

No. 710,383.

Patented Sept. 30, 1902.

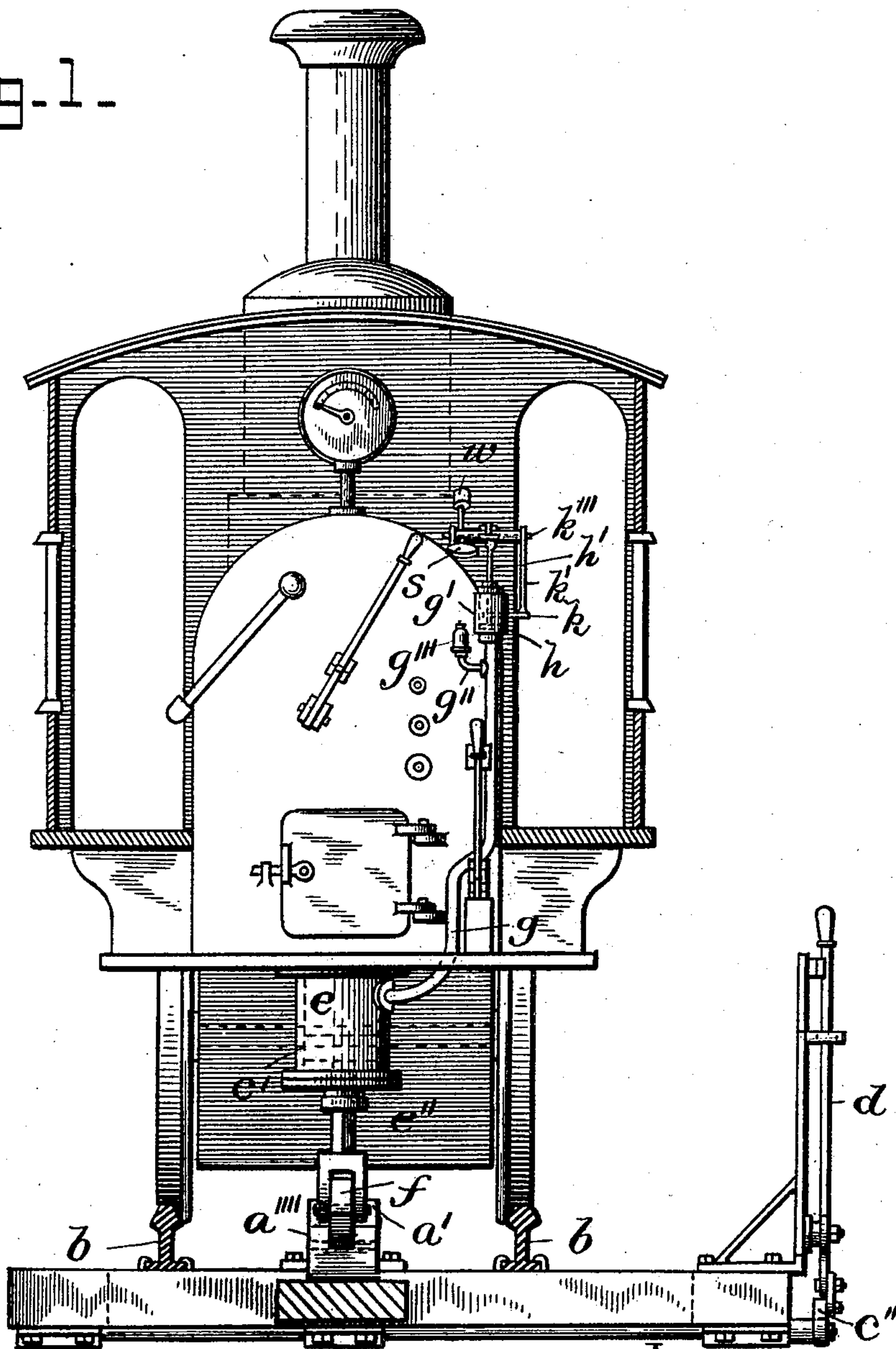
W. WASHA.
DANGER SIGNAL FOR RAILWAYS.

(Application filed Mar. 10, 1902.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



WITNESSES:

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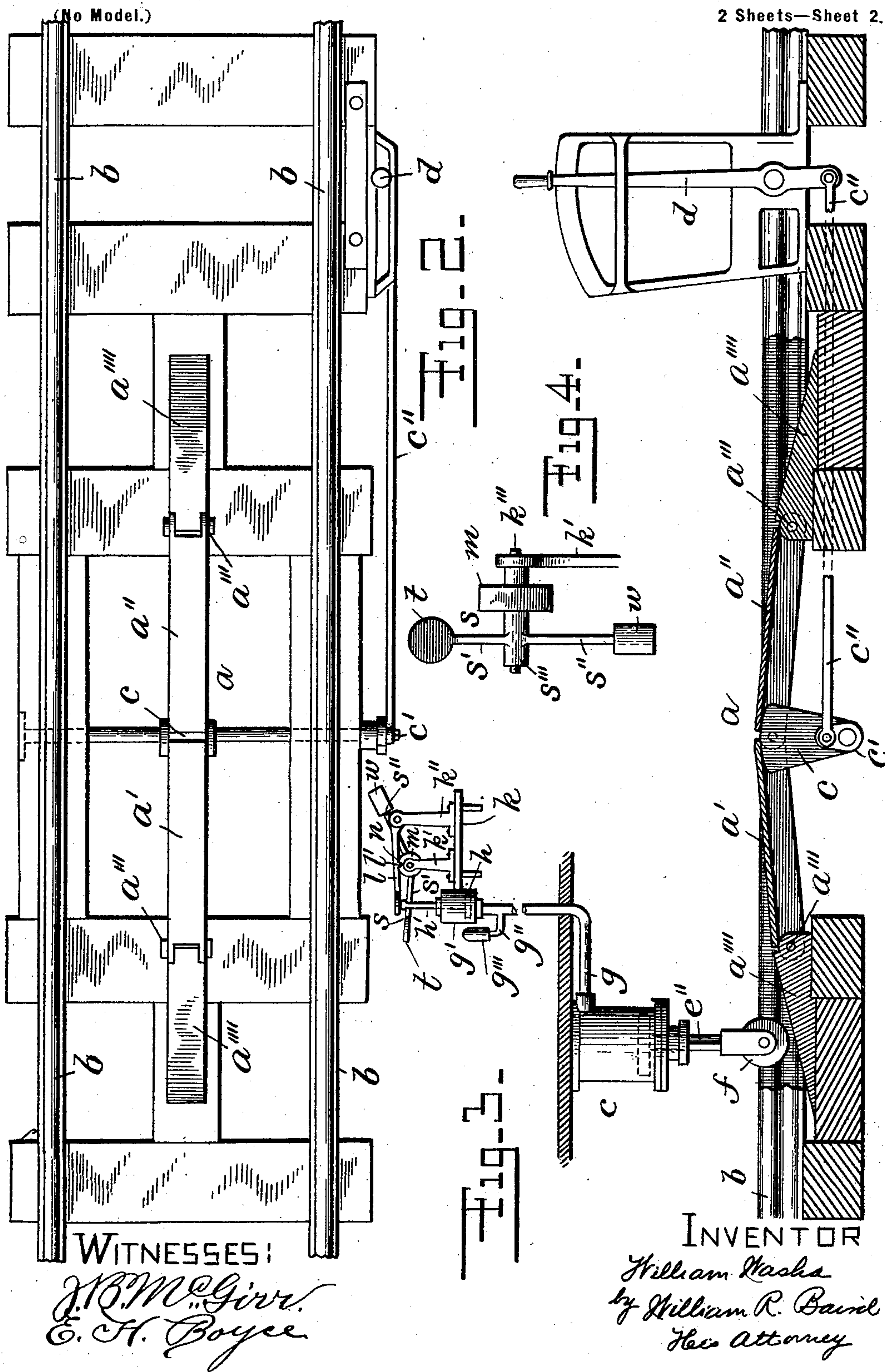
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2 Sheets—Sheet 2.



UNITED STATES PATENT OFFICE.

WILLIAM WASHA, OF NEW YORK, N. Y.

DANGER-SIGNAL FOR RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 710,383, dated September 30, 1902.

Application filed March 10, 1902. Serial No. 97,558. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM WASHA, a citizen of the United States, residing in the borough of Manhattan, in the city of New York, county of New York, and State of New York, have invented certain new and useful Improvements in Danger-Signals for Railroads, of which the following is a specification.

My invention relates to railway-signals, and its purpose is to so present a visible or audible signal, or both, to the engineer within the cab that his attention will be called to the existence of impending danger; and its novelty consists in the construction and adaptation of the parts, as will be more specifically pointed out in the claims.

In the drawings, Figure 1 is a front elevation of an engine provided with my improved signal. Fig. 2 is a top plan view of a portion of the track, the striking-plate, and its connections. Fig. 3 is a side elevation of the signal and its connections, some parts being shown in vertical section; and Fig. 4 is an enlarged detail of the visible signal.

In the drawings, *a* is a striking-plate placed lengthwise of and substantially parallel with the tracks *b b*. It is composed of two members *a'* and *a''*, each hinged at *a'''* to a fixed inclined bearing *a''''*, secured between the tracks. It is provided with means whereby it may be raised or lowered, consisting of a cam *c*, adapted to be oscillated on a bearing *c'* by means of a link or series of links *c'*, actuated by a signal-lever *d* of common construction.

The engine is provided beneath the floor of the cab or in any other suitable location with an air-cylinder *e*. Within the cylinder is a vertically-reciprocating piston *e'*, provided with a dependent rod *e''*, adapted to pass through an aperture in the bottom of the cylinder. This rod is preferably made of square or polygonal section, so that it will have no tendency to turn. At its lower extremity it is provided with a roller *f*. The rod is of such a length that the roller will clear all ordinary obstacles placed between the tracks, over which the cow-catcher or pilot of the engine can pass.

Connected to the cylinder *e* is a pipe *g*, leading up into the cab and terminating at its upper extremity in a small cylinder *g'*. Within this cylinder is a vertically-reciprocating piston *h*, provided with an upwardly-extending rod *h'*. A branch pipe *g''*, connected to the pipe *g*, leads to a whistle *g'''* of any suitable construction.

A bracket *k* is provided on the side of the cab at a convenient position, and mounted thereon are two standards *k'* and *k''*. The standard *k* is provided with a horizontal pin or shaft *k'''*, on which the visible signal *s* is adapted to swing. The signal consists of a front arm *s'*, provided at its extremity with a disk *t*, a rear arm *s''*, provided with a counterweight *w*, a sleeved bearing *s'''*, slipping over the pin or shaft *k'''*, and a ring or plate *m*, notched at *n*. The other standard *k''* is provided with a pivoted arm *l*, extending forward over the plate *m* and provided at the proper place with a pin or projection *l'*, adapted to fit into the notch *n* and long enough to project forward over the upper end of the piston-rod *h'*.

The operation of the device is as follows: If it is desired to attract the attention of the engineer, the signal-lever *d* is operated so as to turn the cam *c* and lift up the striking-plate *a* to the position shown in Fig. 3. As the engine moves forward the roller *f* strikes first the inclined bearing *a''''* and moves upward onto and along the striking-plate *a*. This causes the roller to be lifted vertically. This in turn moves the piston-rod *e''* and piston *e'*, and the motion of the latter compresses the air within the cylinder *e* and causes the air to flow as rapidly as possible into the pipe *g* and branch pipe *g''*. When it passes into the latter, it sounds the whistle *g'''*. As it passes into the pipe *g'* it lifts the piston *h* and its rod *h'*. The latter strikes the arm *l* and moves it upward, releasing the projection *l'* from the notch *n*. This permits the weight or counterpoise *w* to exert its power and causes the rotation of the sleeved bearing *s'''* of the signal *s* on the shaft *k'''*, bringing the front portion of the disk *t* in front of the engineer. The face of the disk *t* is painted red or otherwise distinguished, so as to at once attract his attention.

What I claim as new is—

1. A railway-signal embracing a track element, means by which the same may be raised and lowered, a fluid-cylinder carried by the engine or train, an alarm to be operated by fluid therefrom, a longitudinally-movable

rod, a piston within said cylinder and a device to engage said track element and be moved bodily thereby to adjust said rod and piston longitudinally, said piston and device being secured to opposite ends of said rod.

2. A railway-signal embracing a track element having means by which it may be raised and lowered, and a train element embracing a fluid-cylinder carried by the engine or train, an alarm to be operated by fluid therefrom, a piston in said cylinder, a longitudinally-movable rod depending from said piston, and a roller carried by the lower end of said rod to engage said track element.

3. A train element of a railway signaling system, embracing, in combination with a signaling device proper, actuating and controlling means therefor including a fluid-cylinder, a piston in said cylinder, a locking means for the signaling device proper controlled in one direction of its movement by the action of said piston, and means for controlling the action of the fluid to thereby operate said piston.

4. A train element of a railway signaling system, embracing, in combination, a signaling device proper, means for operating the same in one direction, means for locking the same against the action of said operating means, and means for releasing the same from its said locking means, including a fluid-cylinder, a piston in said cylinder having its rod engaged with said locking means, and means for controlling the action of the fluid to thereby operate said piston and disconnect the locking means from the signaling device proper.

5. A train element of a railway signaling system, embracing, in combination, a pivoted signaling device proper, having a signal at one end and means at its other end for turning it pivotally to expose the signal, means for locking said signal against the action of said turning means, and devices for disengaging the locking means from said signaling device proper, including a fluid-cylinder, a piston in said cylinder and means for controlling the action of the fluid to thereby operate said piston.

6. A train element of a railway signaling system, embracing, in combination, a visual signal, means for normally locking the same, means for adjusting it into danger position when released from said locking means, a fluid-cylinder, a piston in said cylinder operative to disengage said locking means from said signal, an audible signal, and means for actuating said piston and audible signal.

7. A railway signaling system embracing a track element and a train element, said train element having a fluid-cylinder, a piston therein, a signaling device proper, a locking means for the latter controlled in one direction of its movement by operation of said piston, and means controlled by obstruction imposed by the track element of the system to control the operation of said piston.

8. A railway signaling system, embracing

a track element and a train element, said train element having a fluid-cylinder, a piston therein, a pivoted arm having a visual signal, means for actuating said arm automatically in one direction, a device for locking said arm against the action of said actuating means, means between said locking device and piston by which the locking device will be controlled on one direction of its movement by operation of said piston, and means controlled by obstruction imposed by the track element of the system to control the operation of said piston.

9. A railway signaling system, embracing a track element and a train element, said train element having a fluid-cylinder, a piston therein, a piston-rod, a pivoted arm having a visual signal at one end, means connected with the other end of said arm to elevate said signal, a pivoted means for locking said arm against the action of said elevating means, said locking means projecting into the path of said piston-rod and actuated thereby to release said arm, and means controlled by obstruction imposed by the track element of the system to control the operation of said piston and piston-rod.

10. A railway signaling system embracing a striking-plate arranged near the track and having means for adjusting it, a fluid-cylinder carried by the train and containing a reciprocating piston provided with a rod adapted to be brought into rolling contact with the striking-plate when raised, a signal, and a locking means for said signal released therefrom by operation of said rod and piston.

11. A railway signaling system embracing a striking-plate arranged near the track and having means for adjusting it, a fluid-cylinder carried by the train and containing a reciprocating piston provided with a rod having a rolling contact device at its lower end to engage the striking-plate when the latter is raised, a second fluid-cylinder having communication with the first one and provided with a piston, an audible signal having communication with said first cylinder, a piston in said second cylinder and a visual signal controlled by operation of the piston in said second cylinder.

12. A railway signaling system, embracing a striking-plate arranged near the track and having means for adjusting it, a fluid-cylinder carried by the train and containing a reciprocating piston provided with a rod adapted to be brought into rolling contact with the striking-plate when the latter is raised, a second fluid-cylinder having communication with the first one and provided with a piston, an audible signal between said cylinders, a visual signal, a locking means for the visual signal, and means actuated by movement of the piston in said second cylinder to release said visual signal.

13. A railway signaling system embracing a track element having means for adjusting it; and a train element comprising a vertical

fluid-cylinder having a piston which depends from it and is provided at its lower end with a contact device to engage the track element, a second fluid-cylinder having communication with the first one, an audible signal having communication with said first cylinder, and a visual signal controlled by the second cylinder.

14. A railway signaling system embracing a track element having means for adjusting it; and a train element comprising a fluid-cylinder having a piston which depends from it and is raised by said track element, a second fluid-cylinder having communication with the first one, an audible signal having communication with said first cylinder, a visual signal having a means for locking it, means controlled by the fluid from said second cylinder for releasing said visual signal, and means connected with said visual signal for throwing the same into exposed position.

15. A railway signaling system, embracing a track element having means for adjusting it; and a train element comprising a fluid-cylinder having a piston which depends from it and is raised by said track element when the latter is elevated, a second fluid-cylinder having communication with the first one, an audible signal having communication with said first cylinder and caused to sound by the fluid therefrom, a visual signal having a locking means, means controlled by the fluid from said second cylinder for actuating the locking means to permit exposure of said visual signal, and means operated to expose said visual signal when the locking means is disengaged.

16. A railway-signal embracing a striking-plate near the tracks, means for raising and lowering the same, an air-cylinder carried by the train and provided with a vertically-reciprocating piston having a dependent piston-rod provided with a roller to engage said striking-plate when the latter is elevated, a signal normally invisible to the engineer and means for turning the signal into a visible position set into operation by the upward motion of the piston within the air-cylinder.

17. A railway-signal consisting of a striking-plate near the tracks, means for raising and lowering the same, an air-cylinder carried by the train and provided with a vertically-reciprocating piston having a dependent piston-rod provided with a roller to engage said striking-plate when the latter is elevated, and a whistle adapted to be blown by the compression of the air in the cylinder when the piston is moved upward by the travel of said roller along said striking-plate, and a visual signal adjusted into danger position by the same compression of air in the cylinder.

18. A railway-signal consisting of a striking-plate near the tracks, means for raising and lowering the same, an air-cylinder car-

ried by the train and provided with a vertically-reciprocating piston having a dependent piston-rod provided with a roller to engage said striking-plate, a whistle adapted to be blown by the compression of the air in the cylinder when the piston is moved upward by the travel of said roller in said plate and a signal normally invisible to the engineer and brought into view through means actuated by the same compression of the air in the cylinder.

19. A railway signaling system consisting of a track element having means for adjusting it, and a train element embracing an air-cylinder provided with a piston having its rod adapted to be brought into rolling contact with the track element when the latter is elevated, and thereby move said piston, a whistle adapted to be blown by the compression of the air in the cylinder when the piston is moved by the travel of said contact on said track element, and a signal in the engineer's cab, normally invisible to the engineer and brought into his view through means actuated by the same compression of the air in said cylinder.

20. A train element of a railway signaling system, embracing, in combination, a fluid-cylinder, a piston therein, a signal, a locking means for said signal, and means interposed between said piston and locking means and operated by the former to disengage the latter from said signal.

21. A train element of a railway signaling system, embracing, in combination, a fluid-cylinder, a piston therein provided with a rod designed to be operated by the track element of the system, a signal, a locking means for said signal, means connecting said locking means with said piston and operated by the latter to disengage the former from the signal, and means for adjusting said signal when the same is released.

22. A train element of a railway signaling system, embracing, in combination, a visual signal, means for normally locking the same, means adjusting it into danger position when released from said locking means, a fluid-cylinder, a piston therein, means between said piston and locking means for disconnecting the latter from the signal when the piston is actuated, an audible signal, and means for actuating said piston and sounding said audible signal, including a second fluid-cylinder having communication with the one first mentioned and a piston in said second cylinder.

Witness my hand this 27th day of February, 1902, in the presence of two subscribing witnesses.

WILLIAM WASHA.

Witnesses:

WILLIAM R. BAIRD,
WILLIAM J. LEE.