

(No Model.)

J. G. HARTMAN & E. BAKER.
AUDIBLE SIGNAL FOR RAILWAYS.

No. 499,166.

Patented June 6, 1893.

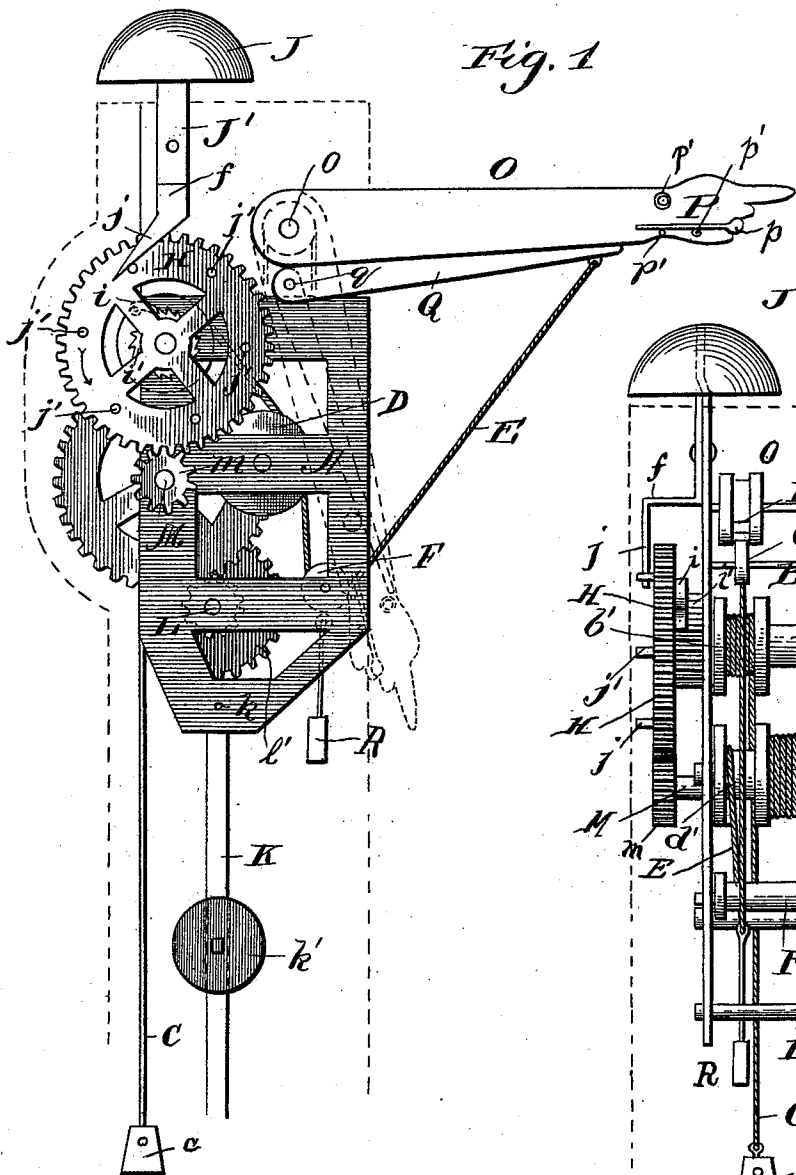


Fig. 1

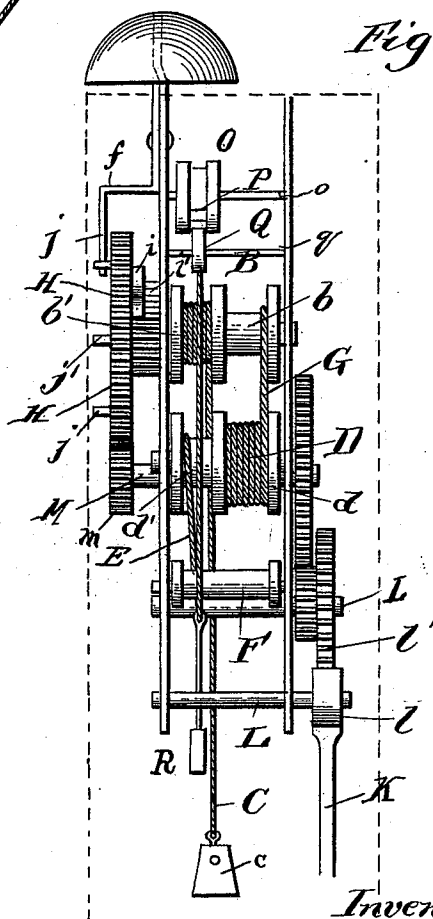


Fig. 2.

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AUDIBLE SIGNAL FOR RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 499,166, dated June 6, 1893.

Application filed June 30, 1892. Serial No. 438,534. (No model.)

To all whom it may concern:

Be it known that we, JACOB G. HARTMAN and ELIJAH BAKER, citizens of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Audible Signals or Alarms for Railways; and we 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.

Our invention relates to improvements in audible signals or alarm mechanisms designed for use on railway cars or in connection with visual signal mechanism adapted to notify the public of the approach or passage of a railway car at a street or road crossing; and the object in view is to provide simple and effective means whereby an audible alarm may be sounded as the car approaches a crossing.

In the application of our alarm to an automatic visual signal of either kind illustrated in our other applications A, B, or C, filed even date herewith, and bearing Serial Nos. 438,531, 438,532, and 438,533, respectively, we combine the winding or setting mechanism of the alarm with the signal vane so that as the vane is raised or elevated to danger position by the power mechanism forming a part of the signal, the drop weight of the alarm is constantly in condition for use and does not require attention by trackmen or other attendants. It will be understood, however, that we do not strictly confine ourselves to the alarm in connection with visual signals as the same can be adapted for use on street railway cars by omitting the signal vane and providing a pull cord or rope by which the gripman, motorman, or driver is enabled, at the end of the route or at any time, to lift the drop weight and set the alarm in condition for use.

The invention consists, briefly stated, in the combination with a bell or gong and a vibrating hammer, of a tappet wheel having studs against which ride the hammer of the gong, a weight drum having the cord or cable of a drop weight wound or coiled thereon, a power drum connected to the weight drum for simultaneous operation by means of a cord or cable which is connected to both drums and

adapted to be wound on one drum as it is uncoiled from the other, and an operating cord or cable coiled around and connected to the intermediate drum.

The invention further consists in the combination with an alarm mechanism substantially as described and having a weight-controlled drum, of a governor mechanism by which the rotations or speed of the weight drum is controlled and hence the number of times the hammer strikes the gong, the object being to prevent the hammer from having a too rapid motion and thus obviate the unpleasant rapid ringing of the alarm which is liable to frighten animals standing at the crossing for the car to pass.

The invention further consists in the combination with a signal vane, and an alarm mechanism substantially as described, of a detent pivoted independently and to one side of the center of motion of the signal vane, the operating cord connected to said detent, and a trip carried by the signal vane and adapted to be connected to the end of the detent when the latter and the vane are lowered, whereby as the signal vane is raised the detent will be carried up with the vane until the latter reaches an approximately horizontal or "danger" position whereupon the trip is released from the detent and the latter is permitted to descend with the cord attached thereto, such detent serving when raised to pull the operating cord, wind the power drum, and thus rotate the weight drum to coil the weight-cord thereon. And finally the invention consists in the novel combination of devices and peculiar construction and arrangement of parts as will be hereinafter more fully described and particularly pointed out in the claims.

The accompanying drawings fully illustrate our alarm mechanism in connection with a signal vane and the detent, and in which:—

Figure 1 is a side elevation with the casing omitted or shown in dotted lines. Fig. 2 is a front view thereof.

Like letters of reference denote corresponding parts in both figures of the drawings, referring to which:—

A designates the frame provided for the support of the operating parts of the alarm mechanism, which frame may be of any suitable or

preferred construction adapted to the purposes of our invention. In the upper part of this frame A is arranged a weight drum B, which has its shaft suitably journaled in bearings in the frame; and this weight drum has a large and small section *b, b'*, respectively. Around the small section or part *b'* of the drum B is coiled the weight cord or cable C, which as is usual, depends below the frame and has the weight *c* connected or fastened thereto.

D is the power drum which likewise has its shaft journaled in bearings in the frame A, but this drum is arranged below and out of the vertical line of the weight drum, see Fig. 1. This power drum is likewise made or composed of two sections of different diameters, indicated at *d, d'*, and around the smaller section *d'* of said power drum is adapted to be coiled the operating or pull cord or cable E, as shown in Fig. 2. This pull cord or cable has one end connected to the power drum, and it extends or runs from said drum beneath a guide pulley or idler F having its shaft journaled in the frame A below the power drum. In the use of the alarm with the visual signal, the other end of this pull cord or cable E is connected to a detent adapted for operation in connection with the signal vane as will be presently described; but when the signal or alarm is carried by the railway car and adapted to be operated by the driver, gripman, or motorman on approaching a crossing, this pull cord is extended through the casing of the alarm and provided with suitable means whereby the attendant is enabled to pull upon the cord at the end of the route, or at any other time or place, to rotate the power drum and wind the weight cable around the weight drum B so that the alarm can be used throughout the trips of the car over the route without rewinding.

The power drum and the weight drum are connected for simultaneous operation by means of the cord or rope G which has one end attached to the large section *d* of the power drum and its other end attached to the large section *b* of the weight drum. In normal position, with the signal vane lowered, the pull cord E is coiled around the small section *d'* of the power drum while the connecting cord G is wound on the large section *b* of the weight drum, the weight cord being coiled on the small section *b'* of the weight drum in the reverse direction to the end of the connecting cord G on said large section of the weight drum. As the signal vane is raised, the pull cord E is uncoiled from the small section *d'* of the power drum and the cord G is wound on the large section *d* of said drum, and at the same time the other end of the connecting cord is unwound from the section *b* of the weight drum while the weight cord *c* is coiled on the small section of the weight drum. The differential drums and peculiar arrangement of cords are impor-

tant as they enable us to put the alarm in condition for service for quite a long period of time by the compact and simple devices herein shown and described.

To prevent the weight drum from operating the gong hammer while the weight cord C is being wound thereon, we provide a ratchet and pawl mechanism between the weight drum and the tappet wheel II to operate the bell hammer. The tappet wheel is loosely mounted on the shaft of the weight drum, at one side of the frame A, and to the tappet wheel is pivotally connected a pawl *i* which normally engages with the teeth of the ratchet wheel *i'* which is rigidly secured to the end of the weight drum, so that when the weight descends and the cord is uncoiled from the weight drum, the ratchet and pawl mechanism cause the tappet wheel to turn with the drum and operate the gong hammer, but when the weight drum is turned by the cord G connecting the same with the power drum, the weight drum and ratchet turn together without affecting the tappet wheel, because the pawl slips idly and freely over the teeth of the ratchet.

The gong or bell J is mounted in any suitable way on the top of the frame A, and the bell hammer *f* is pivoted at an intermediate point of its length to said frame, the upper end of the hammer being adapted to contact with the bell and the heel of the hammer being inclined as at *j* and adapted to be struck by the pins or tappets *j'* on the face of the tappet wheel H. The speed of the drum B and the number of times the hammer strikes the gong is regulated or controlled by means of the regulator lever or arm K which is pivoted at *k* to the frame A and provided at its lower end with the weight *k'* which is adjustably secured to the lower part of the regulator arm. The upper end of the regulator arm is provided with a pallet *l* which engages with the pallet wheel *l'* carried by a shaft L journaled in the frame A, and the other end of this shaft is geared to an intermediate shaft M also journaled in the frame, this intermediate shaft M having a pinion *m* which meshes with the gear teeth formed on the periphery of the tappet wheel as shown in Fig. 1.

O is the signal vane pivoted or fulcrumed at its inner end on a suitable pin or shaft *o* supported in the frame A or in the post on which the arm is placed, and at its free end this vane O carries a trip P which is pivoted at its outer end to the vane, as at *p*, and held in position by means of the stops *p'* secured to the signal vane.

Q is the detent adapted for operation in connection with the signal vane O. This detent lies below the signal vane, and it is pivoted at a point below the fulcrum or shaft of the vane, the pivot of the detent being indicated at *q*. To the free end of the detent is connected the pull cord or rope E, and to this rope or cord is loosely connected a sliding

weight R which is adapted to draw the cord E within the post when the detent and vane are lowered to prevent evil disposed persons from interfering with the signal.

5 The alarm is designed to be inclosed within a suitable casing, and it is mounted in any preferable way on the top of a post indicated partly by dotted lines in the drawings.

This being the construction of our signal 10 or alarm, the operation may be described as follows:—Normally the signal vane and the detent are lowered as shown by dotted lines in Fig. 1, and the trip P is connected to or fitted over the free end of the detent. As the 15 vane is raised by the power mechanism provided for its operation, the trip causes the detent to rise with the vane until the latter reaches nearly a horizontal position, thus drawing on the pull cord E and causing the same to rotate the power drum D which in 20 turn rotates the weight drum and causes the weight cord to be wound up on the weight drum. As the vane approaches its highest or "danger" position, the free end of the 25 detent is withdrawn from the trip by reason of the fact that the detent is shorter than the vane and is pivoted below the center of movement of the vane, and the detent is thus free to drop or fall by gravity to the position 30 shown by dotted lines in Fig. 1, and the cable E is drawn by its weight into the post. The weight drum is now free to turn in the reverse direction by the force of the weight depending therefrom, and as the weight cord 35 turns the drum B the latter operates the gong-hammer and rotates the power drum D to wind the pull cord E thereon. The speed of the drum B is controlled by the weighted regulator-arm, and the length of time that the bell is operated is governed by the number 40 of times the weight cord is coiled around the drum B and the adjustment of the weight on the regulator arm. After the car passes a crossing, the vane is returned to its normal lowered position, and as it is lowered its trip strikes the end of the lowered detent Q so that the trip P is moved far enough to permit the vane to be lowered to its proper position, the trip passing the end of the detent as 50 said vane is fully lowered and being held by its stops *p'* in proper position to again engage with the end of the detent when the vane is again raised, so that the vane and detent are in position for operation when the next car approaches the crossing.

One of the advantages of our improved alarm resides in the means whereby the weight cord can be quickly and easily wound on the weight drum to actuate the gong mechanism, 60 which means consists in the connected differential weight and power drums having the weight cord and pull cords wound respectively thereon and in opposite directions. By reference to Fig. 2, it will be seen that the 65 weight cord is wound on the large part of the intermediate drum; and as the large parts of

the two drums B, D, are connected by the connecting cord G, the weight cord will be quickly wound on the drum B when the pull cord is unwound from the drum D. 70

It will be seen from the foregoing description that we have provided a simple and novel mechanism for automatically sounding an alarm in connection with a visual signal 75 as the car approaches a crossing, and that the alarm is set in motion by the operation of the signal vane so that the attendant or track-walker is not required to set the alarm in condition for operation.

It is also to be understood that we do not 80 confine ourselves to the use of the alarm in connection with an automatic signal of the kind shown in either of our pending applications herein referred to, as the alarm may be used in connection with any other kind of 85 signaling mechanism, or the alarm may be used independently of any signaling mechanism, as for instance by arranging the same on a street railway car as before described.

We are aware that changes in the form and 90 proportion of parts of the details of construction of the devices herein shown and described as an embodiment of our improvements may be made without departing from the spirit or sacrificing the advantages thereof, and we 95 therefore reserve the right to make such changes as fairly fall within the scope of the same.

Having thus fully described our invention, what we claim as new, and desire to secure by 100 Letters Patent, is—

1. In an audible alarm, the combination of the differential weight and power drums independently supported by suitable shafts and connected together by an intermediate cord 105 for simultaneous operation, a weight cord connected to the weight drum, a pull cord connected to the power drum and adapted to be coiled thereon in the reverse direction to the weight cord on the weight drum, a tappet 110 wheel locked to the weight drum to rotate therewith, and the gong and hammer operated by said tappet wheel, substantially as described.

2. In an audible alarm, the combination of 115 the differential weight and power drums connected for simultaneous operation by an intermediate cord, a tappet wheel loose on the weight-drum-shaft, pawl and ratchet mechanism intermediate of the weight drum and said 120 tappet wheel, a gong and its hammer operated by the tappet wheel, a weight cord coiled on the weight drum, and a pull cord connected to the power drum and adapted to be coiled thereon in the reverse direction to the weight 125 cord on the weight drum, substantially as described.

3. In an audible alarm, the combination with a signal vane, of a weight controlled drum and a gong-operating tappet connected 130 therewith, a detent adapted to be operated by the signal vane, and a pull cord connected

to the detent and with the weight drum to wind the weight cord on the latter as the signal vane is set, as and for the purpose described.

5 4. In an audible alarm, the combination with a signal vane, of a weight controlled drum, a power drum connected to the weight drum, a detent pivoted independently of the
10 signal vane, a pull cord, connected to the detent and the power drum, and means adapted to connect the detent to the signal vane and to release the detent as the signal vane is set, as and for the purpose described.

15 5. In an audible alarm, the combination with a signal vane, of a weight controlled drum and gong mechanism operated thereby, a power drum connected to the weight drum, a detent pivoted at one side of the center of motion of the signal vane and connected to
20 the drum, and a trip adapted to temporarily connect the detent to the signal vane, whereby as the vane is raised the detent will be lifted therewith to rotate the power and weight drums, as and for the purpose described.

6. In an audible alarm, the combination 25 with a signal vane and a gong mechanism, of a detent adapted to be operated when the signal vane is raised, and mechanism intermediate of the detent and the gong mechanism to operate the latter, as and for the purpose described. 30

7. In an audible alarm, the combination of the differential weight and power drums connected together for simultaneous operation by a cord which is adapted to be coiled and
35 uncoiled on said drums, a pull cord adapted to be coiled on the power drum, a weighted cord coiled on the small part of the weight drum, a gong, and a hammer, substantially as described. 40

In testimony whereof we affix our signatures in presence of two witnesses.

JACOB G. HARTMAN.
ELIJAH BAKER.

Witnesses:

HENRY E. COOPER,
H. I. BERNHARD.