To all whom it may concern:

Be it known that I, James R. Crow, a citizen of the United States, residing at Cleveland, in the county of Bradley and State of Tennessee, have invented certain new and useful Improvements in Automatic Crossing-Signals, of which the following is a specification.

This invention relates to improvements in railway signaling and more specifically to automatic crossing signals.

The object of my invention is to provide an automatic signal that is simple in construction and operation, effective, and one that will not readily get out of order so as to become inoperative. A trip is arranged in such a manner that an approaching train automatically signals its approach. Means are provided for making the signal inoperative with respect to trains going away from the crossing.

A further object of my invention is to provide a visual signal in combination with an audible signal, so that in cases where noises would ordinarily drown out the audible signal, the visual signal will warn of the approaching train. Likewise where deaf persons otherwise would receive no warning of danger, my visual signal is especially effective.

Other objects of this invention not at this time more particularly enumerated, will be clearly understood from the details description and drawings forming a part of this specification.

Furthermore, this invention consists in the novel arrangement and combination of parts more particularly described in the following specification and embodied in the claims appended hereto and forming a part of this application.

Referring now to the drawings, which are merely illustrative of my invention, Figure 1 is a plan view of my signal system. Fig. 2 is a detail elevation of the trip plate mounted showing its operative position with respect to a rail. Fig. 3 is a transverse sectional view of the trip plate and rail taken on the line 3-3 of Fig. 2. Fig. 4 is a side elevation of the signal member. Fig. 5 is a front elevation of the signal member. Fig. 6 is an enlarged fragmental detail sectional view of signal operating mechanism. Fig. 7 is a detail view of the bell striking mechanism.

Referring further to the drawings, wherein reference characters designate similar parts throughout the respective views, 1 designates a railway track and 2 the crossing thereover. At a certain distance from said crossing is mounted a trip plate generally designated by 3, said plate being laterally disposed along the outside of a rail. The end 4, farthest from said crossing, is beveled on top thereof and the opposite end 5 is bent outwardly with respect to the top of the rail alongside of which the trip is mounted. An L-shaped strip 6 is formed along the bottom of said trip plate, said strip extending outwardly and thence downwardly a certain distance. A standard 7 is embedded in the roadbed along the outside of the rail, as shown in Fig. 2, with the upper end thereof pivotally mounted at 8 through the downwardly extending portion of said L-shaped strip and at the beveled end 4 of said strip. A slot 9 is provided through the other end of said strip. A bell-crank lever 10 is fulcrummed in a carrier bearing 11 embedded along the outside of the rail. To the upper end of said lever 10 is an inwardly extending pin which is slidably engaged at 12 within the slot 9. The other end of said lever 10 is provided with an outwardly extending pin 13. A spring member 14 is secured at one end to the lower edge of said strip 6 near the center thereof, the other end of said spring member being secured in the roadbed, and the spring being adapted to maintain the trip plate in operative position against the outside of the rail.

The signal member of my system is located near the crossing. It consists of a standard 15 mounted near the tracks, and supporting a boxing 16, wherein is mounted a bell 17. A shaft 18 is pivotally mounted through the sides of said boxing, said shaft carrying a ratchet wheel 19. A pawl 20, adapted to engage with said ratchet wheel, is pivotally mounted on one end of a bifurcated lever 21, the opposite end of said bifurcated lever being pivotally mounted at 22. A downwardly extending rod 23 is pivotally mounted to said bifurcated lever at a
certain point, said rod extending through a hole 24 in the bottom of said boxing. A spring member 25 interposed between the bottom of said boxing and said bifurcated lever, is adapted to maintain said lever normally in raised position which is regulated by stop 21. The ratchet wheel 19 is provided with a plurality of pins 26 projecting outwardly from one face thereof, said pins being adapted to contact with an arm 27, rigidly mounted on a spring actuated shaft 28, and integral with a bell hammer 29. The spring 30 on said shaft 28 operates to cause the bell hammer to normally engage said bell, said hammer receiving its stroke from action of arm 27 sliding off of pins 26. Mounted on the shaft 18, and on the exterior of said boxing 10 is a wheel 18. Said wheel 18 being adapted to rotate with said shaft 18, thereby providing a visual signal for an approaching train.

To the rod 23 is secured a shock absorber 31 consisting of a metallic housing 82, a rod 30 slidably mounted through the bottom thereof and provided with a head 34 on the inner end thereof. Interposed between said head and the bottom of said housing is a spring member 35. One end of a wire 36 is secured to the lower end of said rod 33 while the other end is secured to a bell-crank lever 37 pivotal mounted near the base of the standard 15 as shown in Fig. 4. To the lower arm of said lever 37 is secured one end of a wire 38, the other end being secured to one arm of a bell-crank lever 39, as shown in Fig. 1. To the other arm of said lever 39 is secured one end of a wire 40, the other end of said wire being secured to the outwardly extending pin 13 of the bell-crank lever 10.

It will be noted that when a train approaches the crossing 2 its wheels will engage the trip plate 8 which, being pivoted to the standard 7, will actuate the bell-crank lever 10. The bell-crank lever 10 in turn will operate the bell-crank lever 39 by means of wire 40, which in turn actuates the bell-crank lever 27 through wire 38, said lever 37 pulling down rod 23. A shock absorber is interposed between said lever 37 and said rod 23 which is designed to prevent a sudden snapping of the connecting members. The bifurcated lever 21 pivoted at one end at 22 is actuated by the rod 23, said lever having a pawl 20 pivotally mounted on its free end thereof. It will be further noted that a downward movement of said pawl 20 will rotate the ratchet wheel 19 mounted on the shaft 18 which will rotate the wheel 18 forming the visual signal of my system.

Also a rotation of the ratchet wheel will cause a reciprocating movement of the arm 27 by means of the arm engaging and disengaging with the pins 26 on said ratchet wheel 19. A bell hammer 29, integral with said rod 27 is adapted to strike the bell upon the disengagement of said arm and said pins, by means of a spring actuated shaft 28 to which the arm and hammer are secured.

It will be further noted that when a wheel of a train going away from the crossing, comes in contact with the outwardly flared end 5 of the trip plate 3, the trip plate will be pushed outwardly and downwardly thereby preventing the operation of the signal. The spring 14 automatically returns after the passage of each wheel of a train.

The utility, adaptability, and advantages of my improved form of automatic crossing signals being obvious, it is unnecessary to further enlarge upon the same herein.

Having now described and pointed out the new and useful features of my invention, I do not limit myself to the shape of certain parts where the shape is not essential, nor do I restrict myself to the exact details of construction shown and described, but mean and intend to claim all equivalents and variations thereof not departing in principle from my invention and falling within the purview of the appended claims.

What I claim as my invention and desire to secure by Letters Patent is:

1. In an automatic crossing signal, the combination of a trip member laterally disposed at a certain point on the outside of a railway track, a standard mounted at the signal indicating point along a railway, a boxing mounted on said standard, a shaft mounted to the sides of said boxing, one end of said shaft projecting through one side of said boxing, a visual signal secured to the projecting end of said shaft, a gong mounted within said boxing, a ratchet wheel pivotally mounted to one end of said lever, a gong-striking mechanism pivotally mounted beneath said gong, means secured to said ratchet wheel adapted to actuate said gong-striking mechanism, and means interposed between said last-named lever and said trip member whereby said lever will be actuated when said trip member is depressed.

2. In an automatic crossing signal, the combination of a trip member laterally disposed at a certain point on the outside of a railway track, one end of said trip member being beveled along the top thereof, the other end of said trip member being bent outwardly along the top thereof, means secured to said trip member adapted to maintain the same in operative position against the side of a rail, a standard mounted at the signal indicating point along a railway, a boxing mounted on said standard, a gong mounted in said boxing, gong-striking means mounted within said boxing, a ratchet wheel mounted within said boxing, means secured to said ratchet wheel adapted to actuate said gong-striking mechanism.
gong-striking means, means mounted within said boxing adapted to rotate said ratchet wheel, and means interposed between said trip member and said last-named means adapted to actuate the same when said trip member is depressed.

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

JAMES R. CROW.

Witnesses:

JOHN K. BROWN,
W. C. BRYANT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."