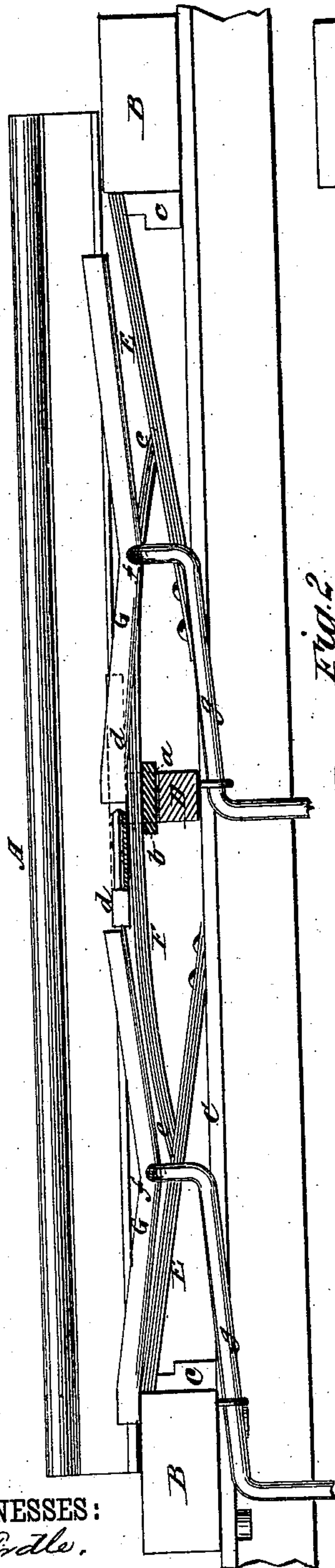


W. H. HALL.
Railway-Track.

No. 211,508.

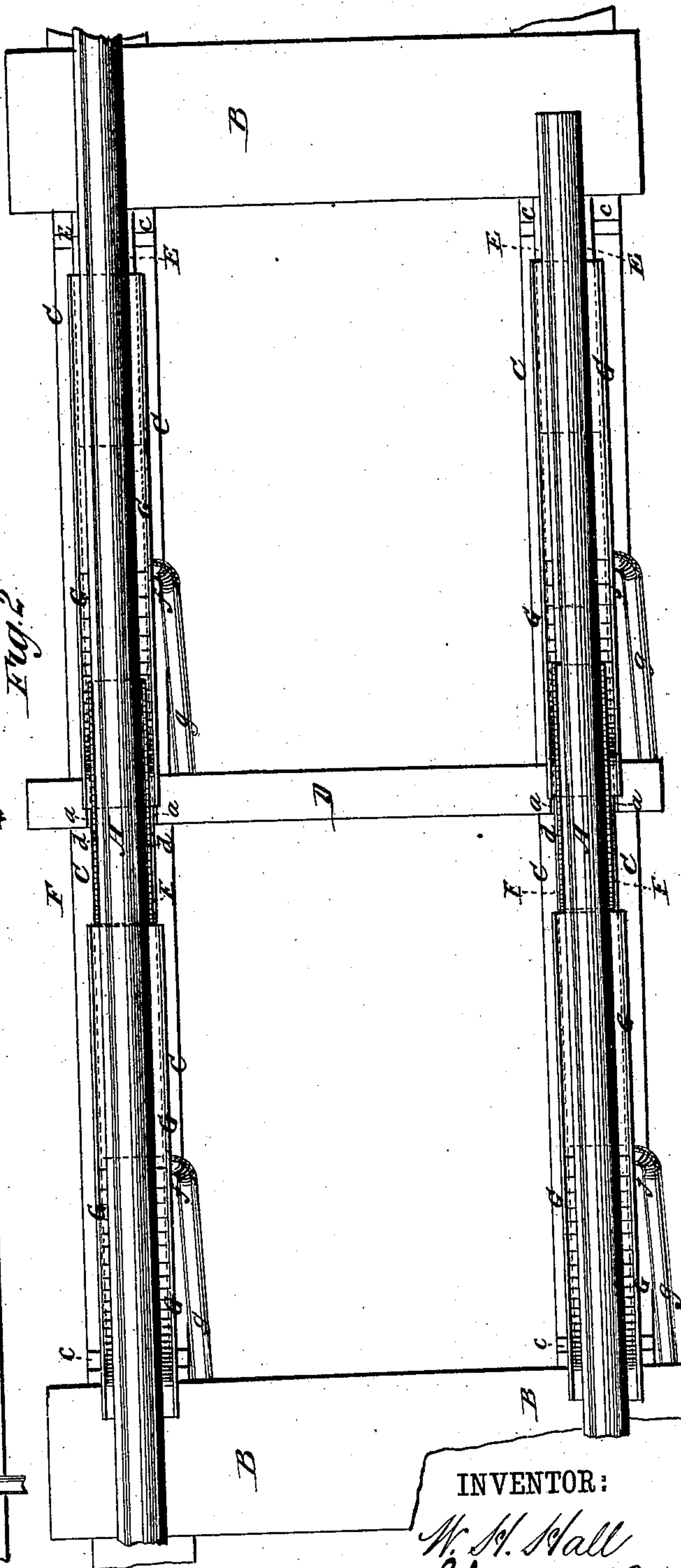
Patented Jan. 21, 1879.

Fig. 1.



WITNESSES:
F. McArdle.
C. Sedgwick

Fig. 2.



INVENTOR:
W. H. Hall
BY *Hunter*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

WILLIAM H. HALL, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN RAILWAY-TRACKS.

Specification forming part of Letters Patent No. **211,508**, dated January 21, 1879; application filed October 17, 1878.

To all whom it may concern:

Be it known that I, WILLIAM H. HALL, of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Railway, of which the following is a specification:

This invention relates more particularly to the construction of elevated railways.

Its object is, first, to materially reduce the resistance to the running of the cars over the rails, and thus lessen the shocks and jarring noises which, in the present construction, are so objectionable.

A second object of the invention is to reduce the quantity of material used in the construction of the road, and thus decrease the vibration, and also give space for the admission of light to the lower stories of the houses on the line of the road.

It consists in supporting the ends of the rails only on cross-ties, the middle thereof resting on springs that yield to the weight of passing cars or locomotives, and thus reduce the resistance, and also render intermediate cross-ties unnecessary, thus leaving ample space for the passage of light.

In the accompanying drawing, Figure 1 is a side elevation of a railway-track, with a part in section, provided with my improvements. Fig. 2 is a plan of the same.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, the two rails forming the track are represented by the letters A A. They are secured at each end to the cross-ties B B, in the usual manner, the ties resting on the girders C C, which in turn are supported upon posts or uprights. Midway of the two rails a beam, D, is laid across under the rails and resting on the girders, being secured thereto by bolts, so as to be firmly fixed in place. Where the rails cross this beam rabbets *a* are made, and in the bottom of the rabbet is laid and fastened a rubber plate, *b*.

On the side of the cross-ties B, under each rail, is fixed a block, *c*. On this block, so as to be held between it and the rail, is fixed one end of a spring, E, the other end thereof being carried down to the girder and secured by bolts, spikes, or any other convenient device. Two of these springs are placed under each

rail, one each side of the beam D, and extending to the cross-ties, in the manner described.

A semi-elliptical spring, on which the middle of the rail rests, is designated by the letter F. The middle of this spring is fastened to a chair, *d*, the flanges of which clasp the flanges of the rail, so as to form a rigid connection between the spring and rail, as clearly shown in the drawing. This spring F, where it crosses the beam D, rests in the rabbet; but it is not designed to bear upon the rubber plate *b*, as it must have sufficient strength to sustain the rail and a reasonable amount of weight without yielding so far as to come in contact with the said plate; but at the same time when subjected to an unusual weight, (as when a freight-train is run over the road,) and it is forced down, it bears upon the rubber plate and is sustained upon an elastic non-resonant bearing, and thus this unusual condition will not affect the rail nor cause any material increase in the noise.

The ends of spring F bear upon springs E about midway of their length, as shown at *e e*, and are secured thereto against displacement by bolts, clips, or other suitable device; but it is not essential that springs F should bear upon the springs E, as they may bear directly upon the girders without any other springs interposed.

By this description, it will be seen that the rails of the track are sustained upon the springs F between the ties, which in turn are supported upon the springs E, and thus an elastic bearing is furnished for the rails that yields readily to the weight of the cars and locomotives. If the track is upon a hard bed and the cars travel at considerable speed, a loud noise is produced; but if the track rests upon a yielding support the resistance is constantly changing as the wheels rotate, and before it can become a solid or rigid resistance the wheels have passed over any given section. At the same time, owing to the peculiar construction and manner of supporting the rails, the only cross-ties required are those for supporting the ends of the rails, and thus between these there is an open space, except where the beam D crosses, through which light can reach the lower stories of the houses along the road, it being a serious objection to the roads as now

constructed that they shut out the light from below, and thus compel the use of artificial light in the dwellings and stores. So, too, the numerous cross-ties, braces, &c., jarred and vibrated by passing trains, propagate and extend the noise to a great degree; but as most of the material can be dispensed with in my construction, it follows that much of the cause of the disagreeable noise will be done away with.

To prevent oil or water from dripping to the ground, I place a gutter, G, under each end of the rail, so as to include the whole bottom thereof, and extend it along the rail to the chair *d*.

The springs for supporting the rails may be of any material and of any appropriate construction, the main object being to place them on an elastic bed, so that they will yield to the weight of the trains, and thus decrease the resistance. Preferably, however, they should be made of wood, placed together in layers, as shown in the drawing. While this is the preference, I do not limit myself to this material.

I am aware that rubber sheets have been used between railroad-rails and their supports. I am also aware that it is not new to use gutters or troughs provided with pipe placed along the track of an elevated railway; but

What I claim is—

1. A railroad-rail supported at each end on the solid cross-ties of the road, in combination with a sustaining-spring, F, having a chair, *d*, and a subjacent auxiliary spring, *b*, the latter resting on a beam, D, substantially as and for the purpose specified.

2. As an improvement in the construction of railways, the spring F, fastened to the middle of the rails, over the beam D, and resting at each end on springs E E, or directly on the girders, as may be preferred, in combination with the rail A, for sustaining the same, substantially as described.

WILLIAM H. HALL.

Witnesses:

C. SEDGWICK,
W. C. DONN.