

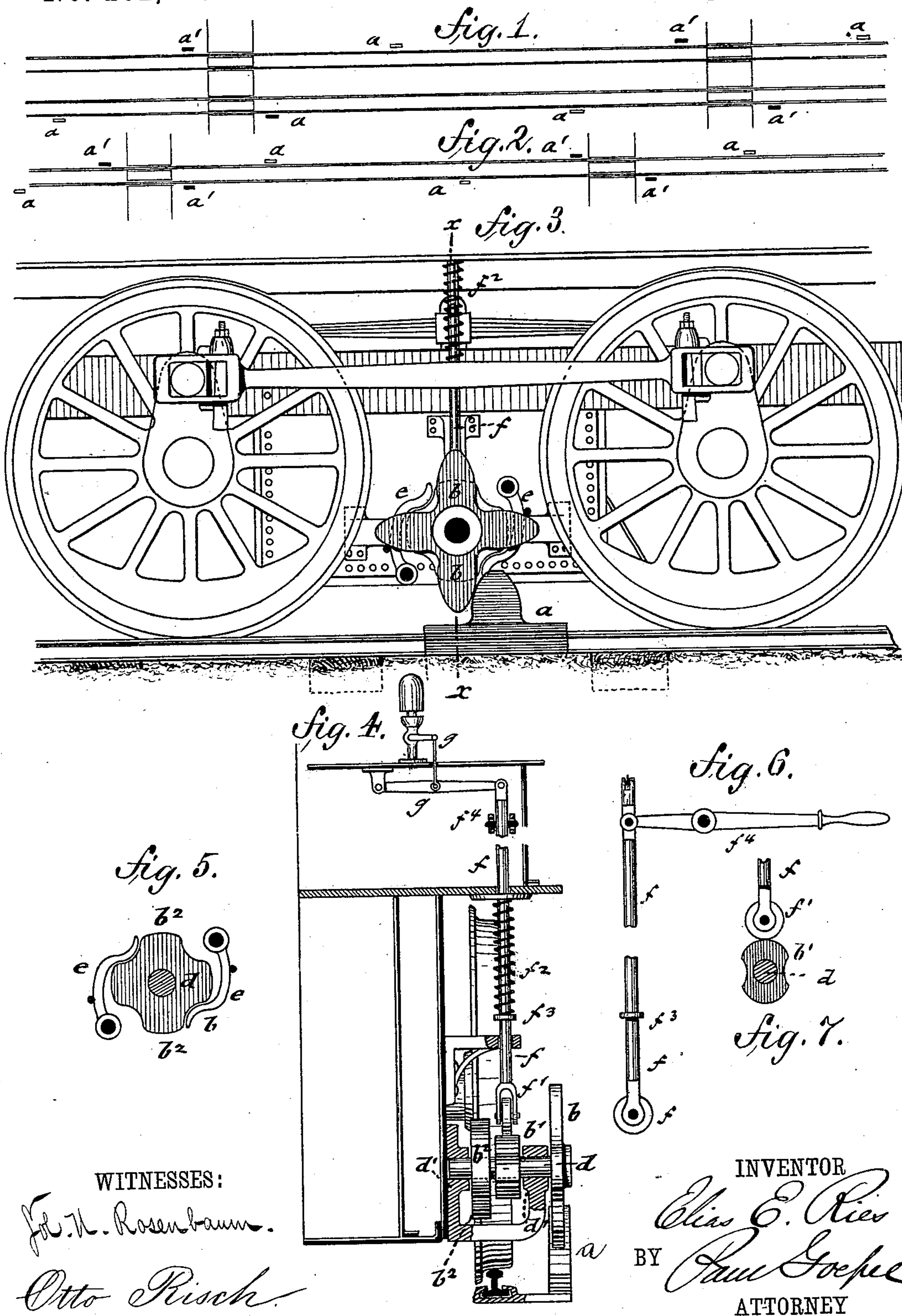
(No Model.)

E. E. RIES.

AUTOMATIC ALARM DEVICE FOR RAILROAD CROSSINGS.

No. 282,776.

Patented Aug. 7, 1883.



UNITED STATES PATENT OFFICE.

ELIAS E. RIES, OF BROOKLYN, NEW YORK.

AUTOMATIC ALARM DEVICE FOR RAILROAD-CROSSINGS.

SPECIFICATION forming part of Letters Patent No. 282,776, dated August 7, 1883.

Application filed August 31, 1882. (No model.)

To all whom it may concern:

Be it known that I, ELIAS E. RIES, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful
5 Improvements in Automatic Alarm Devices for Railroad-Crossings, of which the following is a specification.

This invention relates to an improved automatic alarm or signal device for railroad-crossings, whereby the whistle of the locomotive is automatically blown when the train approaches the crossing, and the sounding of the whistle interrupted when the locomotive has passed the crossing.

15 The invention consists of a suitable mechanism for actuating the whistle, said mechanism being located between the drivers, or at any other suitable points of the locomotive, and thrown in or out of action by projections arranged alongside of the track, one farther, the
20 other nearer, to the crossing, as will appear more fully hereinafter, and finally be pointed out in the claims.

In the accompanying drawings, Figures 1
25 and 2 represent, respectively, a double track and a single track, with the projections arranged in relative position to the crossings for giving the alarm-signal. Fig. 3 is a side view of part of the locomotive with my improved
30 alarm or signaling mechanism arranged thereon, and shown in the act of being operated by one of the projections alongside of the track. Fig. 4 is a side elevation of my improved alarm device, partly in section, on line *x x*, Fig. 3.
35 Figs. 5, 6, and 7 are details of the same.

Similar letters of reference indicate corresponding parts.

My improved alarm-signal device for railway-crossings is intended to be applied to each
40 locomotive at any suitable point of the same, and is operated automatically by sounding the steam-whistle of the same when approaching the crossing. The sounding of the whistle begins at some distance from the crossing, and
45 is discontinued when the locomotive arrives at or near the crossing. For this purpose a projection, *a*, is arranged alongside of the track at a suitable distance from the crossing, and a second projection, *a'*, alongside of the track
50 close to the crossing at either side of the same, as shown in Figs. 1 and 2, in which the disposition of the actuating-stops is shown, respec-

tively, for a double and single track. The projections *a a'* may be made of any suitable shape; preferably, however, in the shape of a spur or
55 tooth of a cog-wheel, as shown in Fig. 3. The projections are either bolted down upon the ties or to the web of the rail, or otherwise supported alongside the track.

The whistle-actuating mechanism proper is
60 composed of three cam-wheels, *b b' b²*, which are keyed to a shaft, *d*, that is supported in bearings *d'*, secured to the fire-box or frame of the locomotive. The outermost cam-wheel, *b*, is provided with four equidistant cams or teeth
65 extending at right angles to each other, and is arranged at such height above the track and at such lateral distance therefrom that one of the cams will engage the projections *a a'* as the train moves past the same and gradually turn
70 the cam-wheel *b* by contact therewith through one-quarter of a revolution, the cam just engaged passing clear over the projection *a*, and placing the next cam or tooth in position to be engaged by the next projection along the track.
75 The innermost cam-wheel, *b²*, is provided in similar manner, like the cam-wheel *b*, with four cams and intermediate depressions, and acted upon at diametrically-opposite sides by friction-springs *e*, which are attached at one end
80 in proper relative position to the cam-wheel *b²* on the locomotive-frame or other support of the whistle-actuating mechanism. The friction-springs *e* serve for the purpose of permitting the cam-wheels *b* and *b²* to be moved
85 through one-fourth of a revolution only, so as to place the next cam of the cam-wheel *b* in position for being engaged by the next following projection *a* or *a'*. As the springs *e* engage on the turning of the cam-wheel *b²* through
90 an angle of ninety degrees the next adjoining depressions, as shown in Fig. 5, and prevent thereby the cam-shaft *d* and its cam-wheels from turning beyond the proper distance by
95 the force of concussion between the teeth of cam-wheel *b* and the projections *a a'*, the intermediate smaller cam-wheel, *b'*, is only provided with two cams and intermediate depressions, and is shown in detail in Fig. 7. This
100 cam-wheel is placed in contact with an anti-friction roller, *f'*, at the lower end of a vertically-guided actuating-rod, *f*, which is forced in downward direction, so that its roller *f'* is always in contact with the cam-wheel *b'*, by a

spiral spring, f^3 , interposed between a fixed collar, f^2 , of the rod f and a guide-collar of the frame, as shown in Fig. 4. The upper end of the vertically-guided rod f is connected by a suitable intermediate lever mechanism, g , with the steam-whistle of the locomotive, so that the steam-supply valve of the frame is opened when the rod f is forced down by the action of its spring f^2 , but closed when, by the next engagement of the cam-wheel b with a projection, a a' , the latter is turned through the second quarter of its revolution, as thereby one of the cams of cam-wheel b' raise the vertical rod f and discontinue the sounding of the steam-whistle. By means of the described position of the cam-wheels of the actuating mechanism the whistle is sounded when a locomotive approaches a crossing, as the outermost cam-wheel, b , is turned by the projection a through one-quarter of a revolution, the actuating-lever mechanism of the whistle being held in position by the cam-wheel b' , so that the whistle continues to blow until the locomotive has passed the crossing and the outer cam-wheel is struck by the stop a' at or near the crossing. This has the effect of throwing the intermediate cam-wheel, b' , into its second position, so that the sounding of the whistle is interrupted.

The parts composing the whistle-actuating mechanism are so constructed as to operate in the same manner whether the locomotive runs forward or backward, the automatical sounding and stopping of the whistle being accomplished in both directions.

As it may sometimes be necessary to throw the whistle out of operation when it is not desired to sound an alarm for any reason, a hand-lever, f^4 , is pivoted at one end to the actuating-rod f , while the opposite end is located at a convenient point in the cab of the locomotive, so that the engineer can, by a slight pressure on the lever f^4 , overcome the resistance of spring f^2 and raise rod f clear of cam-wheel b' , so that the turning of the latter would have no effect on the whistle. The lever f^4 can be kept in this position by any suitable means until the time when the alarm mechanism is to be used. It is obvious that the actuating mechanism has to be so connected with the whistle as not to interfere with the ordinary cord and lever used in sounding the whistle for other purposes.

In place of causing the whistle to be con-

tinuously blown from the moment when the projection farther from the crossing opens the steam-valve of the same up to the moment when the steam-supply is interrupted, the whistle may be blown several times in succession, in which case a number of successive projections have to be arranged along the track.

In this manner an alarm or signal is furnished which is operated automatically and entirely independent of the locomotive engineer, and which gives reliable and timely warning of the approach of a train at such a distance from the crossing that accidents may be avoided.

I do not claim, broadly, the combination of projections arranged alongside of the track, a shaft on the locomotive having radial arms to be engaged by said projections, a cam-wheel upon said shaft, a spring-brake and a lever mechanism operated by the cam to throw the whistle in or out of action.

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

1. In an alarm device for railroad-crossings, the combination of the raised stops or projections a a' , arranged alongside of the track, a cam-wheel, b , keyed to a shaft, d , supported in bearings of a locomotive, cam-wheel b^2 , keyed to shaft d and retained by springs e e , intermediate cam-wheel, b' , keyed also to shafts d , vertically-guided and spring-presser rod f , and intermediate lever mechanism, g , connecting the rod f with the valve of the whistle, substantially as specified.

2. In an alarm device for railroad-crossings, the combination, with raised stops or projections a a' , of toothed cam-wheel b , keyed to a shaft, d , supported in bearings of the locomotive, a cam-wheel, b^2 , on the same shaft, having retaining check-springs e e , an intermediate cam-wheel, b' , a vertically-guided and spring-pressed rod, f , lever mechanism g , for connecting rod f with the steam-whistle, and a hand-lever, f^4 , pivoted to the rod f , for raising the rod f and throwing the alarm mechanism out of action, substantially as specified.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

ELIAS E. RIES.

Witnesses:

PAUL GOEPEL,
SIDNEY MANN.