

No. 894,360.

PATENTED JULY 28, 1908.

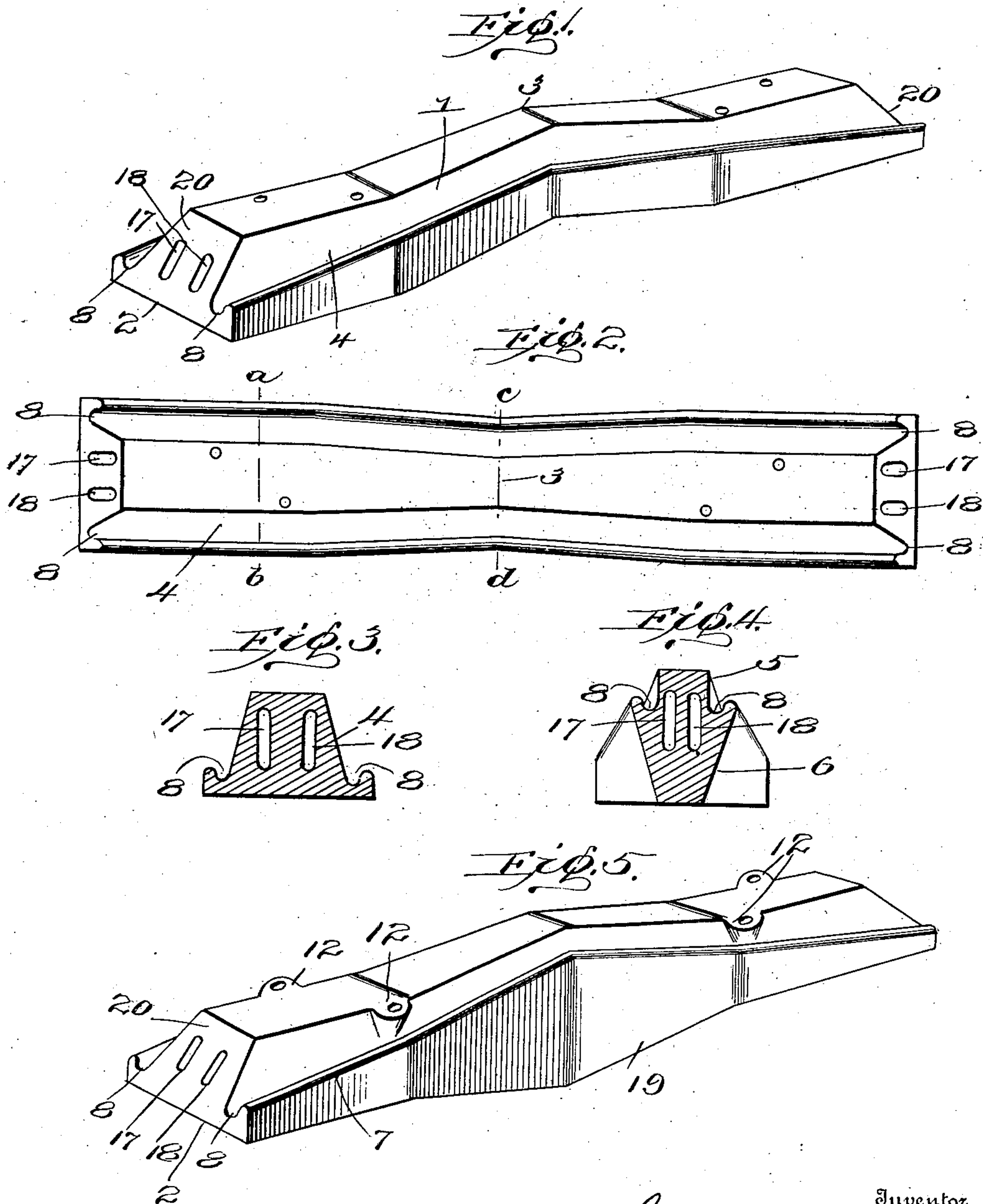
C. E. BARNUM, DEC'D.

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RAILWAY TIE.

APPLICATION FILED OCT. 30, 1905.

2 SHEETS—SHEET 1.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 6.

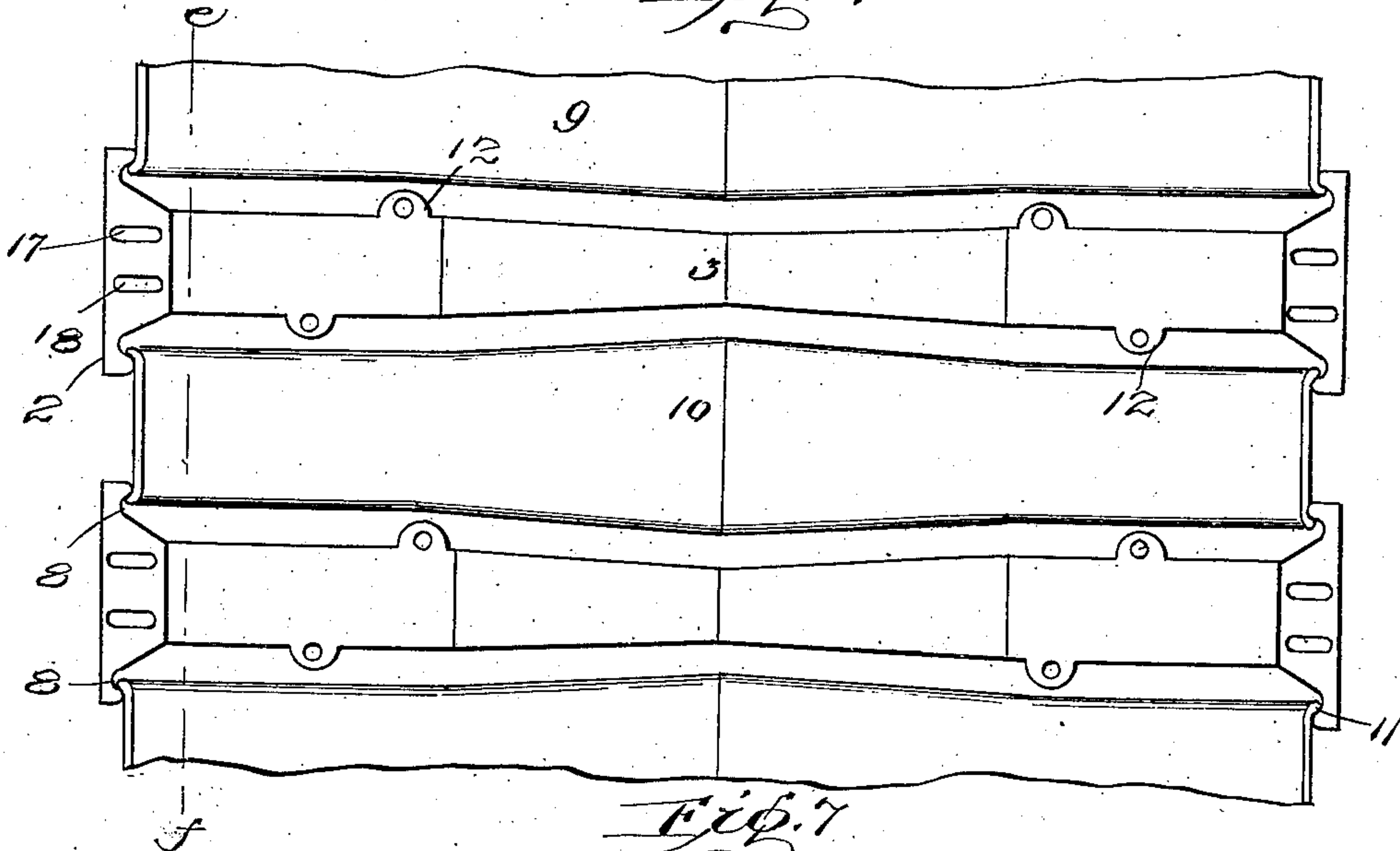


Fig. 7.

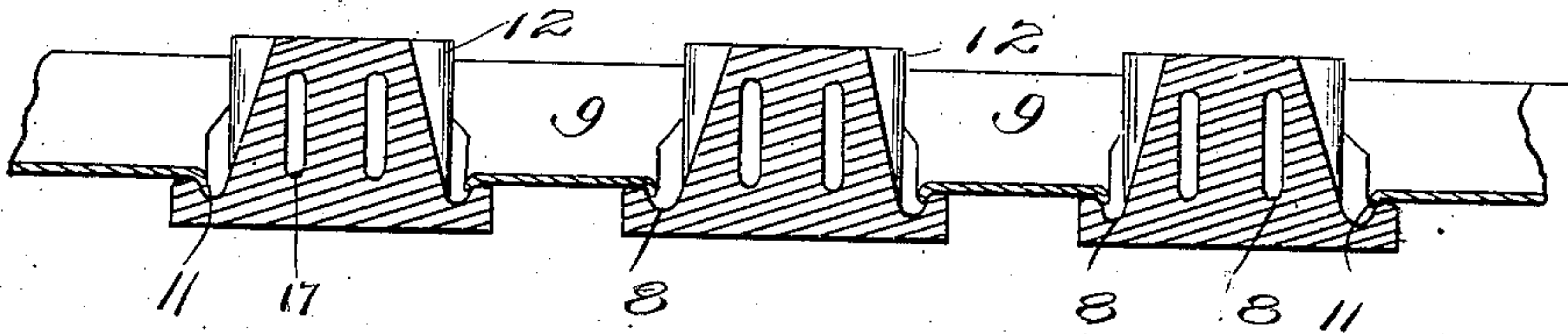


Fig. 8.

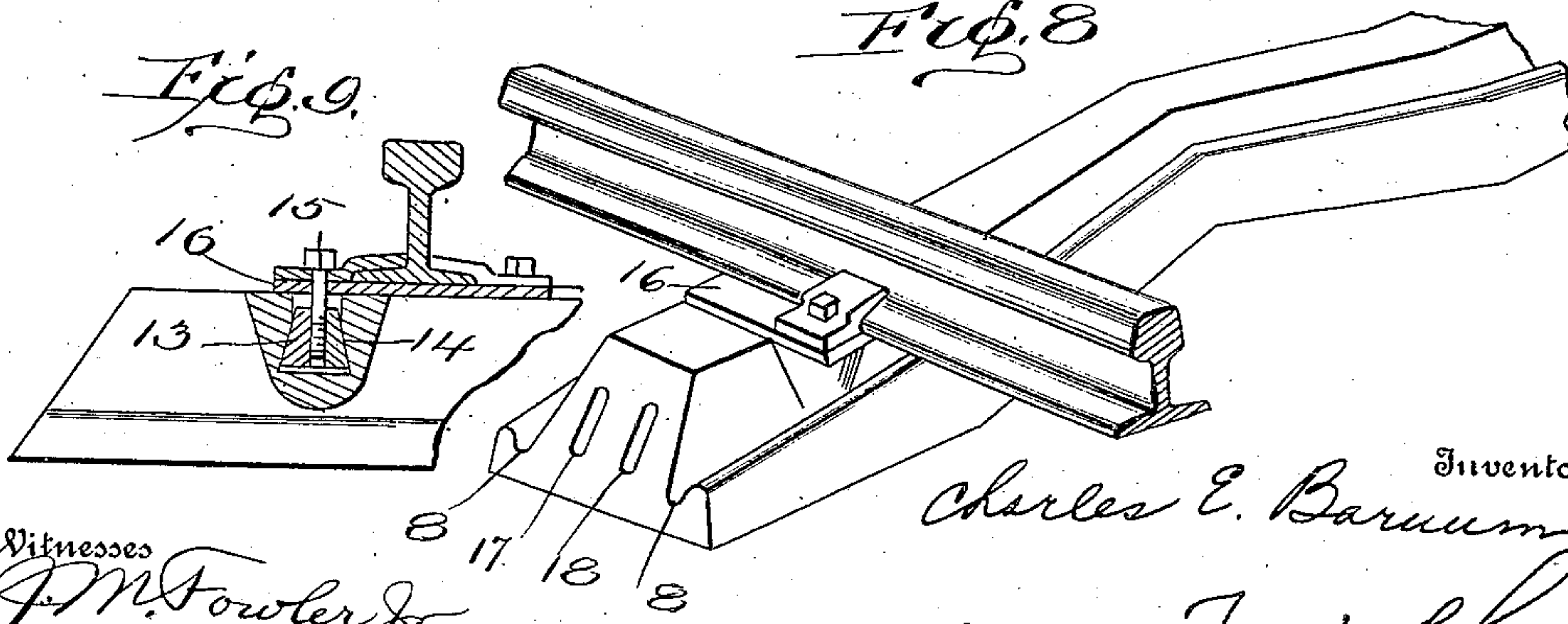
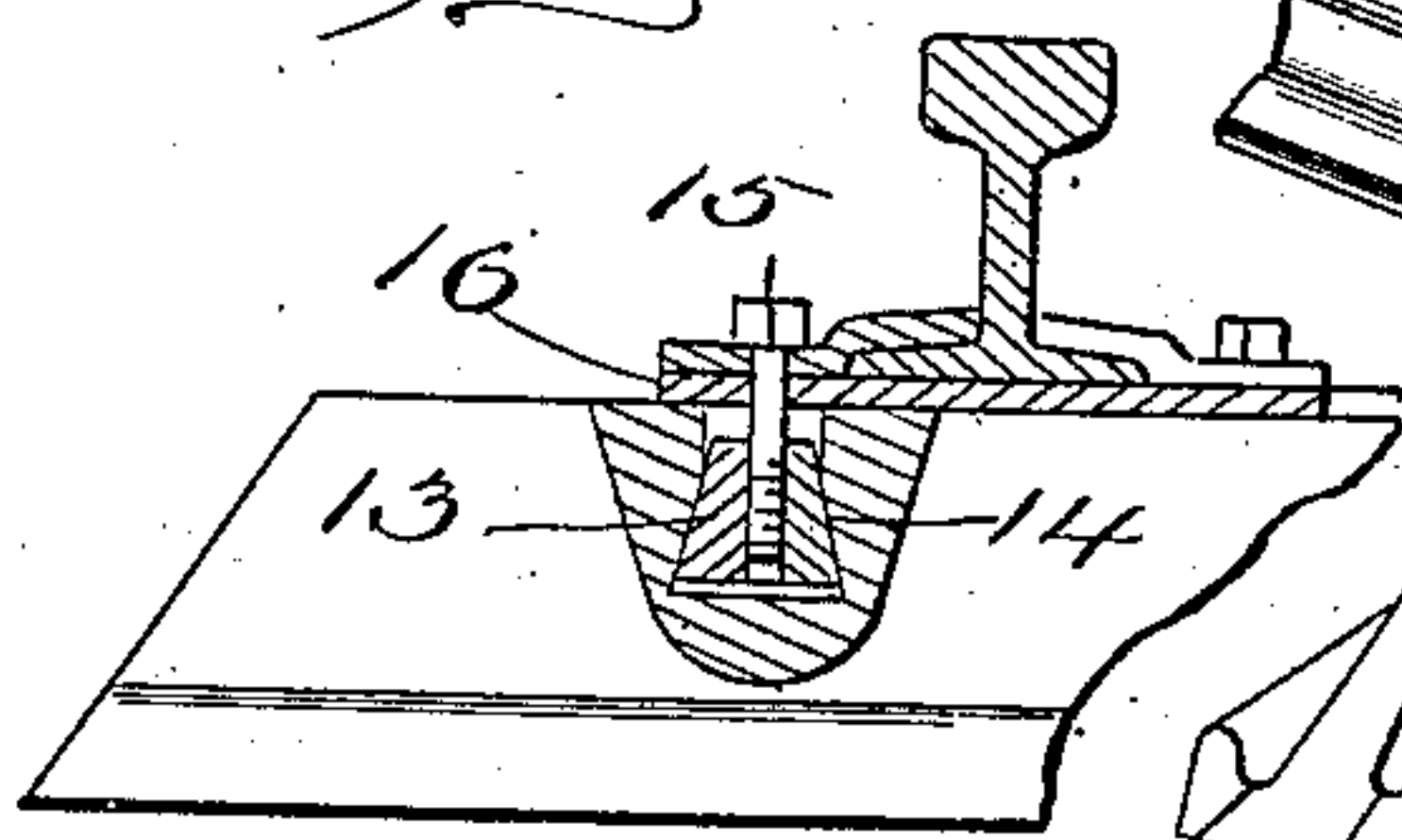


Fig. 9.



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RAILWAY-TIE.

No. 894,360.

Specification of Letters Patent.

Patented July 28, 1908.

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To all whom it may concern:

Be it known that I, CHARLES E. BARNUM, 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 Railway-Ties; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in railway ties and it is the object of the invention to produce a tie which while being made in an economical way of cheap material, will be capable of standing the strain and pounding incidental to the running of railway trains, the tie at the same time possessing all the advantages of the wooden tie and obviating many of the difficulties which will develop by the use of wooden ties.

It is also the object of the invention to produce railway ties, which are capable of facilitating the forming of a water shedding road bed.

It is the further object of the invention to provide a tie, which shall have its grain or fiber extending longitudinally in approximately parallel lines for giving the tie great strength against breaking transversely.

In the accompanying drawing, Figure 1 is a perspective view of a railway tie, constructed in accordance with my invention. Fig. 2 is a top plan view of the same. Fig. 3 is a vertical, transverse sectional view through the tie, taken near one end upon the line *a—b* in Fig. 2. Fig. 4 is a transverse, sectional view taken upon the line *c—d* of Fig. 2. Fig. 5 is a perspective view of tie having a downwardly projecting central portion. Fig. 6 is a top plan view of a portion of a road bed showing the ties and the water shedding means applied thereto. Fig. 7 is a vertical sectional view taken through said ties and water shedding covers upon the line *e—f* of Fig. 6. Fig. 8 is a detail perspective view showing one end of a tie and a portion of a railway rail secured thereon. Fig. 9 is a detail sectional view through one of the rail fastening means used in connection with my improved tie.

The present invention is designed to produce a tie for railroads, which in addition to embodying the good qualities of wooden ties, will also be possessed of superior advantages in other ways and especially in being made of

material which is easily obtained, and which can be so brought together that a practically indestructible tie can be formed such a tie being not subject to destruction by fire or by rotting and being capable of withstanding the pounding and other effects produced by the running of rolling stock over the same.

The tie is formed preferably of certain kinds of shale, clay or similar materials. I find in practice, that certain kinds of shale are especially well adapted for producing railway ties and that when they are properly formed and shaped, they are possessed of considerable toughness and power of resistance to the pounding action of railway trains, which has proved so detrimental to composition ties in general.

I am aware that clay has been used heretofore for ties but it has proven unsatisfactory because of its tendency to crack and break along the lines of fracture produced by the massing of the material in pressing it together. In using shale or clay like materials, I so form the ties that the clay will be drawn into longitudinal lines or fibers, thus making the grain of the completed tie extend longitudinally thereof. This may be accomplished in various ways, as for instance, by forcing the material which is to form the tie, through the mesh of a grid or skeleton form of some sort. After drawing the material for the tie in a longitudinal manner as set forth, the longitudinally extending fibers, strips or grains thus produced, are compressed under great pressure to form the resultant tie, which is then thoroughly burned and hardened.

In further carrying out the spirit of the invention, I form the same, as illustrated in the accompanying drawings, in which 1 designates a tie formed with broadened end portions 2 to increase the supporting bearing surface beneath the parts of the tie which receive the weight of the rails. The central portion of the tie, I preferably reduce in width as shown in Figs. 1, 2, 4 and 6. The reducing of the width of the tie at the center, prevents the tie from being elevated at the center, since the narrow bearing at this portion insures the even settling of the tie throughout and the perfect distribution of the weight supported thereon. This tends to prevent an uneven footing for the tie. The central portion of the tie is usually given additional strength by building it up

at the center, as shown at 3 in the drawings. The reduction in size of the tie by narrowing the central portion, is thus compensated for, by the thickening of the vertical diameter of the tie at the center. The tie is preferably made with a narrower top than base and the sides of the tie at the ends are inclined outwardly as shown at 4, so as to reach the broad base portion 2 near its outer edge. The central reduced portion of the tie is made at the upper part with approximately vertical sides as shown at 5. The lower portion of the central part of the tie, is preferably beveled inwardly as at 6 to produce the proper reduction in size at the bottom, as shown in Fig. 4.

Extending along the sides of the tie are projecting ribs or ledges 7 which form grooves or gutters 8. These gutters are preferably inclined upward toward the center of the tie to a point beneath the peak thereof, as clearly shown in Figs. 1 and 5. These grooves form draining means for water, so that in falling weather, the moisture will be collected and properly conducted from the road bed. To further facilitate the collection of the moisture, I employ covers or filling plates 9 between the ties, as clearly shown in Figs. 6 and 7. These cover plates are of a proper contour to fit between the ties, their inner ends being made wider as at 10, to extend from the reduced central portion of one tie to the reduced central portion of the adjacent tie. Since the ledges or ribs 7 are inclined, the plates 9 will be held in the inclined position, but the widened upper ends 10 engage the tapered central portion of the ties and prevent their slipping longitudinally from place. The meeting ends 10 of the plates 9 form a water shed dividing point or ridge and the water will be caused to run in either direction from the center of the road bed toward the ends of the ties. Of course whatever moisture runs from the plates into the grooves 8, will also be conducted to the ends of the ties.

The water shedding plates 10 are preferably made of the same substance as the tie, that is shale or clay properly baked and hardened, so that they are impervious to water and will not ignite or burn. To better hold the plates 10 in position, I generally turn their edges downwardly to a slight extent as shown at 11, forming edge flanges which fit over the ledges or ribs 7. These flanges not only serve to properly place the plates or covers 9, but also serve to insure the delivery of moisture collected upon the plates into the grooves instead of between the ties.

The construction of the ties and the formation of the covers or plates 9 make it possible to form a road bed which is not subject to the washings of rain and loosening of the under pinning thereby or consequent settling and

also a road bed which because of its raised central portion and inclined side portions will prevent animals from walking or remaining upon the track, since they do not like to stand or walk upon such kinds of surfaces. The ties and cover plates operate to completely cover the road bed beneath, so that weeds cannot grow and this difficulty is thus also obviated.

In order to secure the rails to the ties, the ends of the ties which are to receive the rails are formed with lateral projections or enlarged portions as at 12. These enlargements are formed with sockets 13 in which suitable securing means for the rails may be anchored. Such securing means usually consists in tapering bushings made in halves as at 14 and formed with internally arranged threads into which threaded spikes or retaining bolts 15 may be inserted, as clearly shown in Fig. 9. Such lateral projections upon the ties are found to be amply strong for holding securing bolts or spikes, and are not readily broken from the ties.

In applying the rails to the ties, I place pieces or blocks of wood 16 beneath the rail so that the rail rests upon said wood and then upon the tie. The securing spikes or bolts are usually passed through the blocks of wood though this is not necessary. The yielding effect of the wood is thus imparted to the rails in their support upon the ties and the hammering of the rolling stock upon the rails is modified to a considerable extent.

In forming these ties out of shale or like substances, I provide longitudinal passages 17 and 18 which extend from end to end through the ties and facilitate their even and thorough burning in their formation. A tie thus properly burned and made of suitable shale and shaped as above described, is capable of so resting upon the earth bed, prepared for it on the ground, that it will not need tamping or truing up in the usual way. I find in practice, that it is much better to increase or diminish the thickness of the blocks placed between the rails and the ends of the ties for truing up the rails than it is to shift or alter in any way the bed upon the ground, which the tie has made for itself after it has been in use a short time. The hammering of the heavy rolling stock over the road operates to give the ends of the ties a firm footing and to change such footing and attempt to lift it by tamping loose material beneath it, renders it unstable and likely to soon become beaten down, so as to render the track uneven again. The method of placing blocks of wood or shims beneath the rails and the ties, is an important expedient, as the rail can be raised or lowered at any time by changing the shims and the ties do not have to be altered in their firm bedding upon the earth. It is also an advantage not to need ballast between the ties and not to change the same,

and the covers which I employ for filling the spaces between the ties may thus be properly and advantageously used in place of such ballast whereby it is never necessary to reach the ties beneath the covers. The formation of the ties with the broad bearing ends and the narrow central portions makes it possible for the ties to settle in the ground with always a compact support under them, and distributed evenly from end to end.

While I usually form the ties with the lower surfaces thereof extending in the same horizontal plane from end to end, I may if preferred, form the central portion with a depending ground engaging portion, as illustrated in Fig. 5 at 19, and this formation of the tie will not only contribute to its greatest strength but will increase its stability when placed upon the ground, since the downwardly projecting central portion 19 will occupy a suitable recess or bed in the ground and tend to prevent movement in any direction. The ends of the ties are usually beveled as indicated at 20.

It will be understood that the ties may be made of the same width throughout if preferred, without departing from the spirit of the invention and that other changes in the minor details of construction may be made without departing from the scope of the invention.

By securing the bolts or spikes in apertures formed in the burned shale tie, the material of the tie will be found to hold the spike against the rail and prevent its tipping backward as when in a wooden tie, the spike crushes the fiber of the wood and assumes a position to permit of the tipping of the rail or the lifting of its flanges upon one side.

Because of the peaked shape of the road bed formed by the ties and cover plates raised at the center, people as well as animals will be prevented from walking upon the track and thus deaths by the striking of persons by trains will be reduced to a minimum.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A tie formed with gutters along its longitudinal edges, enlarged portions on each end and constricted centrally.

2. A tie formed with inclined gutters along its longitudinal edges, flattened portions at each end, and a constricted portion centrally.

3. A tie formed with gutters along its longitudinal edges inclined from the middle toward both ends.

4. Spaced ties formed with gutters along their adjacent edges, and a covering filling the space and engaging with the gutters.

5. A tie, formed with an upwardly tapering body portion and lateral inclined ledges formed longitudinally thereof for conveying moisture from the road bed.

6. A tie, having its upper part tapered upwardly at the sides and ends, the top being elevated at the middle and inclined grooves formed in the sides of the tie, the said grooves meeting near the highest point of the tie to form a water shed.

7. Spaced ties formed with inclined gutters along their adjacent edges, and a covering filling the space and engaging with the gutters.

8. A tie, having broad end bearing portions and a narrow central portion, the central portion being extended above and below the surface of the end portions, to increase the depth of the central portion of the tie.

9. A road bed covering and rail supporting structure, comprising ties having inclined lateral supports upon its side portions, and inclined covers interposed between the ties and resting upon said inclined lateral supports.

10. Spaced ties formed with gutters along their adjacent edges inclined from the middle to both ends, and a covering filling the space and having down-turned flanges engaging within the gutter.

11. A tie, formed with broad end portions having upwardly tapering parts, and a narrow central portion having a downwardly tapering portion at the bottom, inclined ribs or ledges formed along the sides of the ties and plates resting on said ribs when the ties are in place in a road bed for covering the road bed and shedding moisture.

12. A tie for railways, having an upwardly tapered upper portion, inclined ledges formed upon the sides of the tie and extending from the central part thereof to the ends, plates forming covers for the space between the ties in a road bed, said plates having depending edges for engaging the said ledges.

13. A rail support and bed covering for railways, comprising ties having inclined ledges upon their sides and cover plates fitting upon said ledges filling the space between the ties, the said covers meeting in a peak opposite the centers of the ties for shedding moisture and preventing it from falling upon the bed of the road.

14. The combination of a plurality of ties having their central portions reduced in width, and cover plates fitting between the ties and having their central portions correspondingly enlarged whereby they are held against longitudinal displacement.

15. A tie formed with lugs projecting laterally from the longitudinal edges thereof and having a cushion plate extending to and over said lugs, said lugs and cushion plate being provided with registering apertures for accommodating rail securing fasteners.

16. A tie formed with lugs extending laterally from its longitudinal edges adjacent

each end and provided with fastener receiving apertures, and gutters formed along the longitudinal edges of said tie, and extending past said lugs.

5 17. A tie formed with a gutter on each side thereof extending longitudinally of the tie, said tie having the end portions thereof reduced vertically and broadened laterally, while the central portion is broadened vertically and reduced laterally, said gutters conforming to the contour of the sides of said tie.

10 18. A bed cover and rail supporting structure for railroads, comprising a tie having reduced central portions and cover plates wedged between the same, the shape of the said cover plates preventing them from slipping longitudinally.

19. A tie, having laterally projecting supports for water shedding means. 20

20. A tie, having laterally projecting ledges extending longitudinally thereof for supporting water shedding means.

21. A tie formed with a reversely inclined gutter leading from the central portion thereof on each side, said tie being formed with a broad base that tapers inwardly toward the center, and a reinforcing portion formed centrally. 25

In testimony whereof I affix my signature 30 in presence of two witnesses.

CHARLES E. BARNUM.

Witnesses:

CASELL SEVERANCE,
JOHN L. FLETCHER.