D. B. SANDERS & J. SMITH.

Feather-Renovator.

No. 200,411. Patented Feb. 19, 1878.

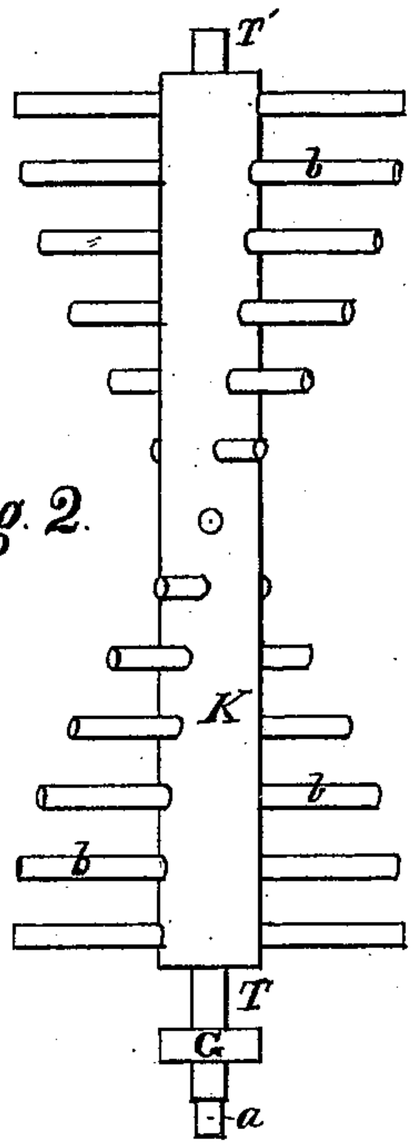

Fig. 2.

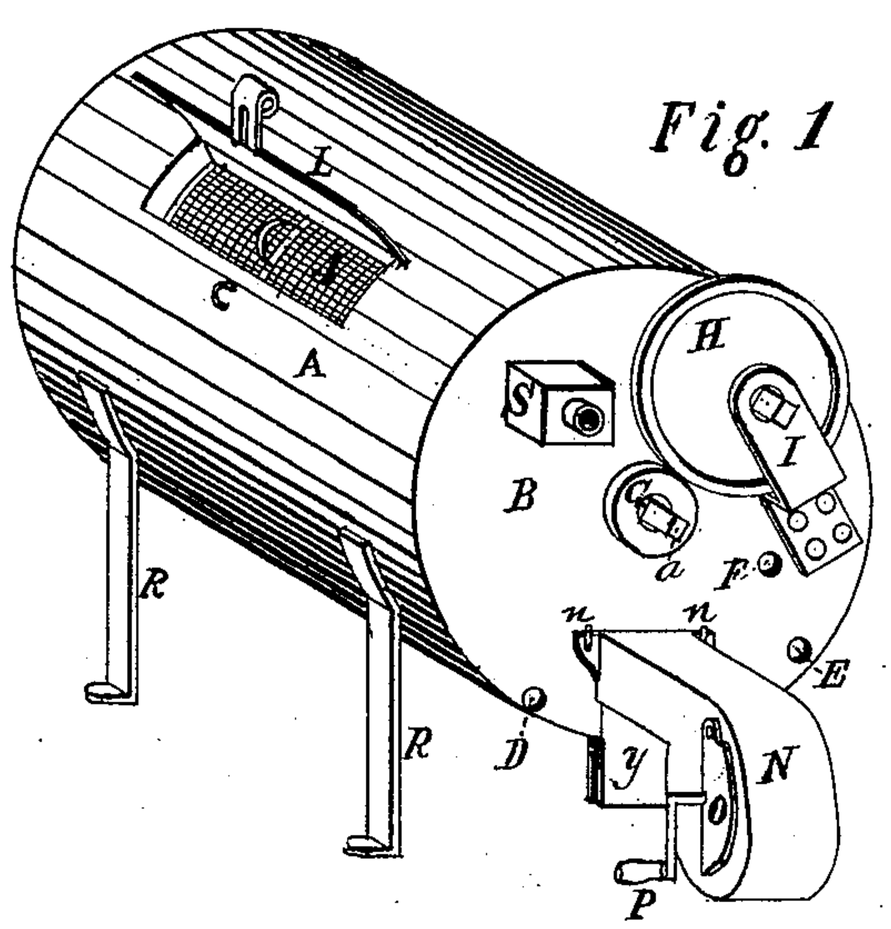

Fig. 1

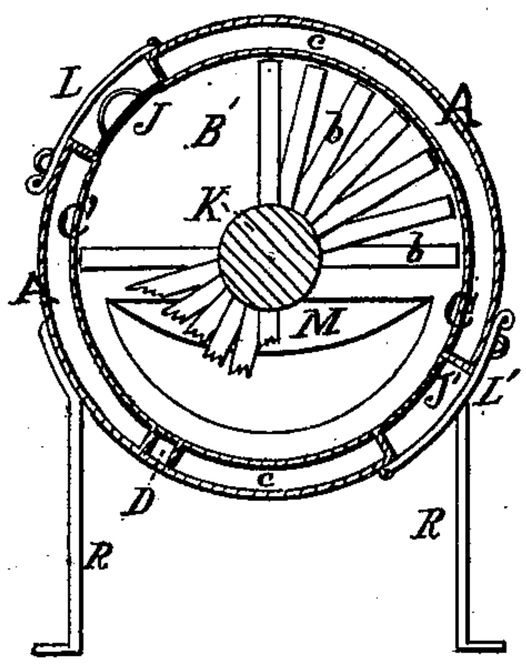

Fig. 3

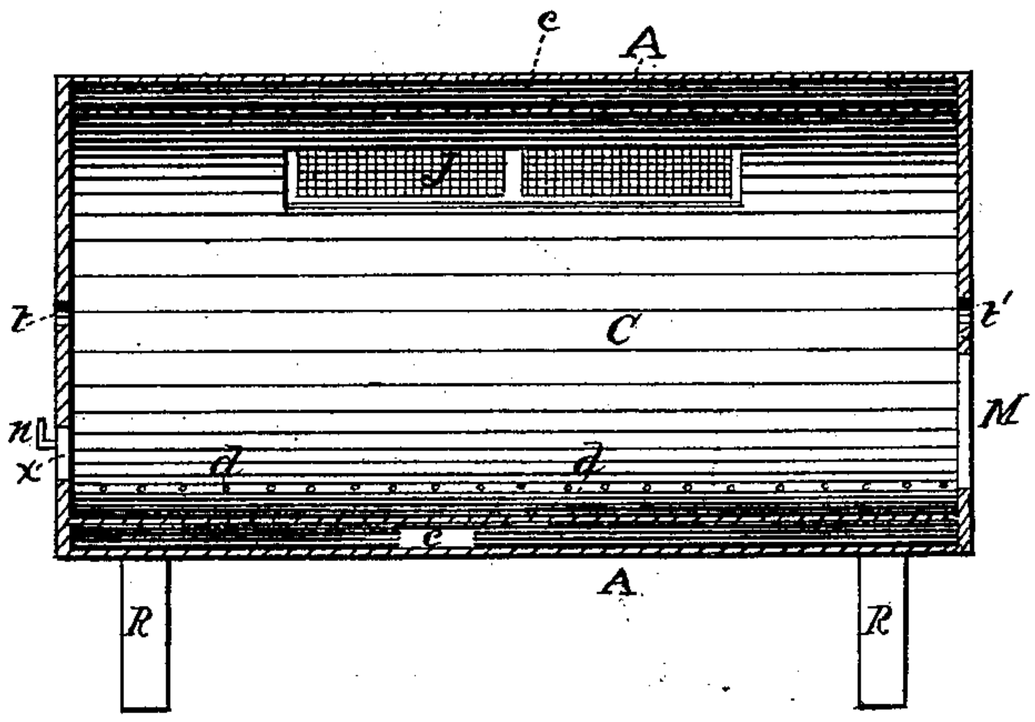

Fig. 4

Witnesses

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UNITED STATES PATENT OFFICE.

DANIEL B. SANDERS AND JUNIUS SMITH, OF BURLINGTON, MICHIGAN.

IMPROVEMENT IN FEATHER-RENOVATORS.

Specification forming part of Letters Patent No. **200,411,** dated February 19, 1878; application filed December 15, 1877.

To all whom it may concern:

Be it known that we, DANIEL B. SANDERS and JUNIUS SMITH, of the town of Burlington, county of Calhoun, State of Michigan, have invented certain new and useful Improvements in Feather-Renovators, of which the following is a full and exact description, reference being had to the accompanying drawings, in which like letters refer to like parts in the several figures.

Our invention relates to an apparatus for cleansing feathers by the use of steam after they have become soiled by use in beds and pillows.

In the drawings, Figure 1 is a perspective view. Fig. 2 represents the stirrer. Fig. 3 is a vertical cross-section through the middle of the body of the apparatus, and Fig. 4 is a vertical longitudinal section with the stirrer removed.

The apparatus consists, essentially, of two concentric cylinders, A and C, having their ends closed by a single head, B and B′, at each end. The inner cylinder C is the receptacle for the feathers. The two cylinders are of such relative diameter as to leave an annular space, *c*, nearly completely round, between them. This space is interrupted by two partitions, forming a steam-chest, running the entire length of the apparatus, as shown at D, Fig. 3, in section. A series of perforations, *d d*, Fig. 4, open from the steam-chest D into the receptacle C. There are also two openings, L and L′, boxed in, leading into the inner receptacle and closed at their inner margins with wire-cloth or perforated plate, J and J′. The lower one is closed permanently by the wire J′, while J in the upper one is made removable. Both openings are closed also by close-shutting hinged covers L and L′. These openings serve chiefly as ventilators. A detachable fan-blower, N, is attached to the head B by means of hooks *n n*, so as readily to be put on or removed. A corresponding opening, *x*, Fig. 4, leads into the inner cylinder C. This opening is closed by the slide-valve *y*, Fig. 1.

At D, Fig. 1, steam is admitted into the steam-chest, and thence into the receptacle C. Steam is admitted into the annular space *c* at E, and hot air into the receptacle C at F. In the head B′, opposite the fan N, is a semicircular opening provided with a door, M, hinged along its upper line, as shown in Fig. 3. Inside the feather-receptacle C is a stirrer, Fig. 2, which revolves in bearings *t t′* in the heads B B′. (Shown in Fig. 4.) On one end of the shaft K the gudgeon T is prolonged, carrying either a toothed or a friction gear, G, to be actuated by a similar gear, H, as a multiplying-wheel. The ends of both axes are squared to receive a crank. A box, S, containing a mass of porous material saturated with some volatile oils, is attached to the head B, having an opening communicating with the receptacle C, and provided with a tube communicating with the hot-air apparatus, for throwing a stream of hot air loaded with oil-vapor among the dry feathers to restore their toughness and pliability.

The operation of the apparatus is as follows: After placing the feathers in the receptacle C, all the openings are closed and steam is admitted at D, which thoroughly saturates the feathers. They are then submitted to a sweating process by admitting steam into the annular space *c* through opening E. In the meantime the feathers have been kept loose and thoroughly stirred. When the sweating process is completed a jet of heated air is thrown upon the feathers through F. The covers L and L′ are then thrown open, securing a free circulation of warm dry air. As the mass of feathers becomes relieved of moisture the crank is transferred to the axis of the wheel H, and a more rapid motion is given the stirrer, rapidly completing the drying process.

To transfer the feathers to the tick, open the door M, fasten the tick by the hooks on the end opposite the fan, apply the fan, and the feathers are quickly blown into the sack; or by closing the opening L′, and removing the wire-cloth from opening L, and leaving M also open, and giving the stirrer a rapid motion, a current of air is drawn in at M and thrown out at L, carrying the feathers with it, and very quickly emptying the apparatus.

Having thus described our invention, we do not broadly claim the use of two concentric cylinders; but

What we do claim as new, and desire to secure by Letters Patent, is—

1. In a feather-renovator, two concentric cylinders with steam-space and steam-chest between, provided with hot-air inlet F and gauze or perforated plate protected openings L and L′, all combined and arranged substantially as and for the purpose herein described and shown.

2. The box S, in combination with the feather-receptacle and with the hot-air apparatus, for the purpose of throwing oily vapors into the receptacle, substantially as and for the purpose herein shown and described.

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