

A. H. LONG.
 SIGNALING DEVICE FOR DOORS.
 APPLICATION FILED NOV. 29, 1907.

924,803.

Patented June 15, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

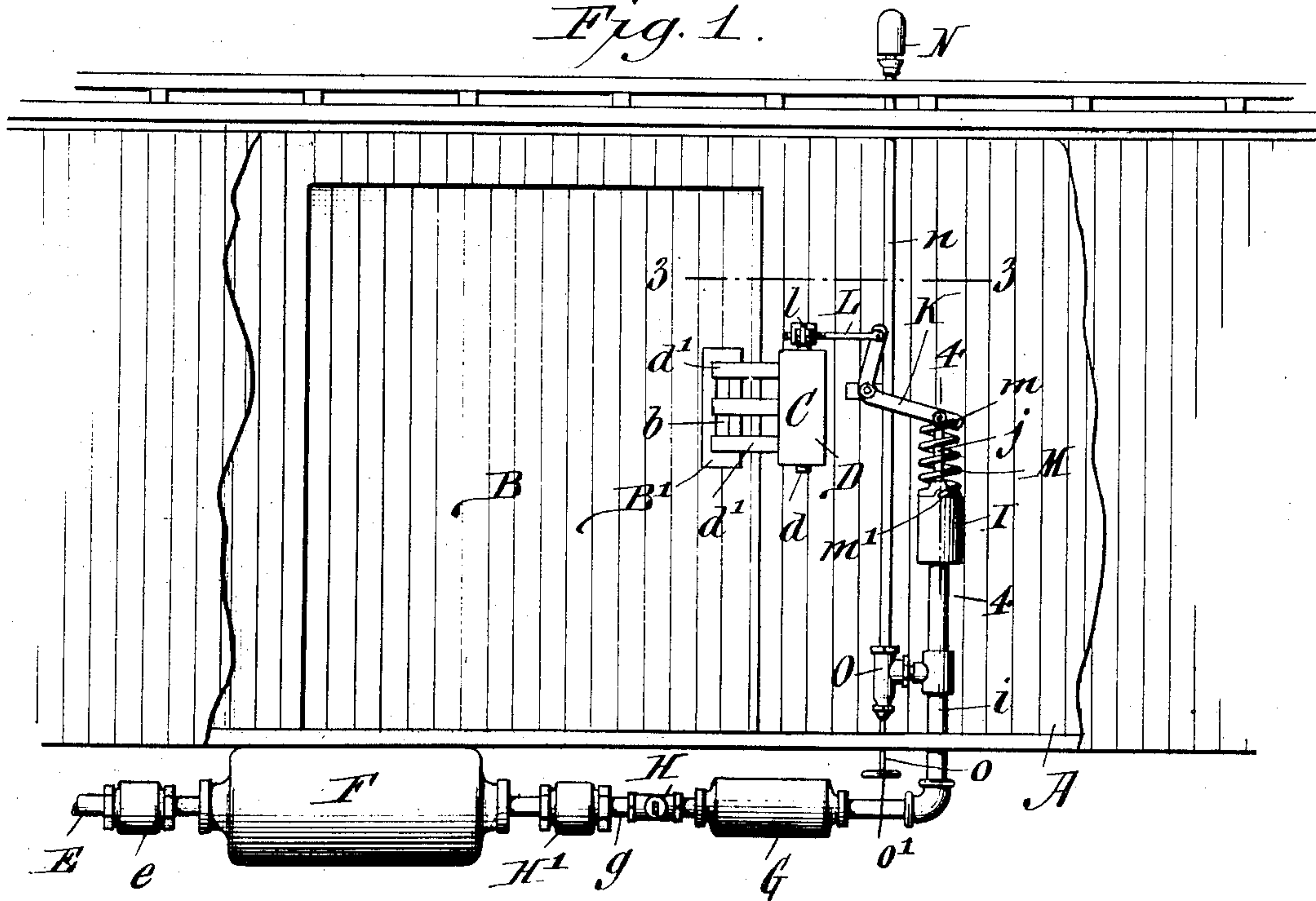
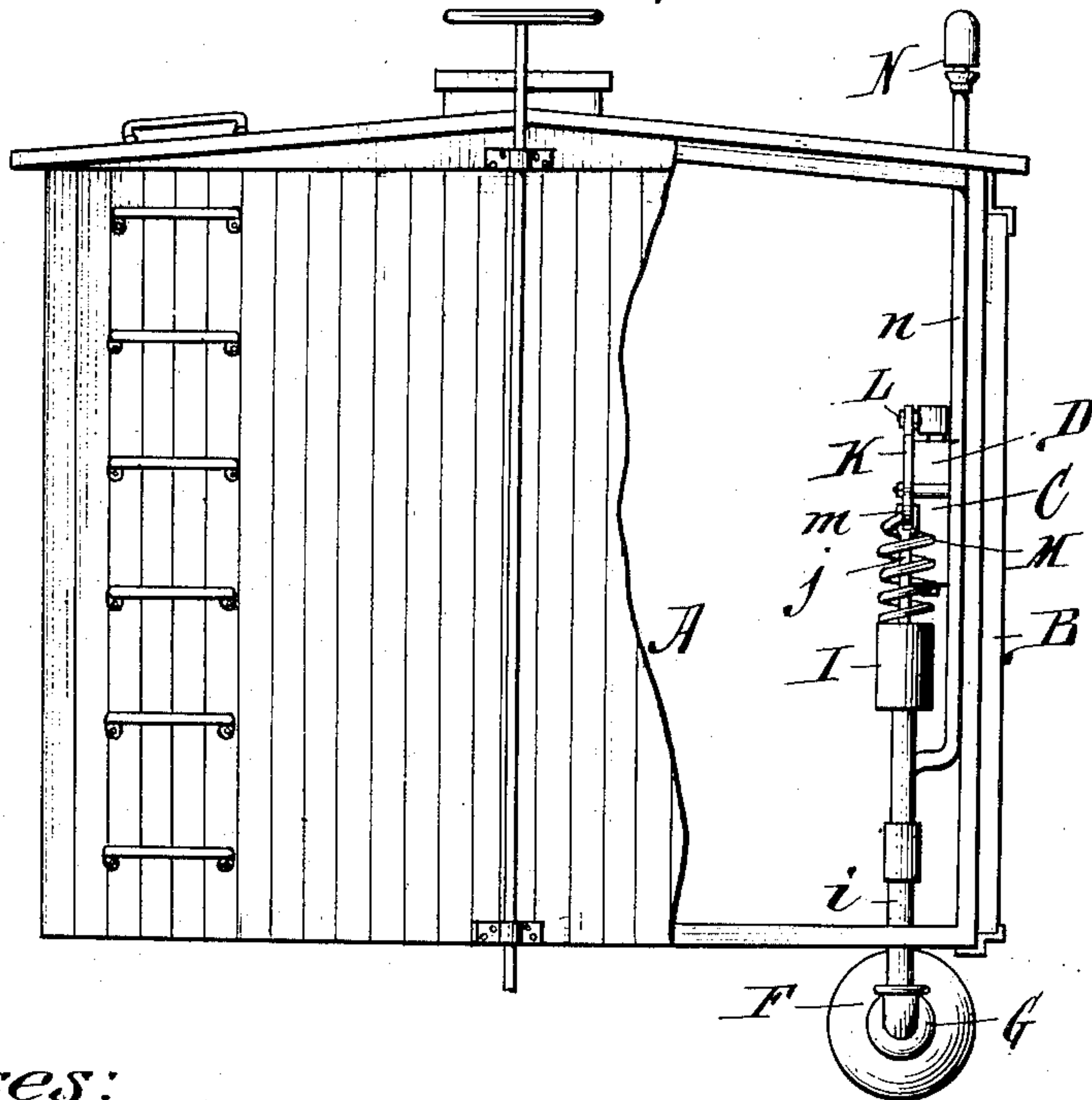


Fig. 2.



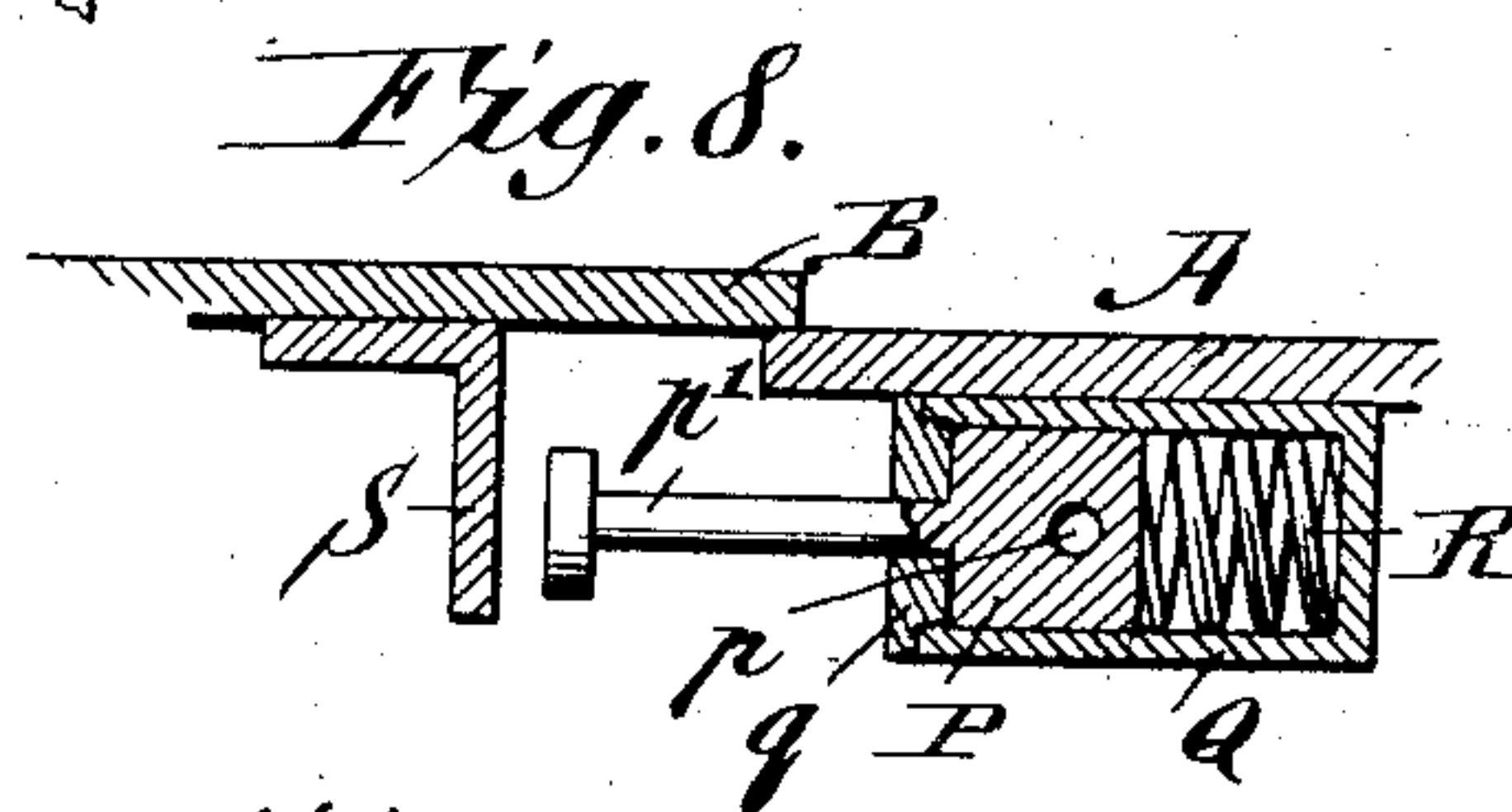
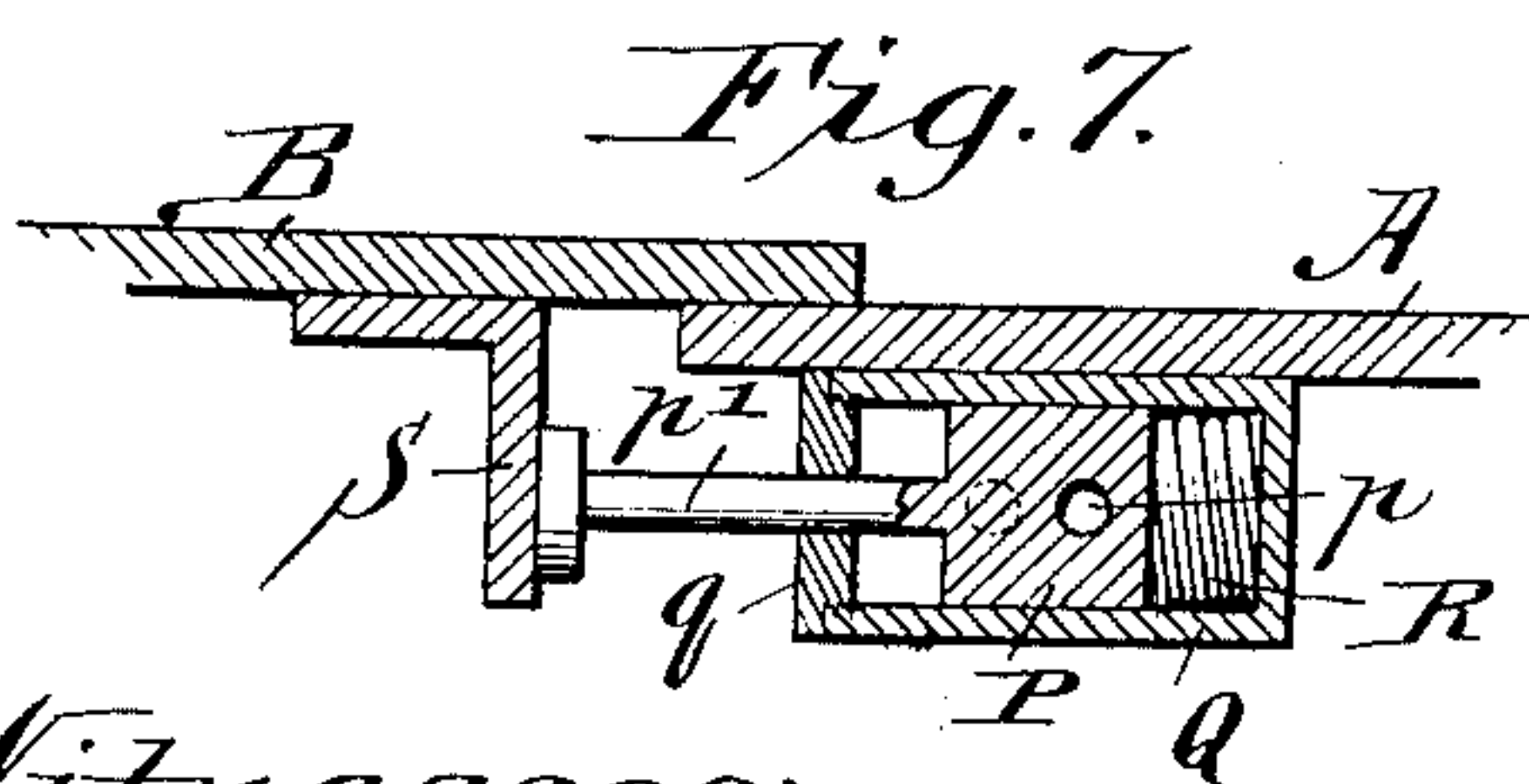
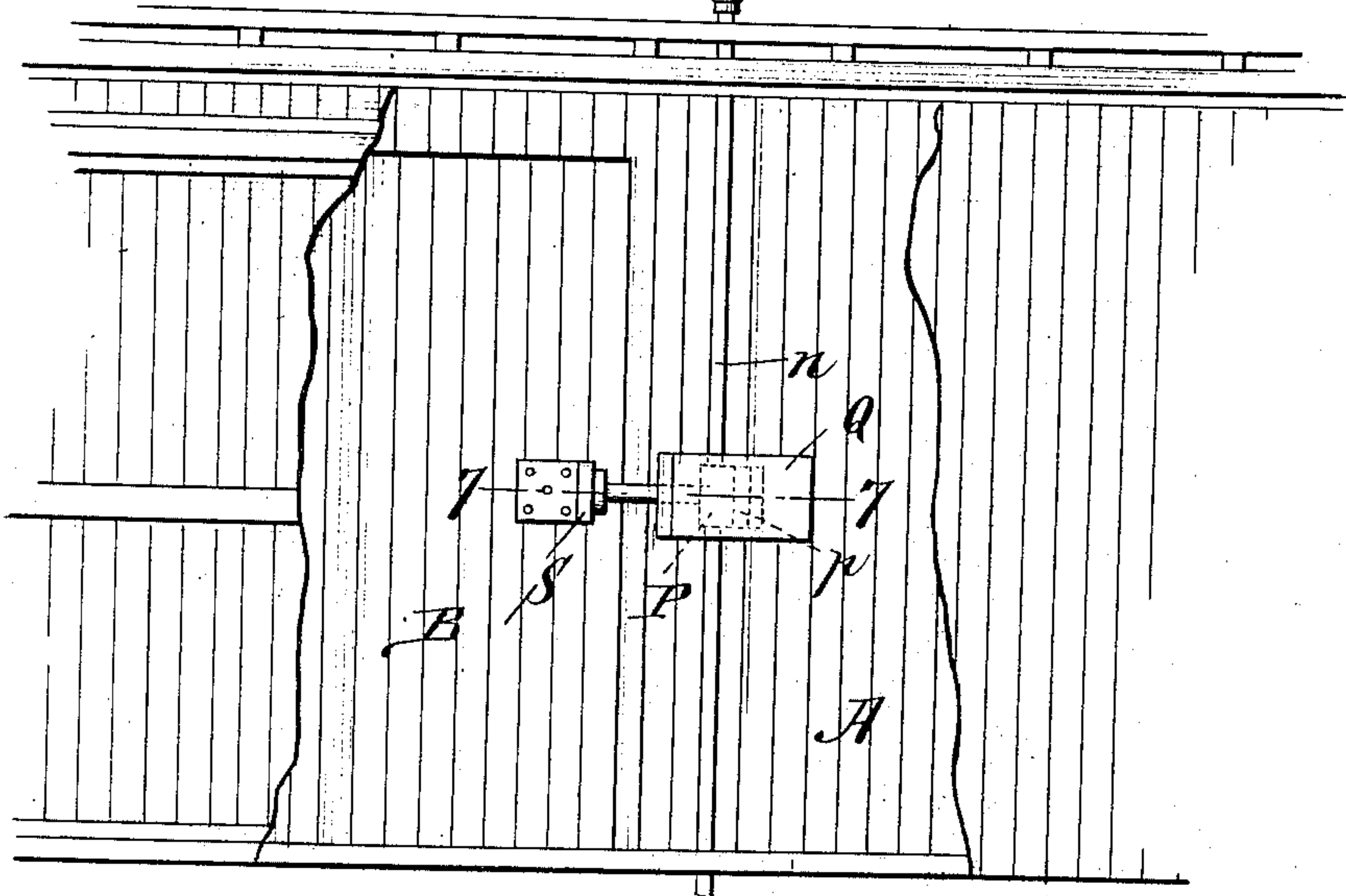
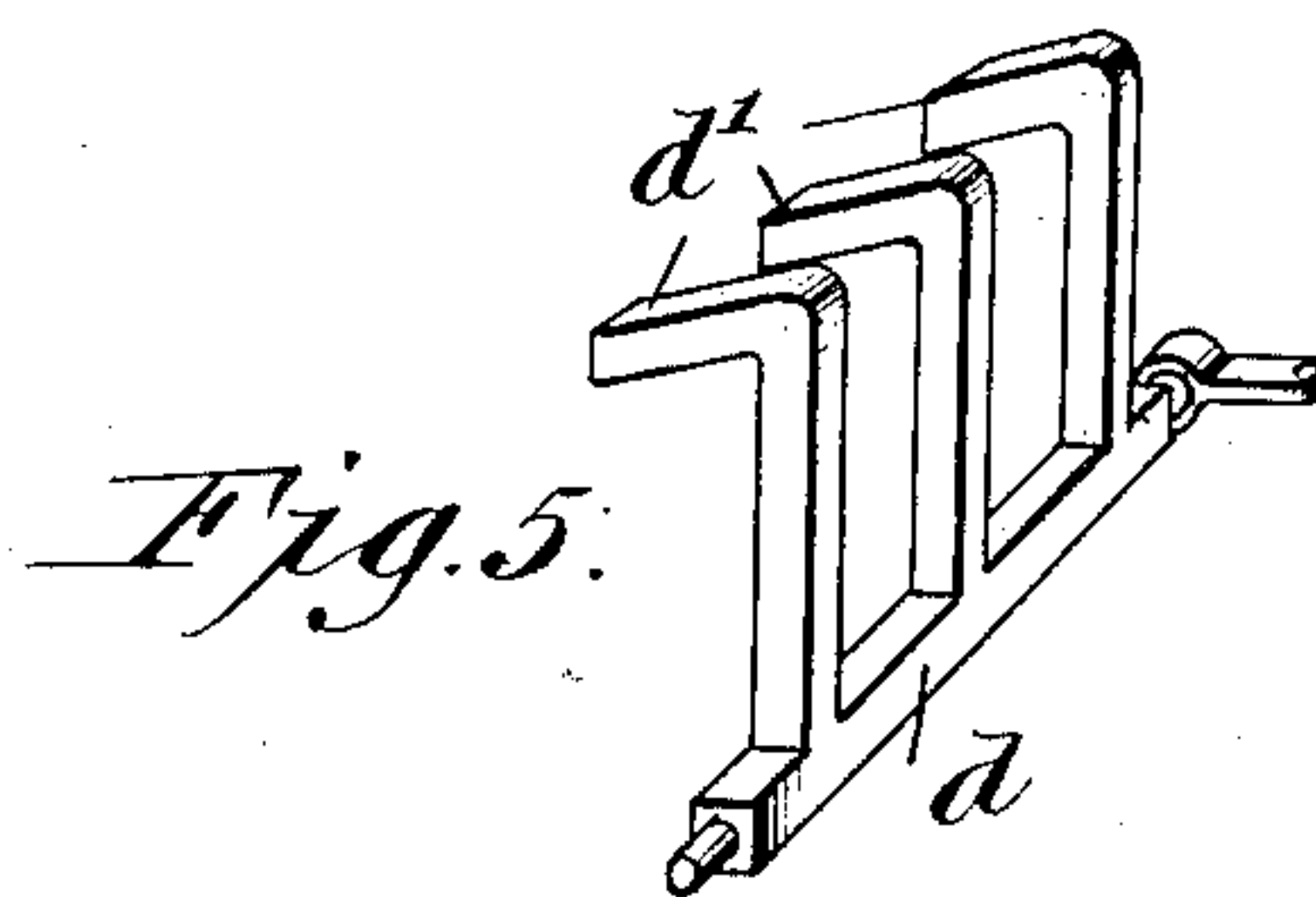
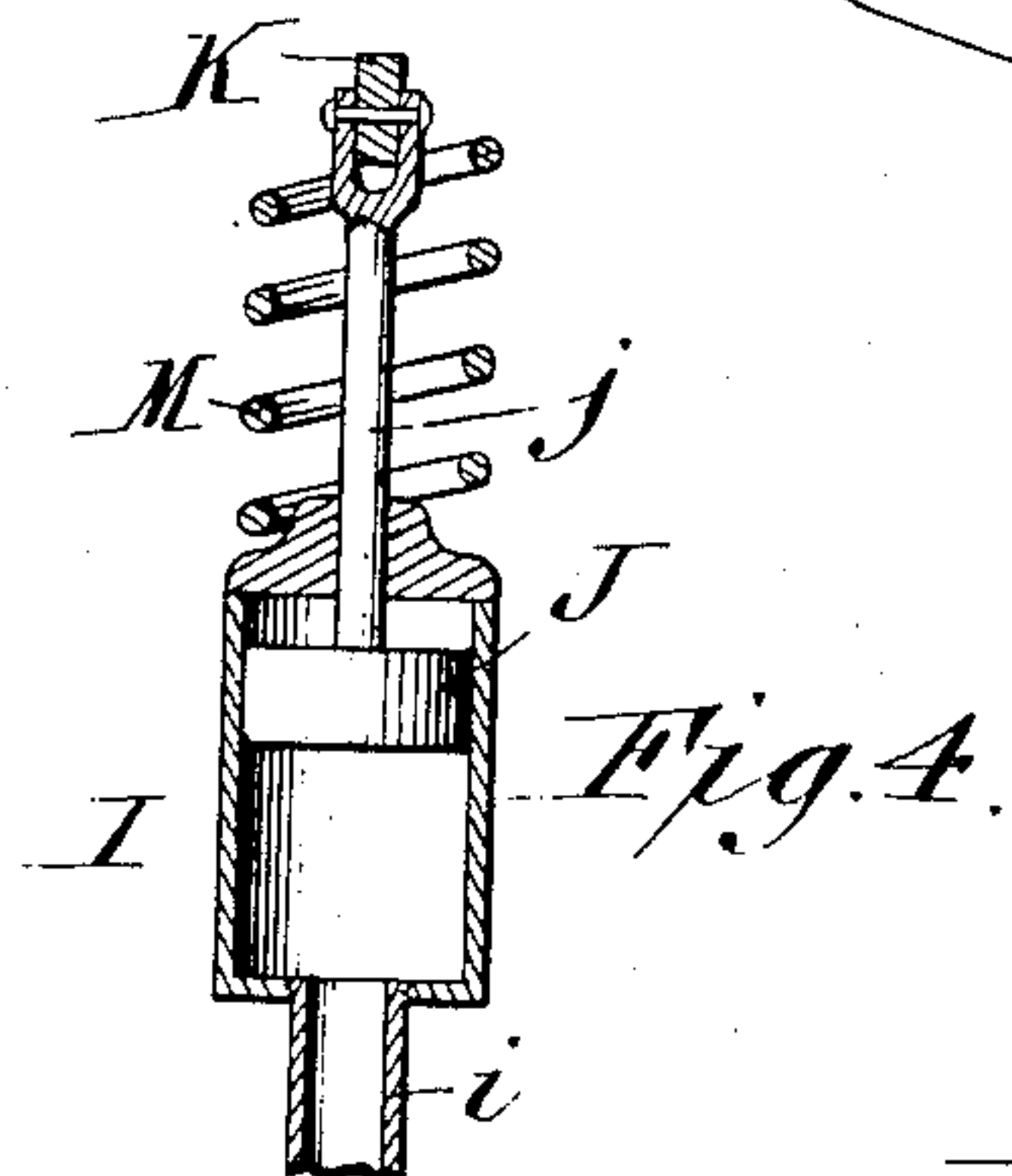
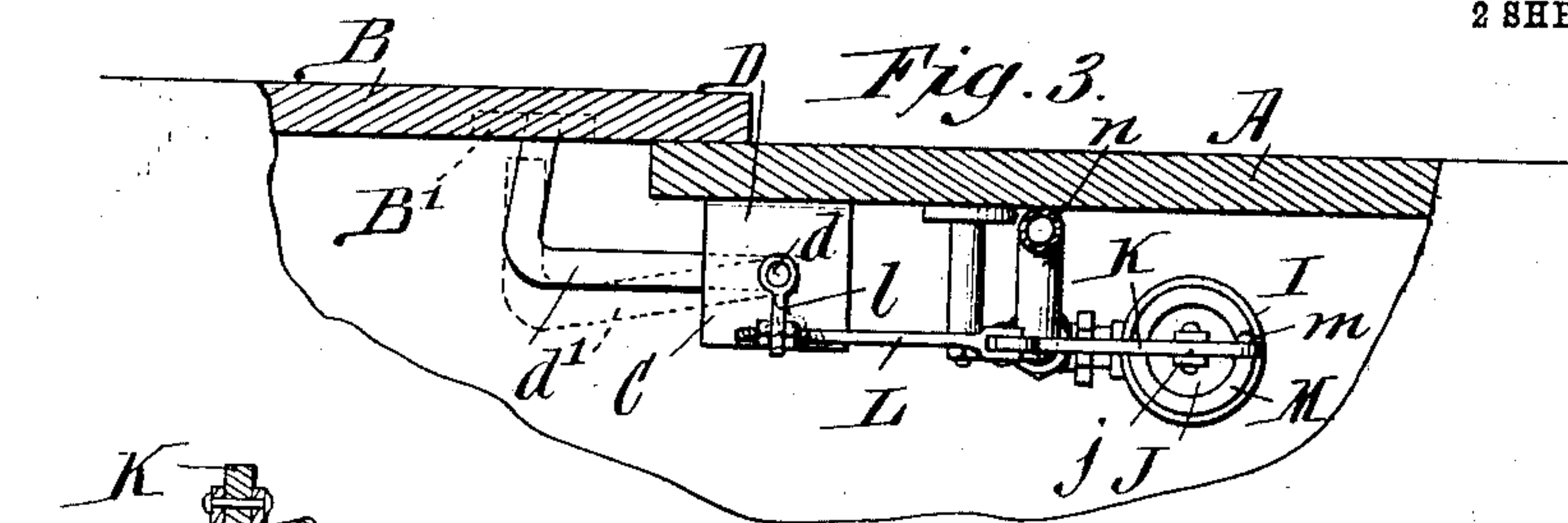
Witnesses:
 Harry D. Rapp. Andrew H. Long, Inventor.
 Christ Feinle Jr. By Emil Neuhart
 Attorney.

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 Attorney

UNITED STATES PATENT OFFICE.

ANDREW H. LONG, OF ROLAND, NEW YORK.

SIGNALING DEVICE FOR DOORS.

No. 924,803.

Specification of Letters Patent.

Patented June 15, 1909.

Application filed November 29, 1907. Serial No. 404,324.

To all whom it may concern:

Be it known that I, ANDREW H. LONG, a citizen of the United States, residing at Roland, in the county of Erie and State of New York, have invented certain new and useful Improvements in Signaling Devices for Doors, of which the following is a specification.

My invention relates to signaling-devices for doors, particularly car-doors.

The primary object of my invention is the production of a signaling-device adapted to be actuated upon opening a car or other door; the device being used in conjunction with the lock of the door and being so constructed that when used on a freight-car door, the signal will be given upon the opening of the door whether the car is coupled with other cars, or entirely disconnected.

Other objects are, to provide simple and effective means whereby a certain volume of compressed-air is stored to be used for giving a signal when the car-door is opened, and to otherwise improve on devices of this character.

My invention consists in the construction, arrangement and combination of devices and parts to be hereinafter described and particularly pointed out in the subjoined claims.

In the drawings,—Figure 1 is an elevation of a freight-car having a portion of one side wall broken away to show the inner side of the opposite wall and to better illustrate the manner of applying my invention to the car. Fig. 2 is an end elevation of the car with a portion of the end wall broken away to show the signaling-device from another point of view. Fig. 3 is an enlarged horizontal section taken on line 3—3, Fig. 1. Fig. 4 is an enlarged vertical section taken on line 4—4, Fig. 1. Fig. 5 is a detached perspective view of the lock-bar adapted to lock the door when in closed position. Fig. 6 is a side elevation of a portion of a freight-car showing my invention in modified form. Fig. 7 is an enlarged horizontal section taken on line 7—7, Fig. 6, the door of the car being closed and the air controlling-piston being forced inward in its cylinder to close the air-passage leading to the signal. Fig. 8 is a similar section with the air controlling-piston moved outward to open the air-passage leading to the signal.

Referring now to the drawings in detail,

like letters of reference refer to like parts in the several figures.

The letter A designates a car, and B the door of the car. Said door has on its inner side a plate B¹ provided with a depression or depressions *b* adapted to be engaged by a lock C when the door is closed. Said lock is secured to the inner side of the wall of the car adjacent the door-opening, and it is inaccessible from the exterior of the car when the door is closed. It preferably consists of a casing D secured to the car wall and having a vertical lock-bar *d* journaled in its end walls so as to be capable of being rocked, and said bar has a plurality of angular lock-arms *d*¹ which are adapted to enter the depressions *b* in the plate B¹.

E designates an air-pipe connected to the main air-line of the car, and F is an air-chamber to which the pipe E is secured. In the pipe E is a check-valve *e* adapted to allow the admission of air into the chamber F—which may well be termed a storage-chamber—and to prevent the return of the air from the storage-chamber to the main air-line common in air-brake systems on railway cars. The main air-line to which pipe E is connected is subjected to a pressure of about seventy pounds to the square inch and it is the purpose of this invention to maintain such pressure in the storage-chamber F. For this purpose the check-valve *e* is provided so that when a reduction is made in the main air-line for setting brakes or when the cars of a train are uncoupled, the air within the chamber F cannot escape through the pipe E.

G is an auxiliary air-chamber connected with the storage-chamber F by means of a pipe *g*, and in said pipe is a valve H adapted to be opened and closed manually with a specially-designed key so that it cannot be actuated by unauthorized parties. Pipe *g* is also provided with a reduction-valve H¹ to allow the escape of air under certain pressure from the chamber F; said air entering the auxiliary air-chamber G. When the air within chamber G reaches a pressure of about ten pounds to the square inch, the reduction-valve closes so that no portion of the air within the storage-chamber F will escape when the door of the car is opened and the signal given.

Within the car, I arrange a cylinder I which has connection with the auxiliary air-chamber by means of a pipe *i*, and within

said cylinder is a lock controlling-piston J having a piston-rod *j* extending through the upper end of said cylinder. A bell-crank lever K is secured to the side-wall of the car and has one arm thereof attached to the outer end of said piston-rod and its other arm connected to one end of a rod L whose opposite end is adjustably secured in an arm *l* secured to the lock-bar *d* of the lock-device.

Surrounding the piston-rod *j* is a retractile spring M having one end attached to the bell-crank lever K, as at *m*, and its other end secured to the cylinder I, as at *m*¹.

N designates an air-whistle secured to a pipe *n* having connection with pipe *i*. Pipe *n* extends out through the top of the car so that when the air is forced through the whistle thus exposed, the signal given can be heard at a distance and notice is given thereby that the door of the car is being opened. The escape of air through the pipe *n* is controlled by a valve O actuated from the outside of the car. In the particular embodiment herein shown said valve is provided with a valve-stem *o* which extends through the bottom of the car and is provided with a hand-wheel *o*¹.

The cylinder I is at all times in communication with the auxiliary air-chamber G, so that the air within said cylinder and the pipe *i*, is at all times maintained under the same pressure as the air within the auxiliary air-chamber. Owing to the locking-mechanism being on the inside of the car and inaccessible from the exterior when the door of the car is closed, said door can only be unlocked by permitting the air to escape from the cylinder I, and as the only means of escape is through the pipe *n* having the air-whistle at its outer end, the opening of the valve O controls the unlocking of the door as and in the manner now to be particularly described.

When the manually-operated valve H is closed, the air within the storage-chamber F cannot escape through the pipe *g*, and when the air within the auxiliary air-chamber G has escaped through the pipe *n*, the piston J within the cylinder I is free to descend, it being aided in this respect by the spring M acting to draw the bell-crank lever K downward, and with it the piston-rod and piston J connected with said bell-crank lever. This downward movement of the bell-crank lever results in a rocking of the lock-bar *d*, which causes the lock-arms *d*¹ to be swung out of engagement with the lock-plate B¹ on the car-door, thus allowing the door to be opened.

When the parts are in the position just described, the door may be opened and closed at will, but in order to lock the door after it is moved into closed position the valve H, by means of a specially-designed key, must be opened so as to allow the air from the storage-chamber F to enter the

auxiliary air-chamber, the pipe *i* connected thereto, and the cylinder I. When the air within said auxiliary air-chamber, the cylinder I, and the pipe *i* connecting both, reaches a pressure of about ten pounds to the square inch, the reduction-valve H¹ closes; the valve H is then closed by an authorized person so that the air within the auxiliary air-chamber G is disconnected from the storage-chamber F. When the air enters the cylinder I it acts to elevate the piston therein against the action of the spring M, thus acting through the medium of the bell-crank lever K and rod L to swing the lock-arms of the lock-bar into engagement with the lock-plate B on the door. It is, of course, understood that the valve O in the pipe *n* must be closed when the air is admitted into the auxiliary air-chamber G.

In order to unlock the car it is merely necessary to open the valve O which allows the air to escape from the cylinder I and auxiliary air-chamber G through the pipes *i* and *n*, and from the latter it escapes to act upon the air-whistle N. When the air has escaped from the cylinder I, the spring M acts to lower the piston within said cylinder and causes the unlocking of the door in the manner previously described.

Any unauthorized person opening the door and entering the car for the purpose of surreptitiously taking property from the car would naturally be apprehended, as it would be impossible for him to leave the car before a train-hand or other employee could reach the car. After each signal or opening of the car-door, the valve O should be closed and the valve H opened to allow the admission of air under pressure to the auxiliary air-chamber G. When the air within the auxiliary air-chamber G reaches the pressure at which the reduction valve H¹ is adjusted, the manually-operated valve should be closed. In this manner a certain volume of air only can escape each time the car door is opened, and when the car is connected with other cars in train and the air-brake system charged, the air within the storage-chamber is always maintained at the regular pressure of the main air-line. When, however, the car is uncoupled, the storage capacity of chamber F is sufficient to allow the car-door to be opened and locked a number of times so that the contents of the car can be unloaded at intervals and the door locked between times of unloading, thus assuring absolute security for the merchandise or other contents remaining in the car.

With this invention installed upon freight cars having its contents locked therein, the robbing of the cars will be reduced to a minimum, if not entirely cease.

In the modification shown in Figs. 6 to 8, the signaling is also controlled by the opening of the door, but the apparatus con-

trolling the signal is independent of the locking of the door. In this case the air pipe *n* passes through the car and connects directly with the auxiliary air-chamber G; it having the air-whistle N as hereinbefore described.

The escape of the air from the auxiliary air-chamber through the pipe *n* is controlled by a spring-governed plunger or piston P within an air-chamber Q secured to the wall of the car adjacent the door opening. Pipe *n* is connected to said chamber at opposite points, and the plunger or piston P is provided with an air-passage *p*. Between the plunger P and the end wall of the air-chamber Q, a spring R is located which acts to retain said plunger at the opposite end of the chamber. Said chamber has preferably a removable head *q* through which the plunger or piston-rod *p*¹ extends which is adapted to be engaged by a pressure-arm S secured to the car-door in such position that when said door is closed, it acts against the plunger or piston-rod *p*¹ to compel the plunger or piston to be moved inward against the action of the spring R, in which position the air-passage *p* is moved out of registration with the air-pipe *n*. When the car-door is closed it may be locked in any approved manner. Upon opening the car-door, the pressure-arm S is moved away from the plunger or piston-rod *p*¹, and the plunger or piston P is moved outward by action of the spring R, causing the air-passage *p* in said plunger or piston to be moved into registration with the air-pipe *n*, thereby allowing the escape of air through said pipe from the auxiliary air-chamber G and causing the actuation of the whistle N.

Although I have illustrated my improved signaling-device in connection with a railway-car, I do not wish to be limited in its use to such purpose, as it will serve admirably in connection with any other structure, such for example,—as a burglar-alarm for buildings, or signaling-device for jails and other similar institutions.

Having thus described my invention, what I claim is,—

1. The combination with a structure having a door-opening and a door adapted to close said opening, of an air-chamber, an air-pipe leading from said chamber and being provided with an air-signal, means for controlling the discharge of air to said signal, a combined air and spring-governed piston in connection with said air-chamber, a lock adapted to lock the door when in closed position, and operative connection between said lock and said piston adapted to open said lock when the air is discharged through said air-signal.

2. The combination with a structure having a door-opening and a door adapted to close said opening, of an air storage-cham-

ber, an auxiliary air-chamber connected with said storage-chamber, an air-pipe leading from said auxiliary-chamber and having an air-signal, means to govern the passage of air from said auxiliary-chamber to said air-signal, a lock whereby said door is locked when closed, and means to open said lock when the air is discharged through said air-signal.

3. The combination with a structure having a door-opening and a door adapted to close said opening, of a lock adapted to lock said door when closed, an air storage-chamber, an auxiliary air-chamber, a pipe connecting said chambers and having a reduction-valve, and a pipe leading from the auxiliary air-chamber and having an air-signal, a valve in said last-mentioned pipe, and means to cause the door to be unlocked when the air is discharged through said air-signal.

4. The combination with a structure having a door-opening, of an air storage-chamber, an auxiliary air-chamber, a pipe connecting said chambers, a reduction-valve and a hand-valve in said pipe, a pipe leading from said auxiliary air-chamber and having an air-signal, a hand-valve in said last-mentioned pipe, a cylinder in connection with said auxiliary air-chamber, a piston reciprocal in said cylinder and held at one end of its stroke by the air-pressure, a spring adapted to force the piston to the other end of its stroke when the air is released from the cylinder, a lock adapted to lock said door, and mechanism between the piston and said lock whereby the latter is actuated to unlock the door when said piston is relieved of the air-pressure.

5. The combination with a structure having a door-opening and a door adapted to close said opening and provided with a lock-plate, of a lock arranged adjacent said door and adapted for engagement with said lock-plate, an air storage-chamber, an auxiliary air-chamber, a pipe connecting said chambers and provided with a reduction-valve and a hand-valve, a second pipe leading from said auxiliary air-chamber, a cylinder to which said last-mentioned pipe is connected, a piston within said cylinder having a piston-rod extending therefrom, a bell-crank lever having connection at one end with said piston-rod, a spiral-spring surrounding said piston-rod and having one end attached to said bell-crank lever and its other end attached to said cylinder, connection between the other end of said bell-crank lever and said lock, and an air-pipe connected to said last-mentioned pipe and having a valve and an air-signal.

6. The combination with a car having a door-opening and a door adapted to close said opening, of a lock secured to the inner side of the wall of the car and adapted to lock said door, an air storage-chamber, an

auxiliary air-chamber, connection between said chambers, an air-pipe leading from said auxiliary air-chamber, a cylinder to which said air-pipe is connected, an air-controlled piston in said cylinder having operative connection with said lock, an exposed air-signal connected to said air-pipe, and means accessible from the exterior of the car to allow the escape of air through said signal.

- 13 7. The combination with a structure having a door-opening and a door adapted to close said opening, of an air storage-chamber, an auxiliary air-chamber, an air-pipe
15 said pipe to shut off the air passing from

said storage-chamber to said auxiliary-chamber when the air in the latter reaches a predetermined pressure, means to entirely shut off communication between said chambers, a second pipe leading from said auxiliary air-chamber, an air-signal secured to said pipe, and means governing the passage of air to said signal. 20

In testimony whereof, I have affixed my signature in the presence of two subscribing witnesses. 25

ANDREW H. LONG.

Witnesses:

ALEX T. STRICKLAND,
HERBERT L. MALLIN.