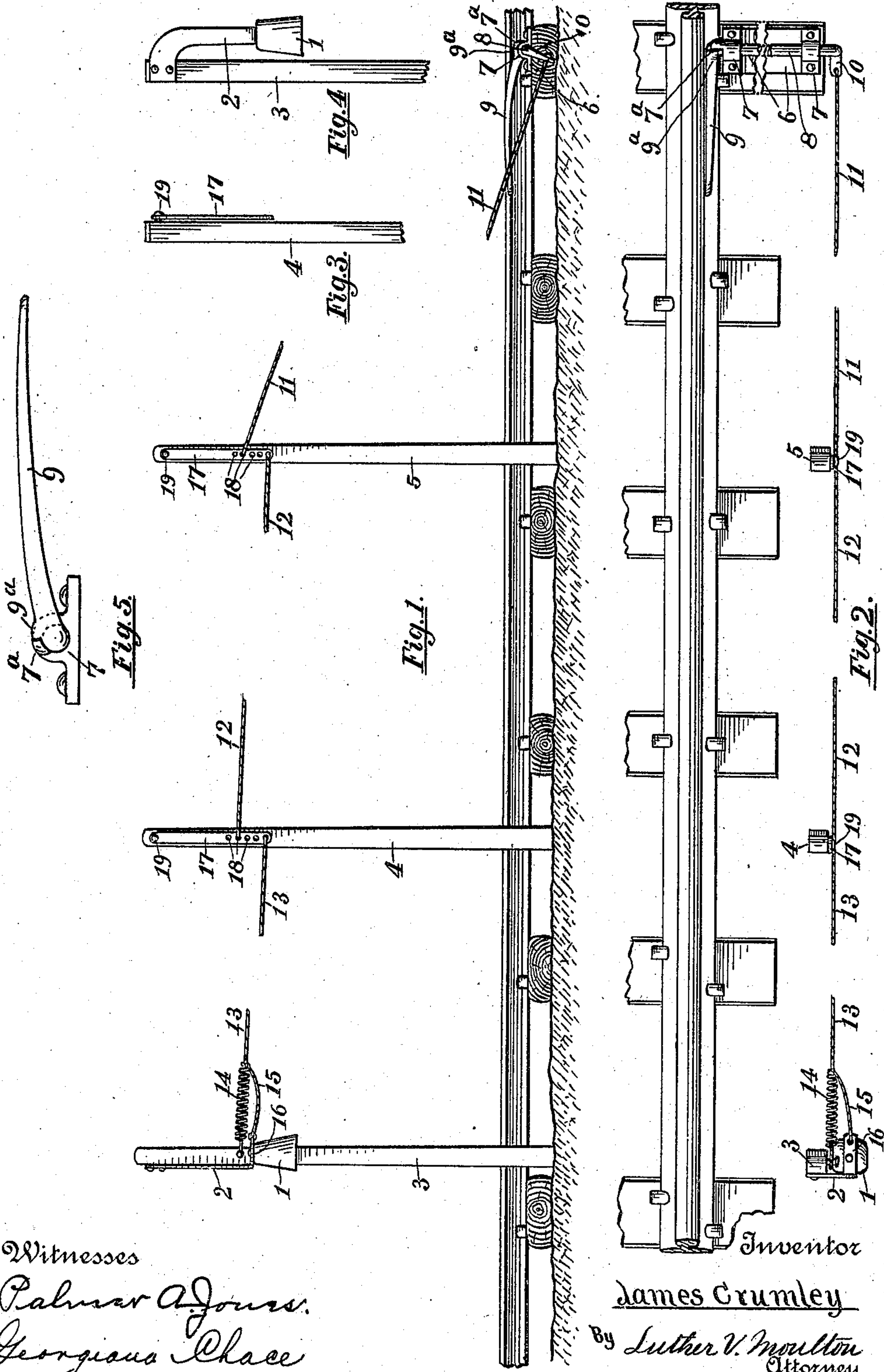


No. 848,087.

PATENTED MAR. 26, 1907.

J. CRUMLEY.  
CROSSING SIGNAL FOR RAILWAYS.  
APPLICATION FILED AUG. 6, 1906.



Witnesses  
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# UNITED STATES PATENT OFFICE.

JAMES CRUMLEY, OF GRAND RAPIDS, MICHIGAN.

## CROSSING-SIGNAL FOR RAILWAYS.

No. 848,087.

Specification of Letters Patent.

Patented March 26, 1907.

Application filed August 6, 1906. Serial No. 329,332.

*To all whom it may concern:*

Be it known that I, JAMES CRUMLEY, a citizen of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Crossing-Signals for Railways; 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 make and use the same.

My invention relates to improvements in crossing-signals for railways, and more particularly to such devices as are shown in my Patent No. 750,264, of January 26, 1904; and its object is to provide improved means for transmitting motion from the lever engaged by the wheels of the railway-train to the bell when the same is located at a considerable distance from the lever and to provide the same with various new and useful features hereinafter more fully described, and particularly pointed out in the claims.

My device consists, essentially, of the combination and arrangement of a lever depressed by the wheels of a passing train, a bell located at a distance from the lever, and a series of separate wires connecting the lever and bell, and pendulum-hangers supported at intervals between the lever and bell, the points of connection of the respective ends of the wires extending from one hanger to the next, being arranged at different distances from the pivot of the hangers, whereby these hangers operate as levers to increase the longitudinal movement of the wires, the last wire in the series being connected to a tension-spring and to the bell, whereby a slight movement of the lever will operate the bell successfully at a long distance from the same, as will more fully appear by reference to the accompanying drawings, in which—

Figure 1 is a side elevation of a device embodying my invention, with parts broken away; Fig. 2, a plan view of the same; Fig. 3, a detail of one of the pendulum-hangers and the supporting-post; Fig. 4, the same of the bell and support for the bell, and Fig. 5 an enlarged detail of the operating-lever and stop-shoulders for the same.

Like numbers refer to like parts in all of the figures.

1 represents any convenient bell for sounding an alarm to indicate an approaching train.

2 is a flexible arm on which the bell is supported, the vibration of which arm rings the bell.

3, 4, and 5 represent a series of supporting-posts for the bell and the various pendulum-hangers, which posts are spaced apart at convenient distances along the railway to locate the bell at a considerable distance from the operating mechanism, whereby the approaching train will give warning of its approach a sufficient distance in advance by the ringing of the bell.

The mechanism for ringing the bell consists of a bed-plate 6, attached to the outer end of a tie adjacent to one of the rails and provided with journal-bearings 7, in which is a rock-shaft 8, on one end of which shaft, adjacent to the rail and projecting slightly above the plane of the same, is a lever 9 to operate the rock-shaft. This lever is provided with a shoulder 9<sup>a</sup>, which engages a projection 7<sup>a</sup> on the adjacent bearing 7 to limit the upward movement of the lever and stop the same slightly above the plane of the rail. The opposite end of the rock-shaft 8 is provided with a crank-arm 10, to which arm is attached a wire or cord 11, which is the first of a series, indefinite in number, (two of which are shown at 12 and 13,) of separate wires or cords sufficient to extend to a contractile spring attached to the bell-supporting post, which spring maintains tension on the series of connecting-wires and yieldingly holds the lever 9 in elevated position. To transmit motion for a considerable distance through this series of wires and to increase the amplitude of this movement, I provide supporting pendulum-hangers 17, pivoted at their upper ends, as at 19, to the various posts and provided with two or more openings 18 near their lower ends, in which are inserted the adjacent ends of the wires 11, 12, and 13, the end of each wire in the direction of the lever 9 being attached at a greater distance from the pivot than the end of the same in the direction of the bell. The hangers thus operate as levers to amplify the longitudinal movement of the wires, and thus enable the device to operate the bell successfully at a considerable distance from the lever mechanism. To vibrate the bell, a branch wire or cord 15 extends from the last wire in the series, from near where it attaches to the spring 14, to the bell-hangers 2, and thus imparts motion to the same from the



wires 13 as the same is vibrated longitudinally by the engagement of the wheels of a passing train with the lever 9. By this amplifying arrangement I am also able to operate the device with but very slight movement of the lever 9, and thus the device will operate successfully when engaged by a rapidly-moving car-wheel. It will also be noted that by the described device I am able to utilize the ordinary telegraph-poles to support the hangers and bell, thus saving the expense of separate poles or posts for the same.

What I claim is—

1. In a signal of the class described, the combination of a bell, a lever engaged by the wheels of a passing train, a series of separate wires extending from the lever to the bell and pendulum-hangers to which the respective ends of the wires are attached at different distances from the pivots of the hangers to amplify the movement of the wires.

2. In a signal of the class described, the combination of a pivoted lever adjacent to the track of a railway, a bell located at a distance therefrom, a series of hangers between the bell and the lever, and a series of

separate wires connected to the lever and to the bell, said wires being connected to the respective hangers, with their ends nearest the bell at a greater distance from the pivots of the hangers and their ends nearest the lever at a less distance from said pivots, whereby the hangers operate as levers to amplify the longitudinal movements of the wires.

3. In a signal of the class described, a rock-shaft near the rail of a railway, a lever fixed on the shaft, and projecting above the plane of the said rail, stop-shoulders to limit the upward movement of the lever, an arm on the rock-shaft, a bell located at a distance from the rock-shaft, a series of separate wires connecting the arm and bell, a series of pivoted hangers to which the respective ends of the wires are attached at different distances from the pivots of the hangers, a tension-spring attached to the wires, and means for connecting the bell with one of the wires.

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

JAMES CRUMLEY.

Witnesses:

GEORGIANA CHACE,  
EDWARD E. MOHL.