

M. L. PALMER.

FEATHER RENOVATING MACHINE.

No. 190,156.

Patented May 1, 1877.

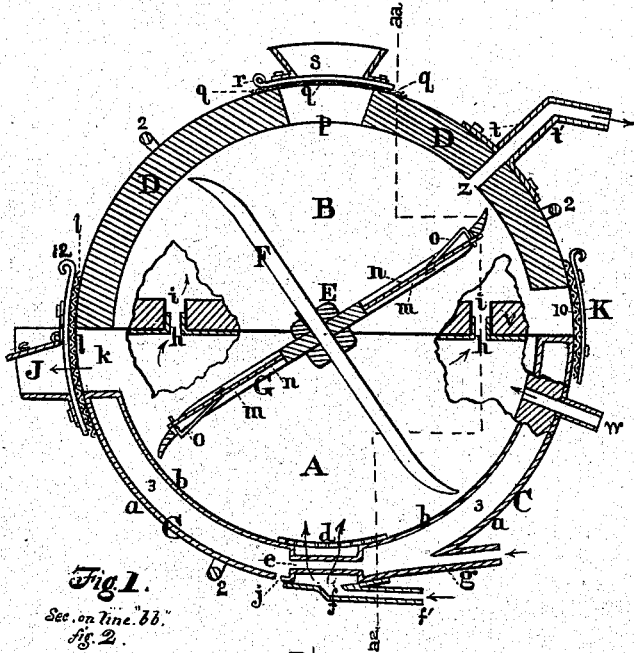


Fig. 1.
Sec. on line "aa"
Fig. 2.

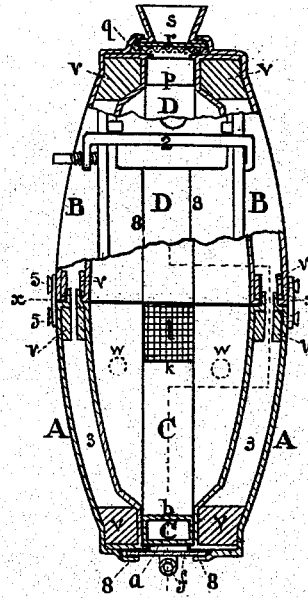


Fig. 2.
(Vert. Sec. on line "aa" of Fig. 1)

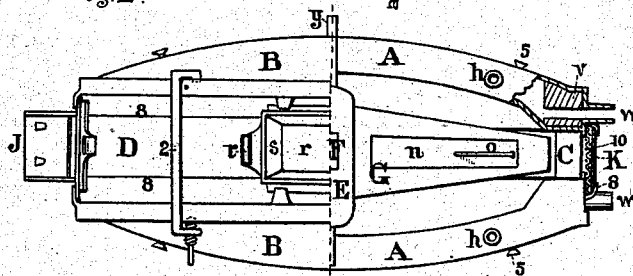


Fig. 3.

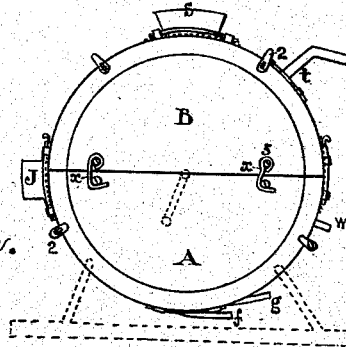


Fig. 4.

Witnesses.
John W. Stanley
Anderson Sartain

Martin L. Palmer.
by E. Thurston, atty in fact.

UNITED STATES PATENT OFFICE.

MARTIN L. PALMER, OF TRIVOLI, ILLINOIS.

IMPROVEMENT IN FEATHER-RENOVATING MACHINES.

Specification forming part of Letters Patent No. **190,156**, dated May 1, 1877; application filed March 23, 1877.

To all whom it may concern:

Be it known that I, MARTIN L. PALMER, of Trivoli, in the county of Peoria, in the State of Illinois, have invented an Improvement in Feather-Renovating Machines; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the annexed drawings, making a part of this specification, in which like letters of reference refer to like parts, and in which—

Figure 1 represents a vertical longitudinal section on line *b b*, Fig. 2; Fig. 2, vertical cross-section on dotted line *a a*, Fig. 1, (the stirrer F G omitted); Fig. 3, a plan of one-half of machine, with one-half of the upper shells D removed to show the stirrer E F G and the surfaces of the lower shells; Fig. 4, elevation of the renovator complete.

This is an improvement in that class of feather-renovating machines which are constructed in several complete pieces or parts with a view to packing and transportation of the same; and it consists of a vertically-revolving stirrer within a circular vertical receiver, the latter separable into two equal halves, horizontally, at the middle, and these again are each separable into three pieces, each containing a separate chamber for drying purposes in heating the feather-chamber, the central piece being a hemi-cylinder, and inclosed between the edges of the others, to form the top or bottom of the renovator and inclose the feather-chamber, and so held there between the peripheral edges of said side pieces by clamps or other fastenings embracing all three of said parts. The semicircular sides are each hollow, and provided with steam entrances and exits; so are the half-cylinders, in addition to which all the openings into the feather-chamber are through the latter. In short, the central feather-chamber is almost or completely surrounded by heating-chambers, for purpose of drying the feathers rapidly after steaming, assisted by a suction-pipe above, to draw off moisture. The semicircular sides, when erected one upon the other, have intercommunicating pipes, which also serve as pins, or means of preventing the shifting of the sides, and the latter are also fastened together at the edges by means of hooks or similar devices, the whole being supported on

any convenient stand. The upper half-cylinder has an opening through it for feathers, with screen and sliding door, and also a passage outward for steam-education into a chimney, chimney-pipe, or open air. The lower hemi-cylinder has an opening for the admission and exit of steam, as it serves as a drying-surface for the feather-chamber above. The stirrer has four equal arms, formed of two pieces of wood or other light material, one piece passing at once through the axle and its fellow arm. Two of the latter are broader than the others, and slotted in the middle with a wide opening, for the passage of feathers and the more effective stirring of them, which slot or opening is followed by each of the narrower arms, just covering the width of said opening. The latter is filled or stopped by a sliding slat when the stirrer is used to blow out the feathers. The general construction is designed to facilitate packing and transporting the same.

One of the forms in which I make my renovator is as follows: The complete receiver separates along the horizontal line through its center, at the spindle. The lateral shells A B make a complete circle, separable, as said, in the center, where they are hooked together by the hooks *x* and heads 5. Between these are held the half-cylinders C D, the joint being covered by the short flange S, thus completing and covering a circular central feather-chamber, excepting necessary openings left for access to latter. Rubber or other packing may be used at the joints, and the whole is held together by clamps 2 at necessary points, embracing the edges of the receiver, and it is held in a vertical position by any effective support or base, as in Fig. 4.

Having given a general description of the shells or main parts, I will describe them in detail.

The two corresponding lower parts of each shell are metallic, or made of wood and metal, each resembling in form half of a saucer, convex sides outward, having a chamber within of equal width laterally, and with its periphery within the chamber filled with a wooden segment, V, or stiffener. The inside surface next to the periphery is in one plane, and abuts against one of the semi-cylinders C

when clamped together. They have each inlet steam-pipes *w w* into their respective interiors, and short pipes *h h* open from their upper horizontal surfaces into corresponding openings *i i* in the respective upper half-shells B B, for steam, and to return condensed steam, besides serving as nipples or fastening-pins. B B are the corresponding upper half-shells, resembling the lower ones, each complete shell A B A B forming a tight steam-chamber, covering the central feather-chamber. C is the lower half-cylinder, forming the bottom of the feather-chamber, being continuous with the periphery of the lower shells A A, between which are clasped the flanges 8 8, inclosing its edges. Like the other part of the shell, it is of metal, and hollow, and divided at its lower part by a passage, for the escape of dirt and the admission of steam to the feather-chamber or stirrer. This passage is crossed by a steam-pipe, *e*, which connects the divided chamber 3. Said passage is covered by the usual screw *d*, and is closed at bottom by a sliding door, *f*, pierced by a steam-pipe, *f'*, for steam to the feathers. A short distance from this is an induction steam-pipe, *g*, into said chamber 3. The upper part of said semi-cylinder C is cut off to leave an opening, *k*, for the exit of feathers from the central or stirring chamber. It is covered by a sliding screen, *l*, door 12, and feather-spout J, having an adjustable flap within, to adjust the opening to the receiving tick or bag. D, the upper semi-cylinder, similar in form to the other, but here made solid, and of any fit material, but hollow, if more drying-space is wanted. It forms the upper inclosure of the stirring-chamber, is held in place like its fellow below, leaving an air-opening opposite the opening *k*, described before, which is covered by a sliding screen, 10, and sliding door K. E, the stirrer-spindle—a block ending in iron axles *y*, held in bearings between the shells, and receiving through its center the two pieces which form the four arms of the stirrer. Of these, F is a plain arm, with parallel surfaces, double as wide as thick, the ends slightly curved in opposite directions. This passes through the mortise in the axle E, and through a corresponding mortise in the middle of the piece G, which forms the other arms of the stirrer, where it is secured by a key or wedge. G is the other arm, secured, as described, in the spindle. It is three or more times the width of the arm F, but tapers toward each end to the width of F, having corresponding bends at its ends, and each end is provided with a slot extending nearly the length of each, which are, when the stirrer is used to blow out feathers, each filled with a sliding slat, *n*, which runs in grooves or guides, and kept from being whirled out by a spring-catch, *o*.

The operation of this renovator is as follows: The feathers are introduced above at *s p*, and the door closed. The pipe *t* is placed over the vent *z*, all other openings are closed, and steam is admitted by pipe *f* below, the stirrer

F G being put in motion by a crank. The slats *n* are first all removed from the openings *m* in two of the stirrer-arms F G. Steam passes away with decayed matter through pipe *t*, facilitated by introducing the end of the latter into a chimney. When the feathers are properly steamed, the steam is shut off from *f* and introduced into pipes *g* and *w w*, (*g* leading into the lower half-cylinder, and *w w* into the lower lateral shells A A, and thence, by pipes *h h*, into the upper shells B B,) thus converting the inclosing-shell A B C into a heater, inclosing the feather-chamber. The feathers are now rapidly dried, dirt falling out with condensed steam through screen *d* at the bottom of the feather-chamber, while condensed steam descends from the semi-cylinder C through the openings J at the bottom of the latter. The feathers are blown out into a bag or tick attached to the hooks on the spout J, after removing the screen and the door therefrom, and from the opposite opening the door K and screen 10, the stirrer meantime being rotated to act as a fan, at which time the slats *n n* are slipped into their places, and held by means of their respective spring-catches *o o*.

What I claim as my invention is—

1. The hollow circular sides or heating-chambers on each side of the feather-chamber, with pipes *w h*, separable in the middle horizontally, and respectively clamped against an intermediate ring composed of two half-cylinders, the whole inclosing a central feather-chamber, substantially as and for the purposes described.

2. The four hollow half-sides A B A B, or heaters, inclosing a central feather-steaming chamber and stirrer, with steam-ducts *w h*, in combination with the segmental or semi-cylinders C D, the lower one made hollow to receive steam as a heater, substantially as and for the purposes described.

3. The hollow half-sides A B, with steam-pipes *w* and connecting-pipes *h*, (acting also as connecting-pins or nipples, to unite the adjoining half-sides,) arranged with segmental half-cylinders C D and their four openings K *p k d* into the feather-chamber, and induction-pipe *f'* and eduction-pipe *t* into and from said chamber, substantially as and for purposes described.

4. The hollow segmental or semi cylinder C, with steam-pipes *g e*, screen *d*, in combination with and clamped between the lateral chambers A A, provided with flange 8, substantially as and for the purposes described.

5. The upper semi-cylinder D, with opening *p* for feathers, and eduction *z t t'* for steam, extending entirely through it into the feather-chamber, in combination with lateral half-sides B B and clamps 2.

6. The combination, with the shell A B C D, the sliding spout J and its screen *l* and door 12, and the sliding hopper *s*, its screen *g* and door *r*, and the door K and screen 10, substantially as described.

7. The combination, with the hollow cham-

ber C, the sliding door *f*, pierced with induction-pipe *f'* to feather-chamber, substantially as and for the purposes described.

8. The stirrer having large openings *m* in each arm G, filled with sliding slats *n*, for the purpose of forming or constituting a convertible feather-stirrer and blower or fan, substantially as and for the purposes described.

9. The stirrer F G E, having large openings *m* in two of its arms G, closable by means of movable slats *n*, followed by narrower arms

F, all the arms being curved in the direction of rotation when used as a stirrer, substantially as and for the purposes described.

In testimony that I claim the foregoing feather-renovator I have hereunto set my hand.

MARTIN L. PALMER.

Witnesses:

HENRY W. WELLS,

JAMES M. MORSE.