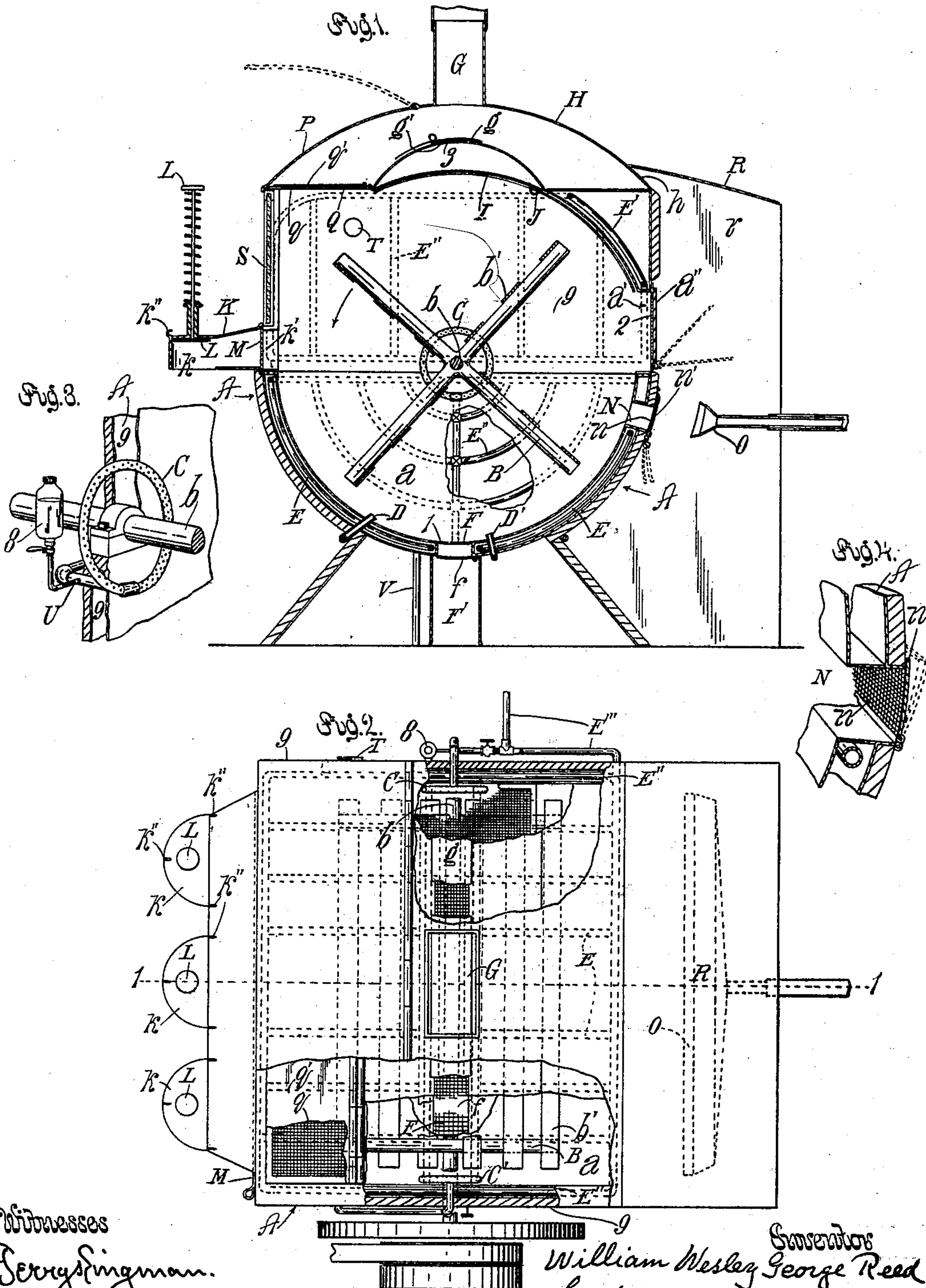


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Patented Jan. 31, 1899.

W. W. G. REED.
FEATHER RENOVATOR.
(Application filed Nov. 16, 1897.)

(No Model.)



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UNITED STATES PATENT OFFICE.

WILLIAM WESLEY GEORGE REED, OF LOS ANGELES, CALIFORNIA.

FEATHER-RENOVATOR.

SPECIFICATION forming part of Letters Patent No. 618,481, dated January 31, 1899.

Application filed November 16, 1897. Serial No. 658,758. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM WESLEY GEORGE REED, a citizen of Canada, formerly of Toronto, in the Province of Ontario, but
5 now residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Feather-Renovators, of which the following is a specification.

10 One object of my invention is to afford more perfect means for rapidly and thoroughly cleansing feathers.

Another object of my invention is to provide means for preventing the escape of dust
15 or effluvia into the room occupied by the operator of the machine.

Another object is to provide superior and more simple means for readily drying and cooling the feathers, and at the same time to
20 dispense with any external fan and blowing apparatus for this purpose; also, to provide superior means for conveniently discharging the feathers and filling ticks and pillows there-with.

25 I provide for filling a number of separate pillow-ticks at practically one operation without any necessity of handling the feathers. The feathers are put into the machine from the tick and are discharged by the machine
30 directly into the tick or ticks to be filled.

The accompanying drawings illustrate my invention.

Figure 1 is a vertical mid-section of a machine embodying my invention. Line 1 1,
35 Fig. 2, shows the line of section. The parts are shown in solid lines in the position they occupy when the apparatus is in use for steaming the feathers. Dotted lines indicate the position of parts at other stages of the operation. Fig. 2 is a plan of the machine with
40 parts broken away to expose the interior construction. Fig. 3 is an enlarged perspective detail of a portion of the machine at the end of the fan-axle, showing the means for injecting a disinfectant into the fumigating-chamber. Fig. 4 is an enlarged detail of the device for catching heavy objects which may be
45 contained in the feathers.

A indicates the renovator-case, having a
50 renovating-chamber *a* therein.

B indicates the fan inside the renovating-chamber. This arrangement is common in

other feather-renovators and is not claimed as my invention.

C indicates a circular steam-inlet at one
55 end of the case, arranged around the axle *b* of the fan, so as to direct the steam into the chamber around the axis of the fan. C' indicates a like circular steam-inlet at the other end of the case to direct a circular body or
60 jet or series of jets into the body of steam which issues from the inlet C at the other end of the machine. The blasts or jets of steam from these two circular inlets supply the steam to the chamber all around the axle
65 of the fan, so that the steam expands outward from the center of the chamber and is also thrown outward by the revolving blades *b'* of the fan, and thus the live steam is thoroughly distributed and mingled with the fly-
70 ing feathers in the chamber, so that the feathers will be quickly and thoroughly saturated with steam. Steam inlet or inlets D D' are arranged at the bottom of the chamber to direct a jet or jets of steam up into the body of
75 steam from the circular inlets, thus increasing the agitation and producing a thorough mixing of the steam and feathers and the more complete saturating of the feathers with the steam. By the use of these four inlets C
80 C' D D' the feathers will be very quickly saturated and heated, so as to destroy all insect and germ life.

The renovator is provided with suitable means for heating its chamber for drying the
85 feathers.

E indicates steam heating-pipes in the hollow semicylindrical bottom wall A' of the case, and E' indicates steam heating-pipes in the top of the case, and E'' indicates steam
90 heating-pipes in the hollow walls 9 at the ends of the case.

E''' is the pipe for supplying steam to the heating-pipes E, E', and E''.

The renovator is provided in the bottom
95 with the cold-air inlet F (supplied through the cold-air flue F') and at the top with a hot-air flue G. A suitable door or shutter *f* is provided to close the inlet F, and a door or shutter *g* is provided to close the outlet *g'*
100 from the chamber *a* into the flue G. The screened cold-air inlet F is located at the lowest point, being the middle of the semicylindrical bottom wall or floor A' of the case,

and extends in the form of a slot from end to end of said bottom wall, as indicated in Fig. 2 in solid and dotted lines. By this arrangement the cold air from the flue or shaft F' is introduced in a line along the middle of the mass of feathers in the renovating-chamber, so that in passing up through the chamber it will be distributed throughout the mass of feathers, thus rapidly and thoroughly cooling the same, and the heat will pass off through the hot-air flue G at the center of the top H of the case.

S indicates means for introducing a disinfectant into the steam to be blown through the inlet C at the end of the apparatus near the axis of the fan, so that such disinfectant will be thoroughly distributed from the middle of the chamber throughout the mass of flying feathers.

Above the closed top section a^2 of the fumigating or renovating chamber a the case is provided with a hood H, and the hot-air flue G leads from this hood, and a passage is provided from the side of the chamber to the hood, as indicated at $a' h$. A door a'' is provided to close the opening a' .

1, 2, and 3 indicate screens for the openings at F, a' , and g' . These screens prevent the feathers from flying out at said openings. Below the screened passage g' , which leads from the renovating-chamber into the hood, I provide a down-retaining net I, which slides in grooves J, so that it can be drawn down and taken out at the door or opening a' . The object of this is to catch any down which otherwise might be driven up through the screened passage g' and to allow the down to be removed from the machine.

K indicates a feather-discharging spout extending along the side of the case and opening from a slot k' , extending horizontally from end to end of the side of the case and provided with a number of mouthpieces k and inside the spout with a number of plungers, a separate plunger L being provided for each mouthpiece.

M indicates a slide-door which closes the slot k' from which the spout opens.

N indicates a receptacle opening through the side of the case, below the horizontal mid-plane thereof, to catch any heavy materials, lumps or mats of feathers, or other material which may be in the charge of feathers which is being treated. n indicates a screen, and n' a door for closing the said opening. The receptacle N will hold the heavy materials, lumps or mats of feathers, or pieces of quills and prevent them from resting upon the screen 1 of the air-inlet F.

O indicates a telescoping blower spout or nozzle for delivering air under pressure into the fumigating-chamber opposite the spout K, thus to assist in blowing the feathers out of the machine into said spout.

P indicates a door opening through the top of the hood. Q indicates a screened opening beneath said door and communicating be-

tween the hood and the case. q indicates a screen for such opening, and q' indicates a door for closing said screened opening. The screen q is hinged to swing as a door, and the door q' is hinged to the screen.

R is an extension of the hood H and extends beyond the opening h and is supplemented by the side wings r to direct up into the hood through the opening h the dust and effluvia which pass from the feathers during the drying of the feathers.

In practice the operation of fumigating a charge of feathers is as follows: The operator will first raise the doors P, q' , and q and put the charge of feathers into the chamber a through the opening Q. The doors q , q' , and q are then closed, thus closing the top of the chamber a . All the other doors and slides P, a'' , n'' , f , and k' will also be closed, so that the case is practically steam-tight, and is provided above its top with an insulating-chamber formed by the air-space between its top and the hood. Then steam will be turned on through the inlets C C' and also through the steam-inlets D D', and at the same time with the admission of the steam the fan B will be rotated in the direction indicated by the arrow. The steam thrown into the chamber by the several inlets will be thoroughly commingled with the feathers to saturate them, and this operation will be continued for about fifteen minutes, more or less, the fan being driven meanwhile. S is a glass window through which the operator can view the operation. By pressing his hand upon the glass window S, which is let into the rear side of the chamber, he can tell by the temperature when the feathers have been heated sufficiently. The machine may be supplied with a thermometer T, so as to accurately indicate the temperature of the interior of the chamber. The heat in the chamber should rise to about the temperature of boiling water. If it is desired to treat the feathers with a disinfectant, this can be readily applied by introducing it through the disinfectant-cup S and pipe U and into the path of the steam-jet, so that the disinfectant will be blown into the chamber by the jet of steam. When the feathers have been sufficiently heated and saturated with steam, the steam will be turned off and the doors g , q' , a'' , n' , and f will be opened and steam will be turned on through the pipe E''' to heat the chamber with a dry heat from such steam. Then the fan is rapidly rotated, and the air entering from outside the building through the flue F' and passing up through the machine and out through the hot-air flue will readily carry off the dust and effluvia up through the flue G, thus thoroughly drying and cooling the feathers by the application of fresh pure cool air without the use of any external fans or blowers. V indicates an exhaust and drip pipe to carry off the exhaust from the heating-pipes. When the feathers are thoroughly dried, the steam is turned off and the fan operated and the cold air ascends

through the flue F', and the feathers are thus perfectly cooled. Any down which might be carried up by the direct current of air through the screen 3 will be caught by the down-net I, and any heavy material—such as mats of feathers, &c.—will be thrown upward and outward by the arms of the fan and will lodge in the receptacle N. The screened opening allows the air to pass through the receptacle N and thus facilitates the depositing of substances, such as matted feathers, quills, &c. When the feathers are fully cooled, the fan will be stopped, and the wire-door netting n' will be opened, and the contents of the receptacle N will be removed by hand. Then the blower-nozzle O will be brought to the opening or mouth of the receptacle N. The tick or ticks will then be applied to the spout K. The slide M will then be drawn out, the fan and blower be set into operation, and the feathers be thereby blown into the spout and thence into the tick or ticks. When the tick or ticks have been filled to the mouth, the plungers L will be brought into operation to ram the feathers down into the tick or ticks, as the case may be. In the case of pillows a separate tick will be fastened to each of the separate spouts. Hooks k' are provided for fastening the tick or ticks to the spout.

Now, having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the renovator-case; the fan inside the case; a circular steam-inlet at one end of the case to direct the steam into the case in a circle around the axis of the fan and a like inlet at the other end of the case to direct a circular body of steam into the body of steam which issues from the inlet at the other end of the machine.

2. A feather-renovator having within its chamber a fan and being provided with circular steam-inlets at its ends to direct the steam into the chamber from each end in a circle around the axis of the fan; and a steam inlet or inlets arranged at the bottom of the chamber to direct a jet or jets of steam up into the body of steam from the circular inlets.

3. The combination of the case provided with the fumigating-chamber having a top section and also having a semicylindrical bottom with a longitudinal screened slot at the lowermost part thereof to form a cold-air inlet into the renovator-chamber; and above

said top section a hood with a hot-air flue leading from the hood, passages being provided from said chamber through said top section to said hood; means for closing said passages; a cold-air shaft for conducting external cold air to said slot; a fan within the chamber; a circular steam-inlet at one end of the case to direct the steam into the case in a circle around the axis of the fan; and a like inlet at the other end of the case to direct a circular body of steam into the body of steam which issues from the inlet at the other end of the machine; a disinfectant-reservoir; and a valved pipe leading from said reservoir and opening into one of the steam-supply pipes substantially as set forth.

4. The combination of the renovator-case provided with hollow walls and steam-pipes inside said walls at top, bottom, end and side walls for heating said case; a fan inside the case; a circular steam-inlet at one end of the case to direct steam into the case in a circle around the axis of the fan; a like inlet at the other end of the case to direct a circular body of steam into the body of steam which issues from the inlet at the other end of the machine; a reservoir for a disinfectant; and a valved pipe leading from said reservoir into one of the steam-supply pipes substantially as set forth.

5. The combination of the case provided with the fumigating-chamber having a top section; and above such top section a hood with a hot-air flue leading from the hood, passages being provided from said chamber through said top section to said hood; and means for closing said passages.

6. The combination of the case having a fumigating-chamber therein and provided with a hood with a hot-air flue leading from the hood; a screened passage being provided opening from the chamber into the hood and below such screened passage a down-retaining net.

7. In combination with the fan, a fumigating-case having at one side above the bottom of the case a receptacle for catching heavy articles which may be contained in the feathers; a movable screen and a door to form the outer wall of said receptacle.

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