June 26, 1928. 1,675,027

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YARD SYSTEM FOR WOOD PRESERVATION PLANTS

Filed Aug. 4, 1927 3 Sheets-Sheet 1

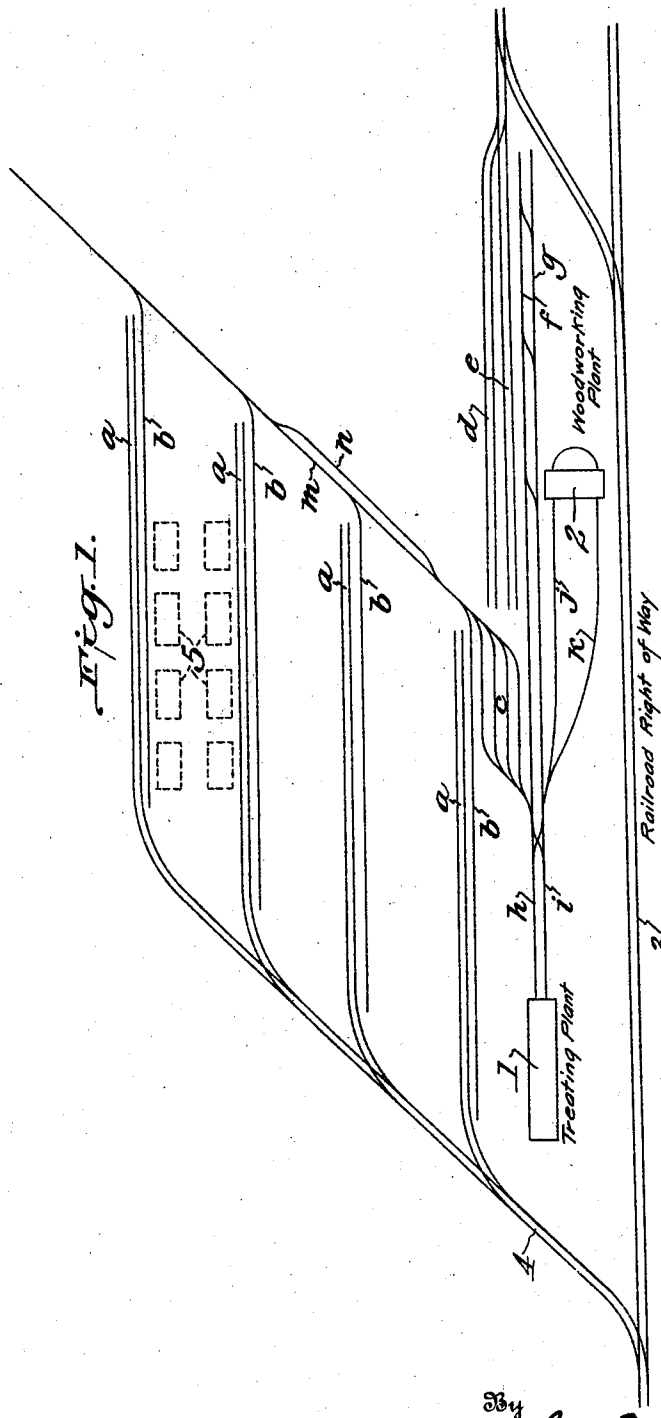


Fig. 1.



Fig. 1a.

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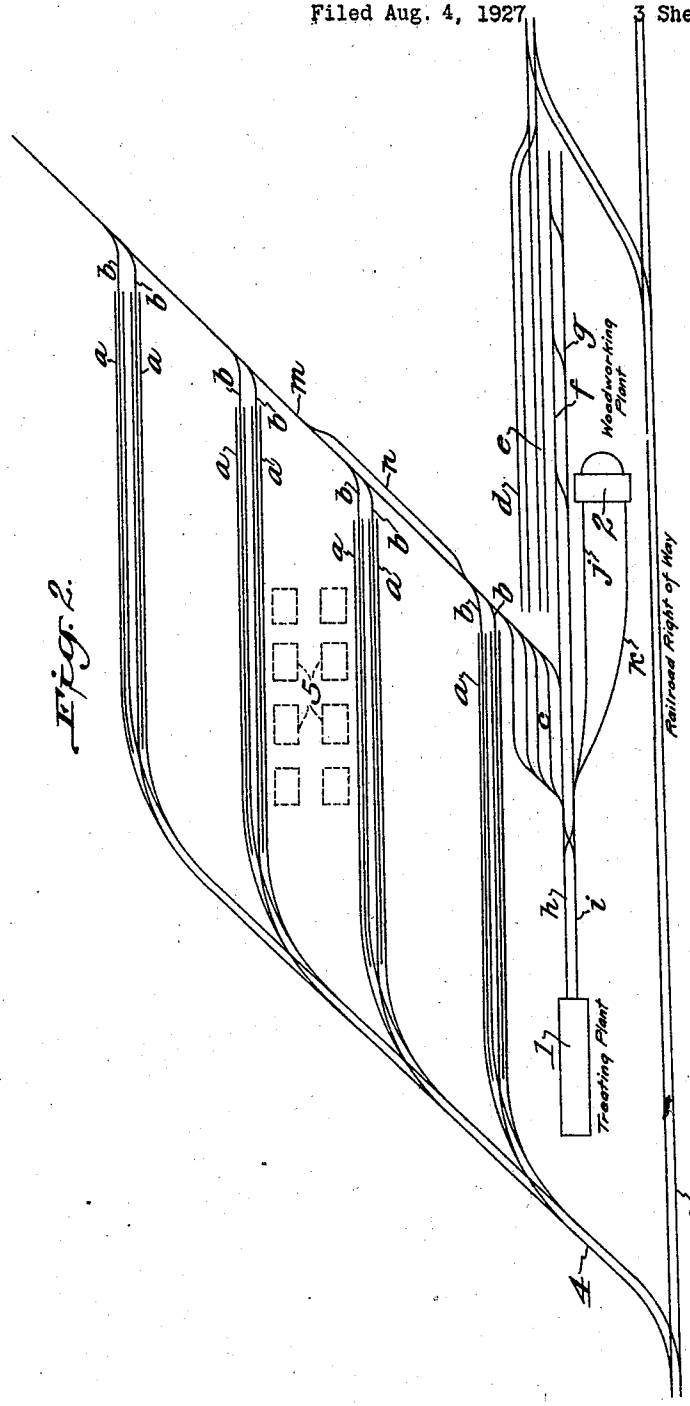


Fig. 2.

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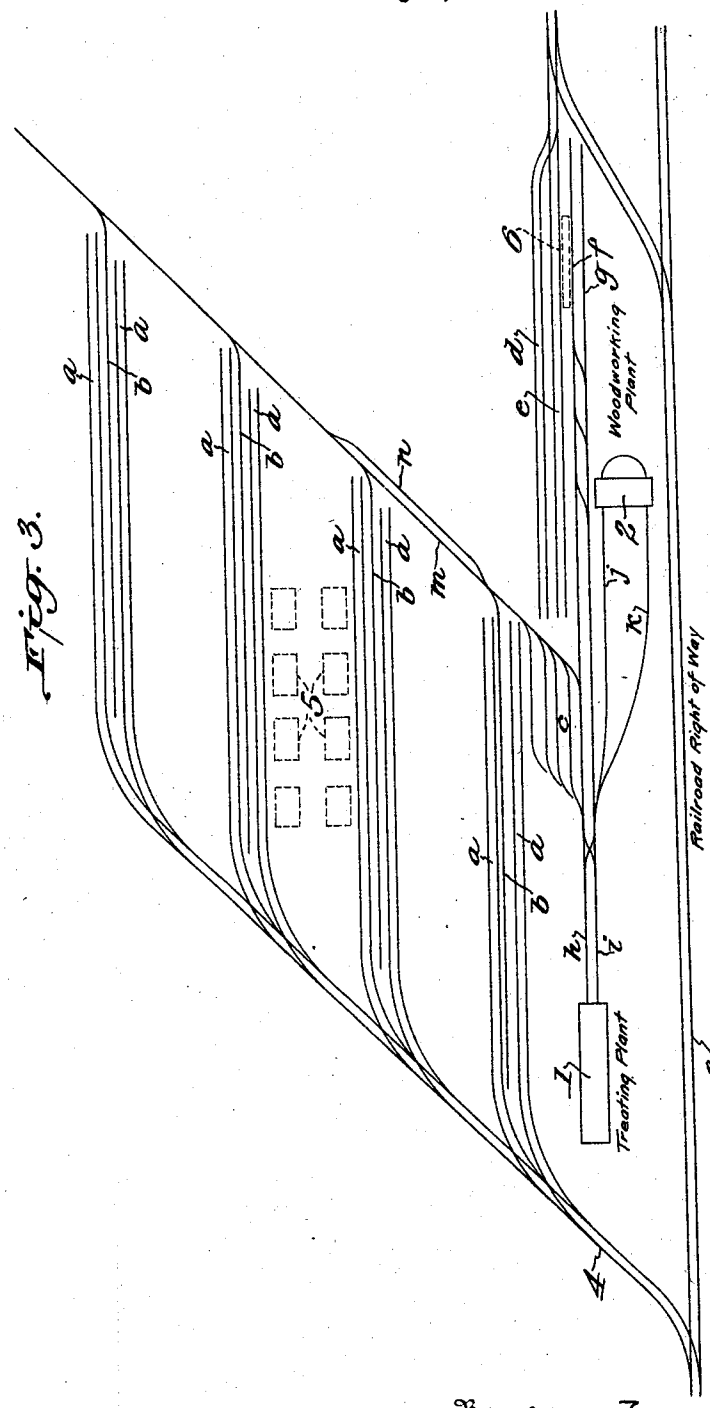
Filed Aug. 4, 1927 3 Sheets-Sheet 3

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# UNITED STATES PATENT OFFICE.

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## YARD SYSTEM FOR WOOD-PRESERVATION PLANTS.

Application filed August 4, 1927. Serial No. 210,707.

This invention relates to an arrangement of the various elements of a plant for preserving wood, and is particularly intended, though capable of other uses, for a plant in which railroad ties are to be impregnated with preservative liquids such as creosote.

The general method of treating ties has been to store the ties in piles, containing as many as a thousand ties, in which they are allowed to air-dry. Railroad tracks of standard gauge are arranged between the piles, and the ties are unloaded from the railway cars on to the piles by cranes traveling on the tracks.

For the creosoting operation the ties are loaded from the piles onto tram-cars running on narrow gauge tracks, these cars being usually of skeleton construction and provided with upwardly extending bolster arms, on which the load of ties is kept in shape by semi-circular bails (see e. g. Patent No. 1,428,474, Cook et al., Sept. 5, 1922) so that the load has a generally cylindrical shape and of such diameter that the loaded cars (in a train of ten or more) can be run into the long cylindrical retorts in which the preservative chemicals are injected into the wood by pressure. The ties are sometimes treated without any preliminary wood-working treatment. At other times, the ties are adzed and bored before being treated, this wood-working being effected at a fixed plant equipped with machinery for that purpose. In this latter procedure, the same trams, which are used to carry the ties to the impregnation cylinders are used for transporting the ties from the stock piles to the wood-working plant, and for this purpose larger loads can be carried if the bolster arms of the tram-cars are provided with extension arms (as shown in my application Serial No. 185,502, filed April 21, 1927).

After being wood-worked the ties are again loaded onto tram-cars, the load being cylindrically shaped and held in place by bails, the thus loaded trams being taken to the impregnating cylinders and after the treatment are delivered to the loading station, where after the bails have been removed, the treated ties are loaded on standard gauge railway cars for shipment.

In this cycle of operations, there is thus an accumulation of extension arms, removed from the trams at the wood-working plant and an accumulation of bails at the shipping platform, and one feature of my invention is the provision of a special track between the wood-working plant and the shipping platform, on which can run a car for interchange of bails and extension arms. For this purpose I have devised a special form of "shuttle car" shown in my application Serial No. 194,431, filed May 26, 1927.

In order to facilitate the loading of the ties from the stock piles to the tram cars, I have invented a dumping table and load former (described in my application Serial No. 202,312, filed June 29, 1927) which need not be described in detail. This device may be moved along a standard gauge track, the ties being delivered to the dumping table by a traveling crane, running on the same or an adjoining track. From the dumping table the ties are loaded on tram-cars located on an adjacent narrow gauge track, the loads being held in shape by bails. In this instance the ties are impregnated directly without a preliminary wood-working operation.

By the use of these various mechanically operating devices, the ties, from the time they enter the yard on the railway cars until they are delivered in tram-cars to the loading platform for shipment, are handled with a minimum of manual labor and at a much diminished operating cost.

In carrying out this general operating scheme, it has been necessary to devise a special arrangement of tracks, of both standard and narrow gauge, connecting the stock piles, the treating plant, the wood-working plant and the loading station, and it is to this arrangement that the present invention relates.

The invention will be readily understood from the accompanying diagrams in which

Fig. 1 represents one form of the invention;

Fig. 1[a] shows a detail; and

Figs. 2 and 3 represent modifications.

Referring to Fig. 1, the treating plant is indicated at 1, and the wood-working plant at 2. The storage yard is connected to the railroad track 3 by a siding, 4, from which branch other standard gauge tracks, *a*, *a*, *a*, between which are located the piles of ties, 5. The standard gauge tracks are shown by double lines.

Located adjacent each of these tracks *a* is an industrial or narrow-gauge tram-car

spur track *b*, (indicated by single lines) the ends of these spurs being connected to a ladder track *m* which in turn may connect to a series of storage or assembly tracks *c*, and to tracks *h*, and *i*, leading to the treating plant 1. Suitable cross-overs and switches enable tram-cars to be delivered to track *k* which slopes downwardly to one side of the wood-working plant, the tram-cars after unloading being transferred by a loop-track to the other side of the wood-working plant where they are again loaded with adzed and bored ties (the loads being bailed to hold them in shape), and carried on the downwardly sloping track *j* to either track *h* or *i* to the treating plant 1, from which the tram-cars carrying the treated ties are delivered over tracks *h* and *i* to tracks *f* extending to the loading station tracks *d* and *e*, where after the bails are removed, the ties are loaded on to railway cars for shipment. The track *g* extends from the loading tracks to the wood-working plant and provides means for rapid transfer of the removable bails and extension arms in a "shuttle" car (which may be of the special construction shown in my application Serial No. 194,431, filed May 26, 1927) operating to and from the wood-working plant and the loading platform.

The cycle of operations as carried out with this form of my invention when the ties are to be adzed before treatment is as follows:

Empty trams equipped with extensions arms and clearance plates are located on any track *b* in the tie yard. A locomotive crane (or similar hoisting machine) operates on the next adjacent standard track *a*, and by use of the gathering cable a load of ties is gathered up and placed on an empty tram, the extension arms affording a ready entrance to guide the load into the tram and making possible a large load. When a sufficient number of trams has been loaded, a train, usually about 15 to 20 trams, is switched to the wood-working plant via tracks *m*, *h*, *i* and *k*. As the trams enter the wood-working plant the loads are mechanically dumped on to the adzing machine. The extension arms are removed and loaded into a shuttle car which operates on shuttle track *g*. The empty trams are then run around the circular track in rear of wood-working plant to the opposite side where they are reloaded with adzed ties. After reloading, the bails which have previously been removed from the shuttle car, are attached to the trams to secure the loads before going into the treating cylinders.

With the ties now adzed, reloaded and fastened by bails, a suitable charge or train, usually consisting of about 15 trams is charged into the treating cylinders via tracks *j* and *i* or *h*. After treatment the charge is drawn from the treating plant and placed on shipping track *f*. The bails are removed from the treated ties and placed on the shuttle car located on shuttle track *g*. The ties are lifted from the trams by a crane operating on track *e* and loaded into railway cars located on track *d*. Extension arms are taken from the shuttle car located on track *g* and replaced on the empty trams. The empty cars, with arms attached, are sent back to the tie yard, to any track *b*, for reloading.

The shuttle car, now loaded with bails and containing no arms, is sent to the wood-working plant via shuttle track *g*, where the bails are removed for use on adzed loads. To avoid delays two shuttle cars are kept in service.

When the ties are to be treated without being adzed, the extension arms are not used, as the ties must be loaded and fastened by bails for direct charging into the treating cylinders. In this case, the cycle of operations is as follows:

The locomotive crane and dumping table are located on any track *a*, and the load forming devices are located on an adjacent tram track *b*. The empty trams with bails in place are switched to the same locality, and the bails removed. The trams are then loaded with ties from the stock piles, by means of the crane, dumping table, and load-formers, the bails are replaced and the loaded trams are run by track *m* to tracks, *c*, or to the treating cylinders.

Referring to Fig. 2, the layout is like that of Fig. 1, except that two standard gauge tracks, *a*, *a*, are used, and each such track is provided with a third rail to form the industrial tracks *b*, *b*.

The same cycle of operations may be carried out, as above described. This arrangement has, however, additional advantages in that the locomotive crane may be operated on either of the two adjacent standard gauge tracks, which places the crane within easier reach of the ties stacked on either side of these tracks; the trams may by use of the third rails be operated on either of the two adjacent standard gauge tracks; and incoming railway cars containing ties may be placed on either of the standard tracks, *a*, *a*, and unloaded either to the yard or to trams by the crane on the adjacent track *a*.

In the modification shown in Fig. 3, the yard tracks are arranged in groups consisting of two standard gauge tracks, *a*, *a*, with a narrow gauge track *b*, between them.

This arrangement permits all the operations of Figs. 1 and 2, with the additional advantages that the tram track *b* is free for any and all movements of trams throughout its entire length. In this way the standard gauge track system is kept entirely separate from the tram track system, which is desirable when the volume of work makes this economically possible.

This track arrangement enables me in connection with the various mechanical features above described, to carry out the loading and handling of wood preserving cars more economically than has heretofore been possible.

I claim:

1. A wood impregnating plant comprising in combination a treating plant, a wood-working plant, and means for delivering material from a stock yard to said plants comprising a track system consisting of a series of standard gauge tracks, spaced apart to permit storage of the material between them, a narrow gauge track located adjacent each standard gauge track, the narrow gauge tracks being connected at their ends to a ladder track, a track connecting said ladder track to the treating plant and having an extension leading to a loading station, and also a loop track connected thereto extending to both sides of said wood-working plant, substantially as and for the purpose described.

2. A plant as claimed in claim 1 in which the track system comprises groups of two adjacent standard gauge tracks and an adjacent narrow gauge track.

3. A plant as claimed in claim 1 in which the track system comprises groups of two adjacent standard gauge tracks each provided with a third rail to form a narrow gauge track.

4. A plant as claimed in claim 1 in which an additional narrow gauge track is provided between the wood-working plant and the loading station.

In testimony whereof, I affix my signature.

WILLIAM H. GRADY.