

No. 816,909.

PATENTED APR. 3, 1906.

W. GOLDIE.

METHOD OF MAKING COMPOSITE RAILROAD TIES.

APPLICATION FILED DEC. 5, 1903.

2 SHEETS—SHEET 1.

FIG. 1

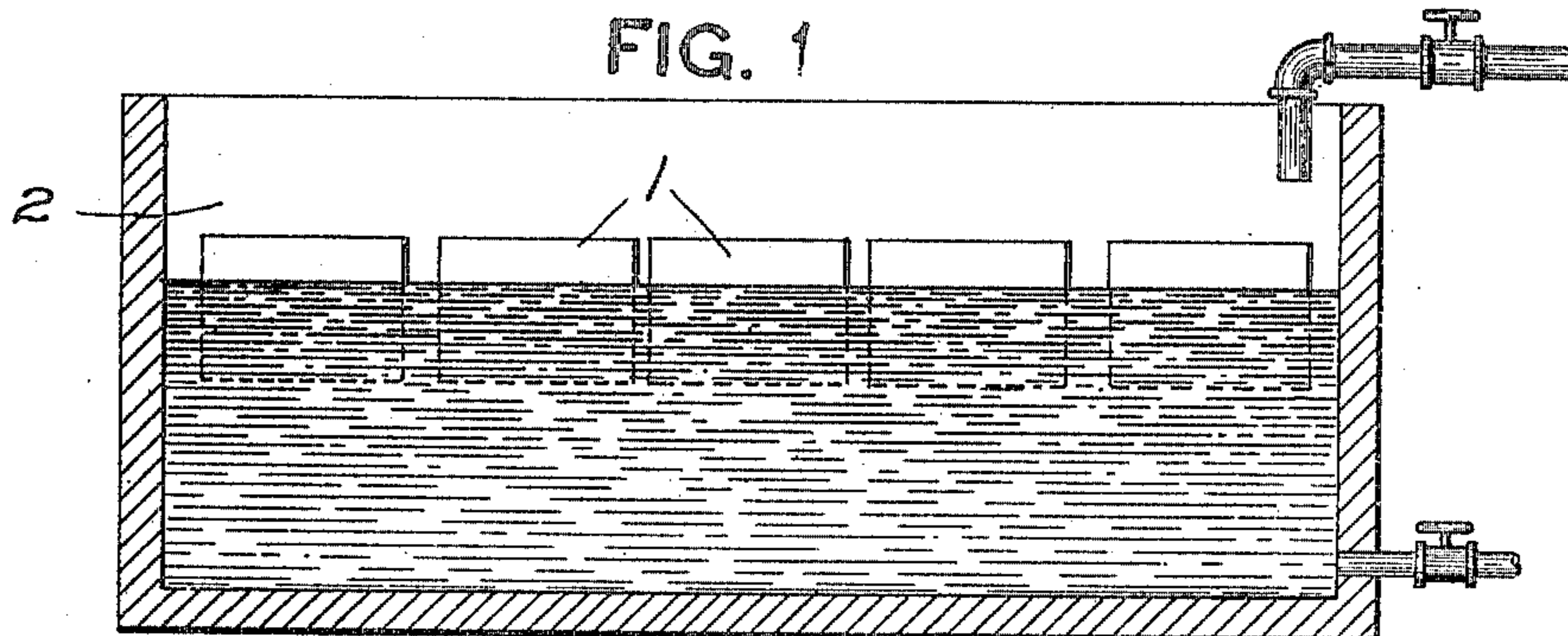


FIG. 2

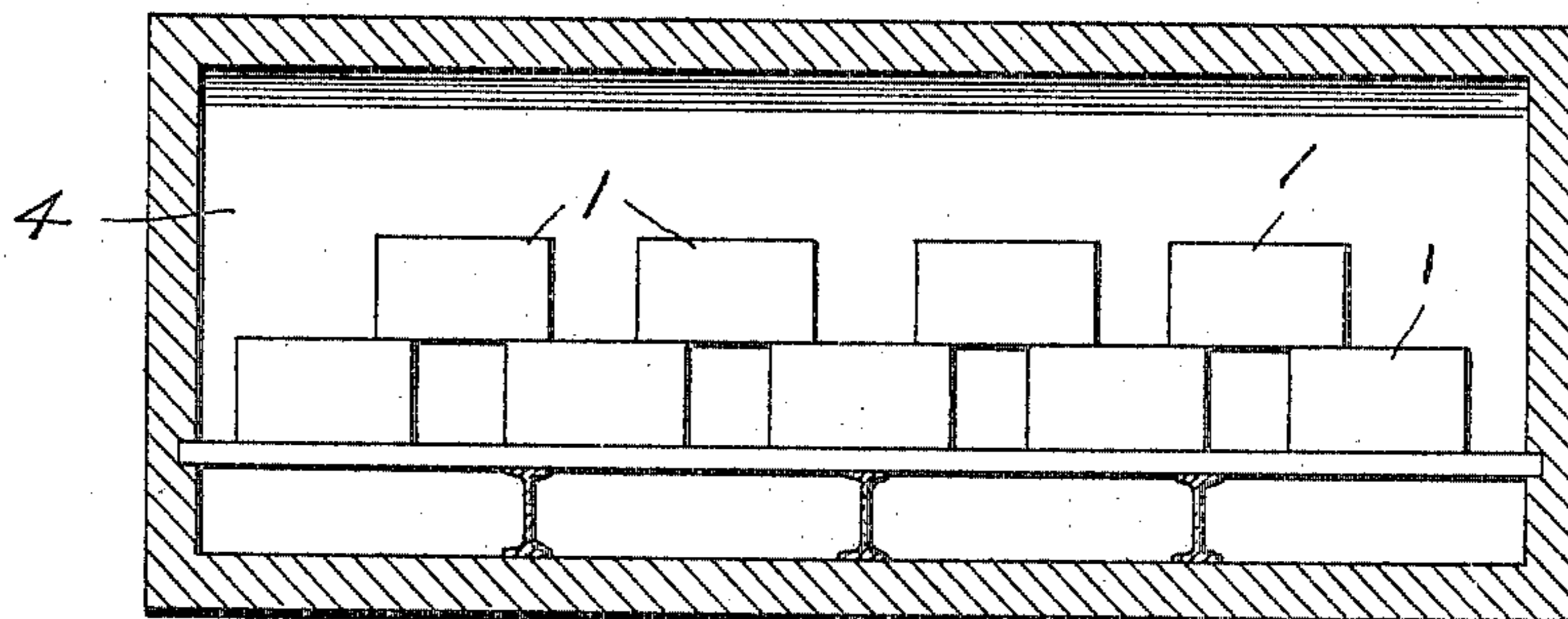
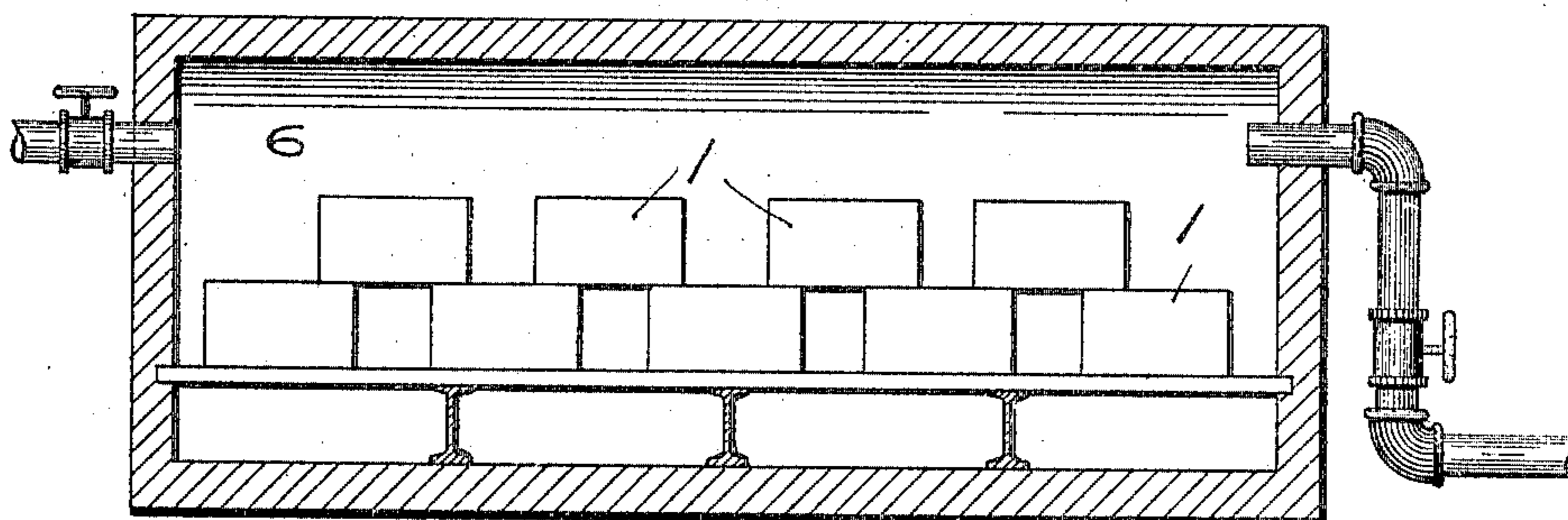


FIG. 3



WITNESSES.

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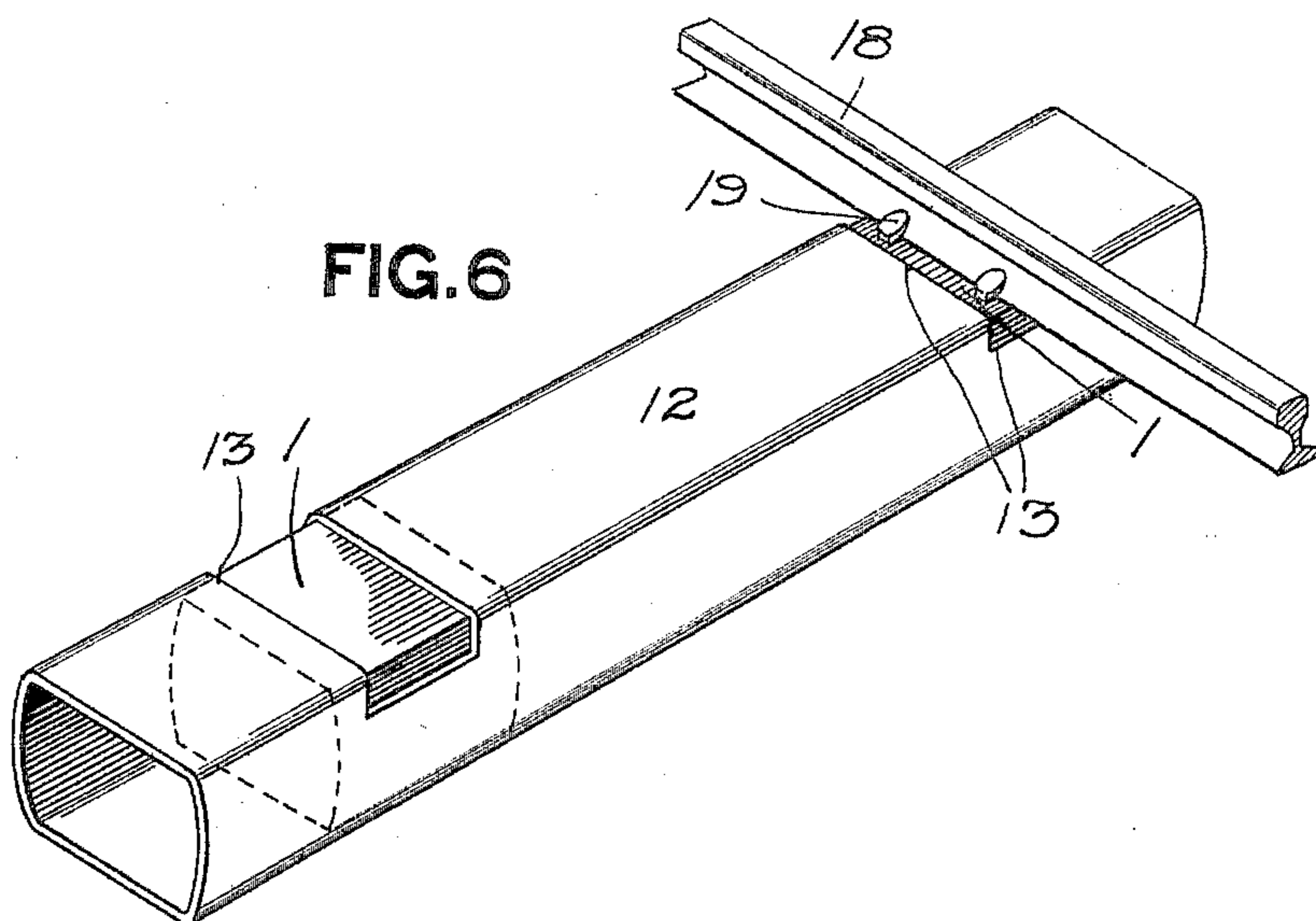
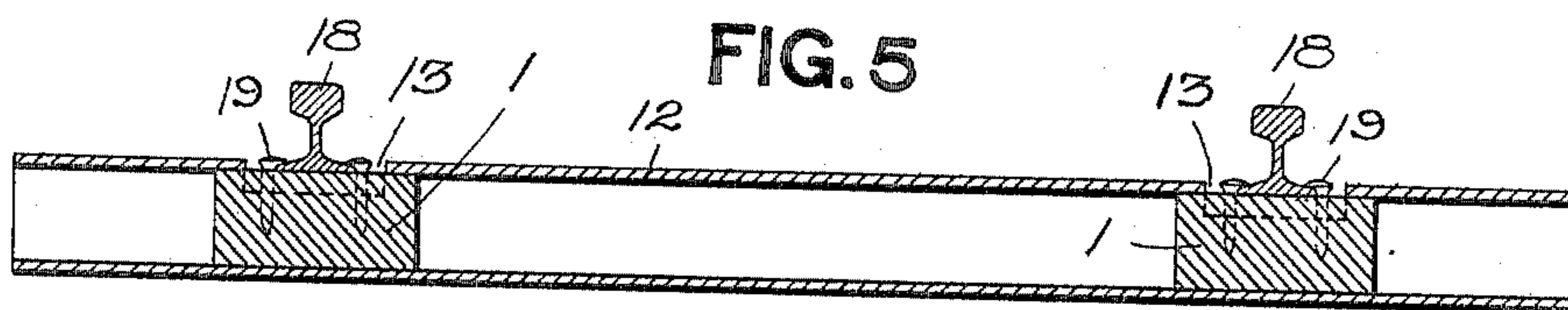
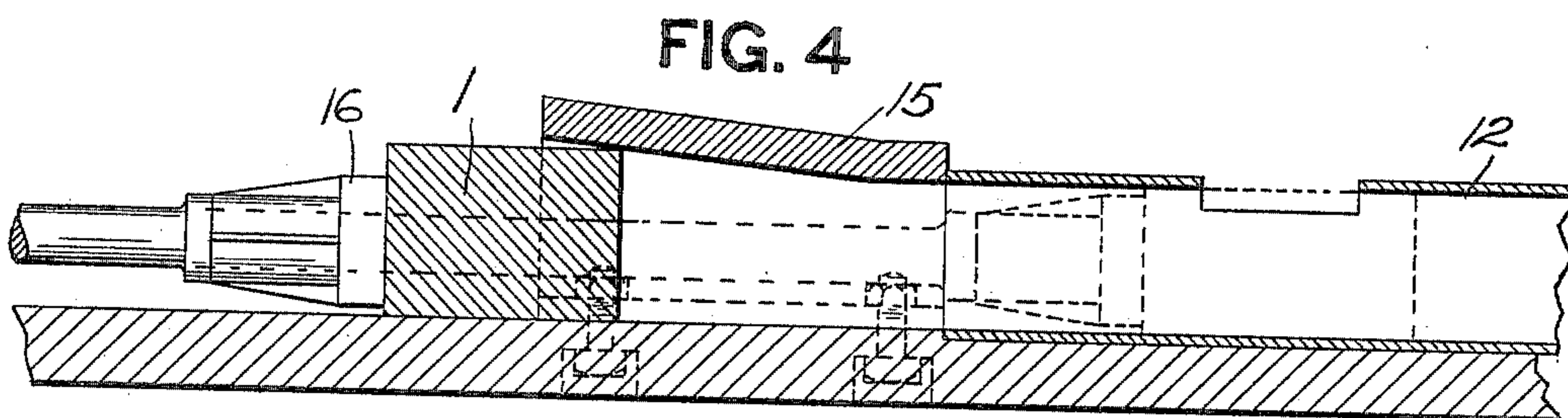
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UNITED STATES PATENT OFFICE.

WILLIAM GOLDIE, OF WILKINSBURG, PENNSYLVANIA.

METHOD OF MAKING COMPOSITE RAILROAD-TIES.

No. 816,909.

Specification of Letters Patent.

Patented April 3, 1906.

Application filed December 5, 1903. Serial No. 183,968.

To all whom it may concern:

Be it known that I, WILLIAM GOLDIE, a resident of Wilkinsburg, in the county of Allegheny and State of Pennsylvania, have
5 invented a new and useful Improvement in Methods of Making Composite Railroad-Ties; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to a method of making
10 ing railway-ties, and more especially composite metal and wooden ties.

The object of my invention is to provide a method of making such ties whereby the life of the wooden portion and its grip or holding
15 power on the spikes are very greatly increased.

Railway-ties of wood or partly of wood and partly of metal as heretofore made and used are subject to very rapid deterioration, due principally to the decay of the wooden
20 portions by the chemical action of the elements thereupon. Furthermore, with such prior ties it has not been possible to use some of the softer and cheaper woods, due partly to the rapid decay thereof and also to the
25 fact that such woods do not hold the spikes with sufficient firmness, this last defect being also present to some extent in hard-wood ties.

The object of my invention is to provide a
30 method of making railway-ties whereby it is possible to produce ties in which the foregoing defects are overcome.

To this end the invention consists, generally stated, in forming a wooden tie or a composite metal and wooden tie by first chemically treating the wooden portion thereof
35 with some preservative, such as sulfate of zinc, and thereafter thoroughly compressing said wood and rendering the fiber thereof
40 very dense, so as to increase its holding power on the spikes.

The invention also comprises certain details of procedure which will be hereinafter described and claimed.

45 In the accompanying drawings, Figure 1 is a diagrammatic view illustrating the step of treating the wood with a preserving chemical. Fig. 2 illustrates the drying of the wooden blocks. Fig. 3 represents the steam-
50 ing of the wooden blocks preparatory to pressing the same. Fig. 4 is a longitudinal section through apparatus for compressing the blocks and forcing the same into a hollow metallic tie-body. Fig. 5 is a longitudinal
55 vertical section through the completed tie;

and Fig. 6 is a perspective view of the same, showing one of the rails in place.

In carrying out my invention the wood which is to form the tie or a portion of the tie is formed to the proper shape and size, such
60 as the blocks 1, and is then chemically treated to render it indestructible by the action of the elements. Various preservatives for this purpose are known, any one of which will answer my purpose, sulfate of zinc be-
65 ing the most common thereof. The wooden blocks are impregnated with this chemical preservative in any suitable manner, such as by immersing the same in a tank 2 containing a solution of such preservative. After being
70 thoroughly impregnated with the chemical the blocks are removed and are then dried, as by placing them in a drying oven or kiln 4. Thereafter they are thoroughly compressed to render the fiber dense and hard, and pre-
75 ferably before pressing the fiber will be made yielding by steaming the blocks. This step also may be performed by any known apparatus, such as placing said blocks in a closed chamber 6, having openings therein to per-
80 mit the circulation of steam therethrough. When thoroughly softened, the wooden blocks are strongly compressed. This may be done by means of any suitable apparatus, such as presses of various forms, whereby a high de-
85 gree of pressure can be exerted upon the blocks. This compression will condense and close the fiber or cellular tissue of the wood and increase its holding power upon the spikes and will also confine the residue of the chemical
90 agent in the wood to such a degree that it cannot be dissipated either by leaching or evaporation. This chemically-treated and compressed wood might be used in this manner in the form of an ordinary cross-tie; but in
95 order to retain the firmness of fiber due to the compression it will be necessary to provide some enveloping means for said wooden body, or at least a portion thereof, to prevent the
100 same from again expanding. It is therefore preferable to have a tubular metallic tie-body and merely use this chemically-treated compressed wood as filling-blocks underneath the rails. I have so shown the same in the draw-
105 ings, the hollow metallic body comprising a tube 12, which is made of an ordinary round tube having its top and bottom faces flattened, as shown, or at least having its bottom faces flattened at the ends, so as to provide a
110 good seat on the ballast of the road-bed, and

its top face also flattened at the ends to provide a seat for the rail. The side face also might be flattened; but for purposes of tamping I prefer to leave the same rounded. Openings 13 are formed in the upper face of the hollow metallic tie-body near both ends thereof, and the chemically-treated compressed wooden blocks are forced into said body so as to come opposite these openings. The size of the wooden blocks will have been so chosen with reference to the cross-section of the hollow metallic body that said blocks in their compressed state will fit very snugly into the body, so that the latter serves to prevent the blocks from expanding and losing the density imparted by the compressing action.

In Fig. 4 I have shown an arrangement whereby the blocks are compressed and forced into the tubular tie-body. The tie-body will be held firmly in position by any suitable means in proximity to the small end of a funnel-shaped guide 15, and a plunger 16, actuated by any suitable means, is used to force the block through the funnel 15 and into the tubular tie-body opposite an opening therein. The funnel 15 will be of such length and taper that an uncompressed block will become sufficiently condensed by the mere act of forcing the same through said funnel in inserting the same into the tubular body. The tie-body serves to hold the blocks against expansion, so that their density is retained.

In use the rails 18 will be secured in place by means of ordinary spikes 19 driven into these wooden blocks. Preferably the openings in the top of the metallic body will be of such length that neither the flanges of the rails nor the spikes will come into contact with the metal portion, and said openings will also extend down slightly into the side walls of the tube, so that the bottom of the rail does not come into contact with the metal, but will be supported entirely by the wooden blocks. Where the traffic is severe, a tie-plate of any approved form may be used between the base of the rail and the tie to more fully protect the wooden portion. In that case care must be taken to so place the plate that no portion thereof will come into contact with the metallic portion of the tie. This arrangement thoroughly insulates the rails and enables their use as conductors for signaling and similar systems.

The tie herein disclosed is not claimed in this application, but is claimed in my application Serial No. 183,969, filed concurrently herewith.

By means of my invention I am enabled to use the softer and cheaper woods, which are practically worthless—such as cottonwood, pine, poplar, and the like—and which heretofore, except as to some species of hard pine, have not been adapted for railway-ties be-

cause of their too rapid decay under the action of the elements and also because their fiber is so loose as not to grip the spikes with sufficient firmness. By my process, however, all such woods are rendered practically indestructible by chemical action, and their density, furthermore, is so increased as to give a very firm grip on the spikes, much better than the hard woods now in use for railway-ties. Furthermore, the closing of the cellular tissue of the wood due to the compressing thereof binds the chemical preservative in the wood to such a degree that it cannot be dissipated either by leaching or evaporation. The metallic body of the tie also is practically indestructible, so that my composite tie as a whole is practically indestructible and requires only a small amount of wood, this being an important consideration by reason of the coming scarcity of wood suitable for tie purposes.

In place of the wooden blocks I may use blocks of wood-pulp, waste-leather, felt, or other suitable fiber, suitably compressed to sufficient density to hold the spikes and also acting as insulation.

What I claim is—

1. The method of making railway-ties which consists in taking a mass of fiber, compressing the same to a degree of density sufficient to hold spikes, and then holding the same in compressed condition.

2. The method of making railway-ties which consists in taking a mass of fiber, treating the same with a preservative, compressing the same to a degree of density sufficient to hold spikes, and then holding the same in compressed condition.

3. The method of making railway-ties which consists in taking a mass of fiber, softening the same, then compressing the same to a degree of density sufficient to hold spikes, and holding the same in compressed condition.

4. The method of making railway-ties which consists in taking a mass of fiber, treating the same with preservative, drying the same, then compressing the same to a degree of density sufficient to hold spikes, and holding the same in compressed condition.

5. The method of making railway-ties which consists in taking a piece of wood, impregnating the same with a wood-preservative, and then compressing the same and holding it in compressed condition.

6. The method of making railway-ties which consists in taking a piece of wood, compressing the same, and then holding the same in compressed condition.

7. The method of making railway-ties which consists in taking a piece of wood, steaming the same, and then compressing the same and holding it in compressed condition.

8. The method of making railway-ties,

which consists in taking a piece of wood, impregnating the same with a wood-perservative, drying the same, then steaming the same, and finally compressing the same and
5 holding it in compressed condition.

9. The method of making railway-ties which consists in taking a hollow metallic body with openings in its upper face, compressing masses of fiber to a degree of density
10 sufficient to hold spikes and forcing the same in compressed condition into said hollow metallic body opposite said openings.

10. The method of making railway-ties which consists in taking a hollow metallic
15 body provided with openings in its upper face, taking masses of fiber, treating the same with a preservative, and then compressing the same to a degree of density sufficient to hold spikes and forcing the same in com-
20 pressed condition into the hollow metallic body opposite the openings therein.

11. The method of making railway-ties which consists in taking a hollow metallic body with openings in its upper face, and
25 compressing wooden blocks and forcing the same in compressed condition into said hollow metallic body opposite said openings.

12. The method of making railway-ties which consists in taking a hollow metallic

body provided with openings in its upper
30 face, taking wooden blocks and steaming the same, then compressing said wooden blocks forcing the same in compressed condition into the hollow metallic body opposite the open-
ings therein.

13. The method of making railway-ties
35 which consists in taking a hollow metallic body provided with openings in its upper face, taking blocks of wood, impregnating the same with a wood-preservative, and then
40 compressing the same and forcing them in compressed condition into the hollow metallic body opposite the openings therein.

14. The method of making railway-ties
45 which consists in taking a hollow metallic body provided with openings in the upper face thereof, taking blocks of wood, impregnating the same with a wood-preservative, drying the same, then steaming the same, and
50 finally compressing the same and forcing them in compressed condition into the hollow metallic body opposite the openings therein.

In testimony whereof I, the said WILLIAM GOLDIE, have hereunto set my hand.

WILLIAM GOLDIE.

Witnesses:

ROBERT C. TOTTEN,
G. C. RAYMOND.