

(No Model.)

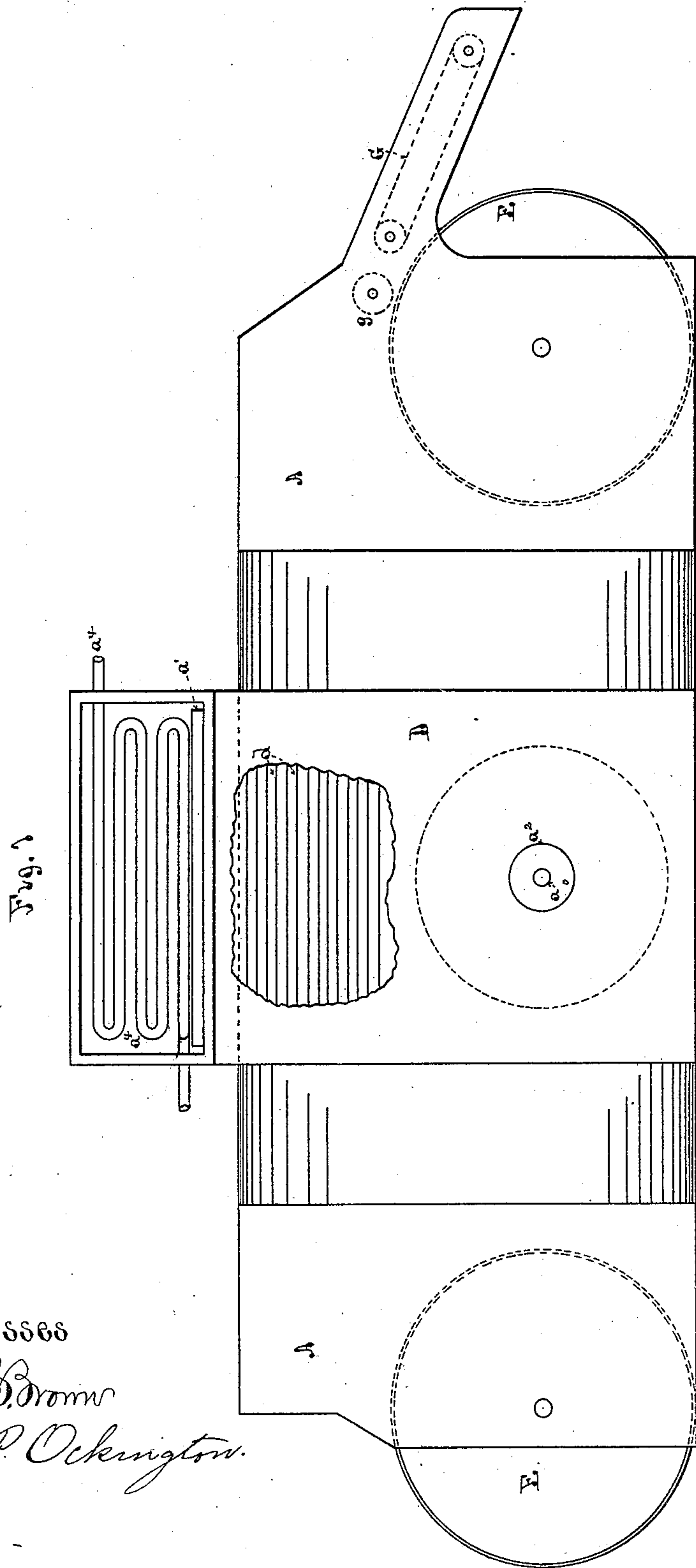
2 Sheets—Sheet 1.

D. H. RICE.

WOOL DRIER.

No. 316,060.

Patented Apr. 21, 1885.



Witnesses

Wm. D. Brown

N. P. Ockington.

Inventor

David H. Rice

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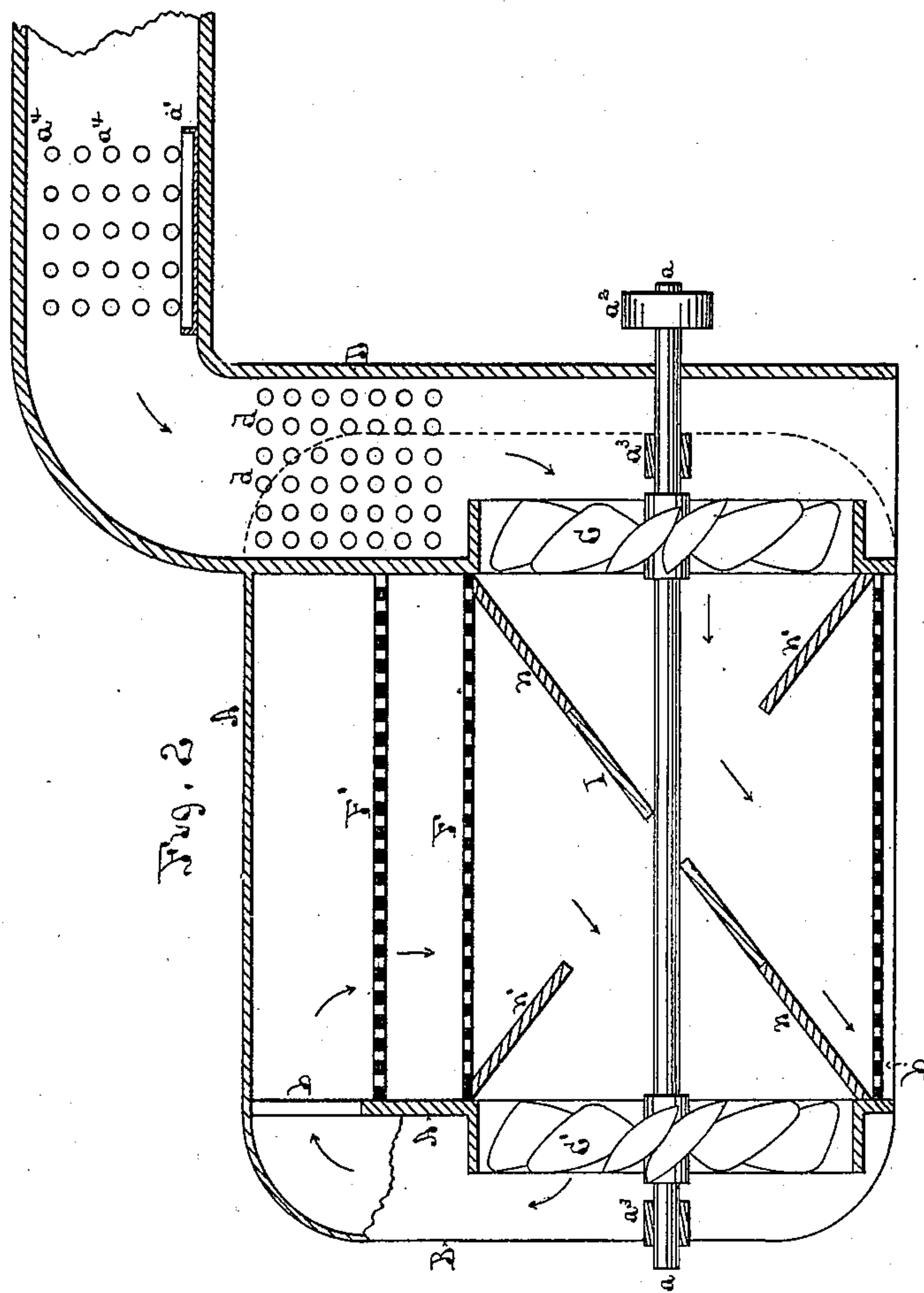
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Inventor

David Hall Rice

UNITED STATES PATENT OFFICE.

DAVID HALL RICE, OF LOWELL, ASSIGNOR TO C. G. SARGENT'S SONS, OF
GRANITEVILLE, MASSACHUSETTS.

WOOL-DRIER.

SPECIFICATION forming part of Letters Patent No. 316,060, dated April 21, 1885.

Application filed June 5, 1884. (No model.)

To all whom it may concern:

Be it known that I, DAVID HALL RICE, of the city of Lowell, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Apparatus for Drying Fibrous Substances, of which the following is a specification.

My invention relates to machines for drying wool and other fibrous substances; and it consists of certain new and useful combinations and arrangements of parts of such machines, and is an improvement upon the mechanism shown and described in the application of F. G. Sargent and A. C. Sargent, No. 90,856, for a patent for improvement in wool-driers, filed April 6, 1883, all being substantially as hereinafter described and claimed.

In the drawings, Figure 1 is a side view of said Sargent's machine with my improvement attached, having the air-conduit partially broken away to show the arrangement of the steam-pipe inside. Fig. 2 is a central vertical transverse section of Fig. 1.

A is the casing of the machine.

B D are the air-passages to carry the air into and through the machine.

E E are the drums which carry the perforated traveling apron which conveys the wool through the machine. G is the feed-apron and a roller, between which and the drum E the wool enters the machine.

F is the endless traveling perforated apron.

F' is a stationary wire screen over the same.

CC' are the fans on the shaft a , supported in bearings a^3 a^3 and driven by the pulley a^2 .

I is the damper for alternating the air-current.

b b are the openings into the air-conduit B, and d d is the steam-pipe in the conduit D for heating the air as it enters the machine.

All of the foregoing parts of the machine, together with suitable apparatus for operating the damper I, are constructed, arranged, and operated substantially as shown and described in the application of Sargent, above mentioned.

In the operation of the above machine it is found that the traveling apron F having given to it a certain rate of speed suited to dry the wool properly under ordinary atmospheric

conditions, a change in the relative amount of moisture contained in the atmosphere of the apartment from which the induct D receives its supply of air prevents the wool being dried with that degree of exactness which is desirable—that is, in order to prepare the wool in the best manner it is never dried so as to expel all the moisture possible, but a certain amount of dampness is always left in the fiber to facilitate its subsequent working, and the nearer to that exact condition it is dried the better. If the air comes into the induct-pipe D in too warm and moist a state, it is found to have taken up so much vapor that the heat of the steam-pipe d does not and cannot expand it sufficiently to absorb the proper quantity of moisture per cubic foot to properly dry the wool, while if it enters the conduit D in too dry and cold a state it dries the wool so much when heated by pipe d that the fiber does not subsequently work well. It is to overcome these difficulties that my improvement is made.

I extend and prolong the air-induct upward and outward a sufficient distance to permit of the introduction into it of a cold-water pipe, a^4 , which is coiled, so as to present a sufficient surface of it to the inflowing air to reduce it a certain amount in temperature before it passes onward to the steam-pipe d . Below the coil of pipe a^4 , I place a drip pan or trough of metal, a' , which communicates with the outside of the conduit D by a drip-pipe. Thus the moisture condensed from the inflowing current of air by the cold-water pipe a^4 is conducted away and the air reaches the steam-pipe d in a suitable condition to be expanded by its heat and absorb moisture from the wool.

In operating my improvement I take the air into the conduit D directly from the room in which the machine is placed, and I keep the temperature of the room at the lowest constant state which the continual discharge of the warm air saturated with moisture from the drier will permit of. I then arrange the amount of exposed surface of the cold-water pipe a^4 so as to condense a given amount of moisture out of the air in its passage over the pipe. I further regulate the amount of exposed surface of the steam-pipe d to heat and expand

this dried air to a certain known point; and I also regulate the speed of the traveling perforated apron F to carry the wool through the machine at a given rate of speed. I am thus enabled to dry the fiber substantially to a predetermined point, and discharge it from the machine in the best condition.

Heretofore in machines for drying lumber, grain, and other substances a drying-chamber has been combined with an air-conduit containing a cold water or air condenser, and suitable heating apparatus for heating the air before the same is forced or enters into the drying-chamber, and this improvement is distinguishable from such mechanism in containing suitable mechanism for transporting the fiber into the drying compartment and exposing it for a predetermined period of time only to the action of the currents of air, which is believed to be novel in its operation, as hereinbefore stated.

It is evident that the arrangement of the various parts of the drying-machine may be varied considerably, provided the essential features of the air-induct, the cold-water pipe,

the steam-pipe, an air-blast or draft-fan, and a traveling perforated apron are kept in substantially the same relation to each other—as, for instance, my improvement may be applied to the drying-machine shown in the application of said F. G. Sargent and A. C. Sargent, No. 74,069, filed October 12, 1882.

What I claim as new and of my invention is—

1. In a fiber-drying machine, the combination of the air-conduit D, the cold-water pipe a^4 , the steam-pipe d , the fan, and the traveling perforated apron F, substantially as described.

2. In a fiber-drying machine, the combination of the air-conduit D, the cold-water pipe a^4 , the steam-pipe d , the fan, suitable mechanism for giving an alternate or intermittent character to the blast of air passing through the traveling apron with the said apron, substantially as described.

DAVID HALL RICE.

Witnesses:

WM. H. FINNEY,
N. P. OCKINGTON.