

(No Model.)

O. MILLARD.
APPARATUS FOR FORCING AIR.

No. 312,371.

Patented Feb. 17, 1885.

Fig. 1.

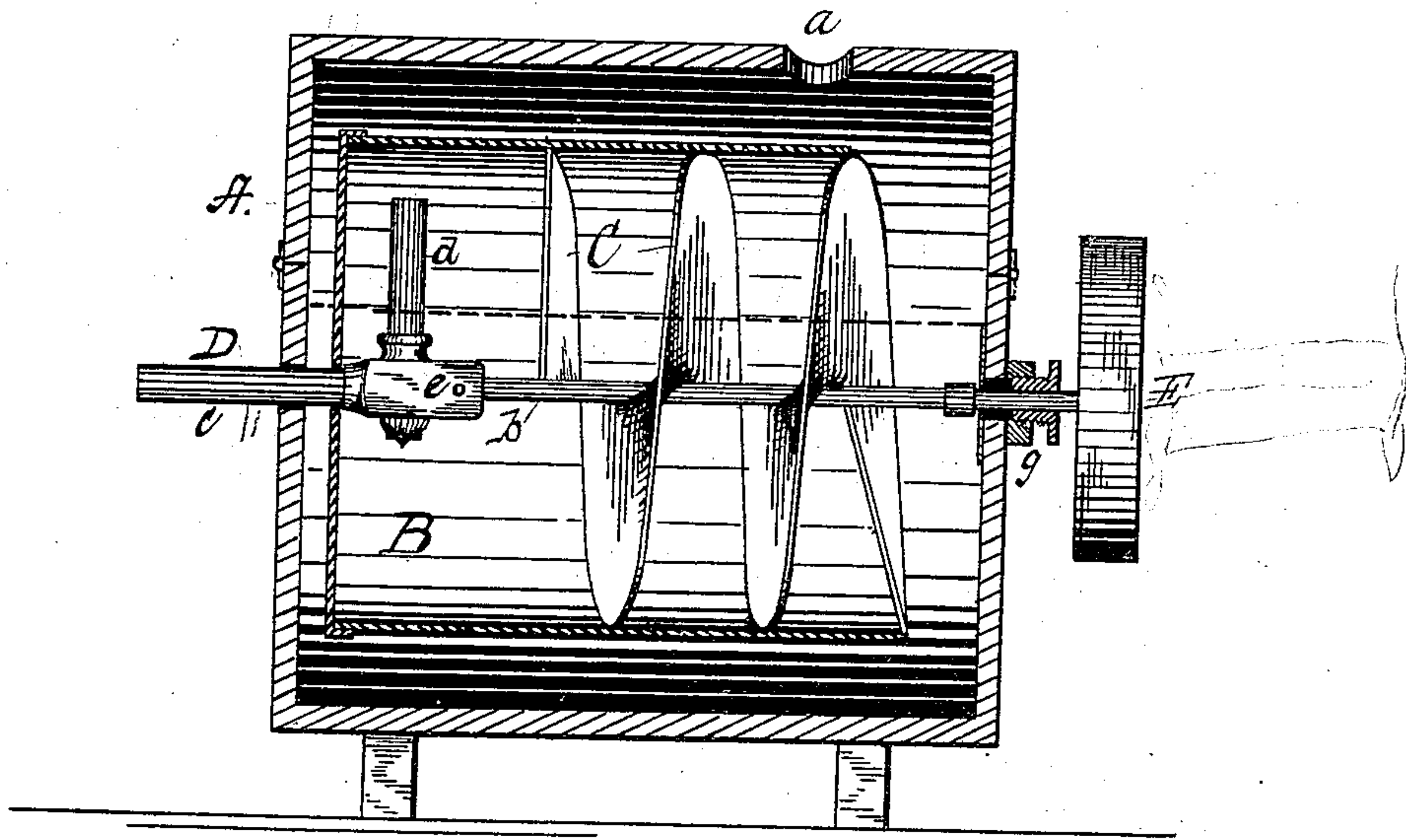
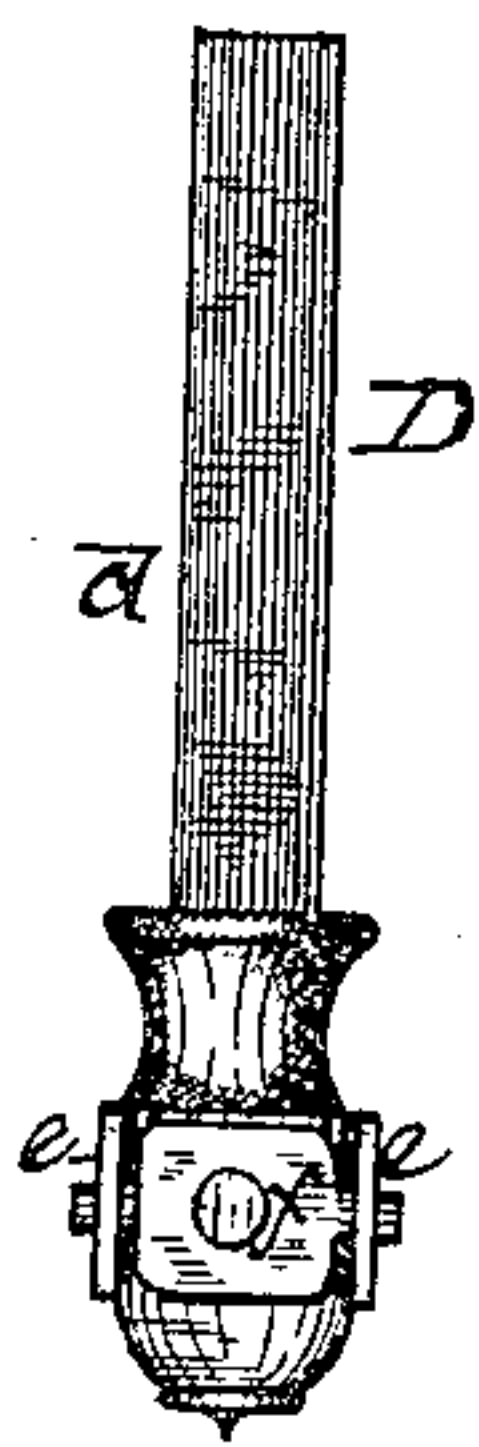


Fig. 2.



Witnesses:
A. J. Murdo
W. B. McKenna

Inventor
O. Millard
by *Howard A. Snow*
his Att'y

UNITED STATES PATENT OFFICE.

ORSON MILLARD, OF FLINT, MICHIGAN.

APPARATUS FOR FORCING AIR.

SPECIFICATION forming part of Letters Patent No. 312,371, dated February 17, 1885.

Application filed October 3, 1883. (No model.)

To all whom it may concern:

Be it known that I, ORSON MILLARD, of Flint, county of Genesee, and State of Michigan, have invented new and useful Improvements in Apparatus for Forcing Air; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use it, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to improvements in apparatus for forcing air; and the object is to provide a machine for the purpose stated which is applicable to any condition or circumstance calling for its operation.

My invention is intended as improvements of the device shown and described in Letters Patent granted to me under date of May 14, 1878, and numbered 203,752; and the improvements consist in constructing the bearing-shaft solid instead of hollow; in providing more efficient and simple escape means, and in providing improved bearing for the journal of the shaft of the forcing-screw.

My improvements also consist in the novel construction and combination of the operative parts, as will be hereinafter more fully described, and specifically pointed out in the claim.

In the accompanying drawings, forming a part of this specification, Figure 1 shows a longitudinal vertical section of my improved apparatus; and Fig. 2 is an end view of the eduction-pipe in elevation, and showing the journal-bearing for the inner end of the shaft of the screw.

The letter A represents the outside casing, having the upper portion connected to the under portion by suitable hinges, or otherwise secured, so as to effect an air-tight and water-tight connection between the parts, and is provided with a hole, *a*, to admit air from the outside.

The letter B represents an inner casing, having secured therein an Archimedean screw, C, the circumferential edges of which are soldered or otherwise rigidly sealed and secured to the inner surface of the casing, and its shaft *b* is made of solid material, instead of being hollow, as in my older apparatus.

The letter D represents the pipe through which the air is forced, and is formed with the horizontal part *c* and vertical part *d*, the

latter extending into the innermost chamber of the casing confining the screw. To the elbow of this pipe D are fixed the journal-bearing extensions *e*, provided with a suitable bearing-piece, *f*. The horizontal part of this air-pipe is passed through the outer and inner casing, substantially as shown, being firmly and rigidly secured in the outer casing, while the inner casing is loosely fitted thereto, in order that it may revolve without frictional resistance or contact therewith.

The inner end of the screw-shaft journals in the journal piece or socket supported by the elbow of the air-pipe, and the other or outer end is passed through the end of the outer casing and through a stuffing-box, *g*, and is provided with a pulley, E, substantially as shown, for the purpose of applying the power.

The operation is readily understood from the foregoing description of the parts and their stated functions, but may be briefly stated as follows: As the screw with the casing is revolved, the reservoir having been filled with water to, say, about to the line *x*, the supply of air is drawn through the hole in the outer casing and forced by the action of the screw into the innermost compartment of the inner casing, from whence it is forced into and through the air-pipe to the place of utilization.

I am aware of the patent granted to W. W. L. Kemp, March 27, 1877, No. 188,919, and another granted to myself, May 14, 1878, No. 203,752, and I hereby disclaim the matter shown and described in said patents.

What I claim as my invention, and desire to secure by Letters Patent, is—

The combination, with the exterior casing, A, interior casing, B, screw C, and shaft *b*, of the socket-piece *e e f*, and the pipes D *d*, the shaft *b* finding a bearing in said socket-piece, and the pipe D being secured thereto and extending in a line with the shaft out through both casings, and the pipe *d*, also secured to the socket-piece, set at right angles to the pipe D and terminating inside the inner case, substantially as and for the purpose set forth.

In testimony that I claim the foregoing I append my signature.

ORSON MILLARD.

Witnesses:

D. D. AITKEN,
JOHN M. HALL.