S. B. STUART & T. P. BURNS.

METALLIC RAILWAY TIE.

APPLICATION FILED DEC. 24, 1909.

967,583. Patented Aug. 16, 1910.

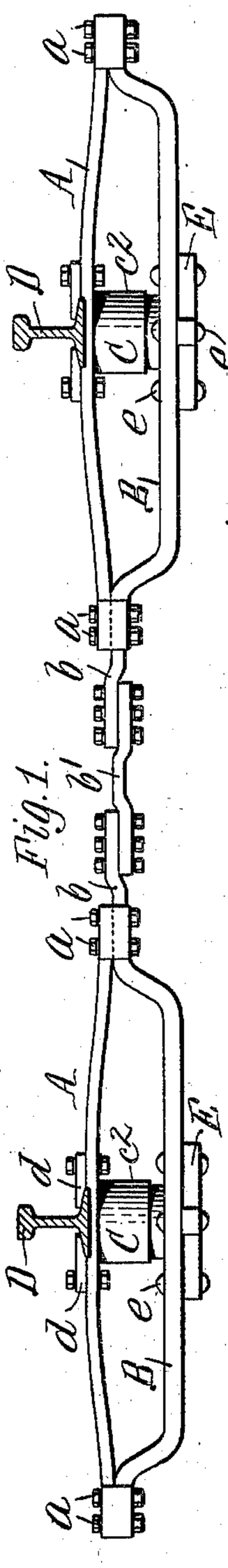

Fig. 1.

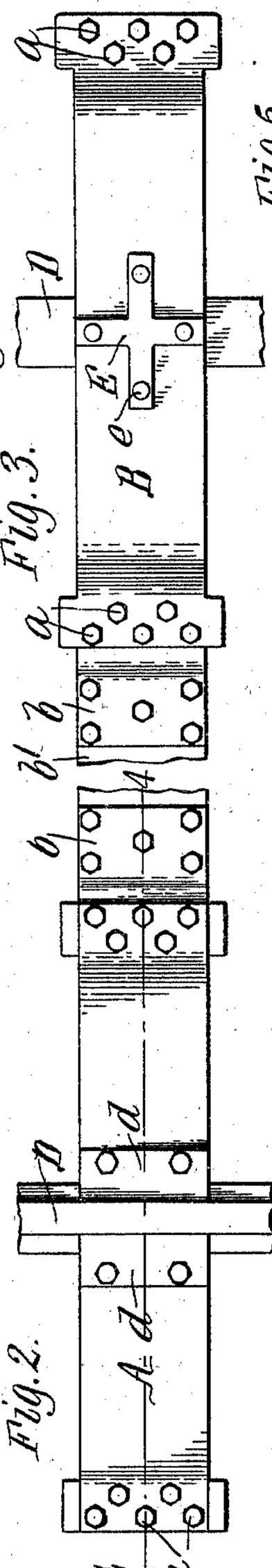

Fig. 2.

Fig. 3.

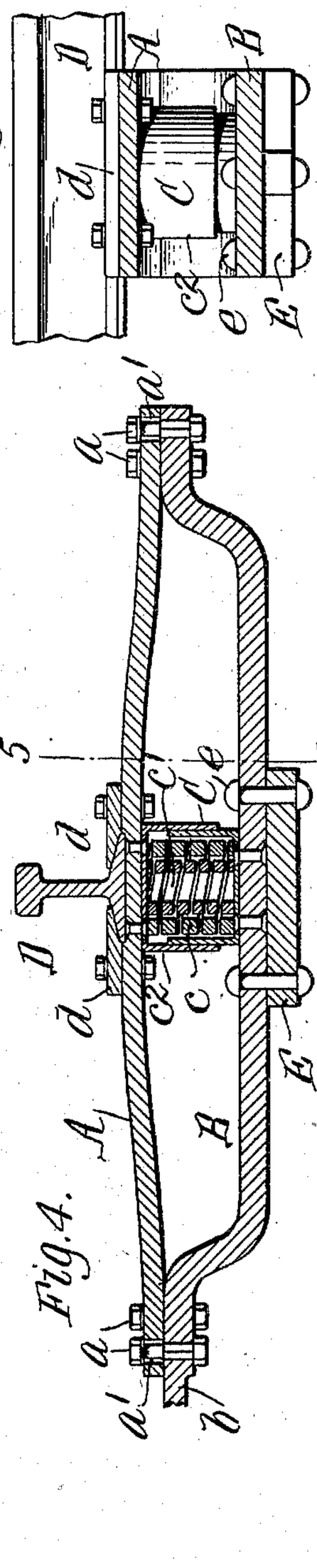

Fig. 5.

Fig. 4.

Fig. 6.

Witnesses.

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UNITED STATES PATENT OFFICE.

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METALLIC RAILWAY-TIE.

967,583. Specification of Letters Patent. Patented Aug. 16, 1910.

Application filed December 24, 1909. Serial No. 534,829.

To all whom it may concern:

Be it known that we, SILAS B. STUART and THOMAS P. BURNS, citizens of the United States, residing at Newark, in the county of Wayne and State of New York, have invented a new and useful Improvement in Metallic Railway-Ties, of which the following is a specification.

The object of this invention is to construct a metallic railway tie which will constitute a firm, durable and effective support for the rails and at the same time will possess sufficient resiliency so that it will permit the rails to yield under the weight of the passing trains to relieve the severe jar and wear to which the rails and the cars are subjected from the impact of the wheels upon the rails.

In the accompanying drawings: Figure 1 is a side elevation of a railway tie embodying the invention. Fig. 2 is a fragmentary top plan view thereof. Fig. 3 is a fragmentary bottom plan view thereof. Fig. 4 is a longitudinal section on line 4—4, Fig. 2. Fig. 5 is a sectional elevation on line 5—5, Fig. 4. Fig. 6 is a longitudinal section similar to Fig. 4, showing a modified construction.

Like reference characters refer to like parts in the several figures.

The metallic tie comprises, in its construction, opposite end or supporting sections which support the opposite rails of the track and are arranged transversely thereof, and a central connecting section which joins the end sections together. These opposite end sections are constructed alike and each consists of an upper arched plate A to the intermediate portion of which the rail is secured, a lower base plate B to which the ends of the upper plate are secured, and a yielding support C which is arranged between the upper and lower plates directly beneath the rail and permits a yielding movement of the upper plate under the weight of the train passing over the rail.

The upper plate A is suitably secured at its opposite ends to the base plate B so that it can spring or yield between its ends. In the construction shown, bolts *a* are employed for this purpose. These bolts pass through slotted openings *a'* in the upper plate, preferably in both ends thereof, and thus permit a limited endwise movement of the upper plate relative to the lower plate. This allows the upper plate to yield without producing any undue end thrust or strain upon the connecting bolts *a*. The base plate B, in the construction shown in Figs. 1–5, is of arched-shape, having upwardly extending end portions to which the ends of the upper arched-plate are secured. The employment of the arched upper and lower plates adds greatly to the strength and resilience of the sections and permits the base plate to be embedded in the road bed while the upper plate is supported above the same in proper position for the rail.

The inner end of the base plate is provided with an extension *b* which, when the supporting sections are joined together to form a tie, is connected by a central tie rod *b'* with a similar extension on the base plate of the opposite supporting section of the tie. The tie rod *b'*, however, may be dispensed with if desired and the extensions *b* of the opposite sections connected to each other to join the sections together to form the tie.

The yielding support C may be of any suitable construction possessing sufficient strength and resiliency to support the weight of the train and permit of a limited yielding movement in the upper plate. As shown in Figs. 1–5, it consists of a cushion spring having the usual outer and inner coils *c* and *c'* which are of sufficient strength to sustain the pressure thereon caused by the weight of the train upon the track. These springs are inclosed in a telescoping spring case c^2 which is riveted or otherwise suitably secured at its opposite ends to the upper and lower arched plates and serves to hold the cushion spring in position between these plates and protect it from dust and dirt. The cushion spring is adapted to be compressed by the weight of the train passing over the rail and thus forms a yielding support for the upper plate which permits the plate and its rail to yield in accordance with the weight thereon and lessens the jar of the train upon the rail. Any other suitable spring construction, however, may be used for this purpose, if desired, blocks of wood or other suitable yielding material may be used in place of the cushion spring.

The track rails D D are held in place on the upper plates A intermediate of the ends of these plates by the usual clips *d* which are bolted thereto, or by any other suitable holding means.

For the purpose of assisting in holding the base plate B from shifting or changing its position when embedded in the road bed,

the base plate may be provided, as shown in Figs. 1–5, with a cross-shaped piece E which is secured to the underside thereof beneath the yielding support C by rivets *e*, or in any other suitable manner, and projects into the material of the road bed below the base plate so that it assists in holding the latter in place therein.

In Fig. 6 is shown a modified construction, in which the base plate B′ of each supporting member is straight instead of arched, and the yielding support for the rail and upper plate A consists of a block F of wood or other suitable yielding material which is arranged between the upper and lower plates beneath the rail in a pocket *f* in the base plate. The block projects above this pocket and forms a cushion support which permits the upper plate and its rail to yield under the weight of the train. The connecting tie rod *b′* for the end sections is not connected directly with an extension arm on the base plate, as in the other construction, but is secured to the inner ends of the upper and lower plates by the same bolts which connect the ends of these plates together.

As commonly used, the end sections of the tie which support the rails are connected together as described, to form the tie, but the construction of these end sections is such that when required by the necessities of the work, the end sections may be used independently of each other, and when so used, each section will form an effective yielding support for the rail.

By joining the upper and lower plates together at each end, the yielding strain is more equally distributed and a much stronger and more durable construction is obtained than is possible where one end only of the upper plate is secured to the lower plate. At the same time the sliding connection between the two plates permits of sufficient yielding movement in the upper plate and the rail which it carries, to relieve the jar of the wheels upon the track, but prevents any such endwise movement of the upper plate as would tend to change the position of the rail. The connected end sections forming the tie thus hold the opposite rails of the track securely in position and prevent them from drawing together or spreading; and at the same time permit a limited vertical or yielding movement thereof.

We claim as our invention:

1. A railway tie comprising in its construction a lower arched plate having upwardly extending opposite end portions, an upper arched plate having its opposite ends secured to the ends of the lower arched plate so that the upper arched plate can spring between its ends and having the track rail secured to its intermediate portion, and a yielding support for said arched plate arranged between the lower plate and the arched plate beneath the rail, substantially as set forth.

2. A railway tie comprising in its construction a lower plate, an upper arched plate having its opposite ends secured to the lower plate so that the arched plate can spring between its ends and having the track rail secured to its intermediate portion, a telescoping spring case arranged between the lower plate and the arched plate below the rail, and a cushion spring for the arched plate contained in said telescoping case, substantially as set forth.

3. The combination of a pair of lower arched plates each having upwardly extending opposite ends, a pair of upper arched plates for supporting the rails arranged over the lower arched plates and each secured at its opposite ends to the upwardly extending opposite ends of the lower arched plate so that the upper arched plate can spring between its ends, yielding supports for the upper arched plates arranged between the upper and lower arched plates beneath the rails, and a center tie rod arranged between the inner ends of the opposite pairs of arched plates and secured thereto, substantially as set forth.

Witness our hands, this 13th day of December, 1909.

SILAS B. STUART.
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Witnesses:
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