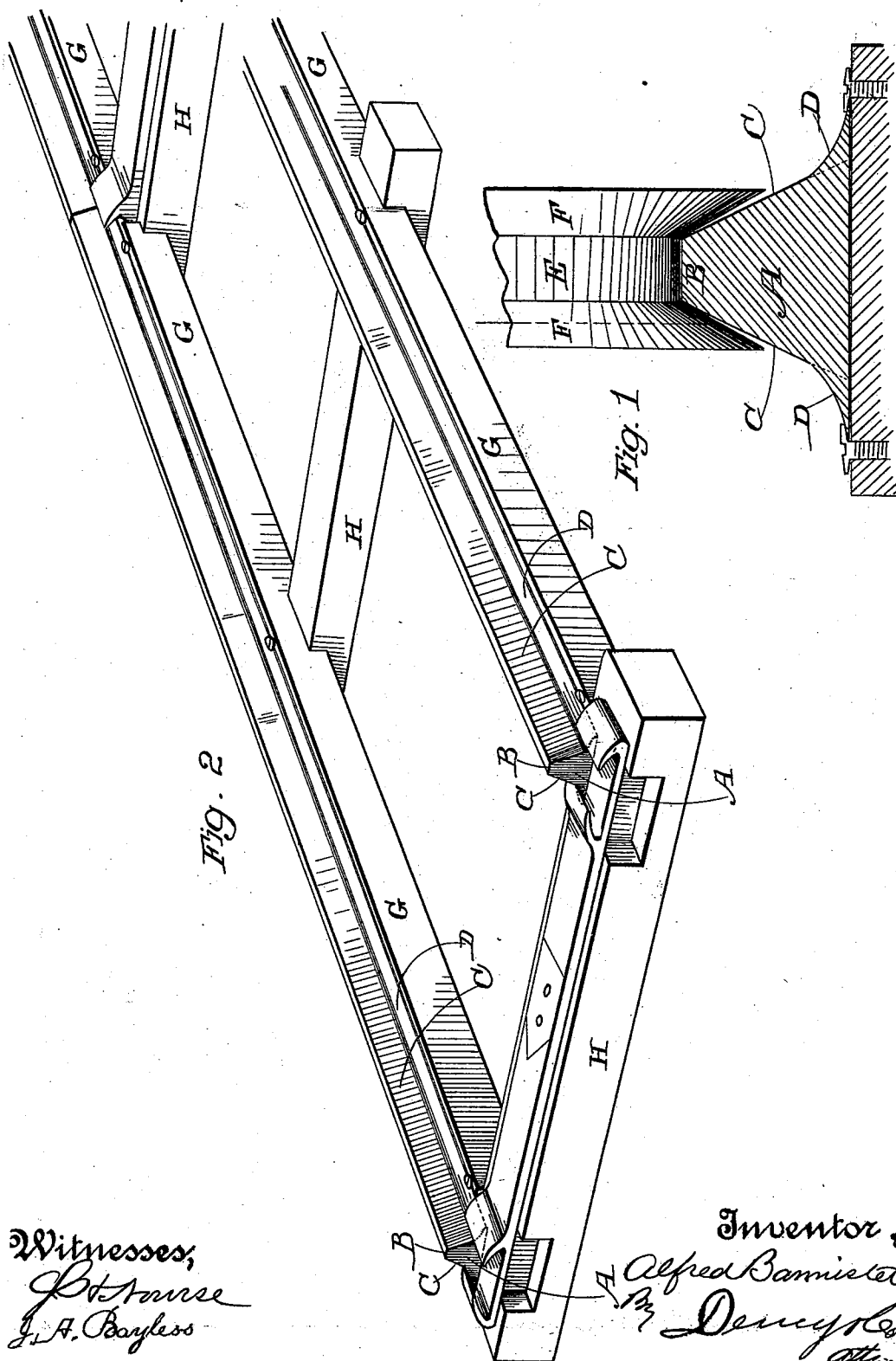


(No Model.)

A. BANNISTER.
RAILROAD.

No. 550,120.

Patented Nov. 19, 1895.



Witnesses,
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UNITED STATES PATENT OFFICE.

ALFRED BANNISTER, OF SAN FRANCISCO, CALIFORNIA.

RAILROAD.

SPECIFICATION forming part of Letters Patent No. 550,120, dated November 19, 1895.

Application filed December 15, 1894. Serial No. 531,943. (No model.)

To all whom it may concern:

Be it known that I, ALFRED BANNISTER, a citizen of England, residing in the city and county of San Francisco, State of California, have invented an Improvement in Railroads; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to certain improvements in railroads.

It consists, essentially, in the novel construction of the rails with relation to the wheels which travel upon them, whereby the load is always carried upon the center of the rail. The strength and base area of the rail are increased, oscillation is reduced, and all leverage from the weight of load upon the sides, which tends to draw the spikes from the stringers, is avoided.

It also consists in details of construction, which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a transverse section showing the rail, its support and fastening, and a wheel-rim adapted to travel upon the rail. Fig. 2 is a view showing the continuous rail-support and sleepers, upon which it rests at intervals.

The object of my invention is to so shape the rail and dispose of the metal which is used in it as to produce the greatest possible strength and resistance to compression and injury from the load carried by the rail, to cause the load to be always carried upon the center of the rail, reducing oscillation and friction, and removing leverage to draw the spikes out of the stringers, which weight upon the sides of the rails would exercise; also, to add to the safety of travel by increasing the base area of the rails upon the stringers and that of the latter upon the ground.

A is the body of the rail, as shown in cross-section, which is made of solid hard metal with diverging sides, having an essentially horizontal top B of variable width.

The sides C diverge from the top downward, essentially in the form of an equilateral triangle in cross-section, and at the bottom the amount of metal which if continued at the top would have formed the apex of the triangle is divided between the two sides of the base, exterior to the diagonal lines of the

sides, thus forming extensions D, which considerably increase the width of the base and the stability of the rail.

The top of the rail is adapted to receive the tread of the wheel E, which corresponds therewith in shape and width.

The flanges F of the wheel extend downward from the tread in diverging lines, having an angle slightly greater than that of the sides of the rail, so that while these flanges serve to maintain the wheel essentially central upon the rail they prevent to a large extent the side oscillation and friction due to high velocities when the wheels are made with a single flange, with considerable space allowed for side play.

It will be manifest that the exterior flanges of the wheels may be made of less depth than the interior ones; but I have made them of various depths.

As the wheels fit approximately close to the top of the rail, the side play is almost entirely avoided, and the result is a constant support of the weight of the load upon the center of the rail, which thus enables the rail to offer the greatest resistance to compressive strain. This and the avoidance of oscillation prevent the leverage which the weight of the load upon the rails ordinarily exerts to loosen and draw the spikes upon one side or the other, and the latter are therefore very much more powerful and permanent and retain their places longer than would otherwise be the case.

I prefer to support my rails upon stringers G, which extend longitudinally beneath the rails and are sufficiently wider than the rail-base to allow for the spikes or fastenings, which are inserted upon each side of the rail. These stringers are adapted to rest upon the surface of the road-bed; but at established intervals I place cross-ties H, which are sunk into the road-bed and which have the top partly cut away or mortised, so as to allow the ties to fit into the sleeper a portion of its depth, while that part of the stringer between each pair of ties rests solidly upon the ground of the road-bed. This enables me to provide a continuous and solid bearing of considerably increased base area for the rail, which, with the similarly-increased base area of stringer also afforded, makes depression of

the track and rail much more difficult and rare. The materials, dimensions, hardness, weight, and width of this safety-rail should be varied, so as to best suit any kind of work which it is intended for. Speed and economy in the hauling power required can be much increased by narrowing the top of the rail to the smallest width suitable and by so constructing and caring for the track that all the wheels shall be supported above and entirely clear of the ground.

The stringers and sleepers or cross-ties will in the same manner be made proportional to the rails and the weight which they are to carry.

The whole forms a solid and enduring road-bed and support of greatly increased strength, adapted in every way for the work they have to do.

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

1. As a new article of manufacture, a railway rail formed of solid steel, the upper part being in cross section essentially the form of

an equi-angular trapezoid, and having the extensions or flanges upon each side forming a solid base which width is about equal to double the depth of the rail from top to bottom, in combination with a wheel having a flange with an angle slightly greater than that of the sides of the rail, adapted to travel on said rail.

2. A railway rail formed of solid steel, the upper part being in cross-section essentially the form of an equi-angular trapezoid and having the extensions or flanges upon each side forming a base of a width approximately double the depth of the rail, in combination with wheels having a flat central portion of the shape of the top of the rail, and divergent flanges with an angle slightly greater than that of the sides of the rail.

In witness whereof I have hereunto set my hand.

ALFRED BANNISTER.

Witnesses:

S. H. NOURSE,

H. F. ASCHECK.