Dec. 28, 1926. 1,612,016

A. B. HARPER

SAFETY SIGNAL GATE

Filed Oct. 31, 1925 2 Sheets-Sheet 1

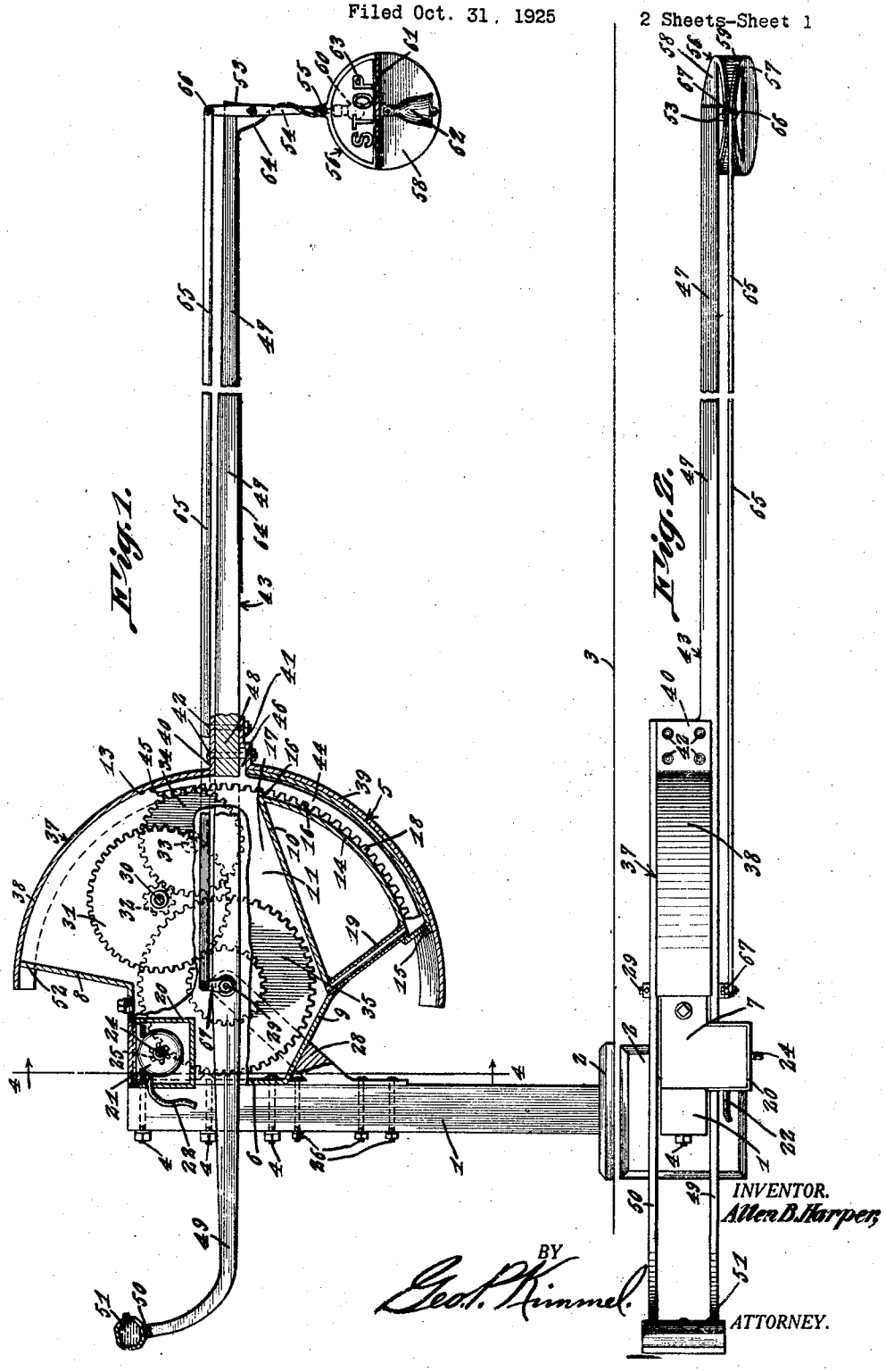


Fig. 1.

Fig. 2.

INVENTOR.
Allen B. Harper,

BY
Geo. P. Kimmel.

ATTORNEY.

Dec. 28, 1926. 1,612,016

A. B. HARPER

SAFETY SIGNAL GATE

Filed Oct. 31, 1925 2 Sheets-Sheet 2

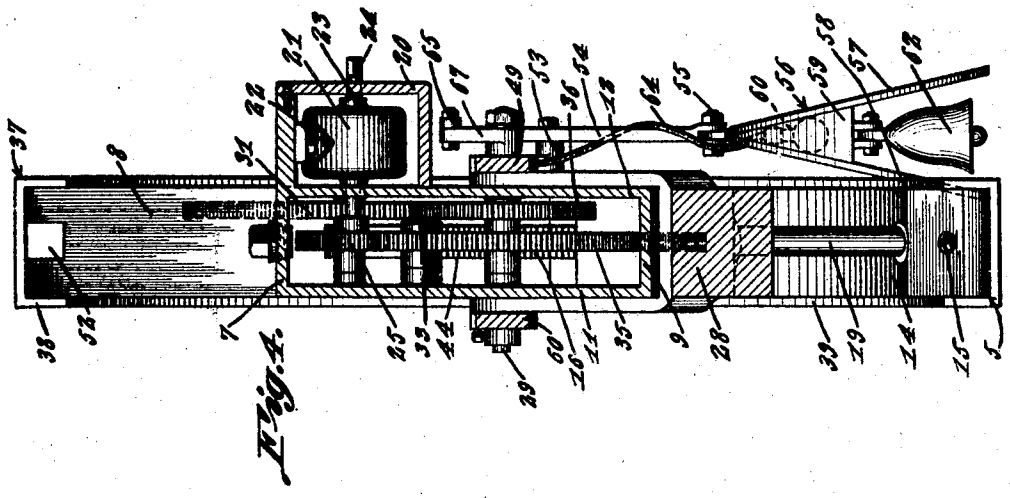


Fig. 4.

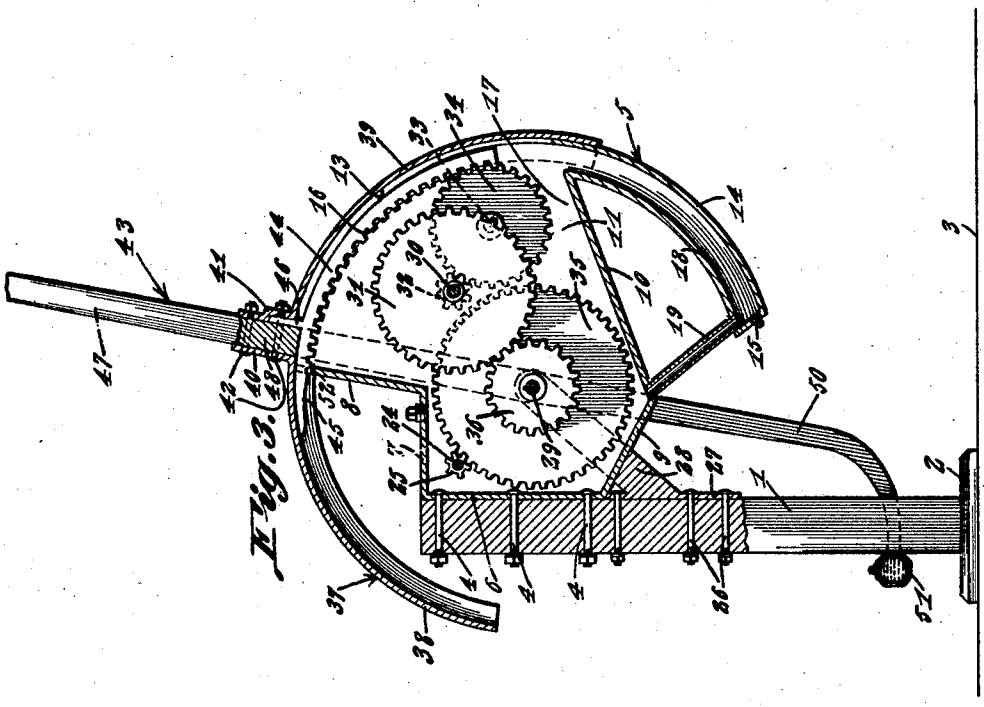


Fig. 3.

INVENTOR.

Allen B. Harper,

BY

Geo. P. Kimmel. ATTORNEY.

Patented Dec. 28, 1926. 1,612,016

UNITED STATES PATENT OFFICE.

ALLEN B. HARPER, OF TIPTON, INDIANA.

SAFETY SIGNAL GATE.

Application filed October 31, 1925. Serial No. 66,029.

This invention relates to safety signal gates, designed for use in connection with steam and electric railways, and has for its object to provide, in a manner as hereinafter set forth, a safety signal gate of such class, whereby the gate member is automatically shifted to safety and signaling position to block a highway at a crossing on the approach of a train, locomotive or electric car, under such conditions reducing accidents at the crossing to a minimum.

Further objects of the invention are to provide a safety signal gate, in a manner as hereinafter set forth, which is simple in its construction and arrangement, strong, durable, automatically operated to active and inactive positions, thoroughly efficient in its use, readily installed with relation to the crossing, and comparatively inexpensive to set up.

With the foregoing and other objects in view, the invention consists of the novel construction, combination and arrangement of parts, as hereinafter more specifically described and illustrated in the accompanying drawings, wherein is shown an embodiment of the invention, but it is to be understood that changes, variations and modifications can be resorted to which come within the scope of the claims hereunto appended.

In the drawings wherein like reference characters denote corresponding parts throughout the several views:—

Figure 1 is a sectional elevation of a safety signal gate, in accordance with this invention, and illustrating the same in signaling and safety position.

Figure 2 is a top plan view thereof in safety and signaling position.

Figure 3 is a fragmentary view, in vertical section, illustrating the device in inactive position.

Figure 4 is a section on line 4—4, Figure 1.

A safety signal gate, in accordance with this invention, can be thrown into operation by a train or a vehicle on approaching a crossing, or it can be operated manually. By way of example, the safety signal gate will be referred to as operated to active position by a train.

Referring to Figures 1 to 4 of the drawings, 1 denotes a supporting standard provided with a base 2 and which is arranged at one side of a highway, exteriorly of the railway track at the crossing 3. Secured to the front face of the supporting standard 1, by the hold-fast devices 4, at the upper portion thereof, is a housing, referred to generally by the reference character 5, formed of a vertically disposed back wall 6, a top wall formed of a horizontally disposed portion 7 and an up-standing forwardly inclined portion 8, a bottom formed of a forwardly extending and downwardly inclined rear portion 9 and an upwardly inclined forward portion 10 and a pair of side walls 11, 12. The front of the housing 5 is open, as at 13. Formed integral with the bottom and sides of the housing 5, as well as depending therefrom and projected rearwardly is a curved tubular extension 14, which is closed at its lower end, as at 15, and open at its upper end, as at 16, for communication with the chamber 17, provided by the housing 5. The extension 14 forms an elongated curved pocket 18 for a purpose to be presently referred to. Connected to the bottom of the housing 5, as well as communicating with the chamber 17 and further connected to the lower end of the extension 14, as well as communicating with the pocket 18, is a lubricant conducting pipe 19.

Formed integral with the outer face of the side wall 12, at the top thereof, is a laterally extending casing 20, in which is arranged a driving motor 21 of the electrical type, and circuit wire connections 22 extend into the casing 20 and are connected to the motor 21. The shaft of the motor is indicated at 23, and which is journalled in the side wall 12 of the housing 5 and in the outer side of the casing 20. The shaft 23 of the motor 21 is extended outwardly from the casing 20, as at 24, and squared to receive a suitable tool for the purpose of manually operating said shaft 23. That end of the shaft 23 within the chamber 17 is provided with a pinion 25.

Fixedly secured to the supporting standard 1, below the back wall of the housing 5, by the hold-fast devices 26, is the base 27 of an upwardly inclined yoke 28 which straddles the lower portion of the housing 5 and forms a support for a gate member operating shaft 29, which extends through the upper end of the arms of the yoke 28 and also through the side walls 11 and 12 of the housing 5.

Arranged within the chamber 17 is a shaft 30 provided with a gear wheel 31 and a pin-

ion 32, and also arranged in the chamber 17 is a shaft 33 carrying a gear wheel 34, which meshes with the pinion 32 and is of less diameter than the gear 31. Carried by the shaft 29 is a large gear 35, which meshes with and is driven from the pinion 25 on the motor shaft 24. The shaft 29 is provided with a gear wheel 36 of less diameter than the gear wheel 31 and which meshes with the latter for driving it. The gear wheel 31 is of less diameter than the gear wheel 35.

Slidably mounted on the front of the housing 5 is a gate member carrier, which is semicircular in contour and channel-shaped in cross section. The carrier which is referred to generally by the reference character 37 overlaps the front of the housing 5 as well as the extension 14 and constitutes a closure for the open front 13 of the housing 5. The carrier is formed of two sections 38, 39 of segmental contour, and the former at its inner end is provided with an outwardly extending flange 40 and the latter at its inner end with an outwardly extending offset flange 41. The flanges 40 and 41, in connection with hold-fast devices 42, provide means for securing a portion of the gate member to the carrier 37 and said gate member is referred to generally by the reference character 43. The carrier further includes a shifting means therefor and which comprises a curved rack bar 44, having an end terminal portion 45 thereof free of teeth. The bar 44, in proximity to one end, is formed with an extension 46, which is interposed between the gate member 43 and flange 41, and one of the hold-fast devices 42 is employed for fixedly securing the bar 44 in position within the carrier. The bar 44 is engaged and shifted by the gear wheel 34 and when said bar 44 is shifted the carrier 37 is bodily moved therewith and which in turn carries the gate member 43.

The normal position of the carrier 37 with the bar 44 is as illustrated in Figure 3, but when the gate member 43 is shifted to active position the bar 44 is moved into the pocket 18, as illustrated in Figure 1.

The gate member 43 comprises an outer portion 47, an intermediate portion 48 and a curved rear portion 49. The intermediate portion 48 is disposed laterally with respect to the other portions of the gate member 43 and said intermediate portion 48 is secured between the flanges 40 and 41 by the hold-fast devices 42. The rear portion 49 is positioned against the side wall 12 of the housing 5 and the shaft 29 extends therethrough. Opposing the side wall 11 of the housing 5, as well as being secured thereto and mounted on the shaft 29, is a curved arm 50 of the same contour as the rear portion 49 of the gate member. The rear portion 49 and arm 50 are so constructed that the lower portions thereof will be positioned at the sides of the supporting standard 1, as well as projecting rearwardly therefrom, and the said portion 49 and arm 50 are connected together by a counter-weight member 51 which normally acts to maintain the gate member 43 in an inactive position, as illustrated in Figure 3. When the gate member 43 is in an inactive position the terminal portion 45 of the bar 44 extends through an opening 52 formed in the upper end of the portion 8 of the top wall of the housing 5. See Figure 3.

The outer end of the portion 47 of the gate member 43 is formed with an angular extension 53, to which is pivoted an oscillatory lever 54 having pivotally connected to its lower end, as at 55, a signalling element referred to generally by the reference character 56. The element 56 consists of a tapering casing formed of front and rear walls 57, 58 respectively and a pair of side walls 59, which are of less height than either of the walls 57 or 58 and connect the upper portion of said walls 57, 58 together to form a chamber in which is arranged an illuminating element 60. The bottom of the chamber in which is arranged the illuminating element 60 is indicated at 61 and suspended therefrom is an audible signal 62, in the form of a bell. The front wall of the chamber in which is arranged the illuminating element 60 is formed with light emitting portions 63 to set up a signal designating the word "Stop". The circuit wire connections for the illuminating element 60 are indicated at 64 and can be connected with any suitable source of supply. The lever 54 is oscillated carrying the signal element 56 therewith through the medium of a pitman rod 65, which is arranged above the gate member 43 and has its outer end pivotally connected, as at 66, to the lever 54, and its rear end carried by a crank arm 67 connected to the shaft 29, whereby on the operation of the latter the rod 65 will cause the oscillation of the lever 54, carrying the signaling element therewith.

When the motor 21 is driven in a clockwise direction the gear train interposed between the pinion 25 and bar 44 will shift the latter downwardly carrying the gate member 43 therewith to position the latter transversely with respect to the highway to arrest traffic at the crossing. The shift of the bar 44 downwardly is continued until the gear 34 reaches the untoothed terminal of the bar 44. The shifting of the gate member 43 to active position is had against the action of the counter-weight 51, which, as before stated, normally tends to maintain the gate member 43 in inactive position. The untoothed part of the bar 44 is upon the same arc as the gear 34, so that the teeth of the latter will not clash with the teeth of the bar 44 to cause it to continuously jerk. After the gear 34 runs into the untoothed

portion of the bar 44 and continues to run, the counter-weight 51 will hold the bar 44 directly against the gear 34 so that when the operation of the latter is discontinued, due to the stoppage of the motor, the counterweight 51 gradually returns the gate member 43 to inactive position. However, the operation of the motor can be reversed so that the gear 34 in connection with the bar 44 and counterweight 51 will return the gate member 43 to inactive position. The motor continues to operate in a clockwise direction as long as the gate member 43 is in active position, and owing to the drive connection between the lever 54 and shaft 29 the signaling element will be oscillated.

With respect to the foregoing operation, the motor 21 has its motor circuit closed on the approach of a train or locomotive or electric car towards the crossing, but if the device is to be manually operated a handle or other suitable instrument is connected to the extended end 24 of the shaft 23.

It is thought the many advantages of a safety signal gate for railway crossings in accordance with this invention, can be readily understood, and although the preferred embodiment of the invention is as illustrated and described, yet it is to be understood that changes in the details of construction can be had which will fall within the scope of the invention as claimed.

What I claim is:—

1. A safety signal gate mechanism comprising a supporting standard, a housing carried thereby and having an open front, a carrier slidably mounted on the front of the housing and constituting a closure therefor, a gate member connected to the carrier and bodily shifted therewith to and from active positions, a rack bar mounted in said carrier and bodily carried therewith, and driven means engaging with said rack bar for shifting said carrier to move the gate member to and from active positions.

2. A safety signal gate mechanism comprising a supporting standard, a housing carried thereby and having an open front, a carrier slidably mounted on the front of the housing and constituting a closure therefor, a gate member connected to the carrier and bodily shifted therewith to and from active positions, a rack bar mounted in said carrier and bodily carried therewith, driven means engaging with said rack bar for shifting said carrier to move the gate member to and from active positions, said bar being of arcuate form, and means depending from the housing to provide a receiving pocket for the rack bar when the gate member is shifted to active position.

In testimony whereof, I affix my signature hereto.

ALLEN B. HARPER.