A. BOWMAN.
Railway-Tracks.

No. 206,416. Patented July 30, 1878.

Fig. 1

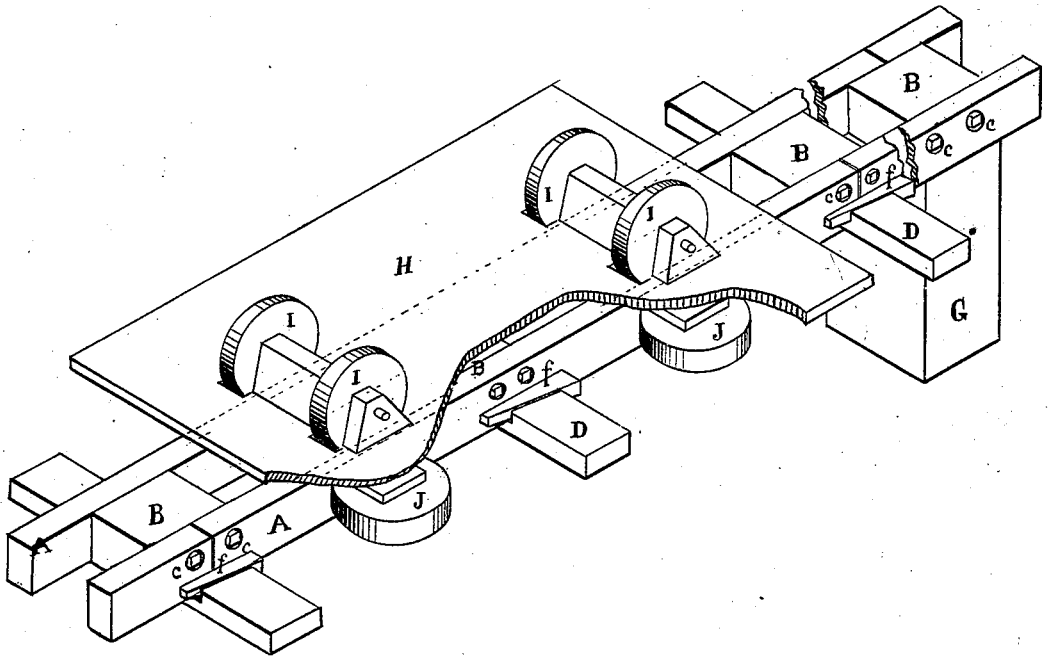
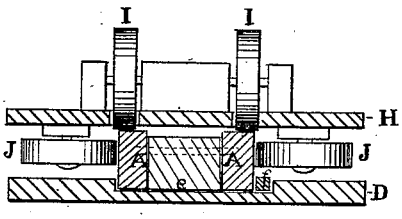


Fig. 2



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UNITED STATES PATENT OFFICE.

AMOS BOWMAN, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN RAILWAY-TRACKS.

Specification forming part of Letters Patent No. **206,416**, dated July 30, 1878; application filed January 14, 1878.

To all whom it may concern:

Be it known that I, AMOS BOWMAN, of the city and county of San Francisco, and State of California, have invented Improvements in the Construction of Railways; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings.

My invention relates to improvements in the construction of that description of railways in which longitudinal wooden rails or stringers are employed, resting either on cross-ties, in the usual manner, or supported upon trestles or pillars, according to the nature of the ground over which it is carried, and in which the car moving upon the rails is kept in its place either by flanges on the bearing-wheels or, in lieu thereof, by side wheels bearing against the outside of the rails or stringers.

My invention consists in certain improvements and combinations of devices, as hereinafter more fully described and claimed.

In order to explain my invention so that every one will understand its construction and operation, reference is had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a perspective view of my device. Fig. 2 is a transverse section.

A A represent the two parallel lines of stringers, which are so spliced as to form one continuous compound stringer, constituting the track upon which the bearing and driving wheels are supported. This compound stringer is constructed of suitable timbers, placed edgewise, and bound together by wooden or other suitable splice-blocks B at intervals, to which they are secured by strong iron bolts, screws, or spikes C. These bolts, screws, or spikes pass into or through the timbers and splice-blocks, so as to bolt the timbers upon the sides of the blocks, as represented.

In securing the timbers in place I am careful to break their joints so that the joints of either line will come opposite the middle of the timbers of the opposite line. The splice-blocks B are then applied so that one of their sides will come opposite the joint while the other side bears against the middle of the opposite timber. I then pass two or more bolts through the block B, one of which passes through each of the abutting ends of the stringers on each side of the joint, thus firmly uniting to each splicing-block the three rails or timbers adjacent to it by means of the iron bolts at the top, as represented, and the notched tie and wedge at the bottom, so as to make one solid piece.

It will be noticed that these timbers serve themselves as the bearing-rails of the railway-superstructure, and that they serve a different purpose from that of the compound stringers in bridges and trestle-works, where they are made use of as the foundation for the railway-superstructure, or any other superstructure requiring a strong support.

The lower edge of the timbers rest upon cross-ties D at proper intervals, to which they are secured in the usual manner, or, where greater strength is desirable, as in curves, in the following manner: The cross-ties have each a notch, *e*, cut in them, which is somewhat longer than the desired width of the track. The timbers A having been secured together, with the blocks B between them, are set down inside of the notch, so that the lower outside edge of one of the timbers will bear against the shoulder at one end of the notch. A taper key, *f*, is then driven in the space between the opposite shoulder and the lower outside edge of the opposite timber, thus firmly binding the combined track in the notches of the cross-ties.

The keys *f* may be prevented from moving by being nailed or screwed to the timbers after they are driven into place.

In crossing ravines and water-courses I preserve the level of the track by employing another form of the splice-block B—namely, upright posts G, of the proper length to have their lower ends secured in the ground, while their upper ends sustain the track in its place on the grade-line, being applied at the joints in the same manner that I apply my splice-blocks. The width of the top of the posts is equal to the width of the splice-blocks B. They may be single or double, and their length is according to the distance from the grade-line to the surface of the ground in the depression which is to be crossed. The stringers may be of any desired height, according to the desired strength

or purpose of the road, but usually should be from ten to sixteen inches above the cross-ties, and the width of their upper or bearing edges should be from three to five inches.

In some cases I shall secure a wooden or an iron rail along the upper edges of the timbers.

I thus provide a narrow-gage two-rail track, which is firmly bound together, so that the two timbers form a unit of strength, and which can be very cheaply constructed, easily repaired, and removed and replaced.

H is the platform of the car which is to move upon this track. The bearing-wheels I may be made plain, without flanges, and mounted upon the upper side of the platform, so that their lower rims will extend below the cars through an opening in the platform, while horizontal or other guide-wheels J serve to keep the wheels in place on the track instead of flanges; or the wheels can be provided with flanges without using the guide-wheels.

I am aware that single-rail elevated railways have been constructed heretofore in which the car was steadied by guide-wheels, or rather tip-wheels; and also single-rail ground railways with similar guide-wheels. In both instances, however, the guide-wheels were used and served solely as a substitute to regain the element of stability which existed in the ordinary two-rail railway, and which was sacrificed in dispensing with one of the bearing-rails.

In my device this stability has been retained by making use of a compound or double rail, having in that respect the effect of a two-rail railway; and if guide-wheels are used at all, or are desirable in any case, they are not essential for stability, as is the case with the single-rail railways, their object being simply to serve as a substitute for the flange of the ordinary railroad-wheel, in order to prevent the destruction of the wooden rail from the grinding friction of the flanges in cases where the purposes of the railroad will not justify the expense of interposing an iron rail for the protection and perfection of the track.

I am aware, also, that a two-rail narrow-gage railway has been constructed as an elevated railway, and also as a ground railway, on which guide-wheels have been used; but no narrow-gage road of this description has ever been constructed where advantage was taken of the unity of the compound stringer, whereby the timbers on each side derive the benefit of the strength residing in the timber on the opposite side, in the same manner as in bridge construction, where neither side can give way without the other; nor has any road been constructed in which the perfection of a single compound rail has been combined with the stability of a double rail, as has been done in my invention. The only road known which, in respect to gage and guide-wheels, resembles this to a degree differs further in being a permanent structure in all the arrangements of its superstructure, as well as being constructed at a much greater cost, not admitting of easy removal or replacement without waste or destruction of material, much labor, and considerable expense, while this is essentially and entirely a portable railway, removable without any waste or destruction of material, every rail, splice-block, key, and bolt fitting every other corresponding part, even on curves, where the angle of the curve is the same.

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

1. In combination with the double line of timbers A A, having their joints broken, as described, the splicing-block B, applied between the joints and middles of the opposite bearing-rails, the three rails and blocks being keyed rigidly together, substantially as and for the purposes described.

2. In combination with the compound stringer or double rail A A, united by splicing-blocks B and bound together by the bolts C, the notched sleepers or cross-ties D, having the combined track secured in the notch *e* by the taper wedges or keys *f*, substantially as and for the purpose above described.

3. The compound stringer or double rail A A, in combination with the vertical posts C, the upper ends of said vertical posts serving as splice-blocks for connecting the joints and binding the ends of the rails together, substantially as above specified.

In witness whereof I have hereunto set my hand and seal.

AMOS BOWMAN. [L. S.]

Witnesses:

FRANK A. BROOKS,

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