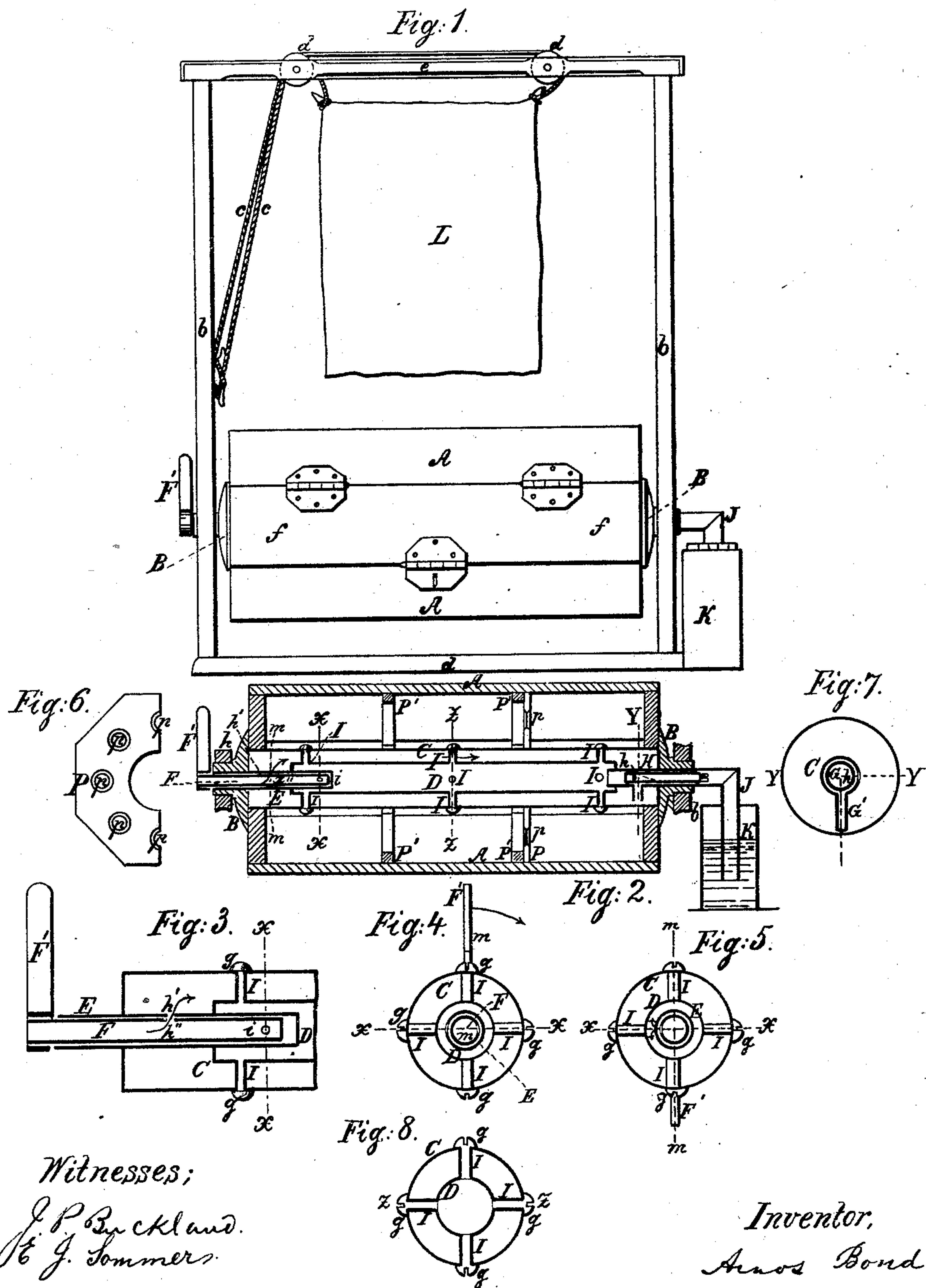


A. BOND.
Feather Renovator.

No. 82,200.

Patented Sept. 15, 1868.



UNITED STATES PATENT OFFICE.

AMOS BOND, OF CHICOPEE, MASSACHUSETTS, ASSIGNOR TO HIMSELF AND
A. D. MOORE, OF SAME PLACE.

IMPROVEMENT IN FEATHER-RENOVATORS.

Specification forming part of Letters Patent No. 82,200, dated September 15, 1868.

To all whom it may concern:

Be it known that I, AMOS BOND, of Chicopee, in the county of Hampden and Commonwealth of Massachusetts, have invented a new and Improved Machine for Dressing and Renovating Feathers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, and to the letters of reference marked thereon, in which—

Figure 1 is a side elevation of said machine. Fig. 2 is a vertical axial section through Fig. 1, only a small portion of the supporting-frame being shown, and the inlet-valve being turned so that steam is admitted to the drying-chamber. Fig. 3 is a portion of the same sectional view, of double size, to show the inlet-valve and steam-ports more plainly. Fig. 4 is a transverse section through the drying-cylinder, the plane of section being indicated by the line *x x* in Fig. 2. Fig. 5 is a like sectional view, the inlet-valve, however, being set so that the steam passes into the steam-chest, and thence passes into the feathers. Fig. 6 is a view of one of the two similar partition-plates. Fig. 7 is a transverse sectional view through the drying-cylinder, the plane of section being indicated by the line *y y* in Fig. 2; and Fig. 8 is a transverse section through the drying-cylinder, the plane of vertical section being indicated by the line *z z* in Fig. 2.

My invention consists of a revolving feather-holder, of wood, cylindrical or polygonal in cross-section, inclosing the steaming apparatus, and supported in a frame the cross-piece of which is rigged with a set of pulleys and cords, for raising the bed or sack of feathers above the holder, in a convenient position for emptying its contents directly into the machine.

The steaming apparatus consists of a drying-cylinder, of sheet metal, extending lengthwise through the feather-holder, and inclosing a steam-chest, from which the steam passes into the holder by pipes the mouths of which are capped with jets, shaped like the sawed tips of gas burners.

A rotating tubular valve and its seat are applied to the drying-cylinder and steam-chest in such a way that, when the valve is turned in one position, steam passes into the steam-

chest, and thence out among the feathers, which is the first step in the process of renovating. By turning the valve to another position, the steam is cut off from the steam-chest and feathers and admitted to the drying-cylinder, and, by the heat radiated from the cylinder, the steamed feathers are soon dried. As soon as dried, the valve is turned to a third position, so as to shut off the steam entirely from the machine, when the feathers can be removed from the holder.

An escape-valve is applied at the opposite end of the drying-cylinder, so as to enable me to use steam under pressure for drying the feathers; and a blow-off pipe is arranged in connection with this escape-valve, so that the condensed water in the drying-cylinder may be blown out by the pressure of the steam at every revolution of the feather-holder, if necessary. A pipe is also extended from the end of the hollow escape-valve nearly to the bottom of a reservoir, which receives the drip, and enables me to use a head of water to hold back the steam, if desirable.

A small portable steam-boiler, constructed strongly to allow the use of steam under considerable pressure, is used in connection with the machine, a steam-pipe being led from the boiler to the tubular inlet-valve; and my arrangement of an escape-valve enables me to use steam under pressure, and thus perform the work much more rapidly and efficiently than if the steam were allowed to pass off without obstruction at the opposite end of the feather-holder, as is usual in other machines for this purpose.

The inside of the feather-holder is arranged so that one or more removable partitions can be placed in it, so as to divide up the inside space, and allow the operator to renovate different lots of feathers at the same time without mixing them.

The construction of my invention is as follows: The supporting-frame consists of the base *a*, standards *b b*, and cross-bar *e*, in which are the pulleys *d d*, which, with the cords *c c*, enable a single operator to remove the feathers into the wooden feather-holder directly from the tick or sack, the lower seam of which is opened a short distance, thus dispensing with an extra hand heretofore required for the purpose.

The holder A is a hollow polygonal prism, an octagonal form being a convenient one, and easily constructed. To the heads of this holder the flanged hollow journals B B are bolted, and turn in bearings in the standards b b.

When the steaming and drying are going on, the holder is frequently rotated, so as to keep the feathers in motion.

Cleats P' P' are fastened to the inside of the cylinder at one or more convenient points, and the partition-boards P are shaped so as to rest against these cleats, being secured by hooks or other fastenings, and they thus form compartments in the holder, while openings p p in the partition-boards allow the steam to circulate through all the compartments at the same head; or the partitions may be removed and the whole space thrown into one.

The ends of the drying-cylinder C are inserted tightly in the respective heads of the holder, space enough being allowed between the ends and the flanges of the bearings B B to admit of the longitudinal expansion of the drying-cylinder by the heat of steam.

The cylindrical steam-chest D is inserted within the drier, and concentric to it, being held in place by stays, and the pipes I I radiating from it, and forming steam-passages from the steam-chest to the outside of the drier. I prefer to apply four of these pipes together, radiating at equal distances apart, and to use two or three sets of these pipes, so as to admit steam directly to all parts of the feather-holder.

The pipes farthest from the inlet-valve or steam end I make slightly larger than those which are nearer, to equalize the amount of steam introduced in the different points. The outer ends of these pipes are covered with a cap, in which a slot is sawed, so as to produce a fan-like jet of steam, and also to prevent the feathers from entering the pipes.

From the steam-chest the tube E extends through the hollow bearing B, and is soldered to it, and also to the end of the drying-cylinder. The inside of this tube is smoothly finished, and forms the seat of the valve F, and opens into the steam-chest by the single port i', Fig. 4, and into the drier by the single port h', Figs. 2 and 3.

The rotating valve F has a steam-passage extending from its outer end, and an opening, h'', therefrom, to meet the port h', into the drier, and another opening, i, to meet the port i', into the steam-chest. It is turned by the winch F', and fitted so as to move steam-tight in the tube or valve-seat E.

When the winch is turned into the position shown in Figs. 1, 2, 3, 4, the steamway into the drier is open, while that into the steam-chest is closed.

If the valve be turned into the position shown in Fig. 5, the steamway into the chest D is opened, and all steam is shut out of the drier. If the valve is set midway between the

two positions named, all steam is excluded from the machine.

The tube H is fastened to the opposite end of the drier and to the hollow bearing B, and extends through the bearing into the drying-cylinder, into which it opens through the pipe G, which reaches nearly to the side of the cylinder.

A valve-tube, G, is fitted to move steam-tight in the tube or seat H, and has a port, h, which meets the end of the pipe G when properly set. The valve is turned by slots in the end, and, if set as shown in Fig. 7, no steam can escape through it from the drier, but if turned so that the opening h falls over the end of the pipe G, the steam will pass through G and out at the end of the valve. The pressure of steam in the drier can thus be accurately regulated, and it will be seen that any condensed steam and drip in the drier will be forced out through G when the end of the latter is at its lowest point.

At the exhaust end of the machine is placed the reservoir K, into which all the escape steam and condensed water pass by the removable tube J, which is fitted tightly to the end of the escape-valve G.

Instead of closing the valve, therefore, the reservoir may be filled, or partly filled, with water, which will, of course, exert a certain back pressure upon the escaping steam.

The inlet and exhaust valves and their seats I propose to construct of brass or composition, and the drier and steam-chest of galvanized iron, or other non-corrosive sheet metal of sufficient strength to resist the head of steam used, which head is to be as much as is possible without crisping or otherwise injuring the quality of the feathers.

I am aware that wooden feather-holders of various forms, with a steam-cylinder passing through them, have been before used, and I do not claim the same as new or of my invention.

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

1. The combination of the revolving feather-holder A, drier C, steam-chest D, tubes I, valve-seat E, two-way valve F, valve-seat H, blow-off pipe G, exhaust-valve G', reservoir K, and pipe J, substantially as and for the purpose described.

2. The removable partition P, applied to the revolving feather-holder A, to form compartments therein, substantially as described.

3. The slotted or sawed caps, applied to the outer ends of the tubes I, when the latter are applied to the steam-chest D and drier C, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand this 17th day of June, A. D. 1868.

AMOS BOND.

Witnesses:

J. P. BUCKLAND,
E. J. SOMMER.