

No. 840,697.

PATENTED JAN. 8, 1907.

E. S. HIPPEY.
RAILWAY FROG.
APPLICATION FILED OCT. 12, 1906.

2 SHEETS—SHEET 1.

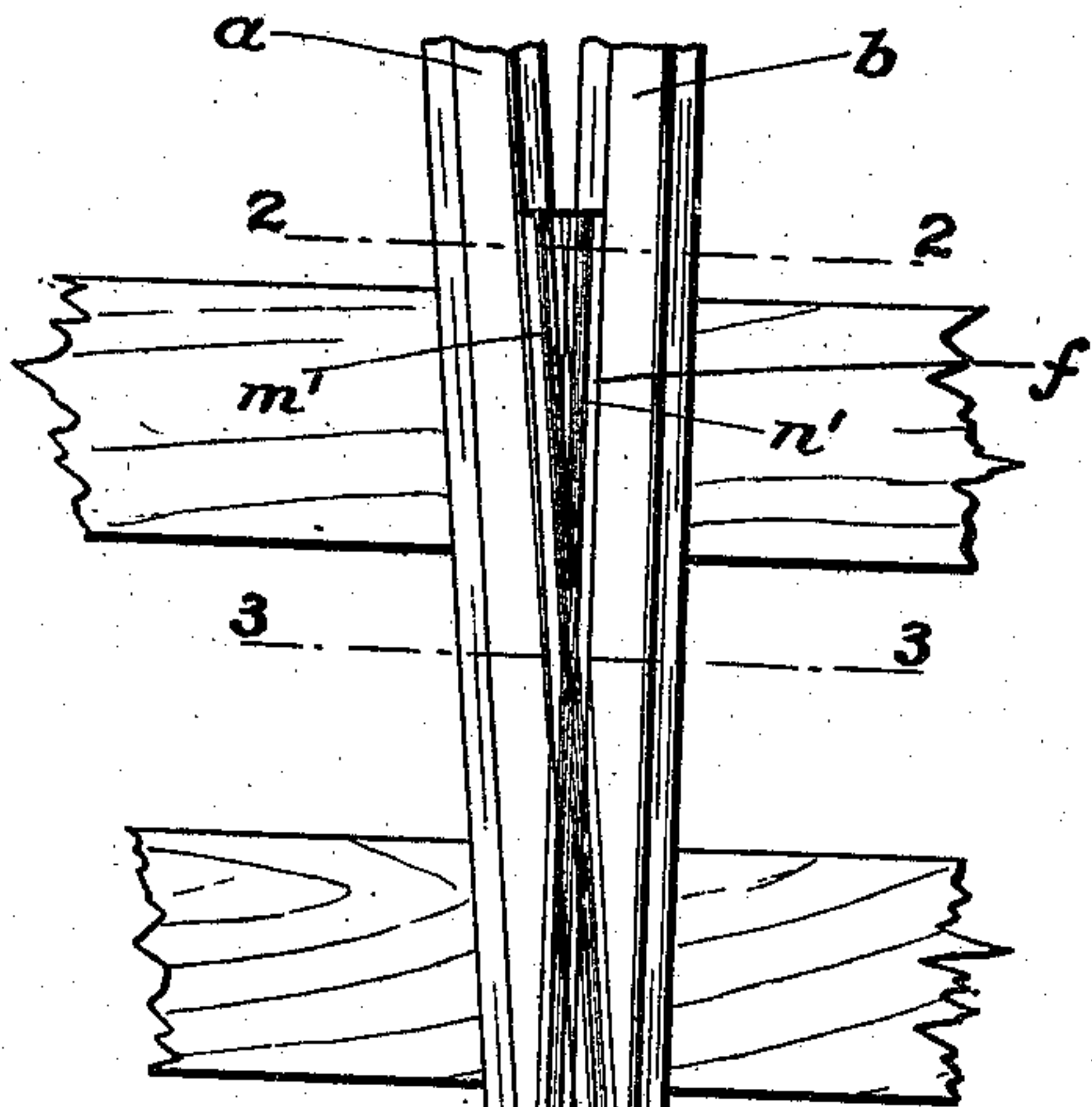


FIG. 1.

FIG. 2.

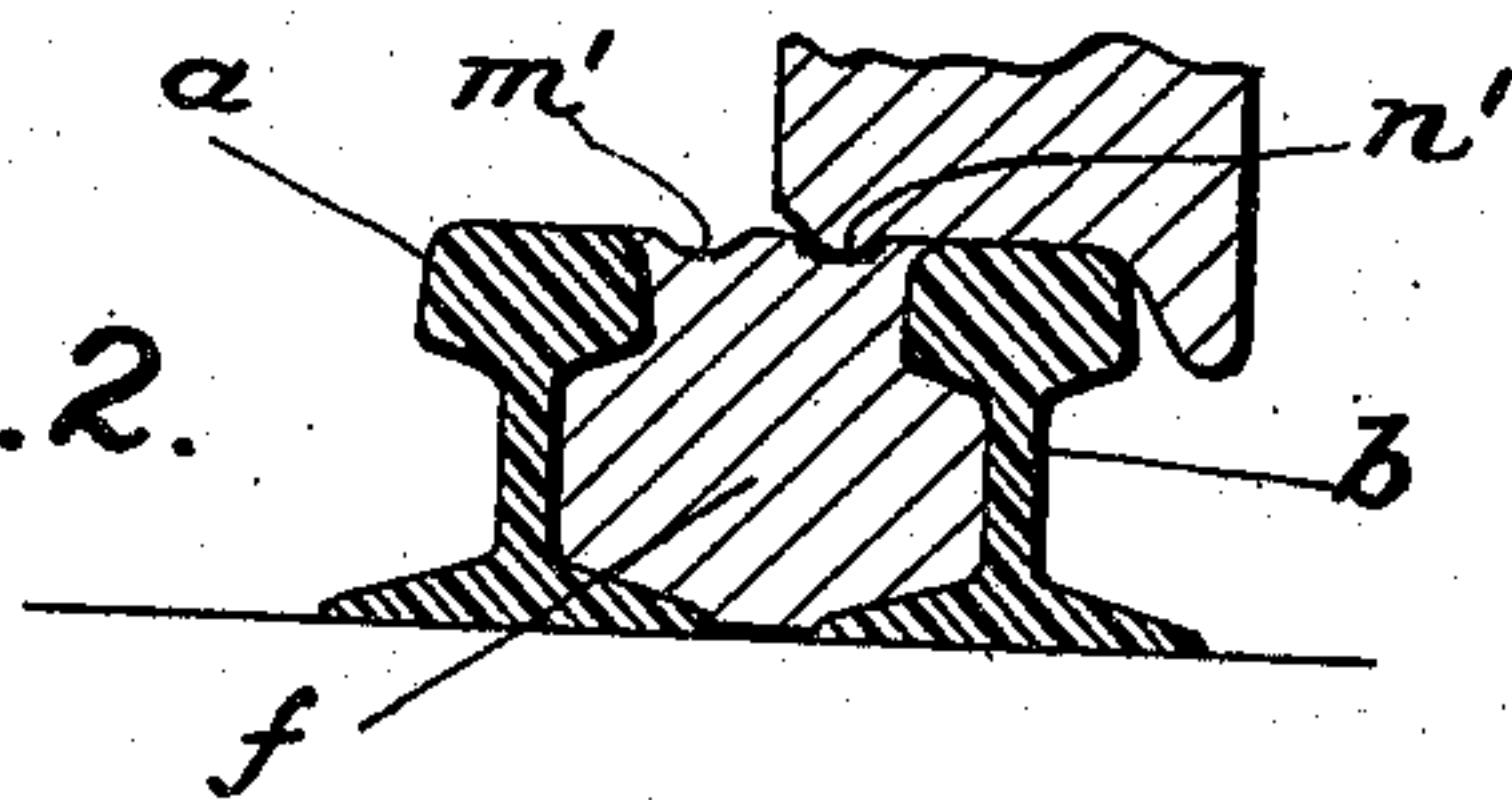


FIG. 3.

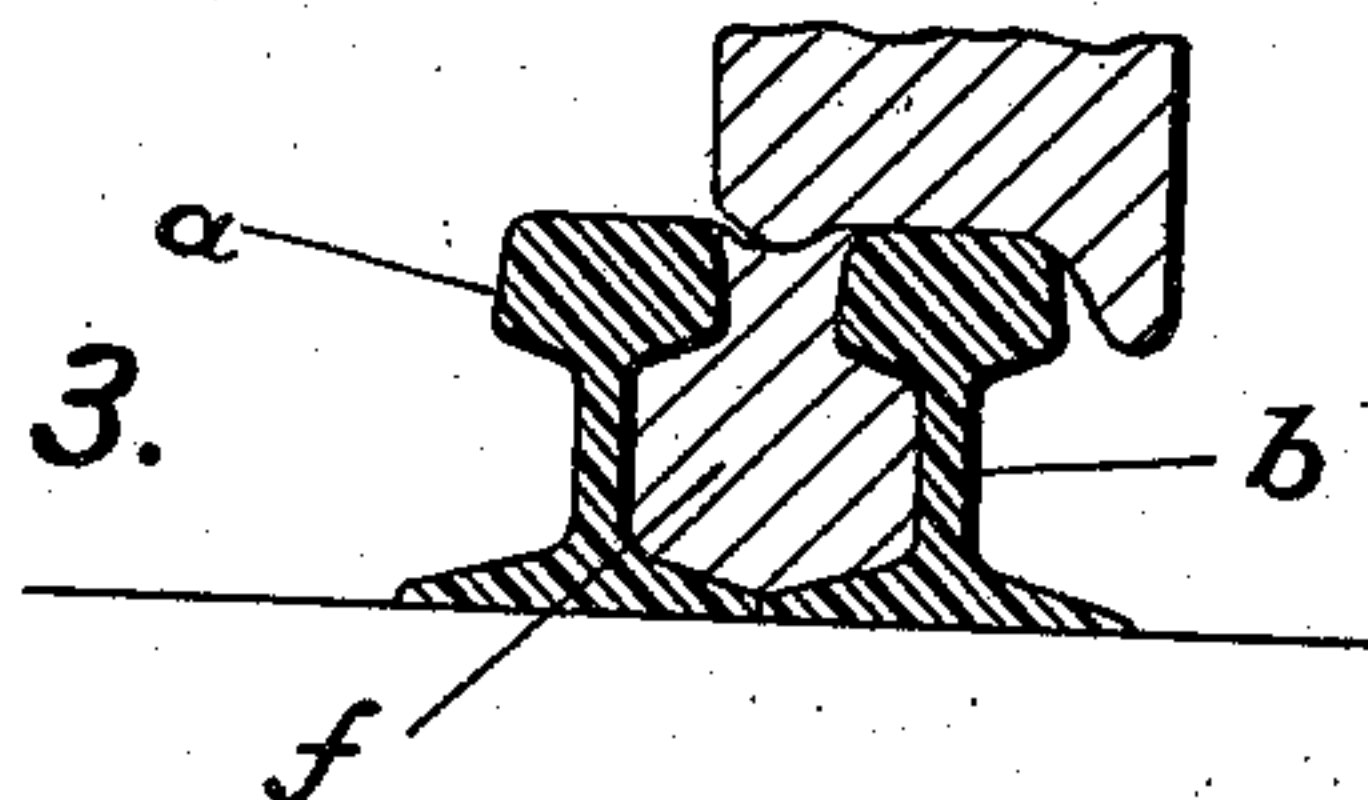


FIG. 4.

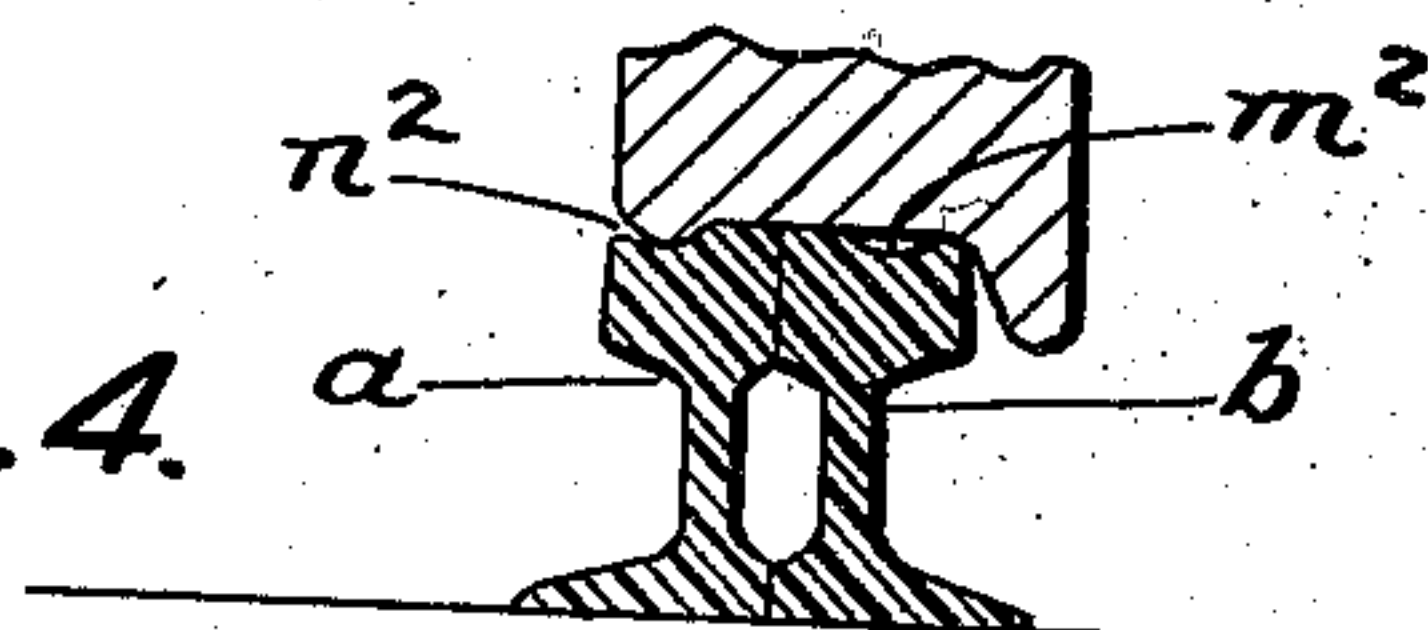


FIG. 5.

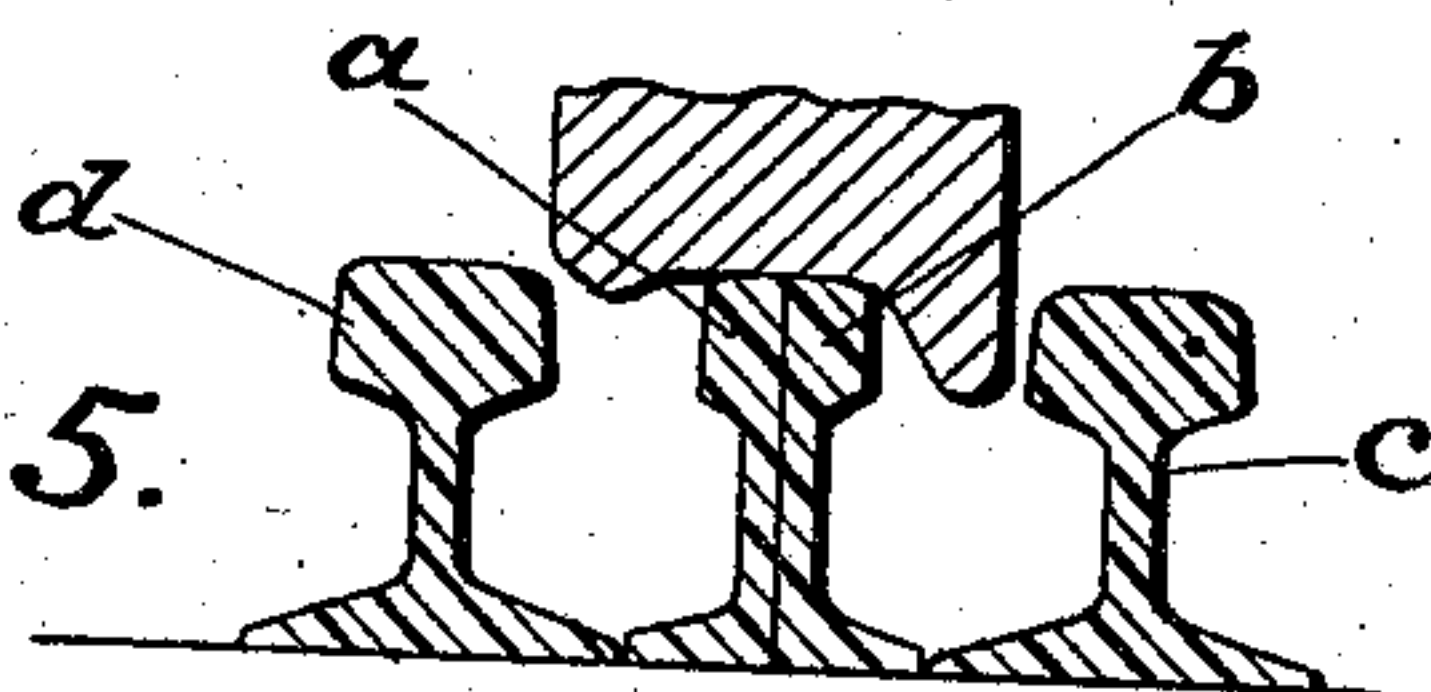


FIG. 6.

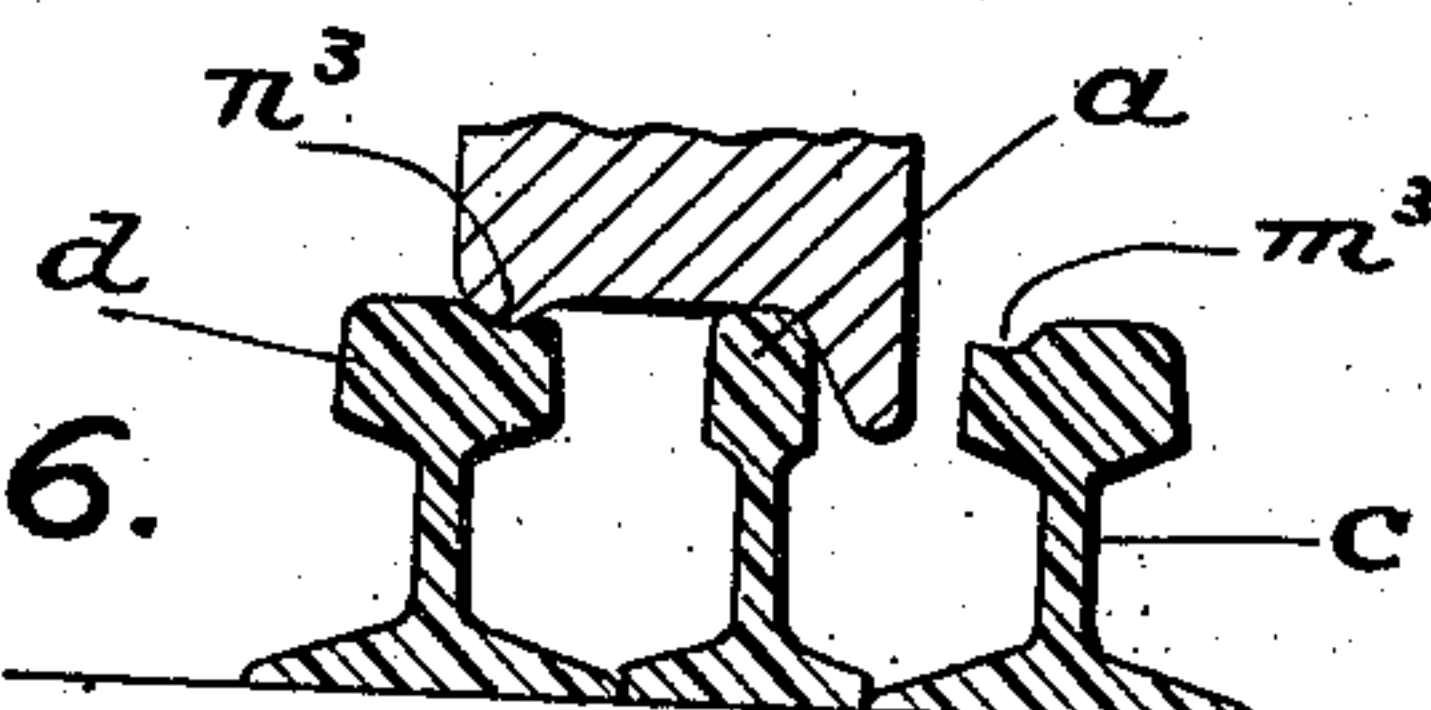


FIG. 7.

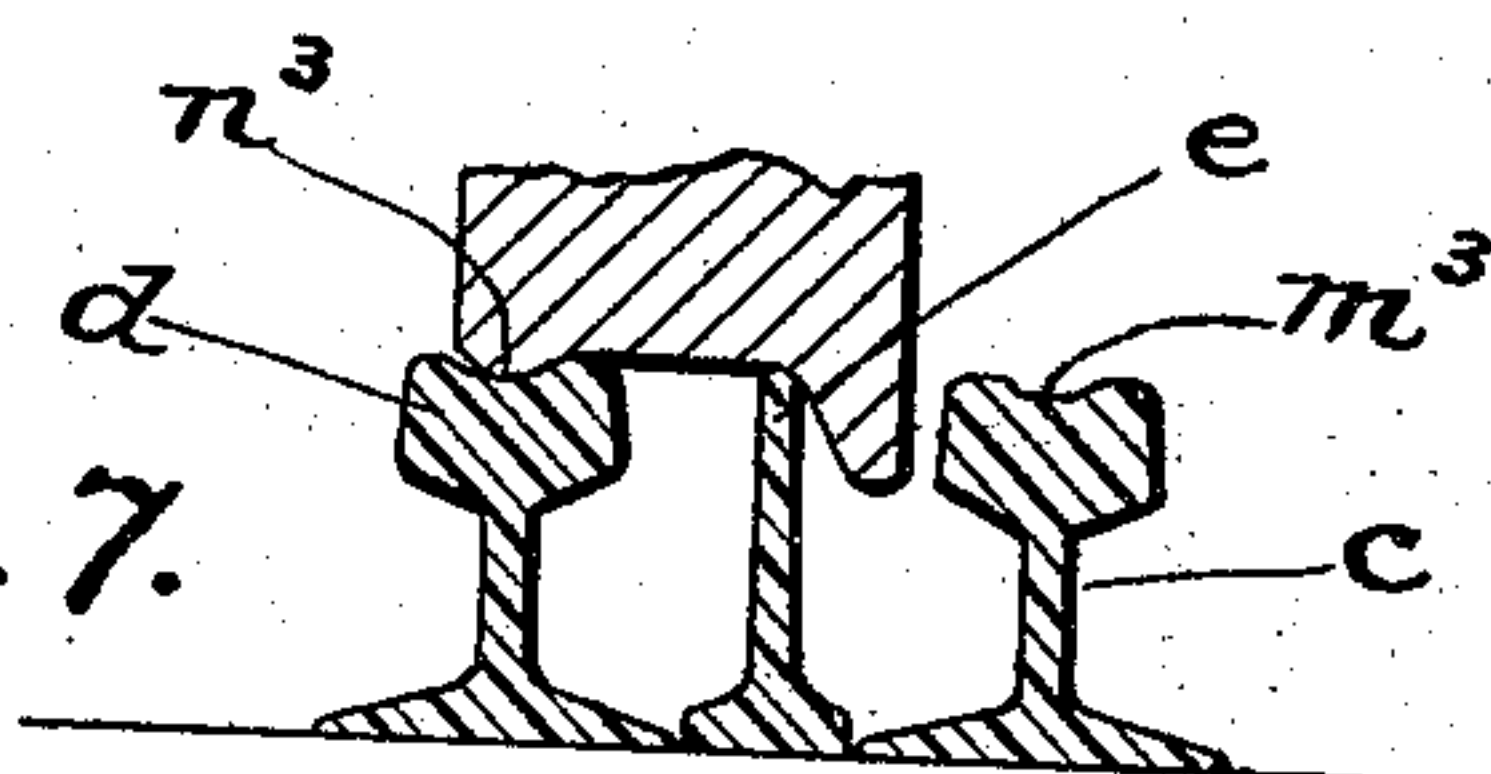
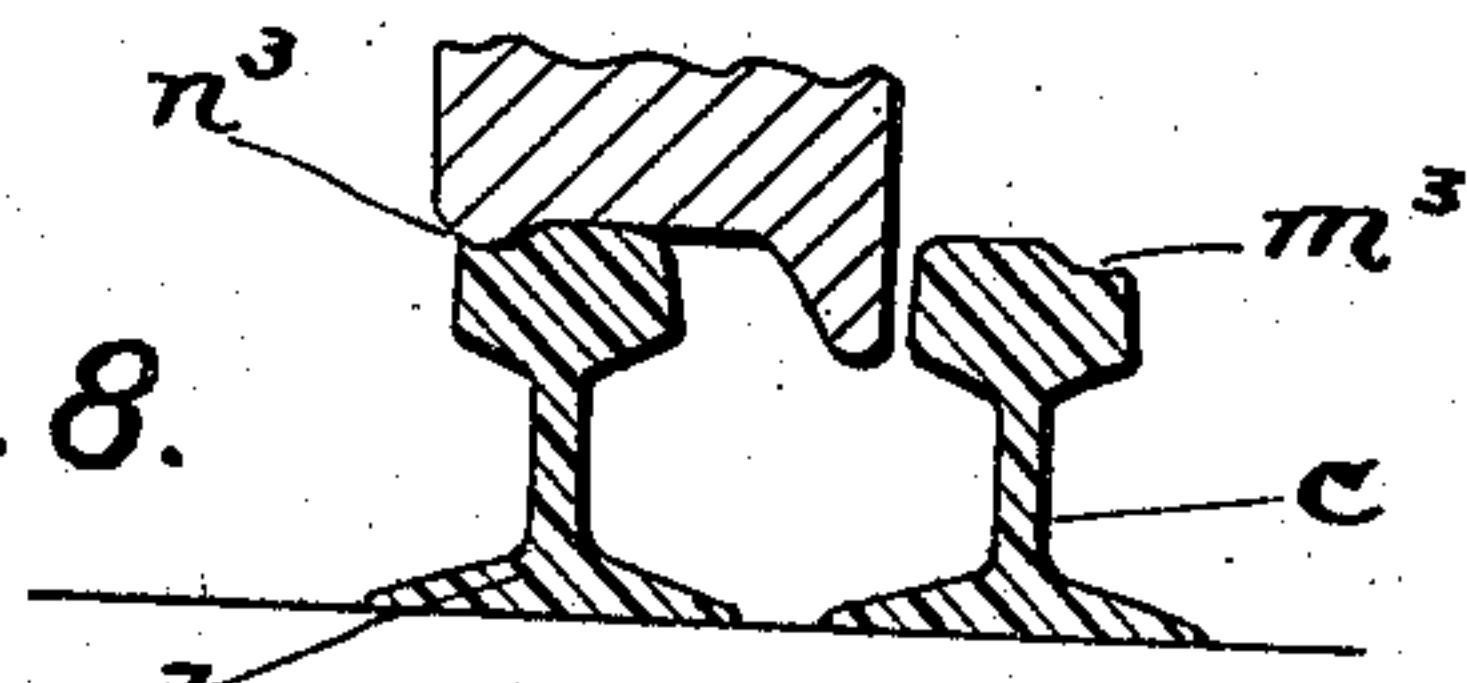


FIG. 8.



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2 SHEETS—SHEET 2.

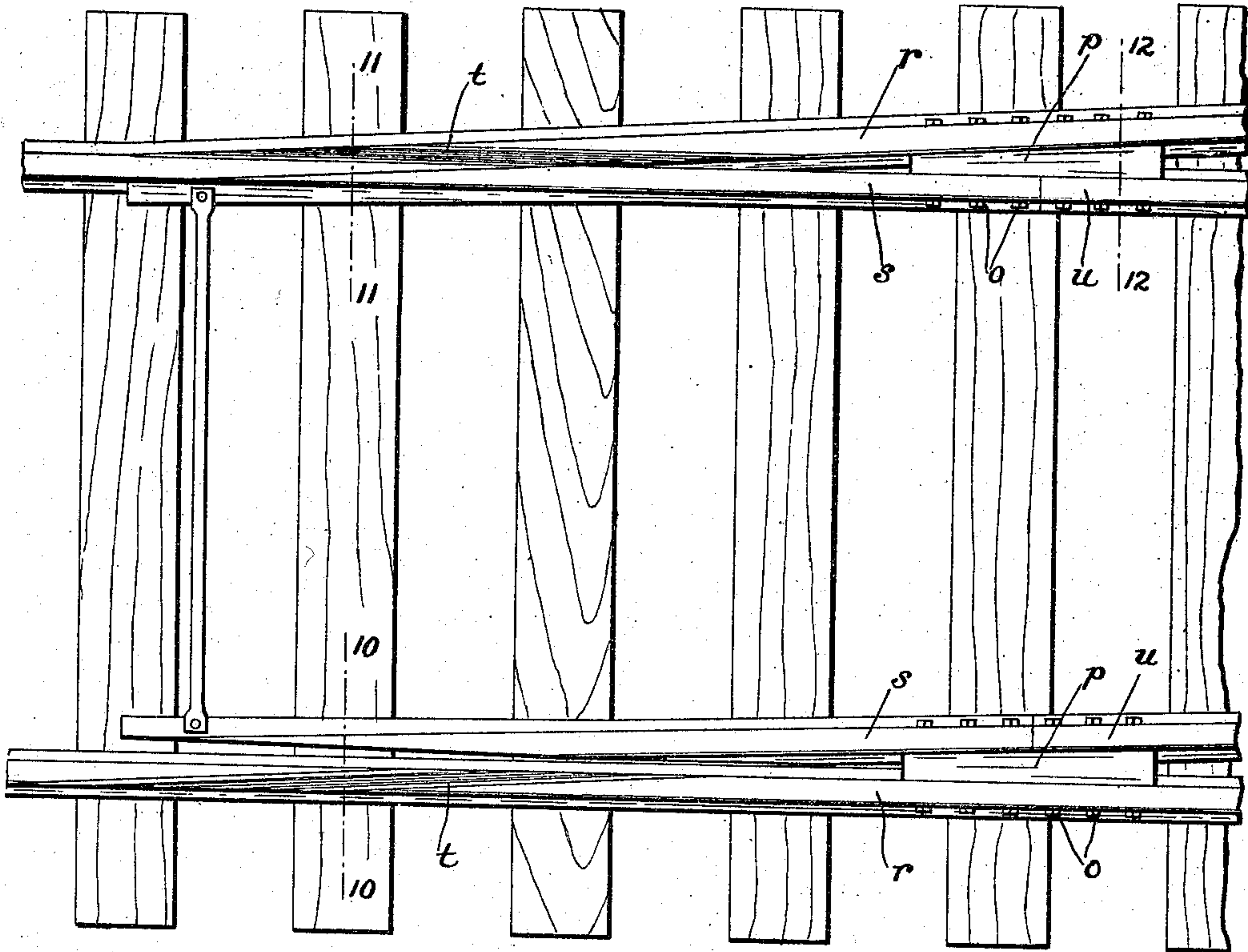


FIG. 9.

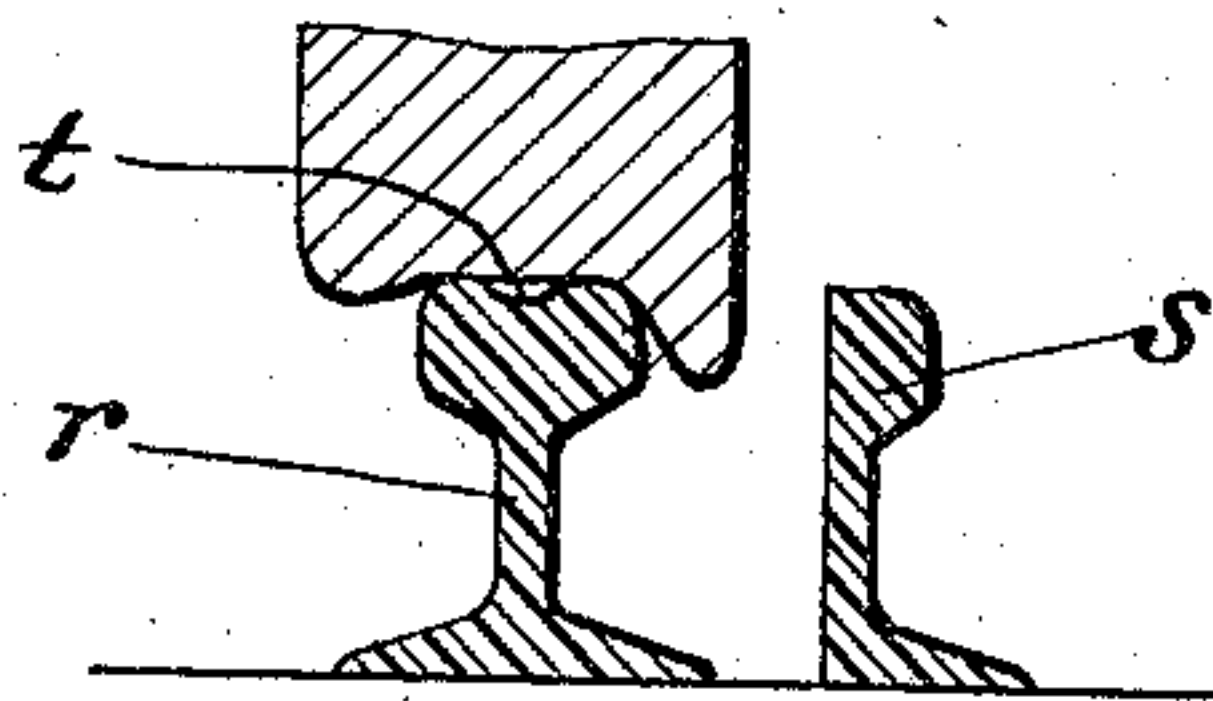


FIG. 10.

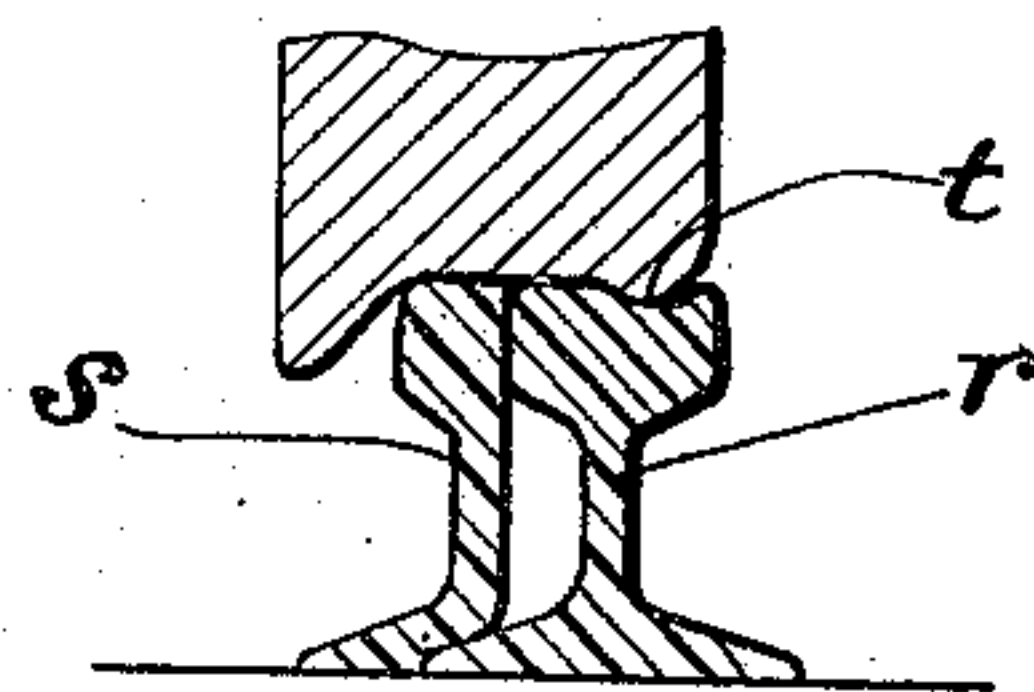


FIG. 11.

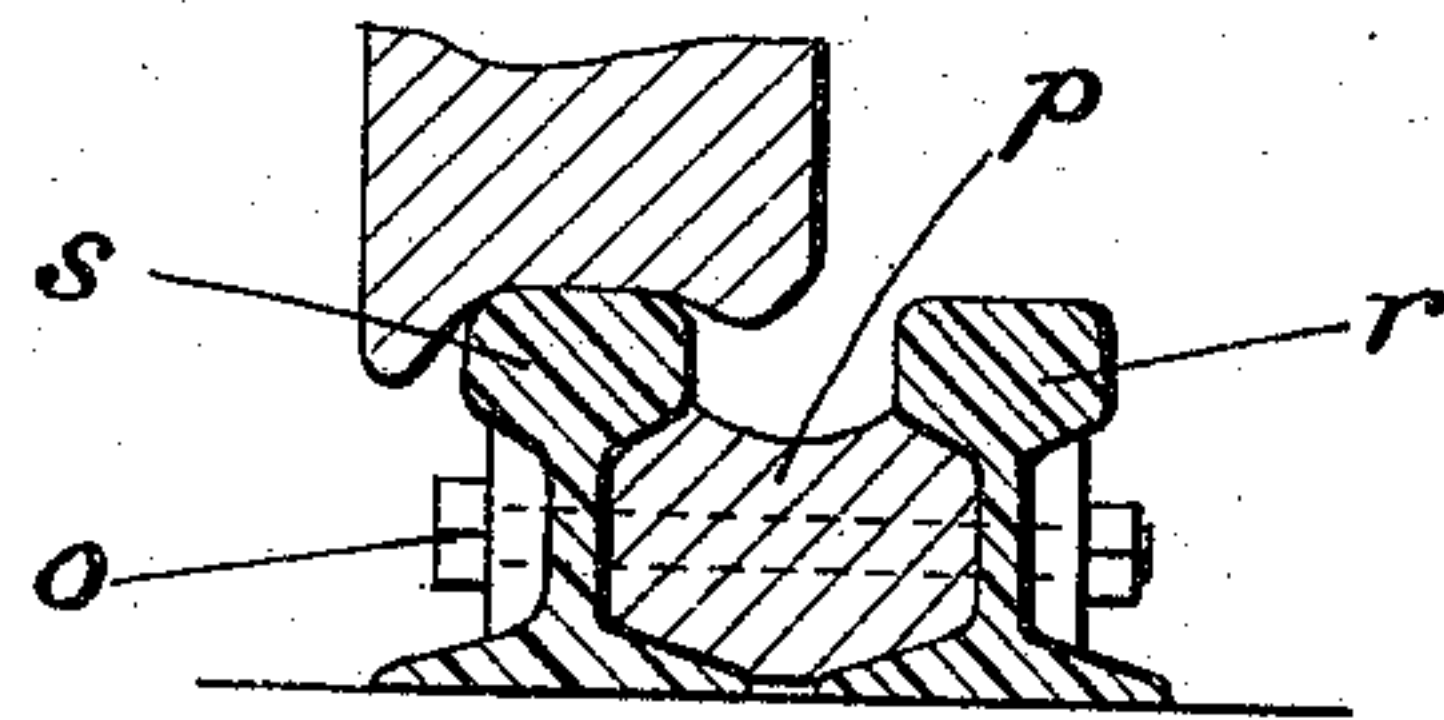


FIG. 12.

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RAILWAY-FROG.

No. 840,697.

Specification of Letters Patent.

Patented Jan. 8, 1907.

Application filed October 12, 1906. Serial No. 338,549.

To all whom it may concern:

Be it known that I, EDWIN S. HIPPEY, a citizen of the United States, residing at York, county of York, and State of Pennsylvania, have invented a new and useful Improvement in Railway-Frogs, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

The object of my invention is to so construct railway-frogs and other analogous special-work construction as to substantially prolong their life.

In car-wheels that are not new the tread of the wheel is more or less worn to fit the rail-head, thereby forming a "false" or "blind" flange on that side of the tread opposite the regular flange which is not worn by riding on the rail-head. When a frog is so constructed that the frog-point and wing-rail are on the same plane, this blind flange as it passes over a frog more or less elevates the tread of the wheel above the level of the frog, causing the cars to lurch and wearing away the frog itself by the hammering action of the wheel as it mounts or drops from the point-rail and wing-rail. This action is even more pronounced in those frogs in which the wing-rail is on a higher plane than the point-rail. While hard metal has been used to overcome the wear, this expedient does not remedy the lurch of the cars. Moreover, when the entire body of the frog is of hard metal there is a resultant serious damage to the wheels, and when a part only of the frog is of hard metal the soft metal in the point-rail is soon smashed, causing destruction of the hard metal at certain near-by points.

My invention in its application to a frog consists in the provision of two intersecting grooves formed in the upper face of the frog and extending parallel with the direction of extension of the two crossing rails and in alinement with and adapted to receive the blind flange of a wheel as it passes over the frog. In the ordinary frog each groove will consist of three parts, one part being formed in the filler-block near the heel of the frog, another part being formed in the head of one of the point-rails, and the other part being formed in the head of one of the wing-rails.

In the drawings, Figure 1 is a plan view of a stiff frog embodying my invention. Figs. 2-8 are sections on the lines 2 2, 3 3, 4 4, 5 5, 6 6, 7 7, 8 8, respectively, of Fig. 1. Fig. 9

is a plan view of a switch embodying my invention. Figs. 10, 11, and 12 are sections on the lines 10 10, 11 11, 12 12, respectively, of Fig. 9.

Referring first to the frog shown in Figs. 1-8, *a b* are the two rails extending to the heel of the frog, these rails being connected at the heel with the two track-rails (not shown) and forming continuations thereof. *c d* are the two wing-rails, which at the toe of the frog are connected with the two track-rails and form continuations thereof. The rails *a* and *b* are in the usual manner bent and their heads planed off and fitted together at their inner ends, the rail *a* being prolonged to form the frog-point *e*. *f* is a filler-block interposed between the rails *a* and *b* at the angle between the same opening toward the heel of the frog. The upper face of this filler-block is on a level with the heads of the adjacent rails. The frog is also provided with the usual filler-blocks *g g g*, sunk below the surface of the rail, clamps *h h h* extending underneath the rail, and wedges *i i i* fastening the clamps to the rails. These clamps and wedges are not shown in detail, as they are old and well known and form no part of my invention and may be replaced by other well-known fastening means. In the upper face of the filler-block *f* are formed the grooves *m'* and *n'*, these grooves intersecting each other and extending parallel with the direction of extension of the heel ends of the rails *a* and *b*, respectively, and in alinement with and adapted to receive the blind flange of a wheel running on said rails, respectively. On each side of and beyond the inner end of the filler-block are formed in the heads of rails *a* and *b* the grooves *n²* and *m²*, respectively, these grooves extending obliquely across said respective rail-heads and in alinement with and forming continuations of the grooves *n'* and *m'*, respectively. On each side of and beyond the frog-point are formed in the heads of the wing-rails *c* and *d* the grooves *m³* and *n³*, respectively, these grooves extending obliquely across the rail-heads and in alinement with and forming continuations of the grooves *m²* and *n²*, respectively, and also in alinement with and adapted to receive the blind flange of a wheel running on the rails *c* and *d*, respectively.

By means of the foregoing construction provision is made for the passage of the blind flange across the point-rail and wing-rail without the blow on the rail-head otherwise

produced by the wheel in mounting or dropping from it in passing over the different parts of the frog. At the same time the grooves do not interfere with the smooth passage of new wheels and partly-worn wheels. The grooves may vary somewhat in width.

While I have shown my invention applied to a stiff frog, it is also equally applicable to spring-rail frogs, sliding frogs, and crossings, whether such frogs be formed of railway-rails, part railway-rails, and part wrought or cast hard metal or all wrought or cast hard metal.

My invention is also applicable to switches, its application thereto being illustrated in Figs. 9-12. In switches it is a common expedient to form the switch-point where the wheels pass from the switch-point to the stock-rail or main rail so that the plane of the top of the switch-point will be somewhat above the plane of the top of the stock-rail, thereby preventing the blind flange catching between the switch-point and stock-rail, and thus preventing displacement of the wheel and derailment of the cars. This construction is successful in preventing derailment; but by raising the wheels on the switch-point higher than the opposing wheels on the same axle not only are the cars caused to lurch, but the rise and fall are so abrupt as to rapidly destroy the stock-rail where the wheels drop onto it at the bottom of the incline in a trailing movement, while in a facing movement, although the destruction of the rail at the bottom of the incline is not so marked, the rise of the wheels on the incline of the switch-point from the stock-rail rapidly destroys the switch-point. By providing a groove in each stock-rail extending obliquely across its head and parallel with the head of the switch-point when the latter is closed and in such position as to receive the blind flange of a wheel traveling on the switch-point the danger of the blind flange catching between the switch-point and stock-rail is entirely obviated, thus doing away with the necessity of raising the switch-point above the level of the stock-rail, with its attendant evils.

$r r$ represent the two stock-rails of the switch, $s s$ the two switch-points, and $t t$ the grooves formed in the heads of the two stock-rails. To prevent the switch-point and stock-rail from "creeping" longitudinally with respect to each other, which would more or less destroy the necessary parallelism between the groove and switch-point head, as well as change the lateral distance between them, an ordinary filler-block p is placed between the stock-rail and the abutting ends of the switch-point and main rail u , and bolts o extend through the stock-rail, filler-block, and main rail and through the stock-rail, filler-block, and switch-point to hold the stock-rail and switch-point in fixed relation, the filler-block preventing relative displacement

of the stock-rail or switch-heel due to tightening of the bolts.

Having now fully described my invention, what I claim, and desire to protect by Letters Patent, is—

1. A railway special-work structure comprising at least two rail members adjacent, and extending at an angle, to each other, one at least of which is adapted to support more or less of the tread of the wheel guided by the other, in which the head of the first-named rail member is provided with a groove extending substantially parallel with the wheel-guiding edge of the head of the last-named rail member.

2. A railway special-work structure comprising at least two rail members adjacent, and extending at an angle, to each other, one at least of which is adapted to support more or less of the tread of the wheel guided by the other, in which the head of the first-named rail member is provided with a groove whose base extends substantially parallel with the wheel-guiding edge of the head of the last-named rail member and at a distance from said edge exceeding the width of a rail-head.

3. A railway special-work structure comprising members whose upper faces receive the wheel-tread, in which one or more of said members is provided with a groove in its upper face whose base extends parallel with and outside the part thereof with which the wheel-tread contacts.

4. A railway-frog comprising heel-rails and wing-rails in which the heel-rail and wing-rail on one side of the frog are grooved obliquely along a line extending substantially parallel with the direction of extension of the head of the other heel-rail and substantially alining with the side of the last-named rail-head opposite the wheel-guiding edge thereof.

5. A railway-frog comprising heel-rails and wing-rails in which the heel-rail and wing-rail on each side of the frog are grooved obliquely along a line extending substantially parallel with, and at one side of the center line of, the head of the other heel-rail.

6. A railway-frog comprising heel-rails and wing-rails in which the heel-rail and wing-rail on each side of the frog are provided with mutually-alining oblique grooves whose common base-line extends substantially parallel with a vertical plane through the wheel-guiding edge of the opposite heel-rail and at a distance from such plane exceeding the width of a rail-head.

7. A railway-frog comprising heel-rails, a frog-point merging into the heads of the heel-rails, a filler-block inserted in the angle between the heel-rails, and wing-rails extending on opposite sides of, and beyond, the frog-point, the face of the filler-block, the

head of one of the heel-rails and the head of the corresponding wing-rail being each provided with a groove, said grooves being in longitudinal alinement and adapted to receive the blind flange of a wheel in its passage along and between said wing-rail and the opposite heel-rail.

8. A railway-frog comprising heel-rails, a frog-point merging into the heads of the heel-rails, a filler-block inserted in the angle between the heel-rails, and wing-rails extending on opposite sides of, and beyond, the frog-point, the head of one of said wing-rails being grooved obliquely from the inner side of the head to the outer side thereof toward the toe of the frog, the head of the corresponding heel-rail and the filler-block being also grooved obliquely toward said wing-rail, said grooves being in longitudinal alinement and adapted to receive the blind flange of a wheel in its passage along and between the opposite heel-rail and said wing-rail.

9. A railway-frog comprising heel-rails, a frog-point merging into the heads of the heel-rails, a filler-block inserted in the angle between the heel-rails, and wing-rails extending on opposite sides of, and beyond, the frog-point, the face of the filler-block, and

the heads of the wing-rail and heel-rail on one side of the frog being provided with grooves in longitudinal alinement, the bases of said grooves extending substantially parallel with a vertical plane through the wheel-guiding edges of said wing-rail and opposite heel-rail and spaced therefrom a distance exceeding the width of a rail-head.

10. A railway-frog comprising heel-rails, a frog-point merging into the heads of the heel-rails, a filler-block inserted in the angle between the heel-rails, and wing-rails extending on opposite sides of, and beyond, the frog-point, the face of the filler-block and the heads of said rails being grooved to form two continuous intersecting grooves, said grooves being respectively arranged to receive the blind flanges of wheels passing along and between one wing-rail and the heel-rail on the opposite side and along and between the remaining heel-rail and wing-rail.

In testimony of which invention I have hereunto set my hand, at the city of York, on this 6th day of October, 1906.

EDWIN S. HIPPEY.

Witnesses:

SMYSER WILLIAMS,
ELLEN M. WELLENSICK.