

W. F. GOLTRA.
 INSTALLATION FOR TREATING RAILWAY TIES.
 APPLICATION FILED JAN. 2, 1912.

Patented Dec. 17, 1912.

5 SHEETS—SHEET 1.

1,047,405.

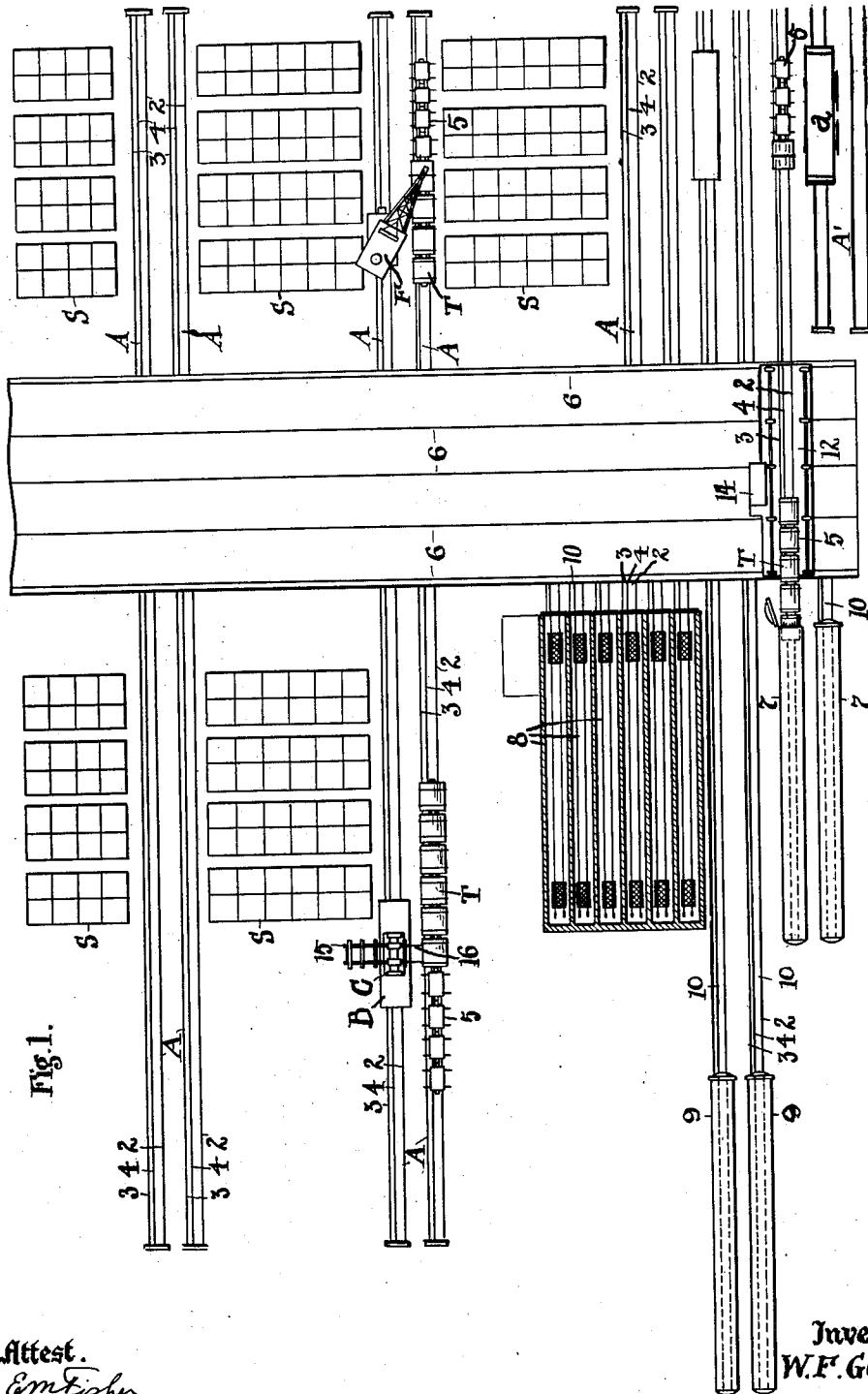


Fig. 1.

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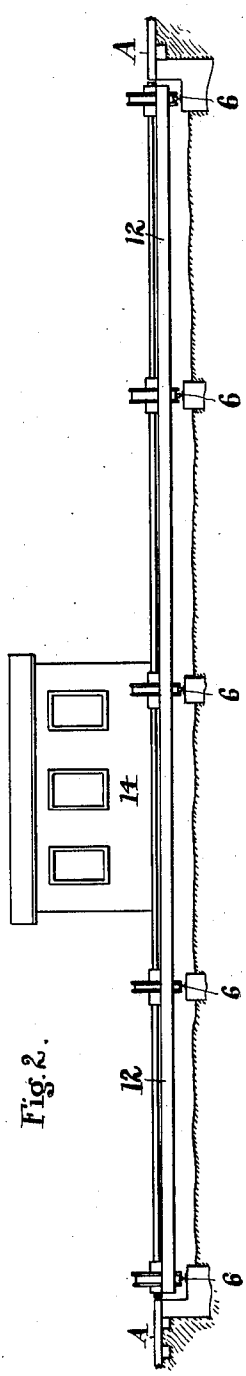


Fig. 2.

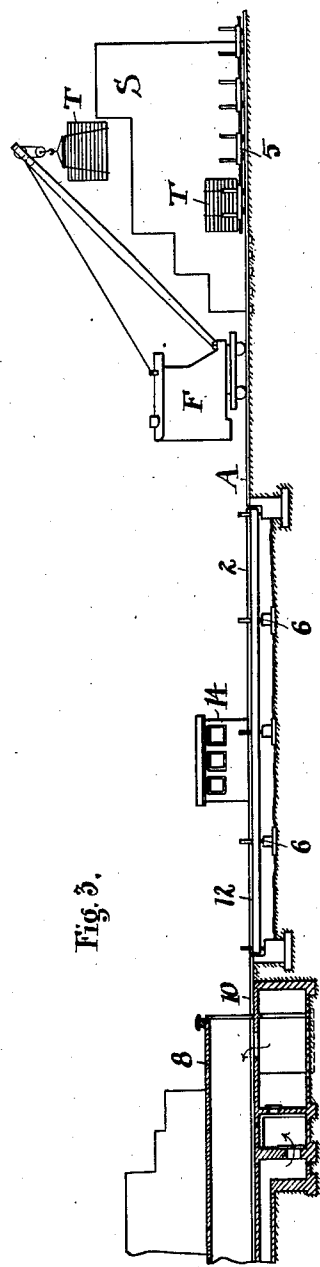


Fig. 3.

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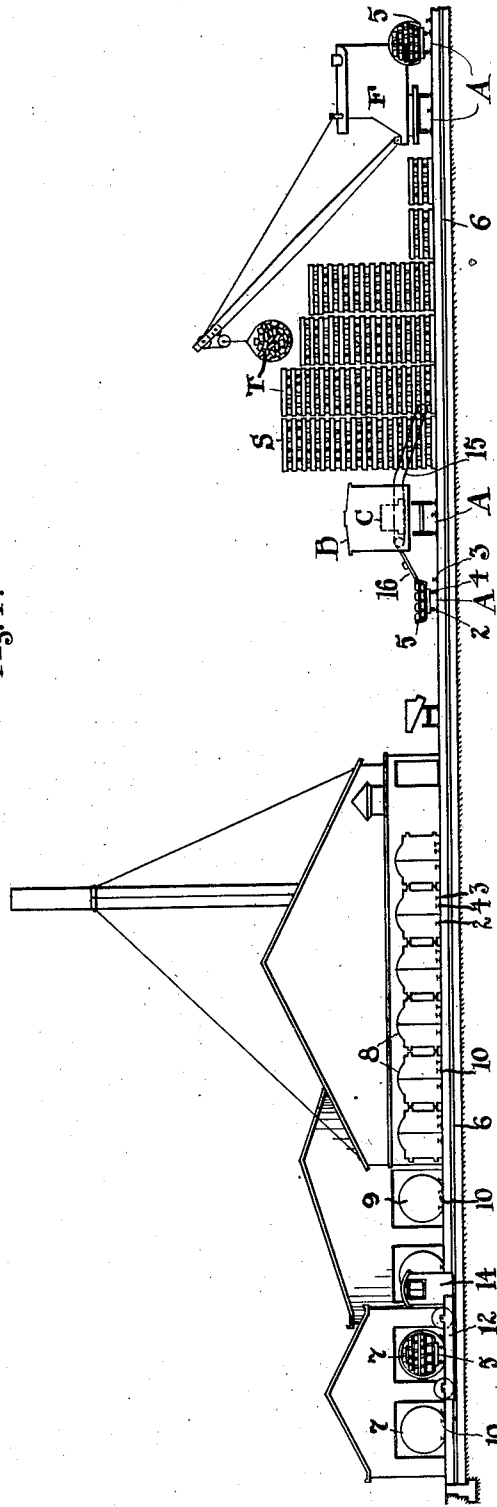
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Fig. 4.



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Fig. 6.

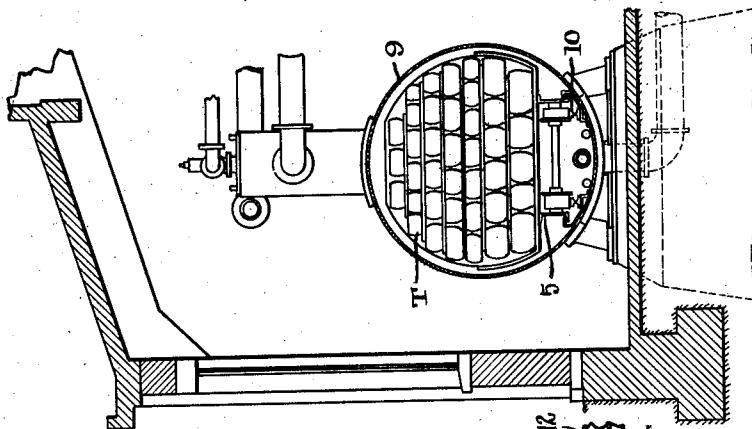
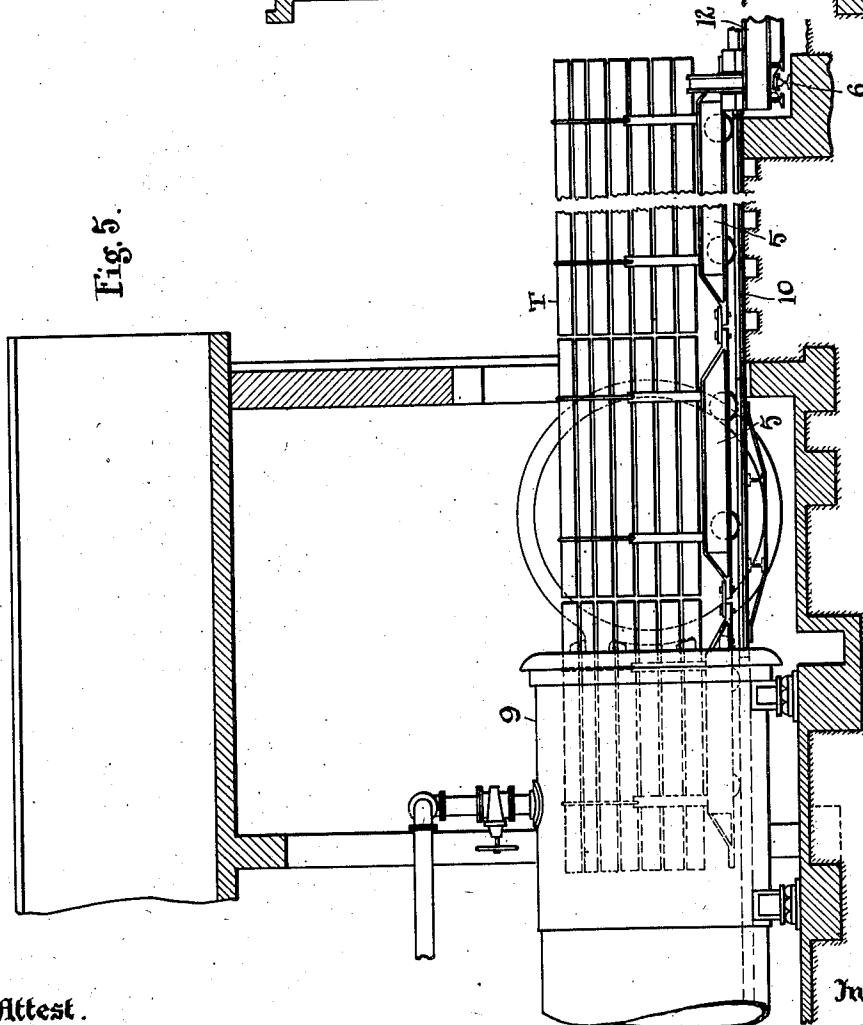


Fig. 5.



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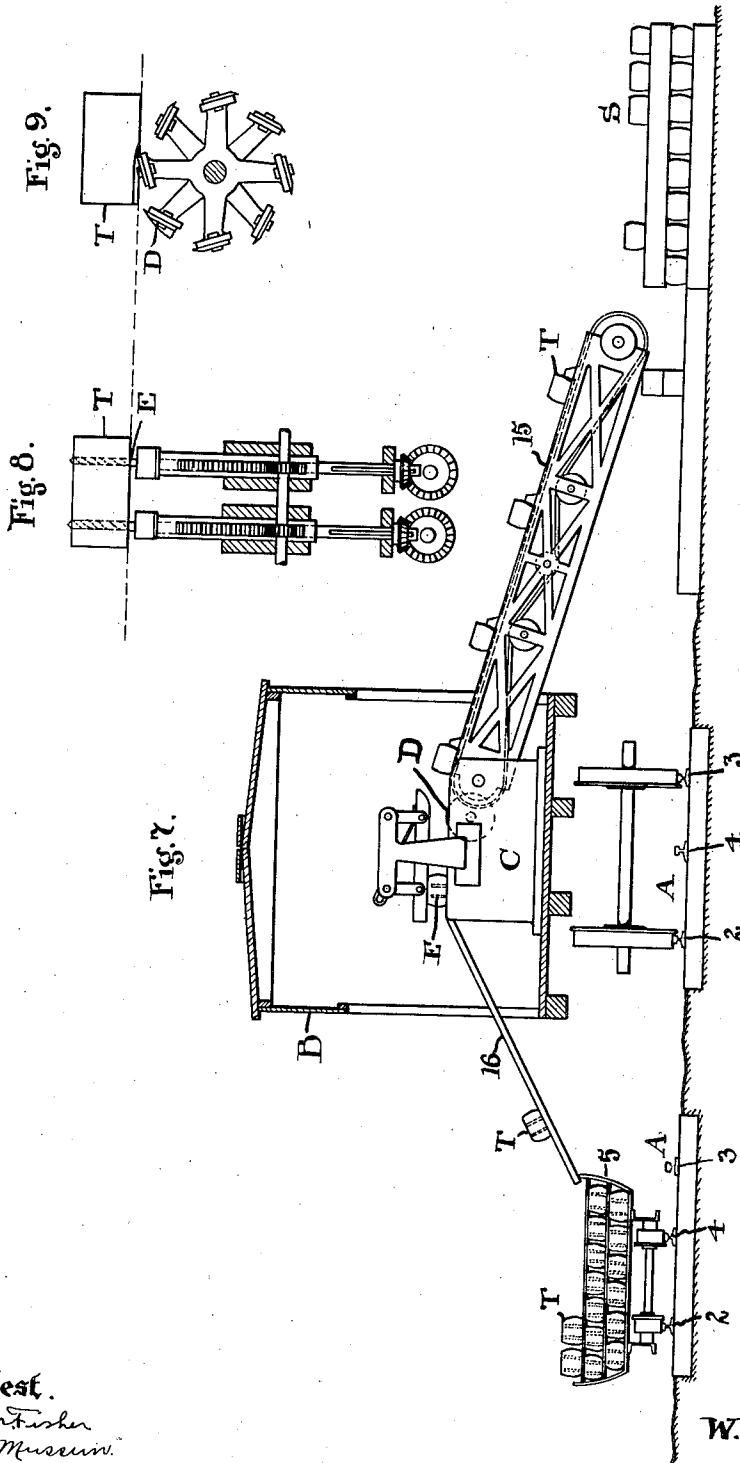
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5 SHEETS—SHEET 5.



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UNITED STATES PATENT OFFICE.

WILLIAM FRANCIS GOLTRA, OF CLEVELAND, OHIO.

INSTALLATION FOR TREATING RAILWAY-TIES.

1,047,405.

Specification of Letters Patent.

Patented Dec. 17, 1912.

Application filed January 2, 1912. Serial No. 668,915.

To all whom it may concern:

Be it known that I, WILLIAM FRANCIS GOLTRA, citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Installations for Treating Railway-Ties, of which the following is a specification.

My invention relates to an installation or plant, and the invention comprises a new and novel combination and arrangement of parts, the object of which is to carry railway cross ties, mainly in bulk, through a succession of allied treatments with the greatest possible convenience, economy and despatch, and to the end that the ties shall be charged with a suitable preservative in the most effective manner and at a low cost, all substantially as shown and described and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a diagrammatic plan view of a completely equipped yard or plant comprising the several related parts of my invention in a working relation. Fig. 2 is an elevation of the transfer table and its tracks which traverse the main tracks and render all parts of the yard available to any given part, and Fig. 3 is a more or less diagrammatic view of the transfer table and of one of the drying ovens in longitudinal section and of a crane and a train or series of trams for transporting the ties in the yard. Fig. 4 is a diagrammatic view illustrating the steaming and impregnating cylinders, and the drying oven in front elevation or as viewed from the transfer tracks, and also showing a crane for handling the ties, a stack of ties on which it is at work and the adzing and boring machine which prepares the ties for the drying oven and the impregnating cylinder. Fig. 5 is a side elevation of one end of one of the impregnating cylinders with loaded trams at its entrance and a section of the transfer table or car arbitrarily shown in that connection, and Fig. 6 is an end elevation of the said cylinder showing a loaded tram therein and a sectional elevation of a portion of the housing, but omitting the other details in Fig. 5. Fig. 7 is a sectional elevation of the boring and adzing machine illustrating the same at work and with delivery and discharge carriers for the ties at its sides, and Figs. 8 and 9 are elevations of the boring and adzing mechanisms respectively.

All the foregoing views are more or less diagrammatic and not worked out in exact details but are sufficiently distinctive as to parts or devices involved to convey an accurate conception of the invention, it being understood that the invention does not reside in details nor in any single part, device or apparatus as such, but rather in the said parts combined as a unit and wherein the several devices and apparatus are constituent and contributing members. Furthermore, this application appertains exclusively to the means shown and is a companion to an application filed by me in which the herein disclosed method of treating the ties is covered and which bears Ser. No. 668,914, filed herewith. The said means are grouped in coöperative relation in Fig. 1, and comprise, first, a series of car tracks A conveniently disposed in a suitable yard which for space occupied will depend on the volume or amount of business the plant is intended to do and especially the portion to be devoted to the open air drying of the ties on stacks as shown. The said tracks are peculiar and exceptional in this particular, that each comprises two outer rails 2 and 3 at standard gage or width and adapted to accommodate ordinary steam locomotives and cars, and an extra inner rail 4 which with the rail 2 constitutes a so-called narrow gage track of a size adapted to accommodate the small trams or special cars 5, which are used exclusively for carrying the ties in this system. Trams 5 are made small to enter the respective cylinders hereinafter described,—greater economy in operation being thus promoted. An elevation of one of the said cars or trams partly loaded is shown in Fig. 7 and one with a full load is seen in Fig. 6. In passing it may also be noted that the loads are purposely built more or less rounding at their sides and top so as to more or less completely fill and occupy the space in the several cylinders in which special treatment of the ties is given as will presently appear.

A new and original feature of the plant as shown in Fig. 1 is the entire absence of switches for running the trams from one portion of the plant to another and for shifting other devices from track to track. I have found that not infrequently the room or space where a plant of this kind must be located, if used at all, is very small and that switches could not be employed even if

otherwise sufficient to make the necessary changes and hence I have planned a yard in which all the car tracks are parallel and relatively near to each other and which are crossed by transfer tracks 6 and a transfer table or platform 12 as wide as said tracks and adapted to be moved back and forth thereon by power carried on said table. This affords a convenient trans-shipment of a tram or other car from one portion of the plant to another in a fraction of the time that switches would require and in a way which is much more direct and convenient. The said transfer tracks are shown as across the middle of the yard and preferably directly in front of the steaming cylinders 7 and the drying ovens 8. The impregnating or chemicalizing cylinders 9 are purposely more retired in respect to said transfer tracks and have tracks 10 of their own leading thereinto, thus leaving room for oil tanks and other equipment adjacent to said cylinders as they require. Otherwise they might be moved up into line with the steaming and drying apparatus directly to the transfer tracks 6. As to all these cylinders and ovens it may be said that they are alike in capacity because the method of operation contemplates the moving of all the loaded trams out of one cylinder into another for successive and continuous treatment, as from the drying cylinder or oven 8 to the impregnating cylinder 9.

It will be seen that all the several tracks 2, 3 and 4 terminate at both sides directly at the transverse transfer tracks 6, and the transfer table or car 12 is adapted to run on said tracks 6 and has three tracks 13 of its own corresponding to tracks 2, 3 and 4 and on a level therewith at either side, thus providing for turning a tram or car onto the table from any one of said yard tracks and therefrom to any other track in the yard, including the tracks 10 entering the several cylinders 7, 8 and 9, and hence it follows that a tram can be received on said table from any given point in the system and delivered to any other part of the system by merely running the table to the track to which the tram is destined. Thus, so far as the operation of the transfer table is concerned, is done by power installed in the house 14 on the said table, while the tram alone may be moved by hand, traveling crane, standard locomotive, or by a dummy engine, any one of which may be provided for this purpose but not shown, except the crane. Ordinarily, however, a man can move a single loaded tram from place to place with comparative ease.

Respecting the several cylinders 7, 8 and 9, it may be observed that they are each equipped with different means according to the kind of work they are designed to perform.

Now, having an installation with tracks and transfers and apparatus in permanent and interdependent relation as described, so that the work goes forward in sequence step after step to the end that a tie which is green or in its natural state to begin with is converted into a chemically impregnated tie to end with, the operation may be further noted as follows: Thus, assuming that the ties are delivered at the plant over a standard gage track as diagrammatically indicated in Fig. 1 by a switch track A', where a standard box car *a* is shown with a load of ties, the said ties are then transferred to a narrow gage or local tram car 5 by hand. Having loaded the trams in this way with green ties they are run into the steaming cylinder 7, of which two are shown, by first traversing the transfer table 12 at its front. There might be one or several of such cylinders according to the size of the plant, and the said cylinders are necessarily steam tight and adapted to receive say fifteen to twenty pounds steam pressure for a period of thirty minutes or more according to the nature of the timber under treatment and other conditions, the object being to expel or boil out the sap and natural juices from the wood and thus prepare it for the more or less perfect drying it is to receive in the open air on the stacks S as shown. It has been demonstrated that railroad ties which have been steamed in this way will become perfectly seasoned in the open air in two to three months, whereas it would require nine to twelve months to season the same ties without steaming. This saving in time greatly reduces the stock necessary to maintain on hand to get proper seasoning, and thus releases about three-quarters of the capital that would otherwise be locked up in such stock, and it further effects a material economy in the cost of the installation of a treating plant by proportionately diminishing the storage yard space and length of trackage needed to handle the ties. The steaming of the ties is, therefore, material from an economical point of view but is more important because of the exceptional condition it produces in the ties to receive the chemical preservative. It has been found that by first driving the sap out of the wood by the steaming process and then drying out the steam moisture the pores of the wood are opened and rendered especially receptive for the chemical, especially when the chemical is placed under pressure and driven by force into the ties as by the present treatment. Therefore, having the ties thus suitably steamed, the loaded trams are run back onto the transfer table, which is then moved transversely of the yard with its load. The trams are next moved upon any one of the tracks A in the yard where they are placed in stacks S on

both sides of the transfer tracks or wherever there is room, and the traveling crane *c* is used for this purpose. However, if it be desired to hasten the drying of the ties more rapidly than is possible in the open yards, I may employ artificial drying ovens exclusively for this purpose. These may be such, for example, as are shown at 8 and which in the present system or plant are employed only to do the final drying and heating preparatory to treating in the impregnating cylinders. A plant might therefore be equipped with a sufficient number and size of drying ovens or cylinders to receive all the ties in hand and dispense with the open air treatment, but the original cost of the plant would necessarily be considerably increased, it being understood that the preliminary drying would have to proceed with relatively low temperatures to prevent checking and to promote gradual and uniform drying without warping and the like and require oven room accordingly. Under either practice the ties are necessarily kiln dried in the drying cylinders 8 or their equivalent just before being delivered to the impregnating retort 9 and as a preparation therefor, it being desirable that the ties should be heated when they enter the drying cylinder to a temperature at least equal to that of the impregnating liquid and so as to promote penetration and saturation by the liquid as hereinafter described. In either case, and whether one method or the other of preliminary drying be adopted, the ties are necessarily subjected to the required machining before final drying of the ties occurs. This operation includes adzing and boring of the ties T and a machine C having rotatable adzing members D and boring tools E for this purpose is carried by a standard gage box car B which is moved about the yard and placed opposite the stacks of ties to be treated. A conveyer or carrier 15 is usually placed between the stacks and the tram on one side, and another conveyer or skid 16 or the like is placed between the machine and the tram on the other side to deliver the treated tie. The yard tracks A are arranged in parallel sets, see Fig. 1, so that the machine car B can be run on rails 2 and 3 of one track and the tram cars 5 on rails 2 and 4 of the next adjacent track, which enables the machining and handling of the ties to be performed in the most economical manner. The majority of ties, either hewn or sawn, are somewhat winding or crooked when placed in the track, and hewn ties may offer a very irregular surface for one or both rails. This causes a tie to work or rock in the ballast, diminishes its load bearing capacity and increases cost of track maintenance. It has been found that very few of the sawed ties offer parallel faces to both rails, and most

ties, whether sawn or hewn, are either bowed or winding. In either case the rail base crushes down the wood at the high contact point. While the machining of ties in all cases is important, it is economically indispensable that ties to be filled with a chemical should be machined. It should also be borne in mind that during the time that ties are air seasoning some distortion in shape will occur. It then follows that ties mechanically adzed and bored will present rail bearing surfaces in the same plane and these together with the spike holes can be more thoroughly impregnated with a preserving fluid.

The ties having been duly machined as described, they are next conveyed on the trams to the drying oven 8, passing *en route* over the transfer table 12, and are held in said oven or cylinder until perfectly dried and heated, say for a period of eighteen to thirty hours and at a temperature ranging from 100° Fahrenheit to say 175°, varying according to conditions and needs and as an experienced attendant will readily understand. Usually the heating is accomplished through steam heating coils beneath the ovens and the heated air is circulated through the oven and drawn off as it becomes laden with moisture.

When the ties have been thoroughly dried in this operation they are carried on the trams to the impregnating cylinders 9. In this change of position the loaded cars necessarily are first delivered upon the transfer table and then upon the tracks into the said cylinders, and this change is made as speedily as possible so as to keep the ties warm and receptive for the impregnating liquid. When everything is ready the cylinder is filled with the impregnating liquid and the process of charging the ties begins. This is done under pressure upon the liquid and the operation continues until the ties are filled to the point of refusal. Usually it takes about four hours to complete a treatment in these cylinders, and in order to facilitate the impregnating operation I first subject the cylinders to a partial vacuum which withdraws some of the air from the cells and pores of the wood and induces absorption of the chemical. The pressure employed may be approximately 100 pounds to the square inch and when a mixture of creosote oil and zinc chlorid is used, the solution is kept in agitation by means of a centrifugal pump to prevent the chemicals from separating from each other. This operation having been completed the chemical is withdrawn from the cylinder, and after the ties have dripped comparatively dry so that they can be handled comfortably they are run out of the cylinder onto the transfer table 12 and carried thence to some designated point in the yard where a locomotive or traveling

crane F may be used to load them on standard gage cars to be shipped to their destination. Crane F may also be used to load and unload the ties in bulk from the trams in stacking operations, and also to convey the trams over the various tracks in the yard and on the transfer table. The three rails on the table 12 permits narrow trams and the wider crane, or other standard power device, to be transported jointly thereover, thereby making every portion of the plant accessible to all the traveling equipment.

The several different elements including the steaming cylinder 7, the drying cylinder or oven 8, and the impregnating cylinder or retort 9, are also referred to as apparatus, each having such equipments of its own as may be necessary to the performance of the office or function for which it is intended.

It will be observed that the tracks on the transfer table are both standard and narrow or tram gage, while the tracks 10 within the several cylinders and ovens are narrow gage only. However, three rails are employed from the transfer pit up to the cylinders and ovens, the object being to facilitate handling of the charges by the standard power equipment using the wider gage track.

In the case of the transfer table or platform 12 as many as five rails 6 are shown in the pit for said table because the table necessarily has considerable length to accommodate the trams and other apparatus to be shifted thereon which include the cranes and the tie-machining car, as well as the standard gage cars and locomotives, when a change from one track to another in the yard is required. However, the said several lines of rails constitute essentially a single track on which the said table alone is adapted to travel by means of the power with which it is equipped, and the tracks 13 on said table are immediately abutted by the parallel tracks A in the yard so that when they are brought into alinement there will be practically no break between them and a car can

be moved from one track to the other without interruption.

The several parallel or main tracks being opposite each other on the sides of the cross-track 6, are in effect bisected thereby and which makes for convenience in transporting a car from one side to the other of the yard, the transfer table or car with its tracks affording a connection or bridge which makes said tracks practically continuous and over which trains can be run as if the line were unbroken where the said table is located. Under this construction it must of course follow that the transverse or cross tracks 6 are on a sufficiently lower grade than said parallel tracks to make room for the transfer table, truck or car and to bring the tracks thereon upon the level of the said parallel tracks. The double set of two-gage tracks A arranged in parallel, permit adzing and boring of the ties and loading and unloading operations to occur from either side of said tracks, thereby effecting a material saving in time, labor and ground space as compared with other methods and means known to me.

What I claim is:

1. In an installation for treating ties, separate means for steaming, drying, and impregnating the ties, in combination with means for transferring the ties from one to another of said means.

2. In an installation for treating ties, separate means for steaming, drying and impregnating the ties, arranged parallel to each other in combination with means, transversely movable at the end of said separate means, for transferring the ties from one to another of the above mentioned means.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM FRANCIS GOLTRA.

Witnesses:

F. C. MUSSUN,
E. M. FISHER.