

No. 661,749.

Patented Nov. 13, 1900.

L. SULLIVAN.
FIBER CLEANING APPARATUS.

(Application filed Dec. 7, 1899.)

(No Model.)

2 Sheets—Sheet 1.

FIG. 4.

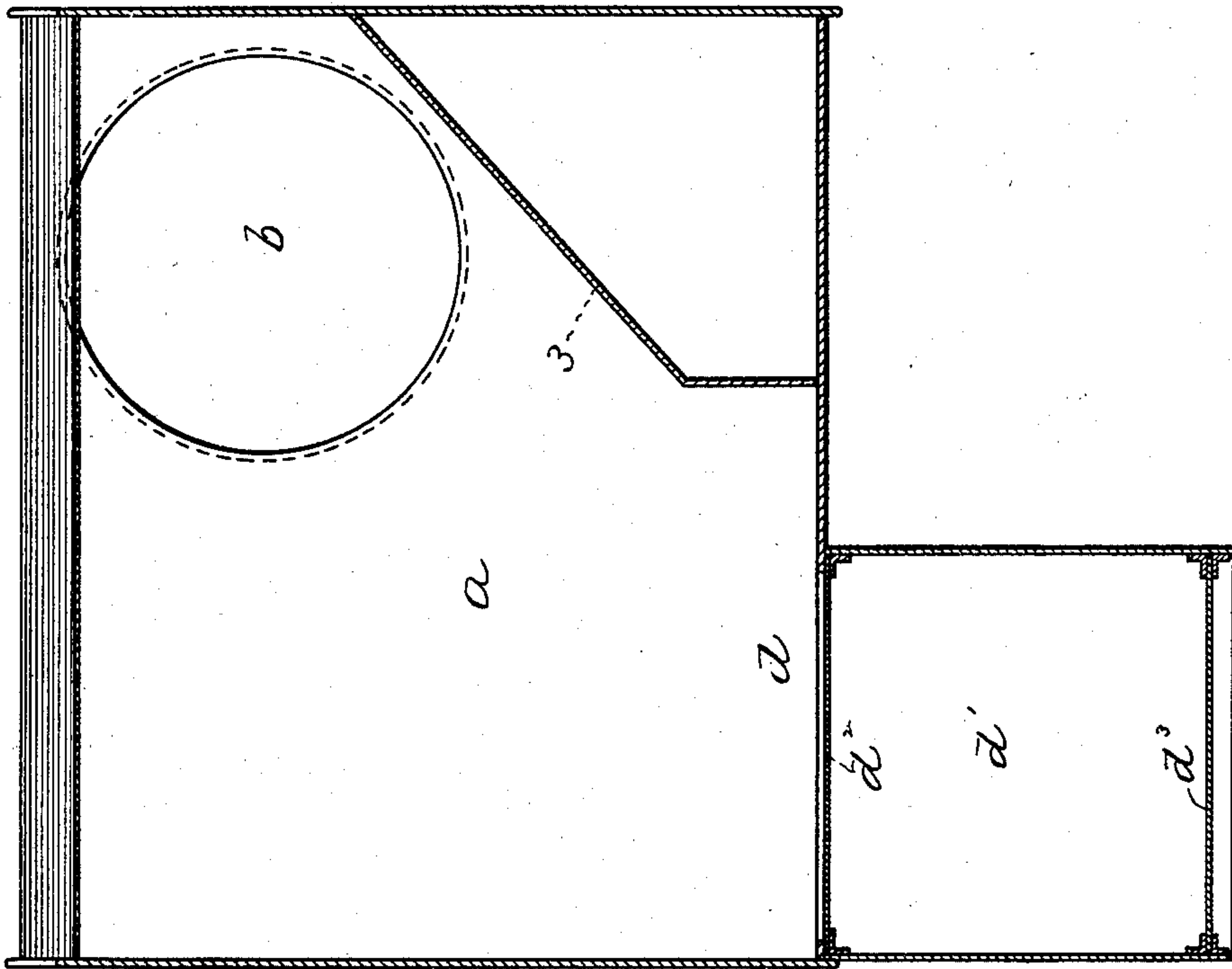


FIG. 5.

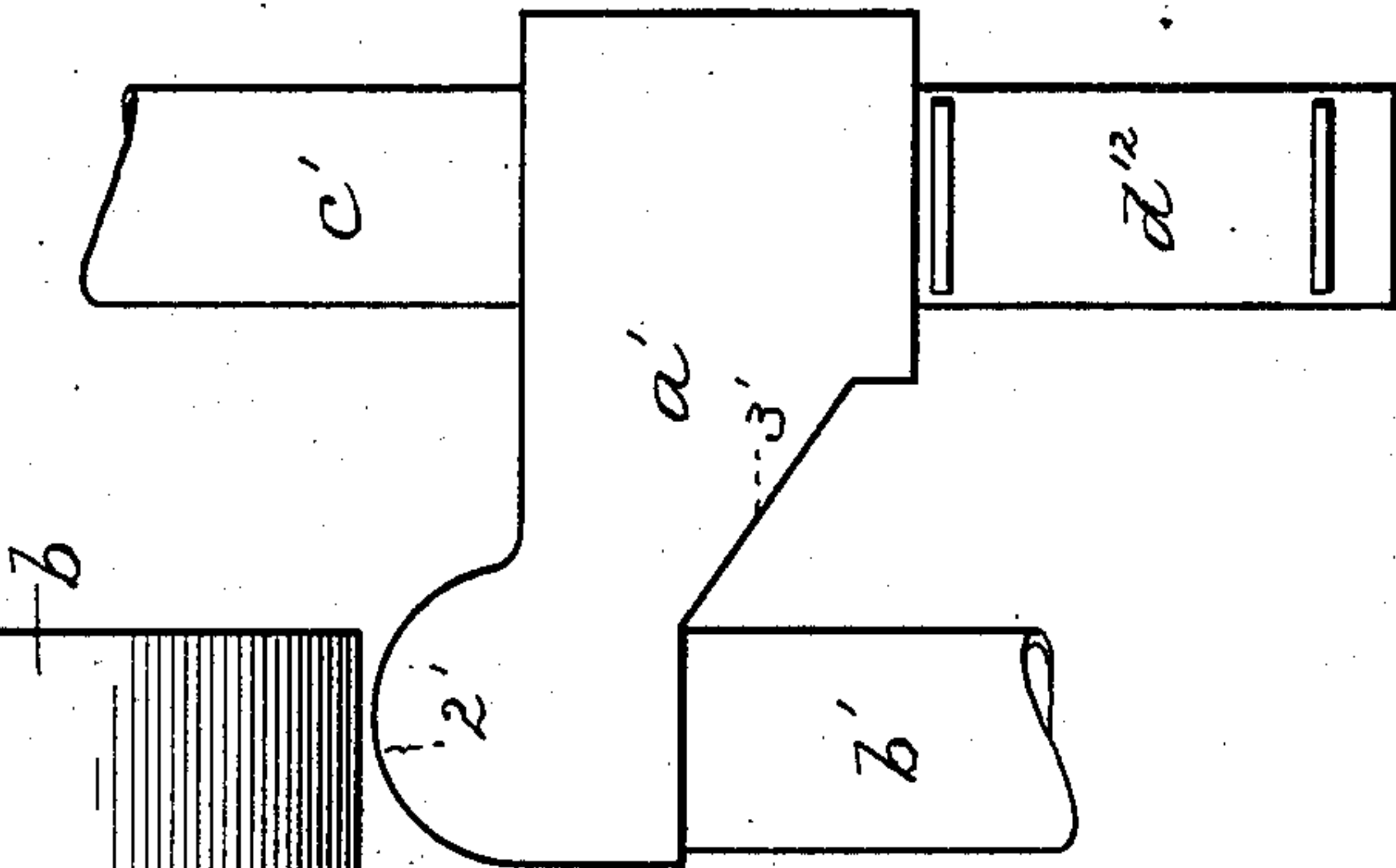
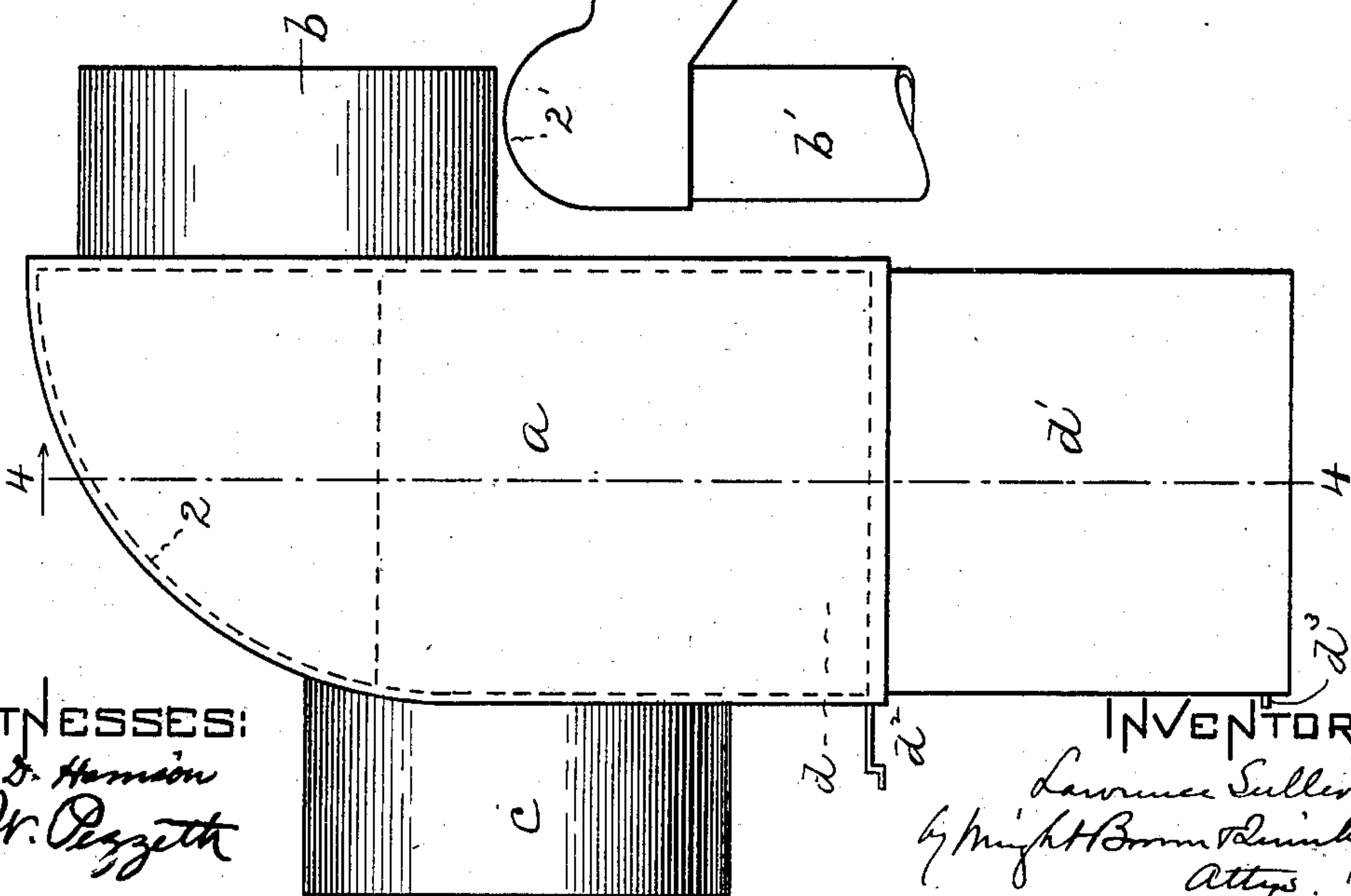


FIG. 1.



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FIG. 3.

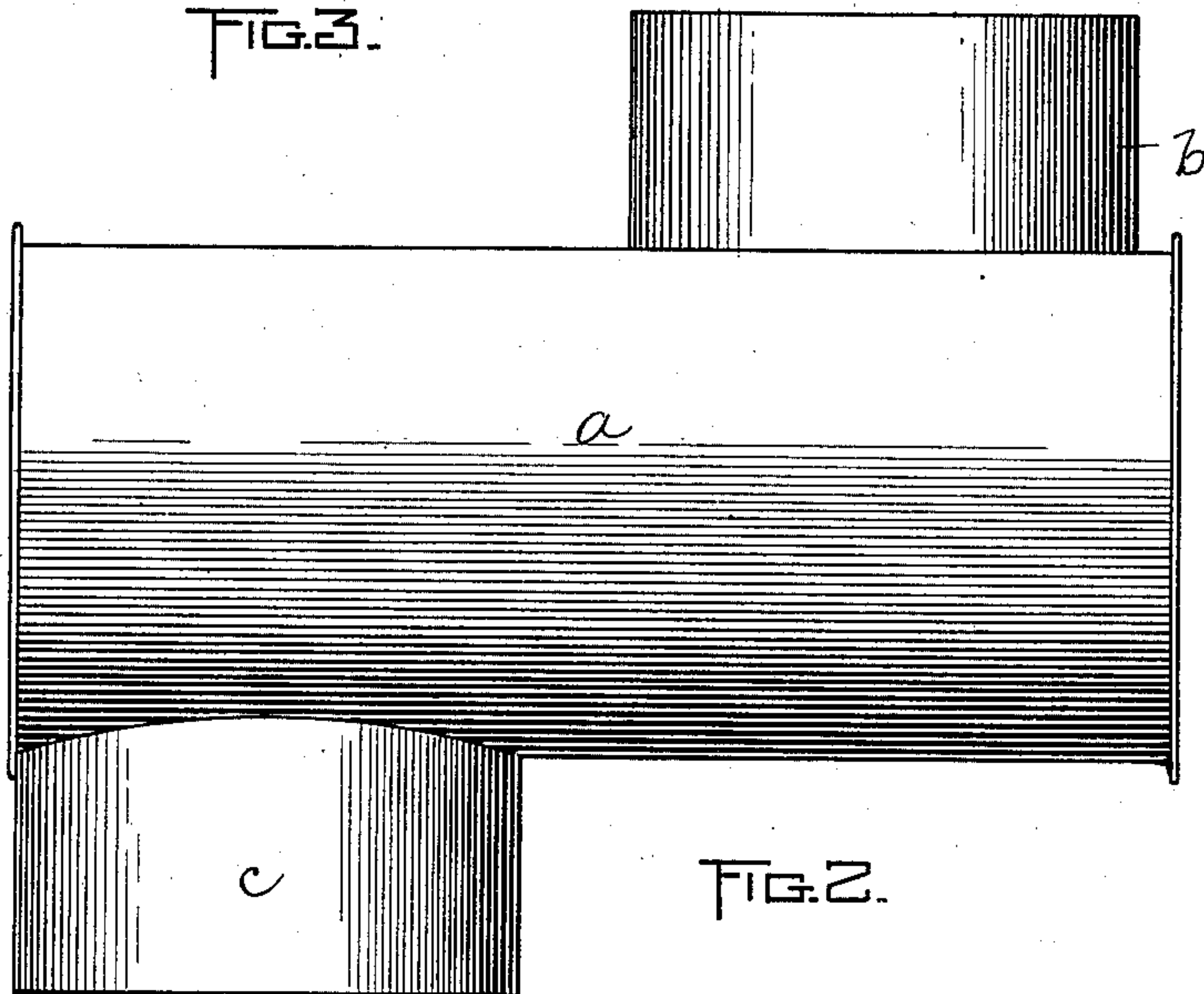
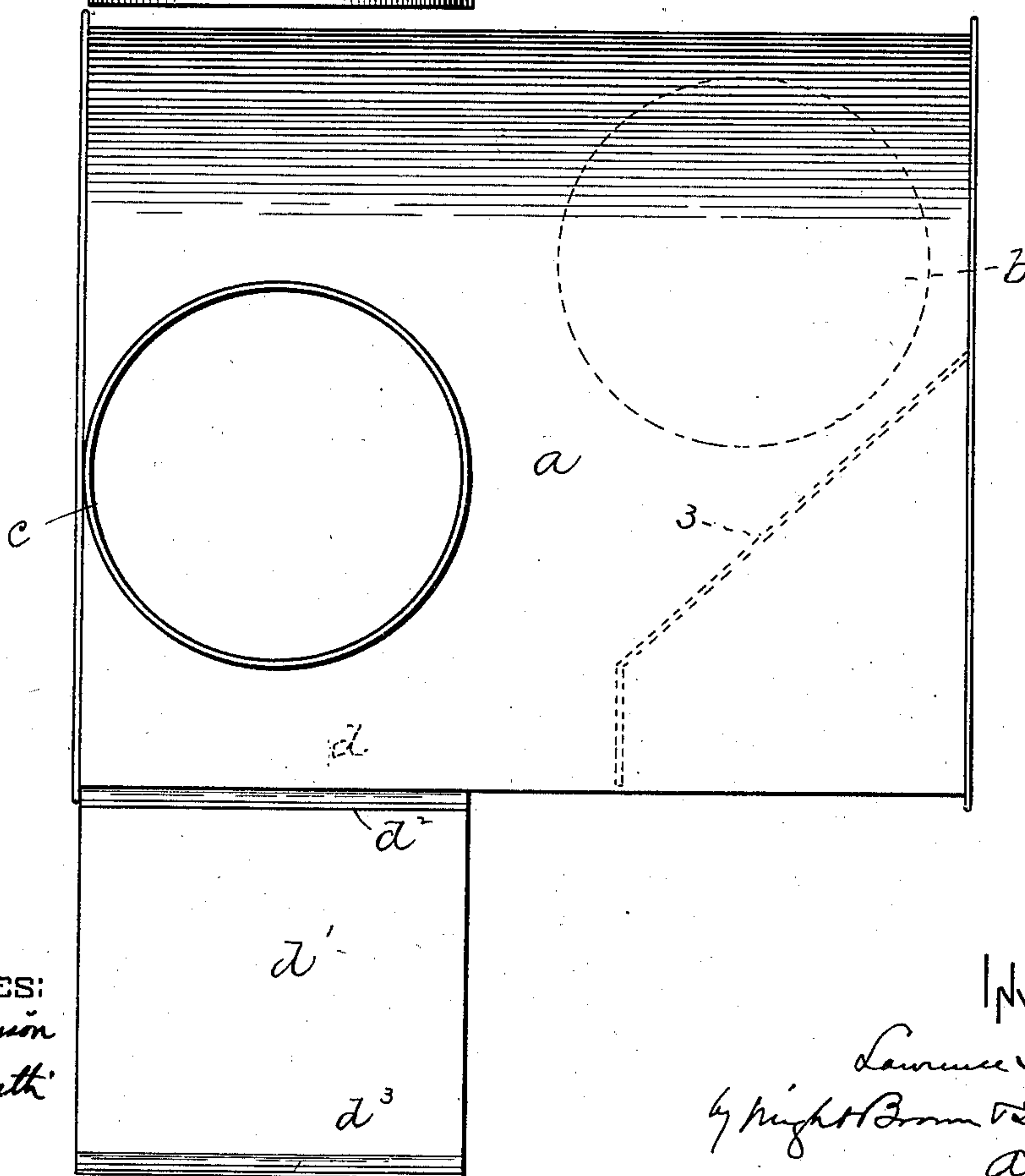


FIG. 2.



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UNITED STATES PATENT OFFICE.

LAWRENCE SULLIVAN, OF WALPOLE, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO HORACE A. SPEAR, JR., OF SAME PLACE.

FIBER-CLEANING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 661,749, dated November 13, 1900.

Application filed December 7, 1899. Serial No. 739,476. (No model.)

To all whom it may concern:

Be it known that I, LAWRENCE SULLIVAN, of Walpole, in the county of Norfolk and State of Massachusetts, have invented certain
5 new and useful Improvements in Fiber-Cleaning Apparatus, of which the following is a specification.

This invention has for its object to provide
10 simple and efficient means for detaching from loose fibrous material, such as cotton or wool, dirt and other foreign matters which are liable to be found in the fibrous material, particularly when it is baled and delivered at a
15 factory in bales. Baled cotton, for example, when opened is found to contain sand, dirt, fragments of bale-ties, and other foreign matter the presence of which is very objectionable.

My invention aims to separate such foreign
20 matter from the fibers before they are subjected to the processes preliminary to spinning.

The invention consists in the improvements
25 which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents an end elevation of a fiber-cleaning apparatus embodying my invention. Fig. 2 represents
30 a rear side elevation of the same. Fig. 3 represents a top view. Fig. 4 represents a section on the line 4 4 of Fig. 1. Fig. 5 represents a sectional view of a modification.

The same characters of reference indicate
35 the same parts in all of the figures.

In the drawings, and referring for the present to Figs. 1, 2, 3, and 4, *a* represents a chamber or casing, which may be of sheet metal or any other suitable material and has in one
40 side an inlet *b*, which may be a pipe of sufficient diameter to conduct a current of air under pressure and fibers of cotton or wool carried thereby. When cotton is the material being under treatment, the pipe *b* may be
45 connected with a suitable machine for opening masses of cotton fiber, a suitable blower or air-forcing apparatus being employed to force the cotton fibers violently through the pipe *b* into the casing *a*. The casing has a
50 curved deflecting-surface 2 opposite the delivering end of the pipe *b*, against which the

cotton fibers and any foreign matter carried with them are caused to violently impinge by the force of the air-current. This surface is formed to deflect the fibers and foreign matter downwardly, the impact of the material
55 against the deflector loosening the fibers from the foreign matter. Below the deflector 2, which may be termed the "primary" deflector, is a secondary deflector 3, against which
60 the material, or the heavier portions thereof, deflected by the deflector 2 impinges, this second impingement or impact completing the separation from the fibers of any foreign matter which was not separated by the impact
65 against the primary deflector 2.

Below the secondary deflector 3 is a depression *d* in the casing, which I term a "trap." This trap *d* is arranged to receive by gravitation the relatively heavy foreign matter
70 which is detached from the fibers by the successive impacts against the deflectors 2 and 3.

c represents an outlet which is arranged above the trap *d* and has substantially the same capacity as the inlet *b*, the fibers now
75 separated from the foreign matter being carried through this outlet by the air-current, while the separated foreign matter is deposited by gravitation in the trap *d*.

The relative location of the several parts
80 above described must be such that the matter entering the inlet *b* will first strike the deflector 2, the fibers separated from the foreign matter rebounding from the deflector 2 and passing either directly to the outlet *c* without
85 striking the deflector 3, while the heavier foreign matter and the fibers still adhering there-to will rebound from the deflector 2 to the deflector 3, the latter being below the outlet *c* and above the trap *d*, so that the fibers and foreign
90 matter striking the deflector 3 will separate at that point, the fibers passing from the deflector 3 to the outlet, while the foreign matter gravitates from the deflector 3 into the pocket
95 *d*. These results are accomplished by the construction of the inlet and outlet out of alignment with each other and the two deflectors also out of alignment with each other and so formed and angularly set relatively to each other and to the inlet and outlet as to twice
100 abruptly change the course or direction of movement of the current of air and fibers pass-

ing through the apparatus. Below the trap d is a receptacle d' , which is adapted to receive the foreign matter that accumulates in the trap, said receptacle having a gate or slide d^2 at its upper portion and another gate or slide d^3 at its lower portion. When it is desired to remove an accumulation of foreign matter during the operation of the apparatus, the slide d^3 is pushed in and the slide d^2 is withdrawn, thus allowing the accumulated matter to drop into the receptacle d' , the slide d^3 preventing the escape of the air-current through the receptacle d' . The slide d^2 is now inserted and the slide d^3 withdrawn, allowing the matter deposited in the receptacle d' to be removed.

In Fig. 5 I show a modification in which a' is the casing; b' , the inlet; c' , the outlet; $2'$ and $3'$, the deflectors, and d^{12} the trap.

As above stated, the outlet c has substantially the same capacity as the inlet b . The entire passage-way through the casing also has a capacity as great as that of the inlet b and is free from obstructions other than the deflectors described. Therefore the fibers are carried by the full strength of the air-current without undergoing such slackening or acceleration of speed or sudden changes of direction of movement as would tend to keep them mixed with the foreign matter, leaving the latter, owing to the weight of the particles, free to rebound after impact with the deflectors.

I claim—

1. A fiber-cleaning apparatus, comprising a casing having an inlet, a primary deflector opposite the inlet, against which the fibers carried through the inlet impinge, a secondary deflector against which the fibers impinge in rebounding from the primary deflector, the two deflectors being out of alinement

with each other and formed to twice abruptly change the course or direction of movement of the current of air and fibers, a trap or depression below the secondary deflector in which the relatively heavy pieces of foreign matter detached from the fibers by the successive impacts against the deflectors fall by gravitation, and a fiber-outlet located above the trap and out of alinement with the inlet, the entire passage-way through the casing, including the outlet, having a capacity as great as that of the inlet, and free from obstructions other than said deflectors.

2. A fiber-cleaning apparatus, comprising a casing having an inlet, a primary deflector opposite the inlet, against which the fibers carried through the inlet impinge, a secondary deflector against which the fibers impinge in rebounding from the primary deflector, the two deflectors being out of alinement with each other and formed to twice abruptly change the course or direction of movement of the current of air and fibers, a trap or depression below the secondary deflector in which the relatively heavy pieces of foreign matter detached from the fibers by the successive impacts against the deflectors fall by gravitation, a fiber-outlet located above the trap and out of alinement with the inlet, the entire passage-way through the casing, including the outlet, having a capacity as great as that of the inlet, and free from obstructions other than said deflectors, and a receptacle for foreign matter below the trap, said receptacle having slides or gates.

In testimony whereof I have affixed my signature in presence of two witnesses.

LAWRENCE SULLIVAN.

Witnesses:

GEORGE A. BOULTON,
CHAS. HERBERT SMITH.