

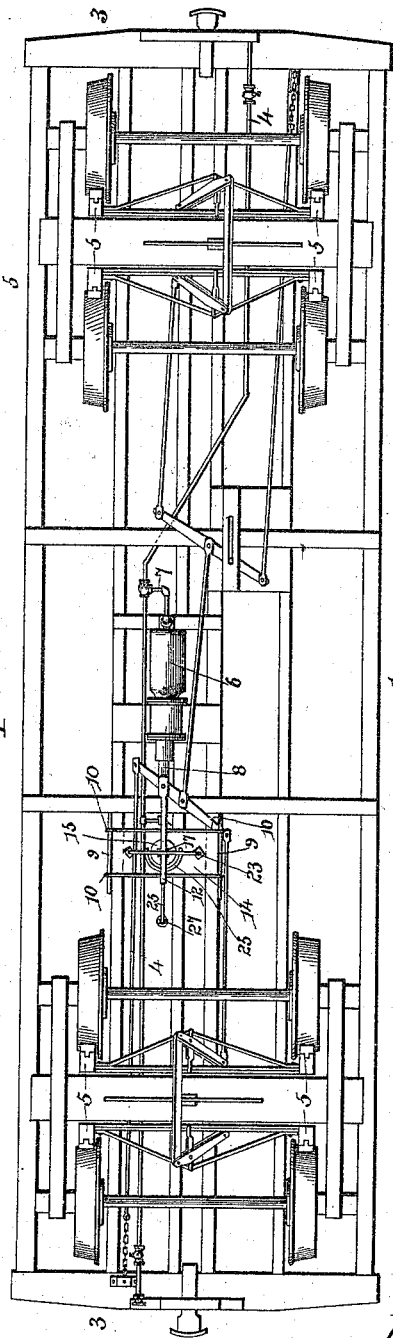
(No Model.)

2 Sheets—Sheet 1.

W. MABLE.
AUTOMATIC LOCK FOR AIR BRAKES.

No. 526,189.

Patented Sept. 18, 1894.



Witnesses

Jas. K. McEachran

A. S. Duval.

Inventor

William Mable

By *his* Attorneys,

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FIG. 3.

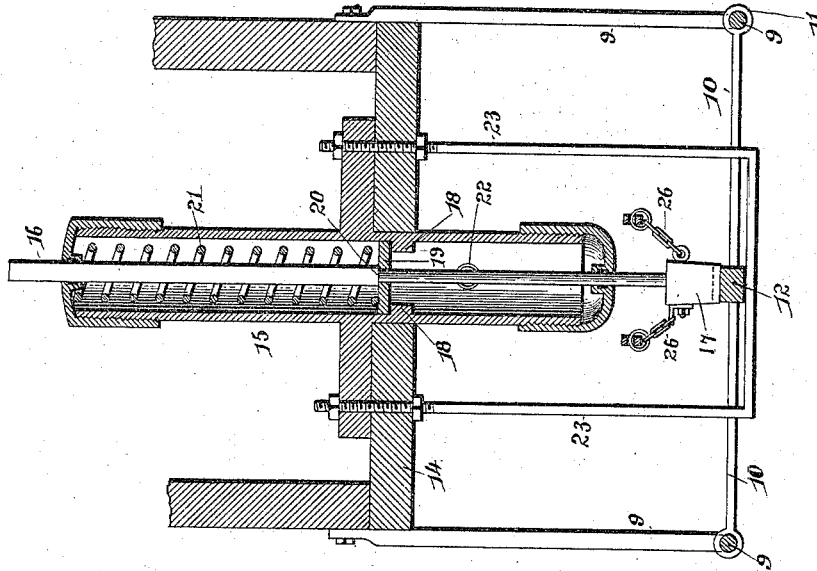


FIG. 4.

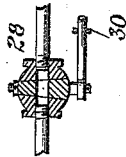
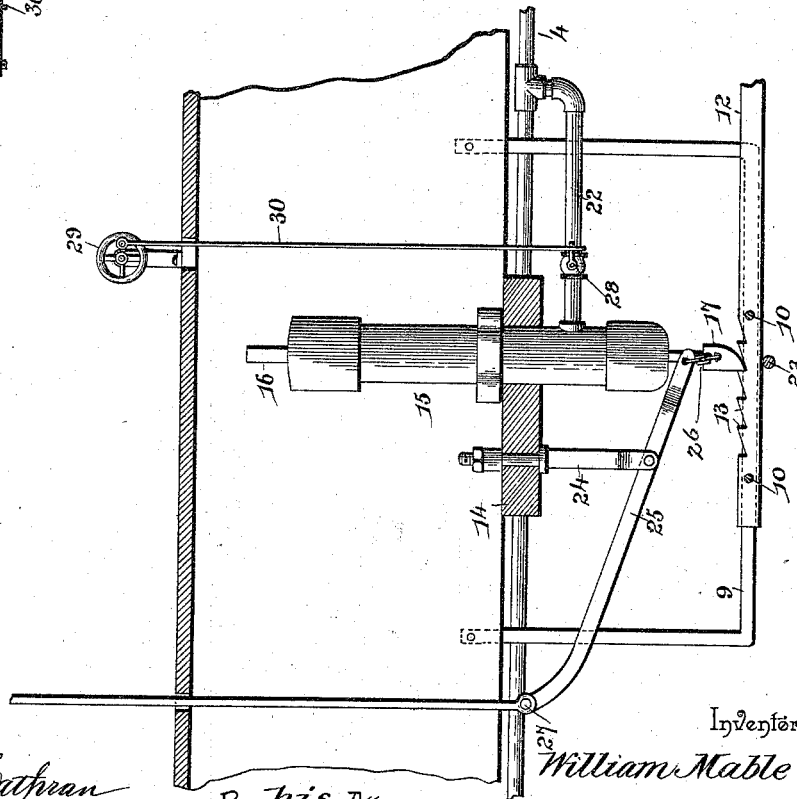


FIG. 2.



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UNITED STATES PATENT OFFICE.

WILLIAM MABLE, OF FORT COLLINS, ASSIGNOR OF ONE-FOURTH TO MYRON H. AKIN, OF LARIMER COUNTY, COLORADO.

AUTOMATIC LOCK FOR AIR-BRAKES.

SPECIFICATION forming part of Letters Patent No. 526,189, dated September 18, 1894.

Application filed April 13, 1893. Serial No. 470,195. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM MABLE, a citizen of the United States, residing at Fort Collins, in the county of Larimer and State of Colorado, have invented a new and useful Automatic Lock for Air-Brakes, of which the following is a specification.

My invention relates to air-brakes; and the objects in view are to produce an automatic lock whereby when the brake is applied it is locked in that position for any length of time desired or until disengaged by a reapplication of the air-pressure or other means located in the engine or the individual coach upon or in which the lock is applied.

With these and other objects in view the invention consists in certain features of construction hereinafter specified and particularly pointed out in the claims.

Referring to the drawings:—Figure 1 is a bottom plan view of a car provided with a Westinghouse-brake mechanism and with a lock constructed in accordance with my invention. Fig. 2 is a vertical longitudinal sectional view through the car-bottom and brake-mechanism, the lock being shown in side elevation. Fig. 3 is a vertical longitudinal sectional view enlarged of the lock and its adjacent parts. Fig. 4 is a detail sectional view of the escape-cock.

Like numerals of reference indicate like parts in all the figures of the drawings.

1 designates the bottom framework of a car, which, as is usual, includes in its make-up the draft beams or timbers 3.

4 designates the brake-pipe, 5 the brake-shoes and their yokes, 6 the auxiliary reservoir which supplies the brake-cylinder and which communicates with the brake-pipe through the medium of the branch-pipe 7, and 8 the stem of the piston moving within the cylinder and connected with the system of levers for controlling or applying the brake-shoes, all of the ordinary construction.

Depending from the draft-beams or timbers of the car is a pair of horizontal ways 9, and the same support movably a pair of sliding cross-rods 10, which have eyes 11 which take upon the horizontal ways 9. These cross-rods are connected to a locking-bar 12, the

same being attached at one end to the end of the piston rod 8 of the brake-cylinder, and provided upon its upper side with a series of inclined teeth 13 which are disposed or inclined toward the cylinder.

Supported in a cross-piece 14 of the timbers is a depending vertical cylinder 15, said cylinder having open upper and lower ends provided with caps and having passed entirely therethrough and fitted in bearings in said caps a piston-rod 16, the same being rectangular or square for the major portion of its length, and the lower portion thereof being cylindrical and terminating in a beveled bolt-head 17. Internal shoulders 18 are formed in the cylinder, and the piston-head 19 is secured upon the rod and has its downward movement limited by the shoulders 18. The reduction of the piston 16 to form the lower cylindrical portion forms an intermediate shoulder 20, and against this shoulder the head rests. A coiled spring 21 is mounted upon the piston-rod 16 between the head and the upper end of the cylinder, the spring being of the expansive pattern or form and therefore adapted to depress the head and piston when the same are not otherwise influenced. A branch-pipe 22 leads from the air or brake-pipe of the car to the lower portion of the cylinder and is adapted to discharge air under pressure to said cylinder below the piston-head and thereby elevate the head and piston against the tension or force of the spring 21. Securing lugs extend from the sides of the cylinder 15, and through the same depend the terminals of a bail 23, the same forming a support for and receiving the locking-bar 12 as it moves with its guide-rods back and forth at each reciprocation of the piston-rod.

Depending from the cross-piece 14 is a standard 24, and the same has fulcrumed therein a bifurcated lever 25 whose inner end embraces loosely the bolt-head 17 of the piston-rod and is connected thereto by means of short chains 26. The outer end of the rod is, in the present instance, connected pivotally, as at 27, with a depressing rod whose upper end projects through the car-floor and may be operated from the interior of the car, or,

if desired, may extend beyond the car-floor to the roof thereof, as in freight-cars, or to the opposite ends. An escape-cock or valve 28 is also located upon the supply pipe 22, and is regulated or opened and closed by means of a small hand wheel 29 located in the interior of the car or at any other convenient point in or outside the car, the same being connected to the cock by means of a connecting rod 30.

This completes the construction of the lock, and the operation is as follows: The operation of the air-brake proper corresponds with that of the ordinary Westinghouse brake, in which the parts are held in such positions as to release the brakes when there is a certain pressure in the brake-pipe and apply the brakes when such pressure is relieved. The pressure in a brake-pipe which is sufficient to maintain the brake mechanism in its released position is also sufficient, by acting through the branch-pipe 22, to hold the piston of the locking device in its elevated or inoperative position. When the brake-pipe pressure is relieved in the operation of applying the brakes the pressure in the cylinder 15 is similarly relieved, thus allowing the piston of the locking device to descend by the action of its spring, whereby the bolt 17 is brought into operative relation with the ratchet of the locking-bar. The strength of the spring 21 is such that if the bolt reaches its depressed position before the locking-bar has completed its movement, said bolt will be pushed upward against the strength of the spring sufficiently to allow the teeth of the locking-bar to pass thereunder. When cars become disconnected by accident or otherwise, the severing of the connections between the sections of the brake-pipe carried by the two adjoining cars produces a decrease of the pressure in the brake-pipe and applies the brakes automatically, and at the same time the locking device is operated by the reduction of pressure in the brake-pipe and the bolt is caused to engage the locking-bar and maintain the parts in their set positions. Thus, under ordinary circumstances the locking-device is operated simultaneously with the brake mechanism from the engine by allowing the valve 28 to remain permanently open, but if it is necessary after the disconnection of a car to release the locking-bar it may be accomplished by means of the lever 25, which is connected as above described to the bolt. In shifting cars it may be desirable to permanently secure the bolt out of engagement with the locking-bar, and this may be accomplished by the manipulation of the valve 28, consisting in closing the same after the piston of the locking device has been elevated by brake-pipe pressure. The locking-device may be released subsequently, and allowed to resume its normal or operative position by turning the hand-wheel 29, to open the valve 28, said hand wheel, as above stated, being located at any desired point on the train. In

this way I obviate the necessity of the presence or employment of hand-brakes for the purpose of locking the coaches when sidetracked and not under the influence of the air-brakes.

Various changes and modifications of details in my invention will readily suggest themselves to those skilled in the art to which the invention appertains, and I therefore do not limit the invention to those details of construction herein set forth and shown, but hold that I may vary the same to any extent and degree necessary in the practical operation of the device.

Having described my invention, what I claim is—

1. The combination with a car and its air-brake system, of a toothed locking-bar secured to the piston of the brake-cylinder, a bolt arranged above the locking-bar and adapted to engage the same, and devices for throwing the bolt into and out of engagement therewith, substantially as specified.

2. The combination with a car and its air-brake system, of a toothed locking-bar connected with the piston of the brake-cylinder, a locking-cylinder arranged over the locking-bar, a piston arranged in the cylinder and terminating below the same in a bolt-head for engaging the teeth of the locking-bar, means for depressing the bolt, and an air-pipe leading from the brake-pipe of the system to the locking-cylinder below the head of the piston thereof, substantially as specified.

3. The combination with a car and its air-brake system, of a toothed locking-bar, a locking-cylinder arranged thereover, a reciprocating piston arranged therein and terminating below the cylinder in a bolt-head for engaging the locking-bar, a piston-head upon the cylinder, a coiled-spring arranged above the piston-head upon the piston and adapted to depress the same, an air-pipe leading from the brake-pipe of the system to the locking-cylinder below the piston-head, a lever fulcrumed at one side of the locking-cylinder and connected with the lower end of the piston thereof, and a depressing-rod pivoted at its lower end to the lever and extending up through the car, substantially as specified.

4. The combination with a car and its air-brake system, of a pair of parallel guides supported under the car, cross-bars carried by the guides, a locking-bar having inclined teeth supported by the cross-bar and connected with the piston-rod of the brake-cylinder of the system, a locking-cylinder supported in the draft timbers of the car-frame and provided with internal shoulders, a piston-rod having its upper end squared and its lower end terminating in a bolt-head located in and extending beyond the ends of the locking-cylinder, a piston-head for the rod, a coiled-spring between the head and upper end of the cylinder, an air-pipe leading from the brake-pipe of the system to the lower end of the cylinder, lugs extending from the sides

of the cylinder, and a depending guide-bail for the locking-bar secured to the lugs, substantially as specified.

5 5. The combination with a car and its air-brake system, of a toothed locking-bar connected with the piston of the brake-cylinder, a locking-cylinder arranged over the locking-bar, a piston arranged in the cylinder and terminating below the same in a bolt-head for
10 engaging the teeth of the locking-bar, means for depressing the bolt, an air-pipe leading from the brake-pipe of the system to the locking-cylinder below the head of the piston thereof, an exhaust-cock therein, and means
15 for operating the same, substantially as specified.

6. In combination with the air-brake cylinder 6, and its piston 8, a supplemental cyl-

inder 15 provided with a piston rod 16, piston head 19, spring 21, a branch pipe 22 leading into the cylinder 15 below the piston head to discharge air under pressure to elevate the piston head against the tension of the spring, the piston rod 16 being extended through the cylinder and having one end thereof provided with locking devices to engage a locking bar carried by the piston 8, substantially
20 as described. 25

In testimony that I claim the foregoing as my own I have hereto affixed my signature in
30 the presence of two witnesses.

WILLIAM MABLE.

Witnesses:

WILLIAM C. STOVER,
VERNER U. WOLF.