

G. T. SENN.
RAILWAY CATTLE GUARD.
APPLICATION FILED JULY 31, 1911.

1,036,154.

Patented Aug. 20, 1912.

2 SHEETS—SHEET 1.

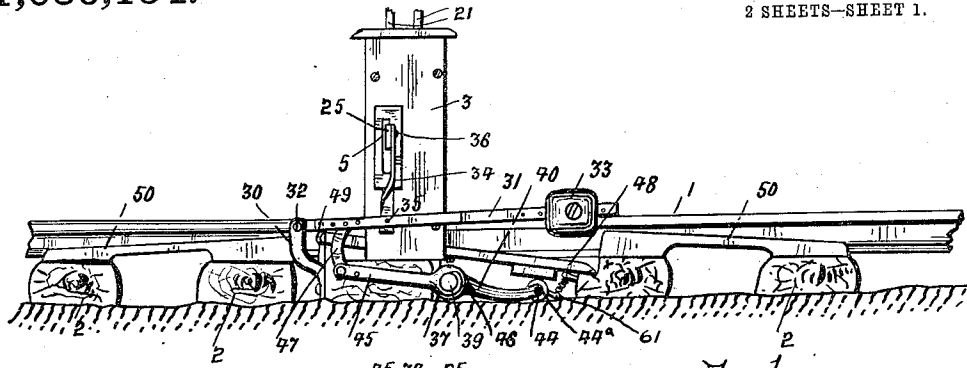


Fig. 1.

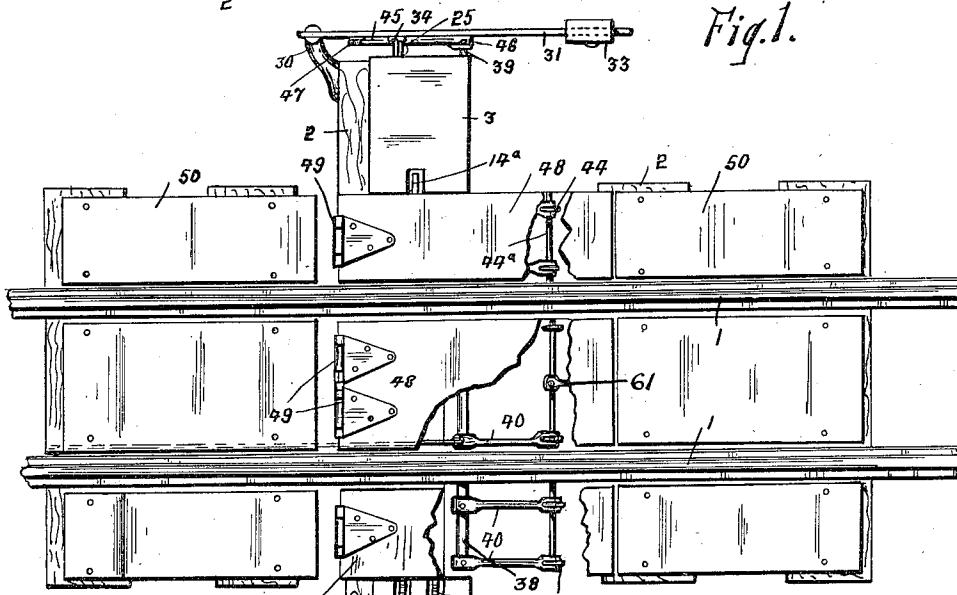


Fig. 2.

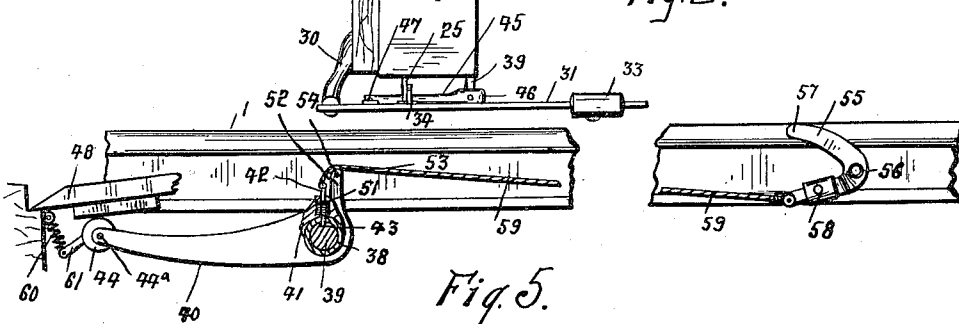


Fig. 5.

Witnesses.

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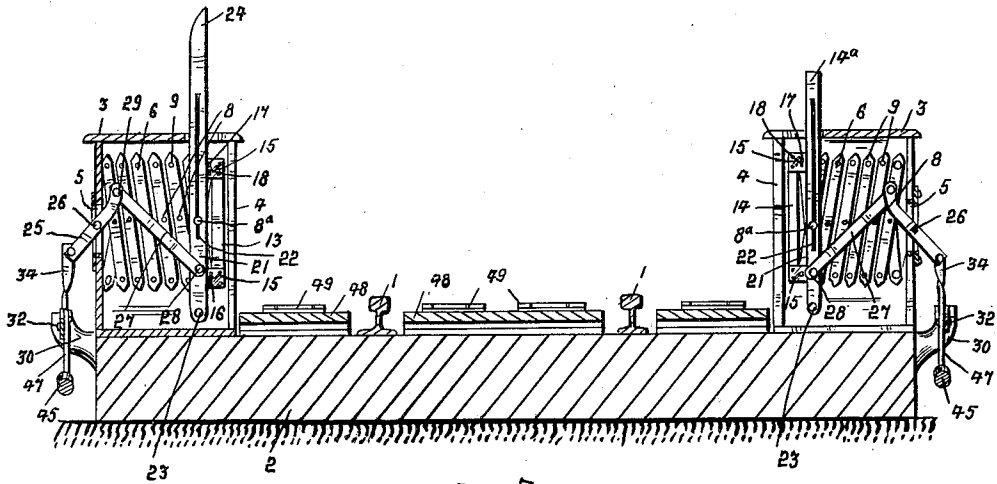


Fig. 3.

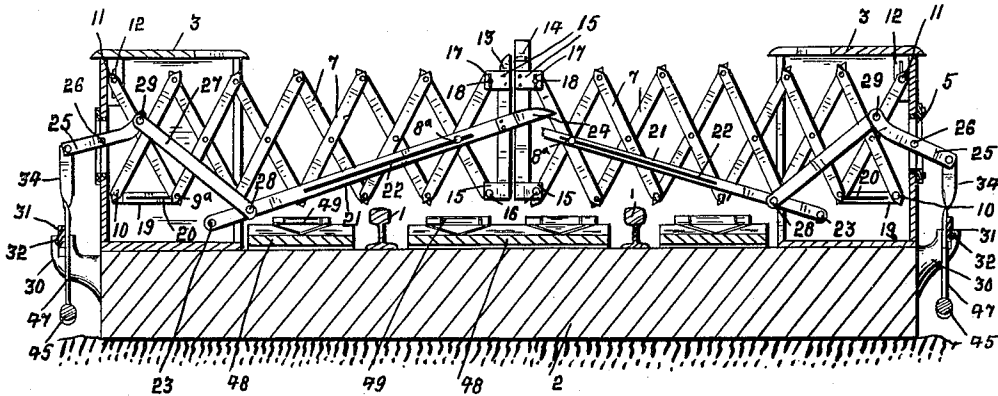


Fig. 4.

Witnesses

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UNITED STATES PATENT OFFICE.

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RAILWAY CATTLE-GUARD.

1,036,154.

Specification of Letters Patent.

Patented Aug. 20, 1912.

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To all whom it may concern:

Be it known that I, GEORGE THEODORE SENN, a subject of the King of Great Britain, and resident of 827 Somerset street, Ottawa, Canada, have invented certain new and useful Improvements in Railway Cattle-Guards, of which the following is a specification.

The invention relates to improvements in railway cattle guards, as described in the present specification, and illustrated in the accompanying drawings, that form part of the same.

The invention consists essentially of the novel arrangement and construction of parts, whereby extensible gates located at each side of the trackway are normally held to their folded position by weighted arms, and operatively connected to platforms arranged on the road-bed, which when depressed extend said gates across the trackway, where they meet and interlock.

The objects of the invention are to devise an efficient guard, which will stand normally clear of the trackway, and will be automatically operated on the approach of animals along the road-bed, to extend across the tracks, and thereby effectually prevent their further progress.

A further object of the invention is to provide a guard of durable mechanical construction, which will in no manner be a menace to the safe passage of trains.

In the drawings, Figure 1 is a side elevation view of the cattle guard as arranged on the road-bed of a trackway. Fig. 2 is a plan view of a section of road-bed, showing the arrangement of the cattle guard, the depressible platforms being partially broken away. Fig. 3 is a cross sectional view through the road-bed and cattle guard, showing the gates in their folded position. Fig. 4 is a cross sectional view through the road-bed and cattle guard, showing the gates in their extended position. Fig. 5 is an enlarged sectional detail view, showing the additional safety pin for the automatic release of the gates on the approach of a train.

Like numerals of reference indicate corresponding parts in each figure.

Referring to the drawings, 1 are the running rails of a railway supported as customary on the ties 2.

3 is a box casing located at each end of

one of the ties 2, and having the open front 4, and the opening 5 in the back.

6 are gates formed of cross bars 7 pivotally secured intermediate of their length one to the other by the pins 8, and at the extremities thereof pivotally secured one to the other by the pins 9 in continuous toggle arrangement, whereby they may be extended as shown in Fig. 4, or may be folded one upon the other as shown in Fig. 3, such toggle arrangement of cross bars being well known. The inner pair of the cross bars of each gate are pivotally secured to the box casing 3 by the pins 10 and 11 at the lower and upper extremities thereof respectively, the pin 10 extending through suitable journal orifices in the sides of the box casing adjacent to the back thereof, and the pin 11 extending into suitable vertical slots 12 in the sides of said box casing adjacent to the back thereof, said slots 12 allowing for the necessary movement of the pins 11 as the gates are extended or folded. The gates at the outer ends thereof have the end bars 13 and 14, said bars having the plates 15 secured thereto adjacent to the upper and lower ends thereof, the plates at the lower end of the bars being pivotally secured to the lower end of the outermost cross piece of the gates by the pins 16, and the plates 15 adjacent to the upper end of said bars 13 and 14 provided with the vertical slots 17 through which the pins 18 extend from the upper end of the outermost cross piece of the gates, the slot 17 allowing for the necessary vertical movement of the end of the cross piece as the gates are extended or folded.

19 are plates having the slots 20 therein, and secured to the sides of the box casings 3 in horizontal alinement with the pin 10, the pivot pin 9^a of the first toggle section of the gates extending into the slot 20 at each side of the box casings 3, and thereby forming a further support for the gates when in their extended position, in addition to the pins 10 and 11.

21 are pairs of operating bars, having the longitudinal slots 22 extending therealong for the greater portion of their length, each pair of operating bars 21 being pivotally mounted on the inner end thereof on the pins 23 extending between the sides of the box casing 3 adjacent to the lower and outer ends thereof.

The pins 8^a of the outermost toggle section of cross pieces extend through the slots 22, and slide in said slots as the gates are extended or folded, moving the said bars 21 when folded to a vertical position as shown in Fig. 3, and when extended to a diagonal position as shown in Fig. 4, the ends of the pair of bars 21 of one gate extending beyond the end pieces 13 and 24, and the top of the end piece 14 of the other gate is tapered to a point 14^a, whereby the tapered end 14^a will readily pass between the extended ends 24 of the operating bars 21 of the opposite gate when the gates are extended and meet.

It must be understood that the operating bars 21 arranged as above described form a rigid reinforcement for the gates, thereby allowing a very light material to be used in the frames of the cross pieces 7.

25 are fulcrum levers extending through the openings 5 in the back of the box casings, said levers being pivotally secured to the back of said casings by the pins 26.

27 are connecting bars pivotally secured at the ends thereof to the operating bars 21 at 28, and the inner end of the fulcrum levers 25 at 29.

30 are brackets secured to the side of the tie ends at the ends of which the box casings are located, the tie being extended a short distance beyond said box casings. The brackets 30 extend upwardly, and have the weighted arms 31 pivotally secured at one end thereof to said brackets by the pins 32.

33 are weights adjustably arranged on the weighted arms 31.

34 are link bars pivotally connected at the lower end thereof to the weighted arms 31 by the pins 35, and at the upper end thereof pivotally secured to the outer end of the fulcrum levers 25 by the pins 36.

It will be readily understood that the weighted arms 31 exert a continual downward pull on the link rods 34, tilting the fulcrum levers 25, and drawing upwardly on the connecting bars 27, and as the said connecting bars 27 are connected at 28 to the operating bars 21, said operating bars are normally held by the weights 33 to their raised position as shown in Fig. 3. By means of these operating bars the gates are moved to their folded position from the extended position as shown in Fig. 4, as the upward pull on the operating bars 21 tends to move the pivot pin 8^a toward the lower end of the slot 21, and in so doing fold the gate, and in addition, acts as a constant upward support for the outer ends of the gates in their extended position where there would be a tendency for them to sag owing to their own weight.

37 are journal bearings bolted at the opposite side of the tie 2 to which the brackets 30 are secured.

38 is a hollow shaft journaled in the bearings 37, and having the solid shaft 39 extending therethrough and beyond each end thereof.

40 are crank arms having the enlarged inner ends 41 secured to the hollow shaft 38 by the pins 42. One of said pins, as particularly shown in Fig. 5, extending through the hollow shaft 38 into an orifice 43 in the shaft 39, whereby the shaft 39 and the hollow shaft 38 are normally secured one to the other, and rotated as one in the bearing 37.

44 are rollers journaled on the shaft 44^a extending through the ends of the crank arms 40.

45 are crank levers having the enlarged inner ends 46 thereof fixedly secured to the outer ends of the shaft 39. The outer end of each of said cranks 45 is pivotally connected to the link 47 with the weighted arms 31, whereby when the outer ends of the crank arms 40 are depressed, the outer ends of the cranks 45 are raised, and through the connection of the link 47 the weighted arms 31 are raised, and the gates moved to their extended position.

48 are platforms connected by the hinges 49 at one end thereof to the tie 2 by the side of which the brackets 30 are secured. The platforms 48 are arranged between and at each side of the tracks 1, and extend over the rollers 44 of the crank arms 40, and are normally held in a slightly raised position above one of the ties 2 by the weighted arms 33.

50 are slanted approach platforms secured across the ties at each side of the depressible platforms 48, said approach platforms slanting upwardly at the ends next the depressible platforms, whereby anything which may drag from a passing train will in no manner interfere or catch either end of the depressible platforms, but will be guided clear over the top of the same.

When cattle or other animals attempt to walk along the road-bed of the railway, they must of necessity step upon one of the depressible platforms 48, and this added weight on the platform will counter-balance the weights 33 on the weighted arms 31, whereby said weighted arms will be raised through connections as hereinbefore described, the gates will be moved to their extended position across the track, effectually barring any further advance of the animals. Should it occur that an animal remains on the depressible platform, and a train is approaching, means is provided as shown in Fig. 5, for releasing the gates and returning the same to their folded position, in the event of the animal not moving from the platform.

As hereinbefore mentioned, one of the pins 42 extends through the hollow shaft 48 into the orifice 43 of the shaft 39, as particularly shown in Fig. 5, said pin being

spring-held by the spring 51 to its inner position.

52 is a bracket extending upwardly in the enlarged inner end of the crank arm 40 immediately next to the pin 42.

53 is a roller journaled on the pin 54 extending through the bracket 52.

55 is an elbowed cam lever pivotally secured to one of the running rails 1 considerably in advance of the cattle guard, by the pin 56, one section of said elbowed cam lever being curved upwardly at 57 adjacent to the tread of the rail, and the other section of said elbowed cam lever being provided with a weight 58 which normally holds the curved end 57 a short distance below the tread of the rail.

59 is a length of cable connected at one end to the outer end of the weighted section of the elbowed cam lever 55, and extending over the pulley 53, and secured at the other end thereof to the pin 42.

When an animal is upon one of the depressible platforms 48, and the crank arms 40 are depressed, the cable 59 is pulled a sufficient extent to raise the curved section 57 of the cam lever 55 a slight distance above the tread of the rail and immediately at one side thereof, and as a train approaches, the curved section 57 of the cam lever 55 will be depressed by the flange of the wheel, and the pin 42 withdrawn from the orifice 43 of the shaft 39, and thereby allow said shaft 39 to rotate with the crank 45 and weighted arm 31, and the several connections all move the gates to their folded position. As soon as the animal has moved off the depressible platforms, the same are returned to their normal position by the spring 60 connected at one end thereof to a bracket extending from one of the ties 2, and at the other end thereof to the bracket 61 extending from the shaft 44^a. As soon as the depressible platforms with the crank ends 40 are returned to their normal position, the spring-held pin 42 is again brought into register with the orifice 43, locking the hollow shaft 38 and the shaft 39 together.

It will be understood that many changes may be made in the detail construction of the several parts of my invention without departing from the spirit of the same, and I do not wish to confine myself to the mechanism or particular arrangement of levers as shown in the accompanying drawings. In fact, the toggle sections of the gates may be entirely done away with, leaving the operating bars 21 to extend across the trackway, and pickets or other cross pieces fixedly secured to these operating bars to form a barrier of limited efficiency.

What I claim as my invention is:

1. In a railway cattle guard, the combination with a cross tie extending across the road-bed, a box casing, an extensible gate

comprising a series of cross pieces pivotally secured one to the other in toggle form, means for pivotally securing the inner set of said toggles in said box frame, a weighted arm operatively connected to said gate and normally moving the several pieces thereof to their folded position, a depressible platform hingedly secured at one end thereof to said tie and means for operatively connecting said depressible platform to said weighted arm.

2. In a railway cattle guard, the combination with a cross tie extending across the roadbed, a box frame situated at one end of said tie, an operating lever pivotally secured at the inner end thereof to said box frame and extending in its horizontal position over the trackway, a weighted arm normally holding said lever in its vertical position, a depressible platform hingedly secured at one end thereof to said tie and means operatively connecting said platform with said levers.

3. In a railway cattle guard, a box casing, a gate frame comprising a plurality of cross pieces pivoted to each other intermediate of their length and at their extremities in toggle arrangement, the extremities of said inner section being pivotally secured in said box casing, an end bar pivotally secured to the extremities of the outer of said toggle sections, an operating bar pivotally secured at one end thereof in said box casing and having a longitudinal slot extending through the greater portion of its length and a pin extending from one of said toggle joint sections through the slot in said operating bar.

4. In a railway cattle guard or the like, a box casing having an open front side and journal orifices arranged in the sides of said box casing at the innermost corners thereof and horizontal guide slots arranged in the sides of said box casing toward the outer and lower corners thereof and vertical guide slots arranged in the sides of said box casing toward the upper and inner corners thereof and a gate frame comprising a series of cross pieces pivoted one to the other intermediate of their length and at their extremities in toggle arrangement, a pivot pin extending through the inner extremity of the innermost cross piece of said gate frame and into the journal orifices in each side of said box frame, a guide pin extending through the lower pivot point of the next pair of toggles and into said horizontal guide slots, a guide pin extending through the upper end of the innermost cross piece of said gate frame and into said vertical guide slots, an operating bar having an elongated slot extending substantially throughout its length and pivotally secured at the inner end thereof within said box frame adjacent to the bottom thereof, a

guide pin extending from the pivot of the outermost pair of cross pieces to said gate frame through the slot in said operating bar.

5 In a railway cattle guard, of a box casing located at each side of a railway track, extensible gates arranged in said casings and extending to meeting position across said tracks and a pair of bars pivotally secured at one end thereof in said box casings and
10 operatively connected to one of said gates and extending on each side thereof beyond the juncture of the meeting extremities of said gates.

6. In a railway cattle guard, the combination with the cross tie of a railway, journal bearings secured to one side thereof, a shaft journaled in said bearings, crank arms secured to said shaft, depressible platforms hinged at one end thereof to said tie and
20 extending over said crank arms, an expansible gate supported adjacent to one end of said tie, a weighted arm normally holding said gate to its folded position and levers operatively connecting said weighted arm
25 with said shaft.

7. In a railway cattle guard, the combination with a railway tie, journal bearings secured along one side thereof, a hollow shaft journaled in said bearings, crank arms secured to said hollow shaft and spring-held
30 to their raised position, depressible platforms hinged at one end to said tie and extending over the outer end of said crank arms, a solid shaft extending through said hollow shaft, a spring held pin operatively
35 connecting said hollow and slotted shafts one to the other, an elbowed cam lever pivotally supported with one section thereof adjacent the tread of a running rail, a length of cable connecting said cam lever with said
40 spring-held pin, an expansible gate pivotally supported at one end of said tie and means operatively connecting said gate with said solid shaft.

Signed at the city of Ottawa, Canada, this
30th day of June 1911.

GEORGE THEODORE SENN.

Witnesses:

K. T. MACGIBBON,
THOMAS R. BALMER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."