2 Sheets--Sheet 1.

U. B. WADDLE.

Feather-Renovator.

No. 163,283. Patented May 11, 1875.

Fig. 1.

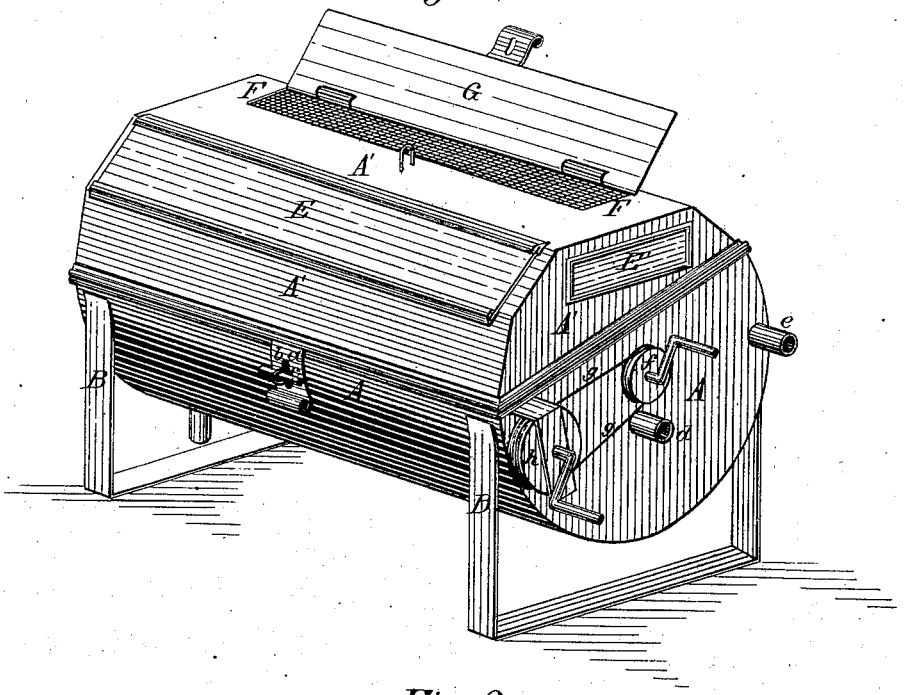
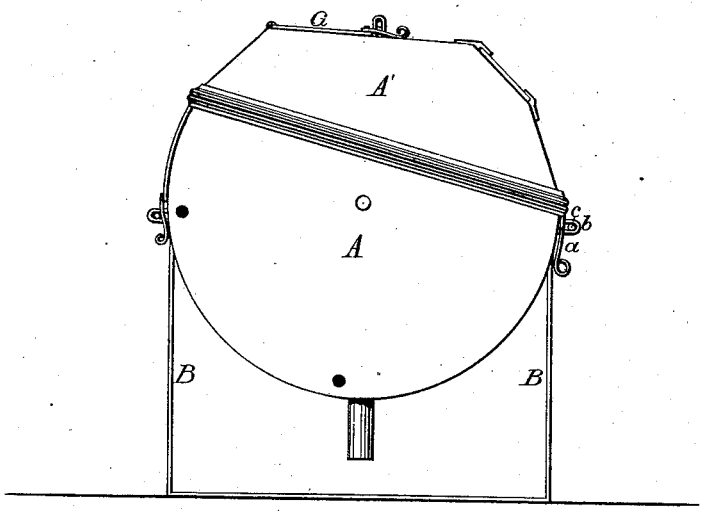


Fig. 2.



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2 Sheets--Sheet 2.

U. B. WADDLE.

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No. 163,283. Patented May 11, 1875.

Fig. 4.

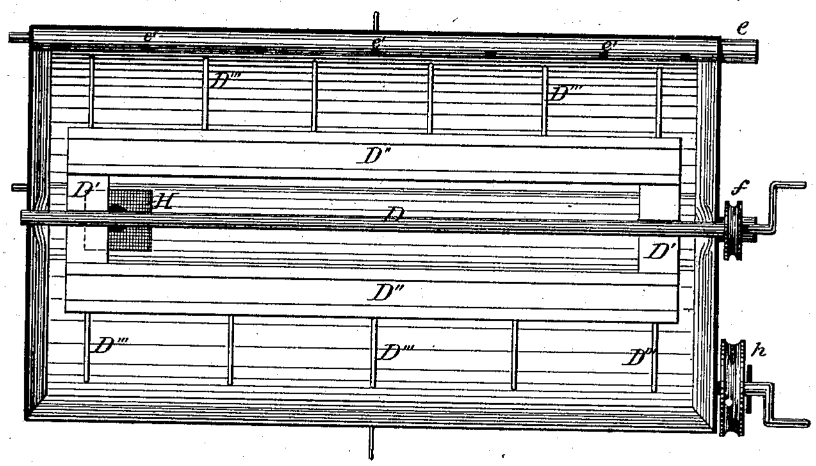
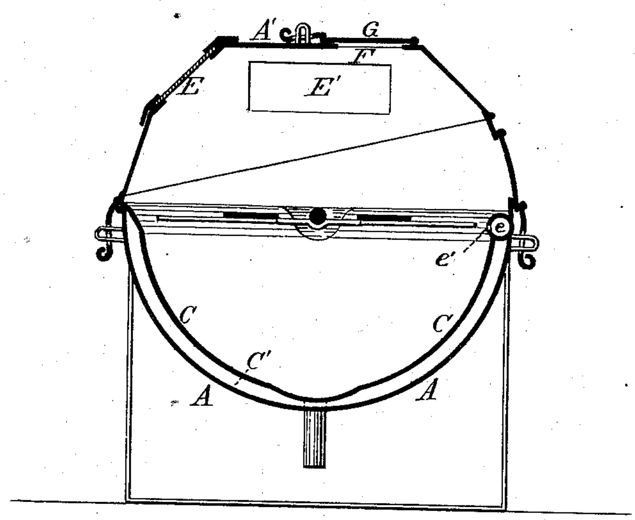


Fig. 3.



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UNITED STATES PATENT OFFICE

URIAH B. WADDLE, OF TRENTON, MISSOURI, ASSIGNOR OF ONE-HALF HIS RIGHT TO STEPHEN D. SAXBY, OF SAME PLACE.

IMPROVEMENT IN FEATHER-RENOVATORS.

Specification forming part of Letters Patent No. **163,283**, dated May 11, 1875; application filed March 13, 1875.

To all whom it may concern:

Be it known that I, URIAH B. WADDLE, of Trenton, in the county of Grundy and State of Missouri, have invented certain new and useful Improvements in Feather-Renovators; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Figure 1 is a perspective view. Fig. 2 is an end view. Fig. 3 is a transverse central vertical section, and Fig. 4 is a longitudinal central horizontal section.

Similar letters of reference indicate corresponding parts in all the figures.

This invention is an improvement upon the feather-renovator patented by me November 26, 1867, (Letters Patent of the United States, No. 71,555;) and consists in providing the renovator with a larger drying-surface more satisfactorily arranged; and, also, in various other improvements in the machine, as hereinafter more fully set forth and pointed out in the claims.

The cylinder or case A is cylindrical in shape, and rests upon the feet or standards B. The cover A′ is hinged at one side, and is fastened at the opposite side by the catch *a*, eye *b*, and pin *c*. Into the cylinder A is inserted a semicylinder of somewhat smaller dimensions, C, thus forming a double wall for the lower half of the case A, by which the steam-chamber C′ is formed, shown more clearly in Fig. 3. This double wall also extends up the vertical sides of the lower half of the case A, so that when the chamber C′ is filled with steam the entire lower half of cylinder A is heated thereby on all sides. A pipe, *d*, conducts the steam into the chamber C′, and another pipe placed in the opposite end carries off the surplus steam. Along the rear top edge of the steam-chamber C′ runs a separate pipe, *e*, which opens out into the case A by a series of perforations, *e′ e′ e′*. The pipe *e* projects on both sides beyond the ends of the cylinder, and steam is admitted at one end at *e*, Figs. 1 and 4, and escapes after the cylinder has been filled with steam, through the apertures *e′*, through a smaller pipe at the opposite end. The openings *e′* are so arranged in pipe *e* as to blow the steam-jets, when steam is admitted into *e*, transversely across the case C, so that the jets will be broken, as it were, and intermingled with the feathers every time the revolving arms D″ pass the plane of the said jets. The agitator D is of the shape shown in Fig. 4, so as to form a fan and stirrer combined. It consists of a central shaft, D, passing longitudinally through the middle of the cylinder, and provided with two cross-arms, D′, one at each end. Broad slats D″ unite the two arms, one on each side of the central shaft, so as to leave a clear space unobstructed by beaters between the central shaft D and fan-blades D″; and these slats, which act as the central fan, propelling the feathers outward toward the sides of the cylinder, are provided with a series of projecting-arms or teeth, D‴, by which the feathers are thoroughly stirred and agitated. The agitator is propelled by the pulley *f*, pulley-band *g*, and crank-pulley *h*, placed on the outside at one end of the cylinder, and the central pulley *f* is provided with an independent crank to be used when it is desired to stir the feathers slowly. By this arrangement of pulleys, the motion of the agitator may readily be controlled by the operator, standing at one end of the machine, so that he can observe the condition of the contents through the pane E′, according to progress made in the drying and renovating process, which requires the feathers to be agitated slowly toward the end of the process, when they are nearly done. The top or cover A′ of the cylinder is provided with three openings, two in the top and one in the side. Of those in the top, one, E, is covered with glass, and the other, F, is covered with a wire screen. A hinged cover, G, shown open in Fig. 1, closes down over the

screen which covers the opening, and, when closed, may be fastened by any suitable devices. The end opening E′ is covered by a pane of glass similar to that in E, but of smaller dimensions. Through these two windows the condition of the feathers within the cylinder may be readily ascertained, without opening the same. A pipe, covered with a wire screen, H, on top, passes through the bottom of the cylinder, and through the doube wall, up into the case A, where the screen is flush with the bottom. Through this screen and the pipe below, the condensed water, impregnated with the impurities of the feathers, is carried off.

The operation of my improved feather-renovator is as follows: The cover A′ is lifted and the feathers are thrown into the cylinder. The cover is then closed, care being taken that the cover G is down upon the wire screen F, and steam is turned on through the pipe *e*, while the agitator at the same time is set in motion. The steam is injected into the cylinder in jets through the apertures *e′*, thus penetrating the body of feathers horizontally where this is widest. The action of the agitator, owing to its peculiar conformation, is to propel the feathers from the central part of the cylinder in an outward direction. Here they come in contact with the teeth D‴, and are rapidly carried past the steam jets at *e′ e′ e′*, being violently beaten, blown, and shaken all the time. As the steam condenses, the impure water passes off through the screen H in bottom of cylinder, and the foul steam is also, at times, permitted to escape through the screen F, by opening the cover G.

After the feathers have been thoroughly cleansed, steam is shut off from *e*, and admitted into the steam-chamber C′ by the pipe *d*, the agitator being kept going all the while. The bottom of the cylinder is rapidly heated by the steam, the sides and ends being likewise heated by the surrounding steam, and the feathers, coming in contact with the heated sides, are rapidly and thoroughly dried, while the progress of drying may be observed through the glass windows E and E′. If the cylinder gets too hot, the cover G may be opened, which will allow the hot air to escape, while the feathers are retained by the screen F. When the drying process is over, the feathers are removed through a smaller door, K, in the side of the cylinder.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

The combination of the steam-pipe *e*, having opening *e′*, arranged as specified, to blow the steam-jets transversely across the cylinder or case, C, with an agitator consisting of the fan-blades D″, having beaters D‴ affixed thereto, substantially as and for the purpose specified.

In testimony that I claim the foregoing as my own, I have hereunto affixed my signature in presence of two witnesses.

URIAH B. WADDLE.

Witnesses:
A. G. FLESHER,
J. H. WADDELL.