

(No Model.)

J. E. BARNEY.  
APPARATUS FOR DRYING WOOL.

No. 507,304.

Patented Oct. 24, 1893.

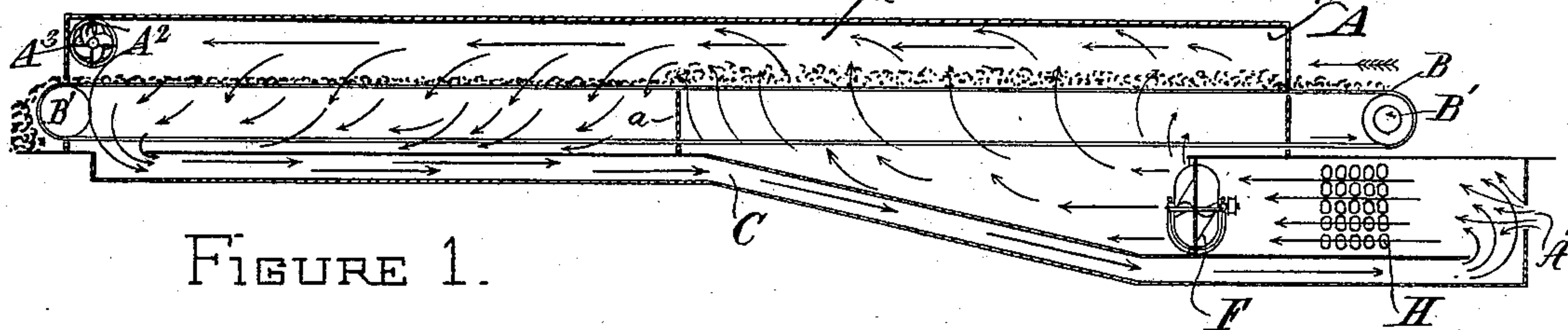


FIGURE 1.

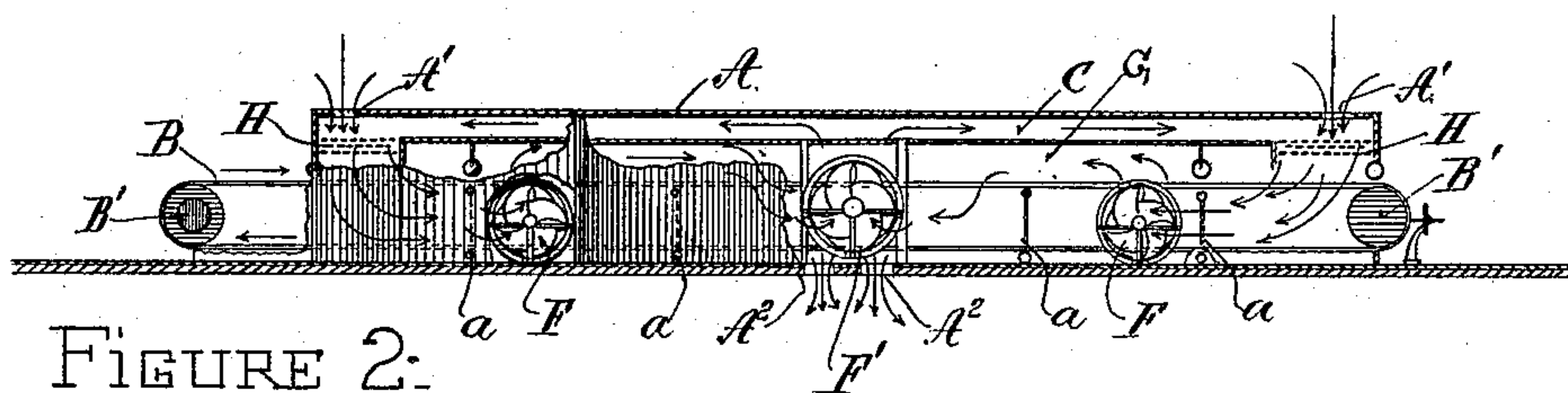


FIGURE 2.

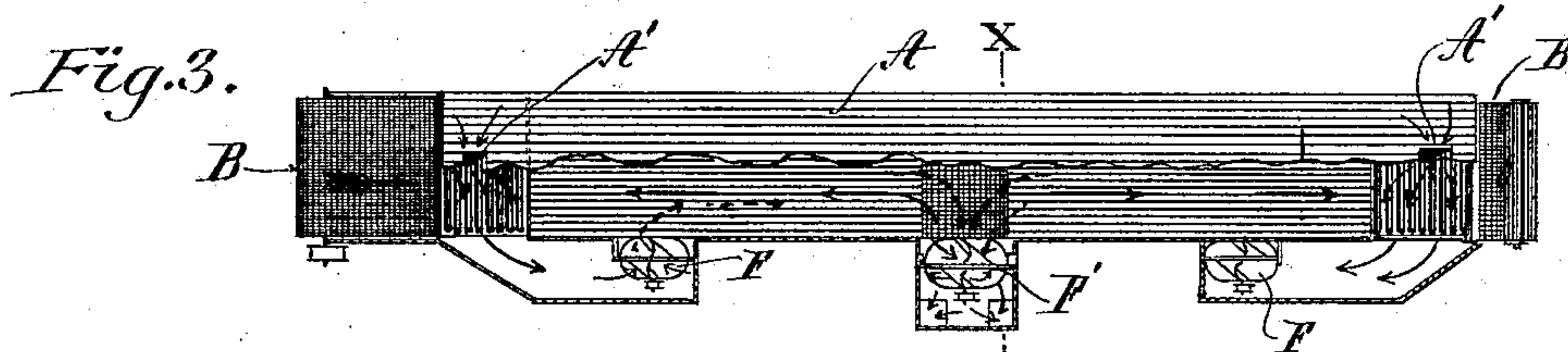


Fig. 3.

FIGURE 4.

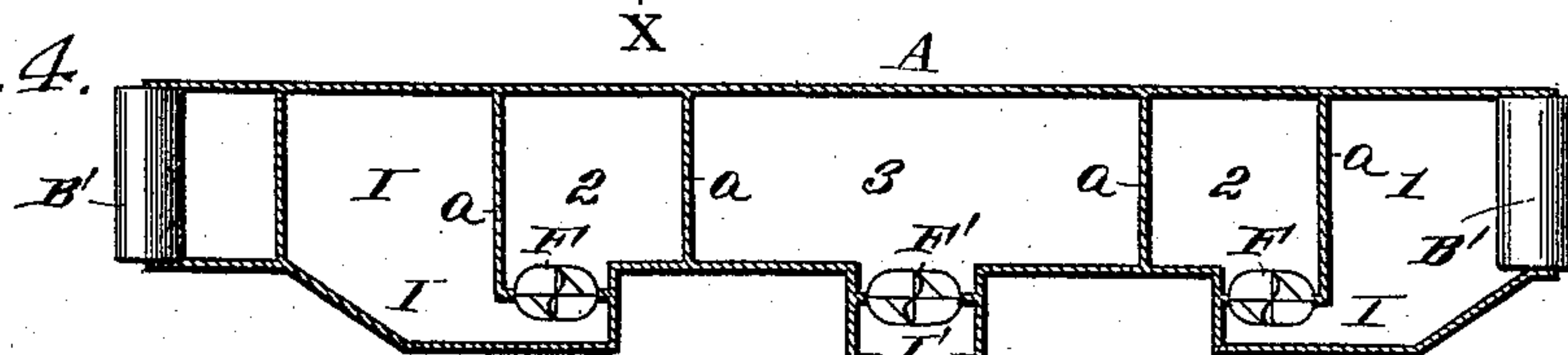


FIGURE 5.

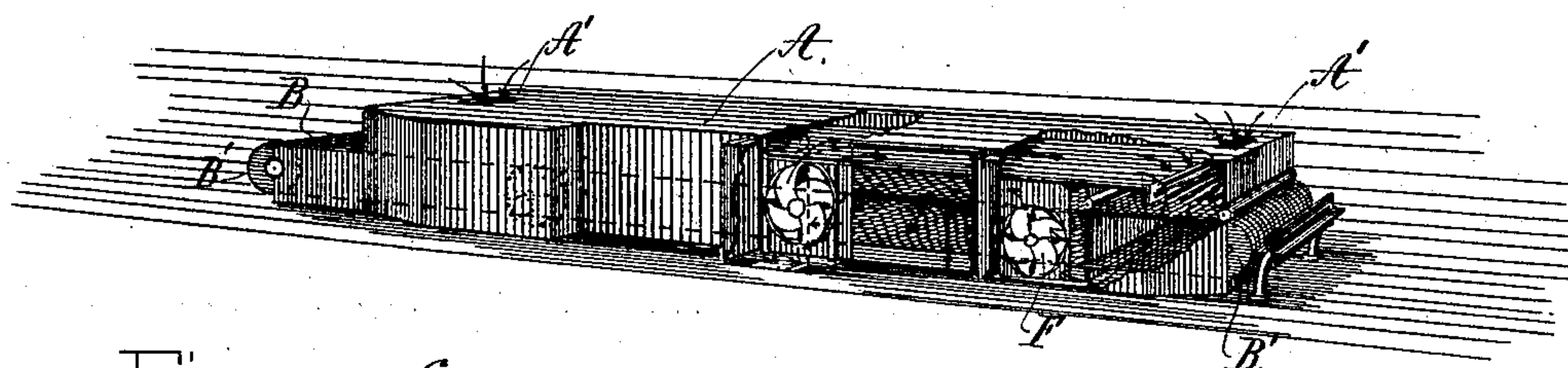
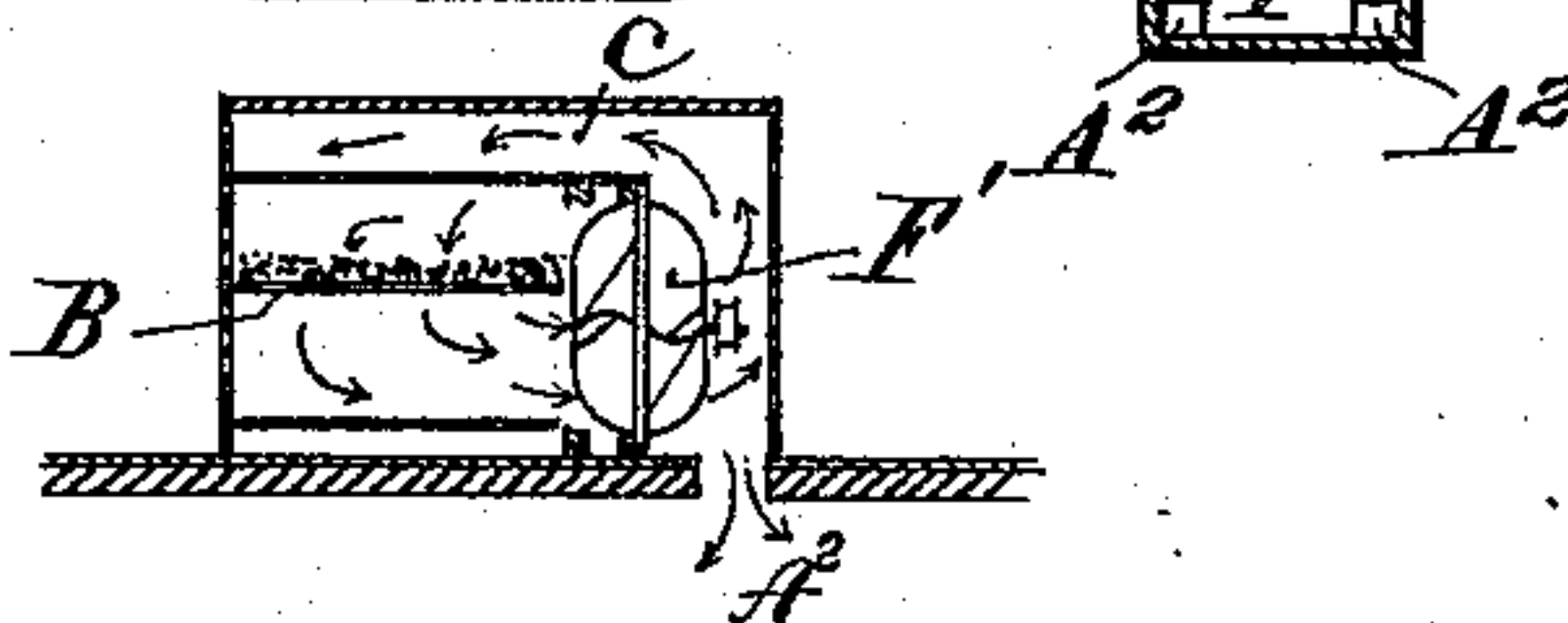


FIGURE 6.

WITNESSES

Henry Marsh Jr.  
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INVENTOR

James E. Barney.



# UNITED STATES PATENT OFFICE.

JAMES E. BARNEY, OF HYDE PARK, MASSACHUSETTS.

## APPARATUS FOR DRYING WOOL.

SPECIFICATION forming part of Letters Patent No. 507,304, dated October 24, 1893.

Application filed August 15, 1890. Serial No. 362,086. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES E. BARNEY, a citizen of the United States, residing in Hyde Park, county of Norfolk, State of Massachusetts, have invented a new and useful Improvement in Apparatus for Drying Wool, &c., of which the following is a specification.

My invention consists in the improved construction and arrangement of the several parts of the apparatus, as hereinafter fully set forth.

In the accompanying drawings: Figure 1, is a longitudinal section of the drier embodying my invention in its simplest form. Fig. 2, is a longitudinal section of the drier in which there are two circulating currents having the general direction toward each other. Fig. 3, is the top plan of the same, a portion of the covering or casing being broken away. Fig. 5, is a transverse section on a line  $x, x$ , of Fig. 3. Fig. 6, is a perspective view with a portion of the top and side casing broken away. Fig. 4, represents a horizontal section with the foraminous apron removed showing the compartments below the apron.

Similar letters and figures of reference denote like parts where they occur in the drawings.

In the accompanying drawings, A is the box or casing of the drier which is divided into separate compartments by a partition  $a$ , which projects a suitable distance into the circulating chamber. An endless foraminous apron B, for supporting the material to be dried extends through the circulating chamber G over the partition  $a$  and the separated compartments. This foraminous endless apron may extend through the circulating chamber, as shown in the drawings, or it may be divided so as to form more than one apron. The apron B travels on the revolving drums  $B', B'$ , and the heater H, located on the suction side of the air moving wheel or fan F, serves to heat the air admitted from the outside of the drier, as it is drawn through the heater and forced into one of the separated compartments and thence through the foraminous apron and the material thereon, into the air circulating chamber G and reversely into the other compartment through the foraminous apron and the material thereon, and through a conduit C, back to the heating chamber for continued circulation and re-heating. Controllable open-

ings  $A', A^2$ , located at any suitable portion of the circulating chamber serve as an inlet for the fresh dry air and as an outlet respectively for a portion of the moist heated air, and a suitable exhaust fan  $A^3$  may be applied to the opening  $A^2$  if desired, thereby affording the means for regulating the temperature and condition of the circulating air by forcing out a portion of the moist heated air, while the main current is in circulation. The inlet  $A'$  may on occasion be entirely closed and the circulation maintained with the same heated air.

It will be observed that the foregoing description applies not only to the drier in which the circulation is induced by a single wheel and heated by a single heater, but it is also applicable to a machine in which there are two or more currents induced by two or more fans and heated by more than one heater. Such a construction is illustrated in the drawings in Figs. 2, 3, 5 and 6, in which the currents circulate from each end of the drier toward the center, where they are gathered, and the return circulation assisted, by the third fan. In this construction which is a duplication of the principle illustrated in Fig. 1, each current of air is forced from one of the compartments 2, through the foraminous apron and the material thereon, into the air circulating chamber G and reversely into the other compartment 3, through the foraminous apron and the material thereon, and by the third fan the two converging currents are drawn through the foraminous apron and the material to be dried, and forced into the return conduits to the heaters.

In the last mentioned figures the casing A, is divided by the partitions  $a$ , into several compartments 1, 1, 2, 2, and 3, as shown in Fig. 6, the lower portion of the apron B passing over friction rollers located under the lower edge of the said partitions, the said partitions being continued above the apron and its supported material. The inlet openings  $A, A'$ , are formed at the opposite ends of the casing A, and near the said openings are placed the heaters H H, the return conduits C, occupying the upper portion of the case. The apron B is made to project at one end of the casing for the purpose of feeding in the material, which when dried is passed out at the opposite end of the machine. The air connection



between the compartments 1 and 2, at each end of the machine, is formed by a lateral passage I, in which is placed the fan F, and the air connection between the middle compartment 3, and the return conduits C for conveying the air to the opposite end of the machine for continued circulation through the heaters H, is formed by the lateral passage I' in which is placed the fan F' which serves to draw the converging currents of air downward through the apron B, and the material to be dried into the said middle compartment 3, and force the same upward through the passage I', into the return conduits C, for re-heating and continued circulation, the waste moist air passing out of the openings A<sup>2</sup>, at the bottom of the lateral air passage I'.

I claim as my invention—

1. In a drying machine, the combination with the movable foraminous apron for conveying the material to be dried, of an air circulating chamber above the said apron, and duplicate compartments at the lower side of the apron, the inlet for fresh air, the outlet for the moist heated air, the heater near the inlet opening, the return conduit for the moist heated air, and the fan located between the heater and the first compartment, for drawing the mixed, moist and fresh air, through the heater, and forcing the same into the said first compartment, thence through the said apron and the material to be dried into the circulating chamber above the apron, thence through

the said material and apron into the second compartment, and thence through the return conduit to the heater for re-circulation through the machine, substantially as described.

2. In a drying machine, the combination with the movable foraminous apron B, for conveying the material to be dried, the heaters H, H, at the opposite ends of the machine, the compartments 1, 1, 2, 2, and 3, below the apron, the air circulating chambers G, G, above the apron, the lateral passages I, I, and I', the fans F, F, for drawing the air through the heaters, and through the foraminous apron, into the compartments 1, 1, and forcing the same thence into the compartments 2, 2, and thence upward through the foraminous apron, into the air circulating chambers G, G, thence downward through the foraminous apron into the middle compartment 3, the conduits C, C, extending each way from the passage I' to the heaters H, H, the fan F', for forcing the moist air through the said passage and conduits to the heaters for recirculation, and suitable openings for the inlet of fresh air, and the exhaust of the moist air, substantially as described.

In testimony whereof I have hereunto set my hand, in presence of two witnesses, this 3d day of June, 1890.

JAMES E. BARNEY.

Witnesses:

HENRY MARSH, Jr.,  
SOCRATES SCHOLFIELD.