

(No Model.)

S. SNELL.
AUTOMATIC CAR BRAKE.

No. 548,474.

Patented Oct. 22, 1895.

Fig. 1.

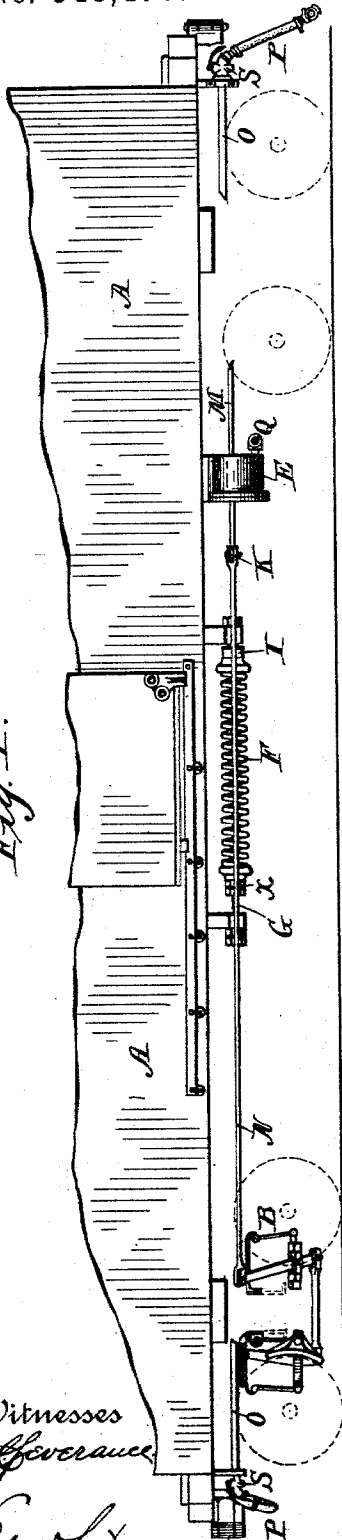
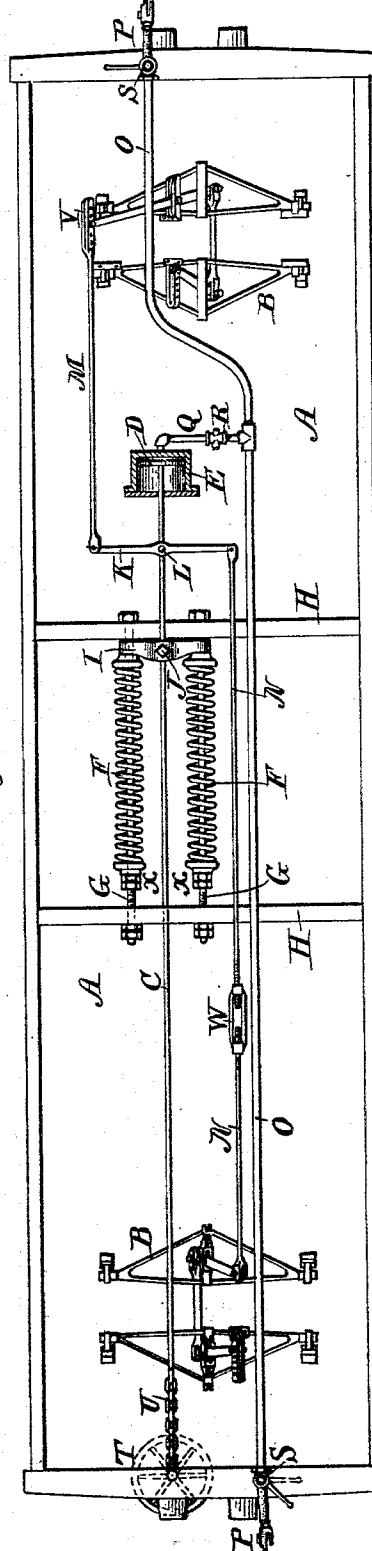


Fig. 2.



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AUTOMATIC CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 548,474, dated October 22, 1895.

Application filed May 19, 1892. Serial No. 433,549. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL SNELL, a citizen of the United States, residing at Dillon, in the county of Beaver Head and State of Montana, have invented certain new and useful Improvements in Automatic Car-Brakes; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to railway-car brakes.

The object of my invention is, first, to provide a car with a brake which is normally always set; second, to provide a piston and a train-pipe with connections with the brake-shoes and an air-pump on the locomotive, whereby the brakes are taken off by pumping an air-pressure into the train-pipe for the purpose of moving the piston in the cylinder and taking the brakes off; third, to provide, in connection with a spring-power which normally sets the brakes, a cylinder and piston in connection with the train-pipe, whereby air-pressure may be applied to release the brakes; fourth, to provide, in connection with the brake-actuating mechanism, means for mechanically releasing the brakes by hand, and to so adjust the spring pressure and adjustment of the brake levers and rods that there will be the maximum amount of leverage with the minimum amount of travel, and, fifth, to provide an air-leak in the train-pipe, for a purpose hereinafter set forth.

To effect these objects my invention consists in the following construction and combination of parts, which will first be fully set forth and described, and the features of novelty then pointed out in the claim.

Figure 1 represents a side elevation, partly broken away and in dotted lines, of a car to which I have applied my improvements. Fig. 2 is a bottom plan view of the same.

In the drawings, A represents the body of a car—a freight-car in this instance.

B are the brake beams, shoes, and levers on the trucks at each end of the car.

C is the main piston-rod of the car. One end of this rod is provided with a piston D, which moves in a cylinder E, bolted to the under side of the car.

F are two coiled springs moving upon guide-rods G, firmly bolted to the cross braces or sills H of the car A.

I is a cross-head having holes in its opposite extremities, through which the guide-rods G pass and upon which the cross-head plays. The main rod C passes centrally through this cross-head I and is rigidly keyed thereto by a bolt J, so as to move therewith.

K is an equalizing-lever, pivoted at L to the main rod C. This lever is pivotally secured to the brake-rod M at one end and to the brake-rod N at the other end, the braking action of the rod M being obtained by means of a push and by a pull on the brake-rod N.

O is the train-pipe which extends throughout the cars of the train, being provided with the usual hose-couplings at the ends of each car.

Q is a branch pipe leading from the train-pipe O of each car to the cylinder E for the purpose of operating the piston D.

R is a cut-off cock in pipe Q

S are the cocks at the opposite ends of the train-pipe O for the purpose of closing communication at that point. These cocks S are each provided with an air-leak in communication with the outer air in addition to the usual air-leak from the cock to the short section of hose to which the pipe-coupling is attached.

T is a wheel and staff on one end of the car, between which and the main rod C a chain U is attached for the purpose of adjusting the main rod C, and after its adjustment for releasing the brakes by hand.

In operation, the main rod C and the piston D are adjusted by means of the wheel T, so that the piston D has normally a short clearance—say a half-inch—from the end of the cylinder E next the pipe Q. The cross-head I is then securely keyed or clamped to the rod C by the bolt J or other fastening in the position shown, the cross-head being forced up against the cross-sill H of the car by the tension of the springs F. In the meantime the

brake-rods M and N have been adjusted, the former by having its connection with the brake-levers moved up in the pin-holes V, so as to take up the slack in the rod when the brake-shoes are set upon the wheels, and the latter rod N being similarly adjusted to the brake-shoes on the opposite end of the car when the shoes are set upon the wheels by means of the turn-buckle W, which takes up all slack in that rod and any slack that may exist in the brake-rod M after its adjustment in the pin-holes V.

X are a series of nuts and washers for the purpose of loading or adjusting the tensions of the springs F to the weight of the car or to the service for which it is or may be required. It should be understood that when the tension of the springs F has forced the cross-head I against the sill H the brakes are set upon all the wheels, the brake-rods M and N and their connections having been previously adjusted so that the brake-shoes are in full engagement with the wheels. This is the normal position of the brakes. They are always set, except as hereinafter noted, and the loading of the springs F is so adjusted that the brakes are set to the wheels with a maximum force which can be applied thereto without locking the wheels and causing them to slide. The springs F of each car are adjusted to the weight or load of that car.

We will assume that a number of cars equipped with my improved brake are coupled together by the couplings P and connected with the locomotive. The locomotive is provided with an air-pump for pumping air into the train-pipe O throughout the train, the cocks S having been opened. To release the brakes, they being normally set, the engineer pumps air into the train-pipe O, which enters the cylinder E by the branch pipe Q, and moving the piston D and the rod C against the pressure of the springs F causes a movement of the lever K toward the center of the car, thereby pulling on the rod M and pushing on the rod N, thereby releasing the brakes, as before explained. When the engineer desires to release the brakes fully, he applies the maximum pressure of air sufficient to fully overcome the tension of the springs F, which causes the piston D to move only about four inches in the cylinder E. This is the normal position of the brakes and the normal air-pressure in the train-pipe when the train is in motion, and it is not desired to apply the brakes. When, however, the engineer desires to apply or set the brakes to any degree he simply allows the air in the train-pipe to escape in greater or less amount, according to the service required. This causes a reduction of pressure in the cylinder E behind the piston, and the springs F, overcoming the pressure in the cylinder, force the brakes into action with a pressure varying to the amount of the reduced pressure in the train-pipe. When the train-pipe is thrown open to the

outer air, the springs exert their maximum braking-force upon the wheels.

There are many advantages which flow from the use of my invention. The brakes on all the cars are normally set and cannot be released except through the action of the engineer, except by the hand-wheel T, as before explained. In running, should the train accidentally become uncoupled at any point, the brakes on each section of the train will be instantly set, owing to the train-pipe being thrown open to the air and the pressure taken off the piston, allowing the springs to come into full action.

If through any negligence of the trainmen in coupling onto additional cars the cock S of the car or cars coupled to should fail to be opened, so that the engineer may have communication with the train-pipe thereof, he would instantly become aware of such negligence, because the brakes of that car or cars would remain set and the extra pull upon his locomotive would at once become apparent.

The air-leak from the train-pipe to the outer air in each cock S is arranged to be opened to the air on the last car of the train only. This opening causes a small pin-hole blow at the end of the train, which needs to be kept open in order that if through any accident or design one of the intermediate cocks S of the train should be closed or the pipe stop up through any cause the blow through the air-leak will gradually reduce the pressure in the train-pipe back of such stoppage, causing the brakes of the train in that section to creep into action and to finally set, thereby notifying the engineer that something is wrong with the brakes of the train.

In the drawings I have shown two springs for applying the brakes, but it will be understood that I may use but one spring, or more than two, if desired; nor do I confine myself to the use of coiled springs, as other forms of springs may be used by me, or a weight substituted therefor. In like manner I may use any style of air-cylinder suitable for the purpose, or any known form of brake apparatus, such as brake rods, shoes, and beams in connection with my invention. In carrying out the purposes of my invention I may modify the various parts and still come within the scope of my invention.

Cars equipped with my brake apparatus may be left upon a siding without fear of their being accidentally blown upon the main track or started by any external means on a grade, and thereby run out upon the main track, because the brakes are always normally set.

Instead of air I may use steam or a vacuum for the purpose of releasing the brakes by suitably modifying my apparatus. In short, I may use any form of fluid pressure.

I claim—

The combination of a cylinder, a piston and rod therefor, a spring or weight connected

thereto forcing the piston normally to set the
brakes, a lever pivoted centrally upon and
carried by the piston rod, a brake-rod con-
nected with one end of said lever, another
5 brake-rod connected with the opposite end of
said lever, and means for forcing the piston
outward to release the brakes.

In testimony whereof I affix my signature
in the presence of two witnesses.

SAMUEL SNELL.

Witnesses:

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GEO. L. CLARK.