

No. 680,460.

Patented Aug. 13, 1901.

F. MINGLER.
RAILROAD TIE.

(Application filed Apr. 17, 1901.)

2 Sheets—Sheet 1.

(No Model.)

Fig. 1.

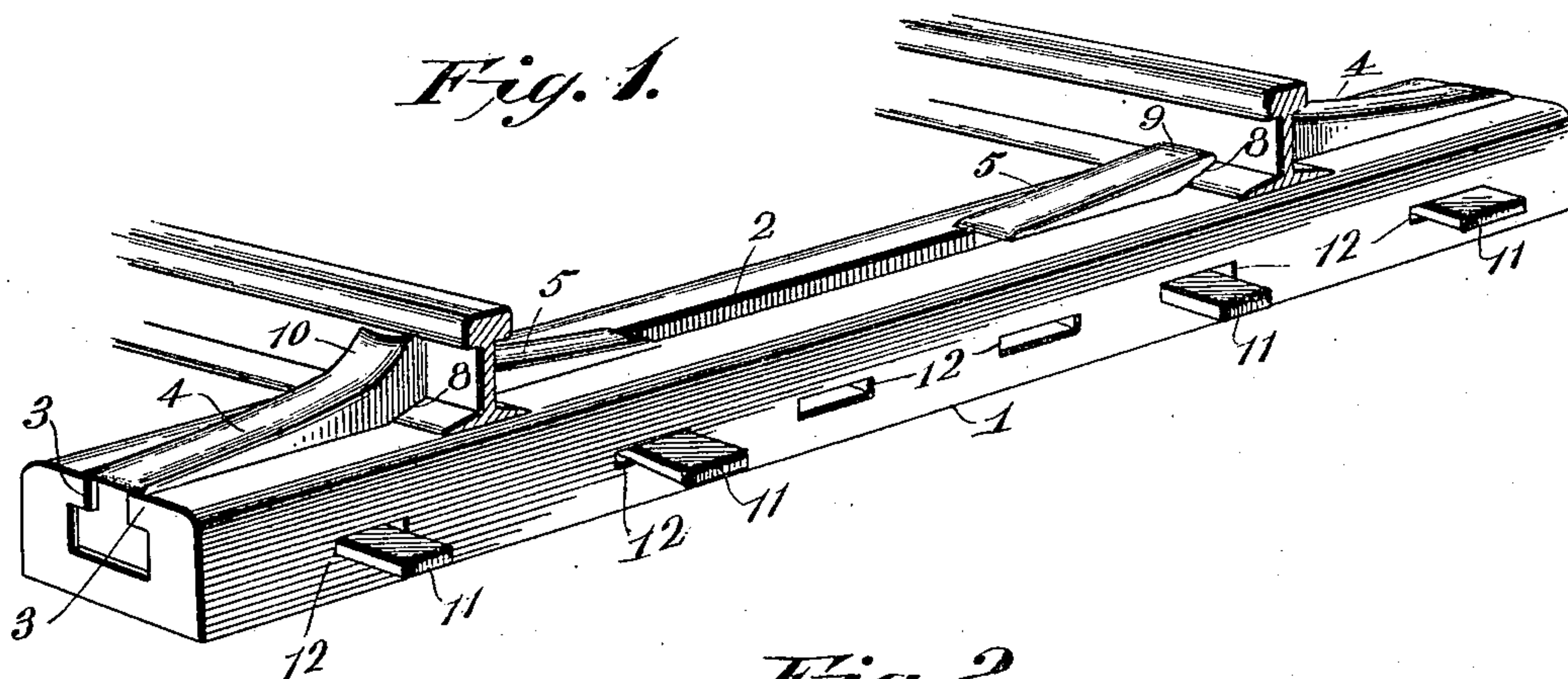


Fig. 2.

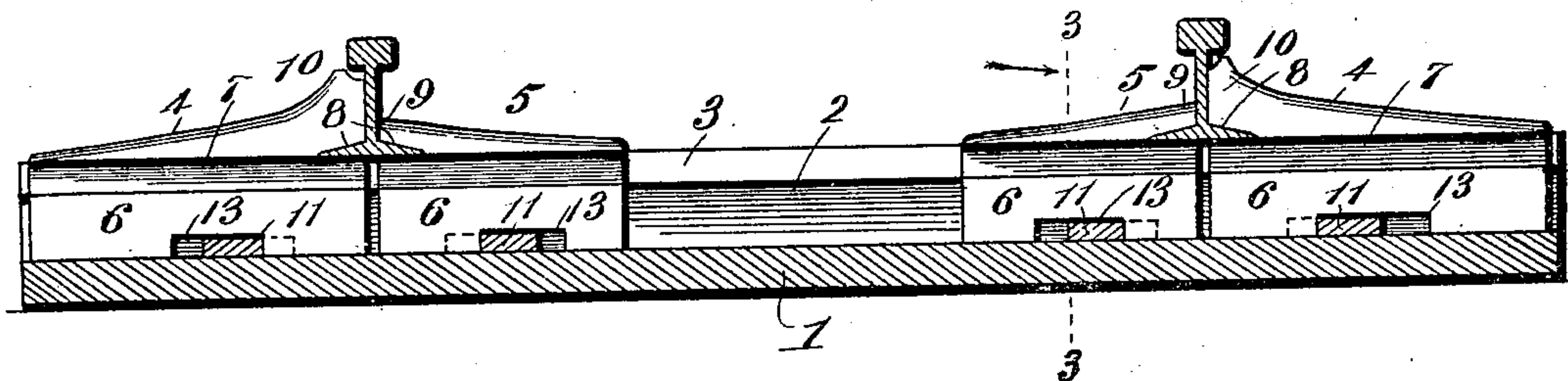


Fig. 4.

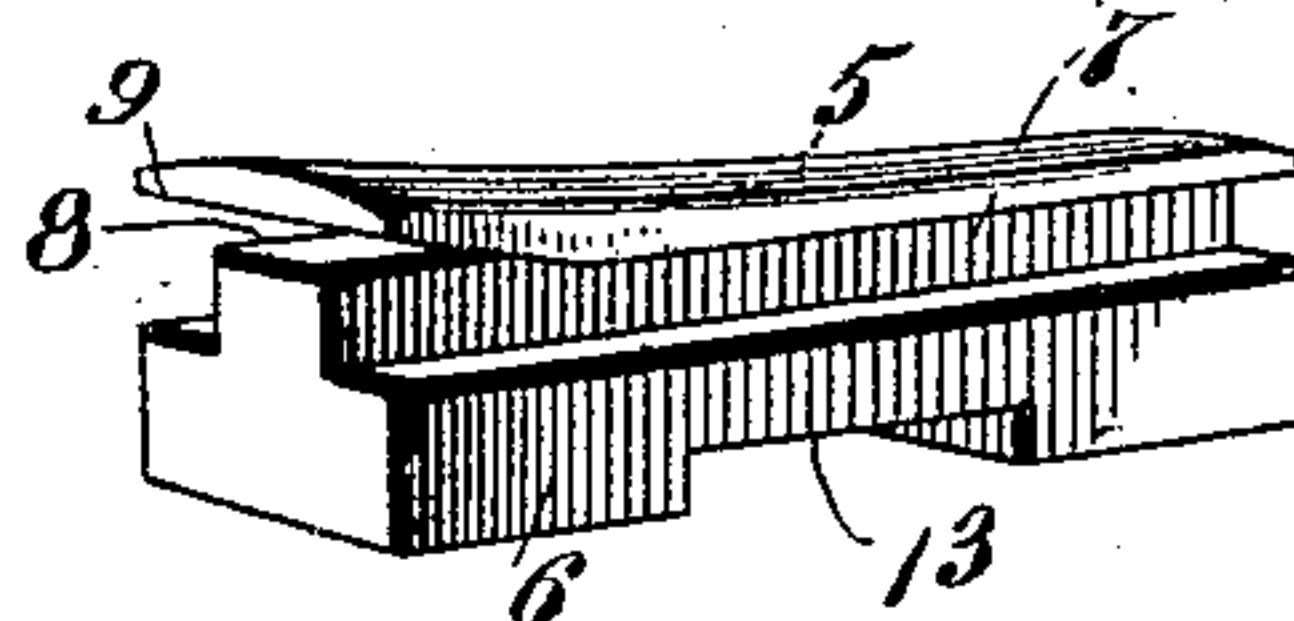


Fig. 3.

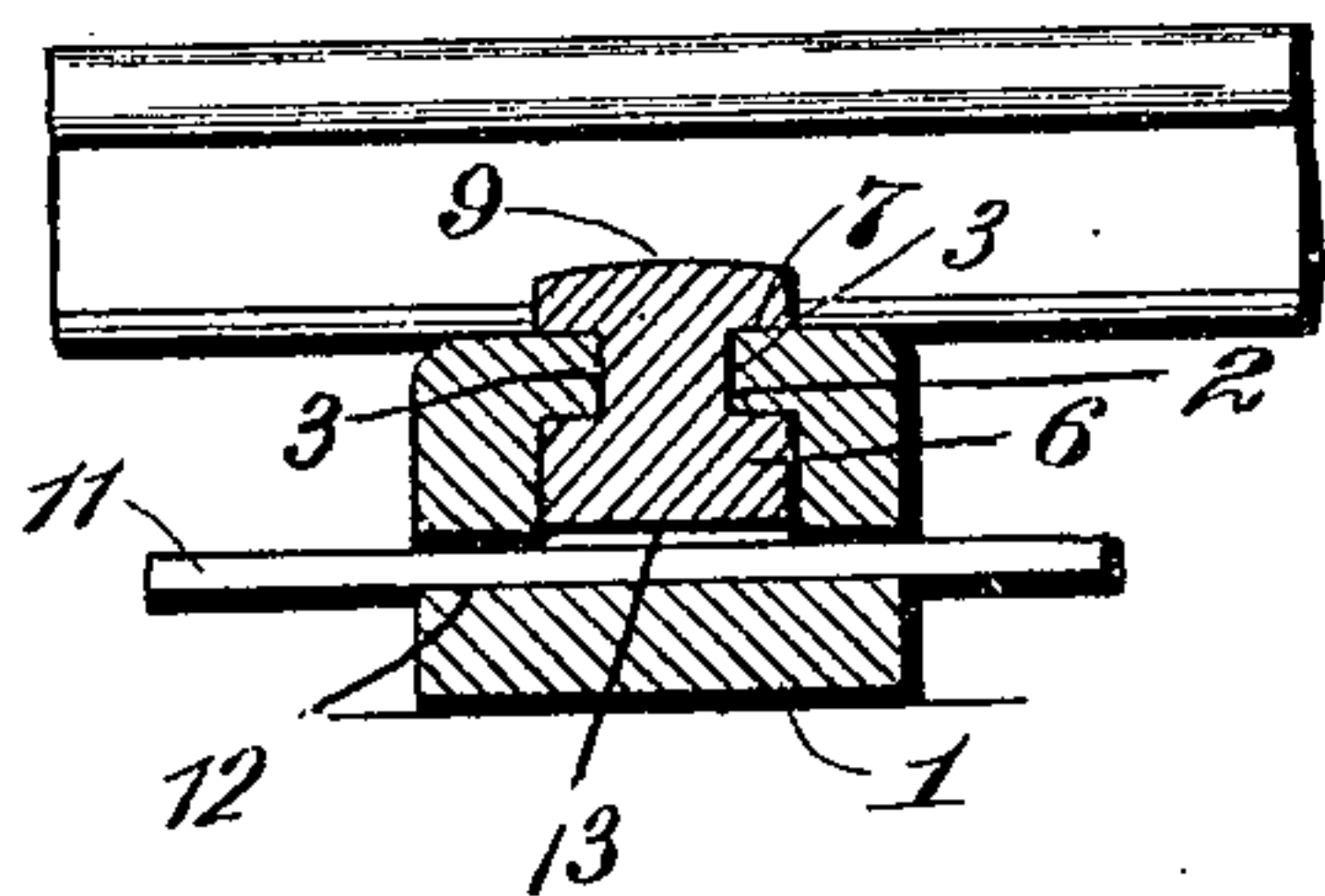
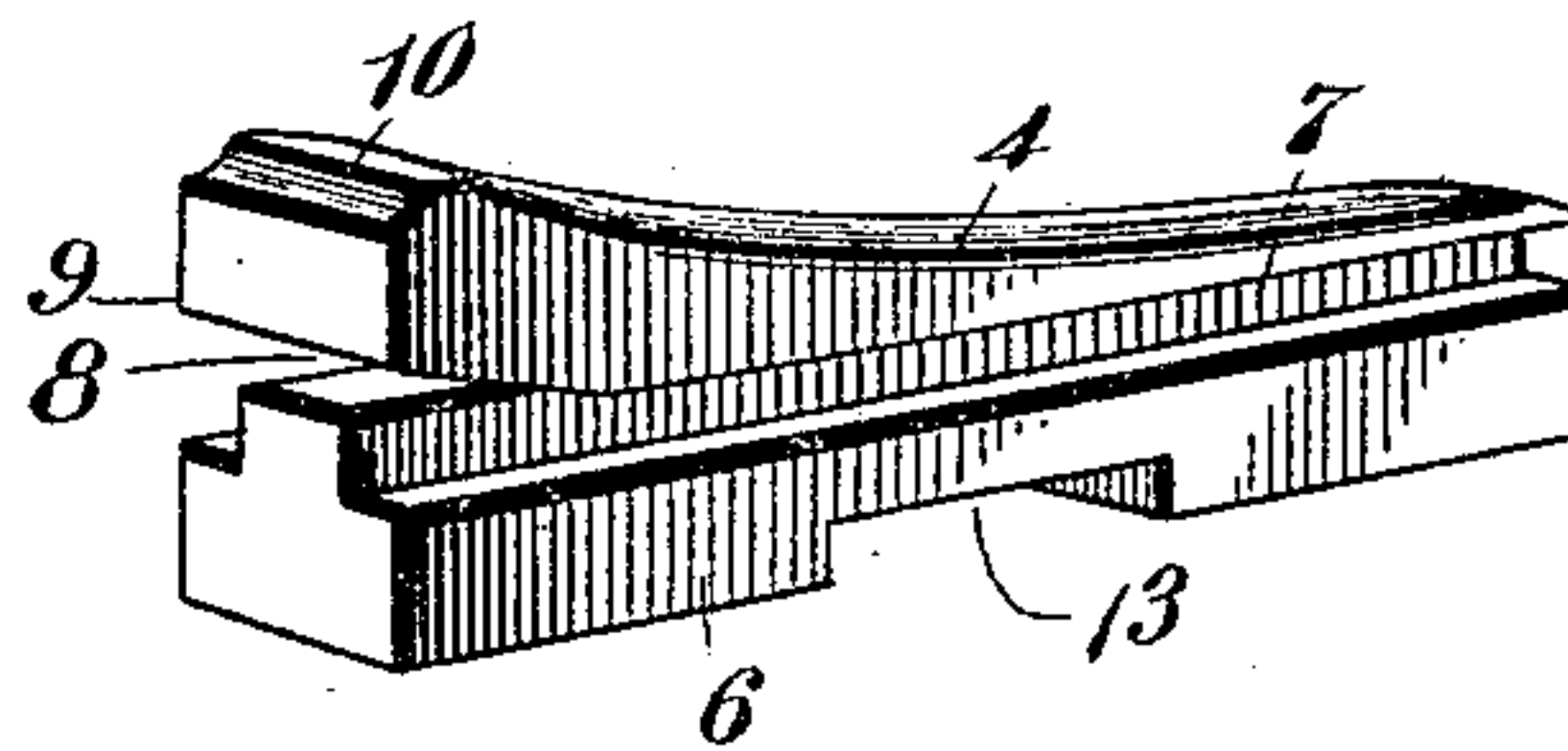


Fig. 5.



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Fig. 6.

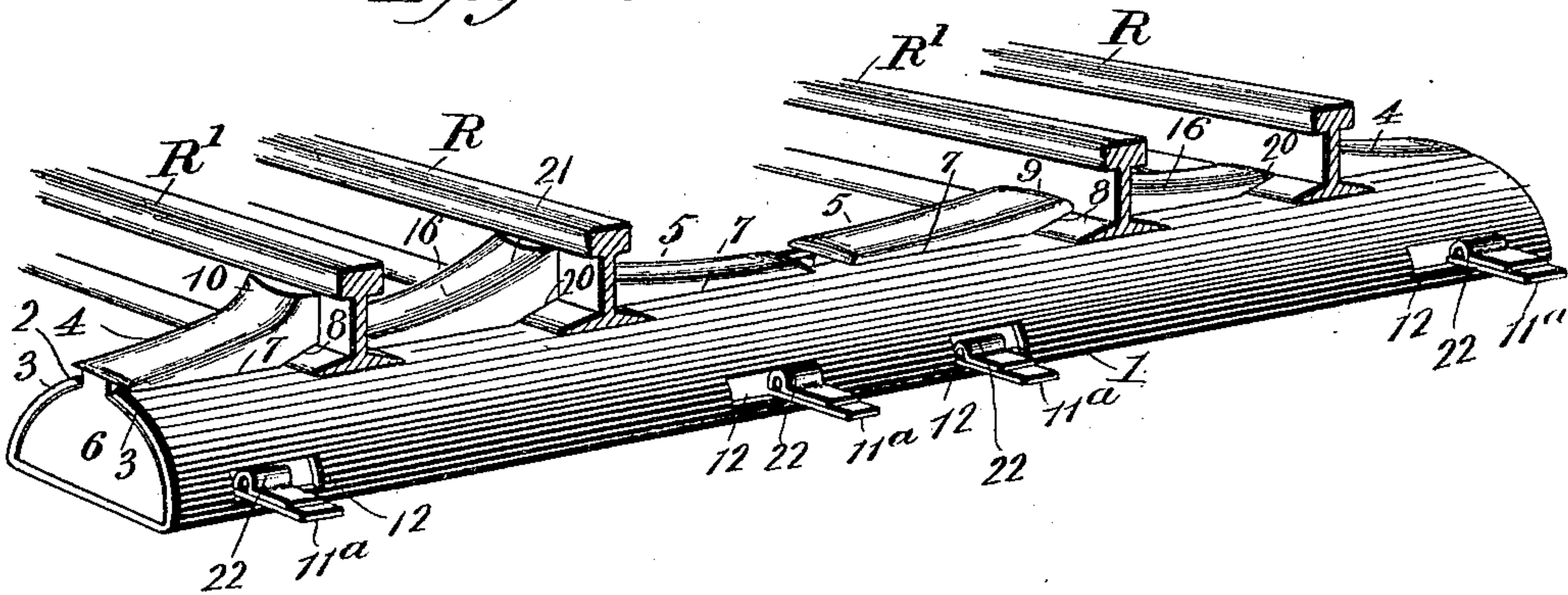


Fig. 7.

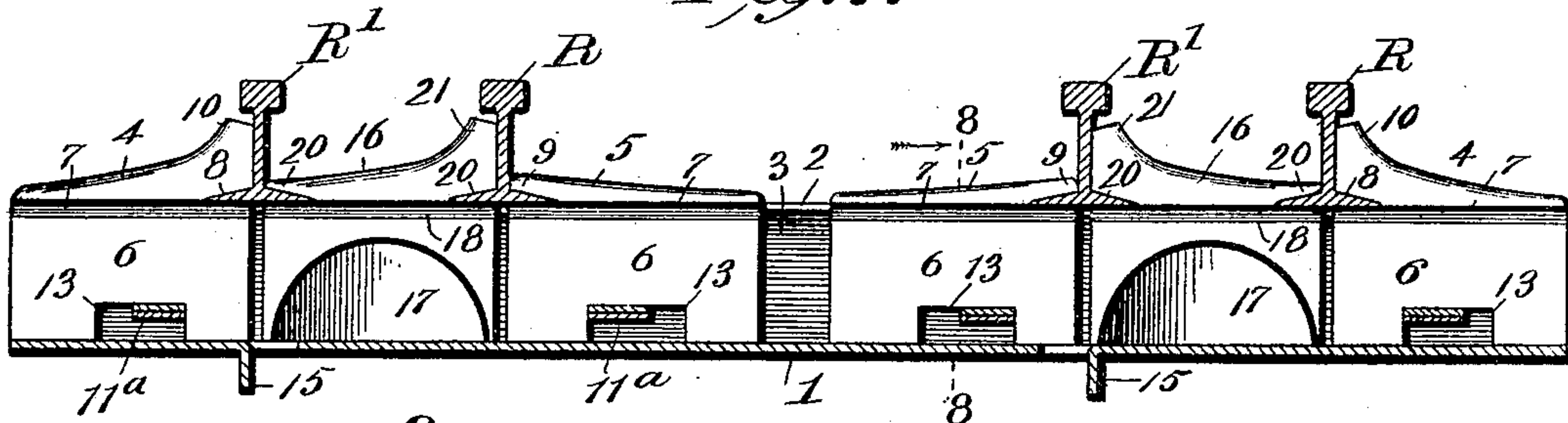


Fig. 8.

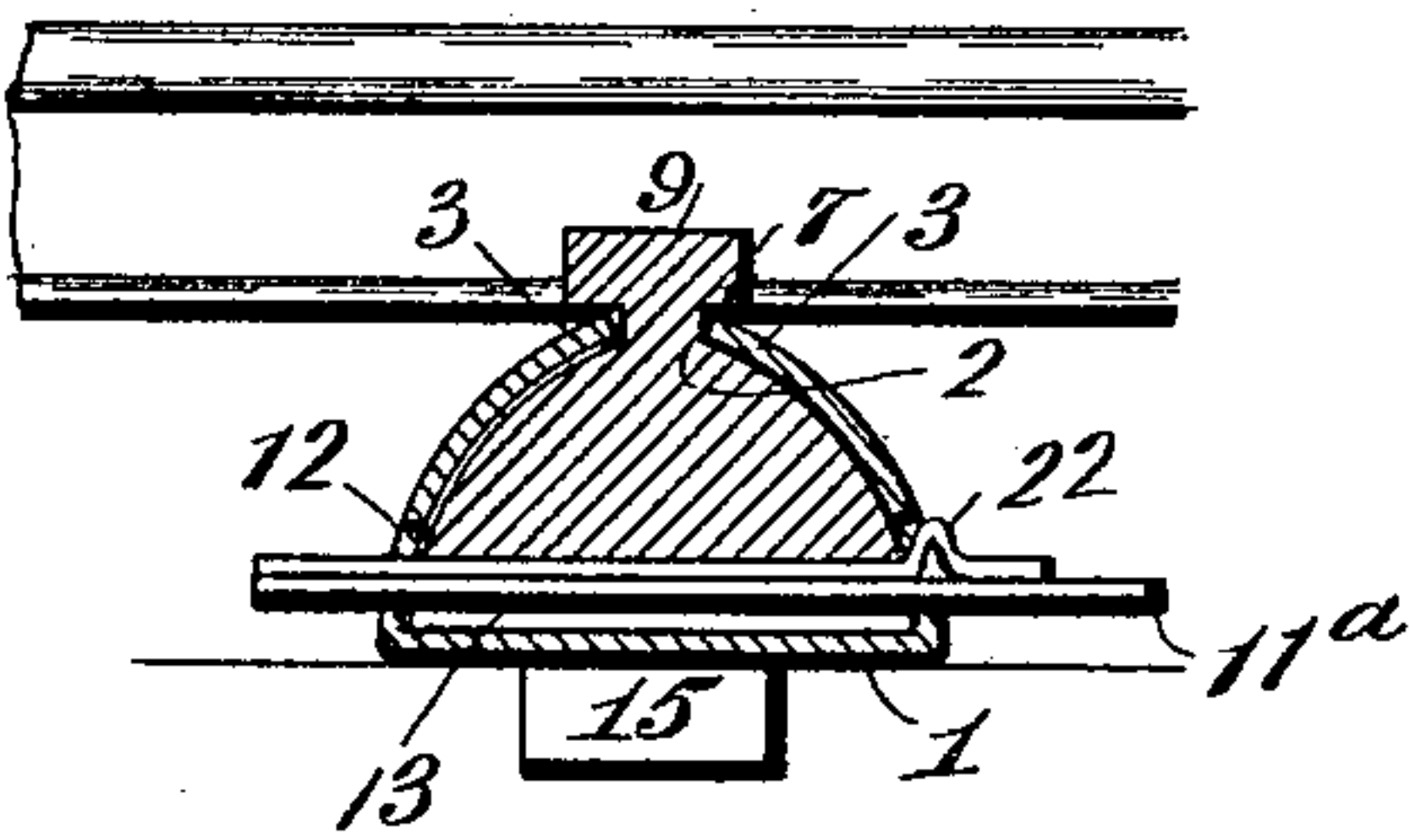


Fig. 9.

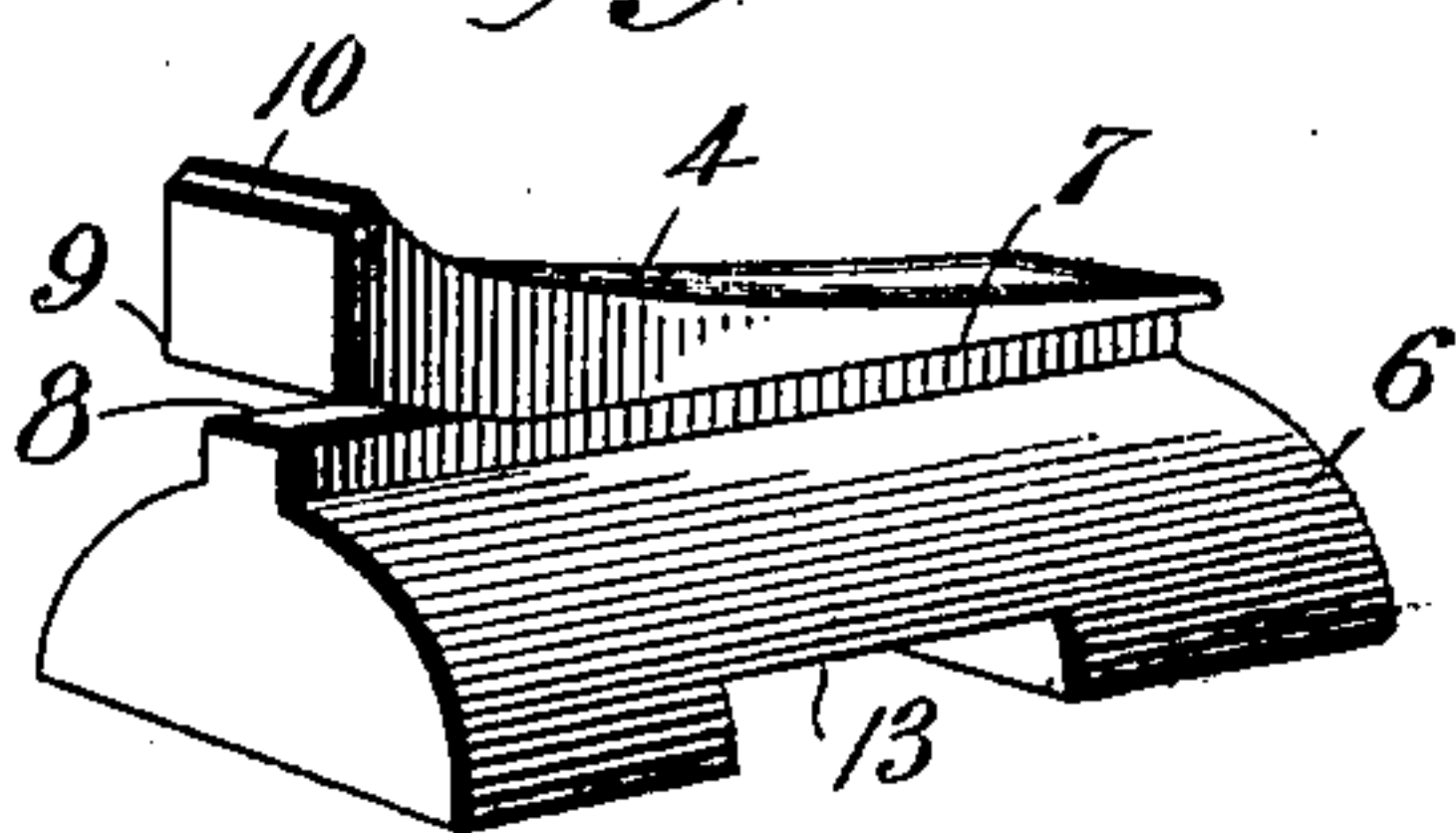


Fig. 10.

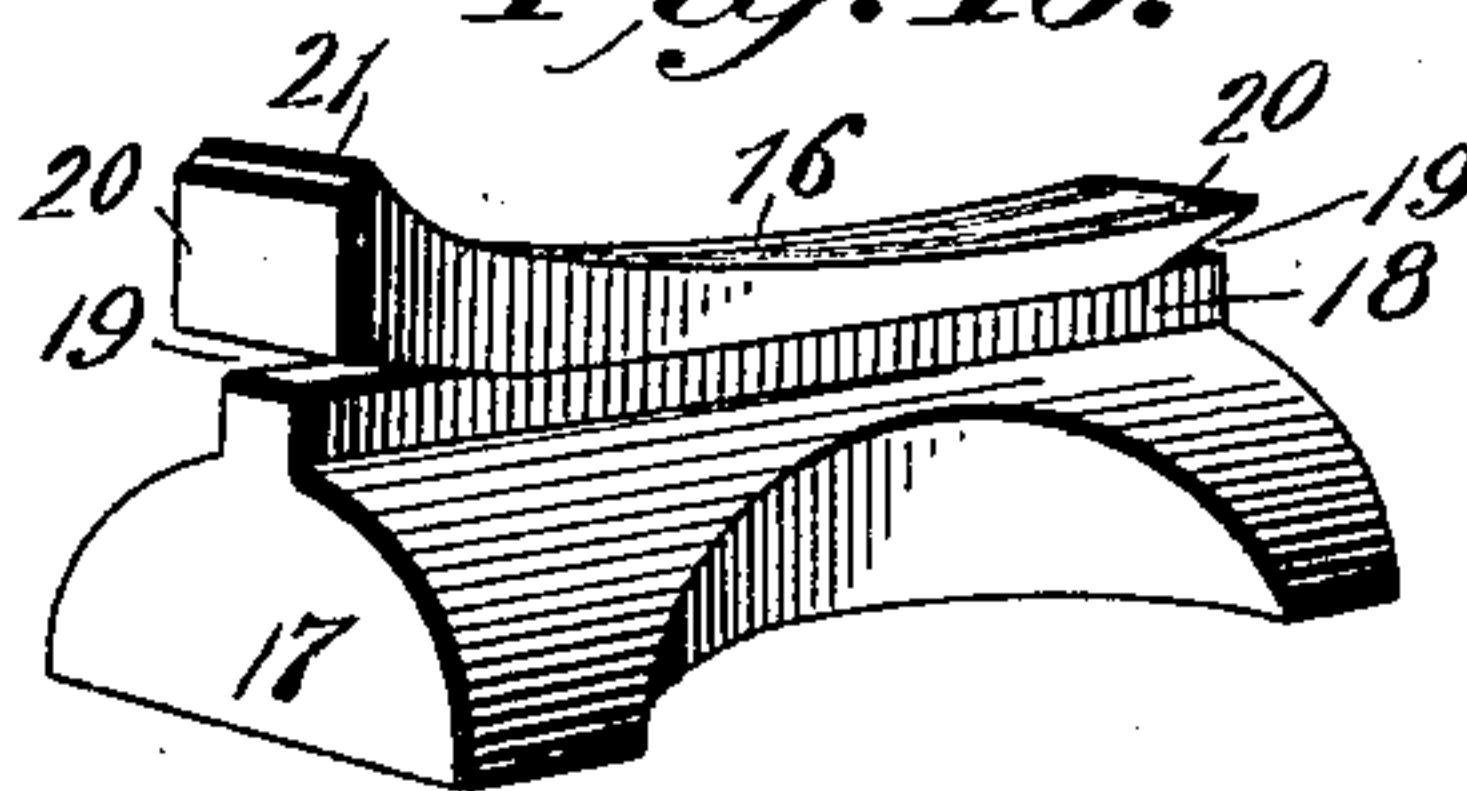
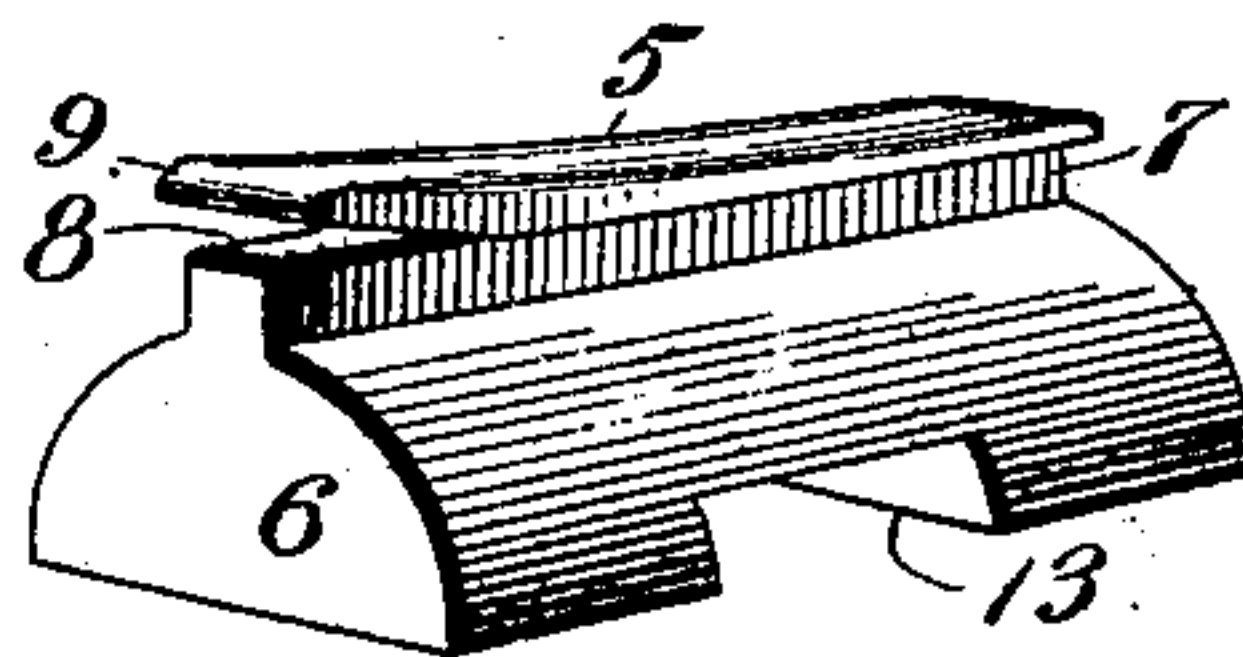


Fig. 11.



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UNITED STATES PATENT OFFICE.

FRANK MINGLER, OF LEETONIA, OHIO.

RAILROAD-TIE.

SPECIFICATION forming part of Letters Patent No. 680,460, dated August 13, 1901.

Application filed April 17, 1901. Serial No. 56,281. (No model.)

To all whom it may concern:

Be it known that I, FRANK MINGLER, a citizen of the United States, residing at Leetonia, in the county of Columbiana and State of Ohio, have invented certain new and useful Improvements in Railroad-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 railroad-ties, and has special reference to that type of ties known as "metallic" ties and with which are directly associated the rail-fastening means or devices.

To this end the invention has in view the provision of a simple and practical construction of tie and improved rail-fastening means carried by the tie and so constructed as to provide for firmly holding the rails in position, while at the same time permitting of the ready release of the rails whenever this may be necessary for purposes of adjustment or in laying new rails.

A further object of the invention is to provide an improved form of tie and rail fastening devices which adapt the invention for all conditions of rail-laying, the same being equally as useful for switch and frog work, as well as for single-track purposes.

With these and many other objects in view, which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

The essential features of the invention involved in the novel construction and mounting of the rail-fastening devices in connection with the tubular tie-body are necessarily susceptible to a variety of modifications without departing from the spirit or scope of the invention; but the preferred embodiment of the improvements is shown in the accompanying drawings, in which—

Figure 1 is a perspective view of a railroad-tie and rail-fastening devices arranged for single-track work and embodying the present invention. Fig. 2 is a longitudinal sectional view of the construction shown in Fig. 1. Fig. 3 is a cross-sectional view on the line 3 3

of Fig. 2. Fig. 4 is a detail in perspective of one of the slidable holding-dogs, preferably of the form employed at the inner side of the rail. Fig. 5 is a similar view of the form of holding-dog preferably employed at the outer side of the rail. Fig. 6 is a perspective view of another form of the invention, showing the parts arranged for holding main-track and switch rails. Fig. 7 is a longitudinal sectional view of the construction shown in Fig. 6. Fig. 8 is a cross-sectional view on the line 8 8 of Fig. 7. Figs. 9, 10, and 11 are details in perspective of the forms of rail-holding dogs associated with the form of tie shown in Fig. 6, or, in fact, with any form of tubular tie which might be contemplated by the invention for switch and frog work.

Like characters of reference designate corresponding parts in each of the views of the drawings.

In carrying out the invention there is employed a tubular tie-body 1, which is designed to be arranged upon the road-bed in the same manner as the ordinary wooden cross-tie, but is preferably formed of pressed steel, although it is obvious that any other equivalent material might be employed in the construction of the tie-body without affecting the functions thereof in connection with the rail-fastening devices.

In all forms of the invention the tie-body 1 is tubular or hollow throughout to permit of a wide range of adjustment for the rail-fastening devices to be described, and while the cross-sectional shape of the tie-body may be varied—such, for instance, as from the cross-sectional rectangular shape shown in Figs. 1, 2, and 3 to an approximately semi-circular cross-sectional shape, as shown in Figs. 6 and 8 of the drawings—still in all embodiments of the invention the tubular or hollow tie-body 1 is provided at its upper side with a longitudinal guiding-slot 2, extending from end to end of the body, and at opposite side of which slot are arranged the inturned guide-flanges 3. These guide-flanges 3 in the cross-sectionally rectangular form of tie shown in Fig. 1 are very pronounced and are disposed horizontally, although in the other shapes of ties—such, for instance, as shown in Figs. 6 and 8—the inturned flanges 3 are sufficiently defined to provide a positive in-

terlocking engagement between the same and the removable and slidable rail-holding devices associated with the tie-body.

The rail-holding devices are in the form of dogs or blocks slidably fitted within the tubular or hollow tie-body and adapted to be locked in clamping engagement with the sides of the rails to provide for holding them in position. The rail-holding dogs for the single-track work, which are employed, respectively, at the outer and inner sides of the rails, are designated, respectively, by the reference-numerals 4 and 5, and each consists of a slidable body-block 6 of the same cross-sectional contour as the tubular tie-body 1 and slidably registering therein, so as to be capable of being moved toward and from the rail, and the slidable block 6 of each rail-holding dog is further provided in the opposite sides thereof with the longitudinally-disposed retaining-grooves 7, which have a slidable interlocking engagement with the intumed guide-flanges 3 of the tie-body, thus providing a slidable interlocking connection between the dogs and the tie-body, which insures against movement or displacement of the dogs in any direction, except in a direction longitudinally of the tie-body when released from the locking means associated therewith.

By reason of providing the body-block of each rail-holding dog with the retaining-grooves 7 in the sides thereof a portion of such block projects above the top or upper side of the tie-body, and at one end each block is provided with a reëntrant rail seat or notch 8, which takes over the base-flange of the rail, and the base of which seat or notch is preferably flush with the top of the tie-body in order to provide in connection with such tie-body a wide and firm seat for the base of the rail. At the same end as the reëntrant rail seat or notch 8, which is necessarily of an angular shape to fit the flange of the rail, each body-block 6 is provided with a rail-engaging lip 9, fitting over the upper side of the rail-flange, and the dog 4, which is arranged at the outer side of the rail, has the engaging lip 9 thereof expanded or enlarged vertically to produce a brace-head 10, fitting against the web and under the tread of the rail, at the outer side thereof, as plainly shown in Figs. 1 and 2 of the drawings. In the construction described the only substantial difference between the outer and inner rail-holding dogs resides in the provision of the outer dogs with heads acting as braces for the outer sides of the rails, and thus serving to resist any tendency of the rails to tilt in an outward direction.

Various locking means may be resorted to for binding and locking the outer and inner rail-holding dogs against the rails; but a simple and effective form of locking means or locking device is shown in connection with the construction illustrated in Figs. 1 and 2. This locking means involves the employment

of a wedge-key 11 for each holding-dog, said key being adapted to be inserted through transversely-alined key-openings 12, formed in opposite sides of the tie-body immediately above the floor of said body, said key also extending through a key-receiving notch 13, formed in the under side or base of the body-block 6 and of a sufficient length to admit of an adjustment under the wedging influence of the key when driven in place. It is of course understood that the tie-body 1 is provided with a plurality of the transversely-alined key-openings 12, the pairs of such openings occupying the same relatively-spaced relation as the outer and inner dogs for the rails.

From the construction described it is obvious that after the rails have been properly placed upon the tie-body the rail-holding dogs are slid into engagement with opposite sides thereof and are clamped tightly against the same by the wedging action of the locking-keys 11 or such other locking devices that might be associated therewith, and in the event of its being necessary to replace or move a rail the removal of the locking-keys permits of the rail-holding dogs being readily slid to inoperative positions without detaching them from the tie-body.

As already stated, various modifications of the invention may be resorted to, particularly in the shape of the tie-body and the rail-holding dogs associated therewith, and while the modification illustrated in Figs. 6 to 11, inclusive, shows a different shape of tie-body from that illustrated in Fig. 1 the same is also illustrative of the means resorted to for holding both main-track and switch rails upon the same tie. Referring more particularly to the modification in question, the tie-body 1, which is of an approximately semicircular cross-sectional shape, is shown as provided at the under side thereof with the downturned anchor-flanges 15, which assist in firmly holding the tie-body in the road-bed, and, as indicated in Figs. 6 and 7, the tie-body may have arranged thereon in addition to the main-track rails R the switch or frog rails R'. To provide for securely fastening or locking these separate rails in place upon the tie-body, there are employed, in addition to the outer and inner holding-dogs 4 and 5, already described, the intermediate spacing-dogs 16. Each spacing-dog 16 is of substantially the same construction as the dogs already described, with the exception of the key-receiving notch and also with the exception of being of a duplex construction. The said spacing-dog essentially consists of the slidable body-block 17 of the same cross-sectional contour as the tubular tie-body and provided in the sides thereof with the longitudinal retaining-grooves 18, slidably interlocking with the intumed guide-flanges of the body, and the portion of the block 17 projecting above the upper side of the tie-body is provided at both ends with angular reëntrant rail seats or notches 19 and

5 rail-engaging lips 20, the lip 20 at one end being vertically enlarged to produce a brace-head 21 corresponding to and subserving substantially the same function as the brace-head 10 already described.

10 The spacing-dogs 16 are interposed in the interval between adjacent track-rails and serve to firmly brace and hold apart the said rails, which are also engaged by the outer and inner holding-dogs 4 and 5, respectively, which are the same as already described.

15 As illustrative of the modified type of locking means which may be associated with the rail-holding devices there is shown in Figs. 6, 7, and 8 a locking-key 11^a of a split type and adapted to have one of the members thereof after insertion crimped to produce a retaining-rib 22, disposed at one side of the tie-body and serving to prevent accidental
20 displacement of the keys. Other equivalent means may be resorted to for the same purpose, and, in fact, other equivalent locking devices themselves may be substituted which could be employed in substantially the same
25 manner as the locking-keys described and which would secure a similar action in connection with the several rail-holding dogs.

30 Various changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

35 Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In a railroad-tie, the tubular tie-body provided at the top side with a longitudinal guiding-slot and in the sides thereof immedi-

ately above the plane of its floor with a plurality of transversely-aligned key-openings, 40 rail-holding dogs of the same cross-sectional shape as the tie-body and slidably fitting therein, said rail-holding dogs being provided in their sides with retaining-grooves slidably interlocking with the side edges of the slot, 45 and also provided above the plane of the tie-body with terminal rail-engaging lips, said dogs being further provided in their bases with key-receiving notches, and locking-keys engaging the transversely-aligned openings 50 of the tie-body and extending through the notches of said dogs.

2. In a railroad-tie, the tubular tie-body provided in the top thereof with a longitudinal guiding-slot, rail-holding dogs of the same 55 cross-sectional area as the body and slidably registering therein, said dogs projecting above the top of the body and provided in the sides thereof with retaining-grooves interlocking with the side edges of the slot, and locking 60 devices engaging the tie-body and said dogs.

3. In a railroad-tie, the tubular tie-body provided with a longitudinal guiding-slot, rail-holding dogs slidably registering within the body and projecting through the slot 65 thereof, separate spacing-dogs also slidably registering within the body, and locking devices associated with all of the dogs excepting the spacing-dogs.

In testimony whereof I affix my signature 70 in presence of two witnesses.

FRANK MINGLER.

Witnesses:

U. L. METZ,
JOHN B. MORGAN.