

T. F. BELLHOUSE.
 TRAIN AIR SIGNAL INDICATOR.
 APPLICATION FILED DEC. 2, 1909.

1,030,454.

Patented June 25, 1912.

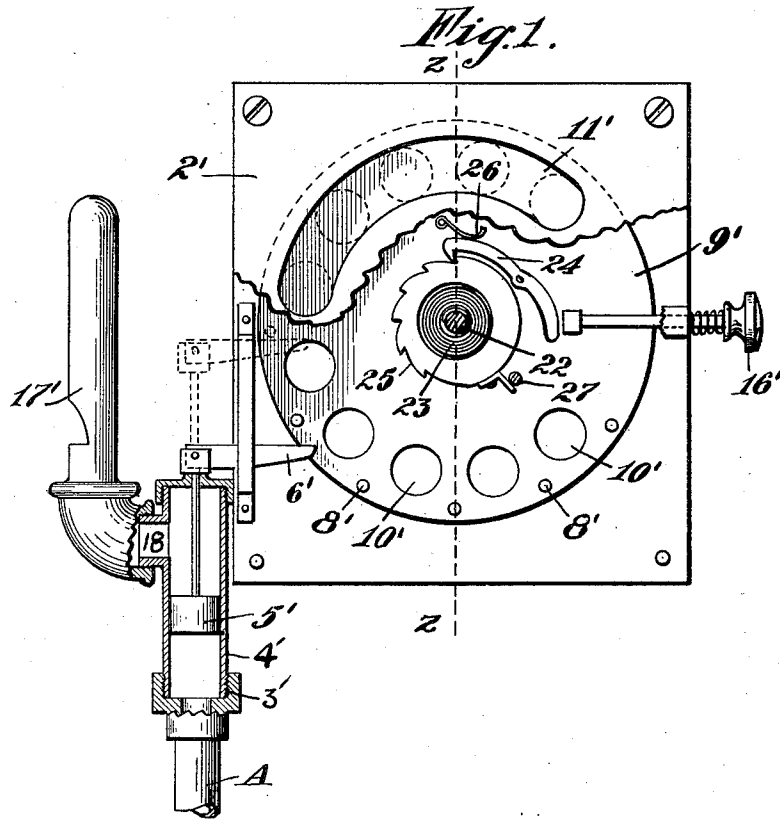
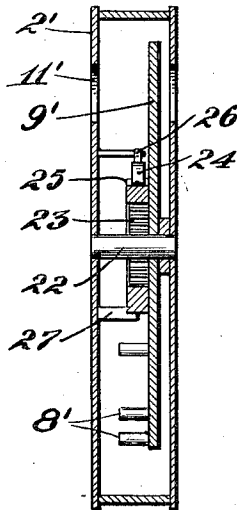


Fig. 2.



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 His Attorney.

UNITED STATES PATENT OFFICE.

THOMAS F. BELLHOUSE, OF SACRAMENTO, CALIFORNIA, ASSIGNOR OF ONE-HALF TO
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TRAIN-AIR-SIGNAL INDICATOR.

1,030,454.

Specification of Letters Patent.

Patented June 25, 1912.

Application filed December 2, 1909. Serial No. 531,044.

To all whom it may concern:

Be it known that I, THOMAS F. BELLHOUSE, a citizen of the United States, residing at Sacramento, in the county of Sacramento and State of California, have invented new and useful Improvements in Train-Air-Signal Indicators, of which the following is a specification.

This invention relates to signal devices of the type operated by fluid pressure, and particularly pertains to signal devices such as are installed upon locomotives and trains, for the purpose of signaling the engineer from remote points on the train.

The invention is not alone applicable to use on railway trains, but is adapted to be employed wherever a fluid pressure system is used for conveying a signal from one point to another such for instance as on boats, in factories and engine-rooms in general.

It is the object of this invention to provide a signal device of the fluid-pressure type, embodying means by which the signal will be delivered in two ways simultaneously, so as to impress both the sense of sight and hearing, and thereby lessen the liability of misinterpreting the signal as is sometimes the case when either sense alone is depended upon.

Another object of this invention is to provide a signal device which may be readily applied to the terminal of the signal air line in the engineer's cab of a locomotive, and which may be installed at intervals throughout the train, and connected on the signal line near the conductor's signal valve.

Another important object of this invention is to provide means whereby the signals given are indicated for a length of time after delivery so that the recipient may be certain of responding correctly to the requirements of the transmitter, and means whereby the indicator may be restored for further operation.

The invention consists of the parts, and the combination and construction of parts as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a front view of the device, showing the circular disk. Fig. 2 is a cross-section on line Z—Z of Fig. 1.

In the drawings, A represents the terminal of a fluid pressure supply pipe on which my signal device is mounted. This pipe A

may be connected to any suitable source of supply in any desired manner, and the fluid pressure by which my device is operated may be supplied and controlled by any appropriate means.

2 indicates the casing of the device which is provided with an internally-threaded portion 3' adapted to be screwed upon the end of the pipe A.

A vertically disposed cylinder 4' is formed within the shell 2', and has its lower end open to the fluid pressure supply A, as shown in Fig. 1. A piston or plunger 5' is mounted in the cylinder 4', and is adapted to be reciprocated up and down therein, as will be later described.

The upper end of the piston 5' has a yoke formed thereon in which a normally laterally extending arm 6' is pivotally mounted.

The disk 9' is journaled upon a horizontal pin, so that its periphery is contiguous to the projecting arm 6' and substantially parallel therewith. Pins 8' project from the face of the disk, so that when the plunger 5' is raised, the arm will engage one of the pins and thus rotate the disk and move its periphery a distance equal to the stroke of the plunger.

Perforations 10' are made through the disk corresponding with each of the pins 8' and each of these perforations is advanced so as to be exposed through a curved slot 11' which is made in the casing 2'. The position of the opening 18, through which air is permitted to escape to the whistle, is such that no sound is made until the plunger has risen high enough to expose this opening and allow the air to escape to the whistle. As soon as the air pressure is relieved, the plunger will drop to the bottom of its cylinder and by reason of the hinging of the arm 6', it will pass the pin next adjacent to the one which was previously lifted, and be in a position to engage this following pin upon the next rise of the plunger.

23 is a coiled spring surrounding the axial pin 22 of the disk, and the tendency of this spring is to reverse the movement of the disk. This tendency is resisted by the pawl 24 pressed by the spring 26 and adapted to engage teeth 25 upon the hub of the disk.

27 is a stop which limits the return movement of the disk when released. The disk is released by means of the push-buttons 16', the inner end of which is adapted to engage

the end of the pawl 24, which projects beyond the pivot and when thus released the disk may return to its normal position.

By this construction, when air is admitted, the piston or plunger will be raised and the arm 6' engaging one of the pins 8' will move the disk, so as to expose one of the perforations 10' through the space or opening 11'. At the instant of this exposure the air will also be admitted to the whistle so that attention is called to the fact.

If more of the openings are to be exposed, the plunger will be allowed to drop to the bottom of the cylinder by relieving the latter of the air pressure by any suitable relief means, and upon the next impulse another opening will be exposed and the whistle again sounded; and thus, instead of the continuous sounding of the whistle, each movement of the disk is accompanied by a single sound of the whistle, until the last opening has been exposed, when the whistle may be allowed to sound continuously to insure attention to the operation.

The number of whistle blasts will thus coincide with the number of perforations in the indicator and error will be prevented. The engineer will not have to depend upon his sense of hearing to determine the number of blasts, as the count may be verified by the number of open perforations upon the indicator, and the perforations will remain exposed until the engineer has had sufficient time to determine a given signal with positive certainty. It will be understood that these signals or openings may correspond with figures, as indicated in Fig. 1, so that the count will be more certainly verified.

It is obvious that by attaching my indicating device to the signal line at a point near the conductor's valve, each opening of the valve will cause this device to operate in the same manner as the one in the engineer's cab, and as the indicator remains fixed until manually released, it acts as a register to show the number of whistle blasts received by the engineer, thereby indicating to the conductor that the right signal has been delivered.

Having thus described my invention, what I claim and desire to secure by Letters Patent is—

1. A signaling apparatus consisting of a vertical cylinder having an inlet at the bottom for air under pressure, a discharge pas-

sage and whistle connection in the side, a plunger within the cylinder, normally depressed and cutting off the discharge passage from the inlet, a pivoted, transversely projecting arm carried by the plunger, means for preventing the arm turning in one direction, a horizontally pivoted disk having pins projecting from the face and adapted to be engaged by the arm with each rise of the plunger, and openings through the disk spaced to correspond to the length of the stroke of the plunger and capable of being successively exposed by each lift of the plunger.

2. A signaling apparatus consisting of a vertical cylinder having an inlet at the bottom for air under pressure, a discharge passage and whistle connection in the side, a plunger within the cylinder normally depressed and cutting off the discharge passage from the inlet, a pivoted, transversely projecting arm carried by the plunger, means for preventing the arm turning in one direction, a horizontally pivoted disk having pins projecting from the face and adapted to be engaged by the arm with each rise of the plunger, openings through the face of the disk spaced to correspond to the length of the stroke of the plunger and capable of being successively exposed by each lift of the plunger, a retaining pawl and ratchet for resisting the reverse movement of the disk, and a releasing pin for said pawl.

3. A signaling apparatus consisting of a vertical cylinder having an inlet at the bottom for air under pressure, a discharge passage and whistle connection in the side, a plunger within the cylinder normally depressed and cutting off the discharge passage from the inlet, a pivoted, transversely projecting arm carried by the plunger, means for preventing the arm turning in one direction, a horizontally pivoted disk having pins projecting from the face and adapted to be engaged by the arm with each rise of the plunger, audible signals being given with each rise of the plunger, said disk having openings which are successively exposed in unison with each audible signal.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

THOMAS F. BELLHOUSE.

Witnesses:

B. KEYES,

CHARLES E. SWEZY.