

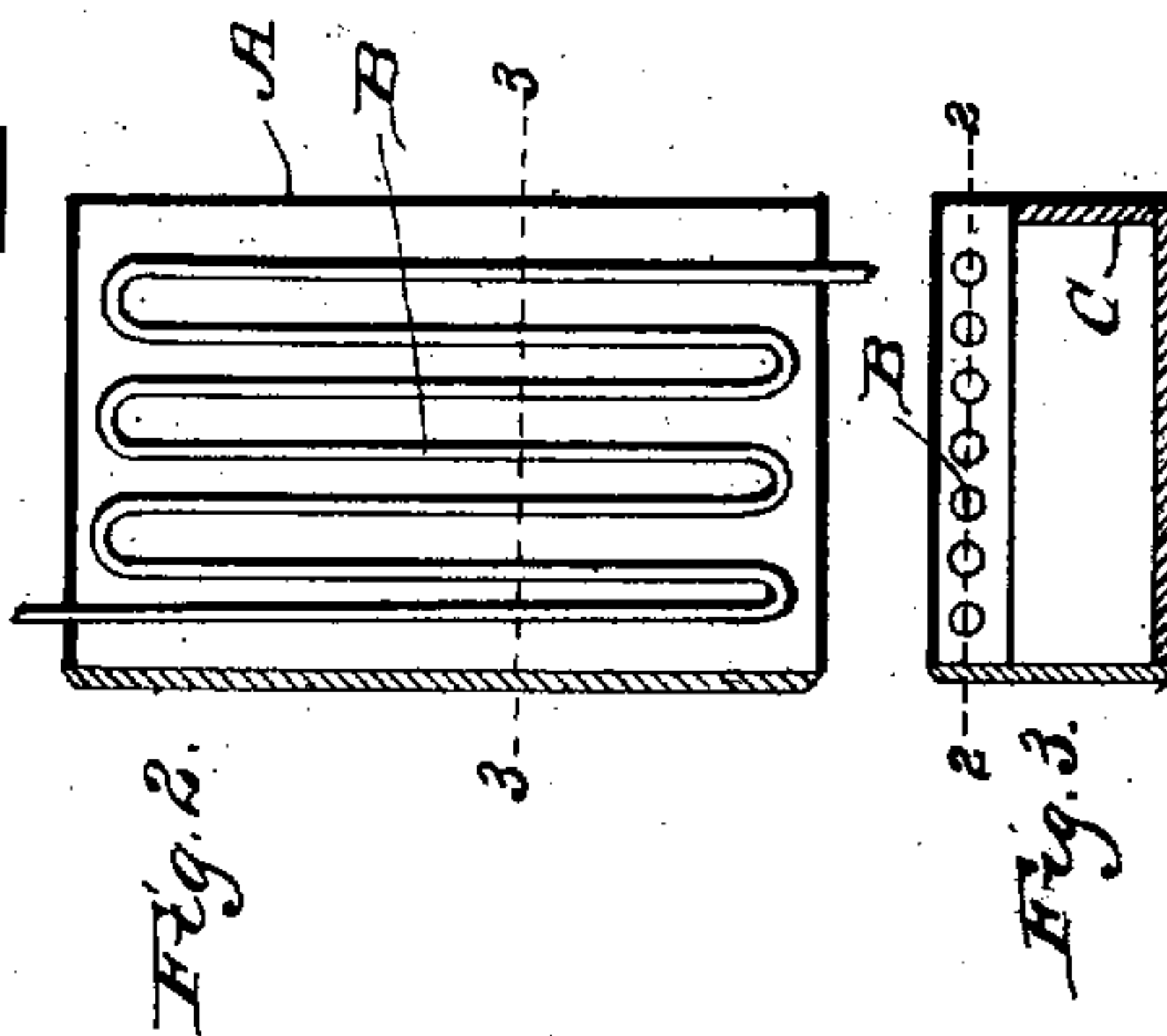
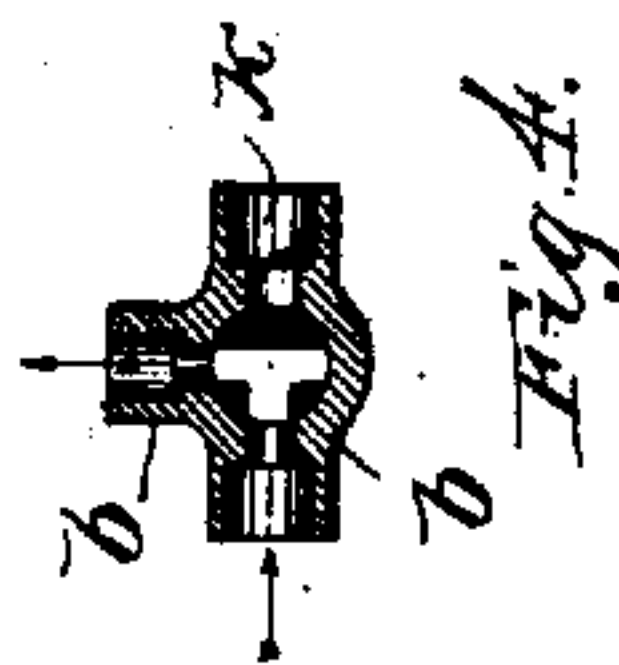
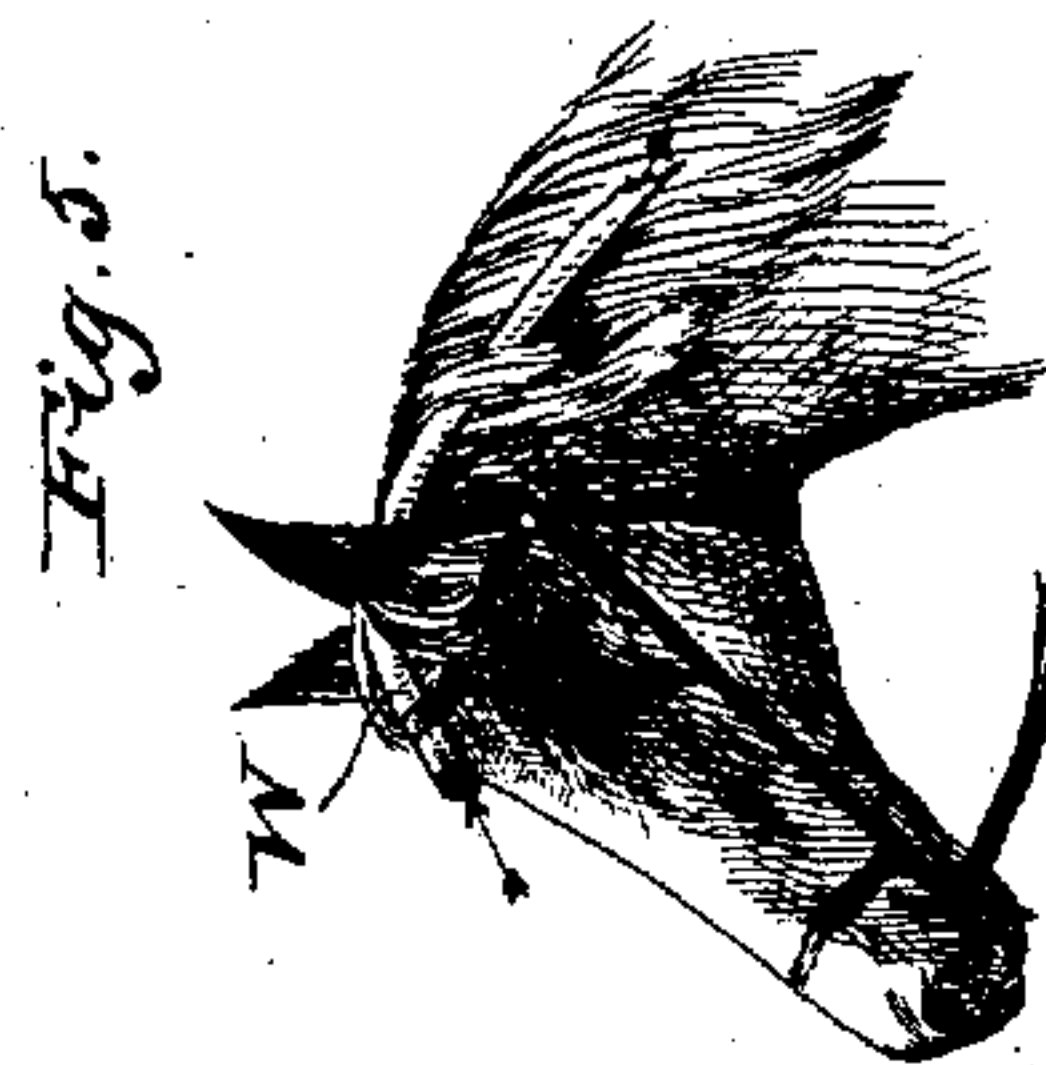
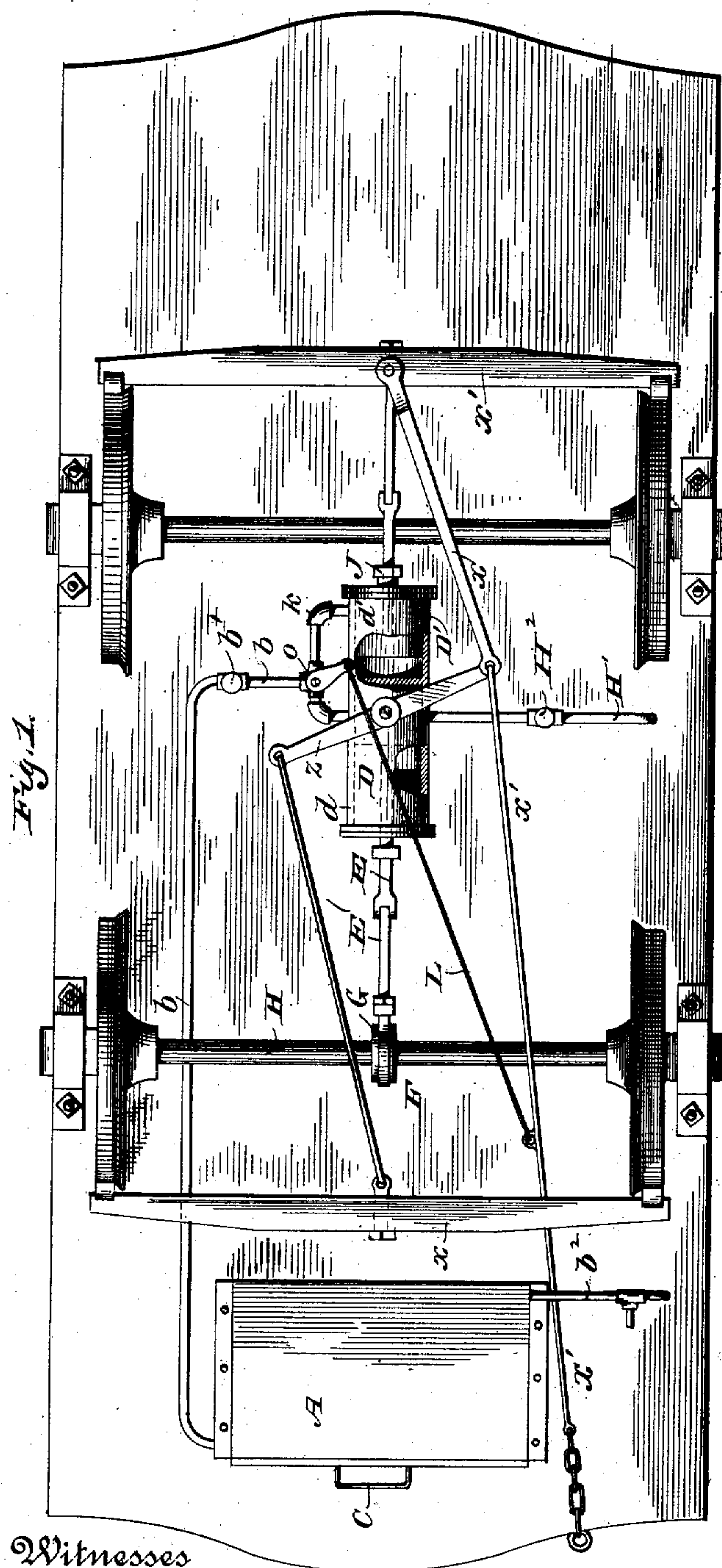
(No Model.)

A. R. CHISOLM.

CAR HEATING AND COOLING DEVICE.

No. 358,382.

Patented Feb. 22, 1887.



Witnesses

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UNITED STATES PATENT OFFICE.

ARTHUR R. CHISOLM, OF ST. LOUIS, MISSOURI.

CAR HEATING AND COOLING DEVICE.

SPECIFICATION forming part of Letters Patent No. 358,382, dated February 22, 1887.

Application filed August 14, 1886. Serial No. 210,889. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR R. CHISOLM, of the city of St. Louis, Missouri, have made a certain new and useful Improvement in
5 Combined Car Heating and Cooling Device and Brake, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

10 Figure 1 is a bottom view of a car, showing my improvement, part of the air-pumps being broken away. Fig. 2 is a horizontal section through the heating-box on the line 22 of Fig. 3. Fig. 3 is a longitudinal section on the
15 line 33, Fig. 2. Fig. 4 is a horizontal section through the three-way valve. Fig. 5 is a view showing the cooling apparatus as applied to horses.

The object of my invention is to provide
20 cars with hot or cold water, as may be desirable, and to utilize a part of the mechanism to that end to operate an air-brake.

The construction of devices as employed by me in my invention is as follows: At one end,
25 preferably the front end, of a car, and underneath the car, I place a box, A. This box A, about its top or sides internally, is provided with a coil of pipes, B, below which, within the box, is a drawer, C. The coil B is con-
30 nected at one end, at the entrance to the box A, with an inlet-pipe, *b*, provided with a valve, *b'*, arranged to open and close automatically, and at the exit from the box with an outlet-
35 pipe, *b''*. Secured to the bottom of the bed of the car is a double cylinder, D, pivoted at its ends *d* with the piston-rod E, which is pivoted to an arm, E', which arm is attached by means of a collar, F, to an eccentric cam, G, which is at-
40 tached to the car-axle H, so as to rotate therewith. An air-conducting or suction pipe, H', leads into the cylinder D, which pipe is provided with a valve, H², similar to the valve *b'*, and arranged to operate in connection there-
45 with. The operation of these parts is as follows: The piston-rod E is caused to reciprocate in the end *d* of the cylinder D by the eccentric cam G imparting an oscillating motion to the arm E'. The motion of the piston-rod E in the end *d* of the cylinder D draws
50 the outside air into and through the air-conducting pipe H' to the part *d* of the cylinder, and thence out into and through the inlet-pipe

b to the coil B in the box A. Passing through the coil B, the air is cooled or heated, as is desirable, depending upon whether the drawer C
55 is filled with a cooling material, such as ice, or a heating material, such as live coals, a gasoline-lamp, or other heating device. Passing out of the coil B through the exit-pipe *b''*, the heated or cooled air may be led by any suit-
60 able system of tubes to any desirable part of the car, preferably to the forward end thereof.

When it is desirable, the exit-pipe *b''* may be tapped at any suitable point, and by means of a flexible tube, W, (when cold air is being
65 utilized,) the cold air may be conducted, where the car is one drawn by horse-power, to the forehead of the horse, as shown in Fig. 5.

The brake mechanism connected with these devices is as follows: At the other end, *d'*, of
70 the cylinder D is a second piston-rod, J, secured at one end to a second piston-head situate within the cylinder and connected at the other end with the brake-beam *x'*. Leading
75 from the pipe *b* to the end *d'* of the cylinder D is a pipe, *k*, having a three-way valve, *o*, which valve is operated by the lever *m*, which is connected with the usual brake-rod, *x'*, by the rod L, (or other suitable means of operating the
80 valve may be provided.) It will be noticed, however, that in this manner my improvement may be connected to the usual brake mechanism employed in street-cars. Extending
85 across the cylinder D is a partition, D', which separates the portions *d* *d'*, in reality forming two separate cylinders.

The operation is as follows: The air being constantly compressed in the cylinder *d'* while the car is in motion, owing to the opening of the pipe *b* being smaller in diameter than the
90 diameter of the piston-head, the rod *x* is moved forward, and the lever *m* thereby turned on its axis, which opens the valve *o*, so as to allow the compressed air in the cylinder *d'* to pass through both parts of the valve *b'*,
95 which are of equal size, so that a portion of the compressed air shall pass through the pipe *k* into the cylinder *d'*, where by its expansive force it forces the piston-head toward the partition D', and thereby draws the brake-shoes
100 against the wheels of the car. The other portion of compressed air at the same time continues to pass through the pipe *b*. In this manner the air which is compressed within

the cylinder *d* is utilized for cooling or heating the car, and at the same time it may be employed as a force for applying the brakes, without, however, interfering with the usual
5 brake mechanism, which may be employed together with the air-force, or when the car is stationary and the compressed air has become exhausted.

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

1. The combination of an air-compressor, a heating or cooling receptacle, a brake-cylinder and piston connected with the brake, conduits for leading the air from the heating or
15 cooling device and to the brake-cylinder, and a valve for connecting and disconnecting the compressor and the brake-cylinder, substantially as and for the purposes described.

2. The combination, with a car and its axle, of
20 the cylinder *D*, having the partition *D'*, a compressing-piston, *E*, connected with the axle, so as to be operated thereby, a brake-piston connected with the brake-beam, a cooling or heating box, a conduit passing from the com-
25 pressor-cylinder through the heating or cooling device, a conduit leading from the compressor to the brake-cylinder, and a valve operated by connecting devices with the brake-rod, substantially as and for the purposes described. 30

In testimony whereof I have affixed my signature, in presence of two witnesses, this 5th day of May, 1886.

ARTHUR R. CHISOLM.

Witnesses:

PAUL BAKEWELL,
S. L. SCHRADER.