(No Model.) 2 Sheets—Sheet 1.

D. D. WEISELL.

COMPOUND RAILWAY RAIL.

No. 260,263. Patented June 27, 1882.

Fig. 1.

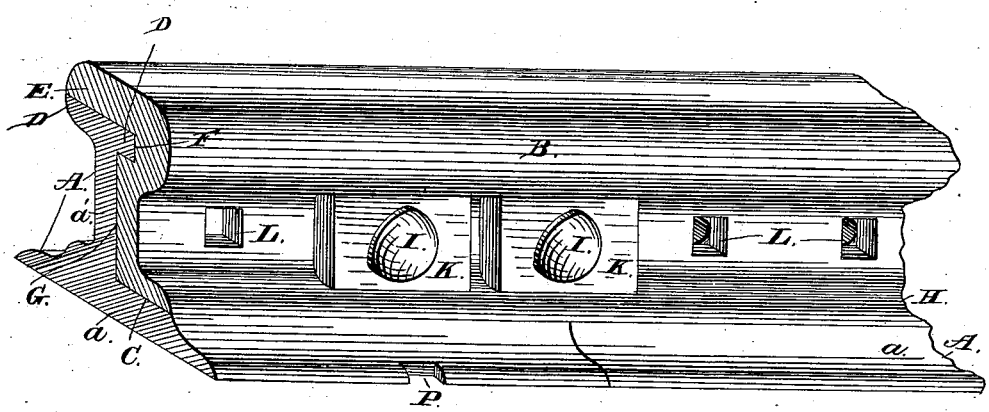


Fig. 2.

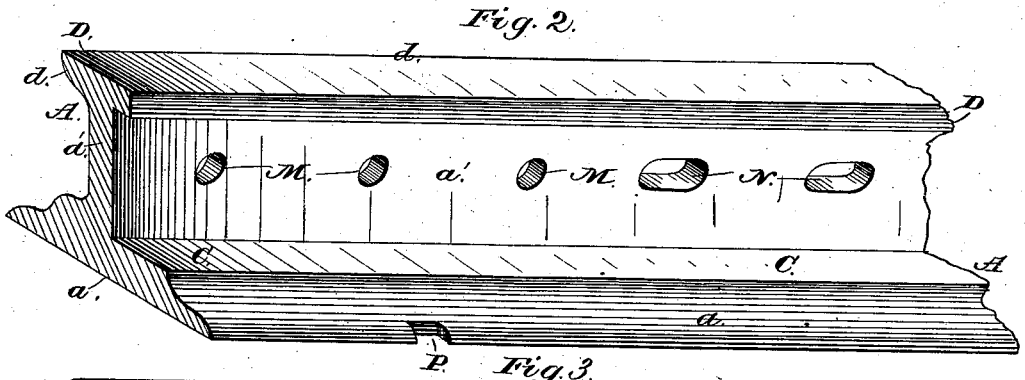


Fig. 3.

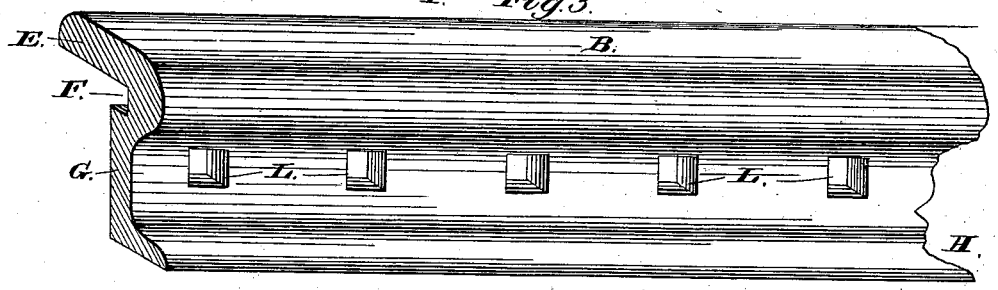
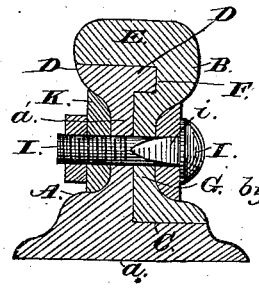


Fig. 4.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 5.

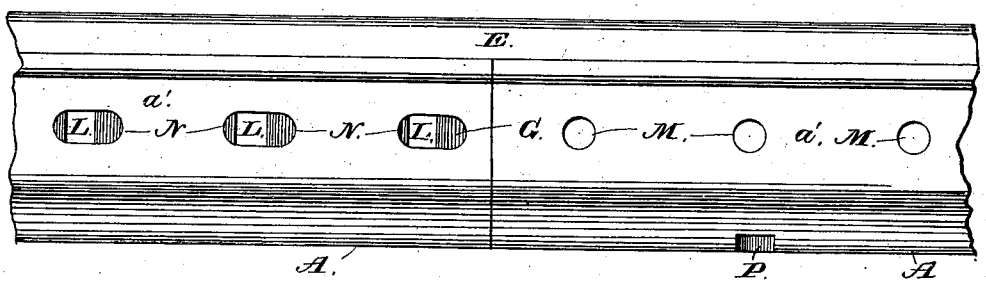


Fig. 6.

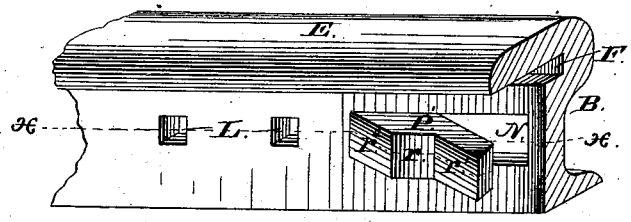


Fig. 7.

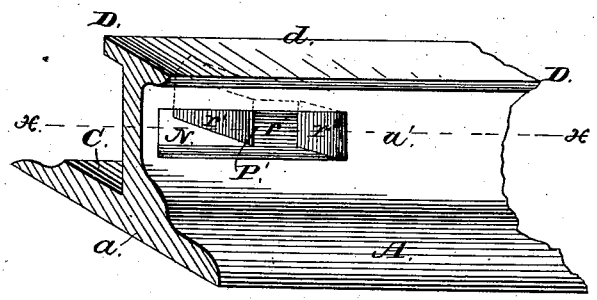
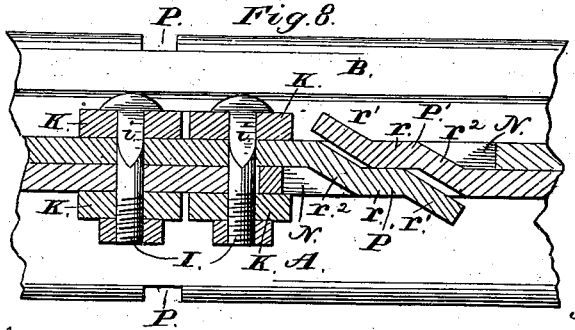


Fig. 8.



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UNITED STATES PATENT OFFICE.

DAVID D. WEISELL, OF FORT WAYNE, INDIANA.

COMPOUND RAILWAY-RAIL.

SPECIFICATION forming part of Letters Patent No. 260,263, dated June 27, 1882.

Application filed July 26, 1881. (No model.)

To all whom it may concern:

Be it known that I, DAVID D. WEISELL, a citizen of the United States, residing at Fort Wayne, in the county of Allen and State of Indiana, have invented new and useful Improvements in Compound Railway-Rails, of which the following is a specification.

This invention relates to that class of compound railroad-rails known as "bipartite" rails, which are composed of two parts, one of said parts forming the base and the other the tread or crown of the rail. These two parts, constituting a rail of such nature, are bolted or otherwise secured together, so as to practically form a continuous rail.

The object of my invention is to cheapen the construction and renewal of said rails, and to render the same more durable than the rails heretofore made, as fully described in the following specification and illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of my improved rail. Fig. 2 is a perspective view of the base portion thereof. Fig. 3 is a perspective view of the tread portion. Fig. 4 is a transverse section of the compound rail, and shows the way in which the two parts of the rail are bolted together. Fig. 5 illustrates the side of the compound rail opposite to that shown in Fig. 1, the bolts and washers being detached. Fig. 6 shows in perspective a modified form of the tread portion of the rail. Fig. 7 is a similar view of a modified form of the base portion of the rail; and Fig. 8 is a section taken on a horizontal plane through these two parts locked together to form the compound rail, said section being taken on a plane indicated by dotted lines *x x*, Figs. 6 and 7.

The rail is composed of the two parts A B, that are fitted and bolted together to constitute practically a continuous rail. The lower or base portion, A, comprises the base *a*, with a web, *a'*, constructed with a vertical inner face, the base of said web having a longitudinal horizontal bearing, C, for the foot of the upper or tread portion, B, of the rail to rest upon. The web of the base portion is formed along its top with two horizontal laterally-projecting flanges, D D, which afford an extended bearing, *d*, for the crown or tread E of the tread portion of the rail, one of the said flanges being received in a longitudinal groove, F, that is formed in the part B of the rail. This last-mentioned part of the rail is formed with a neck or web, G, having a vertical inner face, which fits closely against the web of the base portion of the rail, the said web of the tread portion being provided with a horizontal foot, H, which rests upon the horizontal bearing of the base A. The effect of the flange of one portion of the rail fitting into the groove of the remaining portion thereof will be to prevent any vertical sheering movement of its component parts with relation to each other, thereby effectually obviating all of the objectionable features belonging to rails of this character as heretofore made. By constructing a compound rail in this way I obtain a practically solid bearing by employing the flanges D D, the horizontal bearing C, and the foot or flange of the tread, which will be equal to or greater in width than the entire width of the tread portion E of the rail.

The two parts of the rail are bolted together by means of bolts I, passing through washers K on both sides of the rail, and also through perforations that are formed through the web of the two parts of which the rail is composed. By bringing the vertical webs together and uniting them by bolts, as hereinbefore described, I provide an important function, in that the weight of the rolling stock at all times is sustained jointly by both vertical webs, which is not the case where the webs are separated by a broad intervening space, as in that structure, if the wheels do not at all times bear upon the center line of the tread, the pressure or weight must be almost wholly sustained by one web, and therefore it is necessary to increase the size and weight of the inner web, which is subjected to the greater strain.

It is essential that provision should be made for the expansion and contraction of the parts of the rail in relation to each other, in consequence of the various changes of temperature to which the rails will be subjected. To provide for this I employ the following mode or system of punching and bolting the parts together. Through the web or shank of the tread portion of the rail I punch at regular in-

tervals a series of square holes, L L, of such size that the squared portions *i* of the bolts will fit the said holes snugly. Through one end of the web of the base portion of the rail, and for half the length of same, I punch at intervals corresponding with the holes of the tread portion just described a series of round holes, M, of exactly the size to fit the rounded portion of the shank of the bolt, and through the remaining part of the web of said base portion I punch at regular intervals a series of oblong holes or slots, N, corresponding in distance apart to the spaces between the square holes, and of sufficient length to admit of the greatest expansion and contraction that the rails will be capable of.

The bolts employed for securing the parts of the rail together have their squared portions *i*, which fit in the square holes, adjacent to their heads, the length of the said squared portions of the bolts being just sufficient to extend through the washers that are adjacent to their heads and through the square holes L, the said washers being fitted against the web of the tread portion of the rail. This prevents the bolts from turning, and consequently lessens the tendency of the nuts that are tightened up against the web of the base portion of the rail from loosening, and also prevents the bolt from being thrown from its position at right angles to the line of the rail during any contraction or expansion of the latter.

It will be seen that one end of the base portion of the rail and one end portion of the tread part of the rail are rigidly bolted together for half the length of each part by means of the bolts passing through the square holes L and the round holes M, and that contraction and expansion must take place equally from the central bolt without straining or sheering the bolts, the slotted or elongated bolt-holes not being necessary in these parts, except where metals of different expansive qualities are used, and then only in sufficient number from the central bolt to compensate for this difference. As shown in Fig. 5, the bolts passing through the square holes L in the tread portion of the rail pass through the end parts or halves of two base portions of the rail that meet or are adjacent to each other, one of said halves of the base portions having the round and the other the elongated holes.

In order to lay the above-described rail, the two parts should be bolted rigidly together by the bolts passing through the square and the round holes. Then place the rail thus bolted in position upon the ties, with the tread on the inner side of the track, and drive the first spike through the notch P, formed at the central part of the rail, thus fixing the center from which expansion and contraction will take place, and preventing all crawling of the rails upon the tie or road-bed. Then take another rail, passing the bolts through the remaining square holes L of the tread portion and through the elongated holes N, and if the track-laying is during the highest temperature to which the rail will be exposed place the same in contact with the one previously laid and spike as before, the rails being in position for contraction and expansion, as shown in Fig. 5.

In the modification illustrated in Figs. 6, 7, and 8, in place of passing the bolts through the square holes in one-half of the tread portion of the rail into and through elongated slots made through one-half of the base portion of the rail, I punch the metal out of said parts, so as to form the lips P′ P′ at the sides of the elongated holes or slots N from which the lips have been punched out. Each lip will be formed on its inner face with a part, *r*, parallel with the axis of the rail, and with a part, *r′*, extending outwardly at an angle to the axis of the rail. The web will also be formed with a bevel, r^2, at that end of the slot where the lip forms its junction with the web, so that when the parts are interlocked, as shown in Fig. 8, the parts *r* of the lips will fit against each other, while the outwardly-inclined parts *r′* of the lips will fit against the opposing beveled portions r^2 of the rail at the end of the slots. It will be obvious that this arrangement will admit of the expansion and contraction of this portion of the compound rail equally as well as in the case of bolts passing through square holes into elongated holes, described in the first part of the specification.

It will be seen that by the above one end of the base-rail for half of its length is all that is necessary to have slotted to fully compensate for all contraction and expansion which will take place in either section of the rail, and that it enables me to bolt the other half rigidly to the tread portion of the rail. It prevents loosening of the bolts and renders it impossible for the crown to move upon the base portion by the traction of the engine under any or all of the changes of temperature that the rail may be subjected to.

The tread and base portions of the rail can be made of different metals, if desired, the tread being of steel and the base portion preferably of iron for cheapness.

I am aware of English Patent No. 1,079 of 1873, in which a compound rail is composed of two parts provided with top and bottom bearings, but in such construction the lower bearings are arranged on an inclined plane, which is a serious objection, in that the weight of the rolling stock tends to force parts of the rail asunder, thereby causing the tread portion to gradually move down the inclined bearing, which results in great strain on the bolts or other fastening devices, and rendering it impossible to retain the parts of the rail in contact, which has heretofore been the main objection to this class of rails. In my invention the lateral top and bottom bearings are arranged in horizontal planes, and the web of the face or tread rail is placed on the inside of the track, whereby the liability of the two parts

being forced asunder is entirely avoided, and the weight of the rolling stock and the inclination of the wheel-tires tend to force the parts of the rail together, and the bolts or other fastening devices are entirely relieved from undue strain during the passage of a train, which obviously is of much importance in the practical use of this class of compound rails. The laterally-projecting bearings, arranged in horizontal planes, as hereinbefore described, and shown in the accompanying drawings, provide a bearing-surface equal to the face of the rail and prevents the parts in contact from becoming injured or destroyed by use, as must be the case where the thickness of the web forms the only bearing. Further, in my construction the two parts of the rail are provided with vertical inner faces, which bear directly against each other, and thereby permit the entire web to be brought into contact, which is so desirable in a railroad-rail. The two parts of the rail are so connected by bolt-holes and bolts that they can expand and contract longitudinally, and yet the abutting faces of the webs and other parts are retained in close contact. The top and bottom bearings being arranged in horizontal planes, as hereinbefore described, provide substantial bearings that absolutely avoid the possibility of lateral separation, due to the great weight of the rolling stock.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a compound or bipartite rail having webs arranged in contact with each other, the part A, provided with the flanges D D and bottom bearing, C, the surfaces of which are extended laterally in horizontal planes, and the part B, provided with the longitudinal groove, tread E, and foot H, the bearing-faces of which are also extended laterally in horizontal planes, substantially as and for the purposes described.

2. In a compound or bipartite rail having webs united together in contact by connecting devices which permit their expansion and contraction, the part A, having the flanges D D and bearing C extended laterally in horizontal planes, and the part B, provided with the longitudinal groove F, the tread E, and the foot H, the bearing-surfaces of which are also extended laterally in horizontal planes, all substantially as and for the purpose herein set forth.

3. A compound or bipartite railway-rail composed substantially of the part A, provided with the lateral flanges D D at its top and the lateral bearing C at the inner side of its bottom, and the part B, provided with the longitudinal groove F, lateral tread E, and lateral foot H, the bearing-faces of said flanges, tread, and foot being formed on horizontal planes, in the manner and for the purposes described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

DAVID D. WEISELL.

Witnesses:
W. J. HOLMAN,
W. H. ORFF.