

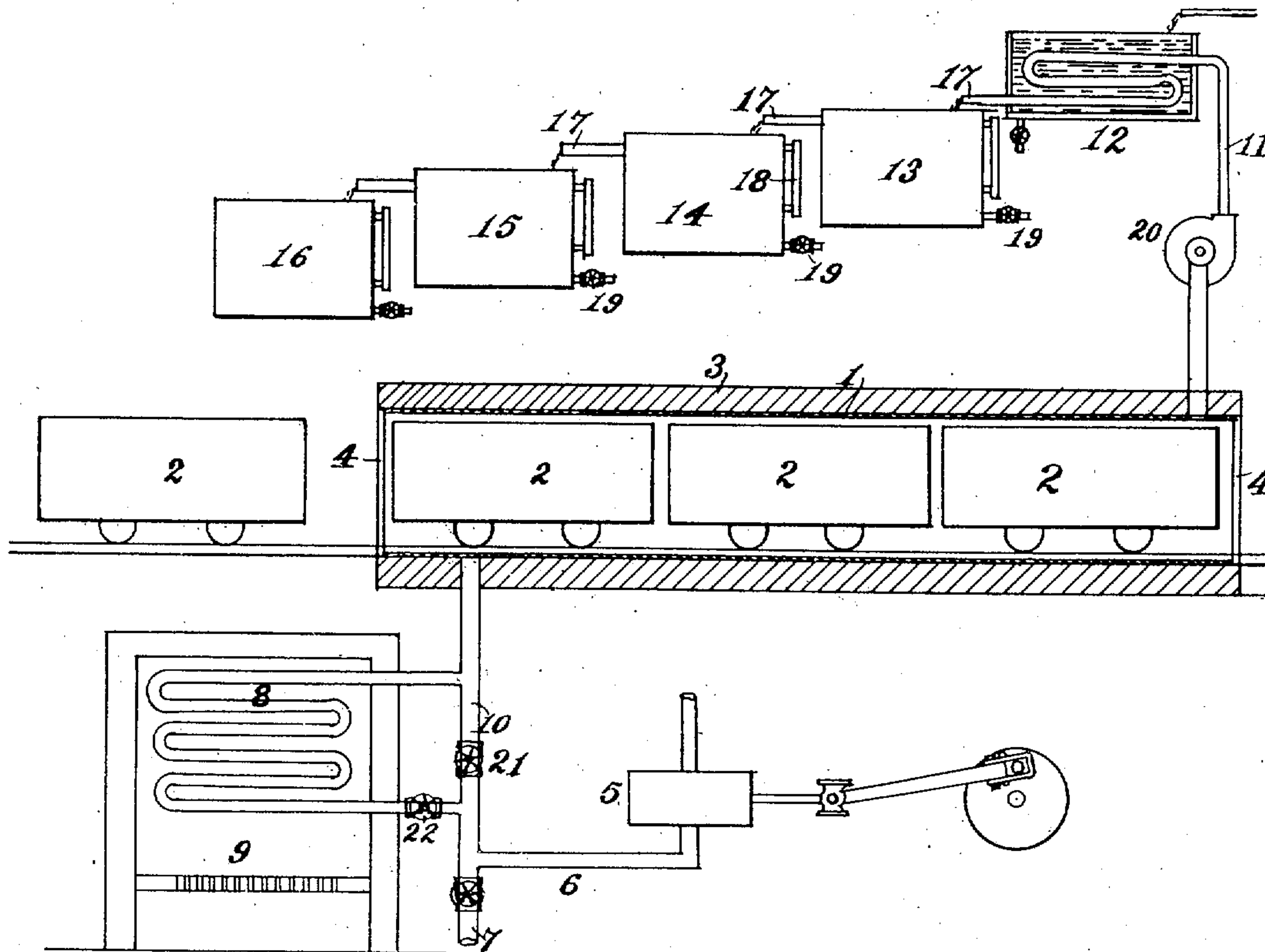
No. 850,098.

PATENTED APR. 9, 1907.

H. RASCHE.

APPARATUS FOR EXTRACTING TURPENTINE FROM WOOD.

APPLICATION FILED MAR. 21, 1906.



WITNESSES.

*Geo. Miller*  
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*att'y.*



# UNITED STATES PATENT OFFICE.

HENRY RASCHE, OF ALKI POINT, WASHINGTON, ASSIGNOR TO AMERICAN WOOD EXTRACT CO., A CORPORATION OF STATE OF WASHINGTON.

## APPARATUS FOR EXTRACTING TURPENTINE FROM WOOD.

No. 850,098.

Specification of Letters Patent.

Patented April 9, 1907.

Application filed March 21, 1906. Serial No. 607,252.

*To all whom it may concern:*

Be it known that I, HENRY RASCHE, a citizen of the United States, and a resident of Alki Point, King county, Washington, have invented certain new and useful Improvements in Apparatus for Extracting Turpentine from Wood, of which the following is a specification.

My invention relates to an improvement in apparatus for the extraction of turpentine and similar oils from wood in such a manner that the wood is not injured for any use to which wood is ordinarily put.

The object of my invention is to improve and simplify the processes for the extraction of such oils, and particularly to perform such extraction without injuring the wood.

My invention comprises the novel parts and combinations of parts, which will be hereinafter particularly pointed out in the claims.

In the accompanying drawing I have shown diagrammatically a form of apparatus now preferred by me for carrying out my invention.

In this drawing, 1 represents a retort, which may be of any convenient and suitable construction, but should be capable of receiving cars having thereon the wood to be treated. This wood may be refuse wood or merchantable lumber. The latter is the class of wood in the treatment of which my devices may be used with the greatest advantage. I have shown this retort as having three cars in place and a fourth car as outside on the track, ready to be run in when needed. These cars may be made of wood as fully as desired, as the temperatures used are such as will not injure the wood. The material of the retort may also be widely varied, but should preferably be such that leakage of steam will be cut down to as small a quantity as possible without incurring undue expense. Absolute tightness is not, however, necessary. By the process employed it is designed to use the steam at atmospheric pressure, so that there is no internal pressure to guard against. In fact, the steam and distilled vapors are to be drawn off by suction, so that the pressure will be very slightly less than atmospheric. Any leakage which may occur would therefore be inwardly and not outwardly and would not result in any loss of product.

The retort should preferably be covered with a layer of heat-insulating material, as

3, to prevent excessive radiation of heat. It should also be provided with doors 4 at one or both ends of such size as to permit passage of the loaded cars 2. These doors need not, however, be steam-tight. They should be made as tight as is conveniently feasible. The source of steam-supply for use in this retort is immaterial. I have shown a steam-engine 5, the exhaust from which is used for this purpose. This is a convenient source from which to obtain the steam where, as will often be the case, the extraction plant is erected in connection to a manufacturing plant, as a sawmill. Steam from the engine is led through pipe 6 to the retort. This pipe should preferably have a connection, as shown at 7, by which steam may be obtained from another source—as for instance, from a boiler. Unless this steam is very much superheated it should not be admitted to the retort without first passing through the superheater, in which it is heated to a temperature ranging from 250° to 300° Fahrenheit. At these temperatures the turpentines are extracted from the wood without injuring the quality of the wood for any purpose.

The superheater shown consists of a number of coils or manifolds of pipe 8 in a furnace 9. The steam from the engine 5 is passed through this superheater before entering the retort. Valve 22 enables the superheater to be cut out whenever desired and steam passed directly to the retort through the pass-over pipe 10, which is also provided with a valve 21. This also provides a ready means of controlling the degree of superheat which the steam has when reaching the retort. If the superheat is greater than desired, as the steam leaves the superheater the valve 21 may be opened more or less and cooler steam mixed with it. It is also possible to thereby use steam without superheat, if desired, when warming up.

The wood is subjected to the steam heat at from 250° to 300° Fahrenheit for a period of from three to five hours, depending upon the character of the wood and the size of the pieces, at the end of which time it will be found that the turpentines have been mostly removed from the wood, without, however, injuring the quality of the wood. It is then removed from the retort and dried, or, if desired, the drying may be done in the retort, the same then serving and being treated as an



ordinary dry-kiln. This use is, however, independent of its use as a retort.

The vapors of steam and the oils extracted are drawn off from the retort through the pipe 11 into the condenser 12, where they are condensed. This condenser overflows or discharges into a tank 13. A series of such tanks 13, 14, 15, and 16 are shown, each receiving the overflow from the preceding one by a trough 17. The turpentines, being lighter than water and of an oily character, tends to separate and rise to the top and run off through the trough 17, while the water settles to the bottom. A bottom-overflow 19, controlled by a valve, is preferably provided for all the tanks, through which the water may be withdrawn either periodically or preferably continuously by properly throttling the valve. The liquid flowing into tank 13 has been concentrated somewhat and is further concentrated in this tank. The overflow from this tank goes into the next tank and is there further concentrated. This process is continued until concentration has been carried as far as is feasible. The contents of the last tank will be strong turpentine. I prefer that each tank be provided with a glass gage 18, by which the amount of water and turpentine can be told at any time. The pipe 11, by which the vapors are drawn off from the retort, is preferably provided with a fan 20 or equivalent device, by which the movement of the vapors can be assisted. The result is that the pressure in the retort may be kept a little below atmospheric. This pressure may be only a very little below atmospheric; but that little is sufficient to prevent any escape of the turpentine-vapors from the retort even if it is far from being tight. This feature enables a very cheap construction of the retort to be used.

The operation of my device is as follows: The cars are loaded with the wood or lumber and run within the retort until it is filled. The steam is then turned on and the contents subjected to the temperatures named for a period varying from three to five hours, after which the cars are removed, unless the retort is to be used as a dry-kiln. The vapors are removed by the aid of the fan and condensed in the still and then concentrated in the

tanks 13, 14, 15, and 16 or other suitable devices. The amount of labor needed for this treatment need not exceed that required for kiln-drying the lumber, and therefore will not add to the cost of present processes.

The apparatus shown in the drawing is only diagrammatically represented and may be widely varied in its constructive details.

Having thus described my invention, what I claim is—

1. An apparatus for producing turpentine from wood comprising a source of steam, means for superheating the steam to a temperature of from 250° Fahrenheit, up, when at atmospheric pressure, means for mixing therewith steam of a lower temperature, a retort for containing the wood being treated and receiving the superheated steam, means for drawing off the vapors from the retort and thereby keeping the pressure substantially at atmospheric, and means for condensing said vapors.

2. An apparatus for extracting turpentine from wood comprising a retort adapted to receive the wood to be treated, a source of steam at substantially atmospheric pressure, a superheater through which the steam may be passed before entering the retort, a by-pass by which the steam may be introduced within the retort without going through the superheater, a positive suction device for withdrawing the vapors from the retort to thereby prevent their rise above atmospheric pressure, and means for condensing said vapors.

3. An apparatus for extracting turpentine from wood comprising a retort adapted to receive loaded cars, cars for receiving the wood and entering said retort, a source of steam at substantially atmospheric pressure, a superheater for said steam before entering the retort, a by-pass about said superheater, a positive suction device for drawing the vapors from said retort and means for condensing said vapors.

In testimony whereof I have hereunto affixed my signature, this 2d day of February, 1906, in the presence of two witnesses.

HENRY RASCHE.

Witnesses:

THEOBALD BUCKINGER,  
WILLIAM HARTZ.