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## IMPROVEMENT IN PORTABLE APPARATUS FOR PRESERVING WOOD.

Specification forming part of Letters Patent No. 113,338, dated April 4, 1871.

*To all whom it may concern:*

Be it known that I, WILLIAM TILDEN PELTON, of the State, county, and city of New York, have made an invention, of which the following is a full description, reference being had to the accompanying drawing and to the letters of reference marked thereon.

My invention consists of an apparatus and arrangement of machinery whereby railroad ties, timber, and other wood and suitable substances may be seasoned and impregnated with preservative elements, whether of hydrocarbons, oleaginous, saline, or other materials, in such manner that said substances shall be effectually and economically treated, and, by the employment of said apparatus—the same being movable to the desired point—treating of wood at distant and separate points along the line of railroads shall be possible and profitable.

It would be impossible to establish a fixed treating apparatus at every point where railroad ties, posts, timber, or other substances are to be found suitable for creosoting along the lines of railroads; and it might be difficult to find localities that so abound in the desired material in such supply, and also that furnish such a market as to justify the outlay necessary to erect a treating apparatus for that locality. It is generally true that the supply of proper timber is quite limited at any given point, and so, also, the demand for the treated article; and that the timber has to be gathered from different points at great distances and distributed again, at great cost of handling and transportation. The employment of my invention requires but outlay sufficient to build one apparatus, and enables the operator to treat ties, posts, and timber at any and every point where a railroad branch or track extends without any previous handling or transportation of the wood; and each owner of timber is able to have it treated with the same economy as though he had a separate treating apparatus constructed upon his own premises. The handling alone of a car-load of ties in loading and unloading them to take them to different points for treatment and return amounts to an additional cost per tie more than sufficient to be decisive as to the utility of using or dispensing with a creosoting process.

My apparatus is particularly adapted for the

employment and practical application of the "Seely process," referred to in Letters Patent No. 69,260, granted September 24, 1867, to Charles Seely, under which I became assignee, and where wood is seasoned or impregnated with liquids as the seasoning or impregnating material, and where it is desired to first apply them heated to the wood, in a manner to expel the sap and other contents of the pores of the wood; and, if impregnation is desired, then to produce a vacuum therein by bringing in contact with the wood impregnating material of a lower degree of temperature, which at the same time supplies itself to fill the pores of the wood without exposure to the air. Yet said apparatus can be employed whatever the heating or treating material used, and whether the desired treatment be by a cold bath or a hot bath; or by alternate baths of hot and cold; or by baths gradually changing from hot to cold; or whether exposure to the air is desirable at any stage of the process or otherwise; and the cars described can be used separately or together. The same is true as to the apparatus heretofore invented by me and described in a specification and claims verified by me February 8, A. D. 1871, dated January 2, 1871, in which I have made application for Letters Patent.

All those features included in the claims numbered 2, 3, 4, 5, 6, 7, 9, and 11 in said first specification are common to both inventions; but, in devising a treating apparatus that can be propelled or drawn upon a railroad track or other roadway as a portable machine, specially useful for treating railroad and other ties, posts, and timber upon the lines of railroad, I have invented a new and useful apparatus, delineated in the accompanying drawing, as follows:

Figure 1 is a plan of the said apparatus and its various parts and adjuncts, and Fig. 2 is a side elevation of the same.

T represents, when D' is shut down, a closed chamber or tank, in which the wood or other substance is treated. The most desirable form I find to be that of a parallelopipedon, about twenty-five feet long, eight feet wide, and six feet high, and the best material light boiler-iron. R<sup>1</sup> R<sup>2</sup> are closed tanks, communicating with each other and with T by means of the pipe *a a* at the side, and constructed above

and below T for the purpose of containing the heating and treating material, and together having a capacity about equal to that of T, the structure of the car making it desirable to make R<sup>2</sup> larger than R<sup>1</sup>.

Where two treating-cars are employed, R<sup>1</sup> and R<sup>2</sup> may, respectively, be made of only one-half the capacity as if used upon a car to be operated alone.

D D are hollow domes communicating with each other by the pipe c, which should be about one foot in diameter. S' represents a frame and pulley, by means of which to raise D'. D' is a door swinging upon its upper edge, and for closing T hermetically tight. t is a truck, upon which the substance to be treated is piled, and running upon m m, which is an inclined track passing into T, and descending into a continuation of m m. G are the trucks or running-gear supporting the treating apparatus. g is a funnel or opening to the pipe n, through which the treating material is poured into R<sup>2</sup>. E is an engine, supplied with steam from the boiler B, which may be located, as described, on a, a platform-car, or may be the boiler of a locomotive in front. P is a force-pump, operated by E, pumping the treating material from R<sup>2</sup> through the pipe f, and forcing it into R<sup>1</sup> through the pipe g. E is the dome, supplying steam to E by means of l, and also supplying steam to heating-coils p p p in the bottom of T through the pipe d d. H is a drum, worked by E, over which passes r, which is a rope attached to one and the other end of t, as it has to be drawn in or out of T. To draw t out of T sheaves have to be arranged at convenient points to lead r around to the open end of T. c c c is a pipe, with arms descending into the top of each dome, making a connection between them, and also with C, which is an ordinary condenser with a coil of cooling-pipes in the bottom. (See also Fig. 4.) b b is an overflow-pipe to T, and connecting two treating tanks, T and T, through the rear domes, on a plane lower than that of c c c, and lower, also, than a a emerges from R<sup>1</sup> R<sup>1</sup>. o o o' o' are pipes connecting R<sup>1</sup> with R<sup>1</sup> and R<sup>2</sup> with R<sup>2</sup> on different treating-cars, when used in conjunction, as it is quite desirable to do.

In order to have as large a reserve of cold treating material as possible to be contained on cars in proportion to their capacity to contain wood to be treated, and with two treating-cars, you can alternately fill and empty T and T, and empty the treating material in the tanks connected by o o o' o' as though in two common reservoirs, R<sup>1</sup> and R<sup>2</sup>, of double the actual size. Besides the hot bath, the cold bath, the drawing off the liquids, or the removal of the wood, or other steps in the process of treatment, would occur in the case of the combination of two or more treating-cars at different instants of time, with reference to the different cars and the same stage of the process, so that in a combination of treating-cars every step of the process could be observed, transporting simultaneously in different chambers, and with a min-

imum of treating material and of labor, fuel, time, and expense.

Fig. No. 3 is a cross-section through two treating-cars, in plane x x, showing the treating-chambers T T, with trucks t t within, on the track m' m', and the steam-pipes for heating p p p underneath; also, the tank R<sup>1</sup> R<sup>1</sup> above, and R<sup>2</sup> R<sup>2</sup> below, and the pipe a a with stop-cocks 4, 2, and 5 connecting the several tanks on each car; also, the domes D D and the overflow-pipe b with flexible joint and stop-cock 1; also, the connecting-pipes o o o' o', with flexible joints.

Fig. No. 4 is a cross-section of the same through the plane z z, showing the condenser C, the domes D D, connected from their tops by the pipe c c, with a flexible joint and a T passing into C; also, showing the ends of the treating-chambers T T, the running-gear G G, and the steam-pipe d d with flexible joints.

The manner in which the apparatus described is employed in using the Seely process is as follows: The truck t, together with the inclined track m' m', having been placed within T, and D' closed down, and the various cars attached to each other and to the motive power, the train or cars are moved to the point where the wood is required to be treated. There D' is raised, m' m' is adjusted to T and to m m; the wood is piled upon t; r is attached; steam from B is applied to E to turn H until t is within T. Then D' is lowered and fastened hermetically by bolts or slots, or, as the case may be, R<sup>1</sup> having been filled by the heating material pumped from R<sup>2</sup> through f and g by means of P, the material in R<sup>2</sup> having been poured in at g through n, another treating-car being joined by o o and o' o'. Then, 5 being closed, 4 and 2 are opened in the first until T is full or the wood amply submerged, and 2 is closed. Then steam from L is let into p p p through d, 8 being closed and 7 open, until a degree of heat is obtained sufficient to drive the sap out of the wood, and then the steam is let out of p p p and 7 is shut. 2 is again opened, R<sup>1</sup> and R<sup>2</sup> having been refilled, as before, and the second treating-car, having been filled with wood to be treated and tightly closed, 1 is opened, whereupon the heated material rises upon the top of the colder material entering at 2, and passes over through b b upon the wood in position in the second treating-car. This is continued till the second T is filled with the heating material and the cold material is substituted in the first T. If impregnation is desired, then 1 is closed and 8 opened, and steam supplied to p p p in the second T, and the heating process goes on therein while the cold bath is being applied in the first T. The gases and other volatile products passing through c c c into the condenser C, 3 and 6 being alternately open and shut to secure that end, this arrangement preventing the danger that would exist of explosion if a covered tank were used for a treating-chamber without the apparatus described, and preventing also the offensive nuisance and waste of material that would en-

sue if the volatile products were allowed to escape as from an open vat. The wood having taken up into its pores a sufficient amount of the impregnating material in the first chamber, and the wood in the second chamber having been sufficiently heated, 4 is shut and 5 is opened in the first treating-car, and the treating material in T passes into R<sup>2</sup>. Then D' is raised; r is run around sheaves to the front of T attached to t, which is started out, if necessary, by proper motion being applied to H. Other timber to be heated is run into T, which is closed when 1 is opened, and in the second car 5 is shut and 2 and 4 are opened, whereupon the hot material passes over through b b upon the wood in the first car, and so on alternately.

It is evident that there is a great saving of time, of labor, of material, and expense where there is a combination of two or more treating-cars operated by the same force of men and steam.

What I claim as a new and useful invention, and petition herein to have protected by Letters Patent, is—

1. The whole combination of machinery and parts constituting the apparatus, as herein substantially described, and for the purposes set forth.

2. The combination of a treating apparatus, for seasoning or preserving wood, with a truck or trucks or other running-gear, so as to be capable of being propelled or drawn on a railroad or other track or roadway.

3. The combination, with a treating apparatus, of an engine, E, placed upon a truck or

running-gear, substantially as described, for the purposes set forth.

4. The combination of receiving and charge tanks R<sup>1</sup> R<sup>2</sup> with a treating-chamber T, connected and used as a wood-treating paratus, and at the same time constructed with running-gear and as a separate and complete vehicle, substantially as described, for the purposes set forth.

5. The combination of the pieces of machinery included in the last two claims.

6. The combination of two or more treating cars, substantially as described, and for purposes set forth.

7. The construction of a treating apparatus for seasoning or preserving wood in such way that it shall be divisible into several complete vehicles adapted to an ordinary railroad track, so as to be conveyed separately a train or part of a train of cars drawn by a motive, either together or separately, for the wood treated or to be treated.

8. The combination of a wood-preserving paratus with wheels, that shall be adapted to be movable upon and used in connection with, and with the ordinary railroad track, and be transportable at will from point to point on said track or branches, to reach and treat ties, posts, and other timber, without the difficulty or expense of removing it from distance to a fixed and immovable apparatus, and employment for such purposes, substantially as described.

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