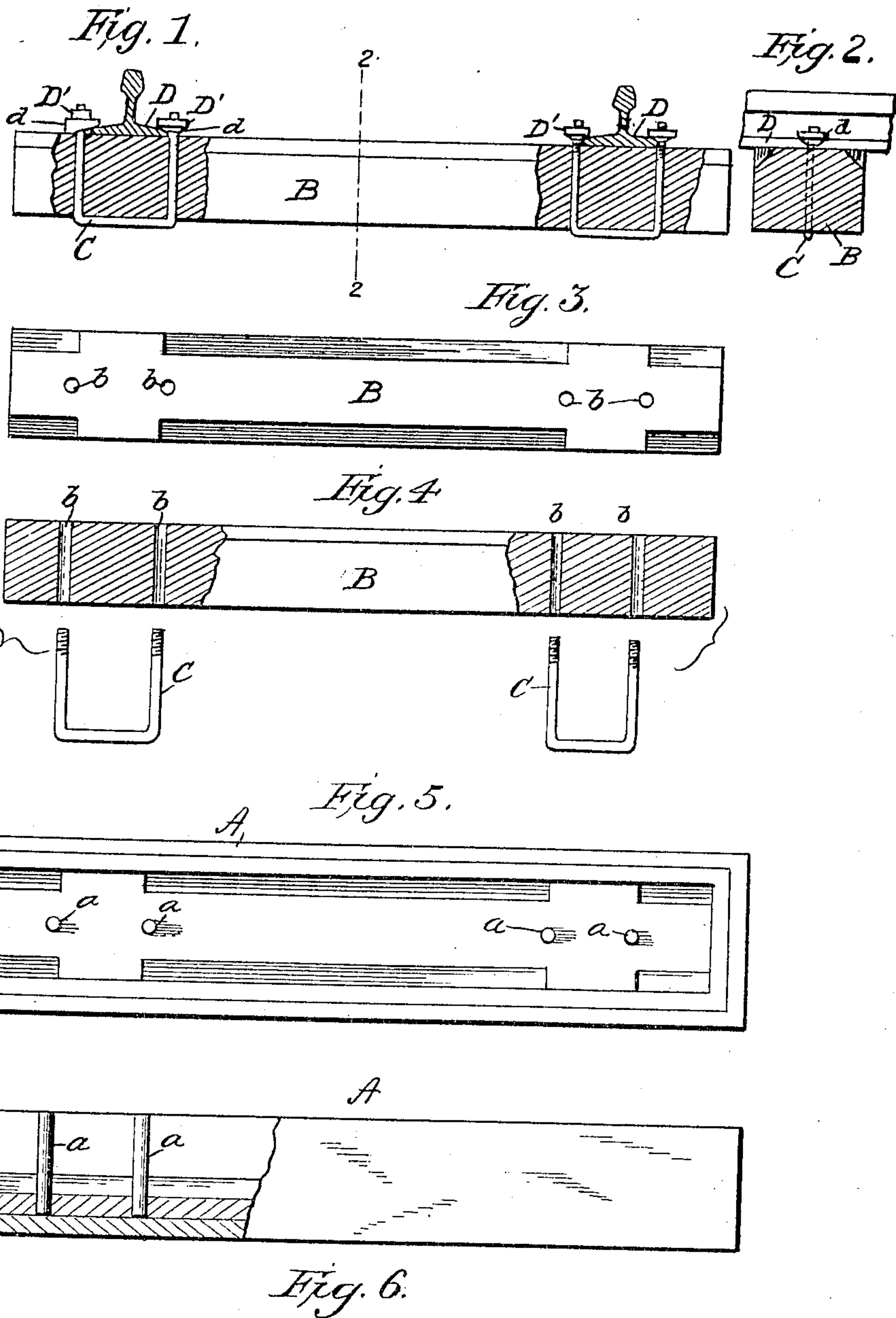


No. 869,645.

PATENTED OCT. 29, 1907.

M. J. NOLAN.
RAILWAY TIE.

APPLICATION FILED MAR. 5, 1907.



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UNITED STATES PATENT OFFICE.

MARTIN J. NOLAN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR, BY MESNE ASSIGNMENTS,
TO NATIONAL SLAG CONSTRUCTION COMPANY, A CORPORATION OF DELAWARE.

RAILWAY-TIE.

No. 869,645.

Specification of Letters Patent.

Patented Oct. 29, 1907.

Application filed March 5, 1907. Serial No. 360,717.

To all whom it may concern:

Be it known that I, MARTIN J. NOLAN, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Railway-Ties, of which the following is a specification.

This invention relates to railway ties, and the manufacture thereof.

The object of the invention is to construct railway ties of a dense, heavy material constituting a by-product of little or no value, at the present time, and possessing the qualities of being unaffected by moisture, frost or heat.

With this and minor objects in view my invention consists in the matters to be hereinafter described in detail, and claimed in the clauses at the close of this specification.

In the accompanying drawings, Figure 1, is a side elevation, partly in section, of a tie, rails and rail fastening, embodying my invention—Fig. 2, is a sectional view on line 2--2, of Fig. 1—Fig. 3, is a plan view of the tie—Fig. 4, is a side elevation, partly in section of a tie with the fasteners in position for insertion—Fig. 5, is a top plan view of a mold or flask adapted for the casting of my ties—Fig. 6, is a side elevation, partly in section, of the same.

In constructing railways many efforts have been made to obtain a satisfactory substitute for the well known wood ties or sleepers, because of the scarcity of wood in large areas of the country, and for the further reason that wood is affected by the elements, and subject to attack by insects, necessitating constant watchfulness and frequent renewals, which involve great expense—I have discovered that satisfactory ties can be made from a by-product of steel and iron plants, the material thus being of low cost, and a saving being effected in the operation of the furnace, as ready disposal is made of waste which rapidly accumulates to the great disadvantage of the plant.

As is well known the slag or cinder dross of steel and iron furnaces, is practically a waste product, extremely hard, and so far as I am aware, methods have not been heretofore devised to compact it into a non-friable mass—I have discovered that the slag when hot from the furnace may be cast in molds, and compacts into a solid mass, having a minimum of expansibility under usual climatic changes, and is not affected by moisture or frost, therefore being eminently well fitted to fill the requirements of railway ties or sleepers, which may be made at slight cost without material or expensive change to the steel or iron plant.

In carrying my invention into practice, a staging or elevated way is arranged adjacent to the furnace to convey the hot slag, cinder or dross direct to a crucible or sand mold, when said hot slag is poured into the mold, compacting therein into a solid mass of the required shape—To admit of proper rail fastenings the mold A is provided with posts *a* so positioned that the finished tie B will be provided with vertical openings *b* on either side of and closely adjacent to the rail seats of the tie so that fastening bolt C may be passed therethrough, the upper ends of which are threaded to receive nuts which overlap and clamp the rail foot D as shown in Fig. 1—I prefer the form of fastening shown, consisting of a U-shaped bolt or staple, threaded at its free ends to receive nuts D that tightly clamp the foot of the rail to the tie and in some instances I contemplate using a beveled washer *d* to rest upon the tie and rail-foot, and present a flat upper surface to the pressure of the clamping nut as at the left hand of Fig. 1—The slag from a steel furnace is preferably cast in a crucible mold, which it will be understood is shaped to give proper form to the tie, preferably that shown in the drawings, as it affords a broad seat or rest for the rails and is beveled between the rail seats, and at the ends to avoid lodgment of snow etc. In casting slag from iron furnaces it may be found necessary to employ sand molds, as the slag contains less flint and is apt to adhere to a crucible mold—In practice the slag is poured while hot into the mold the bottom of which is shaped to the form of the upper side of the finished tie, thus assuring for the top and sides of the tie a practically smooth surface, while the bottom of the tie will be somewhat rough, assuring a better hold on the roadbed.

It will be understood, that the same material and method of casting may be applied in making other structures than railway ties, such as girders, and other objects exposed to the elements.

Claims.

1. A railway tie consisting of a solid mass of slag, and having vertical openings adjacent to the rail seats for the reception of the rail fastenings.

2. A railway tie consisting of a solid mass of slag having rail seats its full width and its upper surface and sides cast smooth, but its bottom roughened, and having vertical openings adjacent to the rail seats to receive the rail fastenings.

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

MARTIN J. NOLAN.

Witnesses:

JOHN R. MCINTYRE,
C. A. NEALE.