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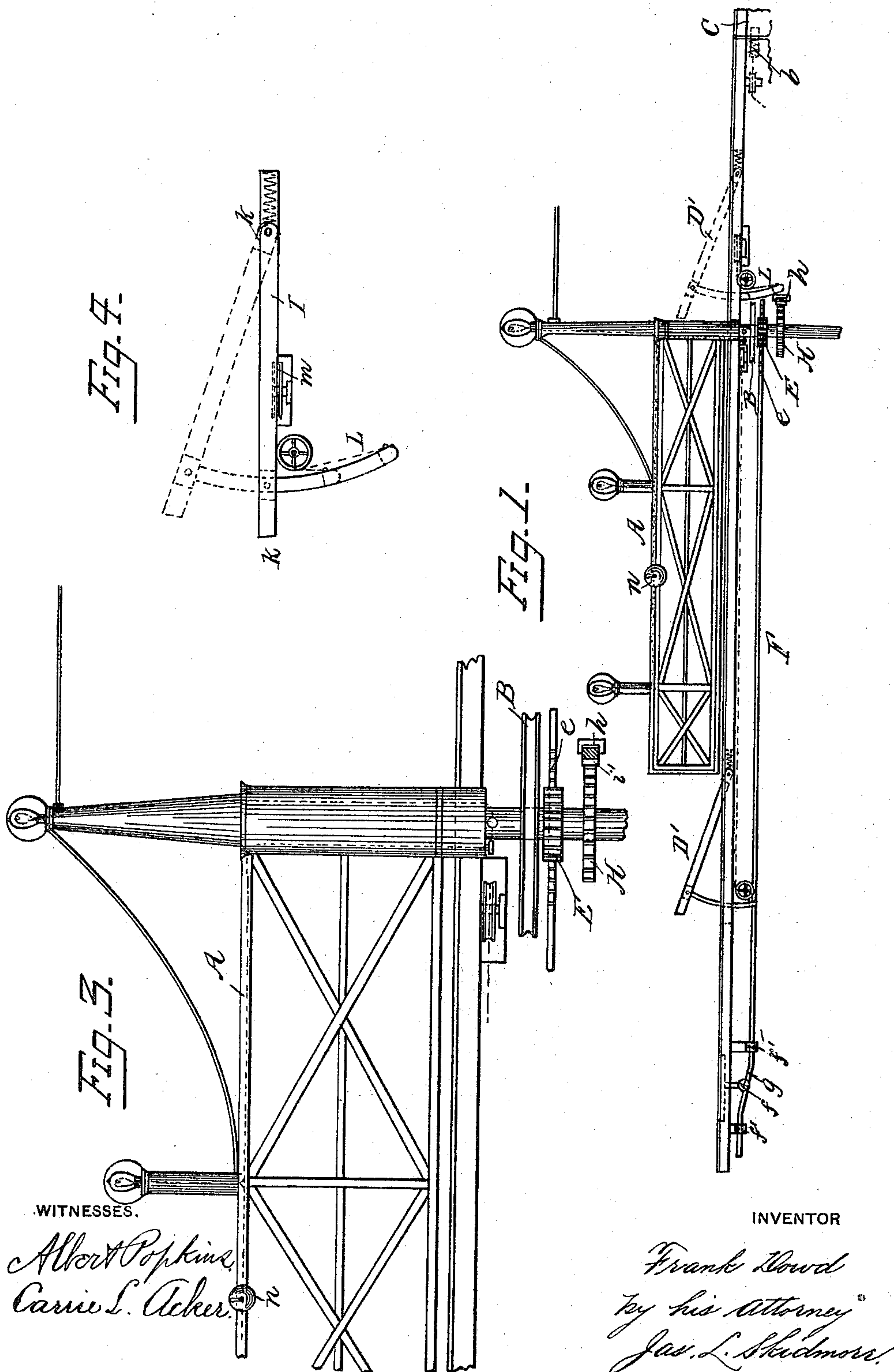
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F. DOWD.

SAFETY APPARATUS FOR STREET OR OTHER RAILWAYS.

No. 572,971.

Patented Dec. 15, 1896.



WITNESSES.

Albert Popkins
Carrie L. Acker

INVENTOR

Frank Dowd
by his Attorney
Jas. L. Skidmore

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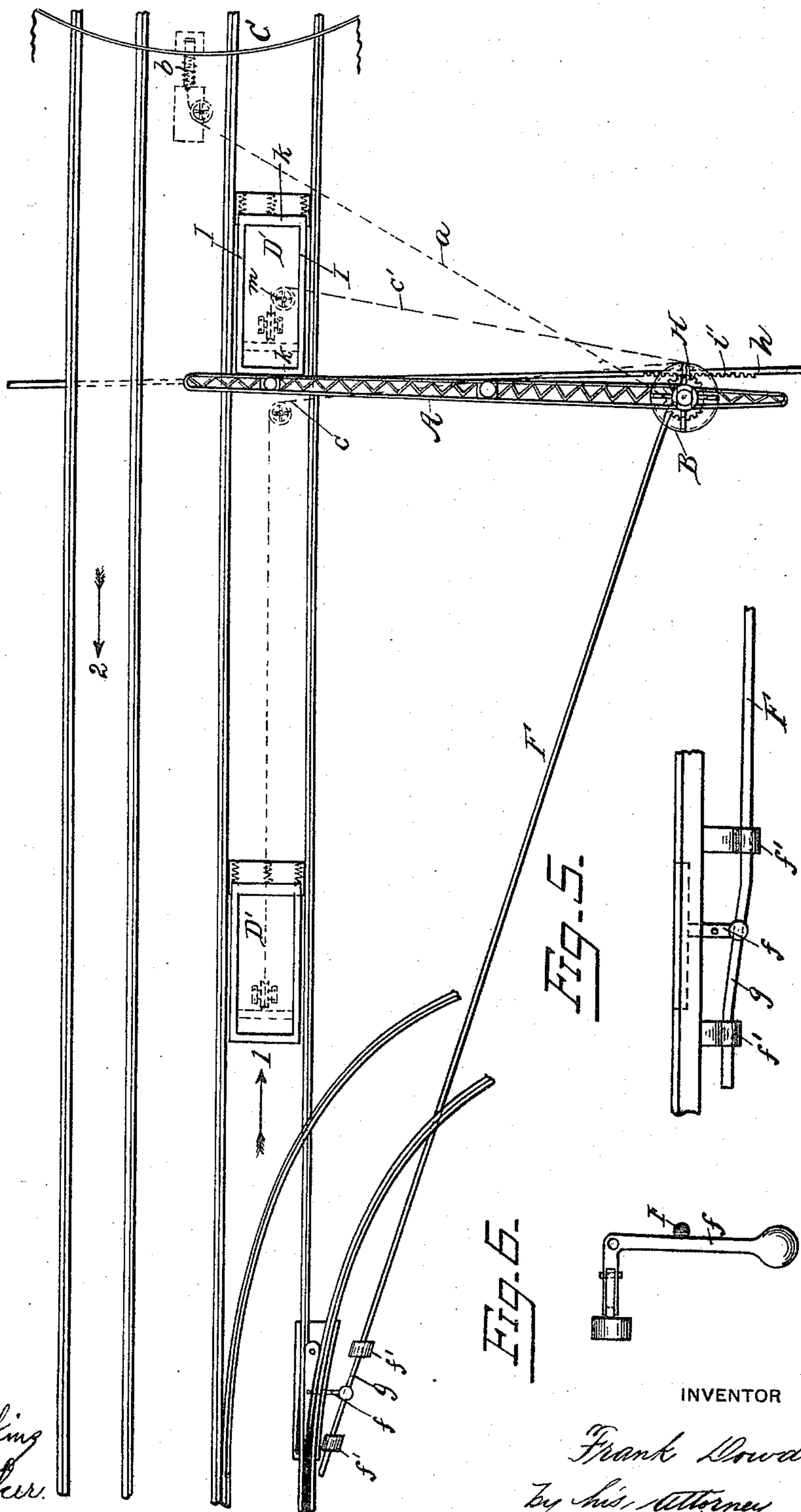
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UNITED STATES PATENT OFFICE.

FRANK DOWD, OF CLEVELAND, OHIO.

SAFETY APPARATUS FOR STREET OR OTHER RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 572,971, dated December 15, 1896.

Application filed December 2, 1895. Serial No. 570,840. (No model.)

To all whom it may concern:

Be it known that I, FRANK DOWD, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Safety Apparatus for Street or other Railways; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention has relation to safety apparatus for street and other railways.

The object of my invention is to reduce to a minimum the possibility of the loss of life at grade crossings, drawbridges, and other dangerous points.

A further object is to derail or switch off the car to a siding in case of extreme danger and at the same time combine with said switch or derailing rail gates combined with certain other apparatus, all operated through the medium of a single gate and connections therewith and by a single attendant or operator.

A still further object is to combine with a swinging gate or gates which, when operated so as to stand transversely across the track, simultaneously operate buffers, switch-point, and spring locking means for drawbridge; also, complete an electric circuit emanating from a generating plant in order to furnish a danger-light signal or signals and an electric alarm.

The foregoing, together with such other objects as may occur from the ensuing description, are accomplished by the mechanism hereinafter referred to, pointed out in the claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation illustrating certain mechanism embodied in my invention. Fig. 2 is a plan view illustrating my invention in connection with a drawbridge and illustrating two main railway-tracks and a siding. Fig. 3 is a view in detail illustrating a portion of a gate with operating mechanism on the main post thereof and illustrating in dotted lines the electric circuit leading to the

danger-light signals and alarm carried by the gate. Fig. 4 is a view in detail of the buffer utilized in connection with my improvements; and Figs. 5 and 6 are views in detail, illustrating a switch-point connection and the precise means for connecting the switch-point with an operating-rod leading from the gate-post.

A indicates a controlling-gate, the main post of which is suitably secured, so that the gate proper may be caused to swing and partially rotate thereon. At or near the lower end of the main post, and below the surface of the road, is suitably secured a pulley-wheel B, to which is secured a cable *a*, leading to a spring-bolt *b*, which is adapted to enter and properly secure the drawbridge C. From said pulley also lead additional cables *c c'*, leading to buffers D', located, respectively, in the front and rear of the gate proper. Secured to the main post at a suitable point, preferably slightly below the aforesaid pulley, is a cog-wheel E, adapted to gear with a rack *e* on a rod F, leading from said gear-wheel to a point opposite the switch-point and connected to said switch-point by a gravity bell-crank lever *f*. The outer end of said rod has bearings in portions *f' f'*, depending from the road-bed, and the portion *g* of said rod F between the said bearing portion is inclined to form a cam-surface, against which the bell-crank lever normally rests, so that when the said rod F is reciprocated by the swinging movement of the gate in the act of closing the same it will be caused, through the medium of the gear-wheel on the gate-post and the rack on the rod, to act on the bell-crank lever and cause the latter, which is normally connected to the switch-point, to throw the switch-point over, thereby causing the car, if desired, to be switched off to the side-track.

It will be seen that the bell-crank lever is provided with a weight or excess of metal at the extremity of the long arm thereof, which will act by gravity to return the switch-point to its normal position. At a point slightly below the gear-wheel E is suitably secured a gear-wheel H, and leading from said gear-wheel or a point slightly beyond the same yet meshing with the gear-wheel H is a rod *h*, provided with a rack *i'* at or near each end thereof, which rack gears with a similar

gear-wheel on an opposite gate and causes the same through the medium of the swinging of one gate to control the swinging movement and at the same time close the opposite gate. This bar *h* is held at each end in contact with the gear-wheel *H* by a yoke or other suitable means.

The buffers *D' D'* are located as shown in Fig. 2, and one of said buffers, as shown in said figure, acts as a stop to limit the rotative movement of the gate, and when the gate *A* shall have assumed the position shown in Fig. 2 the same is hooked or secured by any suitable latch to its respective buffer. The buffers occupy a position between the main rails and consist of a yoke having side frames *I I*, end frames *k*, and a depending yoke portion *L*, which normally occupies a position below the road-bed or surface, and the rear frames of said buffers rest against coiled springs secured in a buffer-sill resting against the inner side of each track and rigidly and securely held between said tracks, so that should a car continue on the main track until it shall have passed the siding track and reached the arrow 1, Fig. 2, it will contact with the buffer located in advance of the gate, and, if possible to continue forward or onward, will next contact with the heavy iron gate arranged transversely across the track, and, if possible to continue its onward course, will then be compelled to force away said gate, together with the buffer arranged immediately in the rear of the same, which is highly improbable and practically impossible.

It will be understood that where two gates are utilized the gearing carried thereby is substantially a duplicate one of the other. Nevertheless the gate *A*, for instance, controls the movement of its duplicate, since the operator or attendant swings only the heavy iron gate *A*, which, during its movement or partial rotation, causes the rod *h* to engage with the duplicate gear-wheel on the opposite gate, thereby reciprocating the rod and thus causing the said duplicate gate to swing or partially rotate until it shall have assumed a position in a line in a transverse plane with the controlling-gate. It will be perceived also that the cables leading from the pulley-wheel on the main post of the gate run around pulleys or sheaves located below the platform *m* of the respective buffers, and since the normal position of the buffers is below or on a level with the road-bed when the gate or gates are opened when the said gate or gates revolve or partially revolve and assume the position indicated in Fig. 2 the said pulley will wind upon the respective cables leading to the buffers, and thereby cause the buffers to assume the position shown by dotted lines, Fig. 4, and occupy such position as to prevent the onward course of the car when the gate or gates are closed, and as soon as the gates reach a closed or shut position the circuit leading from any suitable generating plant will be closed, the danger-lights flashed

into service, and the alarm *n* caused to ring continuously and sound an alarm until the circuit is again broken by the return of the gates or opening of the gates to their normal position.

By the improvements hereinbefore referred to and illustrated by the accompanying drawings it will readily be seen that by a partial rotation of the gate to such an extent as will cause the same to stand transversely across the track of the railroad grade crossing or other approach which is normally dangerous to the traveling public simultaneously the buffers will be lifted to a position ready for service, the switch-point will be manipulated, if desired, the spring-bolt will be acted upon, the lights flashed into service, the alarm given, and a duplicate gate, provided with similar mechanism, will be operated, thereby increasing the safety desired for the protection of life and property.

I desire to be understood that I do not limit myself to the exact details as illustrated in the accompanying drawings, as a slight departure therefrom may be resorted to without departing from the spirit of my invention.

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

1. In a safety device for street and other railways, a swinging gate, the main or pivotal post of which is provided with mechanism to which is connected means for operating buffers located respectively in advance and in the rear of the gate proper, substantially as shown and described.

2. A safety device for street and other railways, comprising a swinging gate, a buffer located immediately in the rear of said gate and serving to act as a stop for the same when the said gate is in a closed position, and a buffer located in advance of the gate, substantially as shown and described.

3. A safety apparatus for street and other railways, comprising a swinging gate, mechanism connected to and leading from the gate-post for operating a spring-bolt, mechanism leading to a buffer in the rear of said gate to lift said buffer, and lifting means leading to a buffer in advance of said gate, substantially as shown and described.

4. The combination with a safety apparatus for street-railways, of a swinging gate the main post of which is provided with a cog-wheel, a rod gearing with said cog-wheel and leading to a switch-point, whereby said switch-point is operated by the swinging movement of the gate, substantially as shown and described.

5. In combination with a safety apparatus for street and other railways, of a safety-gate, a rod leading therefrom to a switch-point, said rod being provided with an inclined portion at or near its other end, a bell-crank lever connected to said switch-point, the long arm of which contacts with the inclined portion of said rod, whereby when the rod is reciprocated by the swinging movement of the

gate the switch-point will be manipulated, substantially as shown and described.

6. A safety apparatus for street and other railways, comprising a swinging gate, a pulley secured to the main or pivotal post thereof, means connected to said pulley for operating a spring-bolt; means also connected to said pulley for lifting a buffer in the rear of the gate, and mechanism also connected to said pulley for lifting a buffer in advance of the gate, substantially as shown and described.

7. A safety device for street and other railways, comprising a swinging gate, the lower portion of the main post of which is provided with a pulley, connections with said pulley, whereby a buffer in the front and rear of said gate, and a spring-bolt are simultaneously operated, substantially as shown and described.

8. A safety device for street and other railways, comprising a swinging gate, mechanism secured to the lower portion of the main post of said gate, and means connected with said mechanism whereby a spring-bolt is operated and two buffers lifted, one buffer in advance and the other in the rear of the gate, all substantially simultaneously by a partial rotation of the gate, substantially as described.

9. A safety apparatus for street-railways, comprising a swinging gate, buffers connected therewith, one buffer in advance and the other in the rear of the gate, said buffers normally occupying a position substantially flush with

the road-bed but caused to assume an upright or a position above the road-bed by or through the swinging movement of the gate, substantially as described.

10. A safety apparatus for street and other railways, comprising a swinging gate, mechanism connected with the main post thereof for operating buffers, one buffer being arranged in advance and the other in the rear of said gate, and mechanism also connected with said post and gate for simultaneously sounding an alarm and displaying danger-signals when the gate shall have assumed the closed position, substantially as described.

11. In an apparatus for street and other railways, a swinging gate, means connecting the main post thereof with one or more buffers, said buffers being provided with a depending yoke portion normally occupying a position below the road-bed or surface, substantially as shown and described.

12. An apparatus for street and other railways, comprising a swinging gate, a pivotal post, mechanism secured to the lower portion of said post, and means connecting the lower portion of the post with two buffers, a spring-bolt, and a duplicate gate respectively, substantially as shown and described.

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

FRANK DOWD.

Witnesses:

CARRIE L. ACKER,
HARRY Y. DAVIS.