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HUGH BAINES..

Improvement in Construction Trains for Railways.
No. 118,667.

Patented Aug. 29, 1871.

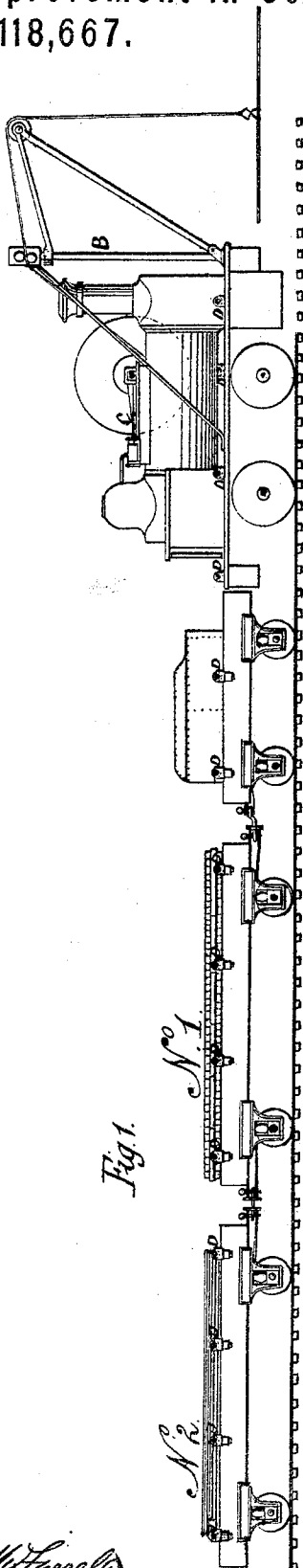


Fig. 1.

Fig. 5.

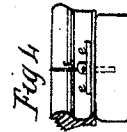
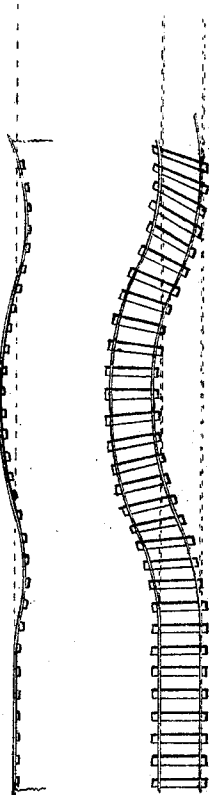


Fig. 4.

Fig. 3.

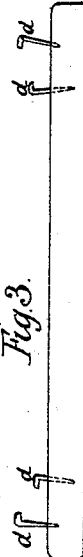
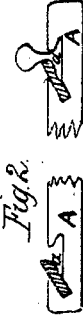


Fig. 2.



"Inventor."
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UNITED STATES PATENT OFFICE.

HUGH BAINES, OF TORONTO, CANADA.

IMPROVEMENT IN CONSTRUCTION-TRAINS FOR RAILWAYS.

Specification forming part of Letters Patent No. 118,667, dated August 29, 1871.

To all whom it may concern:

Be it known that I, HUGH BAINES, engineer, of the city of Toronto, in the county of York, Province of Ontario and Dominion of Canada, have invented certain Improvements in the Art of Constructing Railroads, of which the following is a specification:

My invention consists in the arrangement and manipulation of rolling-stock and machinery for the purpose of bringing forward and distributing the ties, rails, &c., required in the construction of railroads, whereby they may be economically and expeditiously constructed with a minimum amount of manual labor.

Figure 1, side view of construction-train; Fig. 2, tie with slots *a*; Fig. 3, ordinary tie; Fig. 4, showing manner of holding the joints; Fig. 5, profile and plan of roadway.

In constructing or building railroads it is customary to bring forward the material required and to distribute the ties, &c., by carts drawn by oxen or horses, the loading being, of course, performed by manual labor. The rails are distributed by the same means, and, as they are the last to be put down, no advantage can be taken of them for bringing forward material, except when the road is finished, when they are used for bringing forward gravel, &c., for supplementary grading.

In the system which I have adopted, and which I now propose to secure by Letters Patent, I have, to a certain extent, reversed the order of things, and by it I am enabled to utilize the rails and make use of them from the first. As my invention consists chiefly in the system, and as the machinery used for the purpose of carrying it out is in itself by no means new, I have expended no time in the preparation of drawings for the purpose of exhibiting the detail construction of the same, but in the drawing I have merely shown outlines sufficient for illustrating the description of the same, which I will now proceed to give.

I make a number of ties, *A*, shaped somewhat as shown in detail, Fig. 2, the two cross-slots, *a*, being cut at the gauge of the railroad about to be built. A temporary track somewhat longer than is required to support the construction-train is formed by laying enough ties on the ground at the point where the road is to be commenced and placing in the slots *a*, the rails wedging them somewhat, as shown in Fig. 2. It is scarcely

necessary to remark that the ties or sleepers secured in this manner to the rails can be laid with great rapidity and removed equally as fast. Fig. 1 represents roughly the outlines of what I will term the construction-train. It consists of two or more trucks or flat cars, as shown, drawn by a locomotive. To the frame of this locomotive is firmly secured a double crane, *B*. The hoisting machinery pertaining to the said crane is driven by a small engine, *C*, attached to the boiler of the locomotive, from which the necessary steam is derived. When the locomotive is especially constructed for this work it may be so arranged that the engine for propelling the locomotive can also be applied to the crane, as in the case of steam-cranes.

In the drawing I have shown only two cars or trucks, 1 and 2, but in practice I find it advantageous to use several. The first trucks in the train, as shown in the drawing truck No. 1, are or is loaded with ordinary railway ties or sleepers, and truck No. 2 or the hind-truck, according to the length of the train, I load with rails. On each side of the trucks and engine is ranged a number of friction-rollers, *D*, the use for which I will describe further on.

For the first few yards at the commencement of the road, where the supplies are at hand, the track may be laid in the usual manner; but from that point, where it is necessary to use a conveyance for distributing the ties, &c., my system comes into use, and I proceed to lay my temporary track, as before described, without grading or preparing the road any more than leveling it sufficiently to carry the track and support the construction-train. Having arranged and loaded the trucks, as before described, I run the train upon the temporary track and proceed to distribute the ties and rails in the following manner: The ties are slipped upon the friction-rollers *D* on both sides of the trucks, and are brought forward on the rollers by the laborers till they arrive within reach of the crane *B*, when they are attached to the chains of the same and lowered upon the ground. The rails are operated upon in the same manner, and both are distributed as required till the engine arrives at the end of the track. When all the ties and rails upon the train are distributed in this manner the empty train is run back to the point of starting and a fresh supply is obtained, which is then brought to the front, and the op-

eration goes on as before, the train going so much further every time. The masonry, wood, &c., for the bridges, the ballast for the roadway, and, in fact, everything required is thus brought forward by the construction-train. In the meanwhile a gang of regular track-layers follows the construction-train and replaces the temporary ties by ordinary permanent ones, spiking them in the usual manner. The temporary ties are taken up, sent forward upon the train, and relaid, as in the first instance.

In Fig. 3 I show a way in which I sometimes prepare the ordinary ties in order to obviate the necessity for the temporary ties shown in Fig. 2. At the proper gauge I drive in (sufficiently far to prevent them falling out) four rail-spikes, *d*, so that with a little manipulation the rail can be slipped between them, as may be seen by their position. These ties are put upon the construction-train and brought forward in the same manner as those described in the first instance, and the temporary track can also be constructed by them; but instead of securing the ends of the rails together by fish-plates or chairs they are held as shown in Fig. 4, the small bar of iron *e* overlapping the joint so that a spike, *f*, on each side of the rail is sufficient to secure them. Of course, when the track is laid in this manner it is not necessary to take it up, as in the case of the temporary track first described, but it is permanently fixed by the track-layers as the gang proceeds.

Fig. 5 is a profile of the road, the dotted line representing the level. In laying the temporary track for carrying the construction-train, when the road is uneven, as represented, I follow the

undulations of the ground, keeping the temporary track just clear of the portion of the road upon which the track is to be permanently fixed, so that the temporary track can be utilized for the purpose of carrying "muck-trucks" for distributing the earth and leveling the permanent way. Of course, in going up and down the hillocks the temporary track is laid zigzag, as shown in plan of Fig. 5, the dotted lines in said figure representing the line of the permanent track. It will thus be seen that no delay is caused to the general progress of the road, as the temporary track can, in this manner, be run over the heaviest cutting, assisting the removal of it, and, at the same time, the track being extended, the construction-train proceeds as before described. Several such trains may be put on if the road is required to be built with great rapidity.

Having now described my invention and the manner of manipulating the same, I beg to say, in conclusion, that I do not claim, by itself, any part of the combination hereinbefore described; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

The combination of a double crane, B, engine C, and rollers D, in conjunction with a locomotive and cars, for the purpose of building, economically and expeditiously, railroad tracks, substantially as and for the purpose specified.

City of Toronto, July 24, 1871.

HUGH BAINES.

Witnesses:

EDWARD W. FARRELL,
CLAUD S. CAYLEY.