

No. 666,857.

Patented Jan. 29, 1901.

G. F. STENGEL.  
TANNING APPARATUS.

(Application filed Mar. 27, 1899.)

(No Model.)

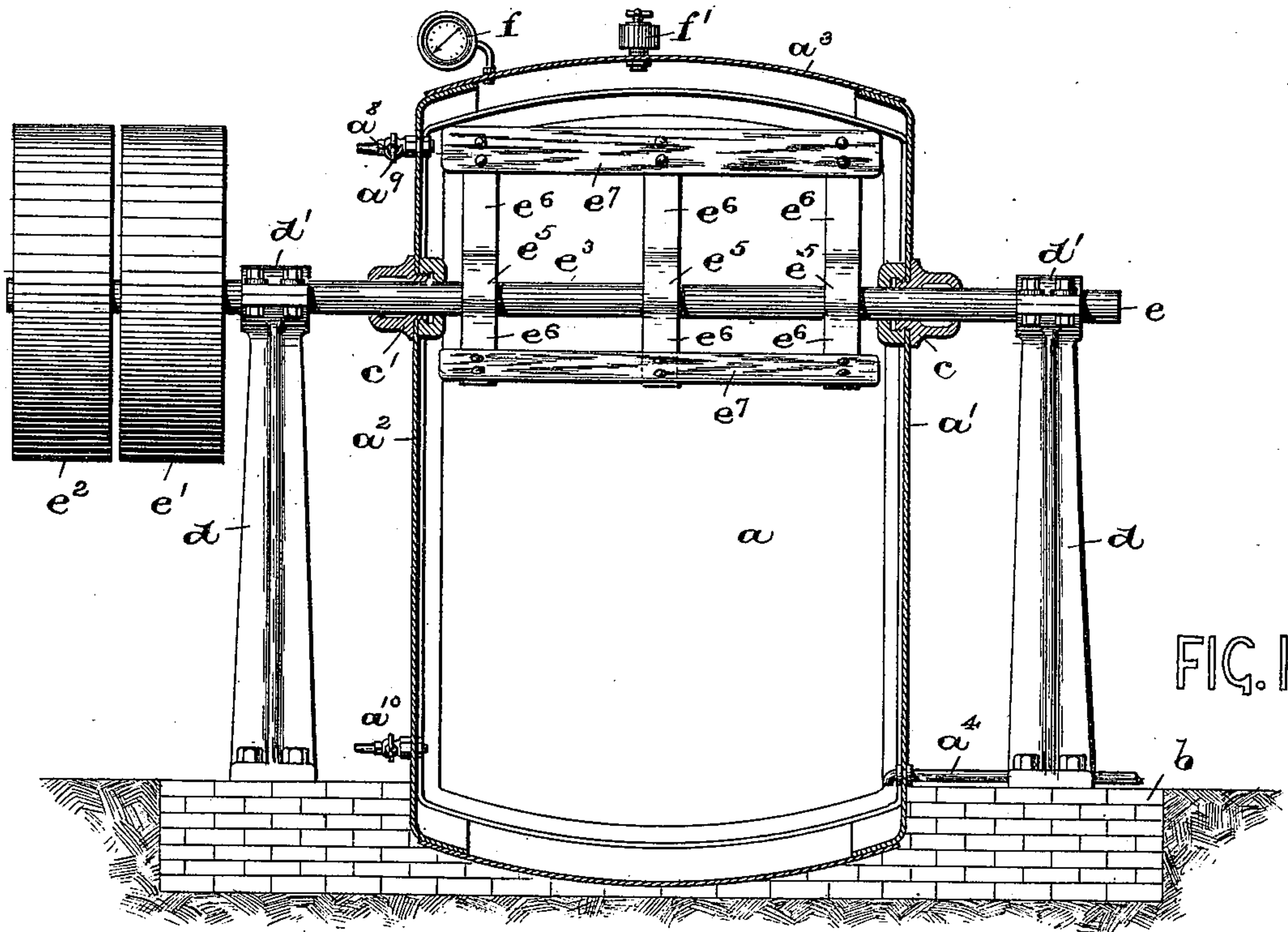


FIG. 1

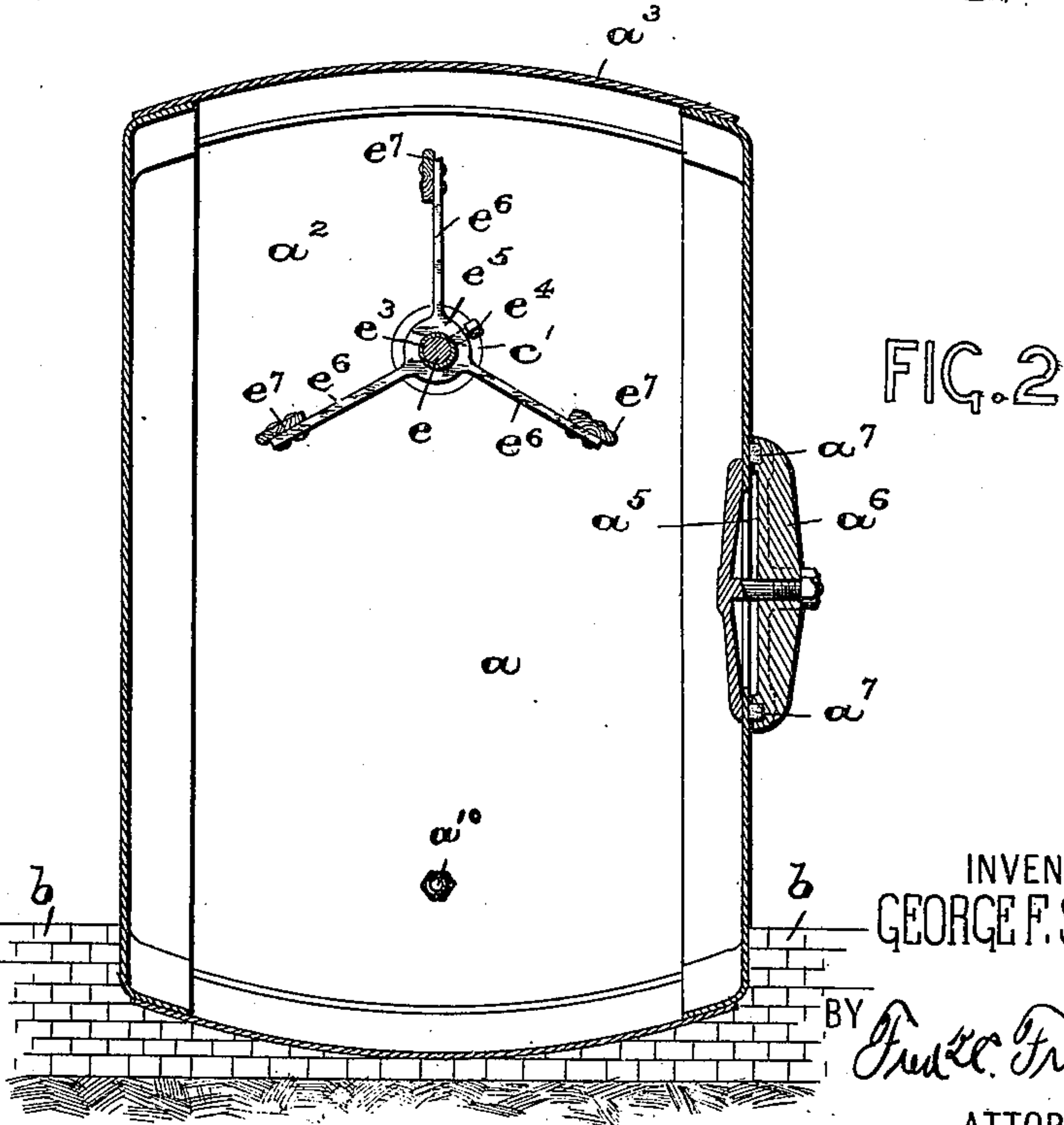


FIG. 2

WITNESSES:

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# UNITED STATES PATENT OFFICE.

GEORGE F. STENGEL, OF NEWARK, NEW JERSEY.

## TANNING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 666,857, dated January 29, 1901.

Application filed March 27, 1899. Serial No. 710,635. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE F. STENGEL, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Apparatus for Tanning Hides or Skins; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to a novel process of treating hides or skins in order that they may be properly tanned; and the invention furthermore relates to a novel construction of apparatus in which the hides or skins are to be treated.

My invention therefore has for its primary object to provide a simple and operative device in which the hides or skins are placed in the tanning liquor, which is kept under constant agitation and pressure to thoroughly open the fiber and pores of the skins or hides, and thereby softening the same and also producing great strength and toughness, as well as elasticity, all of which is imparted to the tanned skin or hide in less time and with less labor than by the ordinary tanning processes now ordinarily employed.

My invention consists in the novel arrangements and combinations of parts comprising an apparatus in which the hides or skins are to be treated.

The apparatus in which the hides or skins are to be tanned is illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section of the apparatus, and Fig. 2 is a vertical cross-section of the same.

Similar letters of reference are employed in said above-described views to indicate corresponding parts.

In said drawings,  $a$  indicates a suitable tank or vat, which is made of sheet metal, preferably of galvanized iron or other suitable metal which will not be affected by the tanning liquor to discolor the same and the hides or skins therein. The sides of the said tank or vat are indicated by the reference-letters

$a'$  and  $a^2$  and are provided with suitable laps  $a^{11}$ , whereby said sides may be properly fitted and secured together, as will be clearly evident. Said tank or vat  $a$  is suitably arranged in or upon a foundation  $b$ , or it may be suitably secured in position upon the flooring of a building. In the sides  $a'$  and  $a^2$  of said tank  $a$ , in positions nearer the top  $a^3$  of said tank than the bottom thereof, I have arranged certain bearings  $c$  and  $c'$ , substantially as illustrated in Fig. 1. Rotatively arranged in said bearings  $c$  and  $c'$  and supported in the bearings  $d'$  of suitably-placed pedestals  $d$  is a shaft  $e$ , on which is secured at one end thereof a fast pulley  $e'$  and a loose pulley  $e^2$  for rotating said shaft. Said shaft is provided with a sheet-metal covering  $e^3$ , of galvanized iron, which will not become affected by the tannic acid of the tanning liquor, or said shaft may be made of any other suitable material which will not discolor the tanning liquor. Secured to that portion of the shaft  $e$  within the inner walls of the tank or vat  $a$  by means of set-screws  $e^4$  or in any other suitable manner are any desirable number of collars  $e^5$ , which are provided with radially-arranged arms  $e^6$ , preferably three in number, as indicated in Fig. 2 of the drawings. Secured to or near the free ends of said arms  $e^6$  in any well-known manner are paddles or blades  $e^7$ , which are preferably made flat, as illustrated; but they may be of any other shape.

Leading into the bottom of the tank  $a$  is a suitable pipe  $a^4$ , through which the tanning liquor is forced into the tank. Said tank or vat is also provided in one or several of its sides with an opening, as  $a^5$ , which is closed by a suitably-constructed cover or door  $a^6$ , preferably provided with a packing-ring  $a^7$ , which cover or door can be opened to permit the placing of the hides or skins in the tank or vat  $a$  and also to provide a means for the removal of the finished product. At or near the top of the tank or vat  $a$  there is a cock  $a^8$ , provided with a suitable finger-piece  $a^9$  for opening and closing the same, and near the bottom of the tank there may be another cock  $a^{10}$ . Said tank or vat  $a$  may also be provided with a pressure-gage  $f$  and a safety-valve  $f'$ .

Having thus described the construction of the apparatus and in order that others may clearly understand the nature of my inven-

tion and the manner in which the same is to be put in practice, I will now describe the method of procedure in tanning hides or skins in the said apparatus.

5 The raw hides after having in the old and well-known manner been unhaired and soaked, are placed in said tank *a* and the cover or door *a*<sup>6</sup> tightly closed. Usually I place from twenty to thirty hides or skins in  
10 the said tank. This having been done, I open the cock *a*<sup>8</sup> and force the tanning liquor into the tank through the pipe *a*<sup>4</sup> by means of a pump or other suitable means for forcing the liquor therethrough under pressure until  
15 the tank or vat *a* is filled and the liquor will flow from said cock *a*<sup>8</sup>. This cock is then closed, and I keep on forcing in the tanning liquor until the gage *f* indicates a pressure, say, from thirty to forty pounds per square  
20 inch. Then I shut off the supply of the tanning liquor and start the rotation of the shaft *e* and the paddles or blades connected therewith. In this manner the liquor will become thoroughly stirred and under the heavy pres-  
25 sure will be forced into the pores of the hides or skins. As has been previously stated, the bearings *c* and *c*<sup>1</sup> are arranged near the top *a*<sup>3</sup> of the tank or vat, whereby the paddle on the shaft *e* is likewise arranged within the  
30 tank or vat near its upper part. This arrangement is absolutely necessary, since the hides or skins should be in the liquor beneath the paddle to prevent contact with the same and not interfere with the movement or cir-  
35 culation of the hides or skins, which is essential to permit the proper penetration of the skins or hides by the tanning liquor. This process more quickly plumps the hides and distends the fiber for the better reception of  
40 the tanning liquor. The liquor when thus taken up in the hides or skins will soon become exhausted or weakened and much lighter in its specific gravity. I then stop the rotation of the shaft and its paddles and  
45 open the cocks *a*<sup>8</sup> and *a*<sup>10</sup>, and by forcing fresh tanning liquor of the required specific gravity through the pipe *a*<sup>4</sup> into the tank *a* the exhausted or weakened liquor is driven out through said cocks. After a time these cocks  
50 are again closed, the shaft started, and the operation of injecting the tanning liquor into

the tank under pressure continued until the hides or skins are thoroughly tanned. After the leather is taken from the tank or vat it is scrubbed in the usual manner and then hung  
55 up to dry.

The apparatus may be employed for tanning skins or hides of any description and with bark or any other tanning materials.

Having thus described my invention, what I claim is—

1. An apparatus for tanning hides or skins, consisting, of a stationary tank or vat, having a sealed opening, a shaft in said tank rotatable in bearings in the sides and near the  
65 top of said tank, means for rotating said shaft, a metallic covering placed over said shaft of a nature not to be affected by the tanning liquor, and agitating-paddles on the metallic covering of said shaft, said paddles  
70 being arranged within the upper part of said tank or vat, away from contact with the hides or skins in the bottom of the tank or vat to permit of their free movement or circulation, when the apparatus is in operation, substan-  
75 tially as and for the purposes set forth.

2. An apparatus for tanning hides or skins, consisting, of a stationary tank or vat, having a sealed opening, a shaft in said tank rotatable in bearings in the sides and near the  
80 top of said tank, means for rotating said shaft, a metallic covering placed over said shaft of a nature not to be affected by the tanning liquor, agitating-paddles on the metallic covering of said shaft, said paddles be-  
85 ing arranged within the upper part of said tank or vat, away from contact with the hides or skins in the bottom of the tank or vat to permit of their free movement or circulation, when the apparatus is in operation, an inlet-  
90 pipe connected with the lower portion of said tank, an outlet cock or cocks in said tank, and a pressure-gage connected with said tank, substantially as and for the purposes set forth.

In testimony that I claim the invention set  
95 forth above I have hereunto set my hand this 23d day of March, 1899.

GEORGE F. STENGEL.

Witnesses:

FREDK. C. FRAENTZEL,  
WALTER H. TALMAGE.