

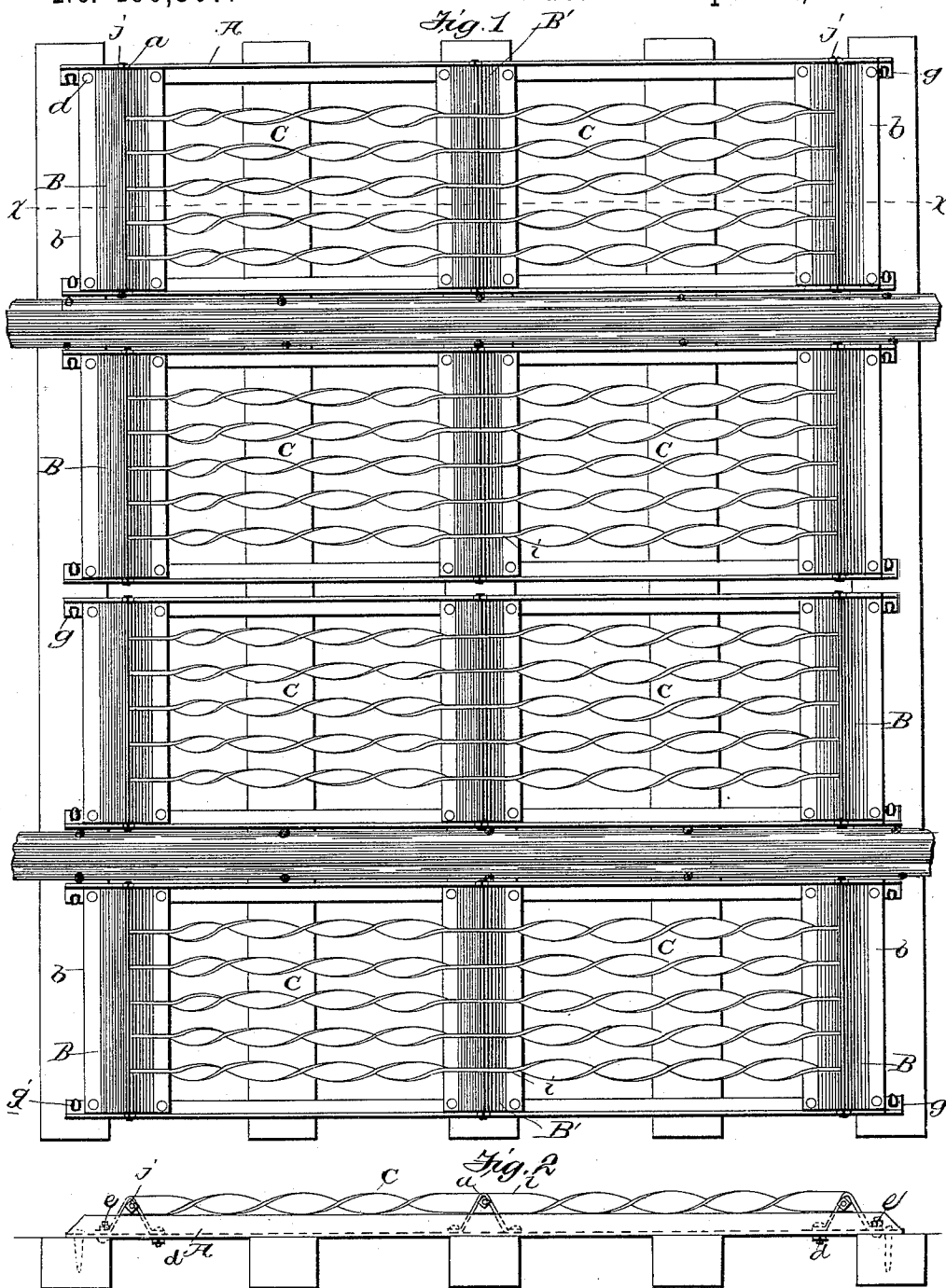
(No Model.)

2 Sheets—Sheet 1.

J. T. HALL.
RAILWAY SURFACE CATTLE GUARD.

No. 460,307.

Patented Sept. 29, 1891.



Witnesses
J. H. Cornwall,
L. S. Bacon

Inventor
James T. Hall
By Thos. Sprague, for

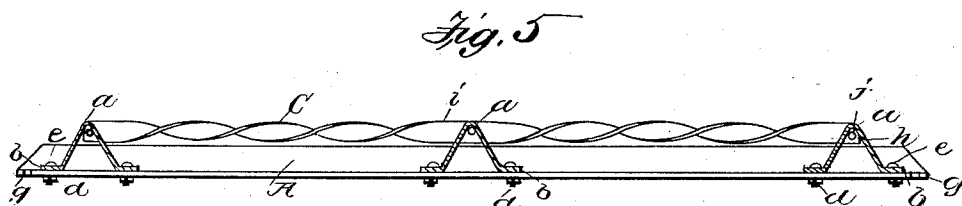
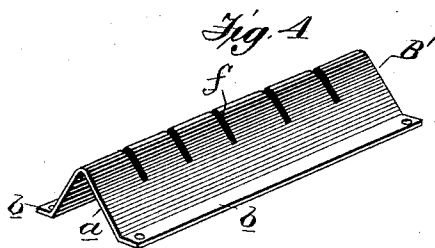
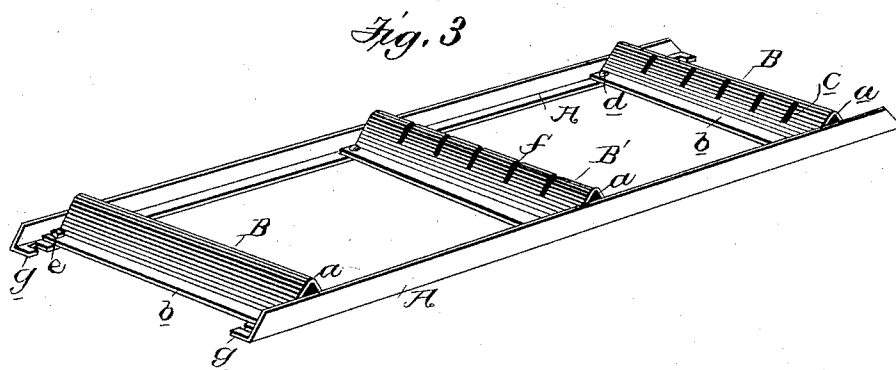
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Attys

UNITED STATES PATENT OFFICE.

JAMES T. HALL, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE NATIONAL SURFACE GUARD COMPANY, OF SAME PLACE.

RAILWAY SURFACE CATTLE-GUARD.

SPECIFICATION forming part of Letters Patent No. 460,307, dated September 29, 1891.

Application filed August 2, 1890. Serial No. 360,740. (No model.)

To all whom it may concern:

Be it known that I, JAMES T. HALL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have
5 invented certain new and useful Improvements in Railway Surface Cattle-Guards, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to new and useful improvements in cattle-guards of that class known as "surface guards;" and the invention consists in introducing a new element of insecurity into the construction for preventing
15 animals from crossing the guard by giving the guard-rails a serpentine aspect, as I have found in practice that horses and animals especially dislike to step upon anything which has a crooked or serpentine appearance. At
20 the same time this construction embodies the most effectual means of destroying the footing of the animals.

The invention further consists in the peculiar construction of a rigid supporting-frame
25 in which the bars are secured, and, further, in the peculiar means of putting the guard rails or bars under tension, as hereinafter more fully described and shown.

In the drawings, Figure 1 is a plan view of
30 my improved guard as laid in the track. Fig. 2 is a side elevation thereof. Fig. 3 is a perspective view of the supporting-frame detached. Fig. 4 is a perspective view of the central cross-bar detached. Fig. 5 is a vertical
35 longitudinal section of Fig. 1.

My guard consists of sections of gratings laid in the track between and outside the rails.

In constructing my present form of cattle-guard I first construct a rigid supporting-frame for each section of the guard-rails in the following manner:

40 A are two angle-iron bars connected together by the cross-bars B and B', the two cross-bars B being secured to the ends of the angle-bars, while the cross-bar B' is secured
45 midway thereof.

The cross-bars B are of the following construction: I preferably take a strip of sheet

metal and form therein an inverted-V-shaped
50 central portion *a*, having at each side thereof the foot or flange *b*, and upon the inner side of the inverted-V-shaped section I form suitable apertures *c*, adapted to receive the ends
55 of the guard-rails C, the feet *b* of the cross-bars being attached to the horizontal portion of the angle-iron by rivets *d* on the inner edge and by means of bolts on the outer edge. The
60 central cross-bar B' is of the same construction as the cross-bars B, with the exception that its upper edge is notched at *f* to receive
65 the lower edge of the guard-rails, and it is rigidly secured by means of rivets *d* to the horizontal portion of the angle-bars.

g is a foot formed by the extension of the
70 horizontal portion of the angle-bars, by means of which the frame may be secured to the track by spiking.

If I attempted to spike the frame to the
75 track, using the flange of foot *b* upon which to rest the head of the spike, the edge of the spike would necessarily enter the tie parallel with the grain; but by forming the foot *g* I
80 am enabled to drive the spike with its edge at right angles to the grain, thereby obviating
75 any danger of splitting the tie. With my frame thus constructed I insert the guard-rails therein and form said guard-rails in the following manner:

The guard-rails preferably consist of a se-
80 ries of metallic bars presenting a serpentine or curved appearance. This I preferably effect by twisting the bars into spiral form, as shown in the drawings; but it is evident that
85 it may be effected by simply bending the bars by twisting or otherwise. These bars thus bent I provide at each end with the securing
portions *h*, which pass through the apertures
90 *c* in the cross-bars, and with the vertical securing portions *i* in the center, the lower edges of which engage in the notches *f* in the central cross-bars B'. The securing portions *h*
95 are apertured to receive a tie-bar *j*. In placing these tie-bars in position I loosen the nut upon the bolt *e*, whereby the outer foot *b* of the cross-bars will be slightly raised above the horizontal portion of the angle-bar. When the section is thus put together, I put the

guard-rails under tension by screwing down the nut of these bolts until the foot *b* is flush with the horizontal portion of the angle-bar. This tension may be applied as well by simply taking a tool and twisting the bars after they are secured in position. The twisting effects a shortening of the bars, whereby they will be given a considerable tension. The bars thus put under tension will give more satisfactory results than bars simply secured between the cross-bars of the guard, and I am enabled to use much lighter material and to get better results with the bars thus strung.

In using the spirally-twisted bars or other shapes effecting the same result I can also use bars of lighter weight and fewer bars than where they are simply parallel and straight, thereby greatly cheapening the cost of manufacture.

It will be observed that my supporting-frame is an entirely rigid frame by itself and that all the tension put upon the guard-rails is taken up in the frame without in any manner being transmitted to the ties or the means of securing the guard in the track.

In bending or twisting the rods I preferably arrange the bend or twist of adjacent rods so that the flat or horizontal portions of the twist will alternate or be staggered.

What I claim as my invention is—

1. In a cattle-guard, the combination, with the supports, of a series of flat bars having their edges thrown out of a straight line and below the plane of the upper portion by twisting the bars, substantially as described.

2. In a railway surface cattle-guard, sections formed of parallel guard-rails consisting of spirally-twisted metal bars, substantially as described.

3. In a railway surface cattle-guard, rails formed of spirally-twisted metal bars and of securing portions at the ends of said bars, substantially as described.

4. In a railway surface cattle-guard, rails formed of spirally-twisted metal bars, end cross-bars, a central cross-bar, and vertical securing portions at the ends and middle of said guard-rails engaging with the cross-bars, substantially as described.

5. In a railway surface cattle-guard, the combination, with the side bars *A*, the cross-bars *B*, and the spirally-twisted guard-rails *C*, of the securing-flange *b* and the bolts *e*, substantially as described.

6. In a railway surface cattle-guard, the combination, with the guard-rails, of an arched cross-bar and a connecting-rod passing within the cross-bar, substantially as described.

7. In a railway surface cattle-guard, the combination, with the guard-rails, of an arched cross-bar in which the ends of the guard-rails engage and of a connecting-rod passing within the cross-bar, substantially as described.

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

JAMES T. HALL.

Witnesses:

M. B. O'DOHERTY,
JAMES WHITTEMORE.