(No Model.) 2 Sheets—Sheet 1.

J. FRYSINGER.

AUTOMATIC RAILWAY TRAIN ARRESTER.

No. 492,154. Patented Feb. 21, 1893.

Fig. 1.

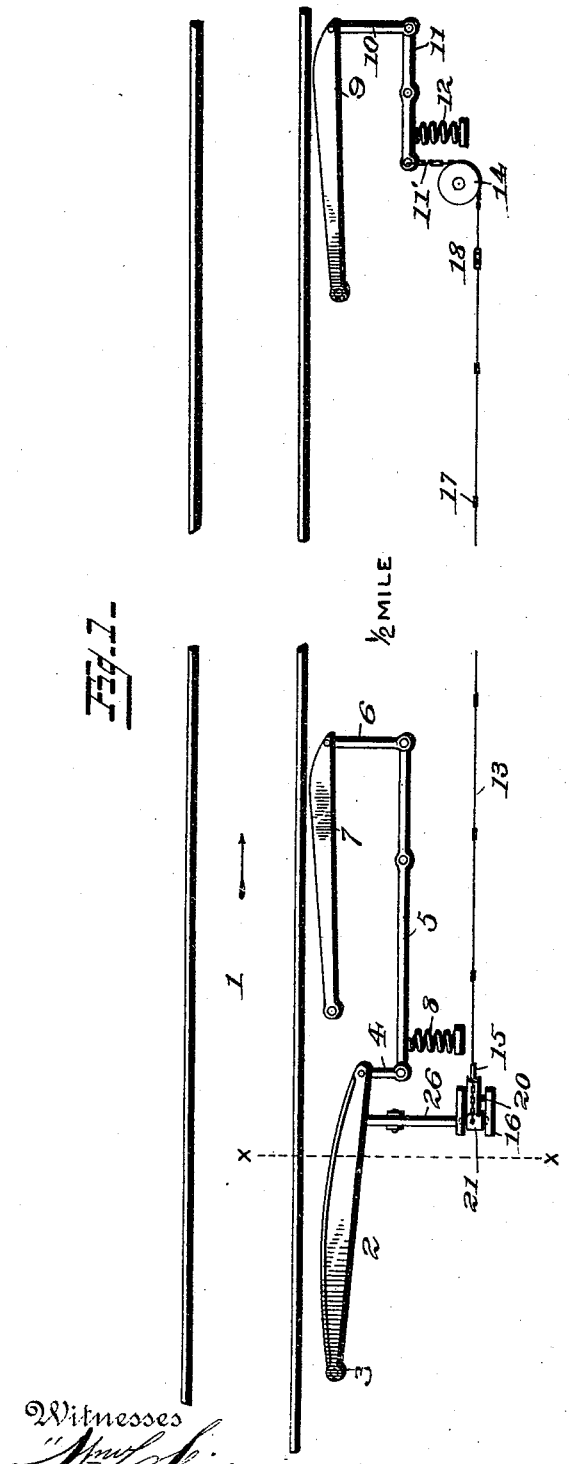
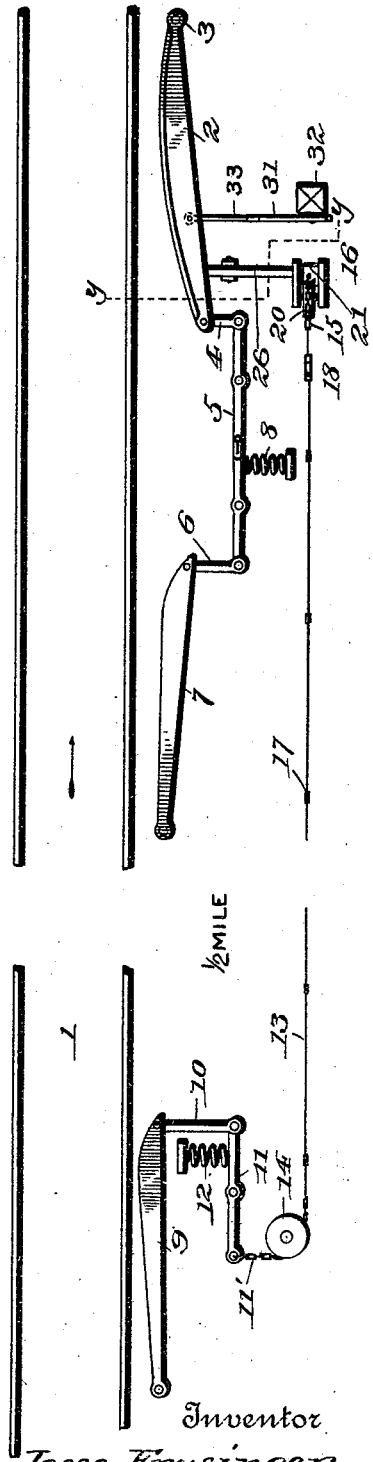


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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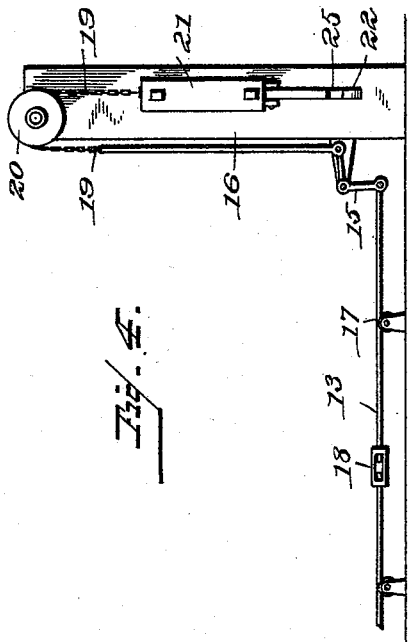

Fig. 4.

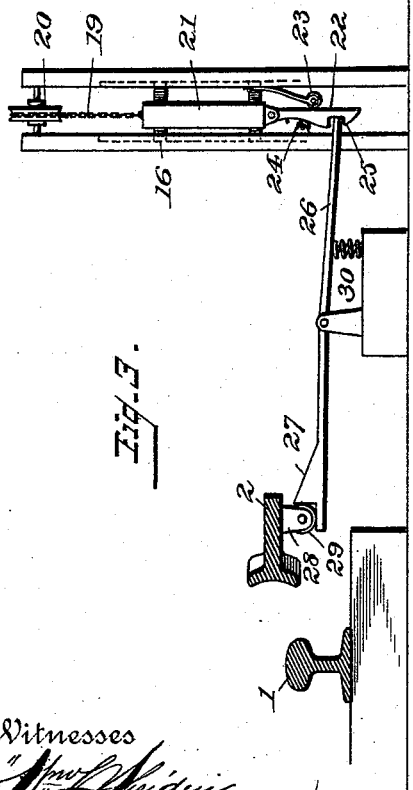

Fig. 3.

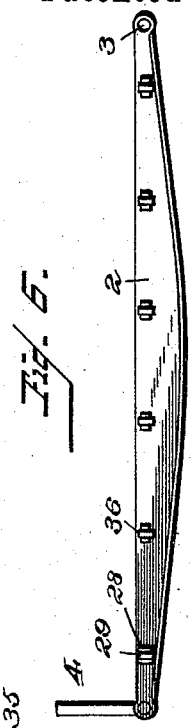

Fig. 6.

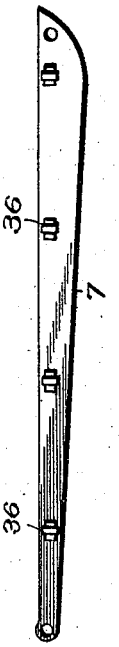

Fig. 7.

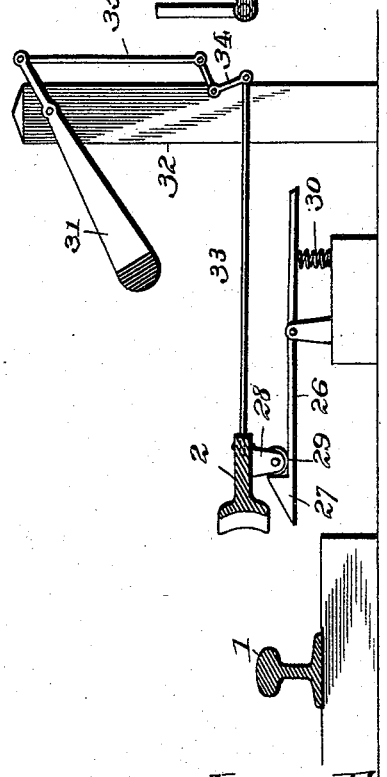

Fig. 5.

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AUTOMATIC RAILWAY-TRAIN ARRESTER.

SPECIFICATION forming part of Letters Patent No. 492,154, dated February 21, 1893.

Application filed August 12, 1892. Serial No. 442,882. (No model.)

To all whom it may concern:

Be it known that I, JESSE FRYSINGER, a citizen of the United States, residing at Hanover, in the county of York and State of Pennsylvania, have invented certain new and useful Improvements in Automatic Railway-Train Arresters; and I do hereby 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.

My invention relates to certain new and useful improvements in automatic railway train arresters, and more particularly to certain improvements in minor details of construction of a like invention filed by me in the United States Patent Office, August 2, 1892, Serial No. 441,955, and has for its object broadly to prevent collisions between two trains running upon a single track.

More specifically the invention consists in means for keeping one train a predetermined distance behind the preceding one, thereby preventing rear collision, and for stopping trains when running toward each other at such distances as to prevent front collisions.

A further object is to display visible danger signals which may be heeded by the engineer to prevent collisions.

The invention further consists in certain details of construction and combinations of parts, all as more fully hereinafter described, shown in the drawings and then pointed out in the claims.

Referring to the drawings—Figure 1 is a plan view of a railway track showing the apparatus for preventing rear collisions. Fig. 2 is a similar view showing similar apparatus for preventing front collisions. Fig. 3 is a view on the line *x*—*x* Fig. 1, looking in the direction of the arrow, showing on an enlarged scale the mechanism for locking and unlocking the contact-bar. Fig. 4 is a side elevation of the same, one of the upright guides being removed. Fig. 5 is a view on the line *y*—*y* of Fig. 2, looking in the direction of the arrow, showing also the manner of connecting the visible signal boards with the contact-bar. Fig. 6 is a bottom plan view of the contact-bar. Fig. 7 is a similar view of one of the contact-plates.

I will first describe the track apparatus for preventing rear collisions as shown in Fig. 1. At the proper distance from the railway track 1, is a contact-bar 2, pivoted at one end as at 3. This contact-bar is double-inclined; its widest part being in the center and gradually tapering on a slight curve or straight line toward each end, its inner or contact face being preferably widened or grooved as seen most clearly in Fig. 3. For the use at curves the contact-bar 2, may be made the proper shape to perform the same work as the convexity does on straight track. A short link 4, connects the free end of the contact-bar 2, with one end of a lever 5, the other end of said lever being connected by a link 6, to the free end of a pivoted contact-plate 7. Spring 8, drawing upon lever 5, normally holds the contact-face of bar 2, away from the track and contact-plate 7, near the track.

Situated at a distance from the parts just described, preferably about half a mile, is a second contact-plate 9, the free end of which is connected by a link 10, with one end of a lever 11. A spring 12, holds said plate at its farthest throw toward the rail. Secured to the free end of lever 11, is a chain 11′, said chain after passing over a guide pulley 14, is secured to one end of a distance wire 13, which follows the line of the track to a point about opposite the end of the contact-bar 2, and is secured to one end of a bell-crank lever 15, secured to one of the posts 16, as seen most clearly in Fig. 4. Small grooved rollers 17, support the distance wire 13, and any slack in the same is taken up by turn-buckles 18. Secured to the free end of the bell-crank lever 15, is a continuation of the distance wire 13, which terminates in a chain 19, which, passing over a grooved pulley 20, is secured to a weight 21, working in suitable guides or ways in the posts 16.

Pivotally connected to the lower end of weight 21, is a catch 22, upon the rear straight face of which bears a spring actuated roller 23, the front face of said catch being substantially cam shaped and bearing against a friction roller 24. A notch 25, in the front face of the catch 22, receives one end of a pivoted lever 26, the other end of said lever having a head or detent 27, for engaging a lug 28, on the under face of the contact-bar 2. A friction wheel 29, allows bar 2, to ride freely over

the head of lever 26. The tension of the spring 30, is sufficient to cause the lever to perform its proper function.

If desired, visible signal boards or lights 31, mounted upon suitable posts 32, may be arranged at proper intervals along the track so as to give the engineer notice whether the track is clear before approaching the contact-bar 2. I have shown said signal in Fig. 5, as connected to the contact-bar 2, through the medium of rod 33, bell-crank lever 34, and rod 35, in such a manner that when the contact-bar is thrown toward the track to stop a train, the signal board will be raised, and will be lowered when said bar is thrown from the track, as will be readily understood.

As shown in Figs. 6 and 7, the contact-bar and contact-plates may be provided on their under faces with rollers or wheels 36, upon which said plates may roll, thus rendering their operation more facile.

The mechanism for preventing front collisions as shown in Fig. 2, is substantially the same as that for preventing rear collisions with the exception that the parts are reversed as to the direction of the train and lever 5, is compound and not single as shown in Fig. 1, consequently the tendency of spring 8, is to move the contact face of bar 2, to the rail rather than away, as in the former case.

The operation of my invention is as follows:—Suppose a train approaching in the direction of the arrow, Fig. 1, a suitable projection on the locomotive or one of the cars will first engage the contact-plate 7, and running along its inclined face will force it away from the track, which action through the medium of the lever 5, will cause the contact-bar 2, to be moved toward the track until the lug 28, rides over the head of the lever 26, and is held in this position as will be understood by an inspection of Fig. 3. The parts now remain in this position until the projection on the locomotive engages plate 9, when through the medium of lever 11, and distance wire 13, weight 21, is raised, rocking lever 26, and releasing contact-bar 2, which will be drawn from the track by the spring 8, thus leaving the track again clear. As catch 22, is raised with the weight 21, the roller 24, acting upon its cam face will force it back against the tension of the spring actuated roller 23, which causes the end of the lever 26, to drop from notch 25, thus leaving the said lever free to work independently of the weight, should occasion require, before the weight drops. But suppose a second train should approach in the same direction before the first train reaches the half mile limit or contact-plate 9. The inclined contact-bar 2, will still be at its farthest throw toward the rail, consequently an alarm mechanism in the cab of the engine, suitably connected, will be sounded by frictional contact with said bar and the engineer warned to stop the train. The train should not proceed until bar 2 is withdrawn from the track, which will be indicated by the signal board 31. It will thus be seen that by means of the mechanism just described, it is impossible for one train to approach within half a mile or any other predetermined distance of the one in advance, thus preventing the danger of rear collisions.

I will now describe the operation of the front collision mechanism:—Suppose a train approaching in the direction of the arrow, Fig. 2. The projection on the engine coming in contact with plate 9, will, through the medium of lever 11, draw on distance wire 13, thus raising the weight 21, and releasing lever 26, which allows spring 8, to throw the contact-bar toward the track, in which position it remains until the train reaches the plate 7, which will be forced outward, thus resetting bar 2, which is held in this position away from the track by the head 27, of lever 26, as seen in Fig. 5. Now if a second train running in the opposite direction, should approach bar 2, after it has been set by the first, the alarm will be sounded or the train stopped as above described.

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

1. In an automatic railway train arrester, the combination with the track arranged in block-system style, of a contact-bar pivoted adjacent to one end of the block, a contact-plate pivoted adjacent to the other end of the block, an intermediate contact-plate connected by interposed mechanism with the contact-bar, a lever carrying a detent located in the path of travel of the said bar, a catch and a distance-wire connecting the end contact-plate and the catch, whereby to actuate the catch to release the detent, or to lock the lever into engagement with the contact-bar.

2. In an automatic railway train arrester, the combination, with the track arranged in block-system style, of a contact-bar and a series of contact-plates pivoted to swing in a plane parallel with the road-bed, interposed spring-pressed mechanism connecting one of the contact-plates with the contact-bar, a spring-pressed lever carrying a detent arranged in the path of travel of the said bar, a weight carrying a catch designed to engage the free end of the lever, and a distance-wire connecting with the end contact-plate and with the weight.

3. In an automatic railway train arrester, the combination with the track arranged in block-system style, of a swinging contact-bar and a series of swinging contact-plates, arranged adjacent to the track, a pivoted spring-pressed lever located adjacent to the bar, links connecting the ends of the lever respectively with the free ends of the contact-bar and one of the contact-plates, a spring-pressed lever carrying a detent arranged in the path of travel of the said bar, a post-supporting a vertically moving weight carrying a swinging-

catch at its lower end and designed to engage the said lever, and a distance-wire connecting with the end contact-plate and actuating the weight.

4. In an automatic railway train arrester, the combination, with the track arranged in block system style, of a swinging contact-bar and a series of swinging contact-plates arranged adjacent to the track, a pivoted spring-pressed lever located adjacent to the bar, links connecting the ends of the lever respectively with the free ends of the contact-bar and one of the plates, a spring-pressed lever arranged approximately at right angles to the track and carrying at one end, a wedge-shaped detent arranged in the path of travel of the said bar, a post supporting a vertically movable weight carrying a swinging spring-pressed catch at its lower end designed to engage the free end of the said lever, a bell-crank lever on the post, a flexible connection uniting the bell-crank lever and the weight, and a distance-wire connecting with the end contact-plate and actuating the catch to engage the spring-pressed lever.

5. In an automatic railway train arrester, the combination, with the track arranged in block-system style, of a swinging contact-bar and a series of swinging contact-plates arranged adjacent to the track, a pivoted spring-pressed lever located adjacent to the bar, mechanism connecting the ends of the lever respectively with the free ends of the contact-bar and one of the contact-plates, a spring-pressed lever carrying at one end a detent arranged in the path of travel of the said bar, a post supporting a vertically movable weight carrying a swinging-catch spring-pressed, having one of its faces substantially cam-shaped and provided with a recess designed to engage the free end of the lever, and a distance-wire connecting with the end contact-plate and actuating the weight.

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

JESSE FRYSINGER.

Witnesses:
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A. M. MACE.