

**No. 636,714.**

**Patented Nov. 7, 1899.**

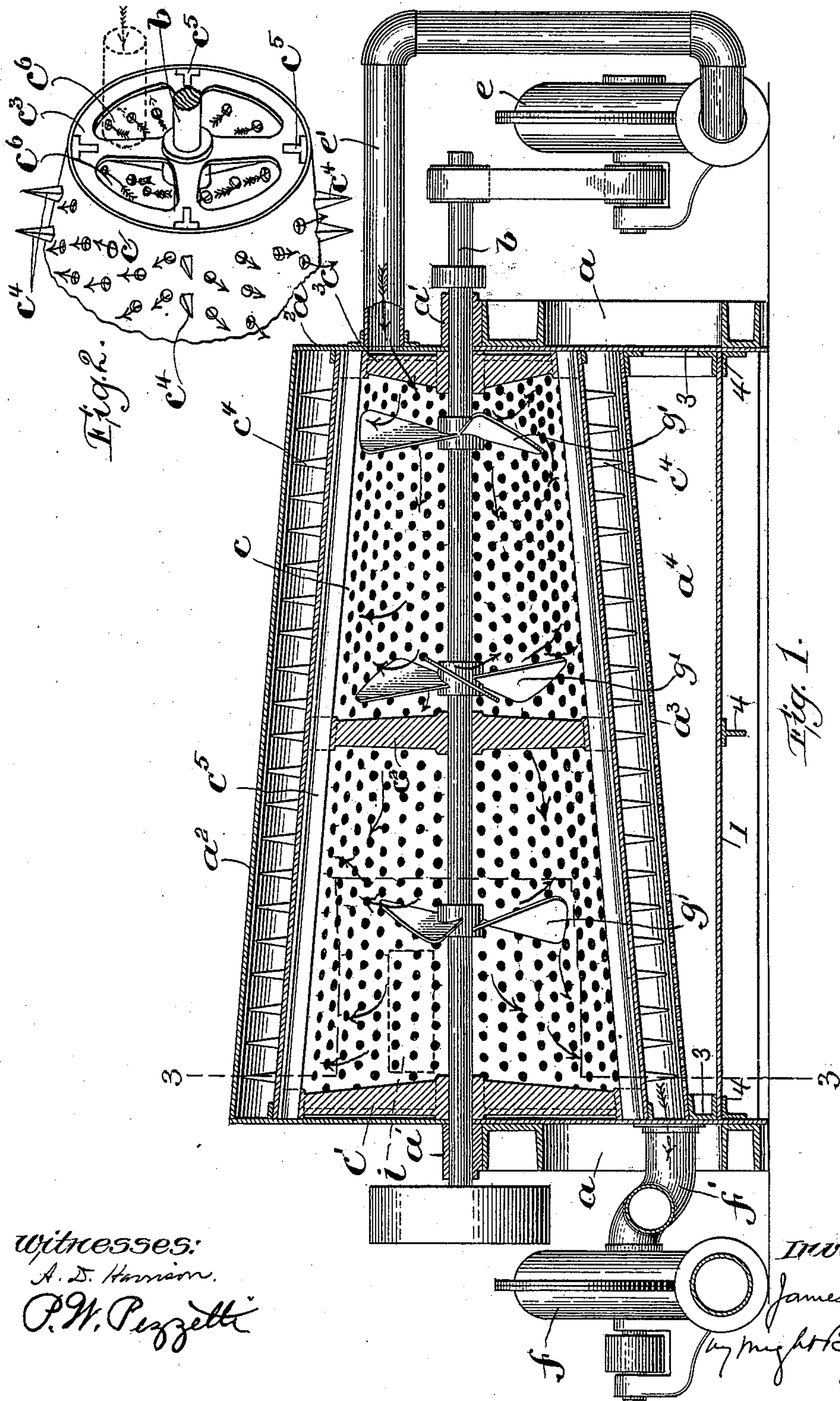
**J. BRANDY.**

## WOOL CLEANING MACHINE.

(Application filed Feb. 4, 1899.)

(No Model.)

**2 Sheets—Sheet 1.**



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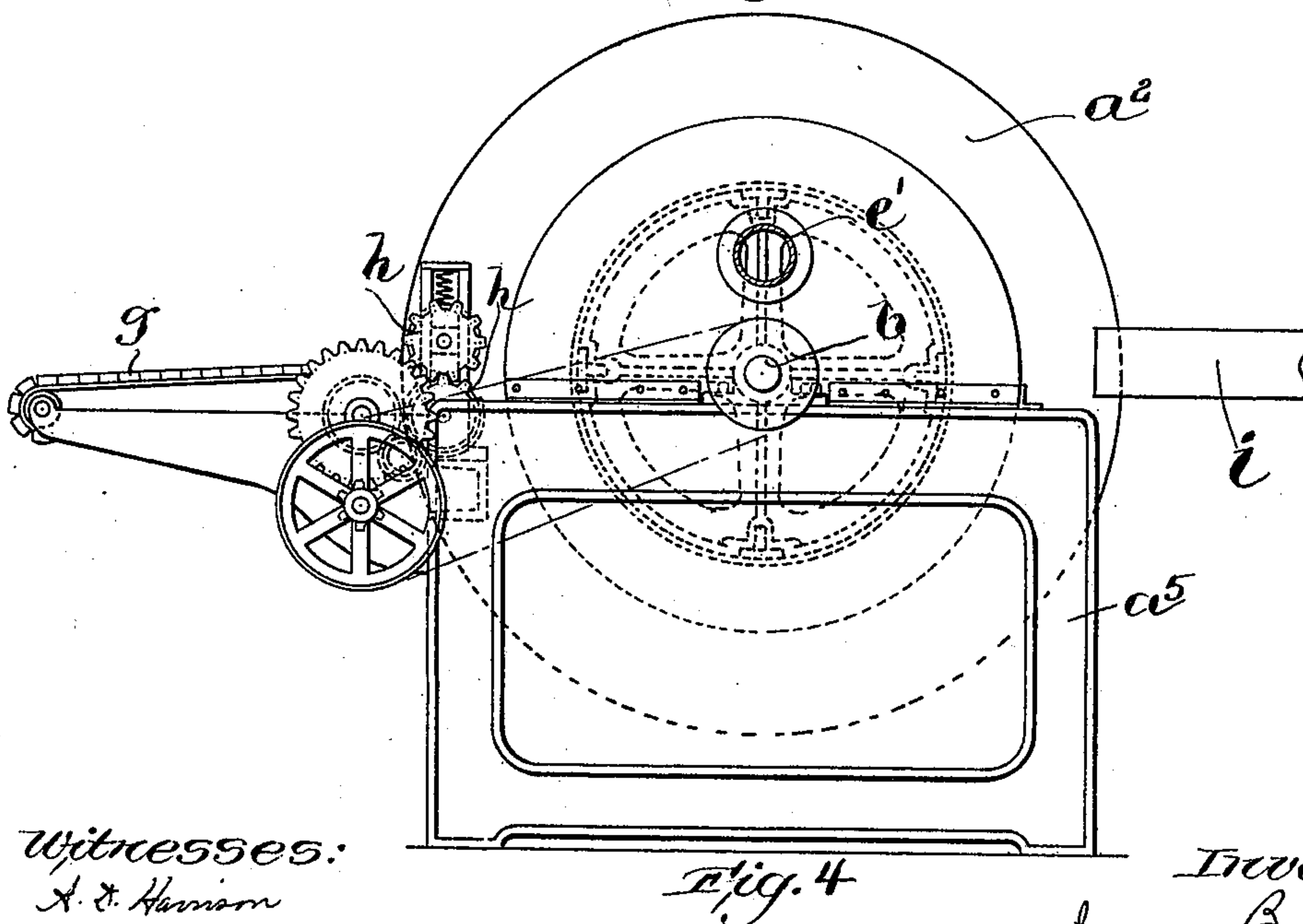
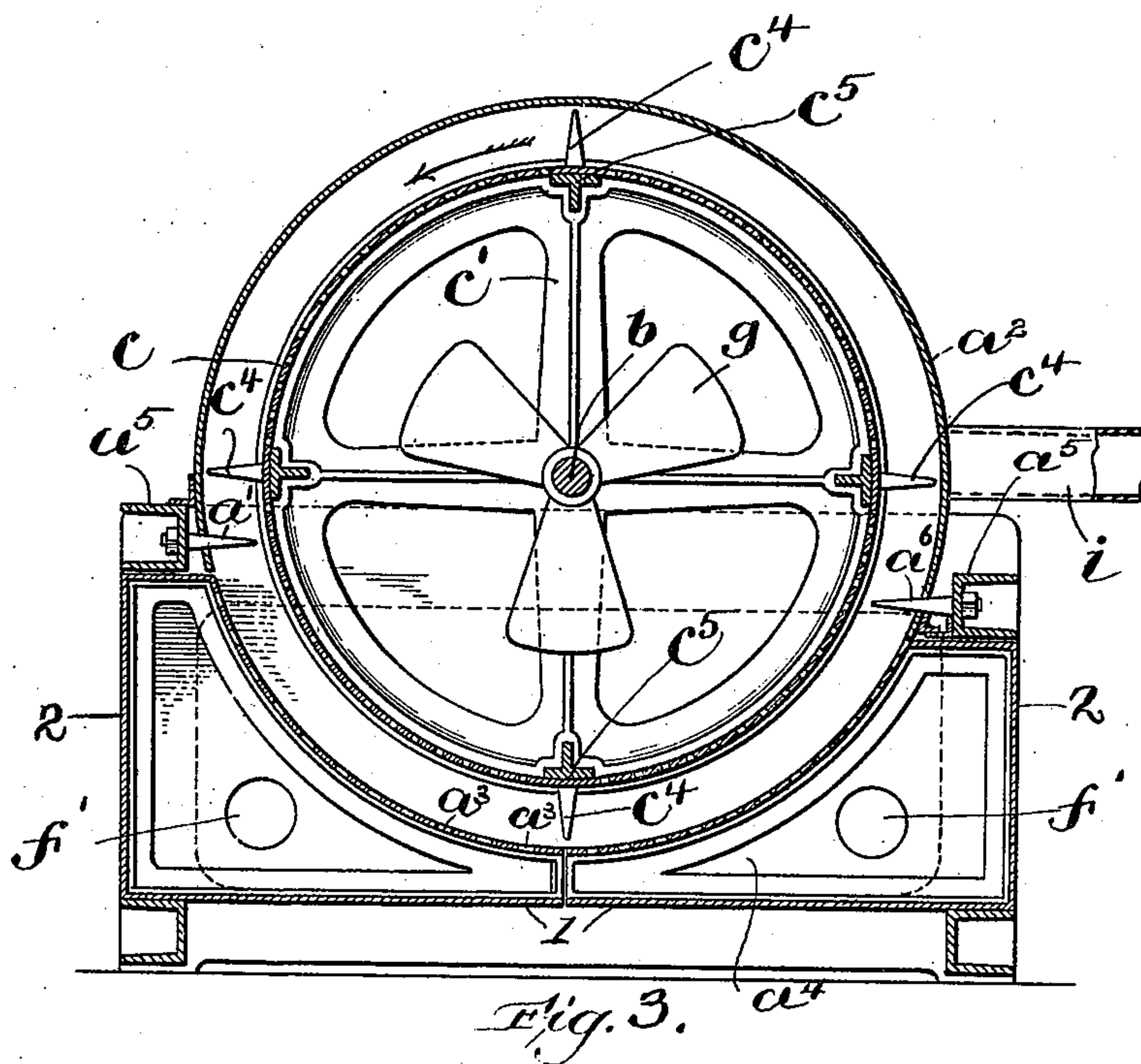
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**2. Sheets—Sheet 2.**



Witnesses:  
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*Inventor:*  
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# UNITED STATES PATENT OFFICE.

JAMES BRANDY, OF LAWRENCE, MASSACHUSETTS, ASSIGNOR OF ONE-HALF  
TO ROSWELL C. TAYLOR, OF SAME PLACE.

## WOOL-CLEANING MACHINE.

SPECIFICATION forming part of Letters Patent No. 636,714, dated November 7, 1899.

Application filed February 4, 1899. Serial No. 704,451. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES BRANDY, of Lawrence, in the county of Essex and State of Massachusetts, have invented certain new and  
5 useful Improvements in Wool-Cleaning Machines, of which the following is a specification.

This invention relates to machines for removing dirt and other foreign matter from  
10 fibrous material, such as wool; and it has for its object to provide a machine which shall thoroughly and rapidly separate foreign matter from the fibrous material by a combined pneumatic and mechanical action.

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

Of the accompanying drawings, forming a part of this specification, Figure 1 represents  
20 a longitudinal vertical section of a wool-cleaning machine embodying my invention. Fig. 2 represents a perspective view showing one end of the rotary perforated cylinder. Fig. 3 represents a section on line 3 3 of Fig. 1,  
25 looking toward the left. Fig. 4 represents an end view of the machine.

The same letters of reference indicate the same parts in all the figures.

In the drawings, *a a* represent the end  
30 pieces of a supporting-frame, which end pieces are provided with bearings *a' a'*, supporting the rotary shaft *b*. Said shaft supports and rotates a foraminous cylinder *c*, which is preferably of tapering or frusto-conical form, as  
35 shown in Fig. 1, and may be made of perforated sheet metal, wire-cloth, or other suitable material. The cylinder *c* may be supported on the shaft *b* by any suitable means, preferably by means of a series of spiders *c' c' c'*,  
40 which have hubs affixed to the shaft and peripheral portions affixed to the cylinder *c*. The cylinder is provided with a series of rows of radiating spikes *c<sup>4</sup>*, these rows extending  
45 lengthwise of the cylinder. To afford suitable supports for the spikes, I have shown the cylinder as provided with longitudinal bars *c<sup>5</sup>*, which are T-shaped in cross-section and are secured in recesses formed for their reception in the spiders *c' c' c'*, the spikes be-  
50 ing riveted or otherwise securely affixed to the bars *c<sup>5</sup>*.

On the supporting-frame is mounted a fixed casing or cover *a<sup>2</sup>*, which covers the upper por-

tion of the body and the ends of the cylinder  
*c*. Said casing is continued below the cylin- 55  
der by two segmental plates provided with numerous small apertures or outlets *a<sup>3</sup>*, Fig. 3, which permit the escape of the foreign matter separated from the wool, as hereinafter described, into removable receptacles *a<sup>4</sup>* be- 60  
low the cylinder. Two of said receptacles are here shown, and the said segmental plates in this instance are attached to and form parts of said receptacles, which also include floors 1, rear walls 2, Fig. 3, and end walls 3, Fig. 1. 65  
The receptacles are adapted to slide on ways 4, supported by the frame of the machine. The supporting-frame is provided with rigid longitudinal side beams *a<sup>5</sup> a<sup>5</sup>*, which extend between the end pieces *a a* and are suitably 70  
affixed thereto, said beams *a<sup>5</sup>* being provided with rows of spikes *a<sup>6</sup> a<sup>6</sup>*, which project into the space between the casing *a<sup>2</sup>* and the cylinder *c*, and are arranged so that the spikes *c<sup>4</sup>* on the cylinder pass between the said spikes 75  
*a<sup>6</sup>*. The body portion of the casing *a<sup>2</sup>* is concentric with the cylinder *c*, so that an annular space or cleaning-chamber is formed between the casing and cylinder, as shown in Fig. 3, the spikes *c<sup>4</sup>* on the cylinder projecting out- 80  
wardly nearly to the casing *a<sup>2</sup>*, while the fixed spikes *a<sup>6</sup>* project inwardly nearly to the periphery of the cylinder, so that any wool introduced into the said annular space and carried around by the rotation of the cylinder 85  
will have its fibers loosened and separated by the conjoint action of the spikes *c<sup>4</sup>* and *a<sup>6</sup>*.  
*e* represents a fan-blower which is located near one end of the casing and is connected by a pipe or conduit *e'* with the casing, said 90  
conduit delivering the blast of air from the blower *e* at one end of the casing at such point that the blast passes through openings *c<sup>6</sup> c<sup>6</sup>*, Fig. 2, in one end of the cylinder into the interior of the latter, said openings *c<sup>6</sup>* be- 95  
ing here shown as formed by the arms and perimeter of the spider *c<sup>3</sup>*. The opposite end of the cylinder is closed against any appreciable escape of air, and this may be effected by making the spider *c'* continuous—that is 100  
to say, without openings, such as are provided in the spider *c<sup>3</sup>*—or said spider *c'* may be of the same general form as the spider *c<sup>3</sup>*, and the escape of air may be prevented by the adjacent end of the casing *a<sup>2</sup>*, which end 105  
is in close proximity to the end of the cylin-



der. It is my object to provide a construction which while admitting air freely to the end of the cylinder next the conduit  $e'$  will prevent any considerable escape of air excepting outwardly through the perforations of the cylinder, so that there will be a radial discharge of air from all parts of the cylinder into the annular space between the cylinder and the casing, each perforation in the cylinder discharging a jet of air outwardly into said annular space. The said jets of air act forcibly upon the fibers of wool which are being loosened and separated by the spikes in the said annular space, and effectually separate therefrom the dirt and other foreign matter loosened or detached by the action of the spikes. The matter detached from the wool by the action of the spikes passes through the perforations  $a^3$ , the heavier portions of such foreign matter lodging in the receptacles  $a^4$ , while the lighter portions are drawn from said receptacles through conduits  $f'f'$ , communicating therewith and with an external exhaust-fan  $f$ . It will be seen that the exhaust created by the fan  $f$  tends to draw all the matter that falls upon the segmental plates containing the perforations  $a^3$  through the latter and out of the annular space.

To equalize the air-pressure within the cylinder and give a practically equal force to all the jets issuing therefrom, I provide air-distributing means, such as fan-blades  $g'$ , attached to the shaft  $b$  within the cylinder, said blades being obliquely arranged so that both by their position and by the rotary motion they receive from the shaft each blade deflects a portion of the air entering one end of the cylinder through the conduit  $e'$  outwardly toward the periphery of the cylinder, the fans being constructed so that each intercepts only a portion of the air, and hence each series of fan-blades deflects a portion of the air outwardly, the result being a practically uniform pressure or force in the jets of air issuing from all parts of the cylinder. The obliquely-arranged fan-blades are adapted to force air outwardly through the perforations in the cylinder independently of the fan-blower  $e$ . As a matter of fact the said fan-blades will create jets or currents of air through the said perforations, said jets having sufficient force to operate beneficially upon the fiber in said chamber, so that the machine would be operative even if the blower  $e$  were not employed, although it is obvious that the air-jets would have a greater force when formed by the conjoint action of the blower  $e$  and the fan-blades  $g'$ . The exhaust-fan  $f$  coöperates with the means used for forcing jets of air from the interior of the cylinder through the annular cleaning-chamber by exhausting the air from said chamber, so that the force of the air-jets is augmented.

The wool or other fibrous material to be cleaned may be supplied to the annular space between the casing and the cylinder by any

suitable means, such as by a sectional feed-apron  $g$ , which delivers the material to a pair of crushing-rolls  $h h$ , which in turn deliver it through a suitable opening in the casing to the annular space between the casing and the cylinder, the point of delivery being preferably at or near the smaller end of the cylinder.

$i$  represents a discharge spout or outlet communicating with the larger end of the casing, its location being shown in Fig. 3 and by dotted lines in Fig. 1, said outlet communicating with the larger end of the annular space between the casing and the cylinder. The wool fibers while being loosened and separated by the spikes in the annular space are gradually carried along from the smaller to the larger end of the cylinder, and when they reach the outlet  $i$  are forced through the latter by the air-pressure, the air that is forced outwardly through the cylinder escaping through the outlet  $i$ , and thus carrying with it the fibrous material that is loosened therein.

The annular space between the cylinder and casing may be properly termed a "cleaning-chamber."

I claim—

1. A machine of the character specified, comprising a rotary perforated cylinder, a casing forming an annular cleaning-chamber surrounding the cylinder, fiber loosening and separating devices in said chamber attached respectively to the cylinder and casing, means for forcing air under pressure into the cylinder at one end thereof, and means for equalizing the pressure of air throughout the length of the cylinder.

2. A machine of the character specified, comprising a rotary perforated cylinder, a casing forming an annular cleaning-chamber surrounding the cylinder, fiber loosening and separating devices in said chamber attached respectively to the cylinder and casing, means for forcing air under pressure into the cylinder at one end thereof, and fans within the cylinder having oblique blades arranged to deflect the air outwardly.

3. In a machine of the character specified, the combination of a rotary perforated cylinder, a casing forming an annular cleaning-chamber surrounding the cylinder, fiber loosening and separating devices in said chamber attached respectively to the cylinder and casing, means for forcing jets or currents of air through the perforations of the cylinder into the cleaning-chamber, and an air-exhausting apparatus communicating with the cleaning-chamber, whereby the force of the air-jets issuing from the perforations of the cylinder and passing through the material therein is augmented.

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

JAMES BRANDY.

Witnesses:

C. F. BROWN,

ROSWELL C. TAYLOR.