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PATENTED APR. 25, 1905.

A. C. MATHER.

# CONSTRUCTION OF CONCRETE RAILROAD TIES.

APPLICATION FILED DEC. 21, 1904.

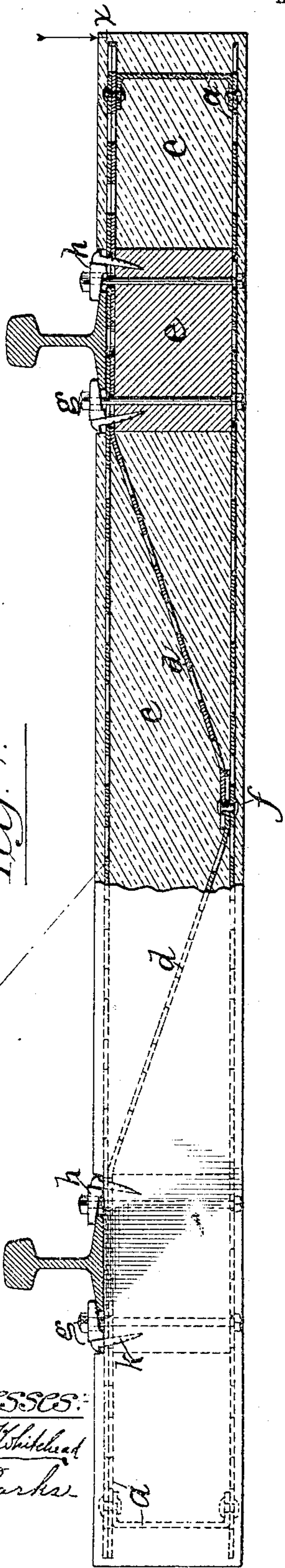
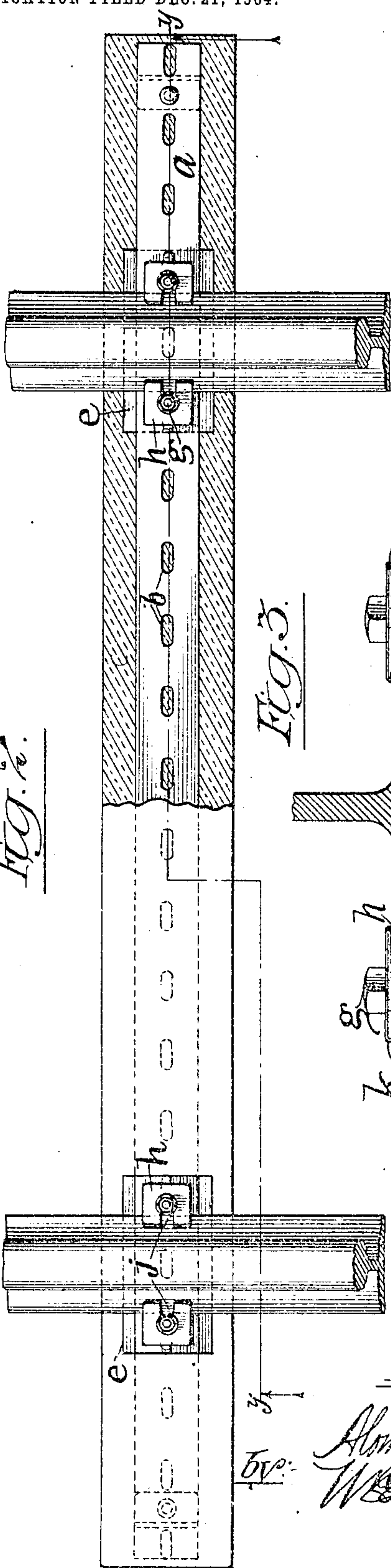


Fig. 1.

Witnesses:

John H. Whitehead

J F Parker.



2. 2. 1. 1.

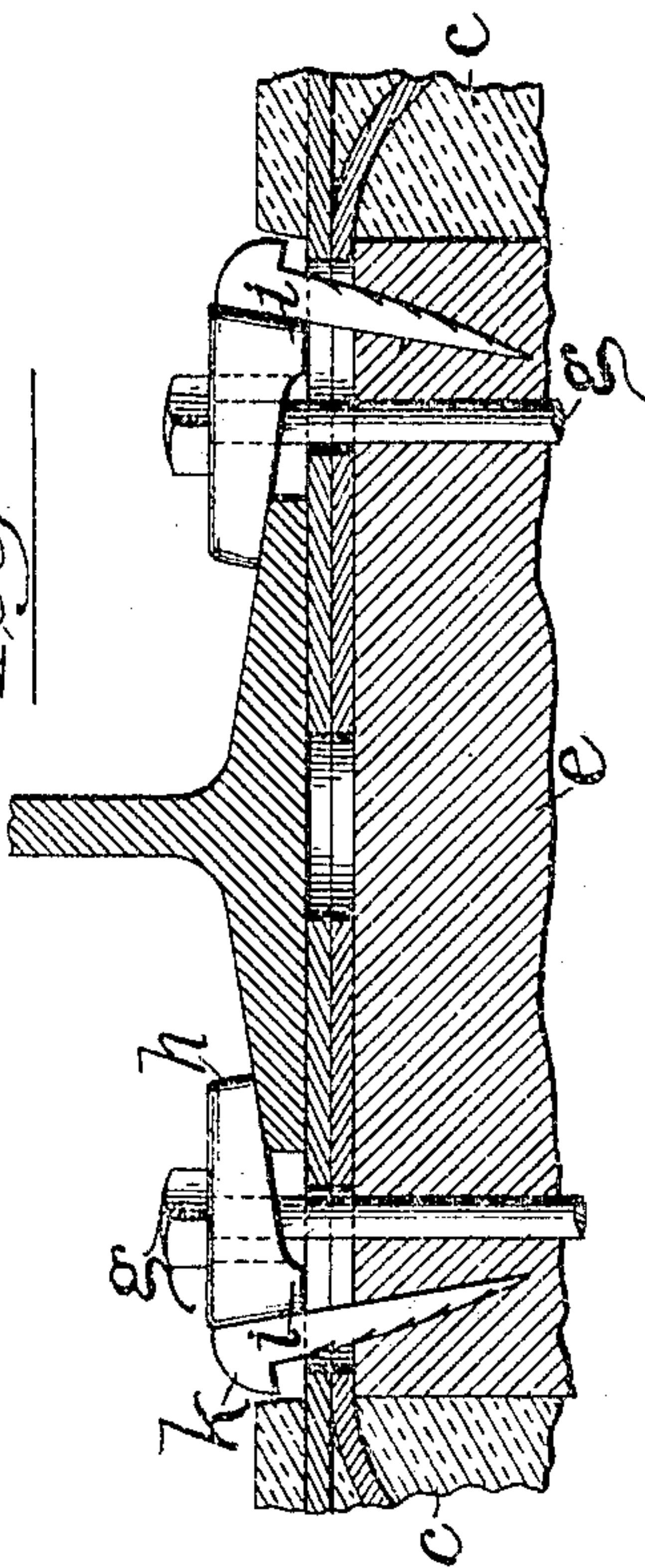


Fig. 3.

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Atty.:



# UNITED STATES PATENT OFFICE.

ALONZO C. MATHER, OF CHICAGO, ILLINOIS.

## CONSTRUCTION OF CONCRETE RAILROAD-TIES.

SPECIFICATION forming part of Letters Patent No. 787,931, dated April 25, 1905.

Application filed December 21, 1904. Serial No. 237,764.

*To all whom it may concern:*

Be it known that I, ALONZO C. MATHER, a citizen of the United States, residing in Chicago, Cook county, Illinois, have invented certain new and useful Improvements in the Construction of Concrete Railroad-Ties, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings herewith, and in which—

Figure 1 shows my said new device in side elevation, partly in section, on the plane *yy* of Fig. 2; and Fig. 2 shows the same in plan or top view, partly in section, on the plane *xx* of Fig. 1; and Fig. 3 shows, on an enlarged scale, a central vertical longitudinal section of a fragment of a tie and rail to show more clearly how the rail and tie are connected in my said new device.

Like reference-letters denote like parts throughout.

The object of my invention is to combine a steel truss-frame and concrete filling in and around said frame and wooden blocks under the rail to hold spikes and to by means of bolts and said elements bind the rail more firmly and securely to the tie than can be done by means of the ordinary spike. To attain said desirable ends, I make a truss-frame *a* of sheet-steel, which is cut into strips about four inches wide and which is pierced with oblong holes *b* about three-quarters of an inch wide and two inches long, which are pitched about two inches apart, as shown, and thus form a steel frame about six inches high within the concrete *c* of a tie which in its finished condition is about eight inches high and about seven and one-half to eight feet long, the steel truss being within said length by about three or four inches less at each end. Said truss is braced by two diagonals *d d*, which reach from the wooden filling-block *e* to the bottom chord, to which they are fastened at a point *f*. The wooden blocks *e* are about five inches wide and about twelve inches long. Through said block and the truss members above and below it are passed threaded bolts *g*, of which the nut is on the under side of the lower truss-chord and is incased in the concrete. The heads of said bolts rest on wedges *h*, provided with a heel *i*, which rests on the top of the

top chord of the truss and of said wedge. The under side is extended from said heel upward and about parallel with the top of the foot of the rail, while the top side of the wedge is parallel with the top of the tie and the shoulder on the head of the bolt. Said wedge is provided with a slot *j*, into which passes the body of the bolt, as shown, and behind said wedge is a spike *k*, driven into the block *e*, whereby the wedge *h* is held to its place, the arrangement of said bolts, wedges, ties, and rails being such that the rail is held to its tie by powerful bolts through the medium of the wedges *h*, wherewith the rail is most securely held in place and at the same time easily and quickly released. In this construction is secured a railroad-tie which is very strong, lasting, and which secures the rail to it in a far more reliable manner than can be done by spikes in wood. The ends of the diagonal braces are continued and lie under the top truss-chord and extend to its end, and thus form a double-thick top chord of the truss from the inner ends of the wooden blocks to the end of the truss-frame. The holes or foraminations *b* of the truss serve both to give strong hold to the inclosing concrete and to pass the bolts and spikes at the required places. The central part of the length of said wooden blocks is placed under the longitudinal center of the track-rails for any and all widths of tracks.

What I claim is —

1. A railroad-tie consisting of a metal truss-frame, short wooden blocks under the rails and between the chords of said truss, and a concrete body inclosing said truss.

2. A railroad-tie consisting of a metal truss-frame, short wooden blocks under the rails and between the top and bottom truss-chords and diagonal braces between said blocks, and a concrete body inclosing said truss.

3. A railroad-tie consisting of a metal truss-frame, short wooden blocks under the rails set equally on each side of the longitudinal rail centers, bolts through said blocks and truss-frames and a wedge under the bolt-head, and a concrete body inclosing said truss.

4. A railroad-tie consisting of a metal truss-frame short wooden blocks under the rails

set equally on each side of the longitudinal rail centers, bolts through said blocks and truss-frames and a heeled and slotted wedge under the bolt-head and a concrete body inclosing said truss.

5. A railroad-tie consisting of a foraminated metal truss-frame, short wooden blocks

under the rails and between the chords of said truss, and a concrete body inclosing said truss.

ALONZO C. MATHER.

Witnesses:

WM. ZIMMERMAN,

WM. A. CUMMINGS.