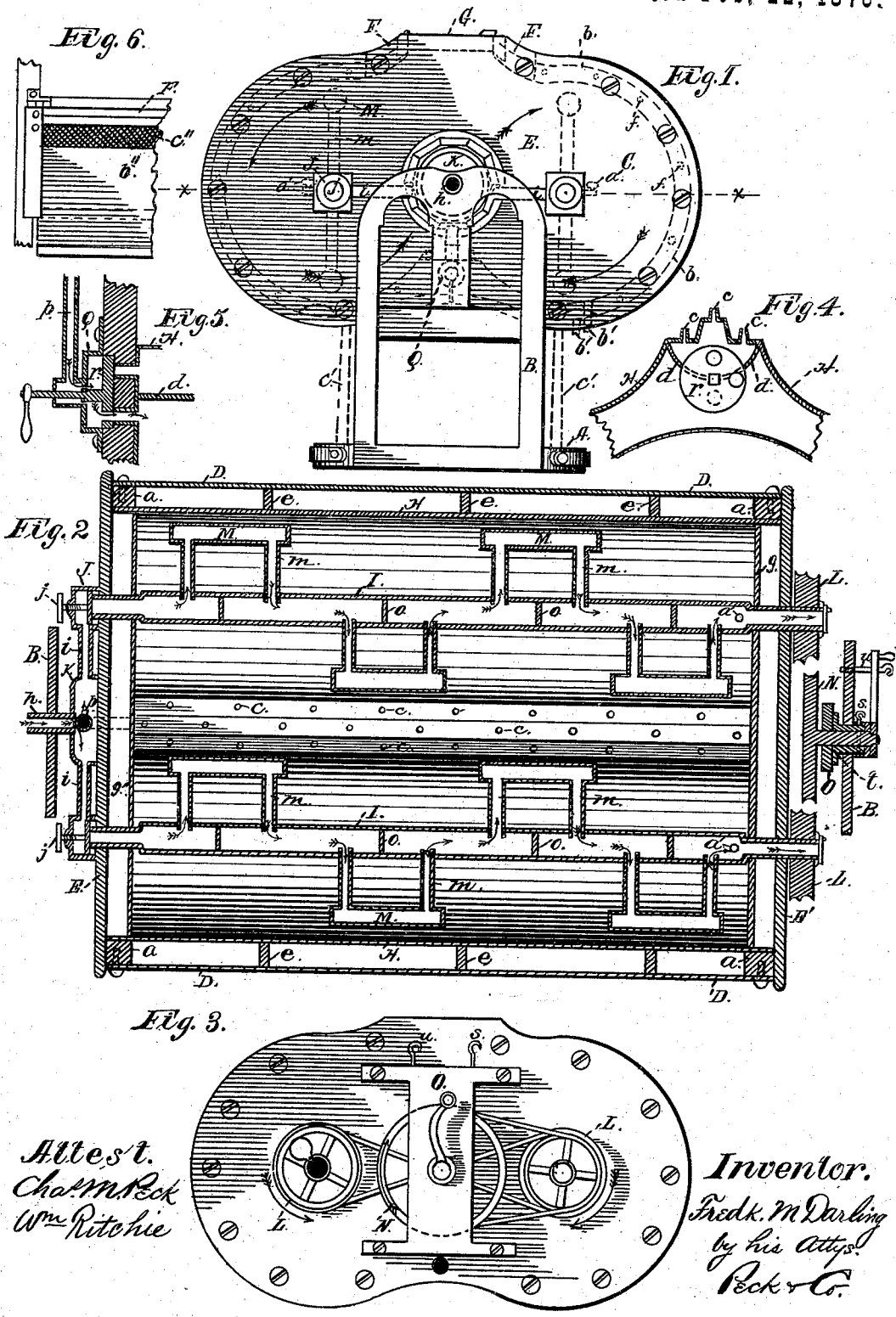


F. M. DARLING.
FEATHER-RENOVATOR.

No. 173,770.

Patented Feb. 22, 1876.



Attest.
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by his Atty.
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UNITED STATES PATENT OFFICE.

FREDERICK M. DARLING, OF EUPHEMIA, OHIO.

IMPROVEMENT IN FEATHER-RENOVATORS.

Specification forming part of Letters Patent No. 173,770, dated February 22, 1876; application filed January 27, 1876.

To all whom it may concern:

Be it known that I, FREDERICK M. DARLING, of Euphemia, in the county of Preble and State of Ohio, have invented certain new and useful Improvements in Feather-Renovators; and I do hereby declare the following to be a full, clear, and exact description of the same.

This invention belongs to that class of feather-renovators in which the feathers are placed in a properly-constructed receptacle, and submitted to the action of steam, for the purpose of removing effete matter from them by scalding and drying.

My improvements consist in the general structure and frame-work of the machine, provided with revolving driers and connecting gearing, all as will be herewith described, and the invention distinctly pointed out in the claims.

To enable others skilled in the art to which my invention appertains to make and use the same, I would thus proceed to describe its construction and mode of operation, reference being had to the accompanying drawings, in which—

Figure 1 is an end elevation of my improved feather-renovator. Fig. 2 is a sectional plan view of the same, through the line *x x* of Fig. 1; and Fig. 3 is an end elevation of the receptacle opposite to the end illustrated in Fig. 1. Figs. 4, 5, and 6 represent minor details, which will be referred to hereafter.

Corresponding letters of reference indicate like parts in all the figures.

A is any suitable platform, at each end of which is erected a durable frame-work, B, in the upper portion of which is journaled the receptacle C. The shape of this receptacle is represented by its respective end elevations, Figs. 1 and 3. It is constructed of an exterior jacket of zinc, D, securely screwed to ribs *a*, which are bolted to the wooden ends E E'. The configuration of this exterior covering is denoted by the dotted line *b*, Fig. 1. The ends are braced by longitudinal beams F, indicated in cross-section by dotted lines, Fig. 1. These beams serve also as casings for the hinged door G, by which communication is had with the interior, and to them and the under sides of the ribs *a* is securely bolted an

interior lining, H, of tin or galvanized iron. The portion of this lining opposite the door is raised, and is of the shape represented in the cross-section, Fig. 4. Through this raised portion are three rows of orifices, from which small nozzles *c* project into the receptacle. The zinc and the interior lining form between them a chamber that extends all around the receptacle, except where the door intercepts it. The raised portion, provided with the nozzles *c*, is cut off from this chamber by means of a semi-cylindrical sheet of metal, *d*, (seen in cross-section in Fig. 4,) that extends the entire length of the receptacle. In order further to stiffen the receptacle, ribs or frame *e* of wood, provided with orifices through them, are fitted at intervals between the jacket D and the interior lining H extending all around it in vertical planes. The orifices in these ribs are indicated by dotted lines *f*, Fig. 1. At each interior end of the receptacle is a tin or galvanized lining, *g*, Fig. 2. Securely bolted upon the end E, near its center, is a hollow metal cap or chest, K, from which proceeds horizontally the induction-pipe *h* that is journaled in the end frame B, and forms one of the pivots upon which the receptacle turns. I I are two pipes or small cylinders that lie longitudinally and parallel in the receptacle, passing through its ends, as shown. At one end they enter the valve-chambers J, which are connected to the chest K by pipes *i*. The opposite ends of the pipes I extend through the end E', and have keyed upon them grooved pulleys L, Figs. 2 and 3. Short pipes M closed at both ends have extending from them at right angles near each end smaller pipes or tubes *m*, which pass through the cylinders I, and project beyond their inner surfaces to prevent any water of condensation entering tubes M. These tubes M are equidistant, and are alternately on opposite sides of the pipes I, and lie in the same plane with them. The pipes I have partitions *o* in them, (each provided with a small perforation,) one between each set of tubes *m*, as indicated. N is a pulley journaled in the bearing O, that is bolted to the end E', but at sufficient distance from it to allow the cord connecting the pulleys L and the pulley N to be situated between it and the end of the receptacle. Securely bolted

to this bearing is a journal, *t*, which is pivoted in the end frame, and with the induction-pipe *h* forms the pivots upon which the receptacle turns. *Q* represents a valve-chamber secured upon the end *E* near the bottom, and having a small pipe, *p*, entering it from the chest *K*.

A disk-valve, *r*, with an operating stem, is set into the end *E* within the chamber *Q*, Figs. 4 and 5. This disk is provided with two orifices at quarter circles from each other, the lower one of which communicates with the chamber between the jacket *D* and the interior lining. Upon turning the stem one quarter of the way around, the upper orifice opens communication with the space under the raised portion and nozzles *c*, while communication with the chamber is cut off. The pipes *I* have small stop-cocks *a'* near one end within the receptacle for permitting the water of condensation to pass from them. They are also provided at their ends to which the pulleys are attached with swinging or any suitable valves to allow the passage of steam when desirable. Small outlet-pipes *b'* allow any water that has collected within the receptacle or chamber to pass out.

The operation of the machine is as follows: The feathers to be cleansed are placed in the receptacle and the door closed. Steam, by any suitable connections, is admitted through the induction-pipe *h*, the valves *j* being closed. It passes down through the pipe *p* and disk-valve *r* into the space beneath the nozzles *c*, from which it issues into the receptacle, thoroughly steaming and scalding the contents. The stays *c'* being then raised to steady the machine, as indicated by dotted lines Fig. 1, the attendant turns the crank, revolving the pulley *N* connected by belts to the pulleys *L*, as indicated, causing the pipes *I*, *m*, and *M* to revolve in the direction indicated by the arrows, dotted lines in Fig. 1, throwing the feathers directly over the nozzles *c*, and thoroughly subjecting them to the action of the steam. When sufficiently steamed, the valve *r* is turned, shutting off the steam from the nozzles *c*, and admitting it into the chamber between the jacket *D* and the interior lining. The valves *j* are opened, admitting the steam into pipes *I*, which it traverses, as indicated by the arrows, thus furnishing heat for drying. To separate and agitate the feathers more thoroughly, a pin, *s*, Fig. 2, is passed through the crank-hub and journal *t*, which is bolted to the bearing *O*, thereby keying the crank to the bearing, so that by turning the crank the whole receptacle is revolved, but not the pipes *I*. To increase this agitation, the pin *s* is removed, and the pin *u* is screwed into the frame *B*, when the operator, taking hold of the receptacle, revolves it, whereupon the pulleys *L* will revolve as well as the pipes *I*. When only a small quantity of feathers is to be cleansed, the receptacle is revolved until the line of the broadest section

is in a vertical plane, and the stays *c'* are applied, thus confining the contents to one end, where they are steamed and dried in the manner before described. When thoroughly dried, the slides *b''*, which cover the door, are drawn open, exposing the wire-netting *c''*, secured upon the bottom of the door, and which, with the slides and frame-work, forms the door. The receptacle is again revolved, and any sand and other foreign substances are cast out through the netting, and the operation is completed.

I am aware that there are cylindrical renovators, having a heating-chamber and revolving driers, but none of them are oblong in section for cleansing varying quantities of feathers, or have the compound motion of the receptacle and driers, as herein shown. Nor have any of them an essential feature of my invention—that is, an outside jacket of zinc used particularly for its non-conducting properties, and an interior lining of tin or galvanized iron, used especially for their property of transmitting heat.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is as follows:

1. In a feather renovator, the oblong receptacle *C*, of the shape represented—being, in effect, two parallel cylinders merged into each other—whose jacket *D* is zinc, and whose interior lining is tin, or galvanized iron, suitably connected to the frame-work in the manner specified.

2. In combination with the receptacle *C*, the revolving heaters, consisting of the pipes *I*, *M*, and *m*, constructed and arranged within the receptacle, as shown, and provided at one end with valves *j*, and at the other with pulleys *L*, for the purpose specified.

3. The combination and arrangement of the frame *B*, induction-pipe *h*, chest *K*, pipes *i* and *p*, valve-chambers *J* and *Q*, as and for the purpose specified.

4. The combination and arrangement of the interior lining *H*, provided with the nozzles *c*, the semi-cylindrical plate *d*, the disk-valve *r*, chamber *Q*, and pipe *p*, substantially as and for the purpose specified.

5. The combination and arrangement of the bearings *O* and *t*, pulleys *N* and *L*, pins *s* and *u*, and frame *B*, substantially as and for the purpose specified.

6. In a feather-renovator, the door *G*, suitably hinged in its casing, and having the zinc slides *b''*, and wire netting *c''*, in combination with the receptacle *C*, as and for the purpose specified.

Witness my hand this 19th day of January, A. D. 1876.

FREDERICK M. DARLING.

Witnesses:

PATRICK H. GUNCKEL,
WM. RITCHIE.