(No Model.) 2 Sheets—Sheet 1.

D. WILSON.

MANUFACTURE OF TUBULAR RAILWAY TIES.

No. 394,426. Patented Dec. 11, 1888.

Fig. 1

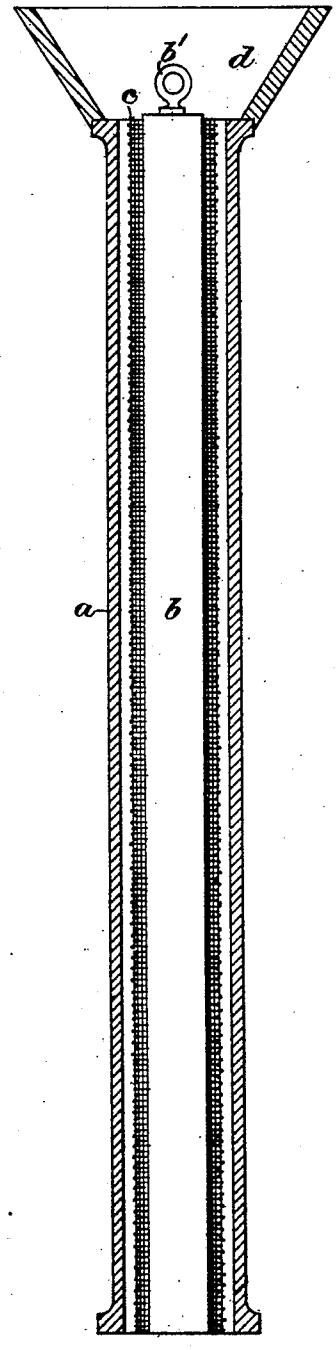


Fig. 2.

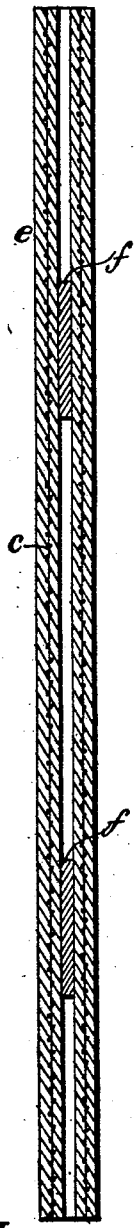
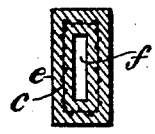


Fig. 3.



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(No Model.) 2 Sheets—Sheet 2.

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MANUFACTURE OF TUBULAR RAILWAY TIES.

No. 394,426. Patented Dec. 11, 1888.

Fig. 6.

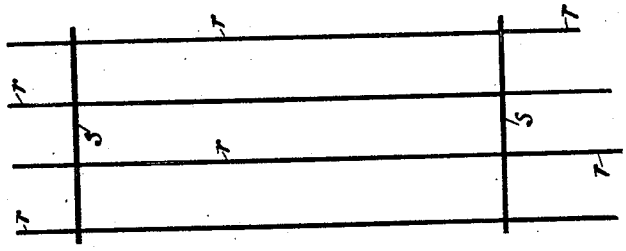


Fig. 7.

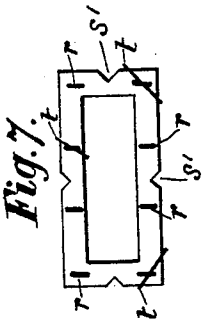


Fig. 4.

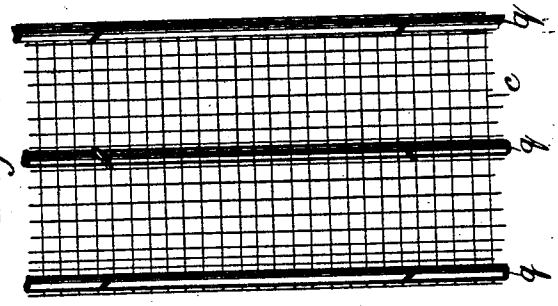
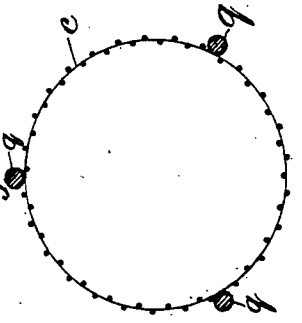


Fig. 5.



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394,426

UNITED STATES PATENT OFFICE.

DAVID WILSON, OF GRAYS, COUNTY OF ESSEX, ENGLAND.

MANUFACTURE OF TUBULAR RAILWAY-TIES.

SPECIFICATION forming part of Letters Patent No. 394,426, dated December 11, 1888.

Application filed August 23, 1887. Serial No. 247,681. (No model.) Patented in England May 15, 1885, No. 5,990, and February 17, 1886, No. 2,348; in France March 16, 1886, No. 174,809; in Belgium March 17, 1886, No. 72,396, and in Spain July 20, 1886, No. 8,651.

To all whom it may concern:

Be it known that I, DAVID WILSON, of Grays, in the county of Essex, England, a subject of the Queen of Great Britain, have invented Improvements in the Manufacture of Railway-Sleepers, (for which I have obtained Letters Patent in Great Britain, No. 5,990, dated May 15, 1885, also Patent No. 2,348, dated February 17, 1886; in France, No. 174,809, dated March 16, 1886; in Belgium, No. 72,396, dated March 17, 1886, and in Spain, No. 8,651, dated July 20, 1886,) of which the following is a specification.

In the annexed drawings, Figure 1 is a longitudinal section of a mold. Fig. 2 is a longitudinal section, and Fig. 3 a transverse section, of a railway-sleeper. Fig. 4 is a partial side elevation, and Fig. 5 a transverse section, of a core of wire-netting on which the sleeper is formed. Fig. 6 is an elevation, and Fig. 7 a transverse section, of another form of core.

My improvements in the manufacture of railway-sleepers consist in forming them of wire-netting or metal frames of peculiar construction, coated on both sides with a novel composition of matter, as hereinafter described, and definitely pointed out in the claims.

In the manufacture of railway-sleepers according to my invention I form molds of the required shape and place the wire-netting or the metal frames therein and pour the concrete or cement into the said molds and allow it to set. I prefer to form a hollow longitudinally in the sleeper, in which hollow I secure a block or blocks of wood.

Fig. 1 of the accompanying drawings represents a mold suitable for the manufacture of a railway-sleeper according to my invention, with a core of wire-netting placed in the required position therein. *a* is the outer portion of the mold. *b* is the inner portion or mandrel, which is formed slightly tapered, in order to admit of it being readily withdrawn after the composition of matter has set. *c* is the core of wire-netting, and *d* is a hopper resting on the upper edge of the outer portion, *a*, of the mold, into which hopper the composition of matter in a liquid state is poured, and whence it passes into the hollow of the mold containing the core *c*, which, when the manufacture is completed, is embedded in or covered or coated on both sides with the composition of matter poured into the mold. The mold is suitably supported on a floor or otherwise while the composition of matter is being poured into it, and while the composition of matter is setting the support on which the mold rests prevents the escape of the composition of matter from the lower part thereof. *b'* is a ring by which the mandrel or inner portion of the mold may be raised, when necessary.

Fig. 2 is a longitudinal section, and Fig. 3 is a transverse section, of a railway-sleeper constructed according to my invention, the core, which consists of wire-netting, being marked *c*, and the composition-coating *e*. *f f* are the blocks of wood placed in the hollow of the sleeper to receive the spikes or bolts by which the chairs are secured. The holes in the composition-of-matter part of the sleeper through which the spikes or bolts pass may be formed by placing suitably-formed blocks in the mold at the parts where the said holes are required, or the said holes may be drilled in the composition of matter after it has set.

In some cases I overlap the ends of the wire-netting forming the cores, and in some cases I arrange several cores of wire-netting concentrically one within the other. Where it is desirable to increase the rigidity of the cores of wire-netting, I secure metal rods longitudinally to the said cores, as shown in Figs. 4 and 5, in which figures the said rods are marked *q q*.

The metal frame which I in some cases use in place of the core of wire-netting in the manufacture of railway-sleepers, as hereinbefore described, consists of bars or rods engaged with slots formed in rings or hoops which are kept in position by means of pins placed in holes in the said bars or rods.

Fig. 6 is an elevation, and Fig. 7 is a transverse section, of a frame thus constructed. Referring to said Figs. 6 and 7, *r r* are the bars or rods, *s s* are the rings or hoops, and *t t* are the pins by which the latter are kept in place. The rings *s s* are or may be cut away at parts,

as shown at *s' s'*, in order to admit of the composition of matter readily flowing past them when the frames are in the mold.

It is in some cases advantageous to lubricate the mandrel and the mold before using them. A composition suitable for this purpose may be made by mixing together soft soap and paraffine-oil in the proportions of about two parts of soft soap to one part of paraffine-oil, and warming the mixture. Any cheap oily or greasy matter may, however, be used for this purpose.

The plastic compound or composition of matter which I use for coating the wire-netting or similar hollow-metal frame or shell both internally and externally, is composed of Portland cement, sand, or similar fine or disintegrated material and an aqueous solution of silicate of soda, or, what is the equivalent of the latter for my purpose, silicate of potash or caustic soda, in or about the following proportions, to wit: Portland cement, one part by bulk; sand or similar fine or disintegrated material, three parts by bulk; aqueous solution of silicate of soda or its described equivalent, one-tenth the joint weight of the Portland cement and sand. This plastic compound or composition of matter I have found to be very desirable, durable, and useful for the special purposes of a railway-sleeper.

I prefer to use netting made of steel wire; but I do not limit myself to the use of any particular metal or gage of wire or form or size of mesh.

Having thus described my invention, what I claim is—

1. A railway-sleeper consisting of a metallic skeleton frame coated internally and externally with a composition composed of Portland cement, sand, and silicate of soda, substantially as described.

2. A tubular railway-sleeper consisting of a metallic skeleton frame coated internally and externally with a composition of Portland cement, sand, and silicate of soda, and provided with wooden blocks located at intervals entirely within and inclosed by the tubular frame, substantially as described.

3. A tubular railway-sleeper consisting of a tubular skeleton frame coated internally and externally with a plastic composition and provided with wooden blocks located at intervals entirely within the space inside the internal coating, said blocks at their outer surfaces bearing against the internal coating entirely around the inside thereof to receive the rail-chair spikes, substantially as described.

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