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PATENTED JAN. 8, 1907.

G. R. PRIDE.

APPARATUS FOR EXTRACTING TURPENTINE FROM WOOD.

APPLICATION FILED AUG. 11, 1906.

Fig. 1.

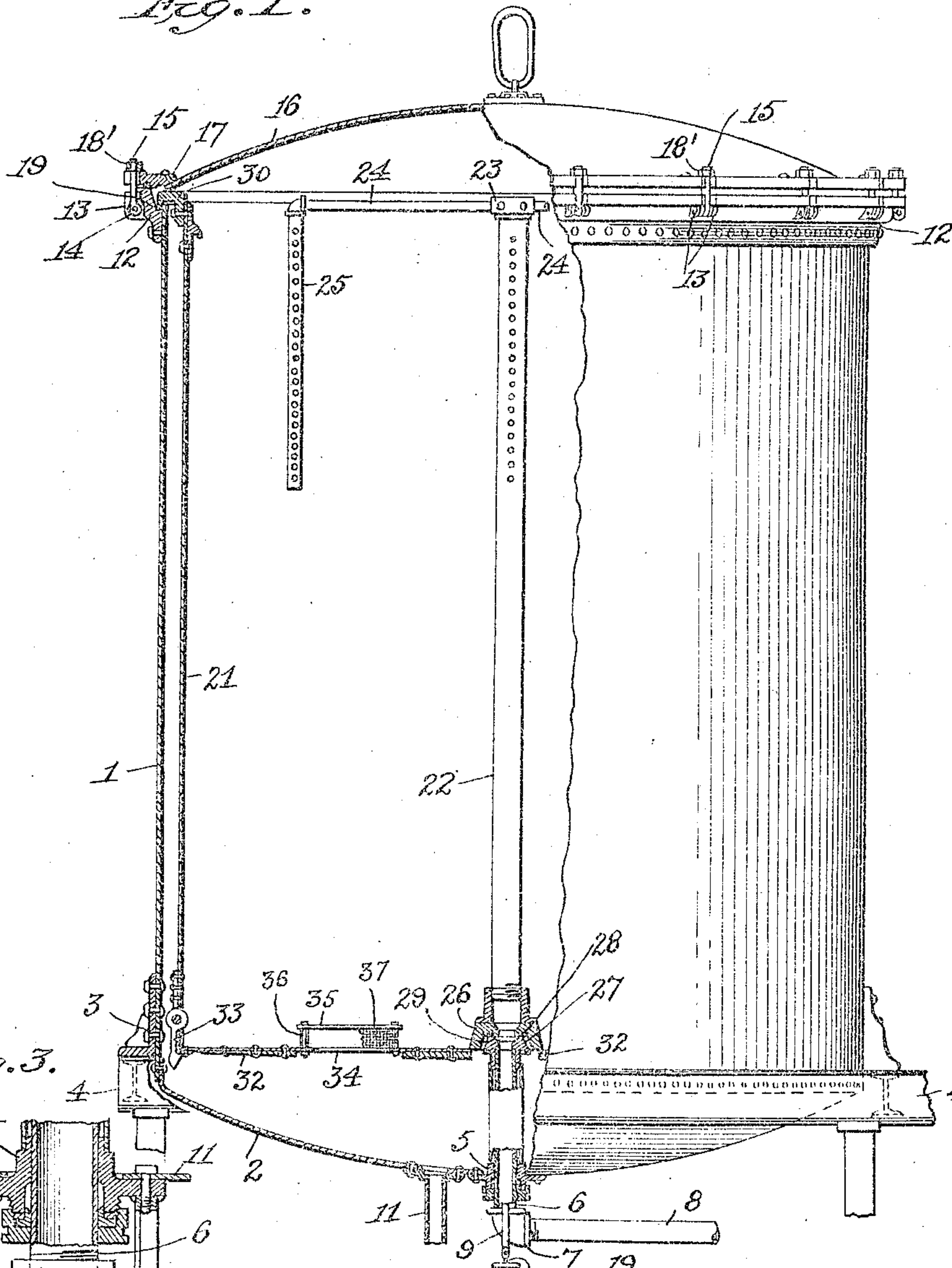
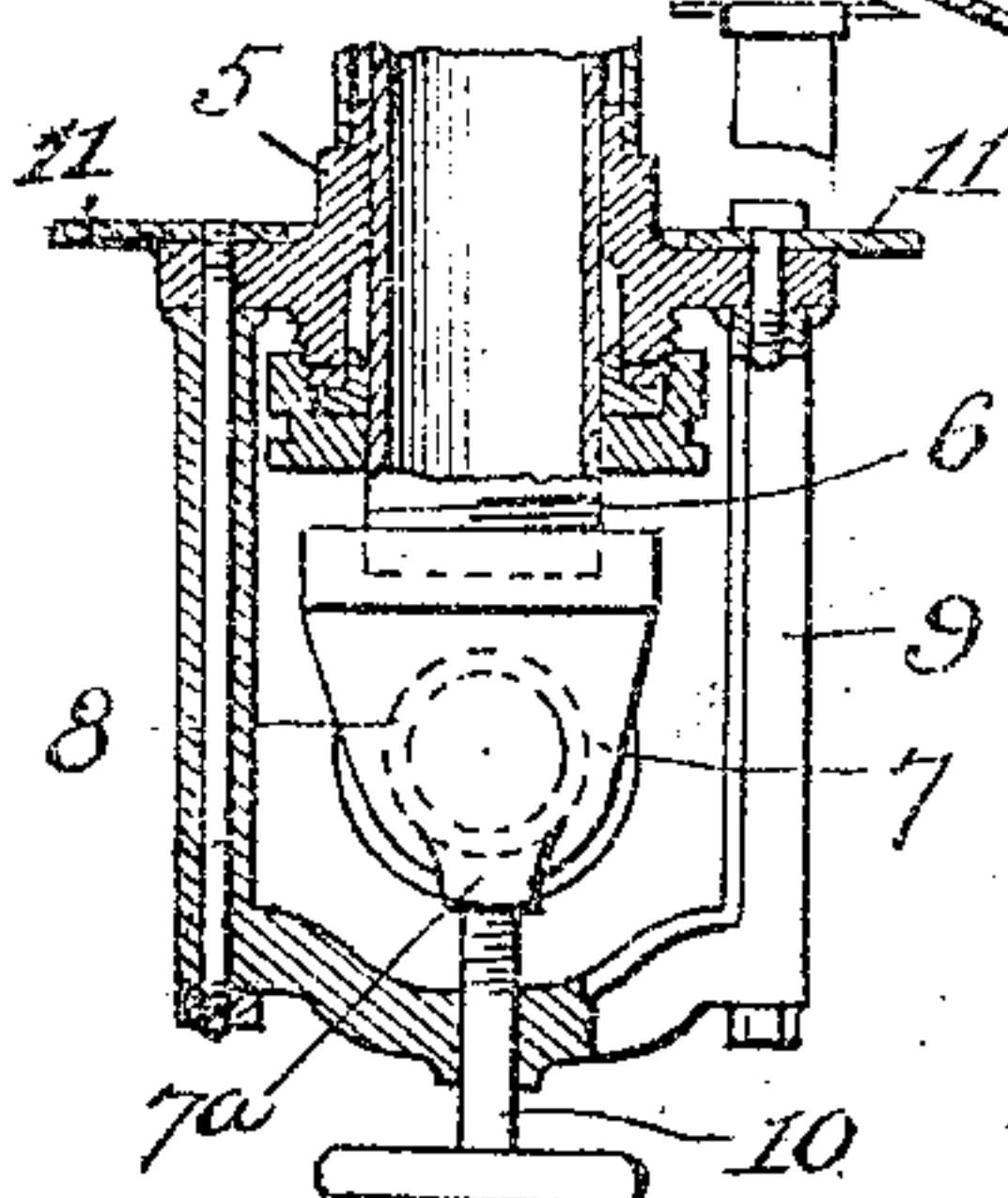


Fig. 3.

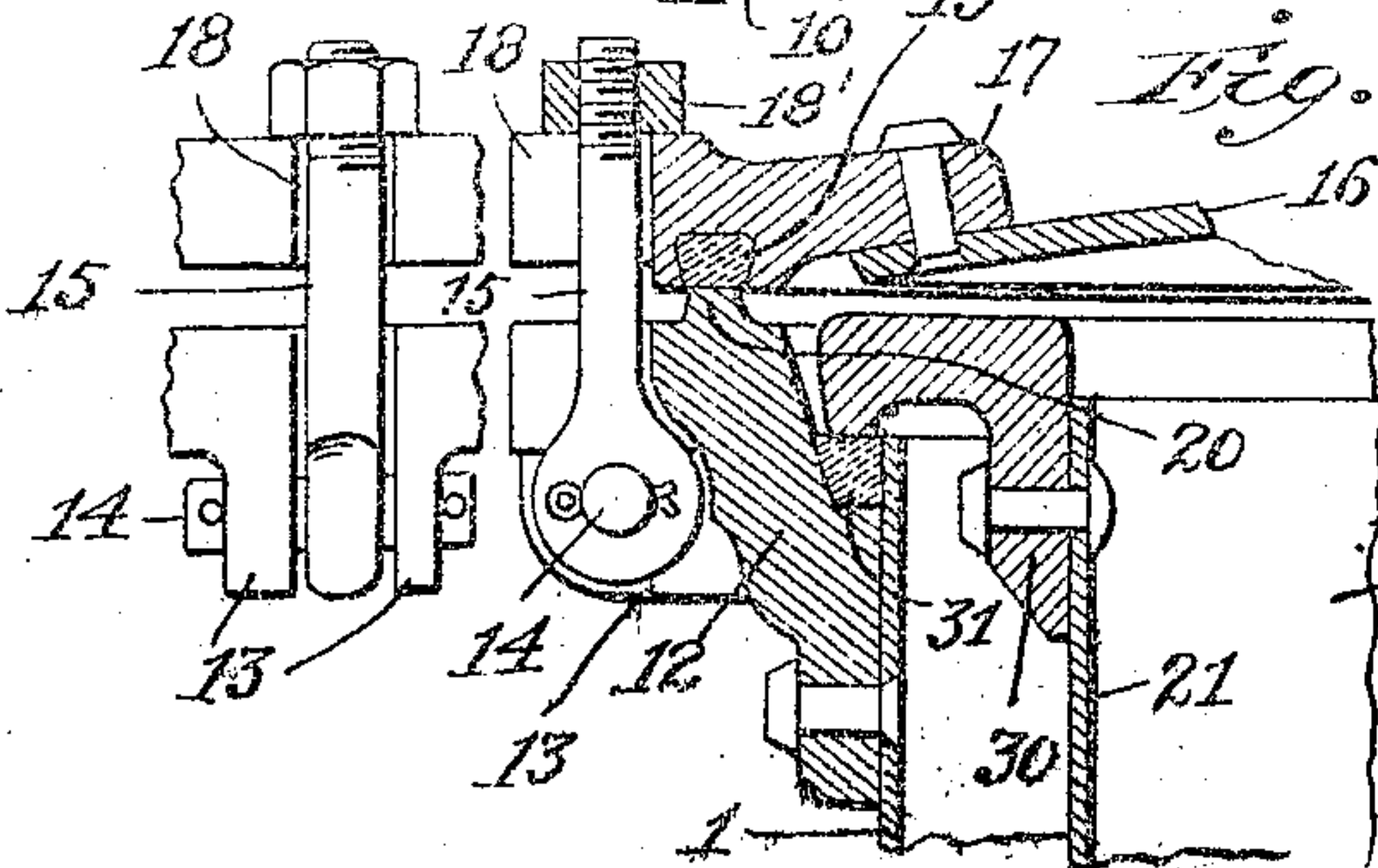


Witnesses

Edwin L. Jewell

Percy B. Hills

Fig. 2.



Inventor

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# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR EXTRACTING TURPENTINE FROM WOOD.

No. 840,955.

Specification of Letters Patent.

Patented Jan. 8, 1907.

Application filed August 11, 1906. Serial No. 330,151.

*To all whom it may concern:*

Be it known that I, GUY R. PRIDE, a citizen of the United States, residing at Jacksonville, in the county of Duval, State of Florida, have invented new and useful Improvements in Apparatus for Extracting Turpentine from Wood, of which the following is a specification.

My invention relates to devices for extracting turpentine and other products from wood by subjecting the wood in a closed retort to the action of steam, and has for its main object to provide certain improvements in the construction of the same whereby the steam may be introduced to the carrier at the bottom thereof and yet be forced to pass downward through the wood contained in said carrier.

My invention also embodies certain other novel features, as will be hereinafter more definitely pointed out and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation, partly in section, of my improved retort and wood-carrier. Fig. 2 is an enlarged detail view of the connection between the lid of the retort and said retort and also the contact between the carrier and the retort. Fig. 3 is a detail view of the steam-admission pipe, the steam-supply pipe, and their connections, taken at a right angle to Fig. 1.

Similar numerals of reference denote corresponding parts in all the views.

In the said drawings the reference-numeral 1 denotes the retort, the same being open at its top and having its curved bottom 2 riveted steam-tight to its sides at 3, the whole being supported by the framework 4.

Tapped centrally through a stuffing-box 5 in the bottom 2 is a steam-admission pipe 6, the same being connected by an angular fitting 7 with a steam-supply pipe 8, leading to a source of steam-supply. A yoke 9, fixed to the under side of the bottom 2 of the retort, carries a screw-rod 10, contacting with a shoulder 7<sup>a</sup> on fitting 7 to adjust the steam-pipe 6 vertically, as best shown in Fig. 3.

Further detailed description of these parts, however, is omitted, the same being separately described and claimed in an application filed of even date herewith, Serial No. 330,152, it being essential only to the present invention that there shall be a vertical adjustment of the steam-admission pipe 6.

Also tapped into the bottom 2 of the retort is a pipe 11 for carrying off the vapor laden with the turpentine and conducting it to the condenser.

The retort 1 at its open top is provided exteriorly with an annular rim 12, riveted steam-tight thereto and provided at intervals with pairs of lugs 13, carrying bolts 14, upon which are pivoted screw-bolts 15. A lid or cover 16 for said retort has riveted thereto at its edge a ring 17, that is recessed at 18 at intervals corresponding with the screw-bolts 15, which latter are adapted to be turned up into said recesses and by means of nuts 18' firmly unite said cover and retort. In order to make the joint between said parts steam-tight, I form the same by an annular packing 19, located in an annular groove in the under side of the ring 17, with which a rib 20 on the rim 12 of the retort 1 engages.

The carrier for the wood to be treated consists of a cylindrical body 21, having fixed centrally therein at its bottom a steam-pipe 22, the same extending upwardly to practically the top of said carrier, where it terminates in a head 23, from which radiate horizontal pipes 24, carrying at their outer ends downwardly-extending perforated pipes 25, said pipe 22 being also perforated for about one-third of its length from its upper end. The bottom of the carrier is provided centrally with a fitting 26, that receives the lower end of pipe 22, and is recessed at 27 on its under side to receive the upper end of steam-admission pipe 6, a suitable packing-ring 28 of relatively broad area being inserted therein, against which the relatively narrow upper edge 29 of the steam-admission pipe 6 abuts when said carrier is located in position in the retort 1. Said carrier is provided at its upper edge with an annular ring 30, downturned exteriorly to rest on a packing-ring 31, located between the upper edge of the retort 1 and its rim 12, thereby forming a steam-tight joint at this point between said carrier and the retort.

The bottom of the carrier is formed of two semicircular downwardly-opening sections 32, normally retained in their closed position by catches 33 and being provided with a series of openings 34 for the escape therefrom of the vapor, said openings each having located thereover an imperforate plate 35, supported at a distance above its opening by a series of



bolts 36 and having a foraminous screen 37 passing around said bolts and filling the space between said plate 35 and the carrier-bottom. Further detailed description of these parts, however, is also omitted, the same forming the subject-matter of a separate application filed of even date herewith, Serial No. 330,153.

From the above description the operation of my improved construction will be understood as follows: The carrier removed from the retort has charged therewith the wood to be treated and is then placed into said retort, being lifted and deposited therein by a suitable derrick or crane, so that its annular ring 30 rests on the packing-ring 31 of the retort. This will bring the packing-ring 28, located centrally in the bottom of said carrier, against the upper edge 29 of the steam-admission pipe 6, which latter may then be adjusted vertically by means of screw-rod 10 to afford a steam-tight joint between the parts, the weight of the carrier and its load being ample to produce this result not only at the steam-admission pipe 6, but also at the packing-ring 31. The cover 16 is then placed in position and fastened steam-tight through packing 19 and bolts 15, and the retort and its contents are ready for the admission of steam. The steam admitted at the bottom then passes upwardly through pipe 22 and thence through pipes 24 and 25, escaping therefrom through the perforations therein. The packing 31 affording an annular steam-tight joint between the carrier and the retort 1 at their upper ends, the only escape for said steam and the turpentine-vapor extracted from the wood will be through the openings 34 at the bottom of the carrier, said steam passing downward through the wood and after passing out through the openings 34 being carried off by means of the pipe 11 to the condenser.

From the above description of the operation it will be seen that I am able to provide a removable carrier for the wood which when located in the retort provides a steam connection with the interior of said carrier that may be effected exteriorly of the retort and at the same time provides for a downward passage of the steam through the wood, whereby the extraction of the turpentine is greatly facilitated.

When the action of the steam on the wood is completed, the cover and carrier are removed and, if desired, a fresh carrier charged with wood inserted, while the first carrier is being emptied by opening its doors 32 and recharged, thus obtaining a substantially continuous operation of the retort.

It will be understood that while I prefer to carry off the steam and turpentine through the openings 34 in the bottom of the carrier I do not wish to limit myself to said specific construction, the whole object being to sub-

ject substantially the whole mass within the carrier to the action of steam passing there-through in a downward direction, which may be accomplished in any suitable manner.

While I have described my invention as particularly applicable to the extraction of turpentine from wood, wherein it is desirable to treat the wood in large masses, it will be understood that I do not confine myself to such use, as the device is equally applicable to other uses wherein masses of material are to be treated with gases or vapors either for the extraction of some component part or parts of for other purposes.

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

1. In apparatus of the character described, a retort, a removable carrier within said retort, means for admitting steam to said carrier in said retort, means for conducting the steam to the upper part of the carrier, and means for causing said steam to follow a downward path in said carrier.

2. In apparatus of the character described, a retort, a removable carrier within said retort, means for conducting steam into said carrier in said retort at the bottom of said retort, means for conducting the steam to the upper part of the carrier, and means for causing said steam to follow a downward path in said carrier.

3. In apparatus of the character described, a retort, a removable carrier within said retort, means for forming from the exterior a steam-admission connection between the bottoms of said carrier and said retort when said carrier is inserted therein, means for conducting the steam to the upper part of said carrier, and means for causing the steam to follow a downward path in said carrier.

4. In apparatus of the character described, a retort, a removable carrier within said retort, and means for forming a steam-tight connection between the upper ends of said carrier and retort.

5. In apparatus of the character described, a retort, a removable carrier within said retort, and means for forming a steam-tight connection between the upper ends of said carrier and retort by the seating of the carrier within said retort.

6. In apparatus of the character described, a retort, a removable carrier within said retort, and a packing-ring interposed between the upper meeting ends of said carrier and retort forming a steam-tight connection by the seating of the carrier within said retort.

7. In apparatus of the character described, a retort, a removable carrier within said retort, a cover for said retort, and means for forming a steam-tight connection between the upper ends of said carrier and retort and between said cover and retort.

8. In apparatus of the character described,



a retort, means for supplying steam to said retort at the bottom thereof, means for carrying said steam to substantially the top of said retort, means for discharging said steam into said retort at the upper end thereof, and means for carrying off said steam at the bottom of said retort.

9. In apparatus of the character described, a retort, a carrier within said retort, a steam-admission pipe passing into the bottom of said retort, a steam-pipe in said carrier communicating with said steam-admission pipe and leading to and discharging at the top of said carrier, and means for taking off said steam at the bottom of said carrier.

10. In apparatus of the character described, a retort, a removable carrier within said retort, a steam-admission pipe in the bottom of said retort, a vertical steam-pipe in said carrier adapted to register steam-tight with said admission-pipe when said carrier is in position, said pipe extending to substantially the top of said carrier, horizontal pipes radiating from the top of said pipe in said carrier and downwardly-disposed dis-

charge-pipes connected to the ends of said radiating pipes.

11. In apparatus of the character described, a retort, a steam-admission pipe at the bottom thereof, a discharge-pipe at the bottom thereof, a removable carrier in said retort, a steam-tight connection between the upper ends of said carrier and retort, a cover having a steam-tight connection with said retort, a vertical steam-pipe in said carrier adapted to register steam-tight with said steam-admission pipe and extending to the top of said carrier, radiating downwardly-disposed discharge-pipes connected with said vertical pipe, and discharge-openings in the bottom of said carrier communicating with the discharge from said retort.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

GUY R. PRIDE.

Witnesses:

WILL R. SMITH,  
A. W. PLUMLEY.