A. MARBLE.

Steam Feather-Renovator.

No. 210,263. **Patented Nov. 26, 1878.**

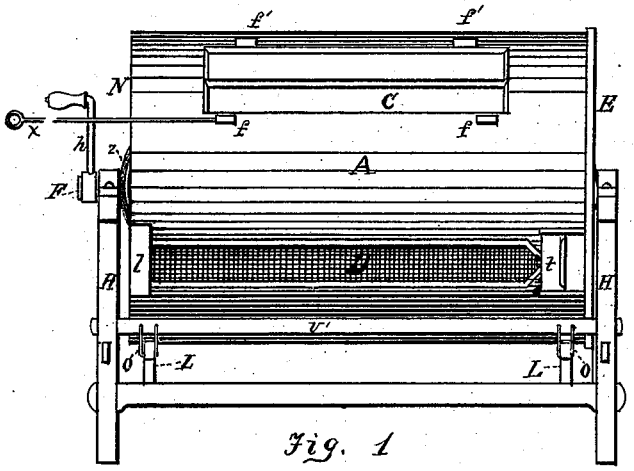

Fig. 1

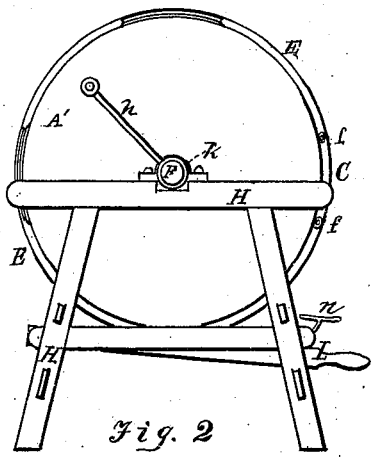

Fig. 2

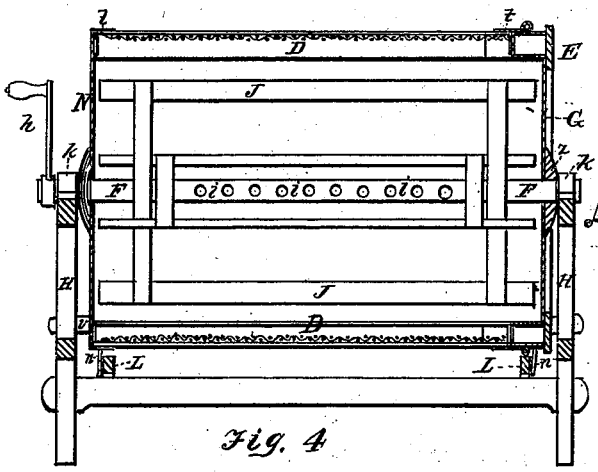

Fig. 4

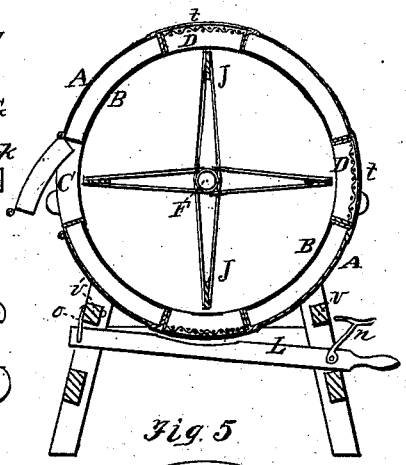

Fig. 5

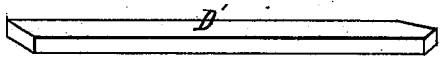

Fig. 6

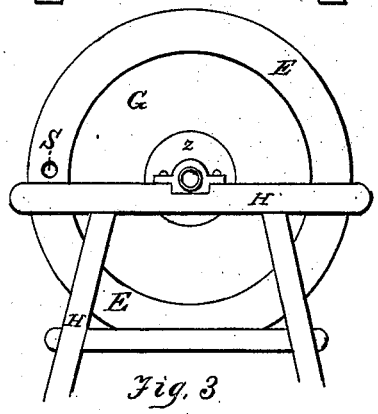

Fig. 3

Witnesses
Elias Hoeweler
C. E. Hewitt

Inventor
Albert Marble
per B. F. Welles
Att'y

UNITED STATES PATENT OFFICE.

ALBERT MARBLE, OF TEKONSHA, MICHIGAN, ASSIGNOR OF ONE-HALF HIS RIGHT TO ALBERT CONE, OF SAME PLACE.

IMPROVEMENT IN STEAM FEATHER-RENOVATORS.

Specification forming part of Letters Patent No. **210,263**, dated November 26, 1878; application filed November 2, 1878.

To all whom it may concern:

Be it known that I, ALBERT MARBLE, of Tekonsha, county of Calhoun, State of Michigan, have invented certain new and useful Improvements in Steam Feather-Renovators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, in which—

Figure 1 is a side elevation. Figs. 2 and 3 are end elevations. Figs. 4 and 5 are longitudinal and cross sections. Fig. 6 is a perspective of a tight leaf to take the place of the gauze frame D in Fig. 1.

It is the common experience of all using the renovators having a fixed or stationary cylinder, and depending upon a revolving stirrer to agitate and break up the mass of saturated feathers, that the feathers will pack into more or less solid masses, requiring a large outlay of force to move them, often, indeed, so great as to break the central shaft by the torsional strain. To obviate this difficulty is the chief object of my invention.

I employ two concentric cylinders, A and B, united by the head N, which is common to both cylinders, and also by the casings of the ventilating-openings D and door C. The head G only closes the inner cylinder, B. Both heads are provided with central bosses, *z z*, through which the hollow shaft F F passes, being fitted to the shaft sufficiently close to be measurably steam-tight, and yet admit of the shaft revolving while the cylinder remains at rest, or the cylinder revolving while the shaft is at rest.

The open space between the two cylinders A and B is closed by a stationary ring or head, E. This head is secured to the frame H and fitted to the cylinder ends, so as to make as tight a joint as possible, and yet admit of a free revolution of the cylinder on its axis. An opening, S, in the head E allows of connection with a steam-generator.

The shaft F F is borne in boxes *k k* on the ends of the frame H H. This shaft is pierced with several rows of holes, *i i i*, and carries the arms to which the beaters J J are secured.

One or more (usually two, one at each end) levers, L, are hinged at *o*, and provided with a hook, *n*, engaging with the tie-bar *v* to hold the lever up against the cylinder A when required, thus locking the cylinder and relieving the shaft of the weight of the cylinder and its contents.

Besides the gauze-covered frames D there are also tight leaves D′, Fig. 6, of the same size and shape, to take the places of the gauze frames while the feathers are undergoing the sweating and steaming process.

The method of using the apparatus is simple. The feathers to be cleansed are placed in the inner cylinder, and the gauze frames removed and replaced with the tight leaves D′. Steam is admitted through the hollow shaft F of the stirrer, while the feathers are kept in motion by turning the crank *h* on its end. Should the feathers become massed together, so as to require considerable force to move them, the levers L L are dropped to the position shown, and the cylinder permitted to revolve, bringing the feathers to the top, when by the falling they are rubbed and broken up. At this stage of the process I introduce a small quantity of some volatile disinfectant—such as bromo-chloralum—into the steam-generator, which is carried over among the foul feathers in a finely-divided state, most effectually removing all offensive odors. Oils may be applied in the same manner to restore the life and pliability of the feathers.

When the cleansing process is finished the steam is turned off from the central shaft and admitted into the space between the two cylinders through the opening S in the stationary head E. The blank leaves D are replaced with the ventilating gauze frames D, and the feathers are rapidly dried, the whole being accomplished with much less labor than with the common apparatus.

Having thus described my invention, I do not broadly claim a double cylinder or revolving stirrer, or a perforated central inlet for steam; but

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

1. In a feather renovator, the stationary head E, in combination with the revolving cylinder A, substantially as shown and described.

2. In a feather-renovator, the combination of the levers L L, hook *n*, and bar *v* with the cylinder A, substantially as and for the purpose shown and described.

3. In a feather-renovator, the combination, with the concentric cylinders A B, of the uniting-head N, head G, and stationary head or ring E, substantially as and for the purpose herein shown and described.

ALBERT MARBLE.

Witnesses:
A. S. SWIFT,
J. M. FAILING.