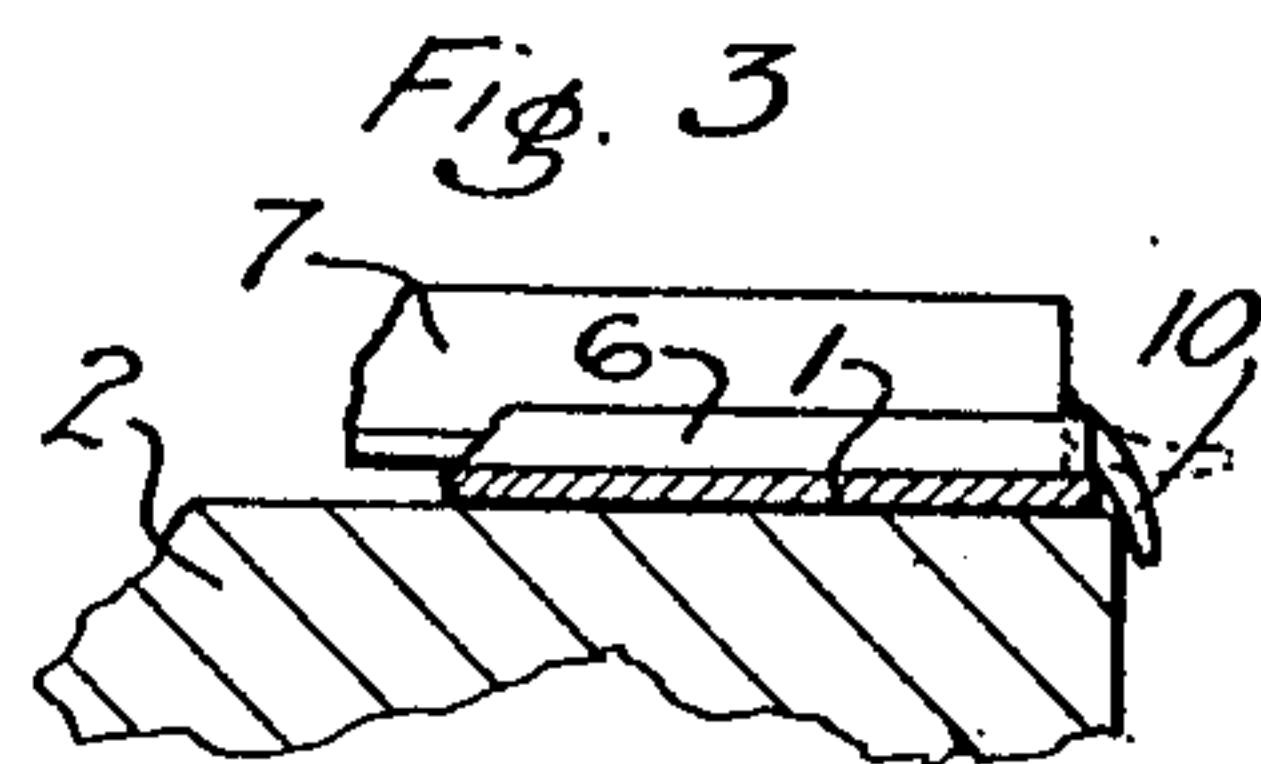
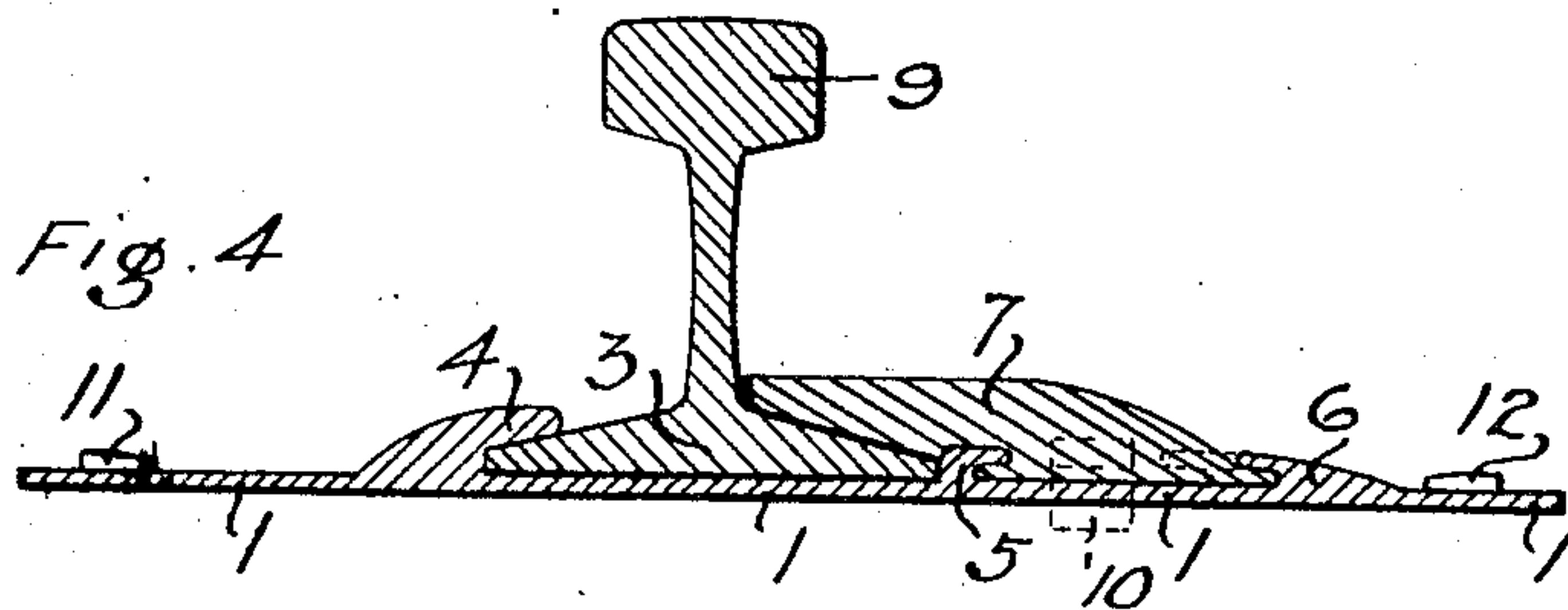
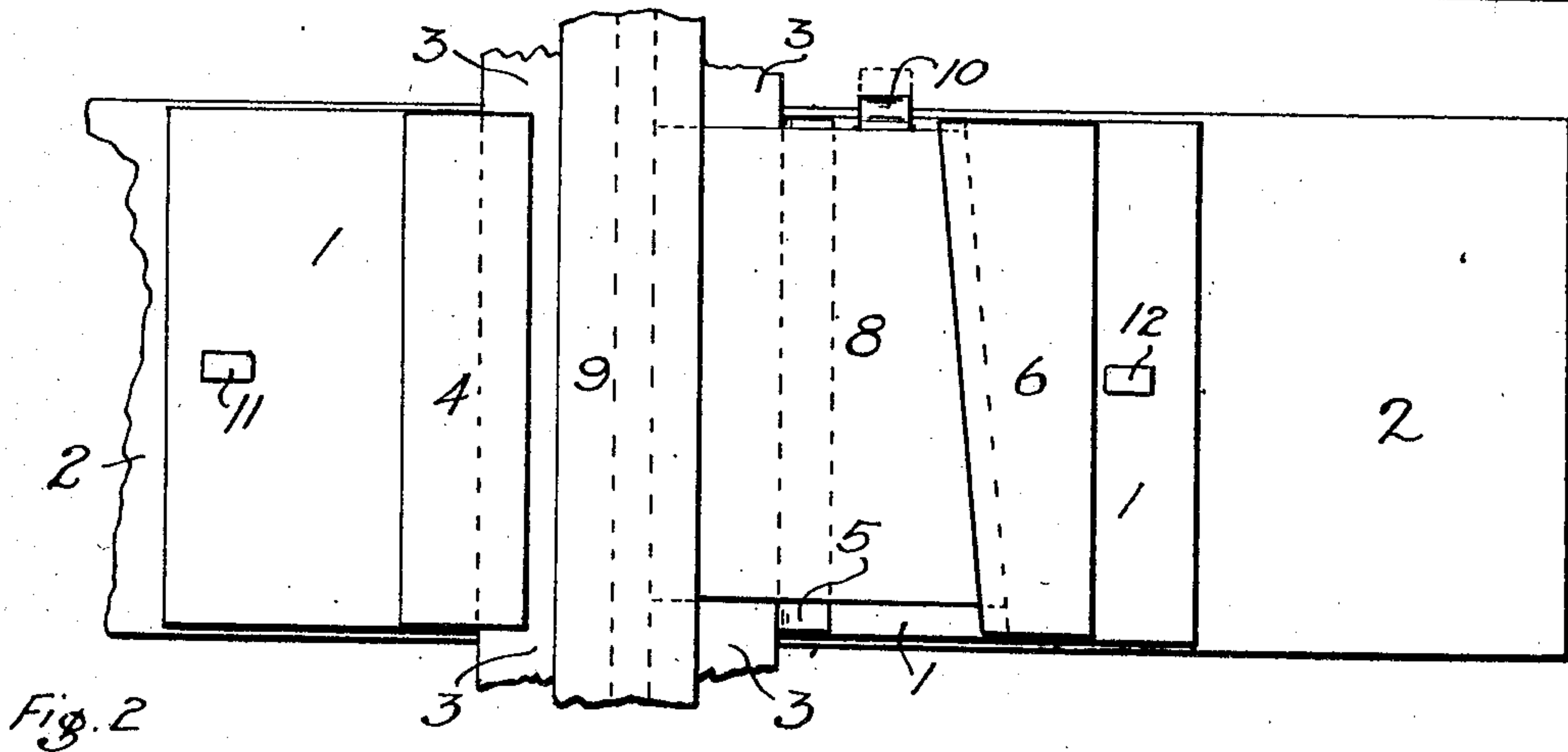
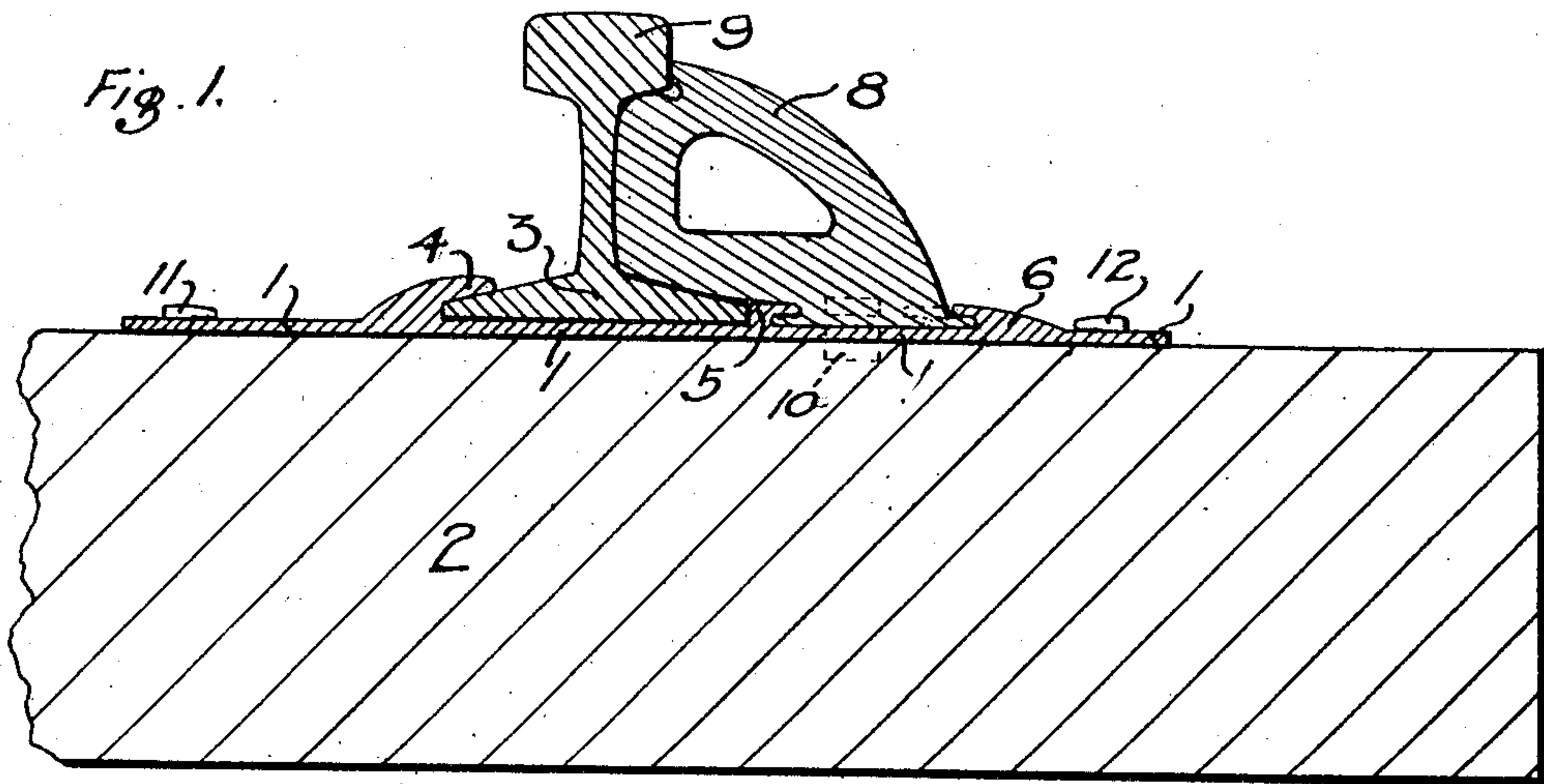


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TIE PLATE.
APPLICATION FILED DEC. 21, 1908.

916,794.

Patented Mar. 30, 1909.



WITNESSES:
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CHARLES E. SHADE, OF TACOMA, WASHINGTON.

TIE-PLATE.

No. 916,794.

Specification of Letters Patent.

Patented March 30, 1909.

Application filed December 21, 1908. Serial No. 468,529.

To all whom it may concern:

Be it known that I, CHARLES E. SHADE, a citizen of the United States of America, residing at Tacoma, in the county of Pierce and State of Washington, have invented certain new and useful Improvements in Tie-Plates, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to railroad tie-plates and has for its objects to provide means for holding and bracing the rail without injuring the tie near the rail, thus lengthening the life of the tie.

Further objects are to reduce the number of spikes necessary; to obviate the necessity of pulling the spikes to remove the rail thus further lengthening the life of the tie; and to provide a device which will hold the rail in position so that a train may run over it even though the securing of the rail may not be permanently completed, thus decreasing the delays to trains over tracks being repaired and increasing the efficiency of the repairing crews.

I attain these objects by the devices illustrated in the accompanying drawing, in which—

Figure 1 is a vertical cross-section of my improved tie-plate in use showing a rail brace in position thereon for use on the outer side of the out-side rail at a curved portion of the track; Fig. 2 is a plan thereof; Fig. 3 is a longitudinal section of a portion thereof to show the down-turned tongue to hold the wedge in position; and Fig. 4 is a view similar to Fig. 1 only showing the rail fastener in use for a straight track.

Similar numerals of reference refer to similar parts throughout the several views.

When a rail is laid directly on a tie the action of a train passing over the rail causes an intermittent compression of the fibers of the tie over the limited area under the base of the rail. This action soon breaks the upper fibers of the wood at the edges of the rail base with the result that the rail gradually cuts into the tie. This is further hastened whenever the tie is damp or wet by the water being drawn into the tie under the rail by capillary action and also by the sponge-like action of the tie when a train is passing over it. The water quickly rots the broken fibers and so additional strain is brought on the highest unbroken fibers which quickly break in their turn. Both of these

causes of cutting are in a measure lessened by placing a plate under the rail so as to increase the bearing surface on the tie and so as to make the fibers bend more gradually at the edges of the plates, thus preventing their rapid cutting at this point. But there is an additional cause for the rotting of the tie and for the insecurity of the spikes which is common to the two conditions above mentioned. This is found in the fact that the spikes are driven directly in line with the edge of the rail whether the rail be laid directly on the tie or on a tie-plate. The result is that as a train passes over a tie the spike is worked very slightly and if the tie be wet the water will be drawn all around the spike thus quickly rotting the wood all around the spike. This causes the spike to loosen and if the rail is held only by spikes in such condition then it is soon overturned by a train. The result is that if the track is to be kept in good condition the spikes must be drawn, the holes plugged and new spikes driven, or new ties must be laid. Now it is a matter of common knowledge that the ties become rotten first under the rail and around the spikes and then inward from the ends and that the life of the central part is much greater than that of the ends. The above remarks are especially true of soft wood ties, such as are now in most general use since hard wood is becoming too expensive for this use.

In view of the above facts I have devised a tie-plate which will distribute the load on the tie over a large area and which removes the spikes away from the rail and in which only one or two spikes are needed for each side of each tie whether the track be straight or curved, as hereinafter fully described. The tie-plate proper consists of a plate 1 about as wide as the tie 2 and extends on each side of the base 3 of the rail a distance of six or eight inches or more. An overhanging lug 4 is formed on the inner part of the plate 1 and extends entirely across the plate in such position thereon and of such shape and dimensions as to allow the inner edge of the base 3 of the rail to enter under it, and on which it may be pressed by the blows of a hammer if necessary. On the outer part of the plate 1 is formed the straight lug 5 extending entirely across the plate 1 parallel with the lug 4 and at such a distance therefrom as to snugly receive the rail base 3 between it and the lug 4. The

outer face of the lug 5 is parallel with the rail and is beveled under or undercut its entire length. Another beveled under or undercut lug 6 is formed on the plate 1 nearer its outer end. The lug 6 also extends across the plate 1 but is not parallel to the rail, being nearer to it at one end than at the other end. The undercut faces of the lugs 5 and 6 face each other. Into the space between these lugs 5 and 6 is driven the rail fastener 7, or the rail brace 8. These two pieces differ from each other only in that part which engages the rail itself, since the fastener 7 engages only the outer half of the rail base 3 while the brace 8 also engages under and on the outer side of the head 9 of the rail. Both the pieces 7 and 8 are identically shaped at their bases, being wedge-shaped and provided with tongues adapted to fit under lugs 5 and 6 which are undercut, as above described, to fit these tongues. The form of the wedge corresponds to the angle that the lug 6 makes with the rail so that when the wedge is driven in tight, the fastener 7 or the brace 8 fits tightly against the rail. A tongue 10 extends out from the narrow end of the wedge and is of such form and length as to be adapted to be bent down over the edge of the plate 1 as soon as the wedge is driven tight home. The plate 1 is secured in place on the tie 2 by means of two spikes 11 and 12, driven through holes at each end thereof, both of said spikes being far removed from the rail so that they will not move in the tie when the train passes and so as to be removed from that part of the tie which rots soonest.

It is evident that if a rail is to be removed and replaced by another, that none of the spikes need be removed but all that is necessary to do is to bend the tongues 10 into horizontal position, then drive the wedges from between the lugs 5 and 6 thus releasing the rail. Further, should a train be approaching when the wedges are withdrawn,

it will not be necessary to hold the train until the rail fastening is completed, for the rail will be held by the straight lug 5 from spreading and by the overhanging lug 4 from overturning and it will not climb out of the socket thus formed because of the weight of the train. In inserting a new rail it is necessary to tip its head inward and slide it transversely under the lug 4 until it has passed over the lug 5, and in order to do this it will be necessary to bend upward the lug 4 slightly when removing the old rail and then to drive it down again on the base when the rail is in place.

Having described my invention what I claim is:

In a device of the class described, the combination with a plate adapted to lie between a rail and a tie; an overhanging lug formed on the plate and adapted to engage over and clamp the inner edge of the rail base; a straight faced lug formed on the plate and adapted to engage against the outer edge of the rail base, the outer face of said lug being undercut; a third lug formed on the plate at an angle to the second lug and having its inner face undercut; a wedge-shaped body engaging under both of said undercut lugs and adapted to be held thereby, said body extending over and engaging the outer edge of the base of the rail to hold it; a tongue formed on the narrow end of said wedge-shaped body and adapted to be bent over the edge of said plate to prevent the removal of said body from between said undercut lugs; and means, removed from the rail, adapted to secure the plate in position on the tie by engaging its ends.

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

CHARLES E. SHADE.

Witnesses:

M. F. McNEIL,
B. V. PIERCY.