

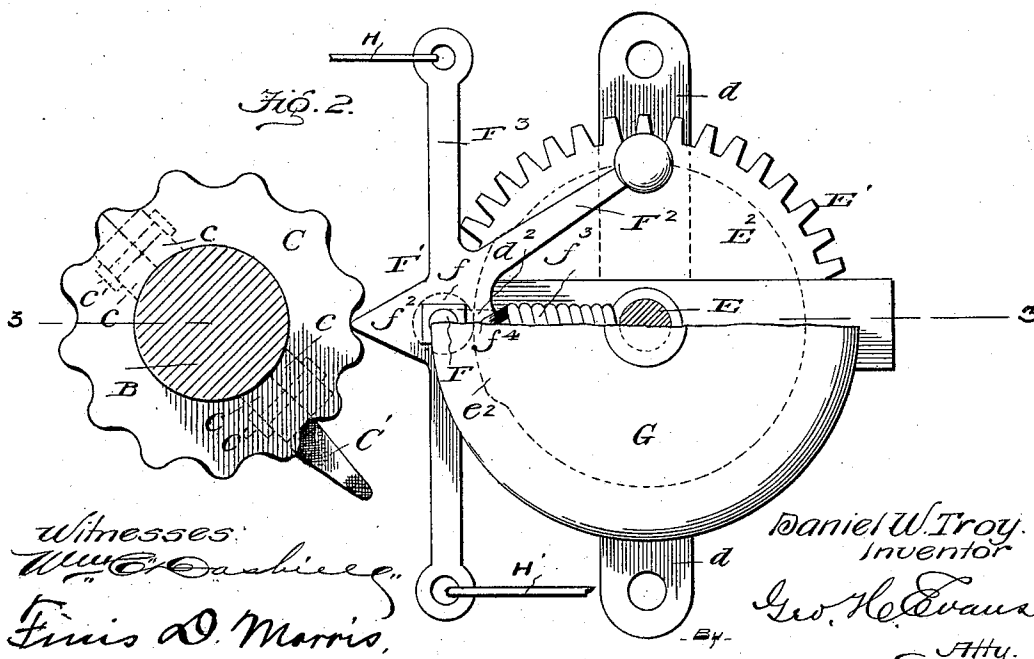
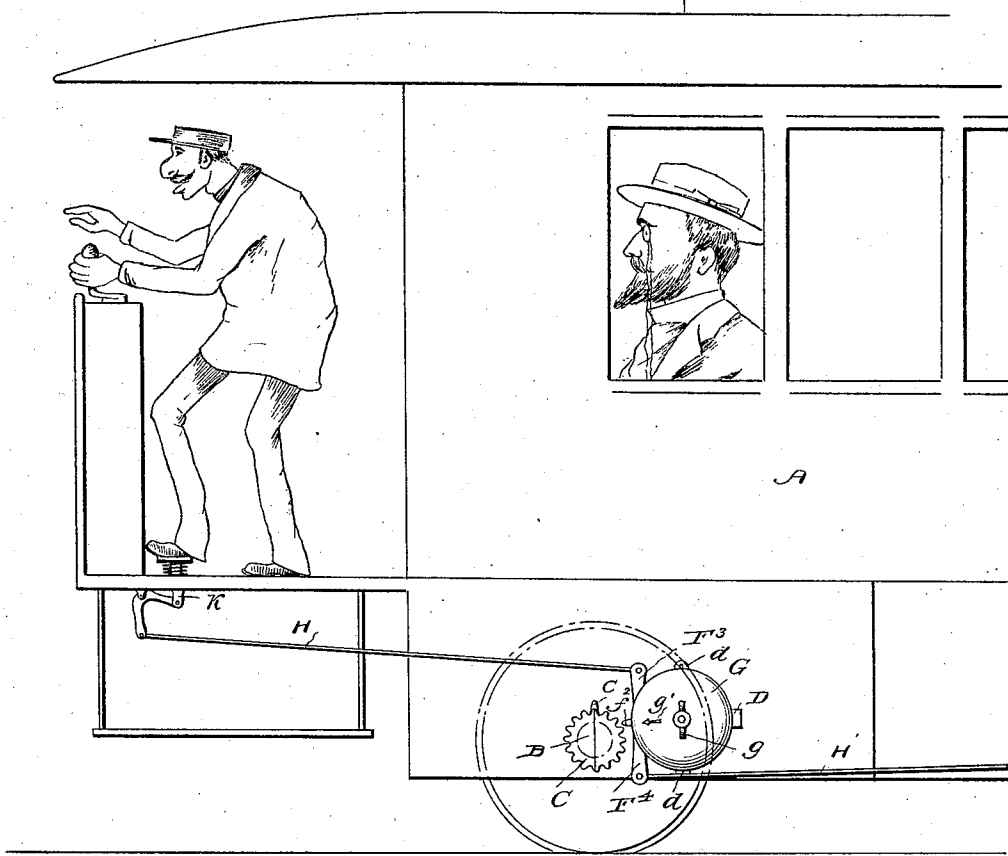
(No Model.)

2 Sheets—Sheet 1.

D. W. TROY.
AUTOMATIC CAR SIGNAL.

No. 574,182.

Fig. 1. Patented Dec. 29, 1896.



UNITED STATES PATENT OFFICE.

DANIEL W. TROY, OF MONTGOMERY, ALABAMA.

AUTOMATIC CAR-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 574,182, dated December 29, 1896.

Application filed September 5, 1896. Serial No. 604,978. (No model.)

To all whom it may concern:

Be it known that I, DANIEL W. TROY, a citizen of the United States, residing at Montgomery, in the county of Montgomery and State of Alabama, have invented certain new and useful Improvements in Automatic Car Signals or Alarms, of which the following specification contains a full, clear, and exact description, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of one end of a street-car provided with my improved signal or alarm. Fig. 2 is a side elevation, partly in section, of the alarm mechanism with the striker thrown outward for action by the toothed wheel on the car-axle. Fig. 3 is a horizontal section on line 3 3 of Fig. 2, the striker being withdrawn by its spring. Fig. 4 is a perspective of the base-plate or attaching-frame. Fig. 5 is a perspective of the striker. Fig. 6 shows a modified form of the same. Fig. 7 is a perspective of the gear and cam for setting the striker in its operative position. Fig. 8 is a detail of the striker-operating gear and its gear-operating projection or tooth. Fig. 9 is an enlarged detail of the stud on which the striker is mounted, a portion of the striker and base-plate being also shown.

My invention relates to an alarm or signal for rapid-transit street-cars.

The objects of the invention are to provide an alarm or signal which will be automatically sounded at the street-crossings; also, to so construct the alarm or signal that it may be sounded at any time by the motorman.

The invention consists, broadly, in a car signal and alarm having an automatically intermittently operated mechanism for giving the signal or alarm when the car approaches a street-crossing; also, in such an automatically-operated signal provided with mechanism by which it may be operated at any time by the motorman.

The invention further consists in the construction and combination of parts herein-after described and claimed.

A is a portion of a modern electric street-car, to the axle B of which is rigidly secured a toothed striker-operating wheel C, formed in two sections having apertured lugs *c c*, through

which pass the bolts *c' c'* for firmly clamping it to the axle. One of these lugs *c* is extended out beyond the periphery of the wheel C to form a gear-operating tooth or projection *C'*.

D is a base-plate formed from a T-shaped piece of strap-iron bent into U shape, the ends of its cross-piece forming apertured attaching-arms *d d*, through which bolts may be passed to secure the base-plate to the motor box or truck of the car, as shown in Fig. 1. The parallel arms of the base-plate are provided with alined apertures *d' d'*, and the free outer end of the arm *D'* of the base-plate D is provided with a longitudinal slot *d²*. (See Fig. 4.)

E is a shaft journaled in the apertures *d'*, and on this shaft, within the base-plate, is fixedly secured a gear-wheel *E'*, adapted to be engaged by the tooth or projection *C'* at every revolution of the car-wheel. On this toothed wheel *E'*, at one side, is secured or formed a cam-wheel *E²*, having a single elongated peripheral cam-surface *e²*, the remaining portion of its periphery describing a plain circle. This wheel *E²* bears on a stud *F*, (or an anti-friction-roller *f* thereon,) mounted to slide in the slot *d²* and forming the pivot of the gong-striker *F'*, adapted to strike the gong *G*, secured on the outer end of the shaft *E*. The striker *F'* is V-shaped and is secured at its angle on the threaded end of the sliding stud *F* by means of a nut *f'*. The angular end *f²* of the striker forms its operating-tooth for engagement by the toothed striker-actuating wheel C on the car-axle, as will be presently more fully described.

The striker *F'* is provided between its two striking-arms *F² F²* with a retractile spring *f³*, which is connected at one end to the aperture *f⁴* in the striker, and its opposite end is looped around the shaft *E*, the tendency of the spring being to retract the striker and hold its axis *F* always in contact with the cam-wheel *E²* for action thereby.

It will be seen that the tooth *c'* of the striker-operating wheel C will strike the gear-wheel *E'* once at every revolution of the axle and turn it the distance of a single tooth. When the wheel *E'* has been given a full revolution, the cam-surface *e²* will force the striker-pivot

F outwardly in the slot d^2 against the action of spring f^3 , so as to bring the end f^2 of the striker into engagement with the rounded teeth of the toothed wheel C. This wheel C will vibrate the striker continuously until the tooth C' rotates the toothed wheel E' a sufficient distance to carry the cam-surface e^2 from behind the axis F, at which instant the spring f^3 will retract the striker and the alarm will become silent. The cam-surface e^2 will be long enough to cause the sounding of the signal or alarm while the car approaches and crosses a street, and the teeth on the wheel E' will be sufficient in number to cause its revolution once in every average city block. Suppose the length of a block to be three hundred feet and the car-wheel to be nine feet in circumference and the number of teeth on the wheel E' to be thirty-three, then thirty-three revolutions of the car-axle would turn the wheel E' once every block to bring the cam-surface e^2 into contact with the striker-axis. Of course the length of the block might vary several yards, but the number of teeth on wheel E' would be arranged for the average block and the length of the cam would be arranged for the average width of crossings plus a length to cause the signal to be operated in approaching and leaving the same.

The gong is provided with a winged nut g and with an indicating mark or arrow g' , which registers with the position of the cam e^2 , so that by grasping the nut g the gong, the shaft E, gear E', and cam e^2 may be rotated to bring the cam into proper position when the car is at the beginning of the run, say at the first crossing, so that the gong will be sounded at each succeeding crossing. Thus the alarm or signal will be given automatically at every crossing and the motorman will not have to be depended on therefor, as heretofore. In order, however, that the alarm may be sounded at intermediate points by the motorman, I provide the striker F' with oppositely-projecting lever-arms F^3 F^4 , which are operatively connected by wires H H' with bell-crank levers I under the car-platforms, (only one being shown,) the said bell-cranks being in turn operated by the spring-retracted push-rods K, mounted in the platform for action by the foot of the motorman, as will be readily understood by referring to Fig. 1 of the drawings. If the foot-operated mechanism is not used, then I employ the striker shown in Fig. 6.

I do not restrict myself to the particular mechanism shown, as it may be considerably varied and modified without departing from the scope of my invention.

What I claim is—

1. An automatic signal or alarm, for street-cars, comprising an alarm or signal proper for attachment to a car, and an intermittently-actuated mechanism for operating the said alarm or signal, automatically from the car-axle, and provided with means for holding it active while the car is passing over a prede-

termined distance, whereby the signal or alarm may be actuated at and across the street-crossings.

2. The combination with the gong or bell provided with a striking device operated automatically at stated intervals from the car-axle, and normally held out of operative connection with said axle, of mechanism actuated automatically from said car-axle to throw the striking device into operative connection therewith, whereby the alarm will be silent between the crossings and sounded automatically at the crossings, substantially as described.

3. The combination with the tooth or projection and the toothed striker-operating wheel carried by the car-axle, of a gong or bell having a normally-retracted striker, a cam for throwing the striker into the path of the said striker-wheel when the car approaches a crossing and retaining it there till the car passes the crossing, and a gear-wheel for operating said cam and located in the path of the said axle-operated tooth or projection to be turned thereby the distance of one tooth for every revolution of the axle, substantially as described.

4. A crossing alarm or signal mechanism for street-cars, comprising a gear-operating tooth or projection and a toothed striker-operating wheel on the car-axle, a gong or bell having a normally-retracted vibrating striker provided with a sliding axis, a cam-wheel engaging said axis and having a cam-surface to push the axis outward and throw the striker into engagement with the toothed striker-operating wheel, and a gear-wheel for operating the cam and located in the path of said gear-operating tooth or projection to be turned thereby the distance of one tooth at every revolution of the car-axle, substantially as described.

5. A crossing alarm or signal mechanism for street-cars, comprising a gear-operating tooth or projection and a toothed striker-operating wheel for the car-axle, a gong, a V-shaped vibrating striker under the gong and secured at its angle to a pivot-stud mounted to slide and turn in a slotted bearing, the angular end of the striker projecting toward said striker-operating wheel, a spring normally withdrawing the striker from said wheel, a shaft parallel with the striker-axis and forming the gong-support, a gear-wheel secured to said shaft and in the path of said gear-operating tooth or projection to be turned thereby the distance of one tooth at every revolution of the car-axle, and a cam-wheel at one side of the gear-wheel engaging the striker stud or pivot and provided with a cam-surface to project the stud and throw the striker into engagement with the striker-operating wheel when the car approaches a crossing, the said spring retracting the striker when the car passes the crossing, substantially as described.

6. The combination with the toothed striker-

operating wheel formed in two sections adapted to be bolted together on the car-axle, one section having a gear-operating tooth or projection extending beyond the periphery of the wheel, of a U-shaped base-plate adapted to be secured to some portion of the car adjacent to the axle, a transverse gong-carrying shaft journaled in the two arms of said base and provided with a gear-wheel engaged by said gear-operating tooth or projection and having a cam-wheel on one side, a vibrating striker having its pivot mounted in the slotted end of one arm of said base and engaged by said cam-wheel for movement thereby to throw the striker into the path of said striker-operating wheel, and a spring connected to the striker to retract it after the cam-surface of the cam-wheel has passed from behind its axis or pivot, substantially as described.

7. The combination with the striker having a sliding axis and means for operating the striker, of a shaft having a cam for throwing the striker into engagement with its operating mechanism and a gear-wheel for operating the cam, means for intermittently operating said gear-wheel, and a gong secured to the shaft and having a thumb-piece and an indicating arrow or mark pointing in the direction of the cam, whereby the shaft and its

gear and cam may be turned by means of the thumb or finger piece on the bell, substantially as set forth.

8. The combination with the alarm or signal and mechanism for automatically sounding the alarm or signal when the car approaches a crossing, of separate and independent mechanism in connection with the sounding device of the alarm or signal, for actuating the same from the ends of the car, by the motorman, at any time, without interfering with the mechanism by which the automatic sounding is effected.

9. The combination with the car, a gong or bell thereon provided with a normally-retracted striker adapted to be operated automatically at stated intervals from the car-axle, mechanism also operated from the car-axle to automatically throw the striker into operative connection with the car-axle, independent lever mechanisms on the car-platform and connected to the striker, and push rods or devices by which the motorman may operate said lever mechanisms and sound the alarm at any time, substantially as described.

DANIEL W. TROY.

Witnesses:

J. E. JOHNSON,
S. W. MITCHELL.