

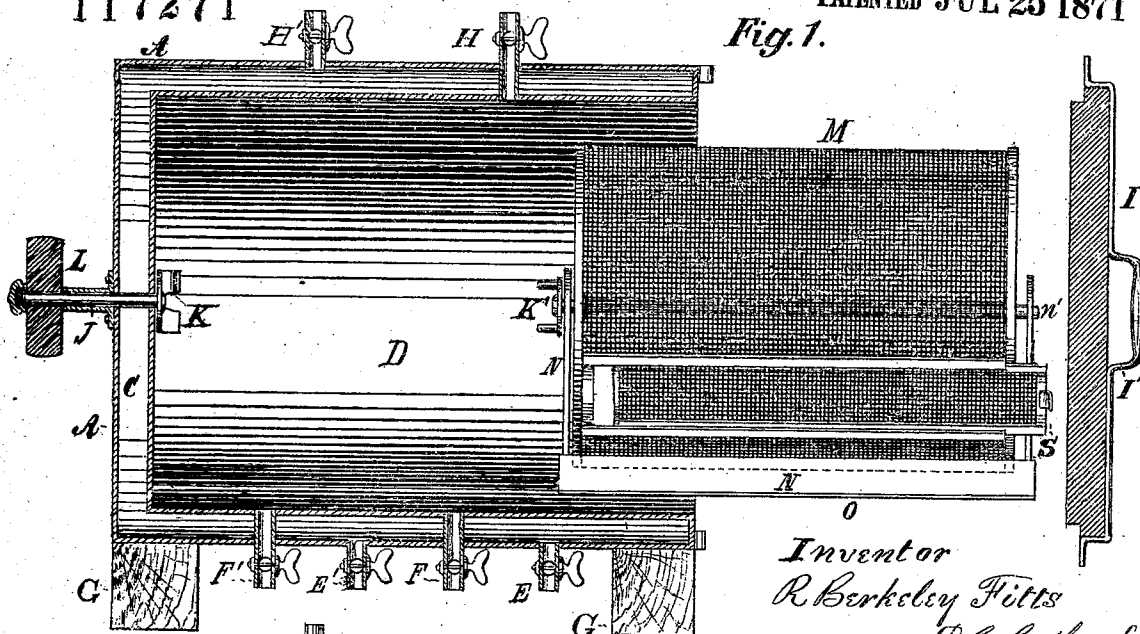
R. Berkeley Fitts.

Treating Rice, &c.

117271

PATENTED JUL 25 1871

Fig. 1.



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Fig. 2.

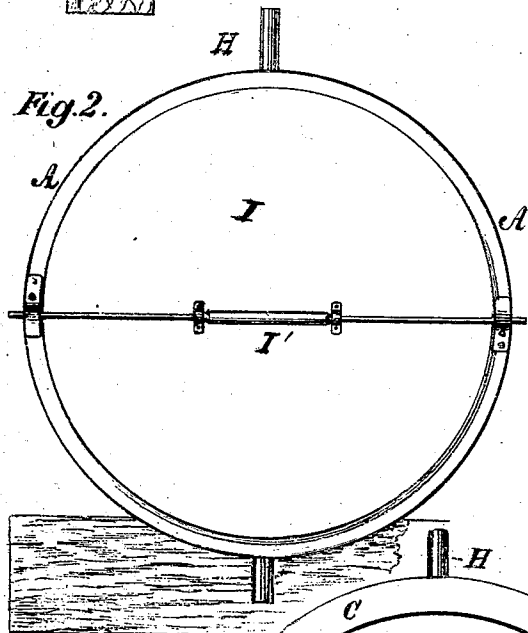


Fig. 3.

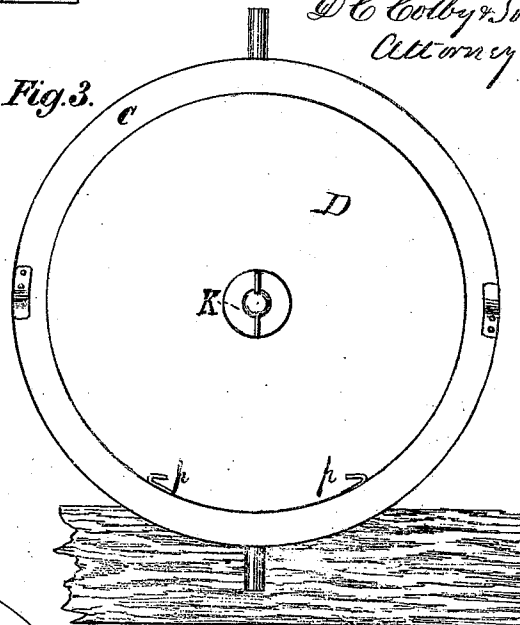


Fig. 4.

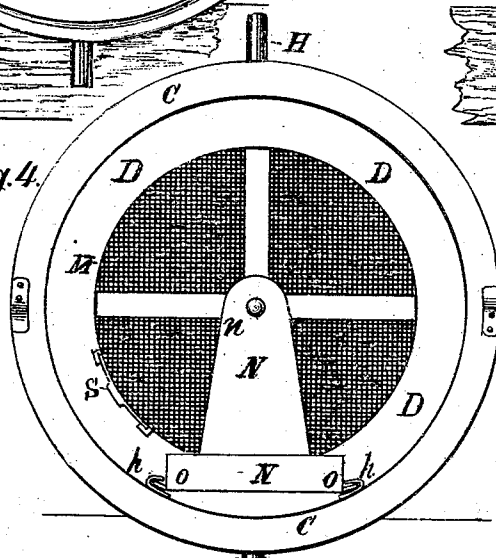
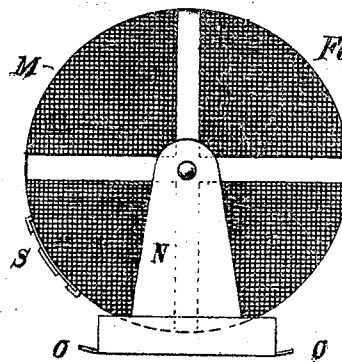


Fig. 5.



Witnesses:
Frederick A. Colby
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UNITED STATES PATENT OFFICE.

R. BERKELEY FITTS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO HIMSELF AND GEORGE W. WAITT, OF SAME PLACE.

IMPROVEMENT IN PROCESSES AND APPARATUS FOR TREATING RICE, WHEAT, CORN, &c.

Specification forming part of Letters Patent No. 117,271, dated July 25, 1871.

To all whom it may concern:

Be it known that I, R. BERKELEY FITTS, of the city of Philadelphia, State of Pennsylvania, have invented certain new and useful improvements in the treatment of rice, wheat, corn, and other grain, and in apparatus for such treatment, for the purpose of removing the hull, husk, or covering of the kernel, of which the following is a specification:

In the drawing, to which reference will be made in the description, Figure 1 is a longitudinal section of the outer chamber or cylinder with inner cylinder, presenting a side elevation; Fig. 2, an end view with closing-cap in position; Fig. 3, an end view looking into the interior, the inner cylinder being removed; Fig. 4, the same end view, the inner cylinder in position; Fig. 5, an end view of the small cylinder by itself.

A represents the outer walls of a steam-cylinder from two to three feet in diameter and four to six feet in length; B, the inner walls, a space being left between the two; C, the space between outer walls A and inner walls B of one to two inches; D, the chamber embraced within the inner walls B; E, pipe for supplying steam into space C; E', drip-pipe leading off from space C; F, pipe whose office is to supply steam to chamber D; F', pipe for carrying the drip from chamber D; G, frame or base upon which the apparatus rests; H, eduction-pipe for carrying away vapors, &c.; I', the handle by which the cap I is lifted to position or removed; J, a short shaft, arranged as in Fig. 1; K, a clutch upon the inner end of shaft J, with which the counterpart K' engages, as and for the purposes hereinafter set forth; L, a pulley upon the outer end of shaft J; M, a cylinder, a little less in diameter than chamber D, preferably made of wire-cloth, and is the receptacle for the article to be treated, and is arranged to be rotated on its longitudinal axis, for the purpose of keeping its contents stirring; N, a frame suitable to sustain the cylinder M, which has bearings at *n' n'*; *o*, flanges upon the sides of the base of frame N, as represented in Figs. 1, 4, and 5; *p*, grooves running along the lower portion of chamber D, in which the flanges *o* slide or move; these parts being to make provision for conveniently introducing the grain-holder M into chamber D and removing the same. A track laid in place of grooves *p* and trucks arranged upon the cylinder M may be used to

facilitate the introduction and withdrawal of said cylinder, this track extending outwardly somewhat beyond the mouth of chamber D. A slide, S, or, if preferable, a door hung upon hinges, is provided in cylinder M, through which the grain is introduced, and, after treatment, poured out.

In operation my device is as follows: Having drawn out the wire-cloth cylinder, as in Fig. 1, and turned it so the slide S will be upon the top, and having partially withdrawn the latter, I fill in from a suitably-arranged conduit the rice or grain to be treated, close the slide S, and move the cylinder M into chamber D, and, having suitably closed the mouth of the latter with cap I so as to render it air-tight, the steam is let on, being admitted through pipes E' and F', a communication having been provided between the two that the pressure in space C and chamber D may be uniform. Now, the steam is brought in direct contact with the contents of cylinder M, which, to facilitate the process, is kept in constant rotation by suitable power applied to pulley L, the clutch K engaging with its counterpart K'. This steam should have pressure sufficient to secure of 220° to 240° Fahrenheit promptly in contents of chamber M, which will be indicated by the steam-gauge, as the object is to soften and loosen the hull or skin, so it may afterward be easily removed. The time for continuing the presence of the steam in contact will depend upon different grains and their different conditions, and the degree of pressure of steam, and can be properly measured only by experience. It must ever be borne in mind the steam is not intended to cook the grain. The next step is to shut off steam from the interior chamber D, and, having removed the cap I and drawn out cylinder M, as in Fig. 1, to bring to bear upon the contents thereof—the now heated and swollen rice or grain—a powerful blast of cold air, a conduit therefor leading from a capacious fan-blower and terminating so as to discharge full upon the chamber M, the object of this cold blast being, by inducing such close contraction, to crack and disengage the hull. Following the steam and cold blast would come a drying and scouring process. This may be accomplished by returning the cylinder M to the chamber D and keeping up a continued rotation thereof; the steam now confined to the space C will supply heat for rapid drying. Suitable material to roll with the contents of M may be

placed within to aid in removing the hull or skin. Instead of carrying on the drying and scouring in chamber M, other suitable drying-ovens may be arranged near by and cylinder M used for the steaming process only. In the case of rice the hull only would require removal, and a scouring and polishing given to the kernel. In treating wheat a more complete removing of the cuticle would better fit it for the flouring-mill and render it more desirable for breaking to be used as cracked or coarse wheat. If a single treatment to steam and cold blast prove not sufficient to answer the end intended the same may be repeated.

I claim for this method of hulling rice, or removing the outer covering of wheat, rye, or corn in the kernel, much less breaking of the kernel, and, having destroyed the germ, to have added much to its keeping qualities.

The process can be rapidly carried on, is eco-

nomical, and vast quantities can be treated without great outlay for apparatus.

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

1. The process herein described for the treatment of rice, wheat, and other grain, consisting of the direct application of steam, followed by that of cold-air blast, as and for the purpose set forth.

2. The steam-chest D, steam-jacket C, and wire-cloth cylinder M, when all arranged and operating as and for the purposes specified.

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

R. BERKELEY FITTS.

Witnesses:

EDM. F. BROWN,
D. C. COLLEY.