No. 784,900. PATENTED MAR. 14, 1905.

E. DE SENAN.

RAILWAY DANGER SIGNALING DEVICE.

APPLICATION FILED AUG. 15, 1904.

2 SHEETS—SHEET 1.

Fig. 3.

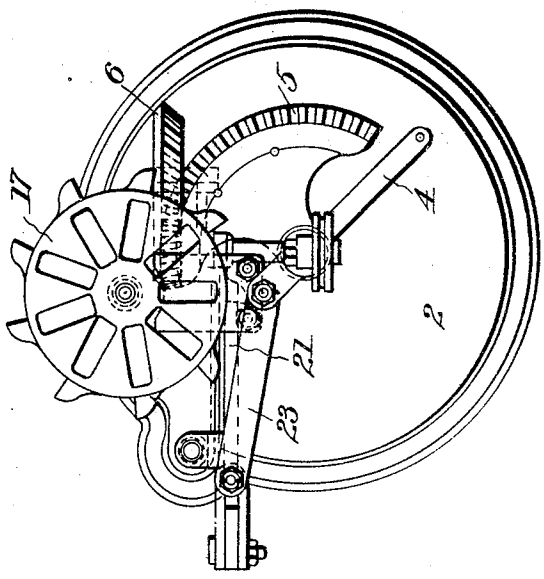
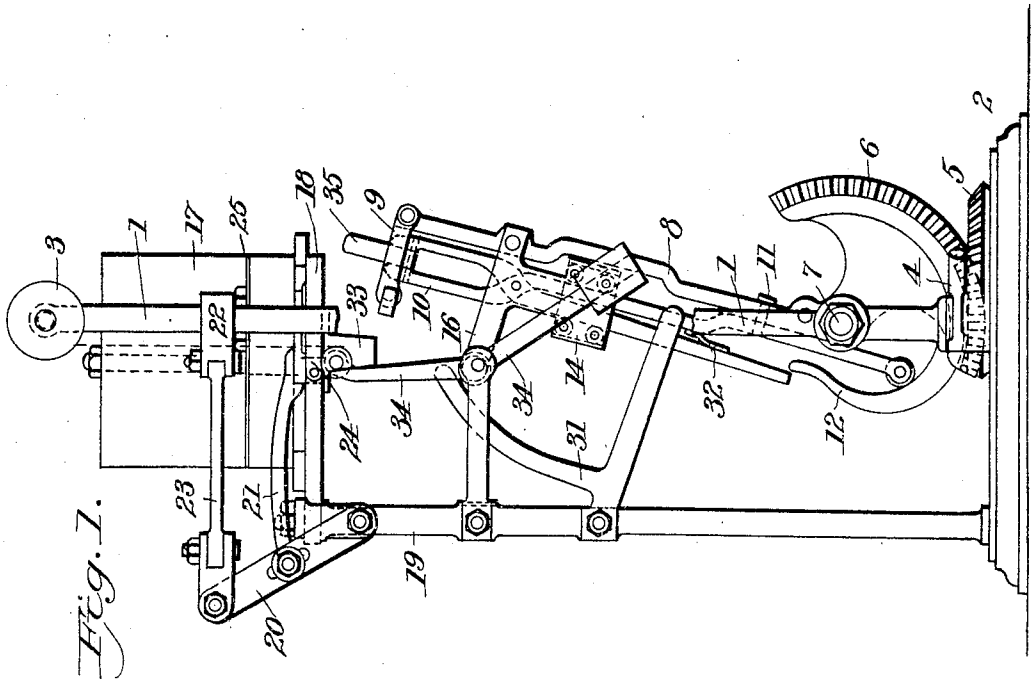


Fig. 1.



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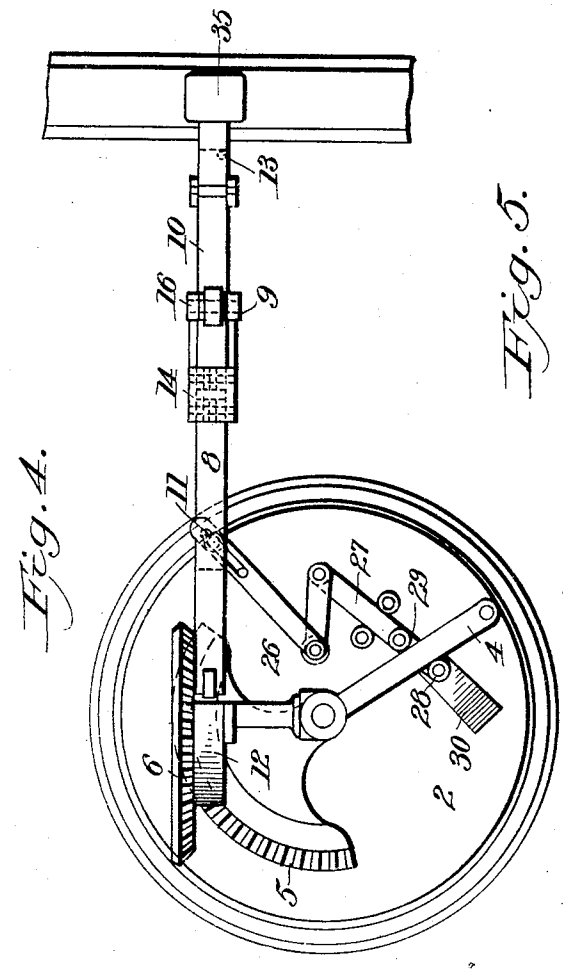

Fig. 4.

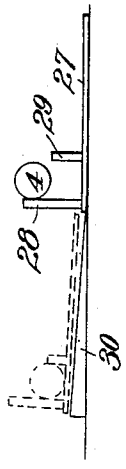

Fig. 5.

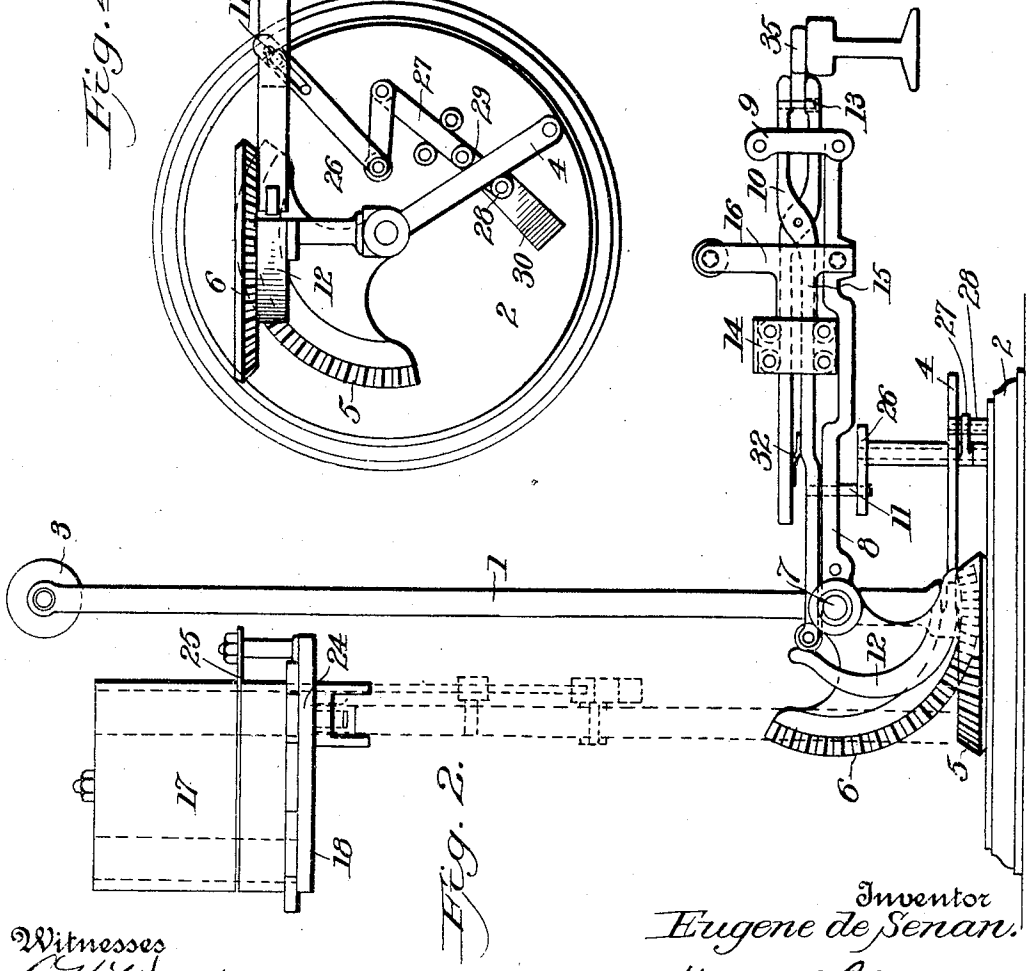

Fig. 2.

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UNITED STATES PATENT OFFICE.

EUGENE DE SENAN, OF CAPE TOWN, CAPE COLONY.

RAILWAY DANGER SIGNALING DEVICE.

SPECIFICATION forming part of Letters Patent No. 784,900, dated March 14, 1905.

Application filed August 15, 1904. Serial No. 220,886.

To all whom it may concern:

Be it known that I, EUGENE DE SENAN, engineer's clerk, of Cape Town, in the district of the Cape, Cape Colony, have invented certain new and useful improvements in mechanical devices to be operated independently as a danger-signal, or in conjunction with other danger-signals, and by which fog-signals or detonators are automatically placed on railway or other rails whenever the danger-signals with which such device is used stand at "danger," and to automatically remove such detonators when such signals are altered to indicate "line clear;" 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.

This invention relates to certain new and useful improvements in train-signals.

The invention has for its object the production of a simple device by means of which a detonating-signal may be automatically placed upon the railroad-track.

A further object is to provide a magazine or drum containing a plurality of detonating-signals and means for automatically delivering the latter.

A further object of the invention is to provide means for displaying a visible signal simultaneously with the placing of a detonating-signal upon the track.

The invention will be hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a front elevation of my improved signal. Fig. 2 is a side elevation thereof. Fig. 3 is a plan. Fig. 4 is a plan with magazine removed. Fig. 5 is an elevation of details.

Referring to the drawings, 1 designates a post or support pivotally revolving on a platform 2 and having its upper end provided with a disk or target 3. The post is rotated upon its pivot by means of an arm or lever, being operated by any suitable means, preferably by wire or rodding, either connected to an existing semaphore or disk signal or leading directly from a signal-station provided with either automatically or manually operated signaling devices adapted to exert a pull and a push upon said wire or rodding. Rigidly fixed on platform 2 is a horizontally-arranged segment 5, with which mesh the teeth of a corresponding vertically-arranged segment 6, rotatably supported upon post 1 by a stud or spindle 7. Rigidly secured to the segment 6, with which it moves, and extending beyond the periphery thereof, is a bar or guide 8, to the upper end of which is fixed a forked bracket 9, which forms a guide for the upper end of one of the branches of a plunger or gripper 10, the lower end of said branch being guided by a pin 11, sliding in a groove in bar 8, said branch or plunger descending to and resting upon the inner side of a cam 12, fixed on stud 7 between segment 6 and post 1. A detonator is received between the upper ends of the plunger, its nipple resting upon the pin 13, which is fixed on the inside of one of the upper members and slides through the other member. This pin is fixed nearer one side than the other, so that when the plunger opens the nipple contained therein, if there is no detonator attached thereto, may fall out clear of the mechanism. Plunger 10 is given a slight reciprocating movement on the bar 8 by means of a cam 12, which moves in a circular direction concentric with the motion of segment 6. The members forming the plunger 10 are operated by means of the ball-bearing slide or ring 14 and, if required, by the projection 15 on the under side of the bracket 16. The detonators are placed in a drum or magazine 17, mounted to revolve upon a suitable base 18, supported by a post 19, adjacent to the post 1. Said drum or magazine is operated by a step-by-step movement by means of a lever 20 and a pawl 21, which engage with projections arranged around the lower part of the drum. The lever 20 receives its motion from the post by means of a lever 22 and a bar 23, which having a universal joint is enabled to change the direction of the motion. The rotation of the post 1 in any one direction will thus effect a corresponding motion of the drum 17 in the same direction through the rocking of pawl 21, the return of post 1, however, to its normal position not effecting the motion of the drum.

Drum 17 is provided with a series of compartments, each adapted to receive any number of detonators. The base 18 is provided with a trap-door, with which the compartments of drum 17 are adapted to register in succession, said trap-door being held normally closed by the detonator within the branches of the plunger. To prevent more than one detonator falling through the trap-door at once, drum 17 is made in two parts, the lower one being just the height of the detonator and its nipple, a thin sheet of metal 25 of sufficient size to cover one of the openings in the drum being fixed between the two parts in such manner that it does not prevent the drum from rotating. To insure the plunger 10 keeping clear of any projections on the passing train, engine, truck, &c., a crank-lever 26 may be arranged on the platform 2 in such a position that when the arm 4 has traveled through a certain angle the pin 11 on the bar 8 engages in a slot in the long arm of said lever 26 and will receive its motion from lever 4 at a corresponding period, when lever 4 in its final circular motion engages rod 27 and causes plunger 10 to be thrown forward and a detonator to be placed upon the rail. The angle of lever 26 may be made to suit the amount of throw required. Rod 27 must be guided, as shown, so as to cause it to travel in a straight line almost perpendicularly to the plunger in its horizontal position. Rod 27 is provided at its farthest end with two lever-worked vertical projections 28 and 29, projection 28 being higher than projection 29, so that when lever 4 travels out it will engage projection 28, drawing rod 27 up on incline 30. In traveling back lever 4 will now engage projection 29 and leave it when returning to the bottom of the incline. 35 represents a detonating-signal.

In practice, when the signal is set for "danger," either a pull or push, as the case may be, is exerted upon arm or lever 4 by means of the connecting wire or rodding, post 1 is caused to revolve a quarter-turn, simultaneously effecting the rotation or movement of the segment 6 on to the segment 5, causing the arm or bar 8 to assume a horizontal position perpendicular to the rail, plunger 10 having meanwhile been pushed forward by means of cam 12 and crank-lever 26, the detonator being thus brought on to the top of the rail. The opening and closing of the members of plunger 10 is dependent upon the slide 14. As the said plunger moves away from the drum 17 the slide 14 is disengaged from the lower end of lever 31, slides downward by gravity and the further help of projection 15 under bracket 16, thus causing the upper branches of the plunger to close and grasp the nipple of a detonator and hold it tight and well away from drum 17. The parts remain in the position indicated until post 1 is returned to its normal position by the connecting wire or rodding. Upon bar 8 and plunger 10 returning to drum 17 the projection of bracket 16 engages the upper end of lever 31, causing the lower end thereof to engage the slide 14 and move it upward, whereupon a suitable spring 32 placed between the lower members of said plunger will automatically separate the upper end thereof and release the nipple of the detonator. The trap-door 24 acts only when the plunger 10 is unprovided with a detonator. It then drops, allowing another detonator to fall in the space between the upper members of said plunger, a box or wings 33, fixed under base 18, guiding the detonator and preventing its falling on either side on its passage downward. As plunger 10 moves away from drum 17 it is closely followed by the upper end of the weighted lever 34, which lifts up the trap-door, this upper end of said lever 34 having been previously held back by the bracket 9.

The advantages of my improved signal will be at once apparent to those skilled in the art to which it appertains. It will readily be observed that I have produced a simple and inexpensive mechanism, by means of which a detonating-signal may be automatically placed upon a railroad-track and securely held against displacement. It will be further observed that I have provided a simple and efficient magazine adapted to contain a plurality of detonating-signals and means for automatically delivering the latter to the placing mechanism. It will also be noted that my improved signal is capable of employment in connection with ordinary semaphores as well as disk signals.

I claim as my invention—

1. A device of the character described comprising a rotating arm or member, a plunger pivotally supported thereby, means for supplying detonating devices to said plunger, and means for rotating said arm or member, whereby said detonator is placed in position.

2. A device of the character described comprising a rotating arm or member, a plunger formed of articulated members and pivotally mounted on said rotating arm or member, means for supplying detonating devices to said plunger, and means for rotating said arm or member.

3. A device of the character described comprising a rotating arm or member, a plunger formed of articulated members and pivotally mounted on said rotating arm or member, means for supplying detonating devices to said plunger, means for automatically operating the members of said plunger, and means for rotating said arm or member.

4. A device of the character described comprising a rotating arm or member, a plunger carried thereby, means for supplying detonating devices to said plunger, means for rotating said arm and simultaneously reciprocating said plunger longitudinally.

5. A device of the character described comprising a rotating arm or member, pivoted

members carried thereby and forming a plunger, means for supplying detonating devices to said plunger, means for automatically operating the members of said plunger, and means for rotating said arm or member and simultaneously reciprocating said plunger longitudinally.

6. A device of the character described comprising a rotating arm or member, a plunger pivotally supported thereby and formed of articulated members, an automatically-operated slide adapted to control said members, means for supplying detonating devices to said plunger, and means for rotating said arm or member.

7. A device of the character described comprising a rotating arm or member, a plunger carried thereby and formed of articulated members, an automatically-operated slide adapted to control said members, means for supplying detonating devices to said plunger, and means for rotating said arm or member and simultaneously reciprocating said plunger.

8. A device of the character described comprising a reciprocating arm or member, a plunger carried thereby and formed of articulated members, a slide adapted to control said members, means for supplying detonating devices to said plunger, means for rotating said arm or member, and means operated by said arm or member for holding said slide normally elevated.

9. A device of the character described comprising a rotating arm or member, a plunger carried thereby and formed of articulated members, a slide adapted to control said members, means for supplying detonating devices to said plunger, means for rotating said arm or member, means operated by said arm or member for holding said slide normally elevated, a pivoted lever adapted to engage said slide, and means carried by said arm or member for operating said pivoted lever.

10. A device of the character described comprising a rotatable post or support, means for rotating the same, an arm or member, means whereby rotation of said post will effect the rotation of said arm or member, a plunger carried by said arm or member, and means for supplying detonating devices to said plunger.

11. A device of the character described comprising a rotatable post or support, means for rotating the same, an arm or member, means whereby the rotation of said post will effect the rotation of said arm or member, a plunger carried by said arm or member, means for supplying detonating devices to said plunger, and means for automatically reciprocating said plunger.

12. A device of the character described comprising a rotatable support, means for rotating the same, a fixed toothed segment, a corresponding segment meshing therewith and carrying an arm or member, a plunger carried thereby, and means for supplying detonating devices to said plunger.

13. A device of the character described comprising a rotatable support, means for rotating the same, a fixed toothed segment, a corresponding segment meshing therewith and carrying an arm or member, a plunger carried thereby, means for supplying detonating devices to said plunger, and a cam fixed between said second segment and said support and adapted to reciprocate said plunger.

14. In a device of the character described, the combination with a rotating arm or member, a plunger pivotally supported thereby, means for operating said plunger, of a drum or magazine, and means for automatically delivering the contents of said drum or magazine to said plunger.

15. In a device of the character described, the combination with a rotating arm or member, a plunger pivotally supported thereby, and means for operating said plunger, of a drum or magazine, a support therefor having a trap-door to coincide with said plunger, and means for automatically closing said trap-door as said plunger moves away therefrom.

16. In a device of the character described, the combination with a rotating arm or member, a plunger pivotally supported thereby, and means for operating said plunger, of a drum or magazine, a support therefor having a trap-door to coincide with said plunger, means for automatically closing said trap-door and simultaneously moving said drum or magazine as said plunger moves from the trap-door.

17. In a device of the character described the combination with a rotating arm or member, a plunger carried thereby and means for operating said plunger, of a drum or magazine, a support therefor having a trap adapted to coincide with said plunger, and a weighted lever having one end adapted to engage and close said trap as said plunger moves away therefrom.

18. In a device of the character described, the combination with a rotating arm or member, a plunger carried thereby, and means for operating said plunger, of a drum or magazine, means for delivering the contents of said drum or magazine to said plunger, a pawl adapted to revolve said drum or magazine and means for operating said pawl.

19. In a device of the character described, the combination with a rotating arm or member, a plunger carried thereby, and means for operating said plunger, of a drum or magazine, means for delivering the contents of said drum or magazine to said plunger, a pawl adapted to revolve said drum or magazine, a lever connected thereto, and means for reciprocating said lever.

20. In a device of the character described, the combination with a post or support, a ro-

tating arm or member operated thereby and a plunger carried by said arm or member, of a drum or magazine, means for delivering the contents thereof to said plunger, a pawl adapted to revolve said drum or magazine, a lever connected thereto, a horizontal bar and another lever and a bar connecting said first lever with said post or support.

21. A device of the character described comprising a rotatable post or support, a semaphore or target mounted thereon, means for rotating said post or support, an arm or member, means whereby the rotation of said post will effect the rotation of said arm or member, a plunger carried by said arm or member, and means for supplying detonating devices to said plunger.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

EUGENE DE SENAN.

Witnesses:
EDGAR BRINE,
A. C. CARTRIDGE.