No. 837,282. PATENTED DEC. 4, 1906.

W. D. CLARK.

COMBINATION TIE PLATE AND RAIL BRACE.

APPLICATION FILED SEPT. 4, 1906.

3 SHEETS—SHEET 1.

FIG. 1.

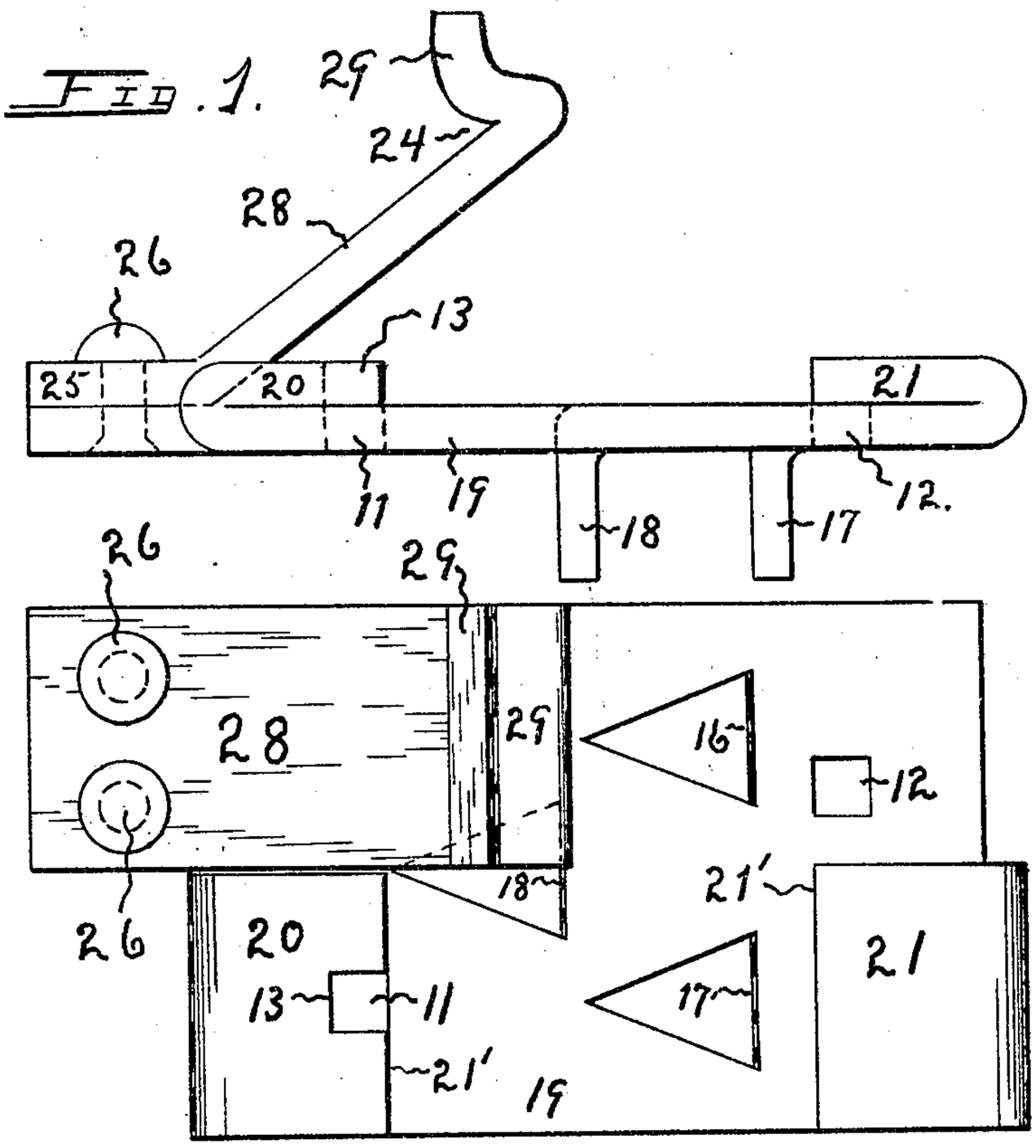
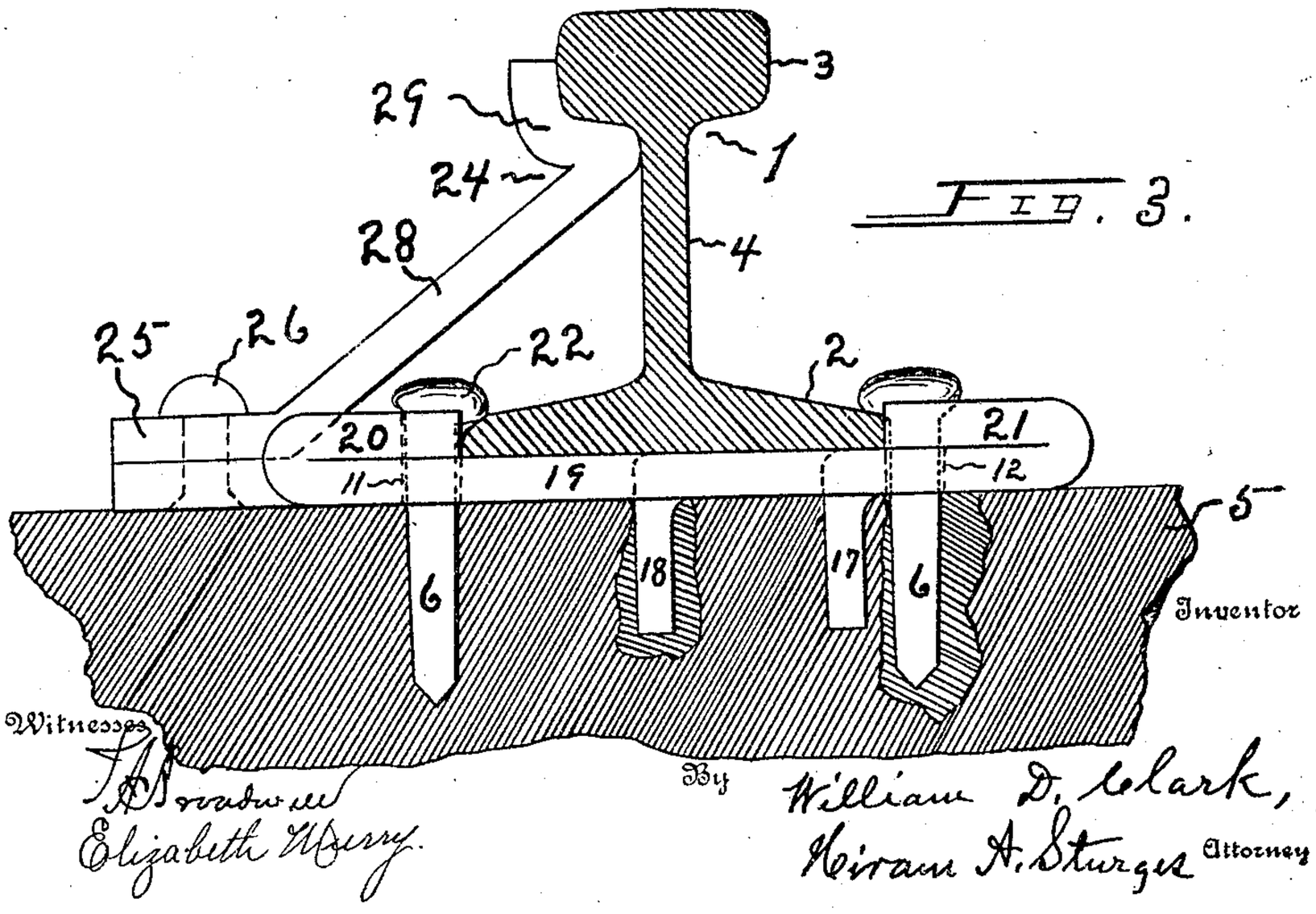



FIG. 2.




FIG. 3.




Witnesses
A. Broadwell
Elizabeth Merry.

Inventor
By William D. Clark,
Hiram A. Sturges Attorney

No. 837,282. PATENTED DEC. 4, 1906.

W. D. CLARK.

COMBINATION TIE PLATE AND RAIL BRACE.

APPLICATION FILED SEPT. 4, 1906.

3 SHEETS—SHEET 2.

Fig. 4.

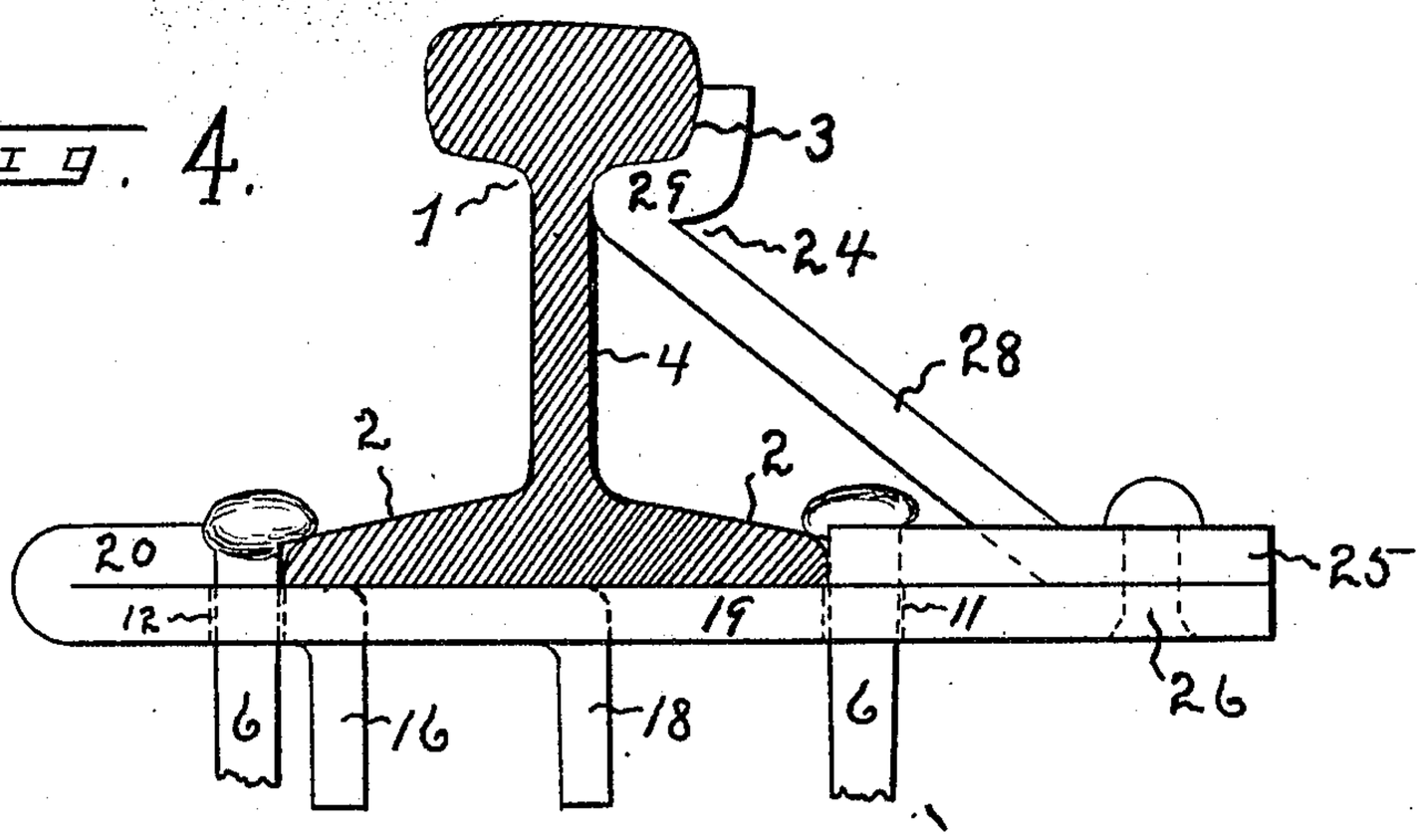
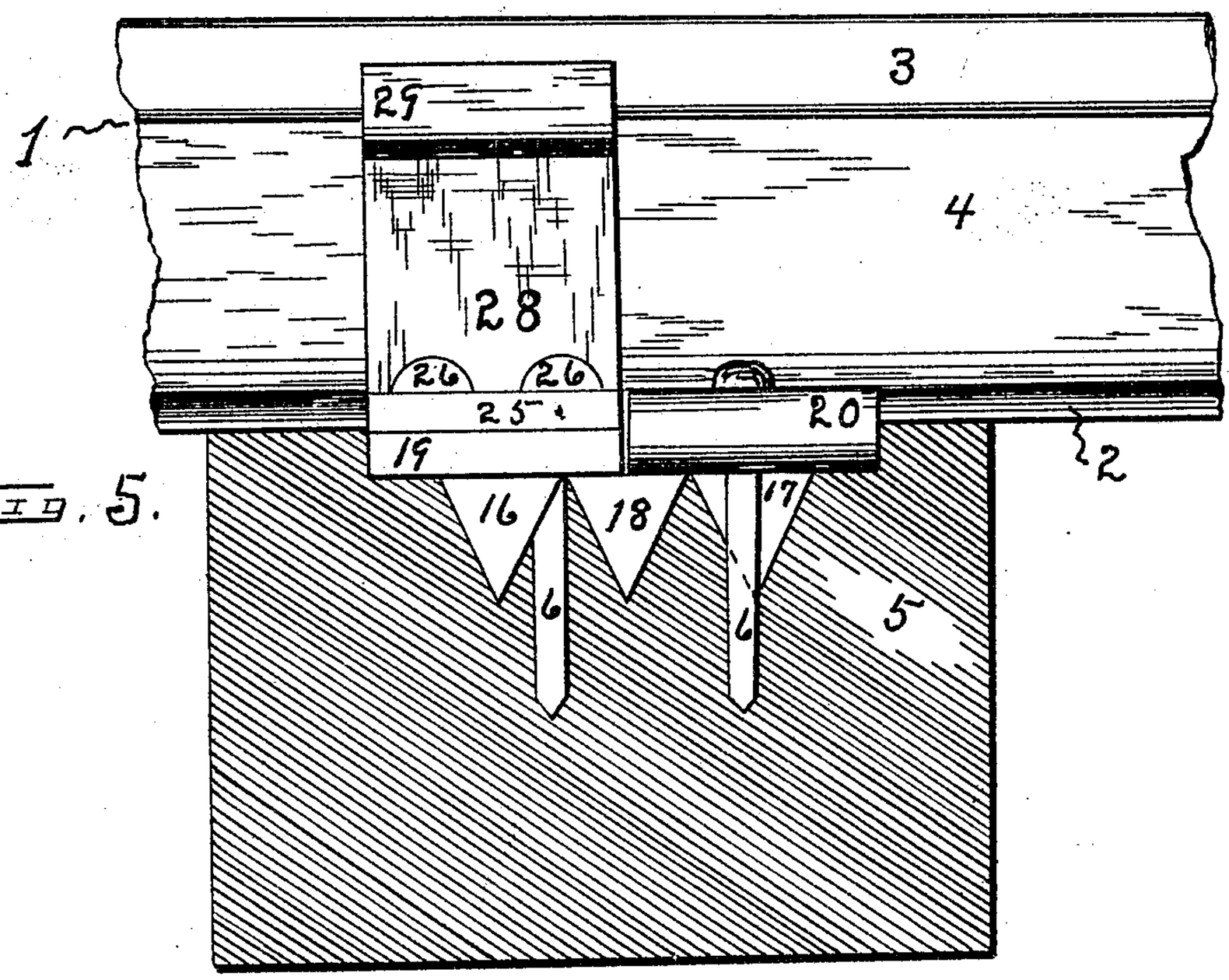



Fig. 5.




Witnesses:
A. Broadwell.
Elizabeth Murry

Inventor
William D. Clark,
By Hiram A. Sturges,
Attorney

No. 837,282. PATENTED DEC. 4, 1906.

W. D. CLARK.

# COMBINATION TIE PLATE AND RAIL BRACE.

APPLICATION FILED SEPT. 4, 1906.

3 SHEETS—SHEET 3.

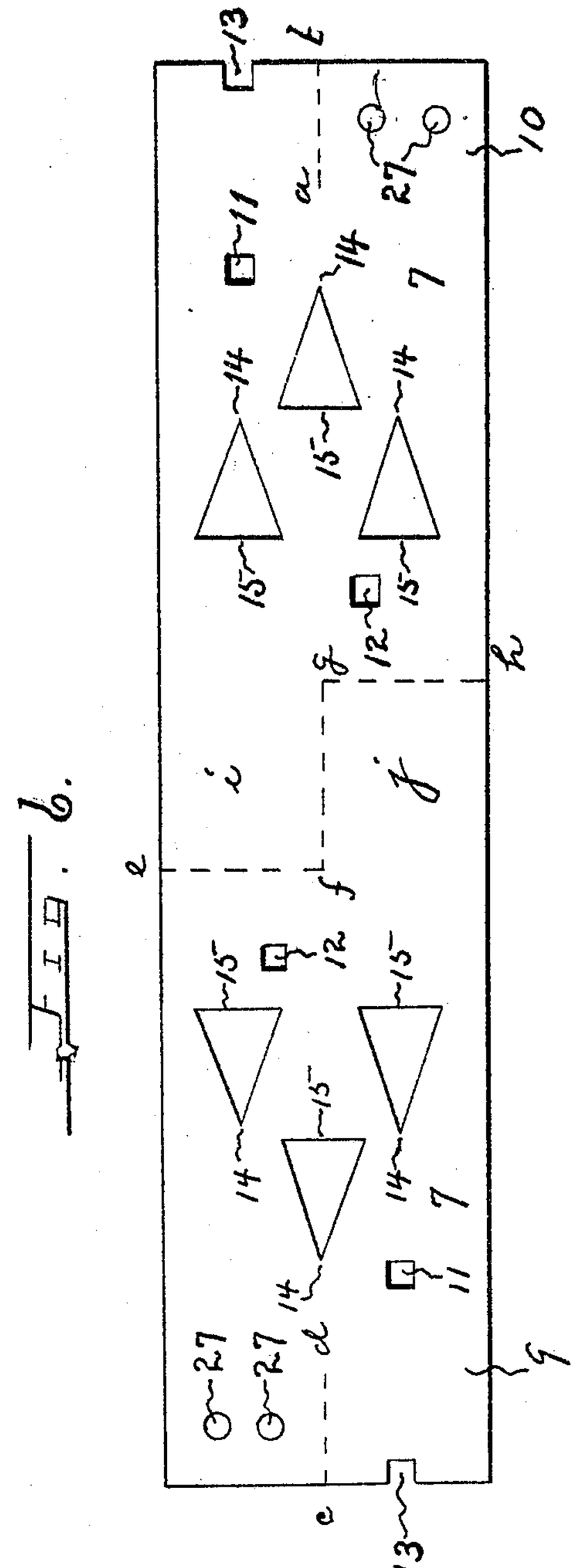



FIG. 6.

Witnesses
T. L. Broadwell
Elizabeth Ufferry.

William D. Clark, Inventor

By Hiram A Sturges

Attorney

# UNITED STATES PATENT OFFICE.

WILLIAM D. CLARK, OF OMAHA, NEBRASKA.

## COMBINATION TIE-PLATE AND RAIL-BRACE.

No. 837,282. Specification of Letters Patent. Patented Dec. 4, 1906.

Application filed September 4, 1906. Serial No. 333,065.

*To all whom it may concern:*

Be it known that I, WILLIAM D. CLARK, a citizen of the United States, residing at Omaha, in the county of Douglas and State of Nebraska, have invented certain new and useful Improvements in a Combination Tie-Plate and Rail-Brace, of which the following is a specification.

This invention relates to improvements in a combination tie-plate and rail-brace of the class designed for use in railway construction, and particularly for use in connection with track-curves.

The primary object of the present invention is the presentation of a rail-brace for sustaining the rail in a fixed vertical position and to prevent spreading of the rails upon curved portions of a railway-track which shall by reason of the arrangement of its parts attain this object in a more effective manner than heretofore presented.

The invention also has especial reference to economy of construction of the tie-plate.

The novel construction and arrangement of parts are fully described herein and in the appended claims and illustrated by the drawings, wherein—

Figure 1 represents a vertical side view, and Fig. 2 a plan view, of the invention. Fig. 3 is a similar view to Fig. 1, partly in section, showing the invention operatively placed in connection with a rail and railway-tie, the tie being a broken-away figure. Fig. 4 is a vertical side view of the invention, being a reverse side to that shown by Fig. 1, the rail being in section. Fig. 5 is a vertical end view showing the brace and tie-plate in operative position, the tie being in section. Fig. 6 is a plan view of a metal plate, being a diagrammatic view to illustrate an economical method of cutting the same for use in connection with the invention.

Referring now to the figures in the drawings, the numeral 1 represents a railway-track rail consisting of flanges 2, the tread 3, and web 4, used in connection with the railway-tie 5 and secured to the tie by means of spikes 6, and for economical purposes I employ a metal plate 7, Fig. 6, having a suitable width for a tie-plate and a length sufficient for two tie-plates and make limited incisions lengthwise, as on the lines *a b* and *c d*, along the center of the plate at the ends thereof, and angularly and transversely bisect the plate, as on lines *e f g h*, in a manner to form two plates of equal surface, each of said plates having the extended part *i* or *j*. By this method of incising plate 7 two plates 9 and 10 are formed of similar outline, as is obvious, and since these plates after being cut are used without further changes in form it is apparent that a saving of material is effected by this method of cutting.

After the plates 9 and 10 are formed in the manner just described the angular apertures 11 and 12 and recess 13 are cut transversely. Incisions are then made divergently from points 14 to bases 15 transversely through the plates, thereby forming the pointed lugs 16, 17, and 18, Figs. 1, 3, 4, 5, the latter being turned downward at approximately a right angle to the plate, these pointed lugs thereafter operating as holding means in connection with the railway-tie when operatively placed to prevent lengthwise movement of said plate. That part of the end of each plate between the recess 13, Fig. 6, and aperture 11 is then folded over the body of the tie-plate 19, Figs. 1, 2, 3, 4, 5, to form the housing-plate 20, the extension *i* or *j*, Fig. 6, being also folded over said body of plate 19 in a manner to form the housing-plate 21. Housing-plates 20 and 21 thus formed have the transverse and vertical wall 21′, adapted to make close contact with the edge of flanges 2 of rail 1, and they effectually sustain these flanges and prevent any side movement thereof. In this connection it may also be explained that the transverse walls which form recess 13 and aperture 11, Fig. 2, are in alinement after housing-plate 20 has been formed, the walls of aperture 11, by reason of the construction, affording a housing for the head 22, Fig. 3, which is effective for preventing its displacement.

I construct a rail-brace 24, having the base 25 adapted to have a mounting on the end of plate 19 adjacent to recess 13 and disposed lengthwise of the tie-plate and secured by means of bolts 26, passed through said base 25 and apertures 27, Fig. 6, of the tie-plate. The base is continued as arm 28, passing inclinedly upward to a junction with the web 4 and tread 3, where it is formed as a brace-head 29, which incloses a part of one side of the web and tread. In practice I have found an angle of forty-five degrees to be effective for the inclination of the brace.

It will be understood from the description that brace 24 is placed on the outer side of the rail of the curved trackway, and, as has been explained, after the parts have been op-

eratively secured the arms or lugs 16, 17, and 18 effectually prevent lengthwise movement of the tie-plate upon the railway-tie, and plates 20 and 21, together with brace 24, cooperate to preserve the track-rail in a vertical position and to prevent undue vibration.

What I claim as my invention is—

1. In combination with a railway-tie, and a rail having a web and base-flanges; a combined tie-plate and rail-brace comprising a rectangular metal plate having a part of its ends upturned in a manner to form transversely-disposed sustaining-walls adapted to make contact with the edges of said base-flanges; said metal plate being apertured in a manner to form spike-openings therethrough in alinement with said transversely-disposed sustaining-walls and to form a spike-housing recess, and incised therethrough between the planes of said transversely-disposed sustaining-walls in a manner to form downwardly-extending pointed lugs integral with said plate; an inclinedly-disposed rail-brace having one of its ends secured upon the tie-plate, its opposite end making contact with a part of said rail and web.

2. In combination with a railway-tie, and a rail having a web and base-flanges; a combined tie-plate and rail-brace comprising a rectangular metal plate having a part of its ends upturned in a manner to form transversely-disposed sustaining-walls adapted to make contact with the edges of said base-flanges; said metal plate being apertured in a manner to form spike-openings therethrough in alinement with said transversely-disposed sustaining-walls, and incised therethrough between the planes of said transversely-disposed sustaining-walls in a manner to form downwardly-extending pointed lugs integral with said plate; an inclinedly-disposed rail-brace having one of its ends secured upon the tie-plate, the opposite end of said rail-brace embracing a part of said rail and web.

3. In combination with a railway-tie and a rail having a web and base-flanges; a combined tie-plate and rail-brace comprising plate 19 formed from metal plate 7 incised on lines *a b*, *c d*, and lines *e f g* and *h;* said plate 19 having a part of its ends upturned in a manner to form transversely-disposed sustaining-walls adapted to make contact with the edges of said base-flanges; said plate 19 being apertured in a manner to form spike-openings therethrough in alinement with said transversely-disposed sustaining-walls and to form a spike-housing recess, and incised therethrough between the planes of said transversely-disposed sustaining-walls in a manner to form downwardly-extending lugs integral with said plate; an inclinedly-disposed rail-brace having one of its ends secured upon said plate 19, the opposite end of said rail-brace making contact with a part of said rail and web.

In testimony whereof I have affixed my signature in presence of two witnesses.

WILLIAM D. CLARK.

Witnesses:
HIRAM A. STURGES,
GEO. T. REYNOLDS.