

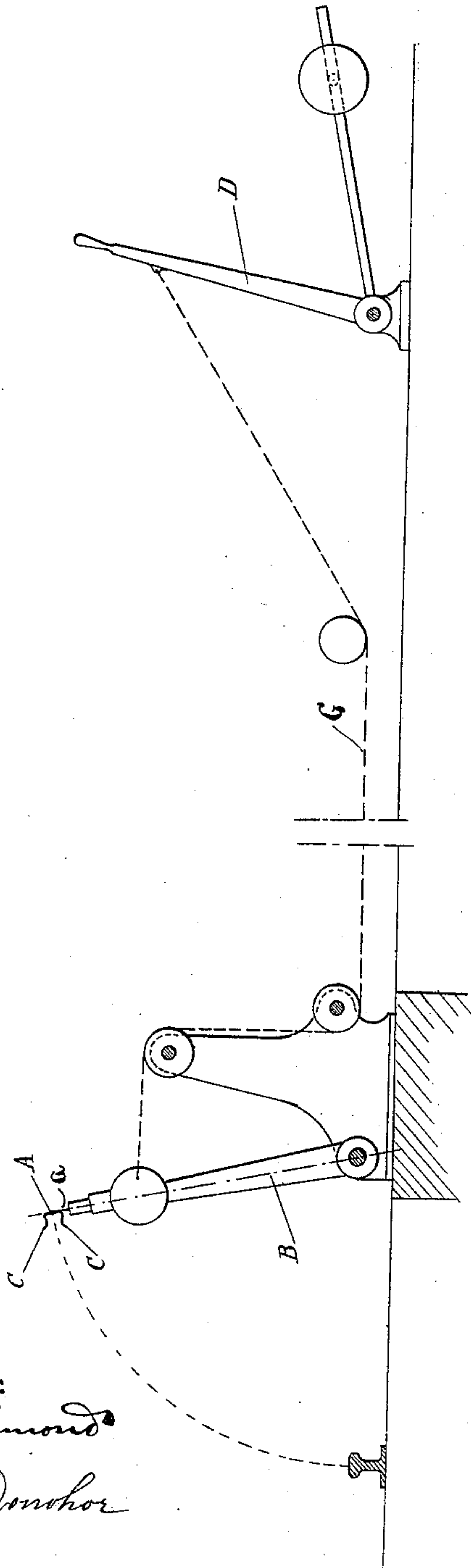
No. 607,754.

P. E. LEGRAND.
RAILWAY SIGNAL ALARM.

Patented July 19, 1898.

(Application filed Mar. 25, 1897.)

(No Model.)



Witnesses:

James Richmond

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UNITED STATES PATENT OFFICE.

PAUL EMILE LEGRAND, OF PAU, FRANCE.

RAILWAY SIGNAL-ALARM.

SPECIFICATION forming part of Letters Patent No. 607,754, dated July 19, 1898.

Application filed March 25, 1897. Serial No. 629,259. (No model.)

To all whom it may concern:

Be it known that I, PAUL EMILE LEGRAND, a citizen of the French Republic, residing at Pau, France, have invented certain new and
5 useful Improvements in Railway Signal-Alarms; 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
10 make and use the same.

This invention relates to a system of alarm-signals designed to prevent collisions of trains; and the means employed for this purpose consist in one or several levers moved
15 from a distance either mechanically or electrically, so as to place on the rails at any distant point an exploding signal-cartridge.

The invention further consists in providing one or more rockets which may be thrown in
20 connection with the motion of the levers.

The use of exploding cartridges on rails is known; but generally these cartridges are placed by hand, which operation presents serious inconveniences. The person employed
25 to perform this work very often arrives too late at the place where the cartridges should be set, either on account of the great distance to be covered, inclement weather, or through gross negligence in the discharge of his duty.
30 It is also quite frequently the case that considerable difficulty is experienced in securing the cartridges on the rail.

In the alarm system forming the object of my invention levers are used to place the cartridges and to throw rockets in a district of
35 sufficient range, in which the collision of trains can be prevented with security and advantage. From a certain point of survey, which may be a watch-tower, sentry-box, &c., situated at any convenient point on the road or
40 in or near the depot, levers placed at any distance on the road are acted upon mechanically or electrically, said levers carrying at their ends cartridges, which after the motion
45 of said levers remain secured to the rails. The operator may, at the same time while operating the levers, cause one or several rockets to be thrown, which are placed near at hand or which may be placed at a distance
50 from this post, in which event the throwing is also effected mechanically or electrically by the motion of the levers.

The invention is illustrated in the annexed drawing, which shows in side elevation a vertical lever in connection with the supporting-
55 frame and a manipulating-lever at the station.

The cartridges A are secured to the end of a lever B, and they are surrounded by clamps C, made of resilient metal, so as to clamp
60 over the head of the rails which retain the cartridges, the latter being secured to the lever by a slight connection only, of any convenient means, so as to be detached automatically and easily from the lever when the
65 same is moved back again. The lever B is operated from a distance by means of a cable or chain guided over suitable pulleys and connected to a hand-lever D, which is placed in the station or at the post of the operator. By
70 turning said lever D the lever B will move down upon the rail, so that the cartridges A, secured in the clamps C, will come in contact with the top of the rail, and by the impetus
75 thus received the clamps will open and grasp the head of the rail, so as to securely retain the cartridges. When the lever is returned to its original position, the cartridges with the clamps will not follow if, for instance, a
80 flexible blade *a*, forming part of the clamps, is simply inserted in a slot in the lever.

I propose to employ several cartridges placed side by side, in order to insure a successful operation in case any one of the cartridges proves defective.

It is evident that in employing vertical le-
85 vers flat cartridges may be used without the clamping devices, which would thus be held in position on the rails until the train had passed the place where the said lever remains in its lowest position. This mode of appli-
90 cation of the system would be preferable in cases where difficulties are met with in the employment of cartridges with clamps.

In connection with the lever system just described I may also employ one or several
95 rockets, which are thrown simultaneously with the motion of the levers. This gives an abundance of security and serves to avert danger when the train has entered the zone of protection before the levers could be op-
100 erated. These rockets are well known in the trade, and therefore need not be described here. They are not claimed by the inventor as an article of manufacture, but only in their

application for the attainment of the object in view. The rockets or fuses are preferably detonating and luminous, and being of different colors can easily be heard and seen from
5 a distance.

The zone or territory for the signaling may be varied at will—say, for instance, four miles—and in the middle the surveying-posts would be placed. At each end of the post a
10 lever for the cartridges would be installed; but at intermediate places between the limit of the zone and the center of the post of survey levers may be used to be manipulated either separately or in conjunction with the
15 first-named levers, so that the cables or chains connect them all and that one manipulation at the station is sufficient to operate all the levers simultaneously.

Having thus described my invention, I
20 claim—

1. In an alarm-signal apparatus, a lever placed at a distance from a station on the road, connected by suitable means with a lever in the station and adapted to be moved
25 thereby, said lever on the road provided with means to loosely receive cartridges or torpe-

does firmly secured in clamps, which are adapted to grasp the rail and to hold the cartridges thereon when said lever is lowered and to detach themselves from the lever, 30 when it returns to its normal position, substantially as described and for the purpose set forth.

2. In a railway signal-alarm, the combination with a manipulating-lever at a terminal station, of one or more vertical levers on the road, connected by a chain or cable with said manipulating-lever and adapted to be operated thereby, said levers on the road provided with cartridges loosely secured thereto in
40 clamps, which are adapted to grasp the rail to hold the cartridges thereon, when said levers are lowered and to detach themselves from the levers when they return to their normal position, substantially as described 45 and for the purpose specified.

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

PAUL EMILE LEGRAND.

Witnesses:

JOSEPH CONTE,
OCTAVE OMBY.