

No. 847,038.

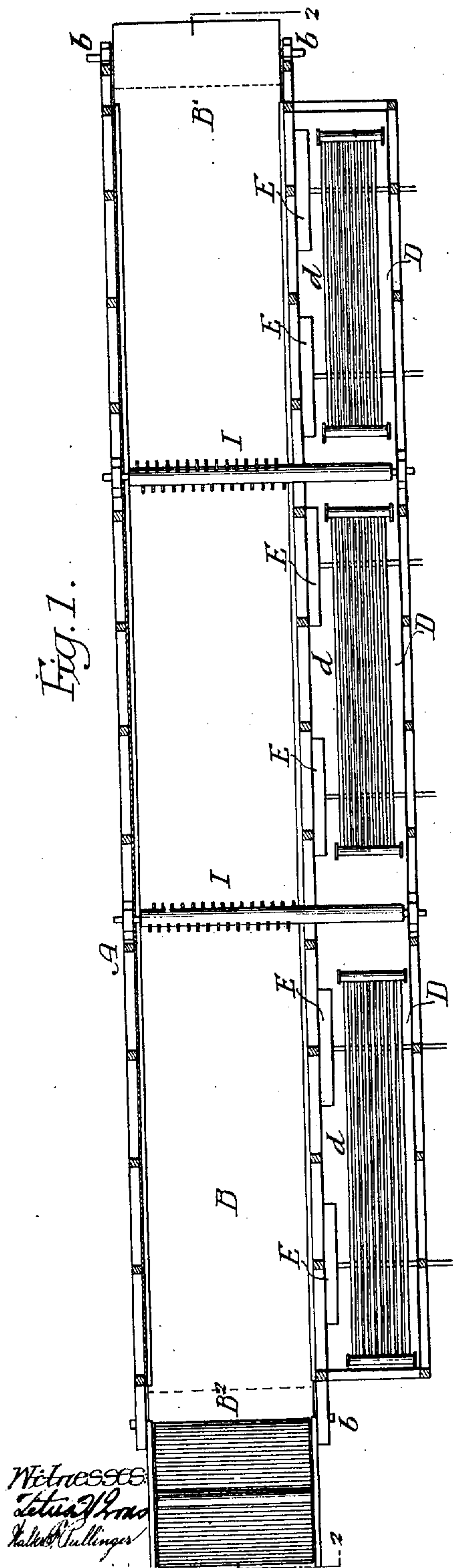
PATENTED MAR. 12, 1907.

E. B. AYRES.
DRYING MACHINE.

APPLICATION FILED NOV. 17, 1906.

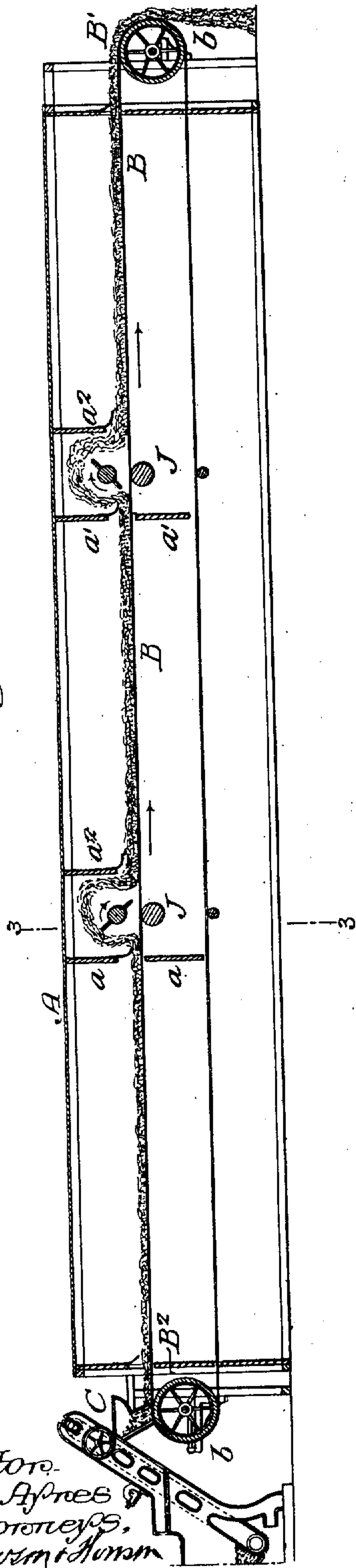
2 SHEETS—SHEET 1.

Fig. 1.



Witnesses
Edwin B. Ayres
Hall & Bullinger

Fig. 2.



Inventor.
Edwood B. Ayres
By his Attorneys,
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2 SHEETS—SHEET 2.

Fig. 4.

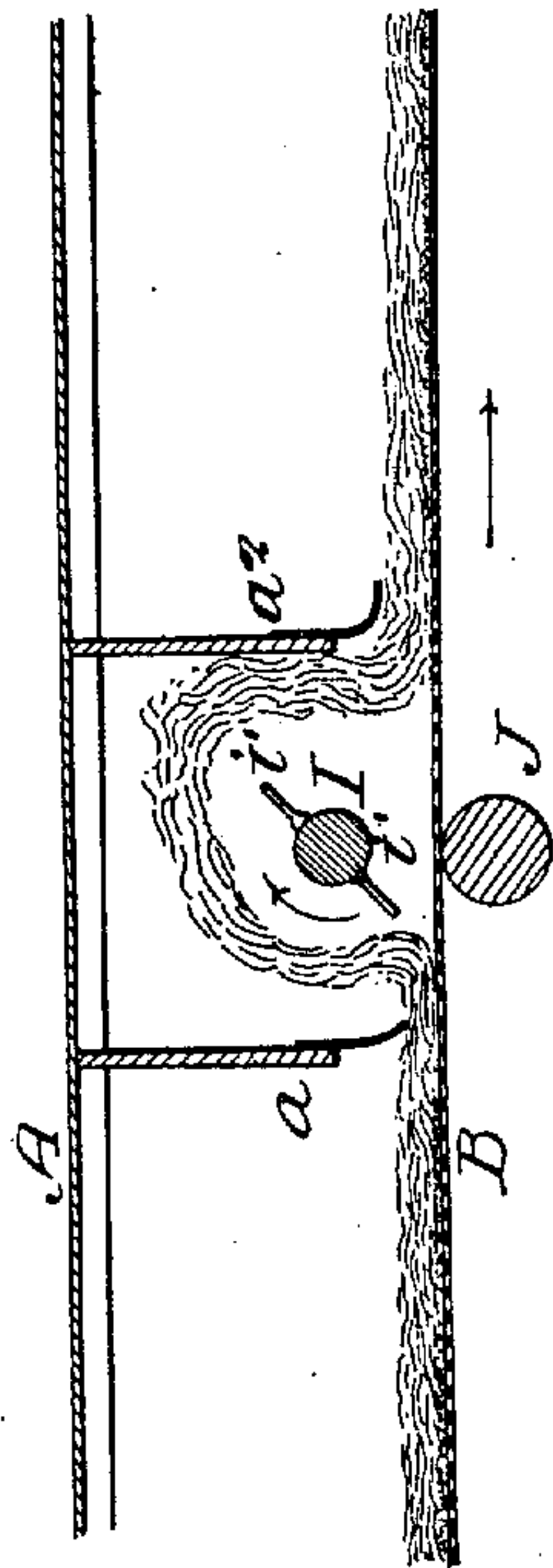


Fig. 5.

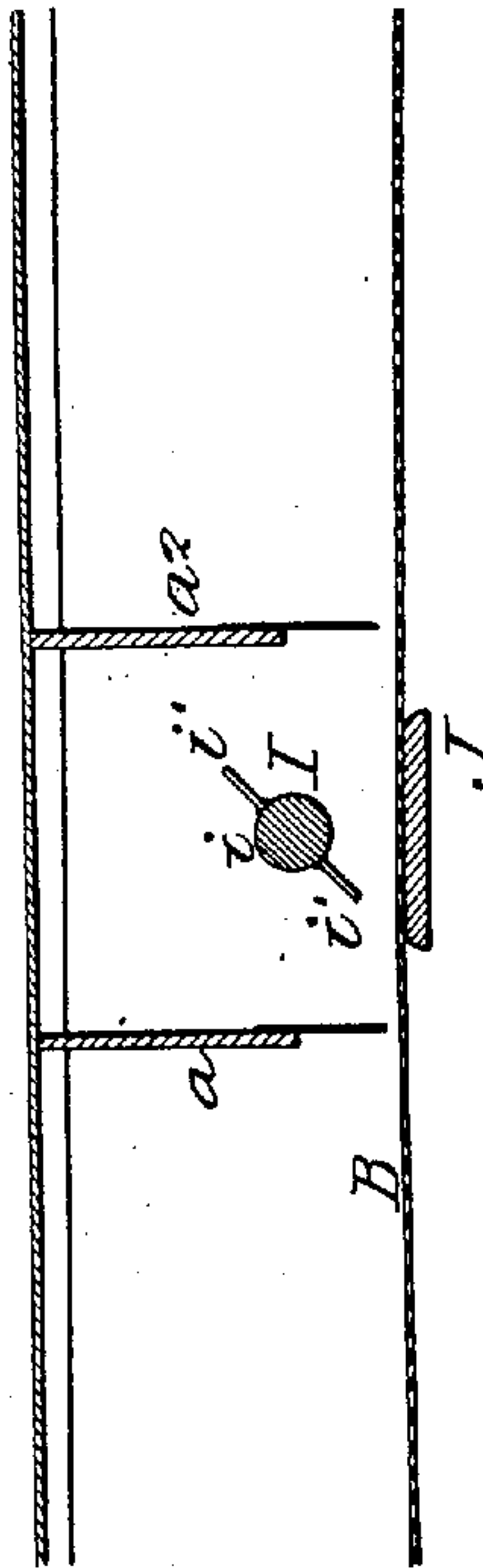
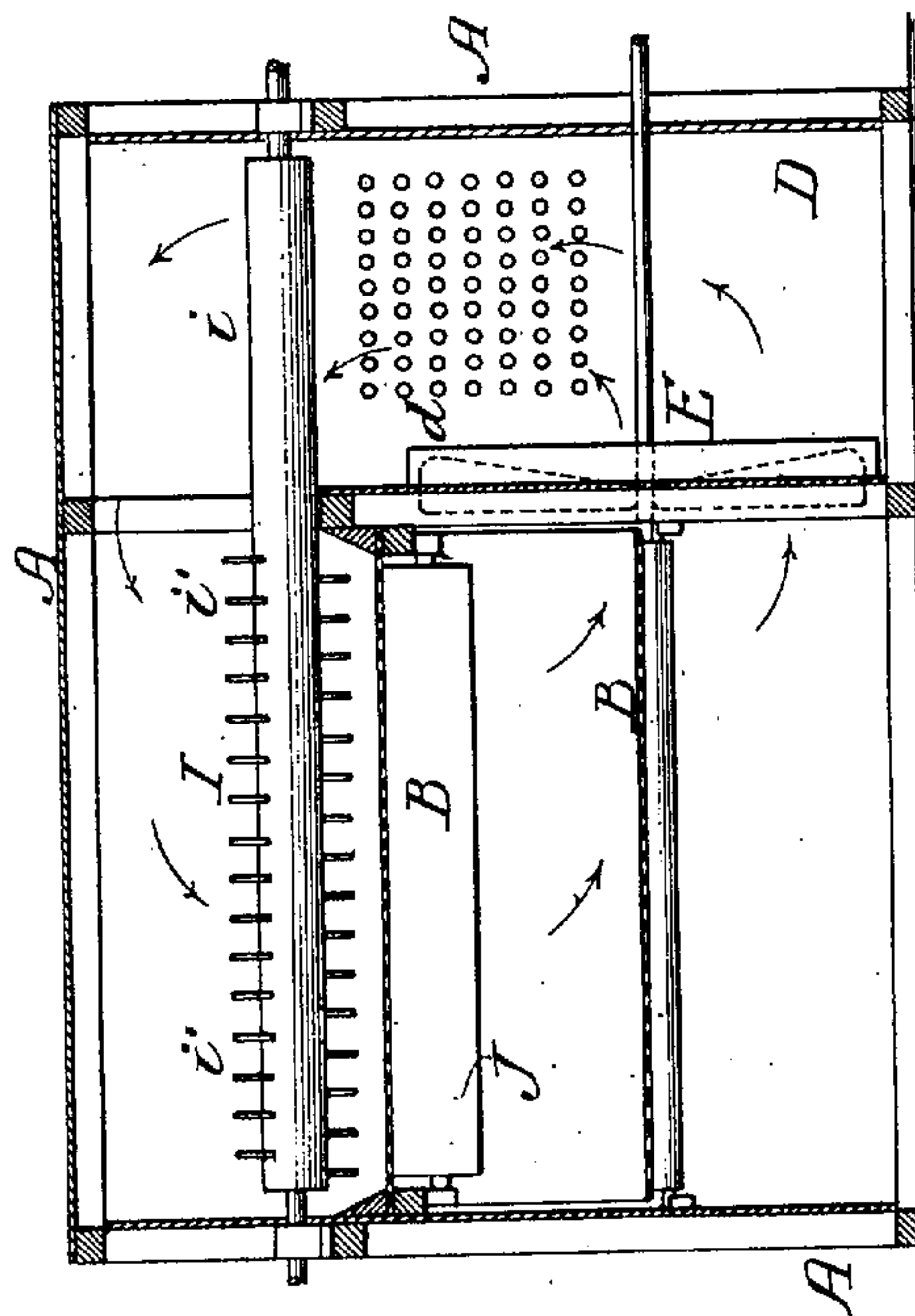


Fig. 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

ELWOOD B. AYRES, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE
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DRYING-MACHINE.

No. 847,038.

Specification of Letters Patent.

Patented March 12, 1907.

Application filed November 17, 1906. Serial No. 343,852.

To all whom it may concern:

Be it known that I, ELWOOD B. AYRES, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain
5 Improvements in Drying-Machines, of which the following is a specification.

My invention relates to certain improvements in the drying-machine for which Letters Patent were granted to J. K. Proctor on
10 April 19, 1892, No. 473,263.

The object of the present invention is to lift the material being dried off of the conveying-apron at intervals, so as to open up the material that it can be more thoroughly
15 dried than by the mechanism described in the above-mentioned patent.

My invention is particularly adapted for drying wool, cotton, and other textile fibers; but it will be understood that it may be used
20 for drying any material which can be conveyed to the belt and which can be lifted off the belt and be returned to it without injury to the material.

In the accompanying drawings, Figure 1 is
25 a sectional plan view of a drying-machine, illustrating my invention. Fig. 2 is a longitudinal sectional view on the line 2 2, Fig. 1. Fig. 3 is an enlarged transverse sectional view on the line 3 3, Fig. 2. Fig. 4 is an enlarged view of part of Fig. 1, and Fig. 5 is a
30 view illustrating a modification.

A is the casing of a drying-machine. B is an endless belt, which in the present instance is perforated for the free passage of air
35 through the material being carried.

B' B' are drums mounted in bearings *b b* at each end of the machine, and in the present instance the shaft of the drum B' is driven, the carrying portion of the belt traveling in
40 the direction indicated by the arrows, Fig. 2.

C is a hopper at the free end of the drier, in which the material is placed to be collected by the apron and conveyed through the machine.

45 The present machine is divided into three compartments by vertical partitions *a a'*, and at the side of the machine is a series of air-heating compartments D, which communicate with the main drying-compartments
50 above and below the carrying-run of the belt B, as indicated in Fig. 3.

d d are coils of heating-pipes in the com-

partments D, and E E are fans mounted in the partition between the drying and air-heating compartments for circulating the air. 55 In the present instance the fans are so driven that the air will circulate down through the material and through the belt and up through the heating-compartment, as indicated in Fig. 3.

In the drying-machine illustrated and described in the above-mentioned patent beaters were used which were driven in such a manner that the under surface of the beaters travel in the same direction as the belt. Con- 60 sequently the material would pass under the beaters and would be pressed by the beaters against the belt, and the only loosening effect would be by the beaters as they remove the material, throwing the material forward 70 against the deflector. In drying some materials this is objectionable.

By my invention I lift the material bodily off the belt, at the same time loosening it to such an extent that the air will more freely 75 pass through it. This is accomplished by the rotating lifters I, two being shown in the present instance, at the points immediately back of the partitions *a a'*. These lifters consist of a shaft *i*, having fingers *i'*, two sets 80 in the present instance, and the belt at this point is supported on a roller J. By this means the blades of the lifter can be adjusted close to the belt, so as to remove all particles of the material from the belt. 85

The lifter is rotated in the direction indicated by the arrow, Figs. 2 and 4, so as to lift the material off the belt and carry it over itself, allowing it to be deposited again on the belt, as illustrated in said figures. The parti- 90 tions *a a'* above the carrying-run of the belt terminate a short distance above the belt, and leather or fabric aprons extend down to the material, so as to prevent the escape of air from one compartment to another, and on 95 the opposite side of the lifters I are partitions *a''*, also having aprons, and these partitions deflect the material onto the belt after being lifted by the fingers *i*, as indicated in Fig. 4. 100

It will be understood that I prefer to drive the belt at a slow speed and the lifters at a high speed in order to obtain the best results.

In Fig. 4 I have illustrated a fixed trans-

verse bed J' in place of the roller J for supporting the conveyer-belt at the point directly under the lifter.

The operation of the machine is as follows:

5 The material is fed forward on the belt, and heated air is driven through the material by the action of the fans E, and when it reaches the first lifter I it is carried bodily off of the belt and thrown up and toward the partition
10 a^2 , as indicated in the drawings, thus loosening the body of material. Then it falls onto the belt and is carried through the next chamber and subjected to a current of hot air and again lifted and loosened by the second
15 beater and again subjected to the current of air in the third compartment, after which it is thoroughly dried and discharged from the machine.

I claim—

20 1. The combination in a drying-machine, of a perforated endless-belt conveyer, a lifter having arms arranged close to the belt so driven that its under side will move in a direction opposite to the direction of move-
25 ment of the conveyer and at such a speed that the material will be lifted off the conveyer and carried over the rotating lifter, with a partition situated at one side of the
30 rial as it passes over the lifter will come in

contact with the partition and be directed onto the belt, substantially as described.

2. The combination in a drying-machine, of an endless perforated conveyer, a rotating lifter, said lifter being rotated so that its
35 under side will move in a direction opposite to the direction of movement of the conveyer, with partitions on each side of the lifter above the material carried by the belt, and means for circulating air through the endless belt
40 and the material, substantially as described.

3. The combination in a drying-machine, of an endless-belt conveyer, a lifter having fingers arranged to lift the material, the under side of the lifter moving in a direction op-
45 posite to the direction of movement of the belt so that the material on the belt will be carried over the lifter, a roller supporting the belt and mounted directly under the lifter, and partitions extending across the drier on
50 each side of the lifter, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ELWOOD B. AYRES.

Witnesses:

WILL. A. BARR,
JOS. H. KLINE.