No. 648,554. Patented May 1, 1900.

F. DUTCHER.

PYROTECHNIC RAILWAY DANGER SIGNAL.

(Application filed Aug. 10, 1899.)

(No Model.)

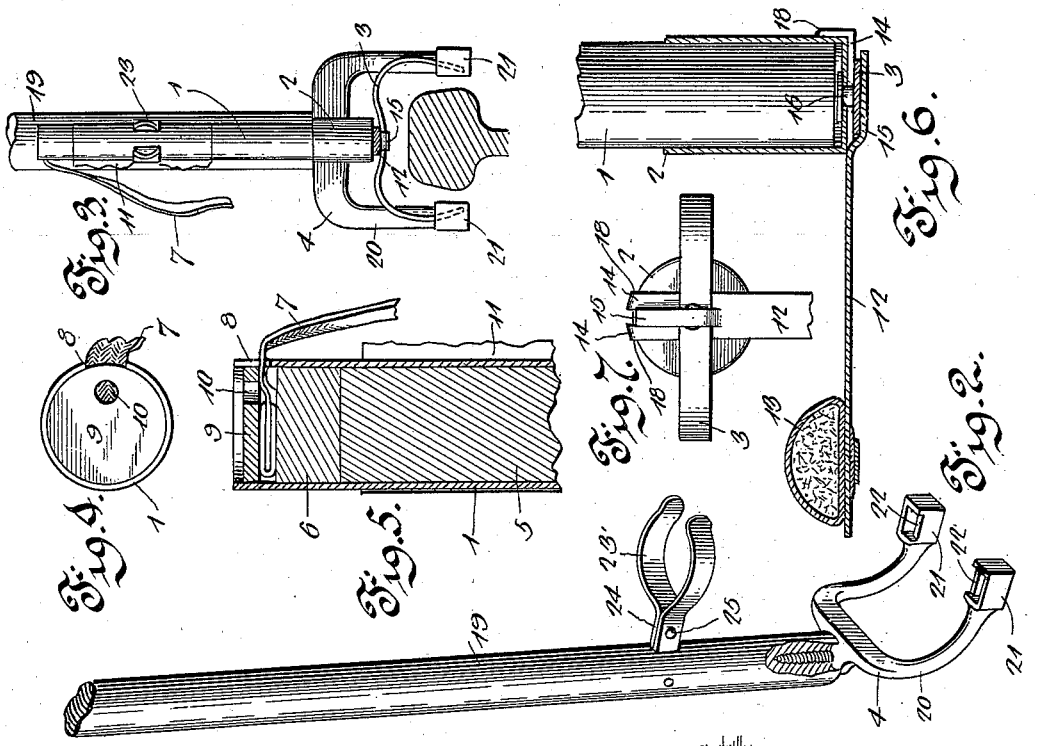
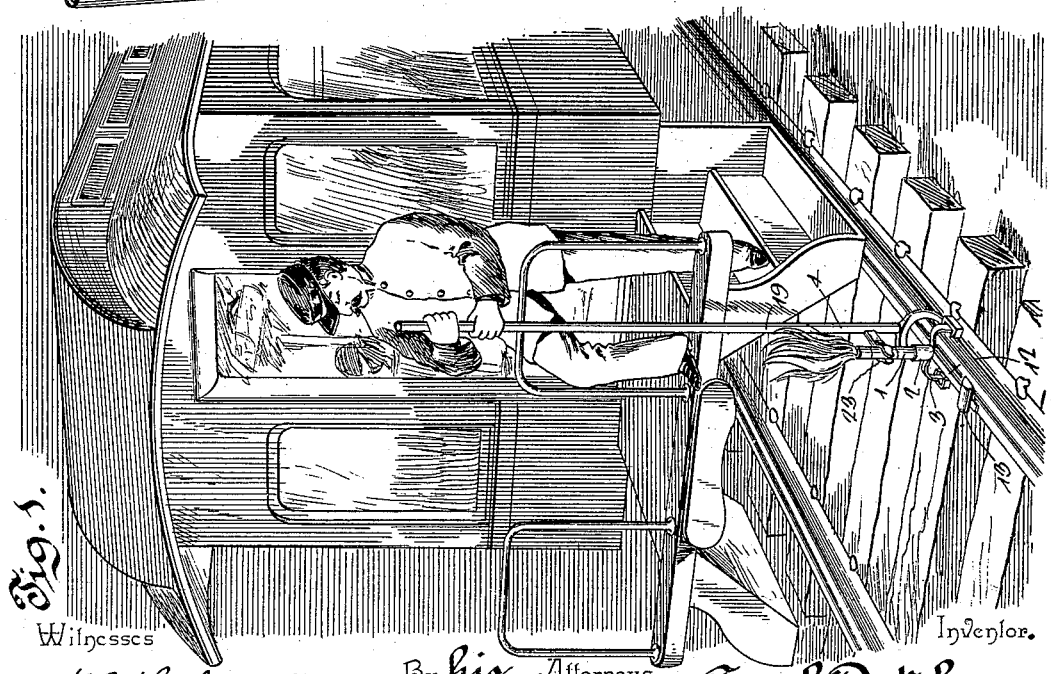


Fig. 1.



Witnesses
J. Paul Culverwell.
H. F. Riley

By his Attorneys,
Frank Dutcher,
C. A. Snow & Co.

Inventor.

UNITED STATES PATENT OFFICE.

FRANK DUTCHER, OF FOSTORIA, OHIO.

PYROTECHNIC RAILWAY DANGER-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 648,554, dated May 1, 1900.

Application filed August 10, 1899. Serial No. 726,804. (No model.)

To all whom it may concern:

Be it known that I, FRANK DUTCHER, a citizen of the United States, residing at Fostoria, in the county of Seneca and State of Ohio, have invented a new and useful Pyrotechnic Railway Danger-Signal, of which the following is a specification.

The invention relates to improvements in pyrotechnic railway danger-signals.

One object of the present invention is to improve the construction of pyrotechnic railway danger-signals and to provide a simple, inexpensive, and efficient device capable of enabling a torch and a torpedo to be fastened to one of the rails of the track from a moving train, whereby the torch will be displayed to great advantage and the torpedo will be in position to be exploded by the wheels of another train.

Another object of the invention is to enable the torch to be readily ignited and to prevent the same from being accidentally lighted.

The invention consists in the construction and novel combination and arrangement of parts, hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

In the drawings, Figure 1 is a perspective view of a pyrotechnic signal and a device for applying the same to a rail. Fig. 2 is a perspective view of the signal-adjusting device. Fig. 3 is an elevation, partly in section, illustrating the manner of adjusting the signal to a rail. Figs. 4 and 5 are detail views of the upper portion of the torch. Fig. 6 is a longitudinal sectional view of the lower portion of the signal. Fig. 7 is a reverse plan view of the signal.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates a torch consisting of a paper shell or tube, glued or otherwise secured within a metal ferrule 2, which is riveted or otherwise secured to a resilient clamp 3, and the latter consists of a spring centrally attached to the bottom of the ferrule and adapted to embrace the head of a rail, as clearly indicated in Fig. 3 of the accompanying drawings. The sides of the resilient caps are spread by a signal-adjusting device 4 in applying the signal to a rail, and after the clamp 3 is in position for engaging the head of a rail its sides are automatically released, as hereinafter described, to cause them to grip the said rail.

The torch is filled with a suitable chemical compound, as indicated at 5, for giving a red or other light, and this chemical compound extends to within a short distance of the upper end of the tube to provide a space for a chemical plug 6, of inflammable material, which is ignited by a tape 7, extending through a slot 8 of one side of the tube and provided at its inner portion with a suitable fulminate. The inner portion of the tape is held against the chemical plug 6 by a wad 9 to produce the necessary friction for igniting the torch when the tape is withdrawn from the tube, and the said wad is provided with an opening 10, forming a vent and adapted to permit the necessary access of air to support the combustion. The free end portion of the tape is secured to the exterior of the tube by a paper band or label 11, which prevents the tape from becoming accidentally withdrawn from the tube. The outer extremity of the tape is extended beyond the band or label to enable it to be readily grasped by the operator in freeing it from the said band or label.

Extending from the lower end of the torch is a horizontally-disposed metal strip 12, forming an arm and supporting a torpedo 13. The inner end of the metal strip is split longitudinally to provide a pair of upper tongues 14 and a lower tongue 15. The upper tongues are spaced apart and are adapted to straddle the rivet 16, which secures the clamp to the ferrule 2, and the lower tongue 15, which is centrally arranged, extends beneath the central portion of the clamp. The upper spaced tongues 14 are interposed between the clamp and the bottom of the ferrule, and their terminals 18 may be bent upward against the ferrule, as clearly illustrated in Fig. 6 of the accompanying drawings. By this construction the metal strip is detachably secured to the torch. The outer end of the strip extends through an opening of the bottom of the torpedo 13, which lies upon the top of the rail in position to be exploded by the wheels of a train. The torpedo may be of any de-

sired construction, and the opening for the outer end of the strip is formed in the shell or casing of the same.

The signal-adjusting device consists of a rod or handle 19 and a head 20, forming a fork and provided at the outer ends of the sides thereof with upright sockets 21, arranged to receive the ends of the clamp, whereby the same is held open, as illustrated in Fig. 3 of the accompanying drawings, while it is being placed on a rail. The inner walls of the sockets 21 are recessed or cut away at 22 to facilitate the disengagement of the clamp, and as the sides thereof are shorter than the height of the rail and the sides of the fork are longer than the same it will be apparent that the signal will be fastened to the rail when the adjusting device and the clamp are thrust over the head of the same. This operation may be performed from the rear of the train while the same is in motion, and the torch is supported in an upright position to prevent it from being extinguished, while it is being applied to the rail, by means of a clip 23, mounted on the handle at a point above the clamp 3 and the head 20. The clip 23 consists of a strip of resilient metal doubled on itself to form a shank 24 and having curved outer portions forming jaws for engaging the torch, the terminals of the jaws being flared outwardly to enable the torch to be readily introduced into the clip. The shank, which has its sides connected at the inner ends of the jaws by a rivet 25, is secured in a slot of the rod or handle by a suitable fastening device.

The invention has the following advantages: The adjusting device, which is simple and comparatively inexpensive in construction, is adapted to support a torch in an upright position, and it is capable of fastening the same to a rail while the train is in motion. The torch, by being secured to the top of a rail, burns to greater advantage than when it is thrown upon the cross-ties or into a ditch, and the torpedo is simultaneously placed in position to be exploded by the wheels of a train. The torch is readily ignited by simply pulling the tape or flexible strip outward, and it is prevented from being accidentally lighted. The band or label holds the free portion of the tape or flexible strip, and the end of the latter extends beyond this label and is adapted to be readily grasped and torn away from the label by the operator.

Changes in the form, proportion, size, and the minor details of construction within the scope of the appended claims may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

What is claimed is—

1. In a device of the class described, a torch provided at one side, near its upper edge, with an opening, and having a tape extending through the opening and arranged transversely of the torch and provided with a fulminate, combined with a wad arranged within the torch and holding the tape in frictional engagement with the former, substantially as and for the purpose described.

2. In a device of the class described, a torch provided at one side with an opening and having a tape extending through the same and provided at its inner end with a fulminate, said torch being provided with a wad engaging the tape, and a band or label arranged on the exterior of the torch and holding the outer portion of the tape against the same, substantially as and for the purpose described.

3. A device of the class described comprising a torch, a clamp secured to the lower end of the torch and adapted to engage a rail, an arm extending from the lower end of the torch, and a torpedo mounted on the arm, substantially as described.

4. A device of the class described comprising a torch, a ferrule receiving the same, a clamp riveted to the ferrule, a strip or arm interposed between the ferrule and the clamp and detachably secured to the same, and a torpedo mounted on the arm, substantially as described.

5. A device of the class described comprising a ferrule, a clamp riveted to the ferrule, a metal strip provided at its inner end with longitudinal arms 14 and 15 embracing the clamp, the arms 14 being spaced apart and receiving the rivet between them, a torch arranged within the ferrule, and a torpedo mounted on the strip, substantially as described.

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

FRANK DUTCHER.

Witnesses:
R. L. UNDERWOOD,
A. MOORES.