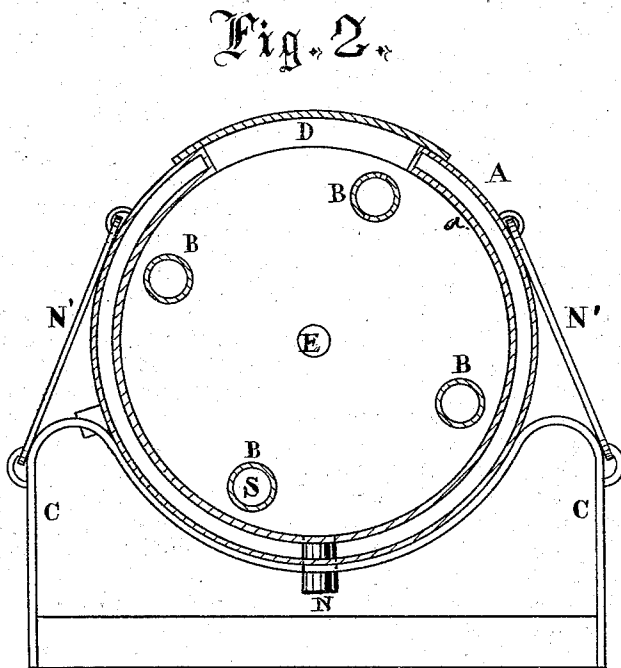
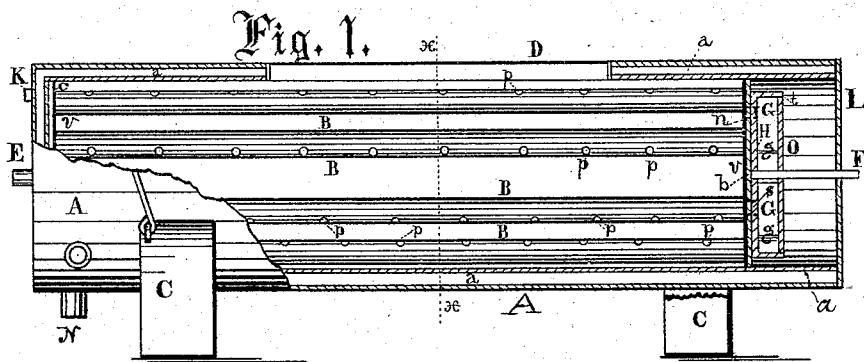


L. W. POWLS.
Feather-Renovators.

No. 154,151.

Patented Aug. 18, 1874.



Attest:

John H. Elliott
Notary Public

Inventor:

Levi W. Powls.
By G. S. Chapin,
Atty.

UNITED STATES PATENT OFFICE.

LEVI W. POWLS, OF VALPARAISO, IND., ASSIGNOR OF ONE-HALF HIS RIGHT
TO LORENZO W. CHILDS AND ROBERT McNAY, OF SAME PLACE.

IMPROVEMENT IN FEATHER-RENOVATORS.

Specification forming part of Letters Patent No. **154,151**, dated August 18, 1874; application filed
June 15, 1874.

To all whom it may concern:

Be it known that I, LEVI W. POWLS, of Valparaiso, in the county of Porter and State of Indiana, have invented a new and useful Improvement in Feather-Renovators, of which the following is a specification:

The nature of the present invention consists in rotating steam-agitators, which are arranged inside of a suitable case or feather-receiver, and operated by means of a rotary steam-cylinder, which is placed inside of the case, and is so arranged, with reference to the rotating agitators, by means of a steam-chamber, that the exhaust-steam from the cylinder will pass into the agitators, and from ports in the latter communicate with the feathers in the case.

In the drawings, Figure 1 is a longitudinal sectional elevation of my improvement in feather-renovators; Fig. 2, a sectional elevation on line *x*, Fig. 1; Fig. 3, an end view, with the end *L* removed to show the steam-cylinder inside.

A represents the outer case or feather-receiver, which is constructed in the ordinary form—that is, with a steam-chamber between its two annular plates *A a*. An agitator, consisting of the two or more steam-pipes *B B*, fastened to circular heads *V V*, is hung to the ends of the case *A* by means of a hollow journal, *E*, so as to rotate freely, said pipes being provided with a series of holes, *p p p*, &c., that steam may readily enter the chamber inside of the case *A a*. The means for conducting steam to the agitators *B* and putting them in motion is a motor-cylinder, *G*, which consists of annular heads, *H O*, fitting the plate *a* as nearly steam-tight as convenient, and of an annular rim, *t*, secured together in any convenient manner. This cylinder is fixed to the journal *F* and rotates with it, and it is provided with two or more steam-chambers formed by partition-plates *g*, which connect with the annular plate *t* and with the heads *H O*. The function of these chambers is to receive steam from ports *r* by means of steam-pipe *J*, for the purpose of rotating the agitators *B* and supplying them with steam. The journals *E F*, heads *v v*,

and agitators *B* are relatively rigid fixtures and rotate together, and the journals *E F* have bearings in the annular end plates *c b*, the latter plate forming a division between the head *v* and cylinder-head *H*, Fig. 1. The case *A* rests on two chairs, *C*, and is held in place by hooks and eyes *N' N'*, Figs. 1 and 2. The cylinder *G* is smaller than the outside case *A a*, and to conduct steam to it is a steam-chest, Fig. 3, consisting of a spring-plate, *I*, which is fastened to said case *A a*, and its ends arranged to bear on the periphery of the cylinder, so that little or no steam will escape. The plate *I* also answers the purpose of a cut-off for the ports *r*—that is, one port at a time receives steam as it is brought against the steam-chest.

The operation is as follows: Steam is introduced to the chambers of the motor *G* by means of a pipe, *J*, and ports *r*, dotted lines, Fig. 3, to rotate the cylinder *G* and agitators *B* by reaction against the ends and sides of said chamber. The particular construction of the chambers is not, however, material, and any other well-known and simple form of rotary engine may be employed. From said chambers the steam exhausts, through port *S* in cut-off plate *b*, into that steam-pipe *B* which is opposite the particular chamber then taking steam.

The feathers are placed in the case by means of a lid or door, *D*, and they are steamed from ports *p* when being agitated, after which steam is shut off from pipe *J* and introduced to the hollow case *A a*, at *K*, to dry the feathers, the journal *F* being rotated by hand that the agitators *B* may keep the feathers separated during the drying process.

The offensive slop and gas from the feathers pass off through the pipes *E N*.

Inasmuch as steam enters only one of the agitators *B* at a time it is discharged at opposite points in the case, and forces the feathers from side to side thereof, preventing them from packing in a mass.

To remove the feathers from the case, the lid *D* is lifted off, the case turned one-fourth round, and the agitators put in motion by the journal *F*. This will discharge the feathers.

I claim and desire to secure by Letters Patent of the United States—

1. The case A of a feather-renovator, and the hollow agitators B revolving therein, combined with the cut-off plate *b*, with its port S, and the steam-motor G, whereby steam is admitted to said agitators one at a time, as set forth.

2. In combination with the case A *a* and hollow agitator B, as set forth, the revolving motor-wheel G, as described.

LEVI W. POWLS.

Witnesses:

GEO. G. BELLOWS,

G. L. CHAPIN.