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**Patented Oct. 29, 1901.**

W. W. ADAMS, JR.

## APPARATUS FOR DEGREASING LEATHER.

(Application filed Jan. 18, 1901.)

(No Model.)

**3 Sheets--Sheet 2.**

Fig. 3.

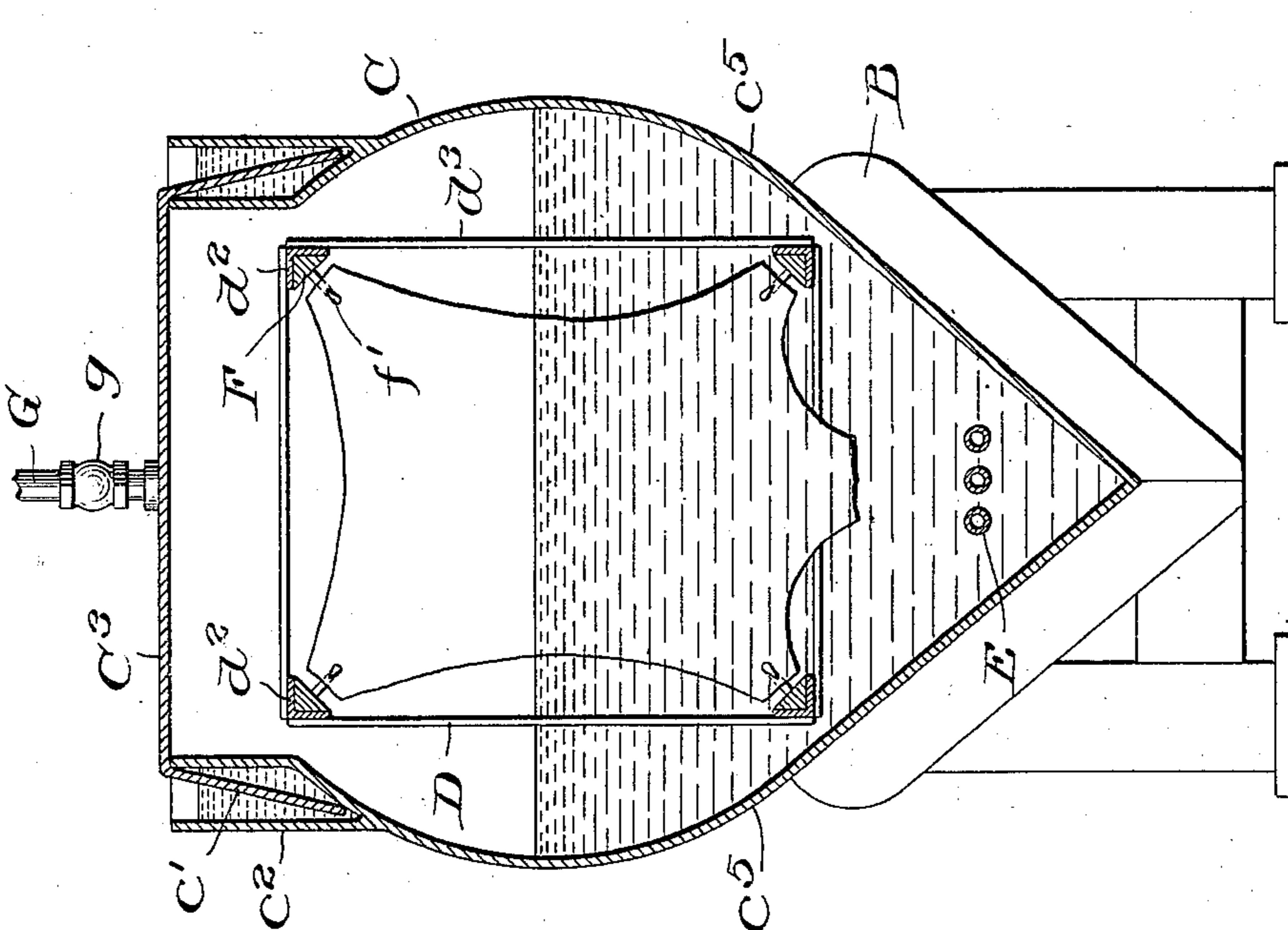
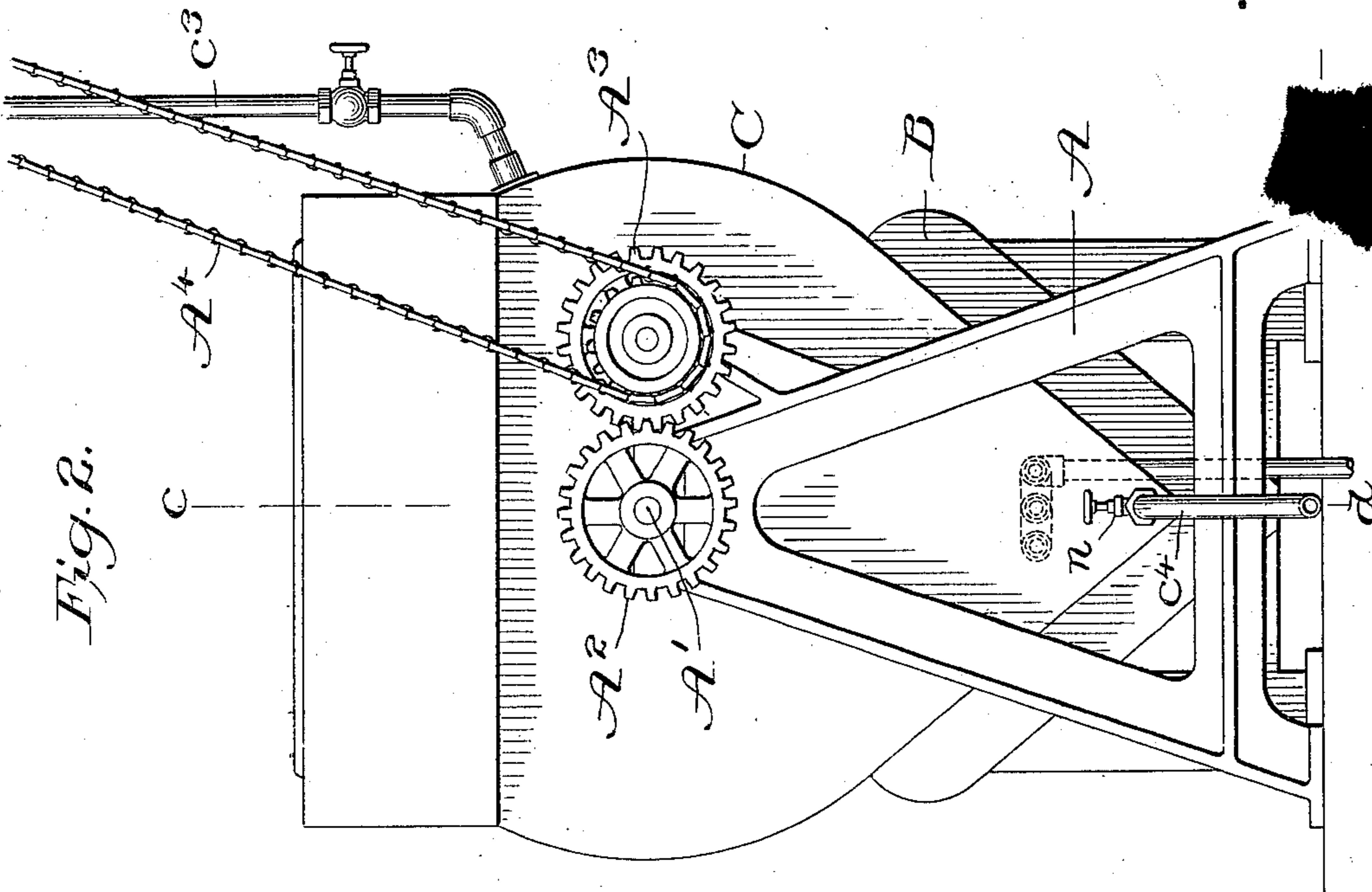


Fig. 2.



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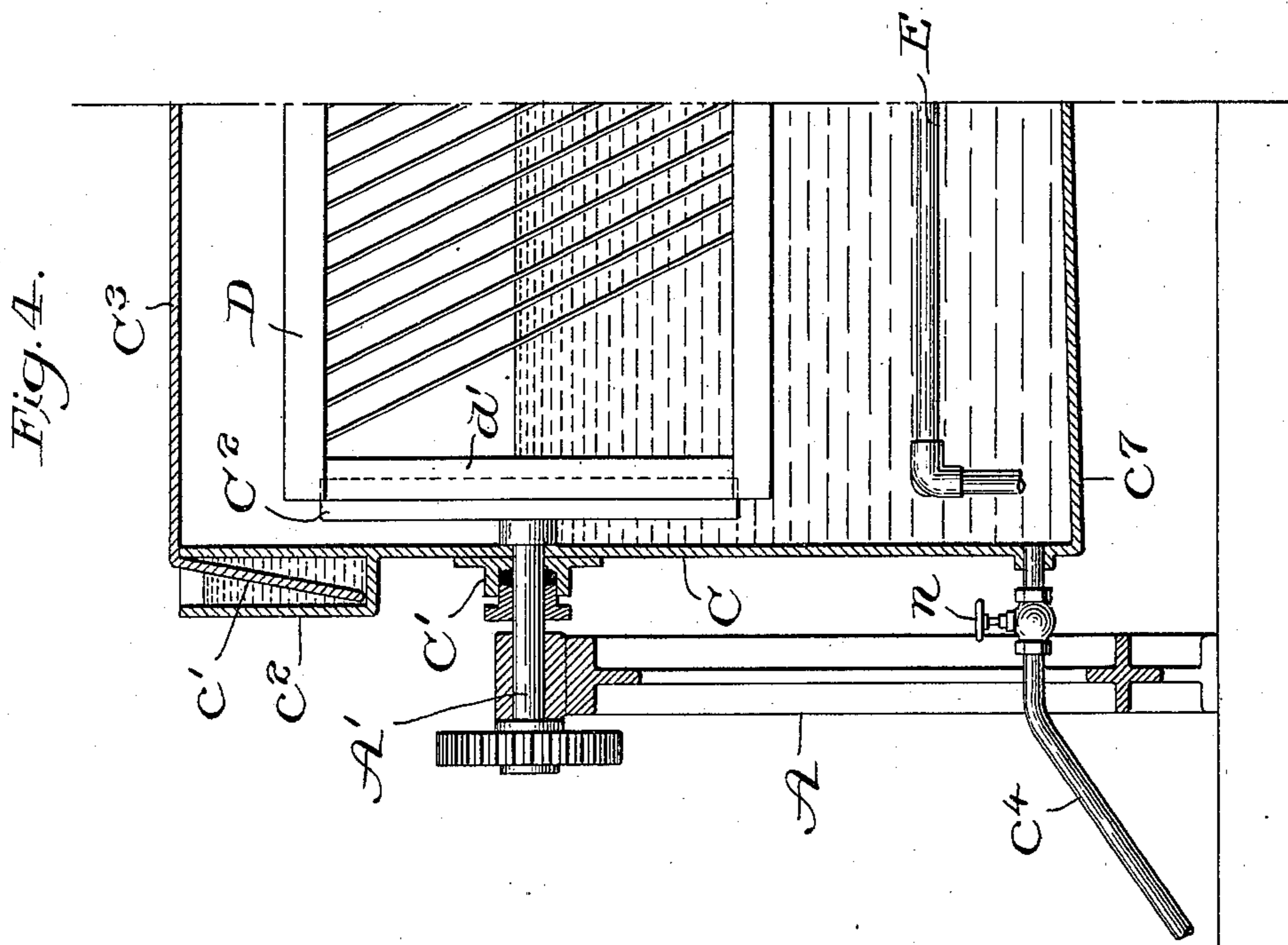
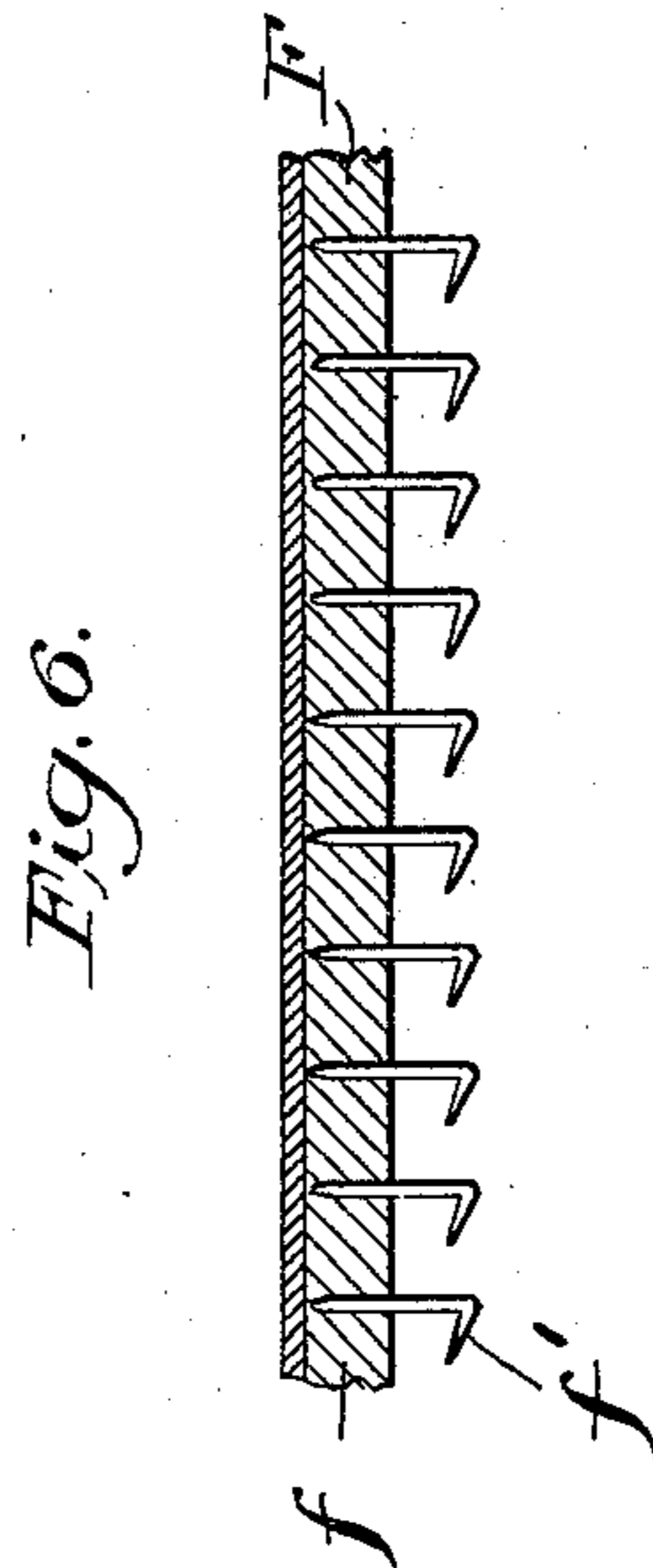
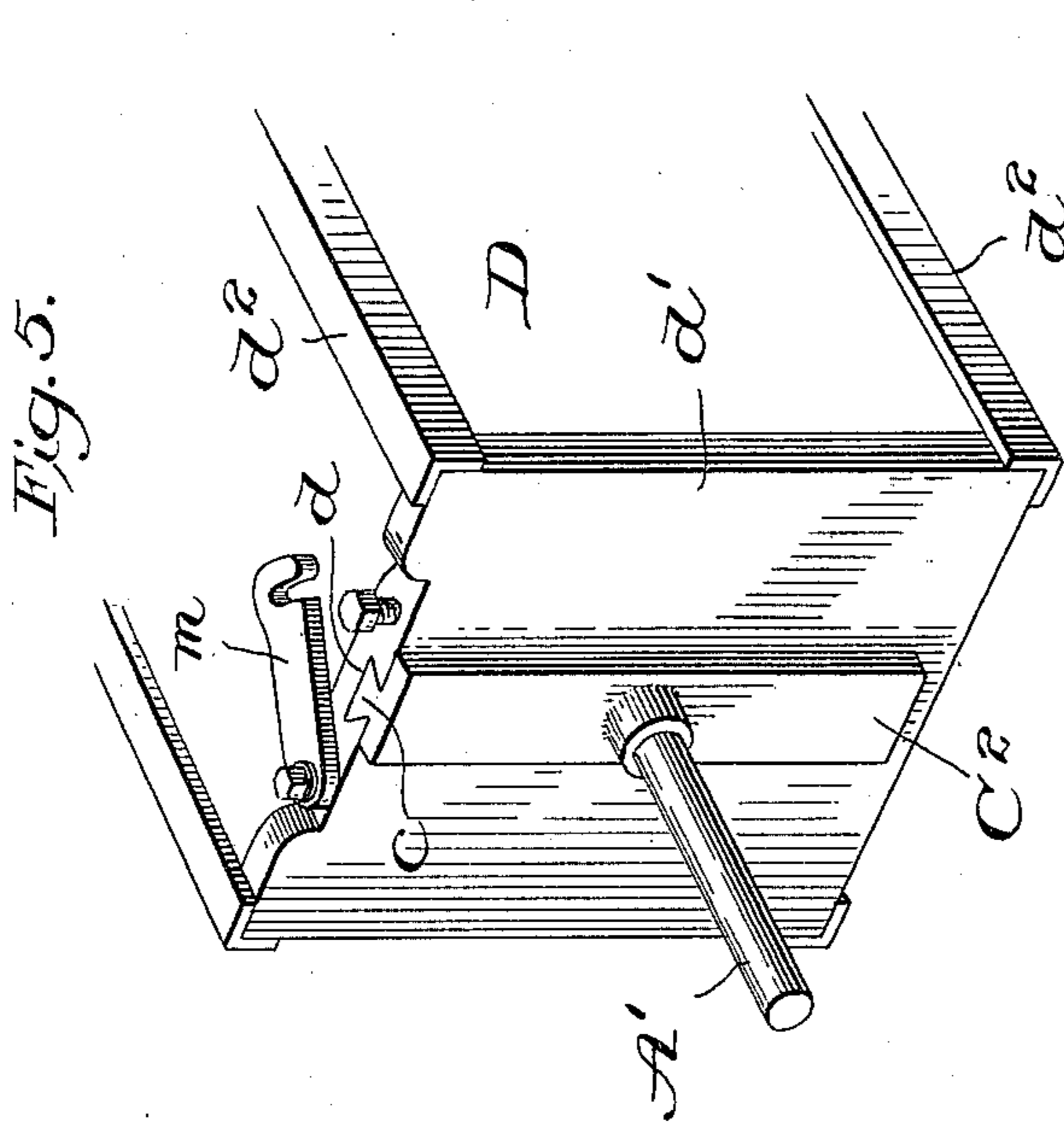
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# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR DEGREASING LEATHER.

SPECIFICATION forming part of Letters Patent No. 685,551, dated October 29, 1901.

Application filed January 18, 1901. Serial No. 43,821. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM W. ADAMS, JR., a citizen of the United States, residing at Philadelphia, in the State of Pennsylvania, have  
5 invented certain new and useful Improvements in Mechanical Apparatus for Degreasing Skins or Leather, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to improved mechanical apparatus for degreasing tanned skins, leather, and other like stock for the extraction therefrom of natural and applied grease.  
15 It is particularly applicable to the degreasing and necessary subsequent drying of tanned skins and leather, which is the chief purpose and use for which I have designed it and to which I have applied it.

20 In all or at least the principal processes and machines for degreasing leather and like stock heretofore employed the principle involved is the quiescent or still subjection of the stock to be treated usually by suspending it in a fixed position to the action of a  
25 volume of liquid grease solvent discharged against it or simply by immersing it in the solvent. In my view that principle is defective, the quickest and most effective results being attained by agitating the stock  
30 itself and bringing it forcibly against a volume of the liquid.

In my improved mechanism of extracting the grease and drying the skins the essential  
35 and distinguishing features are threefold—first, by means of suitable devices, hereinafter described, to support the skins in a taut condition—that is to say, flat and not slack—and so present them in rapid motion against a  
40 body of grease-extracting liquid in order that the grease will be removed completely, evenly, and rapidly from every part of the skin, a difficultly-attainable result, as a skin varies in thickness and density in its several parts  
45 and some parts contain and absorb more natural and applied grease than other parts; second, to quickly and thoroughly dry the degreased skin, but in a manner which will not injure or in any way change the density, pli-

ability, or leather character of the tanned 50 skin, and, finally, after drawing off the degreasing liquid not absorbed by the skin from the extracting-chamber of the machine to remove the naphtha or other grease solvent which has been taken up by absorption and  
55 then remains in the skin by volatilizing it by means of a rapidly-moving current of air admitted to the chamber or by means of radiated heat therein.

My improved machine, hereinafter de- 60 scribed, consists, primarily, in the combination, with a main supporting-frame and suitable driving-gearing and a fixed liquid-containing receptacle mounted in said frame, said chamber having suitable inlet and outlet dis- 65 charges and end stuffing-boxes or trunnions for the admission of rotatable driving-shafts, of a removable receptacle in skeleton form containing oppositely-disposed racks for stretching and supporting the skins, said re- 70 ceptacle being rotated within the liquid-containing chamber by said last-mentioned driving-shafts; also, in the same elements in combination when provided with steam or hot-  
75 air drying-coils suitably disposed within the lower portion of the liquid-containing receptacle, and discharge-openings with valve-governed leading-off tubes near the top of said chamber for drawing off the vapor of the naphtha volatilized in the skin in the final  
80 drying operation.

The essential and distinguishing features of construction in the several elements and in their combination, serving to identify and distinguish the device as embodying my in- 85 vention, will be hereinafter particularly referred to in the description of the machine, and pointed out in the claiming clauses.

In the accompanying drawings, illustrating my invention, Figure 1 is a side elevation of 90 the machine, showing part of the interior of the extracting-chamber in dotted lines. Fig. 2 is an end view of the same looking from the left-hand end of Fig. 1. Fig. 3 is a vertical cross-section on the line *a b* of Fig. 1. 95 Fig. 4 is a section on the line *c d* of Fig. 2. Fig. 5 is an elevation in perspective of the removable skin-containing device shown in

section in the center of Fig. 3, and Fig. 6 is a longitudinal section of one of the four supporting-racks shown in cross-section in center of Fig. 3.

5 A suitable supporting-frame is provided, consisting, as shown in Figs. 1, 2, and 4, of opposite end standards A A, with a driving-shaft A' suitably journaled in the apex thereof and carrying a cog driving-wheel A<sup>2</sup>, which  
10 gears with a cog-wheel A<sup>3</sup>, (see Fig. 2,) the latter driven by a sprocket-chain A<sup>4</sup>, connecting with and driven by suitable overhanging shafting, (indicated at A<sup>5</sup>, Fig. 1,) the latter carrying a usual clutch and lever,  
15 (indicated at A<sup>6</sup> in said Fig. 1.) Within these supporting-frame standards A A, aided by intermediate supporting devices B, (see Figs. 1, 2, and 3,) is maintained in fixed position a chamber or receptacle C, provided at each  
20 end with a stuffing-box C', through which pass the driving-shafts A'. These shafts extend into the said receptacle and carry on their inner ends a fixed wooden or metallic bar C<sup>2</sup>, the inner vertical face of which is provided with a tenon *c*, adapted to be adjust-  
25 ably connected by sliding to a mortise *d* on the external face of each end of the skin-containing rack D, hereinafter described. (See Fig. 5.) The receptacle C is closed through-  
30 out except at its top, for which a removable lid C<sup>3</sup> is provided, the rim edge *c'* of which fits into a double-rim flange *c''*, (see Figs. 3 and 4,) containing water, oil, or other suitable sealing liquid. As the receptacle C is  
35 intended to contain the liquid naphtha, which is constantly being injected and discharged in the operation of the machine, suitable inlet *c<sup>3</sup>* and discharge *c<sup>4</sup>* are provided, and the better to draw off the same I prefer to make  
40 the receptacle with a longitudinally-inclined bottom *c<sup>7</sup>* (see Figs. 1 and 4) and for strength and economy of material and space to construct its upright sides *c<sup>5</sup>* *c<sup>5</sup>* converging together at the base, (see Fig. 3,) forming sub-  
45 stantially a heart-shaped body in cross-section.

Entering and passing through and from the receptacle C, near the base thereof, is provided a steam or hot-air pipe E, coiled or  
50 otherwise disposed to give sufficient radiated heat within the receptacle.

The skin-containing rack D is in skeleton form and composed of two oppositely-disposed end plates *d'*, the external face of each  
55 of which is mortised vertically at *d* to adapt it to fit the tenon *c* on the end bar C<sup>2</sup> of the driving-shaft. (See Fig. 5.) These end plates *d'* are connected together at their four corners by intermediate angle-iron bars *d<sup>2</sup>*, the  
60 whole being preferably braced by braces *d<sup>3</sup>*. (See Fig. 1.) In each corner formed by the angle-bars *d<sup>2</sup>* a hook-rack F is secured in place. These hook-racks (shown in cross-section in Fig. 3 and longitudinal section de-  
65 tached in Fig. 6) consist of bars *f*, containing open sharp hooks *f'*. A skin, such as a calf-skin or goatskin, is usually of the shape

shown in outline in Fig. 3—that is to say, has four very nearly equidistant points. Hence it is fastened thereby to each of the four hooks  
70 *f'* and stretched thereon or rather fastened taut. It is obvious that the receptacle D can be made of different sizes and shapes in cross-section to adapt it to different shapes of skins or other stock to be degreased, and as it is  
75 to be removable from and to the receptacle C it can be lifted out therefrom bodily by overhead trolley-line hangers depending and removably attachable to the bars *d<sup>2</sup>*.

In the removable lid C<sup>3</sup> is provided a discharge-opening G, containing a spring controlled or weighted check-valve *g*, (see section in Fig. 3,) and said discharge-opening G is to be connected to any suitable vapor-pumping device for drawing off and deliver-  
80 ing the volatilized vapor of naphtha arising during the drying process.

The operation of the machine is as follows: The skin-containing receptacle D is removed from the naphtha-receptacle C and a series  
90 of skins are stretched on and fastened to the corner-hooks F, preferably arranged in inclined position, as indicated in Fig. 4, so that in the rotation of the rack D the liquid naphtha shall be dashed directly against the sur-  
95 face of the skins, on both sides thereof, which would not be the case if they were arranged vertically in the rack D. Moreover, when so arranged it will not be necessary to fill the  
100 receptacle C more than half full of naphtha, as indicated in Fig. 4. The latter is then lowered into the receptacle C, the tenon on the shaft-bar fitting the mortise on the rack end and the parts fastened together by lock *m*.  
105 The lid is then put in place on receptacle C and sealed. Motion being given to the driving-shaft, the rack D is rotated for, say, a half-hour in the naphtha, the time depending on the greasy character of the skins to be extracted. When completed, the liquid naph-  
110 tha is drawn off through the discharge-pipe, which is controlled by a valve *n*. The skins are then to be dried. Steam or hot air is admitted to the heating-coils and the naphtha absorbed by the skin will volatilize, the va-  
115 por being drawn off through the check-valved exit by the pumping apparatus indicated.

In my mechanical apparatus described the whole operation is not only cleanly and confined within the smallest possible area, but  
120 the stock to be extracted is carried through every step of my new process without any direct handling between the first and last steps thereof and without necessarily removing the skins from the machine until completely  
125 extracted and dried.

If desired, the supporting-rack D may after the skins have been acted on by the degreasing liquid be removed bodily from the receptacle C and the absorbed liquid naphtha in the  
130 skins be vaporized and the skins dried in a separate chamber or vessel, closed or otherwise, by radiated heat, or, if preferred, by subjecting them in such vessel to the drying

action of a direct current of air under rapid movement, either at common atmosphere temperature or (for more speedy results) at an increased temperature not over 150° Fahrenheit for naphtha, or at any higher temperature not in excess of 212° Fahrenheit for any other liquid grease solvent that may be substituted for liquid naphtha.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine for extracting grease from tanned skins and other like stock, the combination with a suitable supporting-frame and actuating-gearing, of a fixed liquid-containing receptacle adapted to be closed by a removable sealing cap or lid, and provided at each end with stuffing-boxes or trunnions and a rotatable shaft passing through the same; inlet and discharge openings in said receptacle, and a frame-like rotatable body, with means adapted to support therein a series of skins in separated and distended condition, and adapted also to be rotated within the liquid-containing receptacle, and with means at each end of said rotatable body adapted to removably attach it to and detach it from the rotatable shaft within said liquid-containing receptacle; substantially as described.

2. The combination in a machine of the character described, of a fixed liquid-containing receptacle having end hollow trunnions for the admission of rotatable driving-shafts, a removable lid and inlet and discharge openings, driving-shafts within said trunnions, actuating-gearing for the same, a suitable supporting-frame for said elements, and a frame-like rotatable body, with means at each end adapted to removably attach it to and detach it from the driving-shafts extending into the fixed liquid-containing receptacle, and with devices in said rotatable body adapted to separably support and fixedly maintain each of a series of skins therein during the rotation of the frame-like body; substantially as described.

3. The combination in a machine of the character described, of a fixed liquid-containing receptacle having end hollow trunnions

for the admission of rotatable driving-shafts, a removable lid and inlet and discharge openings, driving-shafts within said trunnions, actuating-gearing for the same, a suitable supporting-frame for said elements, and a frame-like rotatable body, with means at each end adapted to removably attach it to and detach it from the driving-shafts extending into the fixed liquid-containing receptacle, and with devices in said rotatable body adapted to separably support and fixedly maintain each of a series of skins therein during the rotation of the frame-like body, means to radiate heat within the liquid-containing receptacle, a check-valved discharge-opening in the latter and means to draw off the vapor from the same; substantially as described.

4. In a degreasing-machine of the character specified, the combination with a liquid-containing receptacle, of a rotatable frame-like body D contained therein, means for rotating the said frame-like body D within the said receptacle, the said frame-like body D being provided with interior hook-racks separately disposed to maintain the skins in distended condition within the frame-like body D between said interior hook-racks during rotation thereof.

5. In a degreasing-machine of the character specified, the combination with a liquid-containing receptacle, of a rotatable frame-like body D contained therein, means for rotating the said frame-like body D within the said receptacle, the said frame-like body D comprising oppositely-disposed end plates each having provisions for detachable connection with the driving means, interior hook-racks disposed between and supported by the said end plates to maintain the skins in distended condition within the frame-like body D between said interior hook-racks during rotation thereof.

In testimony whereof I have hereunto affixed my signature this 15th day of January, A. D. 1901.

WILLIAM W. ADAMS, JR.

Witnesses:

ANDREW V. GROUPE,  
HECTOR T. FENTON.