(No Model.)

# G. A. CHRIST.

## RAILWAY CATTLE GUARD.

No. 470,663. Patented Mar. 15, 1892.

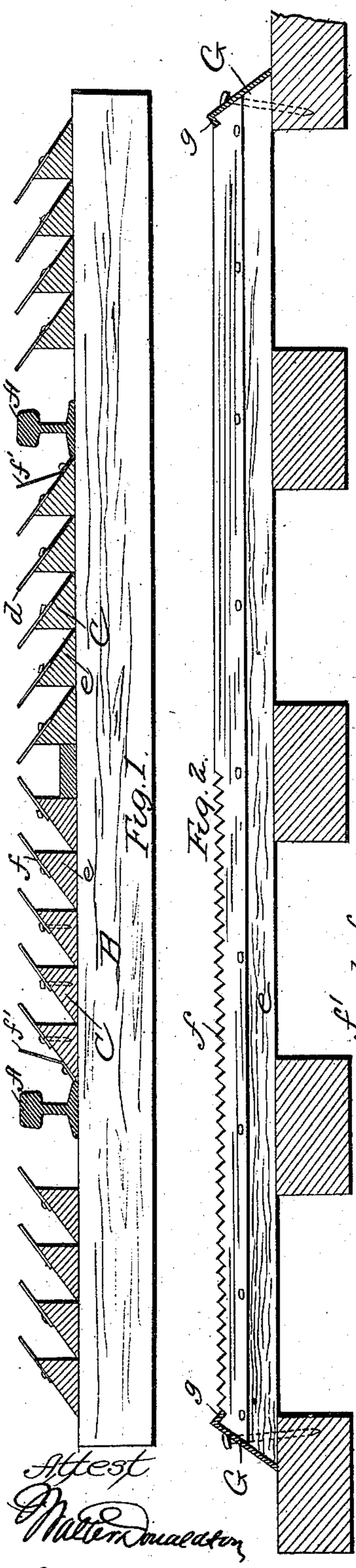

Fig. 1.



Fig. 2.

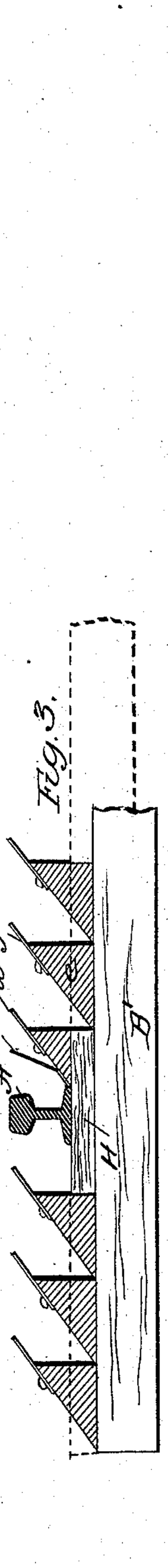

Fig. 3.

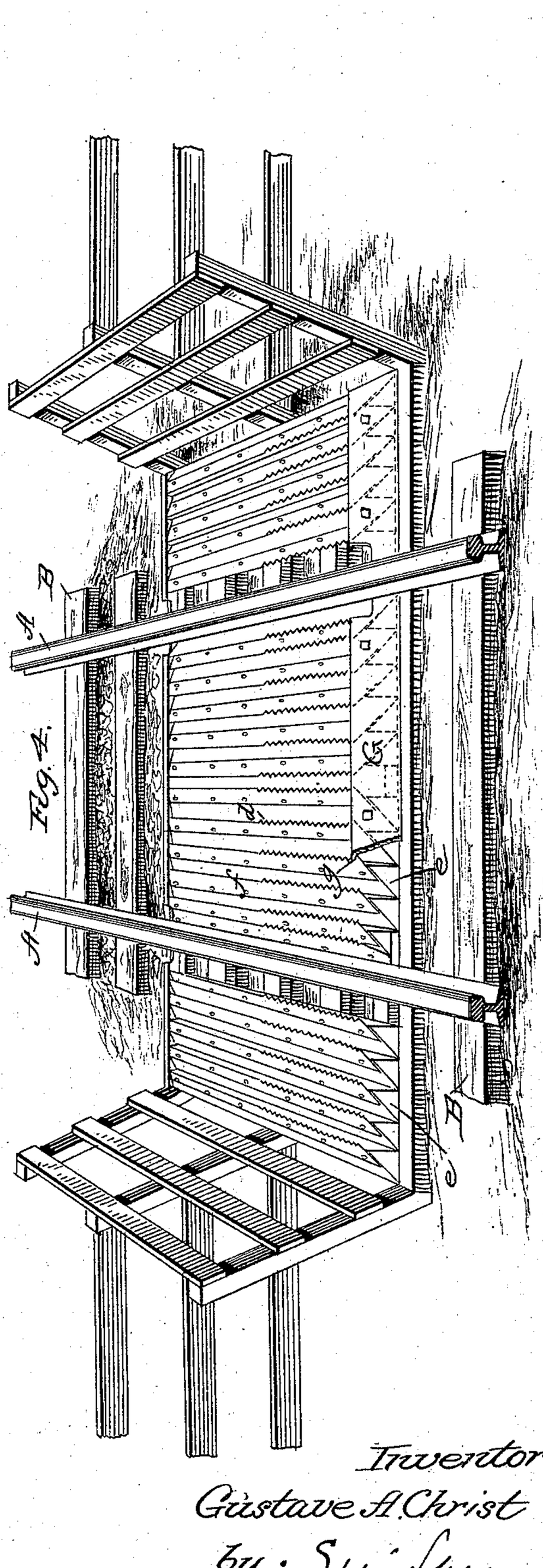

Fig. 4.

Attest

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# UNITED STATES PATENT OFFICE.

GUSTAVE A. CHRIST, OF GRAND RAPIDS, MICHIGAN.

## RAILWAY CATTLE-GUARD.

SPECIFICATION forming part of Letters Patent No. 470,663, dated March 15, 1892.

Application filed January 24, 1891. Serial No. 378,913. (No model.)

*To all whom it may concern:*

Be it known that I, GUSTAVE A. CHRIST, a citizen of the United States of America, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Railway Cattle-Guards, of which the following is a specification.

My said invention relates particularly to that class of railway cattle-guards in which parallel bars are arranged in series on the surface between the rails and upon each side thereof to afford an insecure and troublesome footing for animals and thus prevent them from passing from the highway at railway-crossings upon the track. Heretofore a great variety of such guards have been devised, in some of which parallel inclined plates have been placed across the way at right angles to the rails, the object being to cause the animal's foot to slide upon one of the inclined bars and to bear against the edge of the next bar overhanging it. A very serious difficulty has been found in practice with this form of cattle-guard. When an animal attempting to walk upon it, approaching it in the direction toward which the bars incline, steps upon an inclined bar, the foot slips forward under the edge of the next overhanging bar, so that the foot slides in between the two bars. When in this position, which is very favorable for the introduction of the foot of the animal, he locks his leg by his efforts to advance and is held on the guard and is liable to be struck by the locomotive, so that the guard itself increases the danger sought to be avoided. There is another serious difficulty arising from the bars being placed in an inclined position across the track, and this is that a chain or brake-rod becoming loose and hanging from the car is liable to catch over the overhang of the transverse guard and thus tear up and destroy the whole structure, which may be dragged under the wheels of the train and derail it. Longitudinal bars have been provided of various forms set in vertical planes parallel to the rails; but these do not effectually prevent the passage of animals, the larger animals—such as cattle and horses—being able to pass over the edges of such guards, and the smaller ones get a footing upon the ground between the bars. I have devised an arrangement by which I have secured the superior advantages of the inclined parallel bars or plates, having the edge of one overhanging the next or the intervening space between it and the next without the disadvantages heretofore mentioned.

In the accompanying drawings, Figure 1 represents a transverse vertical section of the cattle-guard. Fig. 2 represents a side elevation. Fig. 3 shows a modification relating to the arrangement of the ties underneath the guard. Fig. 4 is a perspective view of the track and bars.

In the drawings the railroad-rails are shown at A. They are supported by cross-ties B. Upon them are laid the guard-rails C. These are laid in lines parallel with the rails and therefore in line with the direction of movement of the animal attempting to pass over the guard. The invention requires that the upper part at least of these guard-rails should be either exactly or approximately in the form of a plate—that is to say, sufficiently thin to present an overhanging edge, marked *d*. The upper edge of one guard-rail overhangs the inclined upper surface of another, as shown clearly in Fig. 1. The result of this construction is that the animal attempting to walk upon the guard necessarily walks lengthwise of the rails, and its feet, resting upon the inclined upper side of the rail, slip sidewise. The said sidewise slipping will bring the side of the foot against the edge or points of the inclined teeth of the rail, causing the animal discomfort, and the whole affords such insecure and painful footing as to cause the animal to turn back. The whole surface of the road-bed between the guard and the fences on the sides is covered by these guard-rails, so as to completely exclude the animals. I have preferred to incline the rails from each side toward the center, as shown in Figs. 1 and 4, although this is not absolutely essential. The upper edges of the rails for the best effect are serrated, as shown in Figs. 2 and 4.

The construction of the rails is a part of my invention having in view in this particular the stability of the structure and economy of manufacture. The rails are composed of wooden pieces or scantling, the cross-section of which is substantially a right-angled triangle. These are shown at *e*. They may be

cheaply formed by splitting rectangular timbers on a diagonal line. The iron plates *f* are fixed to the inclined sides of the wooden pieces, being arranged, as shown in Fig. 1, so that the upper edges of the plates extend beyond the wooden pieces. The broad bases of the wooden pieces afford a very firm support and the construction is a very economical one. The wooden pieces may be placed in contact, as shown, or may have a narrow space between not sufficient to admit the foot of even the smaller animals, such as sheep. They may be very conveniently spiked down to the cross-ties; but I have also provided for holding them all down by two movable pieces, so that any one or all of them may be easily taken up for repairs. The holding-down pieces consist of plates or bars G, and I prefer to make these pieces or plates of thin bars and provide them on the upper edge with a flange *g*. These bars are made long enough to cover the ends of the sections of the guard—that is to say, one set sufficient to extend from the rail to the guard-fence and the other set sufficient to span the distance between the rails, allowing room for the wheel-flanges. The ends of the guard-rails are formed inclined, as shown in Fig. 2, and the plates or bars G are laid across these ends in an inclined position with the downwardly-turned flange *g* fitting the notches in the ends of the guard-rails. The holding-pieces may be secured by spikes, as shown in Fig. 3, or in any convenient way. To remove all the bars or any one of them, it is only necessary to withdraw these spikes.

When the guard-rails *e* are laid directly upon the cross-ties B, the depth of these rails is somewhat limited. For the purpose of increasing the depth and thus better adapting the guard both to larger and smaller animals, I drop the cross-ties which are under the guard and place thereon a block H to support the rails A, while the guard-rails rest directly upon the cross-ties. This widens the space at the top between the bars, and also increases the depth of the guard-rails, and it is plain that the farther down the foot of the animal is extended the more likely the leg of the animal is brought into contact with the sharp edge of the guard-rail similarly as before, The relative position of the drop-down tie is shown in Fig. 3, where B represents the ordinary position of the ties, and B′ the position of the drop-down ties, which are underneath the guard.

In the form shown in the drawings the bases of the guard-rails are in contact with each other and with the blocks H, so that the whole is held immovable by the holding-down piece at the end.

It will be observed that the serrations upon the edges of the plate are made to extend only one-half way from one end to the other. The serrations are upon that end of the guard which is next to the road or other place from which the animals are supposed to approach. The guard is made of a length greater than the distance over which the animal may ordinarily leap, and if the animal approaches upon a walk or trot he will step first upon the half of the guard provided with the notches and will be turned back by the pain caused by contact with the serrated edges. I have found that animals approaching on a run and with that gait attempting to leap the guard will pass by the impetus, however much they may be lacerated, and it is therefore not advisable to serrate the inner ends of the guard-rails.

The inclined arrangement of the holding-down pieces serves another important purpose. As they incline from the ends toward the center they serve as a guard to turn any chain or brake-bar, or any such thing which may become loose and hang from the car or truck and which in any way would strike and damage the cattle-guard. If the train be moving with any considerable speed, such a hanging part dragging upon the road-bed would strike the inclined holding-down and guarding piece and be thrown up so as to bound over the cattle-guard without injury thereto.

I do not in this specification claim, broadly, the parallel guard-rails arranged longitudinally of the railroad with overhanging edges, nor the holding means for the ends of the guard-rails, as this is subject-matter of an application filed by me in the United States Patent Office on the 9th day of September, 1890, Serial No. 364,400.

Supplemental guard-bars *f′* may be fixed on the base-pieces *e* between the side rails of the guard and the rails A.

I claim as my invention—

1. A cattle-guard composed of guard-rails arranged parallel with the railroad, the said rails having one face inclined and the other straight, and an overhanging edge in the same plane as the inclined face, substantially as described.

2. In combination with a set of guard-rails arranged to rest upon ties and having inclined ends, the inclined holding-down pieces G, having a flange *g*, fitted to notches in the ends of the guard-rails, substantially as described.

3. A cattle-guard consisting of guard-bars composed of bases approximating a right-angled triangle in cross-section, and plates secured thereto and overhanging the vertical sides of the bases, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

GUSTAVE A. CHRIST.

Witnesses:
HENRY E. COOPER,
MARGARET V. COOPER.