

No. 643,611.

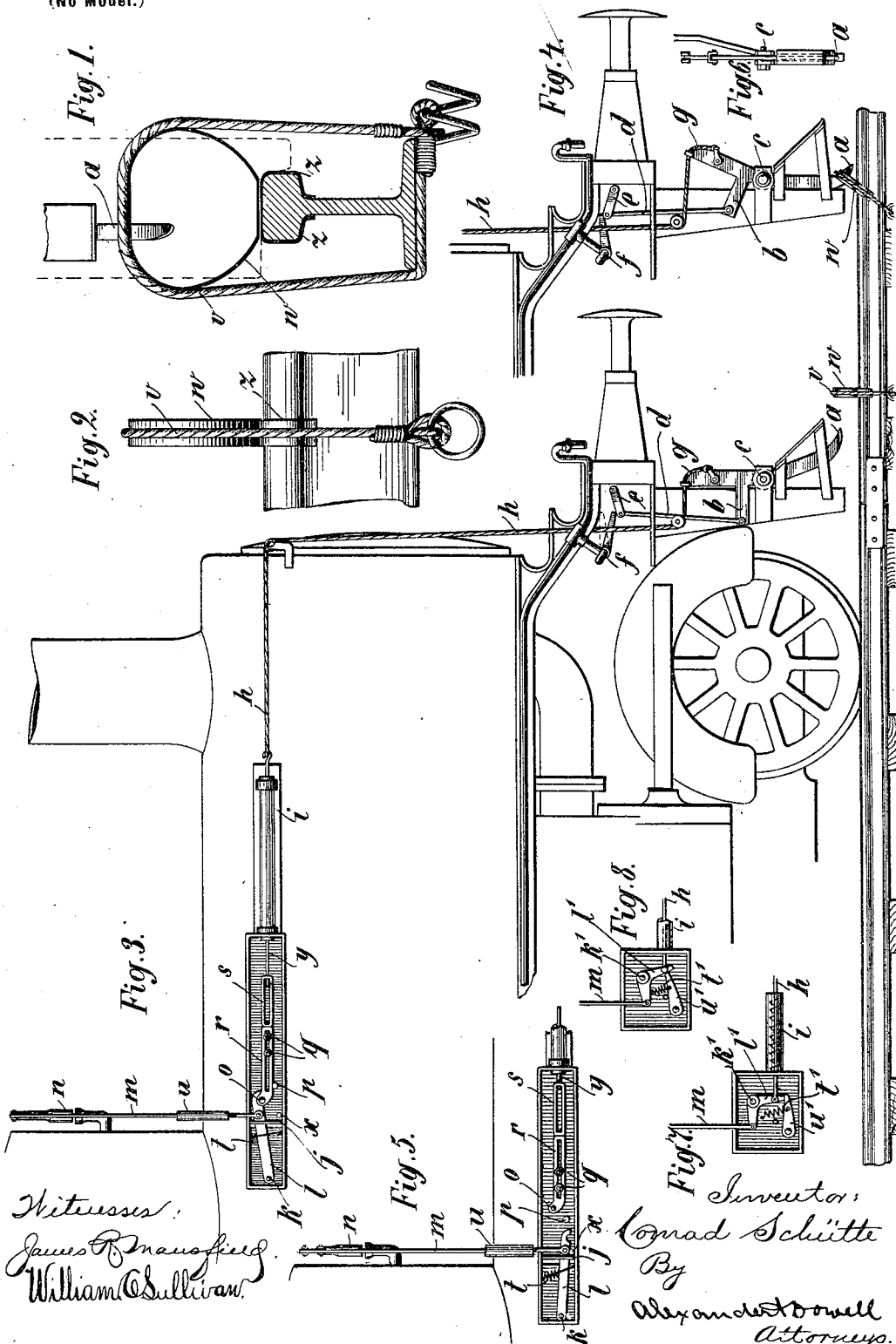
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C. SCHÜTTE.

DEVICE FOR STOPPING RAILWAY TRAINS.

(Application filed Mar. 1, 1899.)

(No Model.)



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UNITED STATES PATENT OFFICE.

CONRAD SCHÜTTE, OF HALLE-ON-THE-SAALE, GERMANY.

DEVICE FOR STOPPING RAILWAY-TRAINS.

SPECIFICATION forming part of Letters Patent No. 643,611, dated February 13, 1900.

Application filed March 1, 1899. Serial No. 707,381. (No model.)

To all whom it may concern:

Be it known that I, CONRAD SCHÜTTE, a subject of the King of Prussia, German Emperor, residing at Halle-on-the-Saale, in the Kingdom of Prussia, German Empire, have invented certain new and useful Improvements in Devices for Stopping Railway-Trains, (for which I have applied for patents in Austria, dated August 19, 1898; in Hungary, dated August 19, 1898, No. 13,510; in France, dated August 18, 1898, No. 280,666; in Belgium, dated August 18, 1898, No. 137,462; in England, dated August 19, 1898, No. 17,909; in Russia, dated September 5, 1898, No. 5,587; in Switzerland, dated January 4, 1899, No. 20,109; in Italy, dated January 7, 1899, and in Germany, dated August 2, 1898,) of which the following is a specification.

This invention relates to apparatus for the prevention of accidents on railways; and it consists of a loop adapted to be attached to the rails, which engages with and operates a lever in order that by the use of suitable intermediate means the brake and danger-signaling device are operated automatically, so that the latter is secured in active position and sounds until it is released by hand. This arrangement is preferably arranged on the locomotive at the side of the driver's station.

When the officer who looks after the line finds any irregularity which may endanger the safety of any passing train, he places on the rail at a suitable distance before such obstruction a loop carried by him. The loop thus placed operates the signaling device when the train passes this place, whereby the steam danger-whistle or other equivalent sounding device (easily distinguished from the ordinary signaling-whistle) is sounded, and the pneumatic or other automatic brake with which the train is provided is also operated. It will be clear that such an audible signal sounded on the locomotive must be heard by the driver, who is often unable to hear the ordinary detonating signals, and, further, that the loop operating the pneumatic brake will cause the train to come to a standstill.

The invention is illustrated in the accompanying drawings.

Figure 1 is a front view of the loop for operating the signaling device. Fig. 2 is a side

view thereof. Fig. 3 illustrates a locomotive provided with the signaling device, the operating-lever being shown in the position of rest. Fig. 4 shows the lever when operated by engagement with the loop. Fig. 5 shows the device for the operation of the danger-whistle. Fig. 6 is a front view of the lever *a*, Fig. 3. Figs. 7 and 8 show in two different positions a modified construction for operating the danger-whistle.

A double lever *a* is arranged at a suitable place on the locomotive on the driver's side—for instance, at *c* on the guard, as shown in the drawings. The upper end of the lever *a* is connected at *g* with connecting-rods or with a wire rope conveniently of about six millimeters thickness, and its length is dimensioned according to the resistance which it is desired that the lever *a* should overcome. The wire rope *h* is led over guiding-rollers and connected to a spiral spring of suitable thickness situated in a tube *i*, through which it communicates with the mechanism for operating the danger-whistle. The latter mechanism consists of a lever *l*, pivoted at *k* and moving in a guide *j*. The oscillating end of the lever *l* has a curved recess. A connecting-rod *m* is connected to the lever *l* and carries a weight *u*. It is also connected with the danger-whistle *n*, which sounds differently from the ordinary steam-whistle.

In order to exert a constant pressure on the lever *l* in its position of rest, a short spiral spring *t* is attached to the upper wall of the box inclosing the mechanism and is guided on a piece of round iron passed through it and connected with the upper and lower sides of the box. A flat slotted sliding rod *r* is situated in front of the lever *l* and serves as a support for the latter. The rod *r* is adapted to slide horizontally on the fixed pins *q*. The end of the rod *r* near the lever *l* fits exactly into the curved recess of the latter and is provided with a handle or knob. It rests on a fixed round pin *p* in order to give the necessary support to the sliding rod *r*. The other end of the rod *r* is rigidly connected with one end of a long link *s*. The other end of the link has a hole through which passes easily a connecting-rod *y*, the end of which is connected to the link *s* by a nut and screw-thread. The rod *y* passes through the spiral spring in

the tube *i*, and its other end is formed as a hook, Fig. 3.

Instead of the mechanism before described with reference to the danger-whistle *n* the device illustrated in Figs. 7 and 8 may be used. In this case a lever *l'*, pivoted at *k'*, is operated by the wire rope *h*, so that the connecting-rod *m* is drawn downward to bring the danger-whistle into action. When the lever *l'* has occupied the position shown in Fig. 8, the locking-arm *u'*, deprived of its rest, is drawn by a spring *t'* against the vertical arm of the angular lever *l'* and prevents a premature return movement of the latter, which might place the danger-whistle out of action.

An arm *h* is situated on the lever *a*, which by a connecting-rod *d* operates a guiding-arm *e*, on which freely rests the handle of the closing-tap *f* of a pneumatic brake.

When the lever *a* is caught by the before-mentioned loop, described more fully hereinafter, it moves from the position shown in Fig. 3 to that shown in Fig. 4. It causes the danger-whistle to sound by the action of the wire rope *h* and intermediate devices, the lever *l*, being deprived of its support in the manner described before, falling on a pin *x*, surrounded by a rubber ring. As long as the lever *l* remains in this position, Fig. 5, the danger-whistle is sounded and ceases only when the driver lifts the lever *l*, draws out the support for the latter by means of the knob *o*, and pushes such support under the lever *l*, Fig. 3.

Simultaneously with the before-mentioned operation of the danger-whistle *n* the tap *f* of the pneumatic brake is opened by the lever *a*, the arm *b*, the sliding rod *d*, and the guiding-arm *e*, Fig. 4.

The lever *a* is operated, as before mentioned, by a loop *v*, attached to the rail and made, preferably, of wire rope of about six millimeters thickness; but it may be made of any other suitable material. Figs. 1 and 2 show how such a loop may be constructed. In the construction shown the wire rope is passed over a ring of strong tin-plate with rounded edges and is soldered thereto to prevent it from sliding off. The lower part of the sheet-metal ring *w* carries two short metal ends or pieces *z*, which are pressed against and below the rail-head and surround the same, so that the ring *w* and wire loop *v* are placed in the right position on the rail and are prevented from moving. The longer end of the open loop is pushed under the rail, and the ends are then connected together in suitable manner. For instance, these ends may be formed as small loops, that of the longer end being a little larger than that of the shorter end, which may be passed through the former, a spiral wire of suitable thickness being then screwed into the loop to prevent the spontaneous loosening of the connection. (See Figs. 1 and 2.) The size of the band *w*, and consequently of the loop *v*, is such as to allow for

the side sway of the lever *a* when approaching the loop.

The loop *v* when folded so as to be carried by the officer is only about the size of the ring of sheet metal *w*. The pieces *z* are folded flat and the wire-rope ends are laid inside the ribbon. Therefore an officer can easily carry a number of loops in his pocket.

When the train provided with this device comes to the loop *v*, the latter engages with the lever *a*, which is moved so that the before-mentioned braking and signaling operations take place. After the lever *a* has obtained its final position by the pulling force of the wire rope, it breaks the loop attachment during the continuation of the motion of the locomotive and throws the loop away.

It is not necessary that the connection between the lever *a* and the signaling and braking mechanism be made in identically the same manner as illustrated in the drawings. Other suitable means may be provided, and the signaling and braking mechanism may also be modified. For instance, in the case of trains provided with pneumatic service-pipes the danger-whistle may be sounded by compressed air instead of by steam by arranging a branch pipe from the air-reservoir to the front of the locomotive over the pneumatic brake-tap *f*, so that the latter and the tap for the danger-whistle may be opened simultaneously. The mechanism described for the danger-whistle provided on trains without pneumatic service may thus be dispensed with.

The lower arm of the lever *a* is guided by a strong curved cap of sheet iron, the upper and lower supports of which are fixed to the guard, so that only the lower rounded end of the lower arm of the double lever *a* protrudes beyond the protecting-shield.

By properly proportioning the relative lengths of the upper and lower arms of the lever *a* and providing a spring of adequate strength in the tube *i* the lever will offer sufficient resistance, as before mentioned, to the accidental operation of the apparatus by slight obstructions on the rails, such as snow in the winter, and will thus be operated only by obstructions which offer a resistance approximately equal to that of the wire loop and which may thus endanger the train, such as telegraph-poles, rocks, and heavy objects placed on the rail with criminal intent. Therefore the apparatus serves also as a warning device as to whether the road is really free from obstacles.

Should snow-shovels, which are going more and more out of use, be considered necessary, they may be arranged behind the shoe or at the side of the latter in divided parts.

In thick weather, when there is danger that the driver may not see the ordinary signals, this apparatus may be used by a signalman stationed near the signal, who attaches the loop to the rail of the signal-stands at "stop"

and removes the loop when the signal indicates that the line is free.

The loop may also be operated mechanically by the ordinary signaling apparatus.

5 For instance, a second catching-lever may be arranged situated on one axle with the lever *a*, but at the side of it—say midway between the rails. A loop may then be operated, so that when the signal indicates “stop” the loop
10 is situated so that it will catch the second lever and operate the danger signaling and braking mechanism through the means connected with the lever *a*. Thus, if desired, two loops may be brought into action simultaneously,
15 one situated on the rail, the other between the rails and operated mechanically, or the latter loop may be used without a loop on the rail. When the signal indicates that the line is free, the connecting means which operate
20 the visible signal also operate the loop so that it moves into a position in which it will not catch the lever on the locomotive.

What I claim, and desire to secure by Letters Patent of the United States, is—

25 1. In an automatic signaling and braking device for railway-trains and similar vehicles, the combination of the signal and braking devices on the train, and the lever thereon located above one of the track-rails, and suitable intermediate connections between said
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lever and the signaling and braking devices; with a loop adapted to be attached to the track-rail and to stand up in position to catch and operate said lever by pulling it downward when the train moves therepast, for the purpose
35 and substantially as described.

2. The combination of the braking or signaling devices on the locomotive and the pivoted lever for operating said devices; with a lever-catching loop adapted to be attached to
40 the rail in a position to engage the lever and band for supporting and distending the loop, for the purpose and substantially as described.

3. The combination in a railway signaling device, of the pivoted lever attached to the locomotive above the rail, having its lower end depending near to the rail; the braking and signaling device and intermediate connections between said device and said lever; with
50 a loop and loop-distending band adapted to be attached to the rail in position to engage and operate the lever, for the purpose and substantially as described.

In testimony whereof I have hereunto set
55 my hand in the presence of two witnesses.

CONRAD SCHÜTTE.

Witnesses:

OSKAR GOLDAMMER,
RUDOLPH FRICKE.