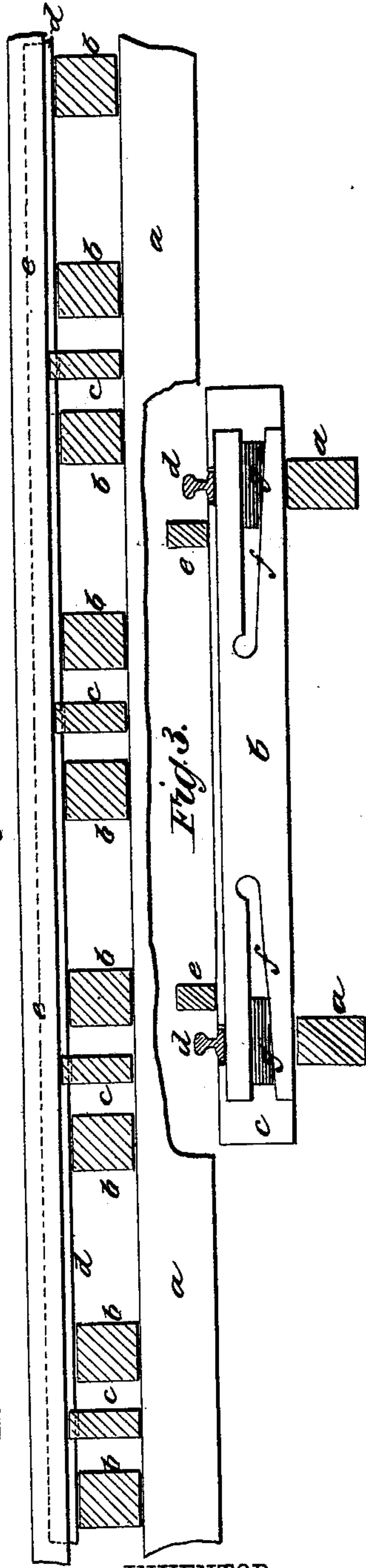
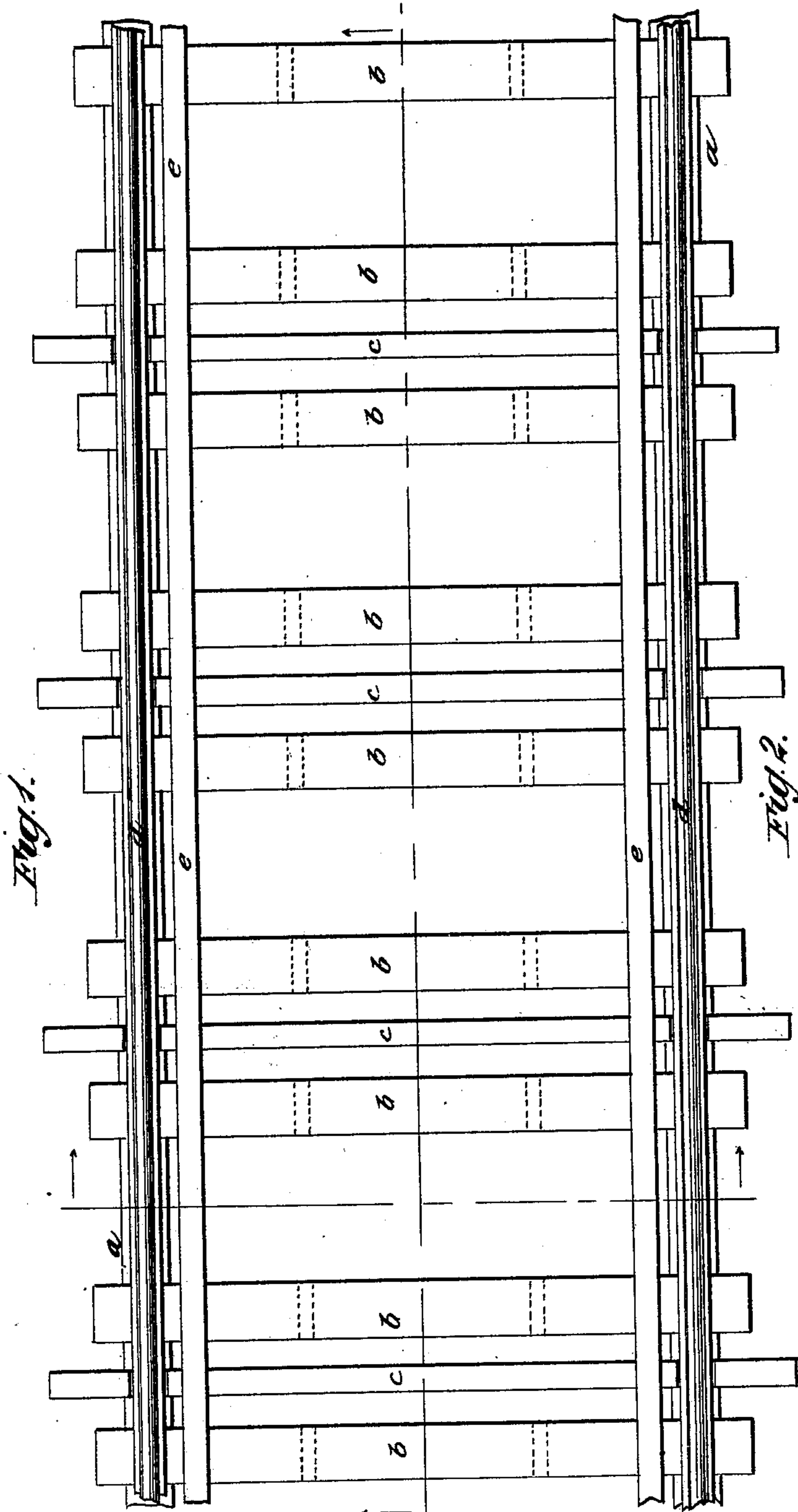


S. S. BURT.
Elevated Railway.

No. 221,774.

Patented Nov. 18, 1879.



WITNESSES:
Francis McArdle,
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UNITED STATES PATENT OFFICE.

SAMUEL S. BURT, OF MARQUETTE, MICHIGAN.

IMPROVEMENT IN ELEVATED RAILWAYS.

Specification forming part of Letters Patent No. **221,774**, dated November 18, 1879; application filed November 13, 1878.

To all whom it may concern:

Be it known that I, SAMUEL S. BURT, of Marquette, in the county of Marquette and State of Michigan, have invented a new and useful Improvement in Elevated Railways, of which the following is a specification.

The object of this invention is to construct the superstructure of elevated railways in such a manner as to reduce the noise of passing trains and the vibrations from the same to the lowest possible limit.

My invention pertains, first, to securing the track-rails upon ties which are so constructed that their ends are made elastic, thus adapting them to yield when a train passes over the road. The manner of construction I adopt to secure the requisite elasticity is to slot the ends of the ties and insert rubber blocks between the posts separated by the slot.

Second, in supporting the guard-rails and all other structure except the iron rails upon separate ties, that are independent of contact with the rails, so that they will not be affected by the train.

In the accompanying drawings, Figure 1 is a plan view of a road constructed in accordance with my invention. Fig. 2 is a sectional elevation longitudinally of the road. Fig. 3 is a cross-sectional elevation.

Similar letters of reference indicate corresponding parts.

a a are the girders or string-pieces, that are secured upon the iron or other structure lengthwise of the road. *b b* are cross-ties, resting on *a a*, and to which rails *d* are spiked. *c c* are cross-ties, resting on *a a*, and to which guard-rails *e e* of usual character are secured. The ties *c c* also form the support for walks, platforms, or other superstructure.

The cross-ties *b* are intended solely to support rails *d*, and are constructed so as to relieve the road of vibration. Each tie *b* is slotted at its ends, as seen in Fig. 3, at *f*, the slot extending from each end inward about one-third the length of the tie. In making this slot enough wood is removed to make the upper end of the tie an elastic tongue, but of sufficient body for spiking the rails to.

In the slot *f*, beneath each rail *d*, is placed a block, *g*, of vulcanized rubber, secured in place by pins in any desired manner. The rubber *g* fills that part of the slot *f* which is beneath the rails, the other parts of the slot being open.

The ties *c* are higher than ties *b*, so that the guard-rails *e* do not rest upon ties *b*, but are supported entirely by ties *c*. The ties *c* are mortised to permit rails *d* to pass over them without touching, and the mortises are cut deep enough to prevent any contact when rails *d* are depressed to the fullest extent they may be by the weight of a train.

It is evident that in elevated-railway structures, however successfully the string-pieces may be relieved from the action of the train on the ties, so long as the guard-rails, planking, and other parts rest on or are in contact with the ties that hold the rails, a fruitful source of noise remains.

Absolute rigidity of the ties is not practicable nor desirable, and in rendering the ties elastic, as heretofore done, the vibrations have been increased and communicated to the other parts of the structure.

By my improvements the ties are rendered sufficiently elastic to deaden the blow of the wheels on the iron rails, and the movement of the tie is taken from the string-pieces, while the iron rails and their ties are independent of the supplementary portions of the road.

If the guard-rails were attached to the ends of the elastic ties *b*, the successive depression of the latter as the train-wheels pass over the road would tend to break the connections between said rails and ties; and the latter would also be subjected to undue strain, since they would act as trusses or bridges, from which the weight of a passing train and the ties bearing it would be in part supported. The guard-rails should have a firm unyielding support, and the elasticity of the ties be also allowed its full effect. By the construction and arrangement I have adopted I secure both these results.

The invention may be applied to bridges or other railroad structures where it is desirable

to reduce vibrations of the structure by passing trains.

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

1. A railroad-rail tie or sleeper having its ends provided with open slots or slits, whereby the rail-bearing parts are supported from points between the lines of rails, as shown and described.

2. In an elevated railway, the combination

and arrangement of elastic ties *b* for the rails and independent ties or supports *c* for the guard-rails and other structure, substantially as and for the purposes specified.

3. In combination with the railroad-tie having slotted ends, the elastic blocks fixed in the slots, substantially as shown and described.

SAMUEL S. BURT.

Witnesses:

C. SEDGWICK,

GEO. D. WALKER.