No. 765,008. PATENTED JULY 12, 1904.

T. H. HILLMAN.

DEVICE FOR AUTOMATICALLY OPERATING AIR BRAKES.

APPLICATION FILED MAR. 18, 1904.

NO MODEL. 2 SHEETS—SHEET 1

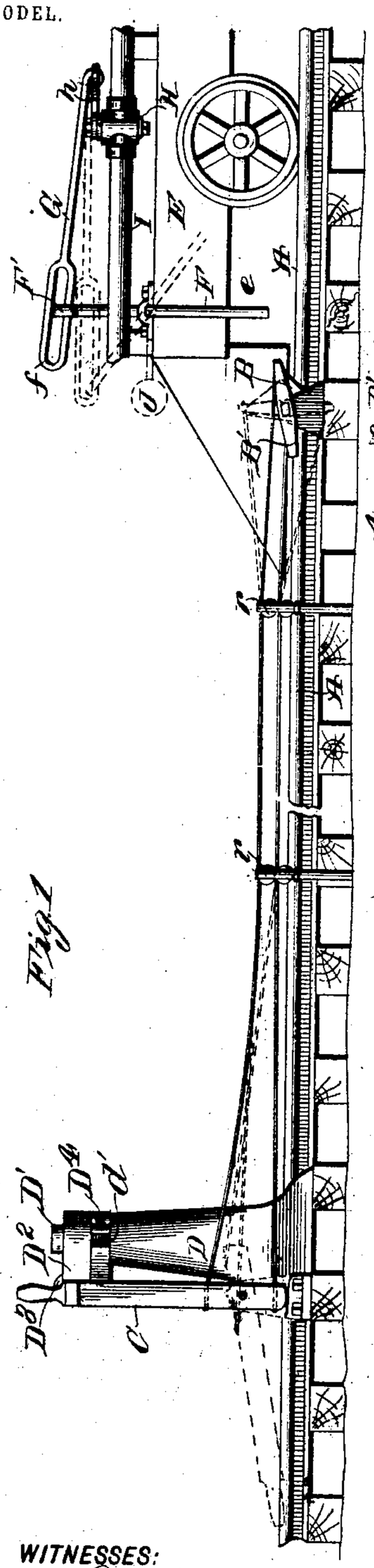

Fig. 1.

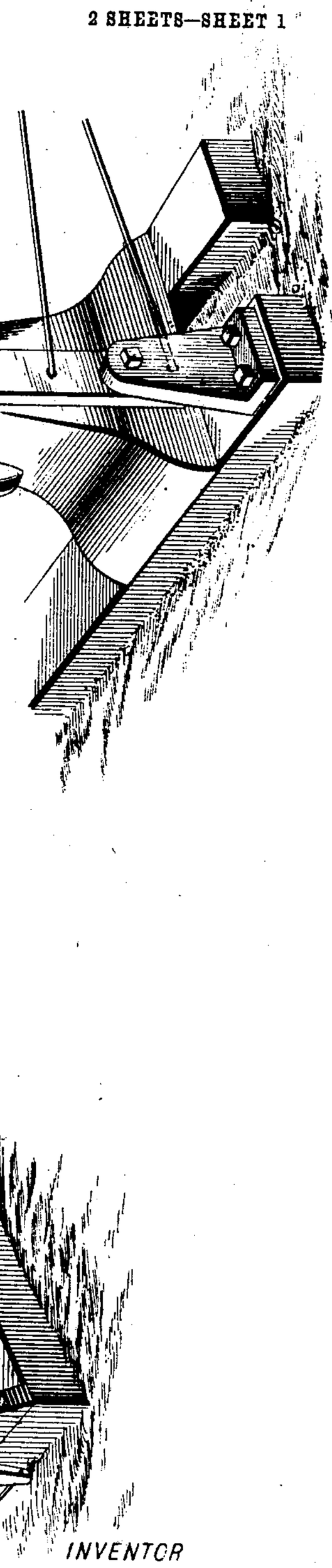

Fig. 2.

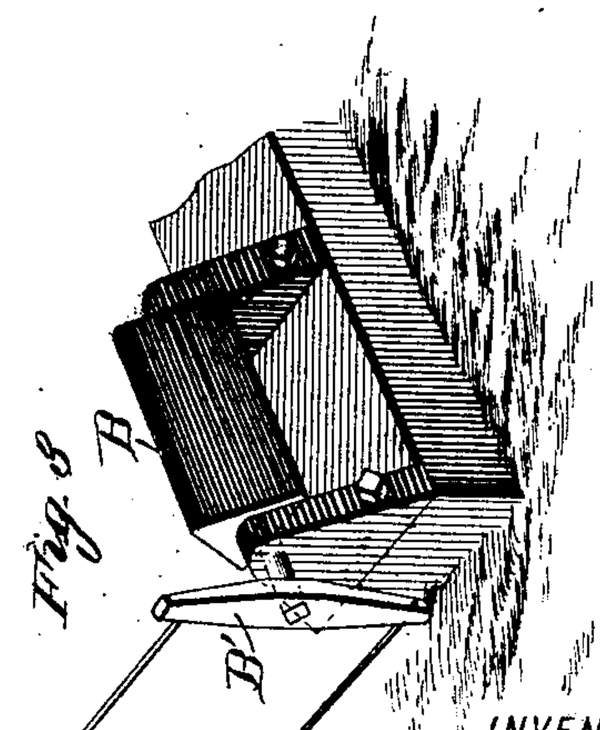

Fig. 3.

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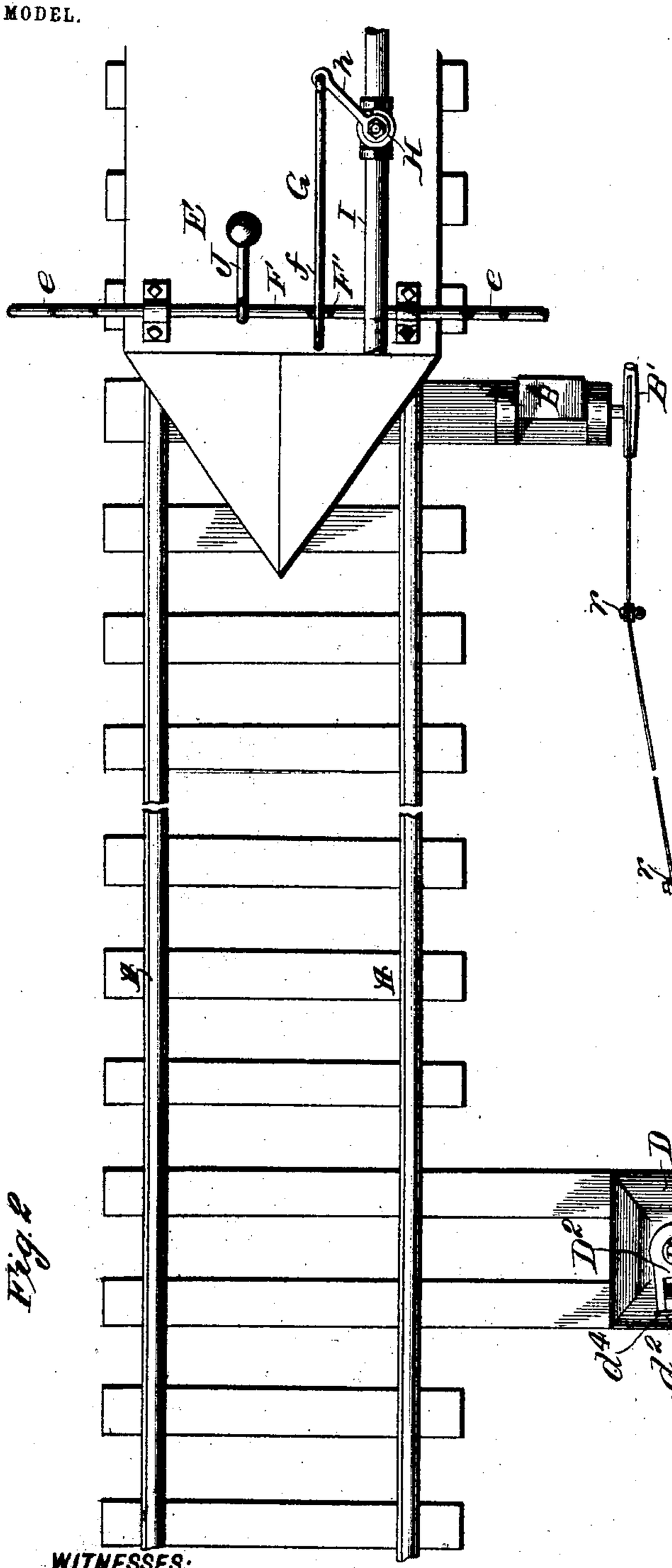

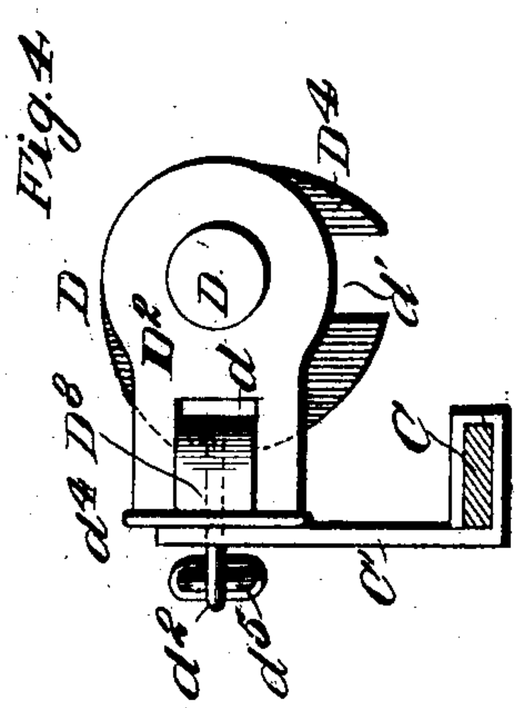

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UNITED STATES PATENT OFFICE.

THEODORE H. HILLMAN, OF SPOONER, WISCONSIN.

DEVICE FOR AUTOMATICALLY OPERATING AIR-BRAKES.

SPECIFICATION forming part of Letters Patent No. 765,008, dated July 12, 1904.

Application filed March 18, 1904. Serial No. 198,806. (No model.)

To all whom it may concern:

Be it known that I, THEODORE H. HILLMAN, a citizen of the United States, residing at Spooner, in the county of Washburn and State of Wisconsin, have invented a new and useful Improvement in Devices for Automatically Operating Air-Brakes, of which the following is a specification.

My invention is in the nature of a device for automatically operating the air-brakes of a railroad-train to stop the train, to protect other trains while switching at stations, or in the event the switch is open, or for stopping the train at telegraph-stations for orders.

It is an improvement in that class of automatic devices in which an adjustable contact-piece is arranged along the road-bed and is so adjusted as to be struck by a coacting member carried by the train, which member by coming in contact with the contact-piece in the road-bed is deflected and is made to open a valve in the train-pipe and release the air therein, so as to apply the brakes.

My improvement consists in the novel construction and arrangement of parts operating on the above-described principle, in which the adjusting devices for regulating the position of the contact-piece in the road-bed are independent of the switch itself, but are arranged to coöperate with the switch-stand, as will be hereinafter fully described with reference to the drawings, and pointed out in the claims.

Figure 1 is a side elevation. Fig. 2 is a plan view. Fig. 3 is an enlarged detail of the contact device in the road-bed. Fig. 4 is an enlarged top plan view of the switch-stand, and Fig. 5 is an enlarged perspective view of the switch-stand and operating-lever for the contact device in the road-bed.

In the drawings, A A represent the rails of the main line.

B is the contact device, located in the road-bed at any suitable distance from the switch—say two or three thousand feet therefrom. This contact device is a block triangular in cross-section and mounted upon a horizontal axis upon suitable bearings and located about sixteen inches outside of one of the rails. This block may be turned about its horizontal axis, so as to present one of its flat sides uppermost, as shown in Fig. 2, in which case it is not in range of engagement by the coacting parts on the engine, or it may be turned so that one of its angles projects upwardly, as shown in Fig. 3, in which it is in range of engagement by the said devices on the engine. This block is turned to either of these adjustments by a cross-head B′, fixed rigidly to the axle of the block, which block is also rigidly fixed to the axle. From the opposite ends of this cross-head two wires extend horizontally along the road-bed over suitable grooved guide-rollers *r* to an upright operating-lever C, which is fulcrumed to a suitable support in the road-bed, the wires being attached to the lever upon opposite sides of the fulcrum.

D is a switch-stand which is an upright column or pillar set about four feet from the track and carrying within it a vertical rotary shaft D′, whose lower end is to be connected with any suitable switching mechanism, which it is not necessary to show, since my devices are not operated by the act of setting the switch. The upper end of this rotary adjustable shaft is provided with a rigidly-attached and horizontally-projecting arm D^2, which has pivoted to its outer end a locking-lever D^3. This lever is arranged to hang in a vertical position and to drop into one of two notches *d d′*, formed in a plate D^4, fixed to the top of the switch-stand column. When this locking-lever is in the notch *d*, the main line is supposed to be continuous; but when the rotary shaft is turned, so that the locking-arm rests in the notch *d′*, the switch is supposed to be open.

The operating-lever C for my devices is adjusted independently of the switch devices; but when the switch is not open and the main line is continuous and the locking-lever D^3 in the notch *d* the operating-lever C is locked in a vertical position by means of an arm C′, which projects at right angles to the lever C and is fixed thereto. This arm is slotted at its outer end, and this slot passes over a staple d^2, fixed to the locking-lever D^3 and projecting through a slotted plate d^4 on the end of the rigid arm D^2. When the arm C′ of my operating-lever is over the staple, a padlock

d^5 is secured in the staple and locks both the operating-lever C and the locking switch-lever D^3. This insures the inoperative position of the contact-block B when the main line is intact and continuous. If, however, the train is to be stopped, the padlock is removed and the lever C is thrown down into the horizontal position, as shown in dotted lines in Fig. 1, and this raises the angle of the block B to position to be operated upon by the devices on the train, which will shortly be described.

It will be seen from the devices just described that the operating-lever C may be adjusted without disturbing the switch-moving rotary shaft, and consequently my device may be made available for automatically stopping the train for receiving orders or for other purposes which do not involve the changing of the switch, and yet my operating devices may be locked, so that they cannot be tampered with.

I will now describe the devices carried by the engine by which the brakes are applied automatically from contact with the block B when in elevated position. These devices may be located on any part of the train, but are preferably placed on the engine just behind the cylinder.

E is a dummy representing an engine. Transversely across this is arranged a rock-shaft F, whose ends are bent down to form crank extensions *e*, which reach out to and descend to the level of the contact-blocks B in the road-bed when in their elevated position. This rock-shaft has an upwardly-projecting arm F′, which is loosely coupled to a link *f* on the forward end of a rod G. This rod extends to and connects with an arm *h* of a valve H, located in the air-pipe I of the train-pipe. This valve H is a discharge-valve, and when the crank extension *e* strikes the block B said crank is deflected to the rear; the shaft F is rocked, arm F′, with link *f* and rod G, are drawn forward, and the valve H is opened to release the air and apply the brakes. To hold the parts to this position with the valve open, a weighted arm J is attached to the rock-shaft and is thrown over the center of the shaft by the deflection of the crank *e*.

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

1. In a device for automatically operating air-brakes, the combination with an adjustable contact-piece in the road-bed; of an operating-lever for the same, a switch-stand and devices for simultaneously locking the switch-lever and the brake-lever, said brake-lever being disconnected from the switch mechanism and capable of independent adjustment substantially as shown and described.

2. In a device for automatically operating air-brakes, the combination of a triangular contact-block mounted upon a horizontal axis in the road, a cross-head attached to the same, wires attached to opposite ends of said cross-head, and an operating-lever connected with said wires upon opposite sides of its fulcrum substantially as and for the purpose described.

3. In a device for automatically operating air-brakes, the combination with an adjustable contact-piece arranged in the road-bed, wires leading therefrom, a vertical operating-lever connected to the wires, a vertical column with notched plate on top of the same, a rotary shaft arranged in said column and having a rigid arm attached thereto at its upper end, a locking-lever fulcrumed to said arm and engaging one of the notches of the plate, and a horizontally-projecting arm fixed to the operating-lever and extended to and locked to the locking-lever substantially as and for the purpose described.

4. In a device for automatically operating air-brakes, the combination with an adjustable contact-piece arranged in the road-bed; of a rock-shaft mounted transversely on the train and having a crank at its end adapted to engage the contact-piece in the road-bed, the train-pipe with discharge-valve and valve-arm, a link-rod connecting the valve-arm to the rock-shaft, and a weight for holding the rock-shaft to its adjustment substantially as described.

THEODORE H. HILLMAN.

Witnesses:
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JOHN STEWART.