

**No. 713,542.**

Patented Nov. 11, 1902.

C. M. WALTER.

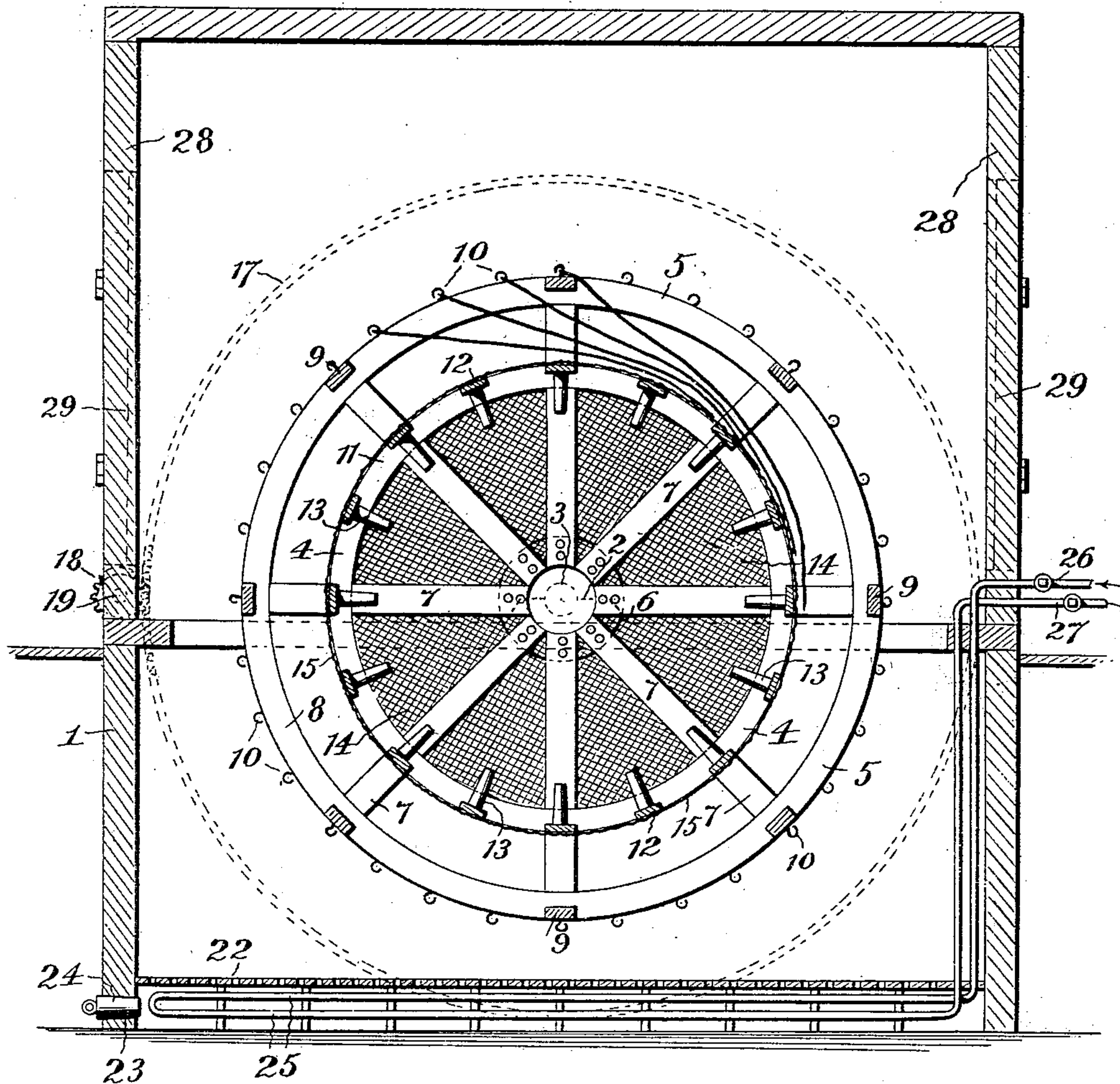
## TANNING AND LEACHING APPARATUS.

(Application filed Sept. 16, 1902.)

(No Model.)

**2 Sheets—Sheet 1.**

Fig. 1.



*WITNESSES*

Jas. E. Hutchinson.  
G. F. Downing.

*INVENTOR*

INVENTOR  
C. M. Walter  
By H. A. Seymour  
Attorney

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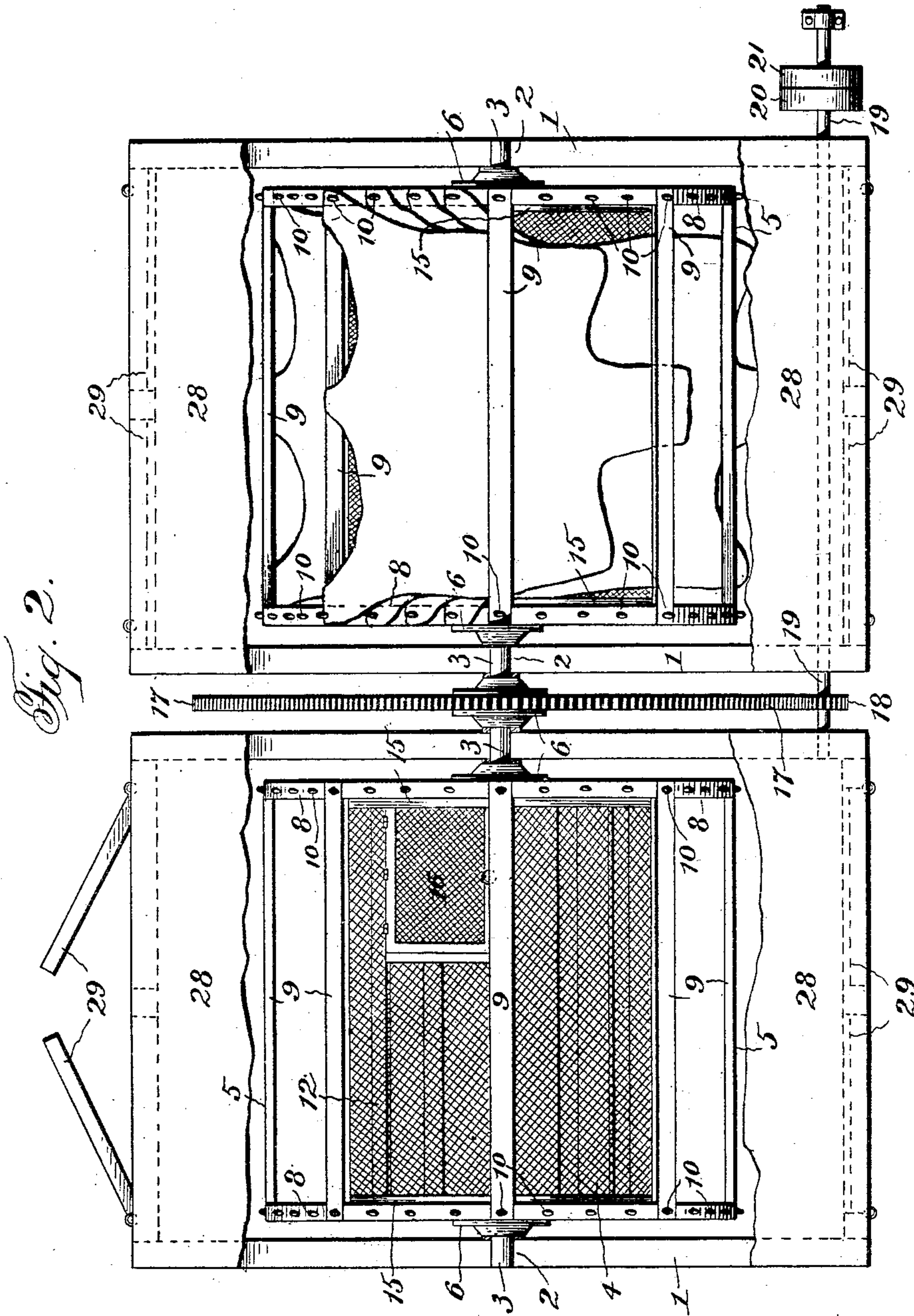
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WITNESSES

Jas. Hutchinson.  
G. F. Downing

INVENTOR

C. M. Walter  
By H. A. Seymour  
Attorney



# UNITED STATES PATENT OFFICE.

CHARLES M. WALTER, OF CINCINNATI, OHIO, ASSIGNOR TO THE INTERNATIONAL LEATHER COMPANY OF SOUTH DAKOTA.

## TANNING AND LEACHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 713,542, dated November 11, 1902.

Application filed September 16, 1902. Serial No. 123,617. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES M. WALTER, of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and  
5 useful Improvements in Leaching and Tanning Apparatus; 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  
10 make and use the same.

My invention relates to improvements in leaching and tanning apparatus, and more particularly to a machine of the "drum" type, one object of the invention being to provide a machine by means of which the process of leaching bark and that of rapidly tanning hides can be accomplished without any alteration in the structure of any of the mechanical features constituting the machine.  
15

20 A further object is to construct the apparatus in such manner as to avoid the use of concentrated liquor, such as heretofore employed in rapid tanning, can be avoided.

25 A further object is to so construct the machine that during the process of tanning the hides will be prevented from contact with the more concentrated portion of the liquor present with the sediment at the bottom of the vat.

30 A further and important object of my present invention is to obtain the best results in the leaching of all kinds of bark, wood-pulp, and, in fact, any vegetable tanning material to save space and to produce an apparatus which after the leaching process shall have been concluded can be used to tan hides in the liquor obtained from the tanning material.  
35

40 A further object is to produce an apparatus for the purposes stated which shall be simple in construction, easy to operate and control, and which shall in all respects effectually perform all the functions for which it is designed.

45 With these objects in view the invention consists in certain novel features of construction and combinations and arrangements of parts, as hereinafter set forth, and pointed out in the claims.

50 In the accompanying drawings, Figure 1 is a sectional view of an apparatus embodying

my invention. Fig. 2 is a plan view with the hoods broken away of two similar apparatus, showing the driving mechanism, the inner drum of one of said apparatus being removed 55 to facilitate the illustration of the manner of suspending the hides.

1 represents a vat provided upon the upper edges of its sides with bearings 2 for the journals or gudgeons 3 of the revoluble parts of the apparatus, said revoluble parts comprising an inner closed drum 4 and an outer open drum or frame 5. A description in detail of the construction and arrangement of these parts will now follow.  
60 65

The journals or gudgeons 3, above referred to, are secured to or provided with disks 6, and to each of these disks radiating arms 7 (preferably eight in number) are rigidly secured. To the outer extremities of each series of radiating arms a rim 8 is secured, and the two rims 8 are connected by a series of (preferably eight) slats 9, the ends of said slats being set into recesses in the rims and secured in place in any suitable manner. To the rims 8 of the open drum or frame thus formed a number of hooks 10 are secured, three hooks being preferably employed on each rim between each pair of radiating arms and one coincident with each of said arms 80 for the attachment of hides, as hereinafter more fully explained.

At points about a foot and a half (more or less, according to the size of the apparatus) from the rims 8 smaller inner rims 11 are secured to each series of arms 7, and these two series of inner rims are connected by a series of staves 12, the ends of which are set into recesses in the respective inner rims 11 and secured in place by any suitable means. I prefer in the inner drum thus formed to employ a greater number of staves than in the outer open drum and to so arrange said staves that half of them will be coincident with the arms 7 and the other half alternate with these, the framework of the inner drum thus comprising the radiating arms, two rims, and sixteen staves, and each of these staves is provided with a series of inwardly-projecting pins 13. At the ends of the inner drum segments of fine-mesh wire-gauze 14 close the spaces between the arms 7. Wooden strips  
85 90 95 100



15 are bent around the said inner drum and secured to the staves thereof, and to said wooden strips fine-mesh wire-gauze is secured to give to the inner drum a perforated peripheral wall, and in this peripheral wall a door 16 is provided to permit ready access to the interior of the drum.

One of the journals or gudgeons of the revolvable frames is extended beyond the outer wall of the vat or is made double and secured to a large driving-gear 17. The body of this gear may be conveniently made of wood and the periphery composed of a series of metallic toothed segments. Motion is imparted to the gear 17 by means of a pinion 18, secured to a driving-shaft 19. The shaft 19 may be conveniently mounted in bearings suitably located on a series of vats, as shown in Fig. 2, and the said shaft is provided with fast and loose pulleys 20 21 for the accommodation of a driving-belt from any convenient source of power. When a number of apparatus are used in series, as is usually the case, a driving-gear 17 is placed between each two vats and connected therewith, as shown in Fig. 2. By the employment of driving mechanism such as above described great leverage for propelling the arms is obtained.

Each vat is provided at a point approximately eighteen inches above its bottom with a false perforated bottom 22, and with the space between the two bottoms an outlet-duct 23 communicates, said outlet-duct being normally closed by means of a plug 24. A steam-pipe 25 for heating the contents of the vat is also located under the perforated false bottom and provided with valved inlet and outlet pipes 26 and 27.

The vat is provided with a hood 28, which incloses the revolvable drums, which project some distance above the top of the vat. Said hood is provided at its ends with doors 29. This hood and its doors constitute important features of my invention, for by their use I am enabled to completely inclose the contents of the vat, and thus cause the same to be quickly heated, and by opening the doors more or less the temperature of the contents of the vat can be easily and accurately regulated and controlled.

In operating the apparatus to leach bark the vat is supplied with water, preferably at a temperature of about 70° Fahrenheit, until the level of the water is approximately twenty inches (more or less) from the center of the drums, when an outer drum having a diameter of about nine and one-half feet and an inner drum having a diameter of eight feet are used. The inner drum is then filled with ground bark to within about two feet of the top, and then after the door in the inner drum shall have been closed the drums will be set in motion by means of the gearing hereinbefore described. The doors in the hood are also closed. After the drums have been rotating for a time—say about two hours—the water

in the vat will be gradually heated by permitting steam to pass through the pipe 25, care being taken that the temperature of the liquor does not rise above 150° Fahrenheit, except when hemlock-bark is being treated, when 160° Fahrenheit is preferable. After the drums have been rotating four or five hours they will be stopped and the liquor drawn into any convenient tank to cool off. The inner drum will then be opened, the leached bark taken out, and the apparatus is ready for another leaching operation or for tanning of hides or skins. After the liquor has been cooled it is run back into the leaching-vat, the inner drum filled with about one cord of fresh bark, the door closed. The prepared hides be placed in position, each with one end attached to hooks on the outer open drum. The hooks are located equidistant apart, and will accommodate thirty-two (more or less) whole hides. The hides need no coloring or handling, but can be placed in the apparatus direct from the beam-house. The hides can be put directly over the hooks, one at each hind shank, or a string can be passed through a hole in the shanks and fastened to the hooks. The heads are allowed to hang down, and the hides hang one over another. When the hides have been properly placed in position, the apparatus will be set in motion and allowed to run for some hours—say from forty-eight to sixty hours, according to the weight and condition of the hides. Sixty hours will be sufficient to tan the heaviest steer-hides into sole-leather. After the hides are taken off, ready for drying and finishing, steam will be permitted to flow through the pipe in order to completely leach the bark in the inner drum.

In case the density of the liquor has diminished a quantity of new bark can be inserted into the inner drum.

Should it be desired to use part bark and part extract, the hides may be placed in the inner drum without any fastening and extract added to the leached liquor.

Rapid tanning in my improved apparatus has many advantages over previous drum processes of which I am aware on account of the safety of the hides at all times and the absolute control of temperature. This is made possible, as hereinbefore stated, by opening or closing the large doors in the ends of the hood surrounding the apparatus. In processes now in use strong liquors are used, and strength can only be maintained by adding concentrated liquor or extracts to the original liquor, while I accomplish rapid tanning with liquors of same strength as used in old yard tannage and can tan with bark liquors alone without any addition of extracts at all. This is accomplished through the use of a large quantity of liquor, which will not run down in strength enough to prevent keeping the hides supplied with the necessary tanning material. The strength is easily maintained by running a quantity of fresh-ground bark



to the inner drum while the hides are tanning between the inner and outer drums. Heaviest steer-hides are thus tanned within sixty hours.

5 I am enabled to use perfectly-cool liquors by leaving the doors of the hood open and the liquors need not be of any greater density than in ordinary yard tannage. I can use bark alone and need no extracts.

10 Slight changes might be made in the details of construction of my invention without departing from the spirit thereof or limiting its scope, and hence I do not wish to limit myself to the precise details herein set forth.

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

1. In a leaching and tanning apparatus, the combination with a tank, of a perforated, rotatable leaching-drum and means exterior of and carried by said drum for supporting hides.

2. In a leaching and tanning apparatus, the combination with a tank, of a perforated, rotatable leaching-drum, means exterior of and carried by said drum for supporting hides, and a hood mounted on the tank and inclosing said drum and hide-supporting means.

3. In a leaching and tanning apparatus, the combination with a tank, of a perforated, rotatable leaching-drum, means exterior of and carried by said drum for supporting hides, a hood mounted on the tank and inclosing said drum and hide-supporting means, means for heating the contents of the tank and means for controlling the temperature of said contents.

4. The combination with a vat, of a drum having perforated walls, means for rotating said drum through fluid in the vat, and means exterior of and carried by said drum for supporting hides to be drawn through the fluid in the tank.

5. The combination with a vat, of devices mounted therein for leaching bark, and means located exteriorly of and carried by said devices for drawing hides through the liquor in

the vat resulting from the operation of said leaching devices.

6. The combination with a vat, of a closed perforated drum mounted therein for leaching bark, and a drum or frame carried by the leaching-drum for drawing hides through the liquor in the vat resulting from the leached bark.

7. The combination with a vat, of an open drum constructed to support hides, a closed perforated drum within and spaced from the open drum, and means for rotating said drums simultaneously through fluid in the tank.

8. The combination with a vat, of a drum comprising a series of radiating arms, rims secured to said arms, slats connecting said rims, pins projecting inwardly from said slats and wire-gauze closing the spaces between the slats and between the radiating arms, and means for rotating said drum.

9. The combination with a vat, of two series of radiating arms, a disk connecting the inner ends of the arms of each series, gudgeons projecting from said disks and mounted on the vat, two concentric rims secured to each series of radiating arms, slats connecting the rims of each pair, hooks on the outer rims, wire-gauze closing the spaces between the slats connecting the inner rims and means for rotating said devices.

10. The combination with a vat, of two concentric drums mounted therein and rotatable together, wire-gauze constituting walls of the inner drum, gudgeons secured to said concentric drums, a large gear secured to one of said gudgeons, a pinion for transmitting motion to said gear, and means for transmitting motion to said pinion.

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

CHARLES M. WALTER.

Witnesses:

A. C. H. JOHNSTONE,  
C. B. WILLIAMS.