chamber S between the cylinder T and concave U. The chute R extends through the edge of the case at R', forming a hopper, R', into which material may be placed for passage through the polisher without passing through the huller. This construction allows of the material being passed repeatedly through the polisher without passing through the huller.

It will be seen by reference to Figs. 3 and 4 that the passage or chute R leads to one end of the cylinder T, so that the material all enters at one end of the chamber S and works endwise to the other end, *s*, where it discharges through an orifice, *a'*, in the side of the case, (see dotted lines in Fig. 1,) and an orifice, *v*, in the turn-plate V, from whence it drops into a spout, W, or into a receptacle or conveyer.

It will be seen that the plate V may be turned upon its axis *v'*, and thus the position of the discharge-orifice *v* changed. This gives a means of allowing more or less ready discharge to the material from the polisher, the plate V being turned to raise the orifice *v*, to check the

discharge and hold the material for a longer time under the polishing action.

I have shown the polishing-cylinder T and concave U armed with ribs *t* and *u*; but a brush may be substituted for the ribs *u* upon the concave without essentially changing the action of the polisher.

The shaft F of the huller carries a spur-wheel, Y, gearing with a spur-wheel, Z, upon the shaft of the polishing-cylinder, to give motion to the latter.

I propose to use, in combination with my hulling and polishing-machine, a fan and riddles for the separation of the pieces of shell and membrane from the seeds, and for the grading of the latter.

I claim as my invention—

1. The cylinder E, having the "dress" consisting of series of teeth *e*, alternating with series of ribs *f* and *f'*, inclined alternately in contrary directions, substantially as set forth.

2. The concave H, composed of two or more sections hinged together, and having yielding support at intervals along the concave, combined with a solid rotating cylinder, E, substantially as set forth.

3. The combination of the series of concaves jointed together and provided with lugs projecting through the casing-heads, with the series of yielding positive adjusting devices described, consisting of screw-bolts L, lugs M, nuts N and P, and spring O, whereby the distance of the series of concaves from the hulling-drum is independently controllable from the outside of the huller, as set forth.

4. The combination of huller E H, polisher T U, and connecting-chute R, ending at top in hopper R', substantially as set forth.

CHAS. E. WHITMAN.

Witnesses:

SAML. KNIGHT,
GEO. H. KNIGHT.