(No Model.)

R. I. VERPLANCK.

RAILWAY RAIL JOINT.

No. 441,723. Patented Dec. 2, 1890.

Fig. 1

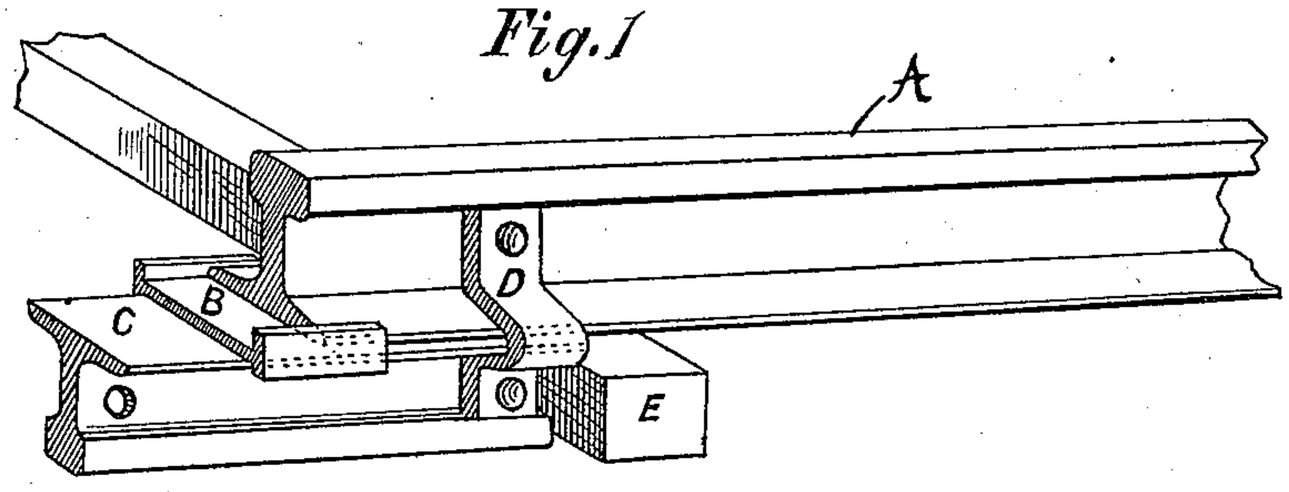


Fig. 2

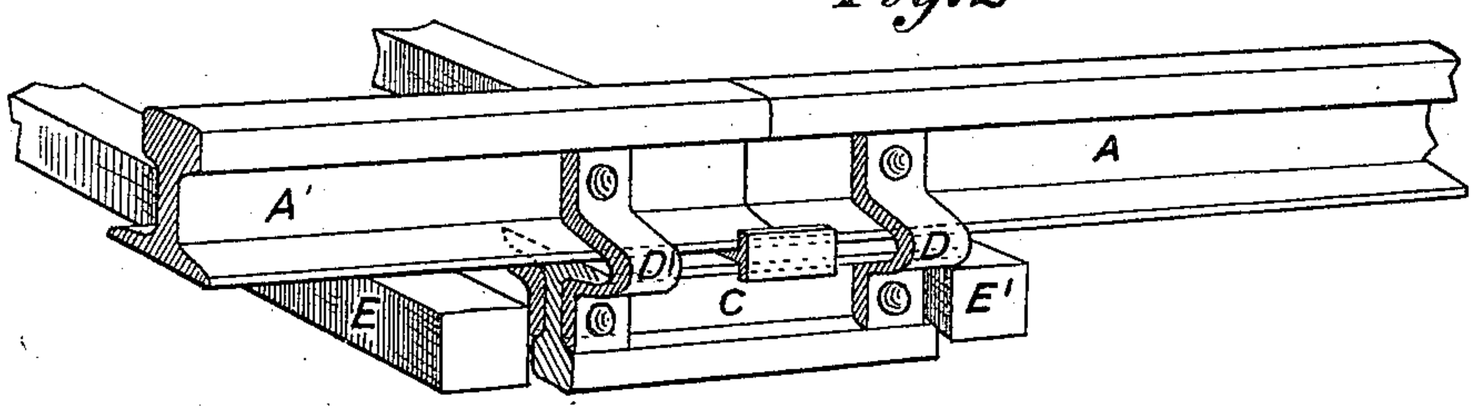


Fig. 3

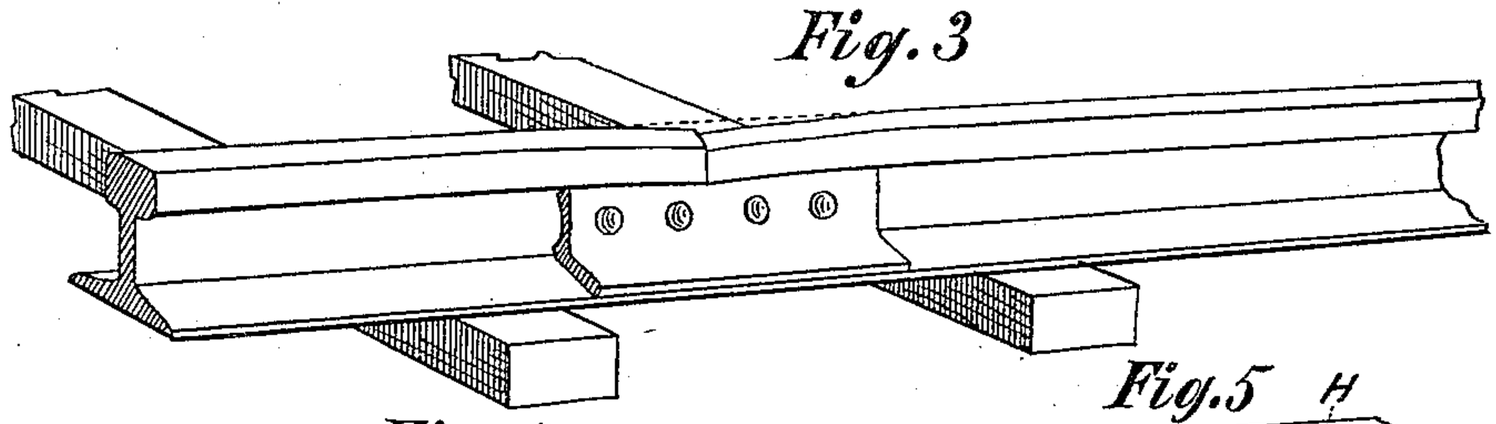


Fig. 4

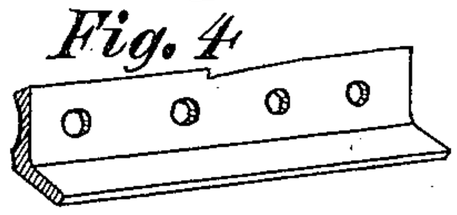


Fig. 5

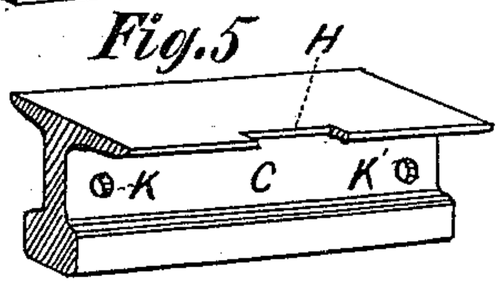


Fig. 8

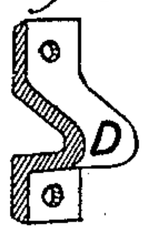


Fig. 6.

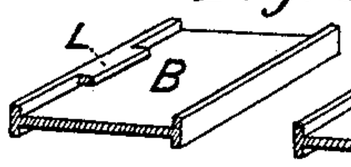
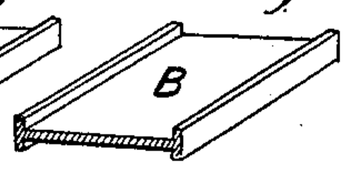


Fig. 7



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UNITED STATES PATENT OFFICE.

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RAILWAY-RAIL JOINT.

SPECIFICATION forming part of Letters Patent No. 441,723, dated December 2, 1890.

Application filed January 10, 1890. Serial No. 336,515. (No model.)

To all whom it may concern:

Be it known that I, ROBERT I. VERPLANCK, a citizen of the United States, residing in the city and county of Albany, and State of New York, have invented a new and useful Improvement in Railway-Rail Joints, of which the following is a specification.

In examining the effect produced by a train of cars passing over the track of a railroad there will be seen a slight motion of the rails which is curving or wave-like. If the upper surface of the rails be smooth and level and they are perfectly joined at their ends, the pressure of the passing wheels would be constant and uniform at every point. If there is any irregularity in the surface, or any part of the line fails to move in consonance with the rest, at that point the pressure becomes a blow like that struck by a heavy hammer. This affects not only the rails themselves but also the rolling-stock passing thereover. Could rails be made with a level smooth running-surface and be so joined together as to preserve the uniformity and continuity of motion given by the passing wheels it would conduce greatly to the length of service of the rails, to the safety of travel, and saving of wear on the rolling-stock. If the joint at the point of junction of two rails is not well adjusted, the constant curving or wave-like motion caused by the passage of the heavy wheels thereon is interrupted, and the wheels passing from one rail to another, instead of having a constant slight curve upward before them, run from one plane to another having a more or less slightly-differing level, and the joint, instead of forming a part of the curve or wave-like motion, makes an angle instead. As a result the end of the receiving-rail receives repeated blows from each passing wheel. These serve to deflect it from the plane of the adjoining rail, and the more it is deflected the heavier are the blows dealt thereon and the greater the strain on both rails and rolling-stock. This is what is generally called a "low joint" and produces what is known as "pounding," and thereby the ends of the rails become battered and flattened. One great object of rail-joints is to obviate this evil. By the use of any good joint when nicely adjusted a great improvement is obtained, but the strain in time will cause wear or cutting down at the weakest point, and usually at the top of the plate, which then fails to hold the end of the receiving-rail in its place and pounding ensues.

Figure 4 of the accompanying drawings illustrates the cutting down of an ordinary angle-plate joint. Fig. 3 illustrates the angle or difference of level of the ends of two rails making a low joint.

No satisfactory means has been devised to bring any of the joints in ordinary use into nice readjustment when they are once worn or cut down, and the only thing to be done is to apply a new joint. The device I have discovered and now describe serves to very materially remedy these evils and makes a trustworthy firm joint and transmits the motion caused by the train from rail to rail with uniformity and continuity, keeps the ends of the rails on a continuous level, is easily placed in position and adjusted to remedy any deflection in the ends of the rails, and can be strongly and cheaply constructed. I place under the lower member of the ends of the rails at the point where they are joined a suitable block. This I support beneath and hold against the lower surface of said rails by means of a beam or bar longer than the block and extending beyond it on each side parallel and beneath said rails. This bar or beam I secure by suitable means firmly at each end to the two rails above at a short distance from their point of junction and on either side of the side block. By this means the motion is transmitted to the supporting beam or bar beneath, which in turn transmits it to the block above, supporting the extreme ends of the rails, and thereby to these and also to the receiving-rail beyond the point of junction. In other words, the supporting beam or bar acts as a lever to move the block. Each end and the block in turn from the fulcrum and each arm being substantially of the same length, just so much motion is transmitted as is received, and the end of the receiving-rail is held even with and moves on the same plane as the end of the rail adjoining it.

By means of using only a short block under the ends of the adjacent rails, and one

that can be easily removed and replaced, I am able by slightly increasing or decreasing the thickness thereof to adjust the joint to compensate for any possible inequality of the level of the upper surface of the rails or any wear on any of the parts of the joint or of the rails themselves, and thus to keep the upper surface of the adjoining rails on a nearly-perfect level at their junction, instead of having to put on a whole new joint or new rails, perhaps, as is often now necessary.

The several parts are hereinbelow described in detail. While I prefer to use these as described and shown in the accompanying drawings, I do not confine my invention to any specific form of block or of the supporting beam or bar beneath or method of securing this to the rails, except as above specified. I prefer also to use for the parts of my said joint steel or iron, so as to obtain the same elasticity, as nearly as possible, as that of the rails themselves.

In the accompanying drawings similar letters are used to designate similar parts in the several figures.

Fig. 1 shows my proposed invention as applied, one rail being withdrawn to show the application more clearly. A is the rail in position in the track. B is the block placed under its end at the point of junction and extending out beyond the end thereof for a resting-place for the end of the other rail when placed in position. C is the supporting bar or beam holding the block B in position and being of greater length than said block. D is the fastening or clamp to secure the end of the beam or bar C to the rail above.

Fig. 2 shows the same with both rails in position, A and A′ being the two rails, B the block, C the supporting bar or beam, and D and D′ the clamps or suitable fastenings to secure each end of the bar to the rail above. I prefer to make my supporting bar or beam of the length of about 22 inches, which is about the usual distance between the ties of the track. These ties are shown also in the drawings and are marked E and E′. They, together with the joint, form a part of the continuous action caused by the passage of the train.

Fig. 3 shows the low joint caused by the wear of an ordinary rail-joint, and Fig. 4 an angle-joint, as usually cut down.

Fig. 5 shows C, the supporting bar or beam, in this case a piece of rail. In this I prefer to cut a slot, as at H, in which a corresponding projection L on the block B will fit to hold said block in its position. It also contains two holes K and K′ to hold bolts to secure the clamps or fastenings D and D′; but I may use any suitable method of fastening.

Figs. 6 and 7 show the block B as I prefer to make it. These figures show the lower (Fig. 6) and upper sides. In Fig. 6 L is a projection to fit in the slot H in the bar or beam, and each side of this block there is a rim or projection which fits over the edges of the lower member of the rail above and also over the edges of the bar or beam beneath and serve further to hold it in position.

Fig. 8 shows the clamp or fastening D—in this case a bent piece of metal having a bolt-hole near each end—and as one of these fits on each side of the rail above and the bar beneath a bolt above and below serves to hold both firmly in connection and in place, and four of them and four bolts the whole joint. I also prefer to so make these that the top fits under the upper member or ball of the rail, so that as the pressure works to open or spread them they are held the more firmly by their position under the upper member of the rail, preventing them spreading upward and the bolts preventing them spreading outward.

While I do not confine myself to the form of clamp or fastening above set forth, it is a part of my invention that the fastenings or clamps used be so constructed as to make a firm and strong connection between the rail above and the bar beneath. It will also be noticed in the drawings that the bar or beam C, which supports the block B, is secured at each end to the rail above beyond said block, and said block B holds the bar or beam C a short distance away from the flange or lower member of the rail above, thus enabling said bar or beam, securely fastened to the rail above at each end, to act as a lever, as above described, and giving play to the elasticity of the said bar or beam.

I am aware that rail-joints have been constructed consisting of a block or chair beneath the ends of the rails and secured to the rails above, and I do not broadly claim such a combination; but

What I do claim, and desire to secure by Letters Patent, is as follows:

A railway-rail joint consisting of a short block under the ends of the rails to be joined, in combination with a longer supporting bar or beam beneath, each end whereof, extending beyond said block and held away from the rails above by said block, is firmly secured to said rails above, substantially as described.

ROBERT I. VERPLANCK.

Witnesses:
RICHARD W. BRASS,
EDWIN G. DAY.