J. J. BONNEY.

Feather-Renovator.

No. 199,614. Patented Jan. 29, 1878.

Fig. 1.

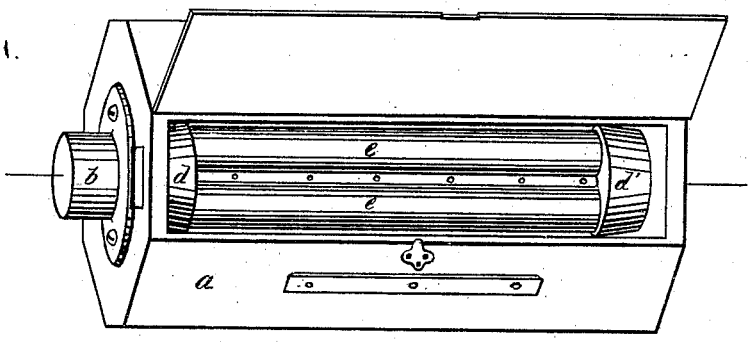


Fig. 2.

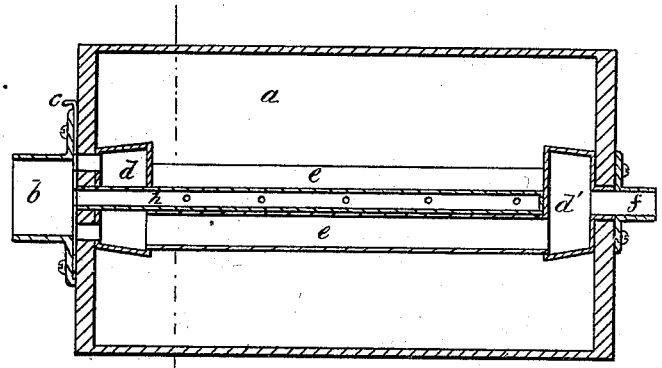


Fig. 3.

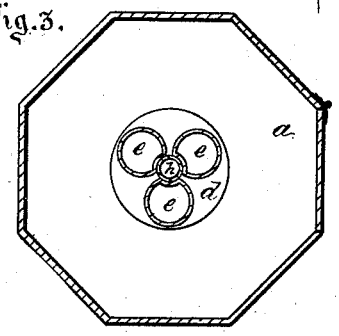
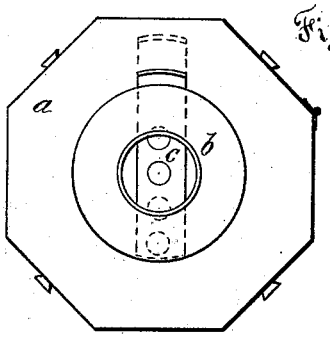


Fig. 4.



Witnesses:

William H. Davis.

Clarence C. DePuy

Inventor:

John J. Bonney

by J. J. Greenough

Atty.

UNITED STATES PATENT OFFICE.

JOHN J. BONNEY, OF FULTON, NEW YORK.

IMPROVEMENT IN FEATHER-RENOVATORS.

Specification forming part of Letters Patent No. **199,614**, dated January 29, 1878; application filed August 9, 1877.

To all whom it may concern:

Be it known that I, JOHN J. BONNEY, of Fulton, State of New York, have invented certain Improvements in Apparatus for Cleaning Feathers, of which the following is a specification:

This improvement in the apparatus for cleaning feathers from their impurities consists in the following devices, illustrated in the accompanying drawings and in the following description:

In the drawings, Figure 1 is a general view of the cylinder in which the cleansing is performed; Fig. 2, a longitudinal section through the axis; Fig. 3, cross-section at right angles to Fig. 2; Fig. 4, end view, showing cut-off valve.

The same letters of reference are used in the different figures to designate like parts in all the figures.

I have found by long experience that, in order to properly and expeditiously clean feathers, they must be neither too dry nor too wet, and that the usual method of first steaming and then drying them by steam-heated cylinders would not effect the cleansing perfectly. The two processes of steaming and drying should be carried on simultaneously, or nearly so, and be readily and conveniently alternated, and for this purpose I devised my apparatus, constructed as follows:

The outer case *a* is a polygon of any number of sides, (although a cylinder might be substituted,) and at each end is affixed a hollow journal, upon which it revolves. One of these journals, *b*, is in connection with the steam-generator, and has a sliding cut-off valve, *c*, having three ports in it, so placed that when the valve is pushed into the position shown in Fig. 4 it opens the center port and the upper one and closes the lower one. When drawn out, as shown by dotted lines, it opens the upper and lower or outside ports. These ports open into a small chamber, *d*, and admit the steam that comes through the hollow journal *b* into it, whence it enters three steam pipes or drums, *e*, extending the length of the case *a*, and opening into a chamber, *d'*, whence the steam escapes through the other hollow journal, *f*, the exit-opening being much smaller than the inlet.

A smaller pipe, *h*, is located between the pipes *e*, which surround it, and is at the axis of motion. This pipe *h* passes through the chamber *d*, and is covered at its open end by the valve *c*, the center port of which, when the valve is in the position shown in Fig. 4, opens a steamway into it, which is cut off when the valve is drawn out. The pipe *h* terminates at the chamber *d'* with a closed end, and does not communicate with it. Along the whole length of the pipe *h* it has rows of perforations between the pipes *e*, through which steam is admitted to the interior of the case *a*. There is no communication between the interior of the case and the chambers *d d'* or drums *e* therein. The drums *e* serve to evaporate any condensed steam in pipe *h*.

The operation of the apparatus is as follows: The feathers are put into the case *a*, and the valve *c* is slid in, so as to open the center port and one outside one. This conveys steam directly into the feathers, and at the same time heats up the drums *e*, thus commencing to dry them off, and equalizing the heat and moisture in the most favorable way for dissolving the gummy and oily impurities adhering to the feathers, which cannot be removed when the feathers are saturated with moisture. After this process is continued sufficiently long, determined by the operator, and differing with varying lots of feathers, the valve *c* is drawn, the center port cut off, and the two outer ones opened, which stops steaming and increases the drying heat, and also evaporates the water in pipe *h* until the process is finished.

I am aware that a feather-renovator, provided with a steam-drum and perforated steam-pipe and means for the control of the flow of the steam to both, is not new.

By my invention not only is a less costly, simpler, and more compact apparatus produced, but also, by the arrangement of the steam-drums surrounding the perforated pipe, the condensation of steam within the pipe and upon the feathers immediately surrounding

the steam-drums is prevented, so that the steam is more diffused through the feathers, and the perforations in the steam-pipe do not become clogged by the dirt from the feathers.

Having thus fully described my invention, I claim—

The series of drums or pipes *e*, in combination with the center pipe *h*, end chambers *d d'*, and valve *c*, for opening the ports, constructed and arranged as and for the purposes specified.

JOHN J. BONNEY.

Witnesses:
J. PAGE MUNRO,
J. J. GREENOUGH.