(No Model.)

T. E. & E. W. HILL.

FEATHER RENOVATOR.

No. 342,513. Patented May 25, 1886.

Fig. 3.

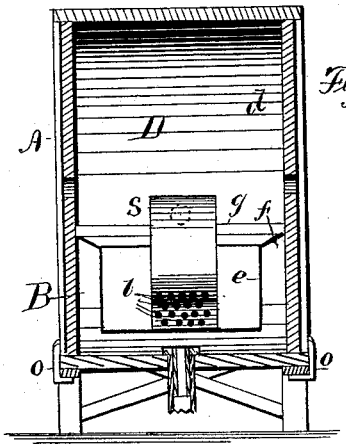


Fig. 4.

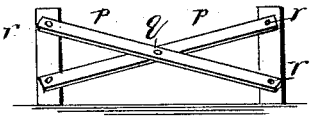


Fig. 1.

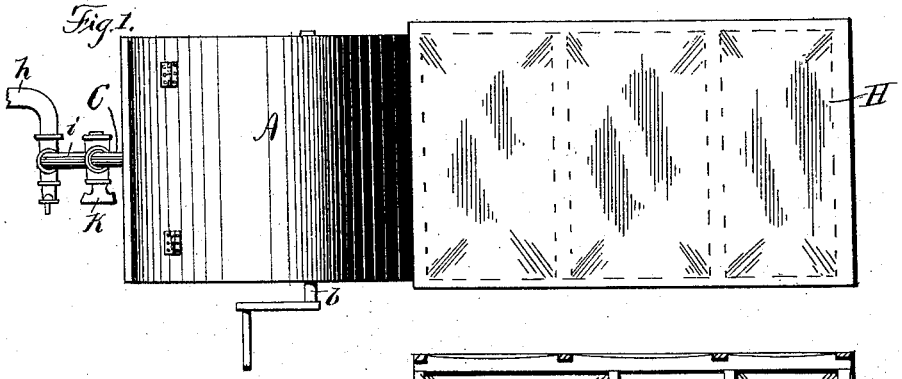
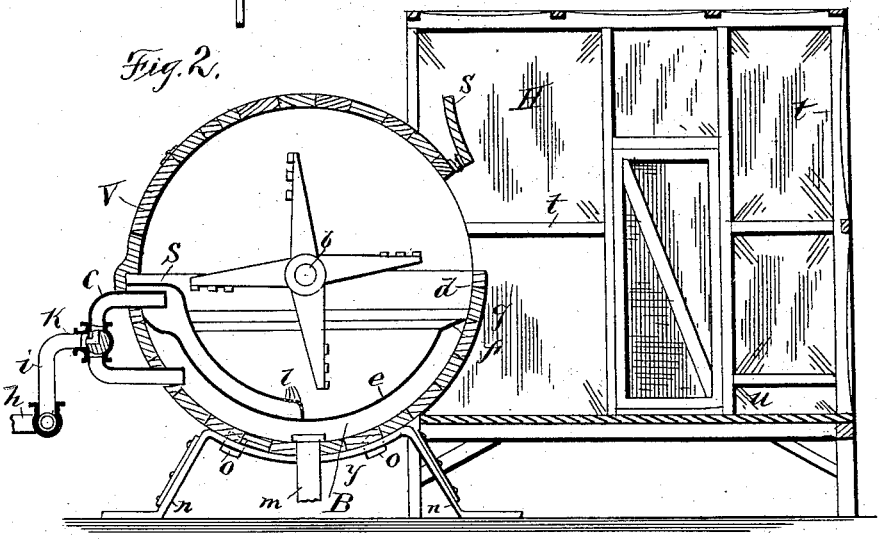


Fig. 2.



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UNITED STATES PATENT OFFICE.

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FEATHER-RENOVATOR.

SPECIFICATION forming part of Letters Patent No. 342,513, dated May 25, 1886.

Application filed January 22, 1886. Serial No. 189,420. (No model.)

To all whom it may concern:

Be it known that we, THOMAS E. HILL and ELIJAH W. HILL, citizens of the United States, residing at Covington and Bradford Junction, in the county of Miami and State of Ohio, have invented a new and useful Improvement in Feather-Renovators, of which the following is a specification.

Our invention relates to improvements in that class of machines for cleansing feathers and restoring their elasticity in which the feathers are placed in a fixed cylinder having a revolving reel for stirring the feathers arranged within the cylinder, means for introducing jets of steam into the cylinder among the feathers, and means for heating and drying the feathers by steam introduced between the walls of the cylinder and separated from the feathers.

The objects of our improvements are to provide improved means for drying and cooling the feathers after they are cleaned, and to provide a frame for supporting the cleaning-cylinder, which may be easily packed in a small space for transportation.

The accompanying drawings illustrate our invention.

Figure 1 is a plan; Fig. 2, a vertical section; Fig. 3, a vertical longitudinal section of the cylinder, and Fig. 4 a portion of the frame.

A is a hollow wooden cylinder, in which is mounted centrally on a shaft, *b*, a stirring-reel, *c*.

B is an annular steam-chamber formed within the lower half of cylinder A. Heretofore in this class of machines said steam-chamber has been formed by securing within the wooden cylinder a half-cylinder of sheet metal of less diameter than the wooden cylinder by means of horizontal flanges turned outward from said metal half-cylinder and secured to the upper edges of the wood, the wood thus forming one side of the annular chamber. It has been found that this construction causes a rapid rotting of the wooden cylinder. To avoid this difficulty, we first cover the whole interior of the wooden cylinder with sheet-metal lining *d*, then form of sheet metal an inner lining, *e*, of less diameter and shorter than the first, and having inclined flanges *f*, and vertical flanges *g*, said vertical flanges being soldered to the first metal lining and forming a steam-tight annular chamber, complete in itself, independently of the wooden cylinder.

C is a branched pipe, one end of which enters chamber B, and the other end enters the open space D, in which the feathers are put, above the upper edge of chamber B. Said pipe C is provided near its center with a three-way cock, *k*, by means of which communication is established between the steam-supply pipe *h* and the upper or lower branch of pipe C, as may be desired by the operator. Heretofore in this class of machines the steam-supply pipe has entered directly the cock *k*, and the condense-water from such pipe has flowed into chambers B or D. To avoid this difficulty, we enter the cock by a short inverted L-branch, *i*, having at its lower end a T-coupling, into one arm of which the supply-pipe *h* enters, and into the other arm of which a waste-cock, *j*, is screwed.

It is desirable that steam should be admitted to the feather-chamber D sometimes above and sometimes below the mass of feathers as they lie in the lower part of the chamber. For this purpose we secure to the inside of the lining *e*, in such a manner that it may be easily detached, a shield, S. The upper end of said shield incloses the inner end of the upper branch of the steam-pipe C, and forms with the lining *e* a broad conduit, which directs the steam to the lower part of the chamber, into which it passes through perforations *l* in the lower part of the shield.

m is a waste-pipe, through which the steam and water escape from chamber B.

Cylinder A is supported in a horizontal position by a frame, the ends of which are each formed of a flat iron bar bent in the shape shown to form a curved bearing, *y*, and a pair of legs, *n n*. To said curved bearing are secured a pair of lugs, *o o*, which engage the end of the cylinder. Said ends are connected on each side by a pair of straight braces, *p p*, crossed and pivoted together at their centers, as at *q*, and having their ends secured to the legs *n* by means of screws *r*.

For the purpose of receiving the feathers from chamber D, after they are cleaned, and cooling the same, a portable chamber, H, is

attached to cylinder A and connected with the interior thereof by a door, *s*. The walls of said chamber H are formed of some substance which will retain the feathers, but will allow a free circulation of air through them. We use, preferably, thin muslin tacked to a suitable supporting frame-work, *t*. The floor of the chamber H is raised above that on which the machine sets, so that the feathers may be easily swept therefrom through an opening, *u*, into a sack secured to the outside of the wall.

In operation the feathers to be cleaned are put into chamber D through a door, *v*. The chamber is then closed, and steam is admitted through the upper portion of pipe C, the feathers being stirred and tossed about by the reel *c*. After being steamed for a sufficient time cock *k* is turned, and the steam is shut off from chamber D and enters chamber B, thereby heating chamber D and partially drying the feathers. Door *s* is then opened, and the feathers are thrown by the turning of reel *c* into the cooling-chamber H, where they are tossed by an attendant against the walls of the chamber until cool and thoroughly dry. Feathers thus treated are much more elastic and lie more lightly than when thrown out of the chamber D onto the floor of an ordinary room to cool and dry.

In using this class of machines it is necessary to move the machine frequently from place to place, and this operation is greatly facilitated by the construction of the supporting-frame.

We claim as our invention.

1. In a feather-renovator, the cooling-chamber H, constructed with walls which are pervious to air and arranged to receive the feathers from chamber D, substantially as specified.

2. In a feather-renovator, the cooling-chamber H, constructed with walls which are pervious to air, arranged to receive the feathers from chamber D, and having the raised floor and the opening *u*, as and for the purpose specified.

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