G. H. RICE.

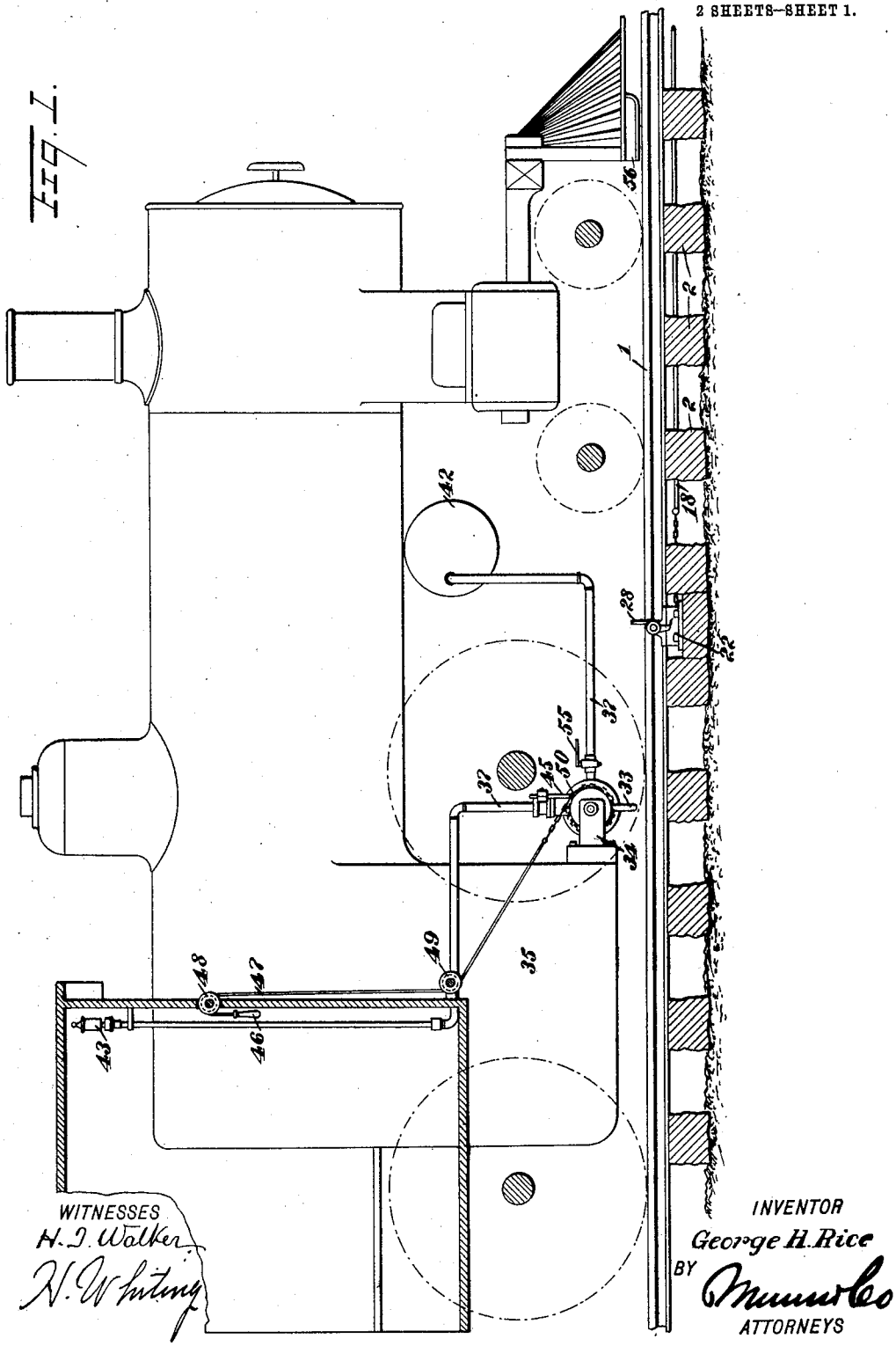
OPEN SWITCH SIGNAL.

APPLICATION FILED JUNE 24, 1909.

**1,002,083.** **Patented Aug. 29, 1911.**

2 SHEETS—SHEET 1.

Fig. 1.




WITNESSES

H. J. Walker

N. W. Whiting

INVENTOR

George H. Rice

BY Munn & Co

ATTORNEYS

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2 SHEETS—SHEET 2.

Fig. 2.

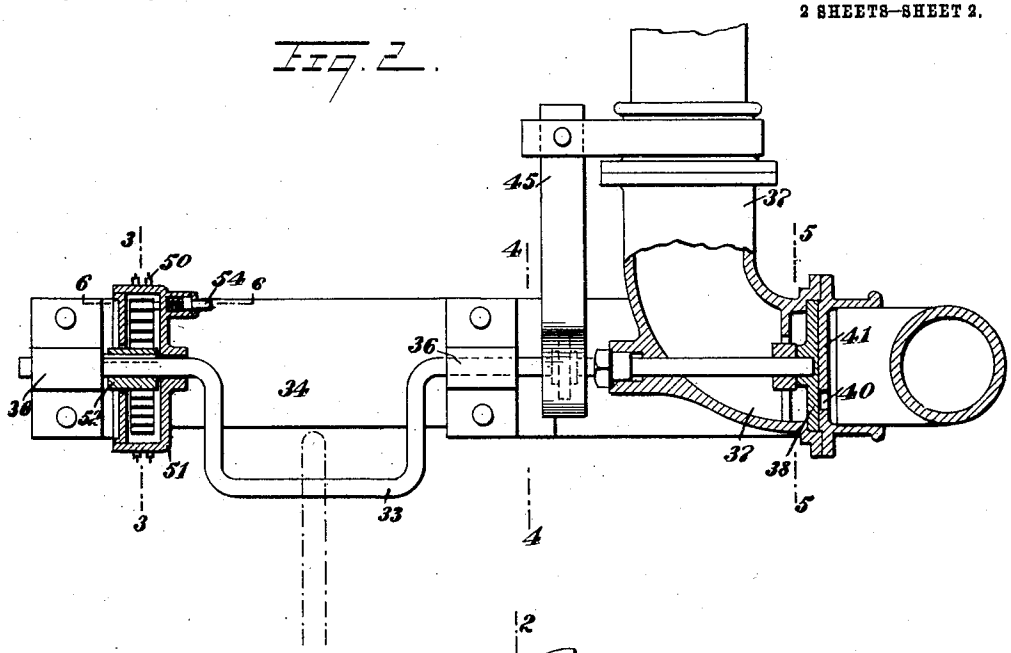



Fig. 4.

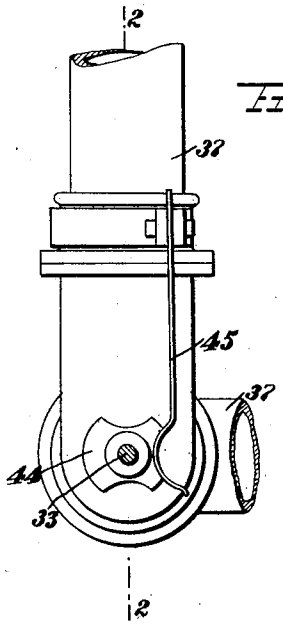



Fig. 3.

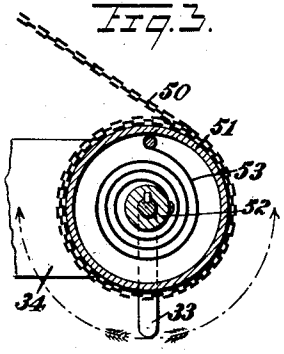



Fig. 5.

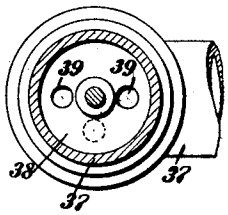
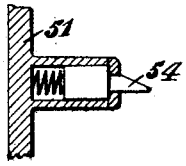



Fig 6

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ATTORNEYS

# UNITED STATES PATENT OFFICE.

GEORGE H. RICE, OF HONOLULU, TERRITORY OF HAWAII.

## OPEN-SWITCH SIGNAL.

1,002,083. Specification of Letters Patent. **Patented Aug. 29, 1911.**

Application filed June 24, 1909. Serial No. 504,041.

*To all whom it may concern:*

Be it known that I, GEORGE H. RICE, a citizen of the United States, and a resident of Honolulu, in the county of Honolulu and Territory of Hawaii, have invented a new and Improved Open-Switch Signal, of which the following is a full, clear, and exact description.

This invention relates to a new and improved means of warning an engineer that he is approaching an open switch, so that he may be prepared and have his train under perfect control.

The object of this invention is to provide a device which will be simple in construction, positive in its action, and which will have the fewest parts consistent with accurate working, and which at the same time will be strong and durable.

The invention consists in the construction and combination of parts, to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views, and in which—

Figure 1 is a side view showing the signal attached to the engine and a tripping mechanism attached to the track; Fig. 2 is an enlarged detail, partly in section on the line 2—2 in Fig. 4; Fig. 3 is a vertical cross section on the line 3—3 in Fig. 2; Fig. 4 is a vertical section on the line 4—4 in Fig. 2; Fig. 5 is a vertical section on the line 5—5 in Fig. 2; and Fig. 6 is a detail section on the line 6—6 in Fig. 2.

Referring more particularly to the separate parts of the device, 1 indicates a track suitably supported on cross ties 2, adjacent which is provided tripper finger 28 which when in its vertical position, is adapted to engage a trip 33, which is rotatably secured to a support 34, which is fixed in any well-known manner to the front of the fire-box of a locomotive 35. The trip 33 is substantially U-shaped in form, and is rotatably secured in bearings 36 on the support 34, and extends at one end through a fluid-conducting pipe 37, to a rotatable valve 38. The valve 38 has a plurality of openings 39 therein, which are adapted to be moved so that they coincide with an opening 40 in a diaphragm 41 on the pipe 37. The purpose of the valve 38, is to open and close the opening 40, so that the flow of a suitable fluid, such as compressed air, steam or the like, from a reservoir 42 to a signal 43 in the engineer's cab may be regulated.

Intermediate the valve 38 and the U-shaped bend in the trip 33, there is provided a notched locking member 44 secured to the trip 33 in any well-known manner, which is adapted to be engaged by the curved end of a spring 45, secured in any well-known manner to the pipe 37. The purpose of this notched member 44 and the spring 45 is to lock the trip 33 in any adjusted position and thereby hold the valve 38 in either its open or closed position. When the U-shaped bend of the trip 33 has been revolved by means of the tripper 28 into such a position that the valve 38 is open, it will be held there by the spring 45, and the signal will continue to sound until the trip is returned to its normal position by the engineer pulling a handle 46 in the cab, which is connected to a suitable pull-cord 47, that passes over suitable pulleys 48 and 49 and is attached to a flexible member, such as a chain 50 secured to and wound around a suitable casing 51, which is rotatably secured on one end of the trip 33. The casing 51 is connected to a sleeve 52, which is splined onto the trip 33, by means of a suitable flexible connection, such as a spiral spring 53. There is thus given a yielding connection between the casing 51 and the trip 33, whereby any rotation of the trip may be communicated to the casing.

In order to form an intermeshing positive connection between the trip 33 and the casing 51, there is provided a suitable spring-pressed latch 54, which is slidingly secured in any well-known manner to the casing 51, and is adapted to engage the U-shaped bend in the trip 33 when approached from the right direction. There is provided a suitable shut-off valve 55 between the reservoir and the valve connected to the trip mechanism, which may be used to cut off the pressure in case it is desired to have the signal-sounding mechanism inoperative. In order that the tripper finger 28 may not be caught on the cow-catcher of the engine, there is provided a suitable curved guide 56, secured to the under side of the cow-catcher,

which acts as a deflector to bend the finger while the front part of the engine is passing over it.

The tripper finger 28 which is preferably placed some little distance up the track, about quarter of a mile or so, so that the engineer will receive the warning in sufficient time to get his train under perfect control is erected to a vertical position in any suitable manner, as by the throwing of a switch. When the tripper finger 28 comes in contact with the U-shaped bend in the trip 33, it rotates it in the direction of either one of the arrows shown in Fig. 3, according to the direction in which the train is moving relative to the tripper. However, in whichever direction the trip 33 is rotated, it serves to bring one of the openings in the valve 38 opposite the opening 40, thereby permitting a flow of fluid, such as compressed air, steam or the like, from the reservoir 42 to the whistle 43 in the engineer's cab. The spring 45 in the meantime engages one of the notches in the member 44, holding the valve in its open position until the trip 33 is rotated back into its set position, by the engineer pulling on the handle 46. When this is done, the connecting cord 47 unwinds the chain 50 on the casing 51, thereby coiling up the spring 53 until the latch 54 comes in back of the U-shaped bend of the trip 33. Then, in the case when the trip has been revolved toward the rear of the engine, a further rotation of the casing 51 will bring the U-shaped bend to its lower or set position, and when the handle 46 is released, the tension of the spring 53 will coil up the chain 50 and bring the same to its normal position. If, however, the engine had been going in the reverse direction, and the trip 33 had been revolved to its opposite position, the casing 51 would have had to be revolved three-quarters of a revolution before the U-shaped bend in the trip 33 would have reached its lower or set position. The latch 54, by reason of its having a bevel face and being yieldingly extended, is permitted to slip by the U-shaped bend in the trip 23 when the same rotates backward to wind up the chain 50.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. In a device of the class described, the combination with a signal, of means adapted to supply an operating fluid to said signal, a valve adapted to control the flow of fluid to said signal, a trip adapted to operate said valve, and a member having a yielding connection with said trip and adapted to rotate without operating said trip and also adapted to positively engage said trip to operate the same.

2. In a device of the class described, the combination with a signal, of means adapted to supply an operating fluid to said signal, a valve adapted to control the flow of fluid to said signal, a trip adapted to operate said valve, a member having a yielding connection with said trip and means for positively connecting said member to said trip intermittently to operate the same.

3. In a device of the class described, the combination with a signal, of means adapted to supply an operating fluid to said signal, a valve adapted to control the flow of fluid to said signal, a trip adapted to operate said valve, a member having a yielding connection with said trip, means for positively connecting said members to said trip to operate the same, and a lock for holding said trip in various positions.

4. In a device of the class described, the combination with a signal, of means adapted to supply an operating fluid to said signal, a valve adapted to control the flow of fluid to said signal, a trip for operating said valve, a pull cord adapted to operate said trip, means adapted to normally connect said pull cord to said trip in a yielding manner, and means adapted to intermittently connect said pull-cord to said trip in a positive manner.

5. In a device of the class described, the combination with a signal, of means adapted to supply an operating fluid to said signal, a valve adapted to control the flow of fluid to said signal, a trip for operating said valve, a tripper adapted to operate said trip, a pull-cord adapted to operate said trip, means adapted to normally connect said pull-cord to said trip in a yielding manner, and means adapted to intermittently connect said pull-cord to said trip in a positive manner.

6. In a device of the class described, the combination with a signal, of means adapted to supply an operating fluid to said signal, a valve adapted to control the flow of fluid to said signal, a trip for operating said valve, a casing for said trip, a spring connecting said casing with said trip, a latch on said casing adapted to positively engage said trip, and a pull-cord adapted to rotate said casing.

7. In a device of the class described, the combination with a signal, of means adapted to supply an operating fluid to said signal, a valve adapted to control the flow of fluid to said signal, a trip for operating said valve, a casing for said trip, a spiral spring connecting said casing with said trip, a spring-pressed latch in said casing adapted to positively engage said trip, and a pull-cord adapted to rotate said casing.

8. In a device of the class described, the combination with a signal, of means adapted to supply an operating fluid to said signal, a valve adapted to control the flow of fluid

to said signal, a trip for operating said valve, a rotatable casing for said trip, a spring connecting said casing with said trip, a latch on said casing adapted to positively engage said trip, a pull-cord adapted to rotate said casing, and a lock for holding said trip in various positions.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE H. RICE.

Witnesses:

CHAS. J. WEBSTER,

E. M. PHETRIDGE.