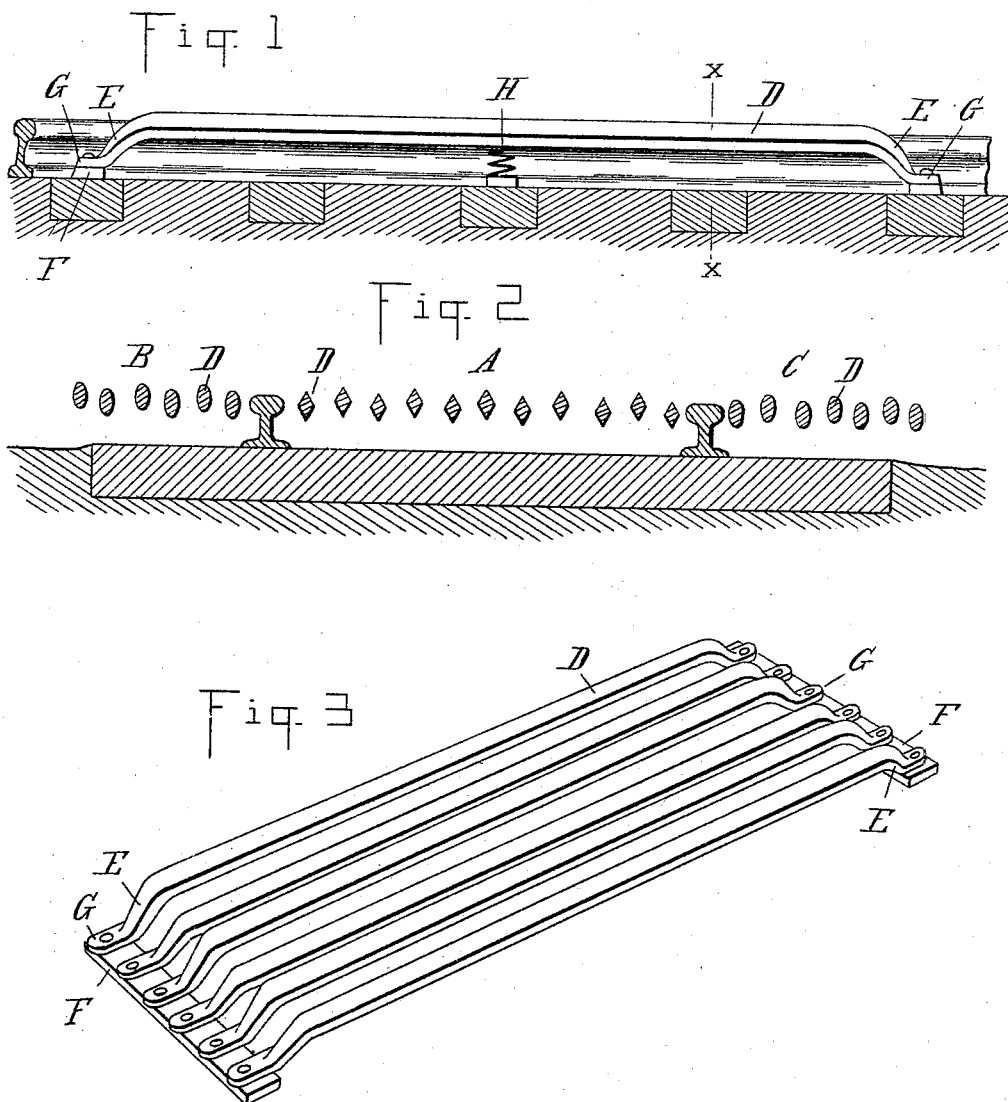


(No Model.)

J. T. HALL.  
SURFACE CATTLE GUARD.

No. 418,014.

Patented Dec. 24, 1889.



Witnesses:  
H. M. Hulbert  
Geo. A. Gregg.

Inventor:  
James T. Hall  
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Att'y.

# UNITED STATES PATENT OFFICE.

JAMES T. HALL, OF CHICAGO, ILLINOIS.

## SURFACE CATTLE-GUARD.

SPECIFICATION forming part of Letters Patent No. 418,014, dated December 24, 1889.

Application filed August 16, 1889. Serial No. 320,916. (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 invented certain new and useful Improvements in Surface Cattle-Guards, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to new and useful improvements in surface cattle-guards; and the invention consists in the peculiar construction of a metallic surface-guard, whereby the cost of manufacturing such cattle-guards is greatly reduced, and at the same time the footing is more effectually destroyed, all as more fully hereinafter described and claimed.

In the drawings which accompany this specification, Figure 1 is a side elevation of my improved cattle-guard in position upon a railroad-track. Fig. 2 is a cross-section thereof on line *x x*. Fig. 3 is a perspective view of a part of the guard.

My cattle-guard is of that class of guards consisting of metallic bars, having an upward presentation of parallel edges connected together into sections A, B, and C, the section A being between the rails and sections B and C outside of the rails, as shown. It has heretofore been the custom to construct such guards of thin flexible bars set up on edge and joined together by a rod passing through the bars. This requires a bar three or four inches in height and without any vertical flexibility under an ordinary load. This does not present the same insecurity of footing to animals as bars such as D in the accompanying drawings. To make these bars, I preferably take a straight bar of rectangular, diamond shape, or oval cross-section, and bend down the ends into the legs E and the horizontal extensions, which I flatten out into the foot G by a suitable die to rest firmly upon the cross-bars F, providing suitable apertures for rivets or bolts, and corresponding apertures in the cross-bars. The legs E, I incline outwardly, so as to present an angle which will prevent the catching thereon of dangling chains or rods on passing trains, and I likewise bevel the sides of the cross-bars. If nec-

essary, a stiff spring H may be secured in the middle of each bar to prevent too great deflection of the bar and to assist in giving the proper flexibility thereto.

In previous constructions it has been customary to connect the bars in sections by means of a bar horizontally passing through the ends of the strips or bars of metal, as shown in Patent No. 403,532, granted to me on May 21, 1889. This presents a constant menace of accident from trailing chains or rods catching upon the guard. This objection is entirely obviated by the construction shown in this application, as there is no cross-bar above the ties, excepting the cross-bar F, which is secured to the ties and is provided with a beveled edge. The necessary height of the guard may be obtained by this construction of bars with about one-half the material used in previous constructions.

The cross-bars F resting upon the ties, the sections may be more easily spiked down than with previous constructions by simply driving spikes into the ties with the heads resting upon the cross-bars.

While I claim the peculiar construction of the bars as my invention, what I consider as the most important feature of my improvement is that the cross-bars are arranged upon the ties, obviating the use of cross-bars above the base of the guard, at the same time affording means for securing the sections of the guard to the track.

It is evident that instead of bending down a part of each bar to form the legs, legs may be attached to straight bars to effect the same result.

What I claim as my invention is—

1. A surface cattle-guard composed of a series of flexible bars having an upward presentation of their edges, and having their ends bent downward, whereby they may be fastened to ties at their ends, leaving their main portions unsupported by intervening ties of the same level as those to which they are attached, substantially as described.

2. A surface cattle-guard composed of sections of flexible bars supported at the ends by legs connected together by cross-bars adapted to be secured upon the ties, substantially as described.

3. A surface cattle-guard composed of sections of flexible bars supported at the ends by legs provided with feet at the base of such legs, and with suitable means for securing  
5 the feet to cross-bars adapted to rest upon the ties, substantially as described.

4. A surface cattle-guard composed of sections of flexible bars supported at the ends only by legs, in combination with springs ar-

ranged under such bars at or near the middle, substantially as described. 10

In testimony whereof I affix my signature, in presence of two witnesses, this 26th day of June, 1889.

JAMES T. HALL.

Witnesses:

TILLIE HAMMERSCHLAG,  
WILLARD F. CHANDLER.