(No Model.) 2 Sheets—Sheet 1.

M. BUCHANAN.

CATTLE GUARD.

No. 601,120. Patented Mar. 22, 1898.

FIG. 1.

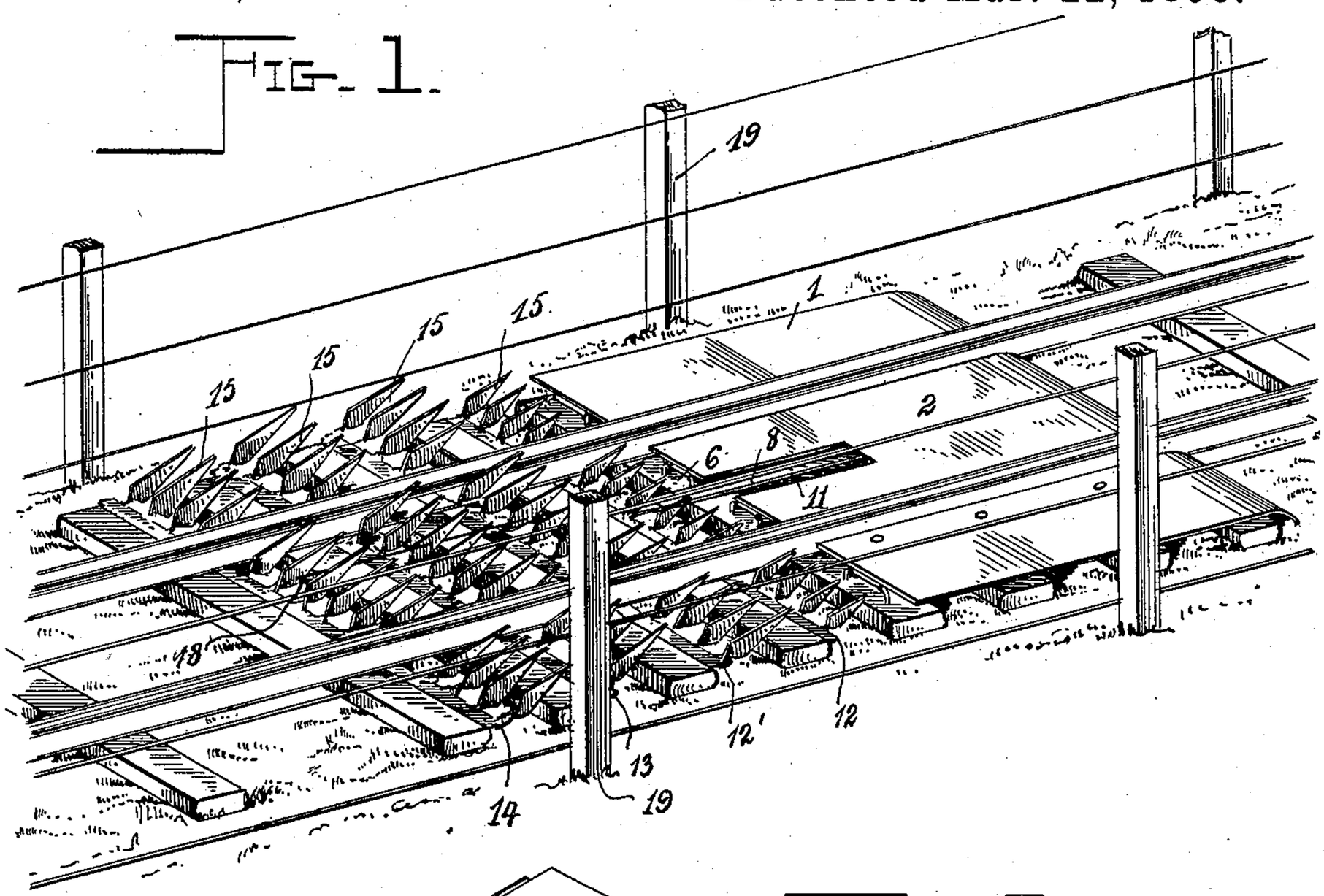


FIG. 5.

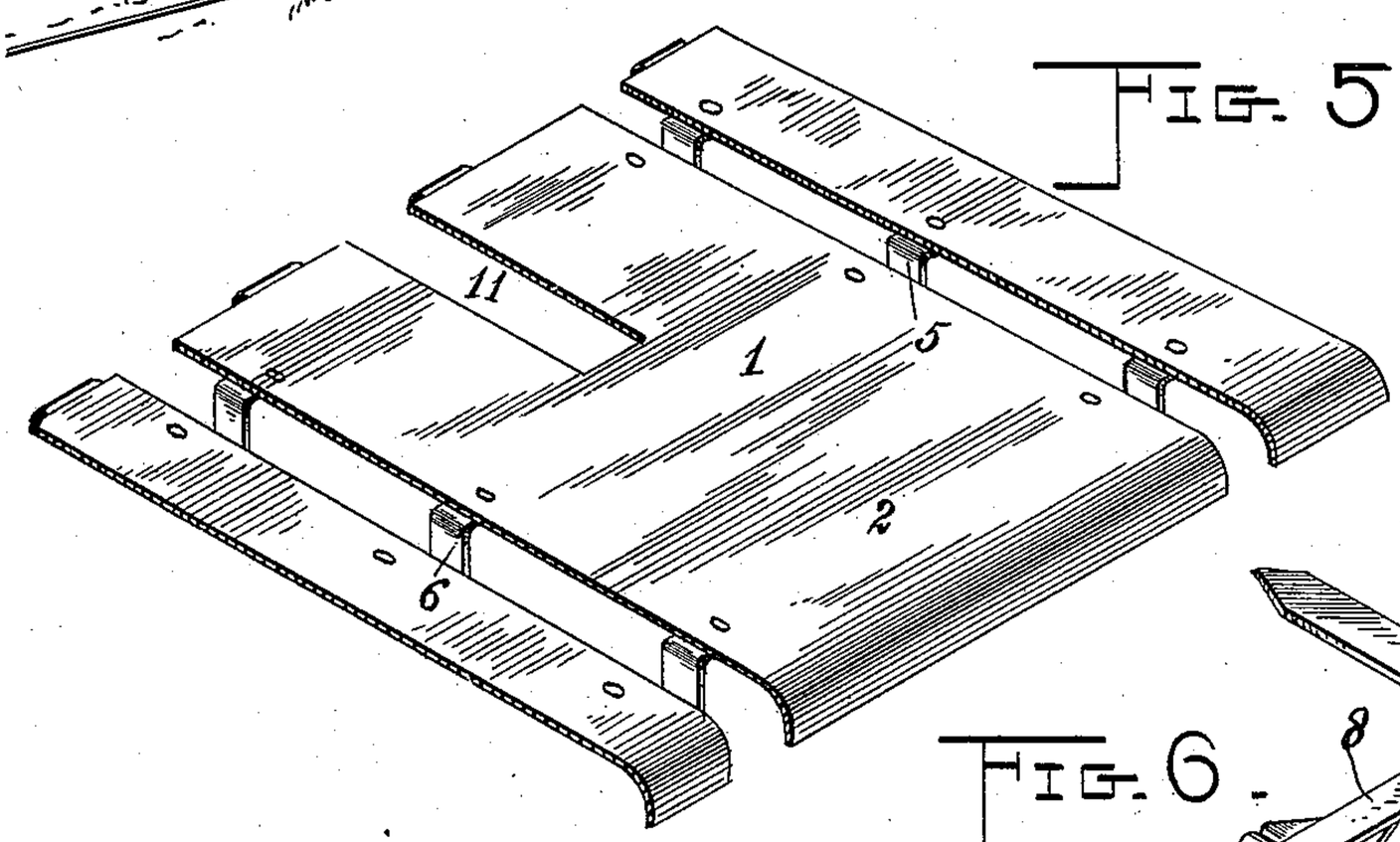
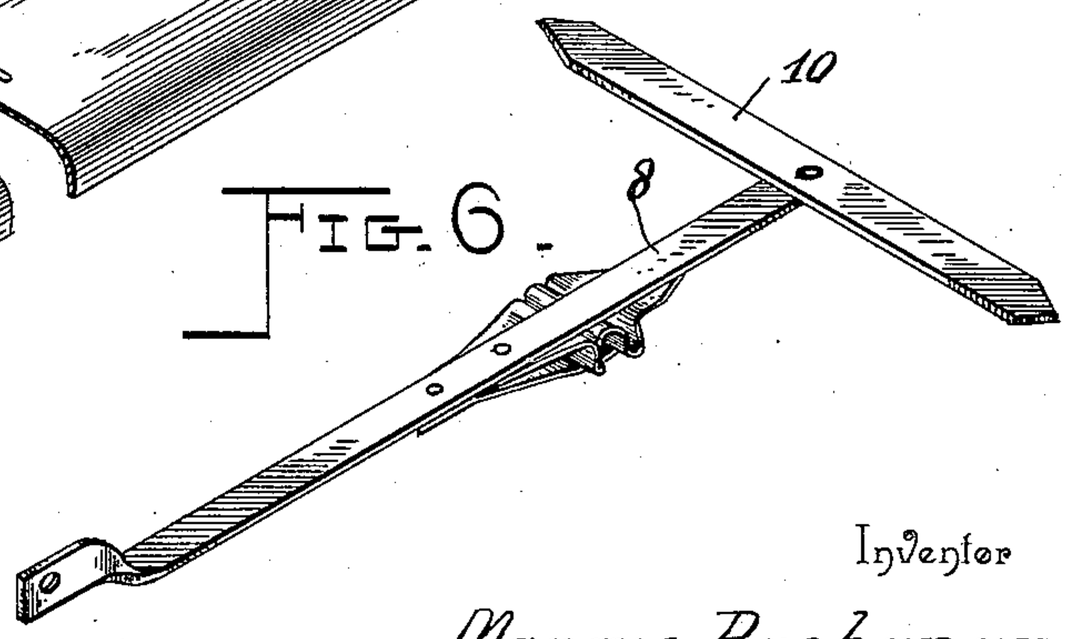


FIG. 6.



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(No Model.) 2 Sheets—Sheet 2.

M. BUCHANAN.

CATTLE GUARD.

No. 601,120. Patented Mar. 22, 1898.

FIG. 2.

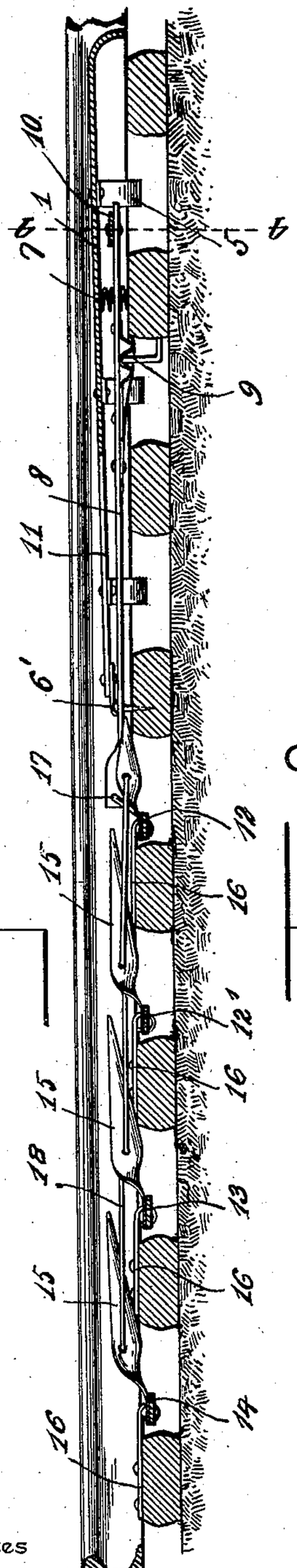


FIG. 3.

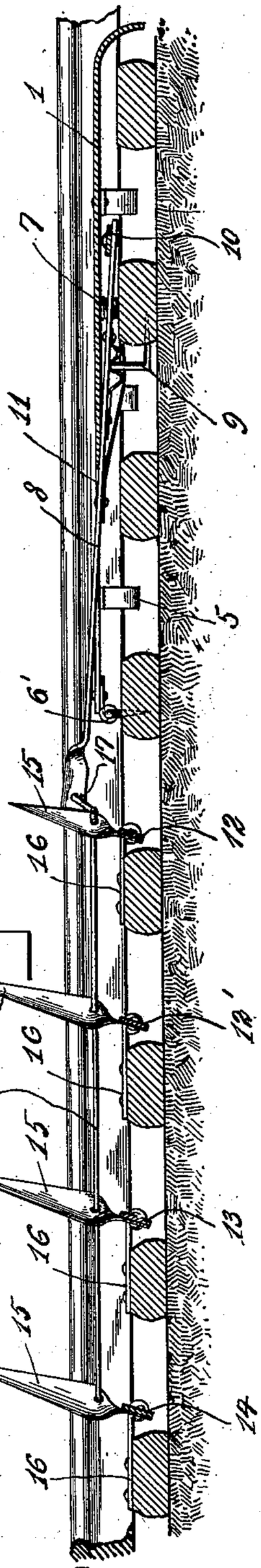
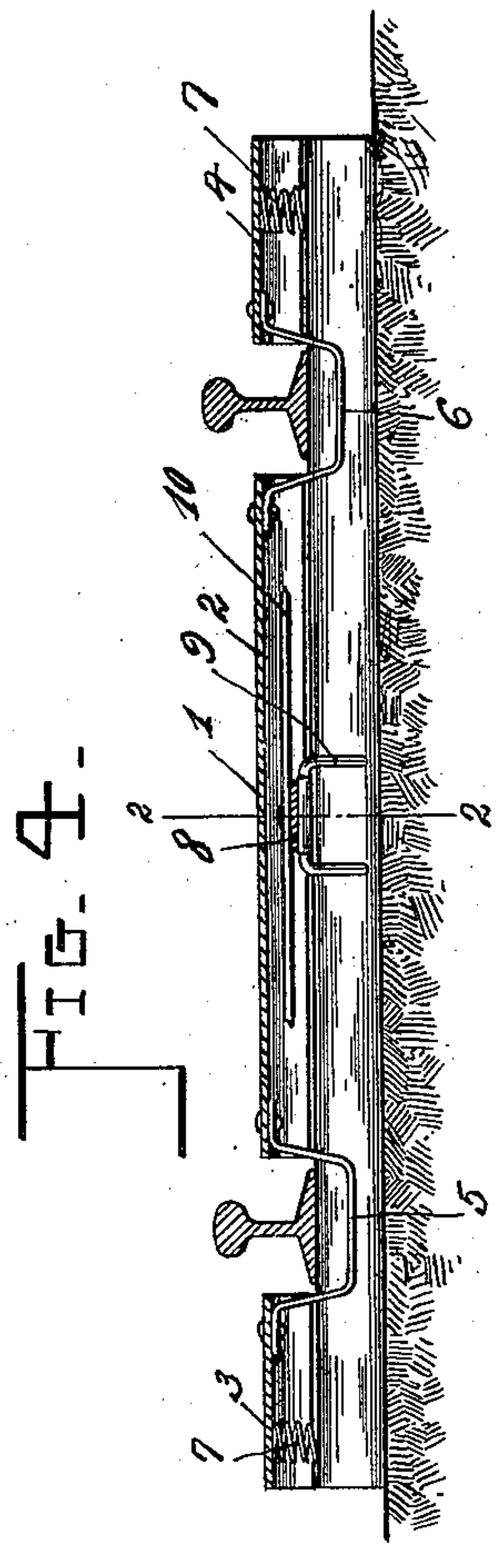


FIG. 4.



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UNITED STATES PATENT OFFICE.

MARQUE BUCHANAN, OF WINDSOR, ILLINOIS, ASSIGNOR OF ONE-HALF TO JOHN BAXTER, OF FAIRLAND, ILLINOIS.

CATTLE-GUARD.

SPECIFICATION forming part of Letters Patent No. 601,120, dated March 22, 1898.

Application filed July 24, 1897. Serial No. 645,834. (No model.)

To all whom it may concern:

Be it known that I, MARQUE BUCHANAN, a citizen of the United States, residing at Windsor, in the county of Shelby and State of Illinois, have invented a new and useful Cattle-Guard, of which the following is a specification.

My invention relates to improvements in cattle-guards for railway-tracks; and the primary object of the invention is to do away with all pits, sills, and carpenter-work. A section-foreman can take this guard up and raise the track, if necessary, without the assistance of an expert.

A further object of the invention is to construct the guard in a peculiar way to enable it to be applied to a railway-track without disturbing the rails or the ties in any way, and also to permit the parts to be taken out of place for inspection and repairs whenever desired.

A further object is to provide a simple construction in which the guard lies normally in a compact position below the level of the rails, so as to be out of the way of passing trains, but is constructed and arranged to throw up automatically a series of guards in the path of an animal walking along the track.

With these ends in view my invention consists in the combination of rock-shafts carrying guard-fingers, a step-plate mounted upon one of the ties and comprising a central member and two side members, the latter arranged outside of the track-rails, means for coupling the members of said step-plate and serving to limit the upward movement of the step-plate by bearing against the track-rails, and devices which operatively connect the step-plate with the guard-carrying rock-shafts.

The invention also consists in a novel construction of step-plate, guards, and connections to enable the parts to be disconnected or applied without disturbing the rails; and the invention further consists in the novel combination of elements and in the construction and arrangement of parts, which will be hereinafter fully described and claimed.

To enable others to understand my invention I have illustrated the preferred embodiment thereof in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a perspective view of a cattle-guard applied to a track and showing my invention. Fig. 2 is a longitudinal sectional view on the plane indicated by the dotted line 2 2 of Fig. 4, showing the guard lowered below the level of the track-rails. Fig. 3 is a sectional view similar to Fig. 2, but showing the guard raised to form a barrier in the path of an animal on the track. Fig. 4 is a vertical transverse sectional view on the plane indicated by the dotted line 4 4 of Fig. 2. Fig. 5 is a detail perspective view of the sectional step-plate, and Fig. 6 is a detail perspective view of the operating-lever.

Like numerals of reference denote corresponding parts in all the figures of the drawings, referring to which—

1 designates the step-plate of a cattle-guard for railway-tracks constructed in accordance with my invention. I construct this step-plate in a novel manner to provide for its installation on the track without in any way disturbing the rails or ties and also to prevent the animals from walking on the ties outside of the rails or between the same. To this end I construct the step-plate in three sections, (indicated at 2 3 4.) The central section 2 of the step-plate is of a width proper to fit between the rails without, however, coming in engagement therewith; but the sections 3 4 are comparatively narrow, and they are arranged outside of the track-rails above the ends of the ties. Each section of the step-plate is preferably made of a single piece of stout sheet metal, and the central section 2 of the step-plate is united or coupled to the outside members 3 4 by means of the keepers 5 6. Each keeper is a single piece of metal of U shape with projecting ends, and said keepers are fastened to the sections of the plate 1 by rivets, bolts, or other suitable means, whereby the three parts of the plate are united together to constitute practically a single structure. The keepers 5 unite the central section 2 to the side member 3, while the other keepers unite the side member 4 to the central member 2. These keepers 5 6 pass beneath the respective rails of a track,

and they are adapted to limit the upward or lifting movement of the step-plate by coming into engagement with the lower sides of the rails of a track to which the guard is applied.

The step-plate is applied to a track by arranging the central member 2 between the rails, placing the members 3 4 outside of the rails, and arranging the keepers beneath the rails, after which the keepers are fastened to the three members. It will be seen that this construction enables the step-plate to be applied or removed without disturbing the ties or the rails and that access can be had to the parts for the purpose of inspection or repairs when desired.

The step-plate is hinged or pivoted at one edge to one of the ties of a track, as at 6. I may hinge the step-plate to a tie by means of staples, which are driven into the tie and with which engage suitable loops or ears on the edge of the step-plate; but this form of hinge connection is not material, and the same may be changed or modified without departing from the spirit of the invention.

The step-plate is normally raised to an inclined position by means of springs 7, two or more of which may be used. These springs are preferably of the coiled variety, and they are arranged between the step-plate and one of the ties, as shown by Figs. 2 and 3. The springs need not be very strong, as their only purpose is to lift the step-plate sufficiently for it to clear the operating-lever 8. This operating-lever 8 is arranged beneath the step-plate, and it extends longitudinally of the track, preferably midway between the rails of the latter. The lever normally occupies a horizontal position, and it is hung or fulcrumed at an intermediate point of its length—as, for instance, on the short standard indicated at 9. The short arm of this operating-lever is provided, preferably, with a cross head or bar 10, which is adapted to be engaged by the step-plate when the latter is depressed against the tension of its lifting-springs 7 by an animal stepping on said plate. The long arm of the operating-lever extends forward of the step-plate, preferably through a slot 11 formed in the hinged edge of said step-plate, and said long arm of the lever is operatively connected with the rock-shafts which form the barriers of my improved cattle-guard.

The barriers comprise a series of rock-shafts 12, 12′, 13, and 14 and a series of guard-fingers 15 on each of said rock-shafts. Each rock-shaft is pivotally mounted on one of the ties of a track, substantially parallel therewith, and said rock-shafts extend beneath the track-rails, so as to carry the guard-fingers throughout the length of the ties on which the shafts are mounted. I have shown the rock-shafts as journaled loosely in bearings 16, formed by clips which are bolted to the ties; but this particular manner of supporting the shafts on the ties is not material to my invention. Although I have shown the barriers as consisting of four rock-shafts with guard-fingers thereon, I do not limit myself to the number of shafts herein shown, as I am aware that the number can be increased or diminished, as required.

The rock-shaft 12, adjacent to the hinged end of the step-plate 1, is operatively connected with the long arm of the operating-lever 8 by a suitable link connection 17, so that as the short arm of the lever is depressed by the step-plate its long arm will be raised through the slot in said step-plate and operate to raise the fingers 15 in the path of the animal. The other rock-shafts are connected in series and with the rock-shaft 12 by links 18, and thus all of the shafts, with the guard-fingers, are raised when the step-plate 1 is depressed. I have arranged the guard-fingers on the rock-shafts in a manner to cause said fingers to overbalance the rock-shafts and turn them so that the fingers rest upon the ties adjacent to the ties to which the shafts are hung. The fingers on the rock-shafts 12′, 13, and 14 are long enough to extend across the ties nearly to the shafts in advance thereof; but the fingers on the shaft 12 should not touch the step-plate.

At the sides of the track adjacent to the place where my guard is installed I have shown the fences or barriers 19, which prevent animals from walking alongside of a track. My improved guard may be installed in a track adjacent to a bridge or other place from which it is desired to exclude large animals, such as horses.

The operation of my invention may be described briefly as follows: The lifting-springs tend to raise the step-plate to an inclined position and the rock-shafts are turned by the weight of the guard-fingers to permit the fingers to lie below the level of the track. Trains can thus pass on the track without hindrance from the guard. When an animal steps on the plate, either on the central or side sections thereof, the plate is depressed and acts on the lever 8 to force down its short arm and raise the long arm thereof. The lever thus turns the rock-shaft 12 to raise the fingers thereon, and the links in like manner operate the other rock-shafts to raise the fingers, thus throwing up a series of barriers in the path of the animal. These barriers tend to obstruct the progress of the animal on the track and to frighten it away. As soon as the weight of the animal is removed from the step-plate the springs again lift the plate, thus freeing the lever, and the fingers of the rock-shafts turn the latter to permit the barriers to fold down on the ties below the level of the track-rails.

I am aware that changes in the construction herein shown and described as the preferred embodiment of my invention can be made without departing from the spirit or sacrificing the advantages thereof.

One of the important advantages due to the construction of a cattle-guard constructed

in accordance with my invention is that all pits, sills, and carpenter-work necessary in the installation of ordinary cattle-guards is wholly done away with. My guard is constructed in such a way that a section-foreman can take up the guard without assistance of an expert or skilled help to enable the track to be raised, if such a proceeding is deemed necessary.

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

1. In a cattle-guard for railways, the combination with a hinged step-plate, of a barrier formed by a series of rock-shafts arranged parallel to each other in advance of the step-plate and each having fingers which overbalance the shaft, means for operatively connecting said shafts together and with the step-plate, and retracting devices to raise the step-plate and free it from the operating devices for the barrier-shafts, substantially as described.

2. In a cattle-guard for railway-tracks, the combination with a step-plate, of a movable barrier consisting of a rock-shaft journaled in advance of the step-plate and carrying a series of fingers arranged to overbalance the shaft, a lever lying in the path of the step-plate and operatively connected with the barrier-shaft, and a spring to lift the step-plate free from the lever and allow the barrier-shaft to turn to its lowered position, substantially as specified.

3. In a cattle-guard for railway-tracks, the combination of a hinged step-plate, a lever arranged below said step-plate and fulcrumed at an intermediate point of its length to provide a short arm to be depressed by said step-plate, a series of rock-shafts carrying guard-fingers, means connecting one of said rock-shafts with the long arm of the operating-lever, and links connecting the other rock-shafts in series, as and for the purposes described.

4. In a cattle-guard for railway-tracks, the step-plate having side members united rigidly to a central member by keepers which fit beneath the rails of a track, one edge of said step-plate hinged to a tie, combined with springs to hold the step-plate yieldingly in an inclined position, a series of rock-shafts hung to ties in advance of the step-plate and each carrying guard-fingers which overbalance the rock-shafts, intermediate links connecting the rock-shafts in series, and an operating-lever disposed beneath the step-plate and having its short arm in the path of said step-plate and its long arm connected operatively with one of the rock-shafts, as and for the purposes described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

MARQUE BUCHANAN.

Witnesses:
GEO. GOWIN,
JAMES A. MOBERLEY.