

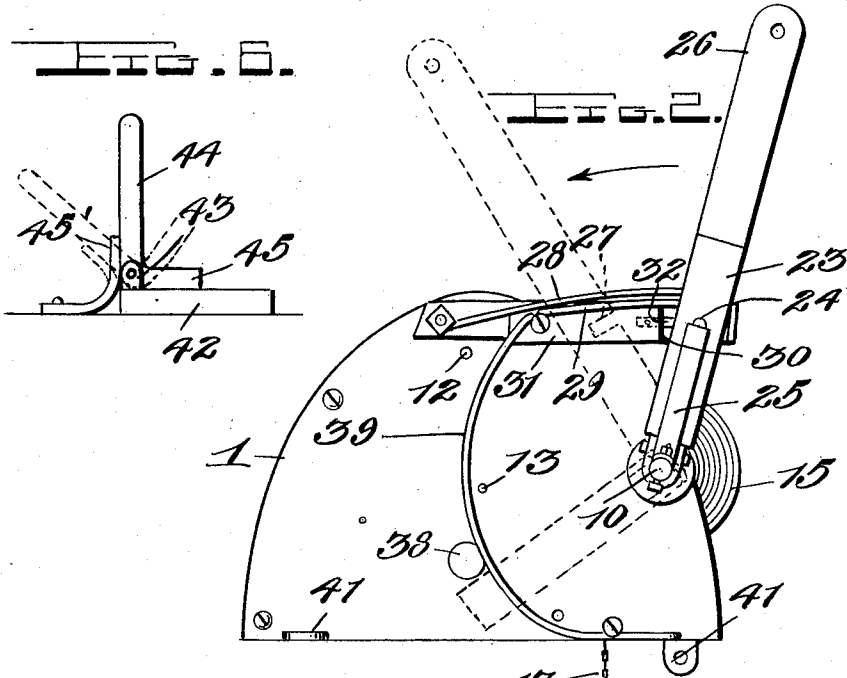
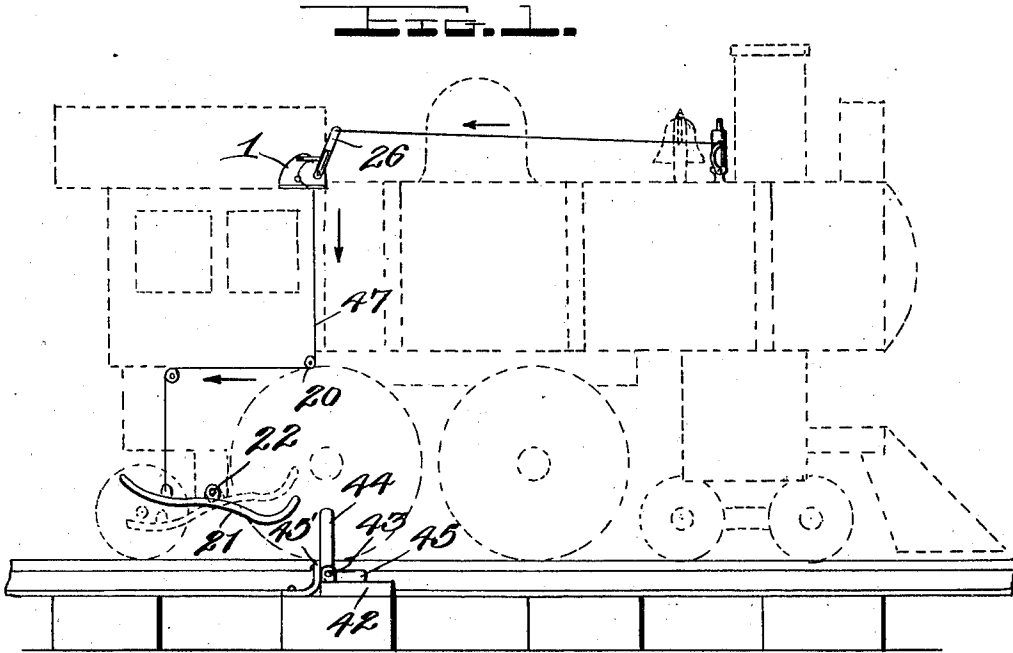
A. J. THELEN.
SIGNAL DEVICE.

APPLICATION FILED APR. 12, 1911.

Patented Nov. 7, 1911.

2 SHEETS—SHEET 1.

1,007,751.



Inventor

Witnesses

Chas. L. Griesbauer.
L. J. Ellis.

By Arnold J. Thelen,
Watson E. Coleman.
Attorney

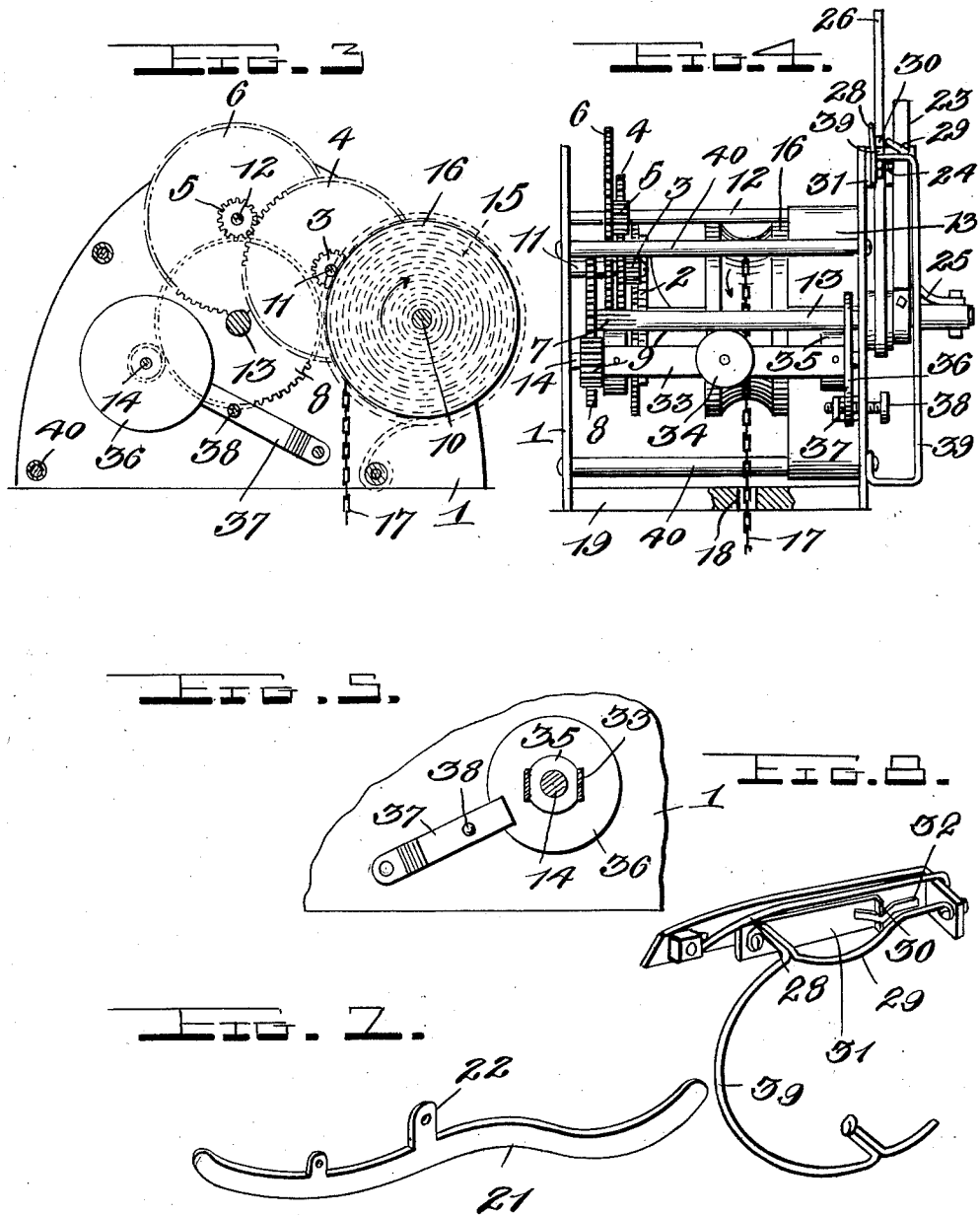
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UNITED STATES PATENT OFFICE.

ARNOLD J. THELEN, OF ST. JOHNS, MICHIGAN.

SIGNAL DEVICE.

1,007,751.

Specification of Letters Patent.

Patented Nov. 7, 1911.

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To all whom it may concern:

Be it known that I, ARNOLD J. THELEN, a citizen of the United States, residing at St. Johns, in the county of Clinton and State of Michigan, have invented certain new and useful Improvements in Signal Devices, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to signals and more particularly to that class of signals which are used on locomotives, street cars and the like to announce their coming to a grade crossing.

The objects of my invention are to provide a device which can be suitably mounted on a locomotive, street car or the like for actuating a whistle, and operated by means of an attachment secured on the rails, sleepers, posts or other suitable location, for operating it.

Another object of my invention is to provide means on such a device to adjust the length of time the device will actuate on the occasions of its use.

A further object of my invention is to have a device of this character of the construction and design which can be readily mounted and installed in inconspicuous parts of the car it is on.

Other objects will become apparent as my invention is more fully set forth.

In the accompanying drawings which illustrate an embodiment of my invention Figure 1 is a diagrammatic view of a device embodying my invention; Fig. 2 is a view in elevation of a device embodying my invention; Fig. 3 is a view in sectional elevation of the device; Fig. 4 is an end view of Fig. 2; Fig. 5 is a detail of a governing device; Fig. 6 is a detail of the trip used in the device; and Fig. 7 is a detail of an alarm lever for actuating the mechanism of the device. Fig. 8 is a view in perspective of the mechanism at the side of the device.

In the drawings which illustrate an embodiment of my invention 1 is the main casing or frame work for holding and supporting the mechanism in which are mounted the train of gears 2, 3, 4, 5, 6, 7, 8 and 9 which are supported on the shafts 10, 11, 12, 13 and 14 respectively.

The gear 2 is attached to the shaft 10 and meshes with the gear 3 which is keyed to the shaft 11 and actuates the same, which in turn rotates the gear 4 mounted thereon.

The gear 4 engages with the gear 5 on the shaft 12 to which is attached another gear 6 that engages with the shaft 13 that is properly slotted to permit it to actuate it, which has on its outer end a gear 8 that actuates a gear 9 disposed on the shaft 14 to which is attached the governing member which will be described more in detail in the later part of the specification.

Mounted on the shaft 10 is a coiled spring 15 which normally tends to rotate the shaft 10 in the direction of the arrow Fig. 3. A pulley 16 is mounted on the same shaft 10 and has thereon a chain 17 which is peripherally mounted on it and tends to turn the pulley in the direction of the arrow shown Fig. 4, when the chain 17 is pulled down through a hole 18 of a base 19 which supports the main frame work 1. The chain 17 is actuated and pulled in the direction of the arrow over a pulley 20 by an alarm lever 21 which is secured to the side of the car or locomotive on a fulcrum 22 and which is moved to a position indicated by the dotted line on the occasion of operating the device.

Attached on an extending part of the shaft 10 is an arm 23 which is turned in the direction of the arrow Fig. 2 when the shaft is rotated by the chain 17 on the pulley 16. This arm has extending from the upper portion of it a stud 24, and also has a spring 25 which tends to press the arm 23 toward the casing 1. Between the arm 23 and the casing is another arm 26 which is arranged with a slot 27 to receive the stud 24, and has a hole in the upper end arranged to receive a chain from a whistle or other alarm to be actuated to give the signal. The arm 26 is guided between guides 28 and 29 on either side of it and has a catch 30 arranged by means of a spring 31 to engage and hold the arm 26 when it is pulled over a certain distance. This catch is provided with an extension 32 which is arranged to be engaged by the stud 24 which tends to push it back and relieve the arm 26 of the catch thus permitting the arm to be pulled back to its normal position.

Mounted on the shaft 14 is a governing device which consists of spring levers 33 having weights 34 attached to them that tend to pull a part 35 having a plate 36 attached to it toward the center of the shaft, when the governor is acting. The plate 36 when pulled out is brought against a projecting friction piece 37 which is arranged

to rub against the side of the plate, which tends to slow up the governing device, a set screw 38 being provided for moving the piece 37 toward or from the plate 36. By this means the governor governs the length of time it takes the mechanism to unwind, which in turn controls the length of time the lever arm 26 is held back by the catch 30, that is the length of time the whistle of the locomotive or other signal is kept in operation. The guide 29 is so shaped as to give an eccentric travel to the arm 23 so as to release the stud 24 out of engagement with the slot 27, when the lever arm 26 is pulled back to the catch 30; from thence the travel of this arm is guided on a piece 39 which is provided to keep it or its parts out of contact with the casing 1.

40 are studs provided for holding the casing together.

41 are suitable lugs provided on the casing 1 for fastening the device in any suitable position.

The switch situated preferably on the railroad ties consists of a base 42 which has necessary attachments for securing it to the ties, etc., and is provided with lugs 43 which are arranged to form the fulcrum of a bell-crank whose arms 44 and 45 normally tend to keep the trip in an upright position as shown, the trip to be maintained in the vertical position through the agency of a spring 45', and so as to push up the alarm lever 21 and therefore pull on the chain and device, and operate the whistle when the train is coming toward the crossing. Should the locomotive for any reason back up over the same track the alarm lever 21 will rotate the bell-crank of the switch and pass harmlessly over it as shown by the dotted lines in the drawing. After the alarm lever 21 has passed over this device a spring 45' will return it to its normal upright position.

The operation of the whole signal device is as follows: To the arm 26 is first attached a chain which actuates the arm of a whistle or other alarm on a locomotive or car, then a chain 47 is attached to the chain 17 which is run over the pulleys 20 as shown in the diagram of Fig. 1 and to the end of the alarm lever 21 which is preferably secured to the lower portion of the locomotive or car so as to be readily operated by the switch installed on the ties for the purpose. As a train comes along the alarm lever is pushed up by the lever arm 44 which causes the chain 47 to be pulled in the direction of the arrow which in turn rotates the pulley 16 which winds up the coiled spring 15. Incidentally the arm 23 is brought over to the position indicated by the dotted line in Fig. 2. The stud 24 engaged in the slot 27 pulls the arm 26 back into the catch 30 where it is held. After the locomotive has passed over this switch the alarm lever re-

turns to its normal position and the arm 23 returns to its normal position after the gear wheels inside the casing 1 have turned through a circle of operations, the time of which depends upon the adjustment of the governing device; as this lever 23 returns to its first position its stud 24 engages with the projections 37, which throws the catch 30, which permits the arm 26 to return to the first position under a spring, which tends to return the arm of the whistle to its closed position, and stops the whistle.

While I have described this invention as particularly suited for installation on locomotives, cars and the like and operated by means distinct from the car, I anticipate its use in the reverse operation as to that which is described, that is, the main operating device being secured at some convenient location attached to a whistle or other suitable signal actuated by the same, and means to operate the device, attached to the car. The device I have just described has many advantages among them being that it can be installed in practically any desirable location on a locomotive, and also that it eliminates, the necessity of the engineer, motor-man, and the like being constantly on the watch for signals of this kind, or the paying of attention to them too late, thereby causing the loss of life which grade crossings are conspicuous for. Another advantage is that by means of the governing device the length of time of the whistling can be very easily graduated to be suitable for various conditions, together with the general simplicity of the entire mechanism which makes it possible to be cheap to manufacture and easy to install.

While I have shown but one form of my device I do not limit myself to that modification or in any other way except that necessitated by the prior art as many modifications of my construction can be made without departing from the principles thereof.

Having thus described my invention what I claim is:

1. A clock work mechanism comprising in combination a casing having a plurality of holes therein, a plurality of axles disposed in said casing having their end portions disposed in said holes, a train of gears on said axles, a spring secured to one of said axles for actuating said train, a pulley on one of said axles and securely mounted thereon, a chain or the like, secured to said pulley and arranged to pull it so that it will wind said spring a lever loosely disposed on one of said axles and having a slot therein and a lever adjacent to the first mentioned lever secured to said axle and having a pin thereon arranged to engage with said slot when the clock work is wound up so as to pull the loosely mounted lever to a backward posi-

tion, a guide mounted on the side of said casing and arranged to guide the second mentioned lever away from the first mentioned lever at a certain position of its travel so that said pin will come out of engagement with said slot and permit the first mentioned lever to return to its normal position.

2. A clock work mechanism comprising in combination a casing having a plurality of holes therein, a plurality of axles disposed in said casing having their end portions disposed in said holes, a train of gears on said axles, a spring secured to one of said axles for actuating said train, a pulley on one of said axles and securely mounted thereon, a chain or the like secured to said pulley and arranged to pull it so that it will wind said spring, a lever loosely disposed on one of said axles having a slot therein, a lever adjacent to the first mentioned lever and secured to said axle and having a pin thereon arranged to engage with said slot when the clock work is wound up so as to pull the loosely mounted lever to a backward position, a guide mounted on the side of said casing and arranged to guide the second mentioned lever away from the first mentioned lever at a certain position of its travel so that said pin will come out of engagement with said slot and permit the first mentioned lever to return to its normal position, a centrifugal governor disposed on one of said axles, a friction plate disposed at one end of said governor and means for engaging with said plate for graduating the amount of friction thereon.

3. A signal clock work comprising in combination with an alarm device a casing having a plurality of holes therein, a plurality of axles in said casing and having their end portions disposed in said holes, a train of gears disposed on said axles, a spring for actuating said train disposed on one of said axles, a pulley disposed on one of said axles and rigidly secured thereto means for actuating said pulley so that the spring will be wound up, a lever loosely attached to said axle on the outside of said casing and having a slot therein, a lever securely fastened to said axle and having a pin projecting therefrom for engaging with said slot and pulling said first mentioned lever outwardly when the spring is being wound up, the first mentioned lever being adapted for connection with the alarm device and a guide for moving said last mentioned lever outwardly from the first mentioned lever when the same is to be pulled back so as the pin thereof will come out of engagement with said slot, a catch for holding said first mentioned lever in position when the pin comes out of engagement with said slot, a spring used to keep said last mentioned lever toward said casing, a projecting piece dis-

posed on said catch so arranged that the pin will come into engagement with it as the second mentioned lever returns to its normal position, and thereby permit the first mentioned lever to return to its normal position.

4. A signal clock work comprising in combination with an alarm device a casing having a plurality of holes therein, a plurality of axles in said casing and having their end portions disposed in said holes, a train of gears disposed on said axles, a spring for actuating said train disposed on one of said axles, a pulley disposed on one of said axles and rigidly secured thereto, means for actuating said pulley so that the spring will be wound up, a lever loosely attached to said axle on the outside of said casing and having a slot therein, a lever securely fastened to said axle and having a pin projecting therefrom for engaging with said slot and pulling said first mentioned lever backwardly when the spring is being wound up, the first mentioned lever being adapted for connection with the alarm device, a guide for moving said last mentioned lever outwardly from the first mentioned lever when the same is to be pulled back so that the pin thereof will come out of engagement with said slot and a catch for holding said first mentioned lever in position when the pin comes out of engagement with said slot, a spring used to keep said last mentioned lever toward said casing, a projecting piece disposed on said catch so arranged that the said pin will come into engagement with it as the second mentioned lever returns to its normal position and thereby permit the first mentioned lever to return to its normal position, a centrifugal governor disposed on one of said axles, a friction plate disposed at one end of said governor and means for engaging with said plate for graduating the amount of friction thereon.

5. A signal clock work comprising in combination with an alarm device a casing having a plurality of holes therein, a plurality of axles in said casing and having their end portions disposed in said holes, a train of gears disposed on said axles, a spring for actuating said train of gears disposed on one of said axles, a pulley disposed on one of said axles and rigidly secured thereto, means for actuating said pulley so that the spring will be wound up, a lever loosely attached to said axle on the outside of said casing and having a slot therein, a lever securely fastened to said axle and having a pin projecting therefrom for engaging with said slot and pulling said first mentioned lever outwardly when the spring is being wound up, the first mentioned lever being adapted for connection with the alarm device and a guide for moving said last mentioned lever outwardly

from the first mentioned lever when the same is to be pulled back so as the pin thereof will come out of engagement with said slot, a catch for holding said first mentioned lever in position when the pin comes out of engagement with said slot, a spring used to keep said last mentioned lever toward said casing, a projecting piece disposed on said catch and so arranged that the pin will come into engagement with it as the second mentioned lever returns to its normal position, and thereby permit the first mentioned

lever to return to its normal position, and means for controlling the rate of rotation of said gears so that the duration of time it will take for the spring to be unwound can be controlled.

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

ARNOLD J. THELEN.

Witnesses:

W. H. SNELLING,
L. H. SNELLING.

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