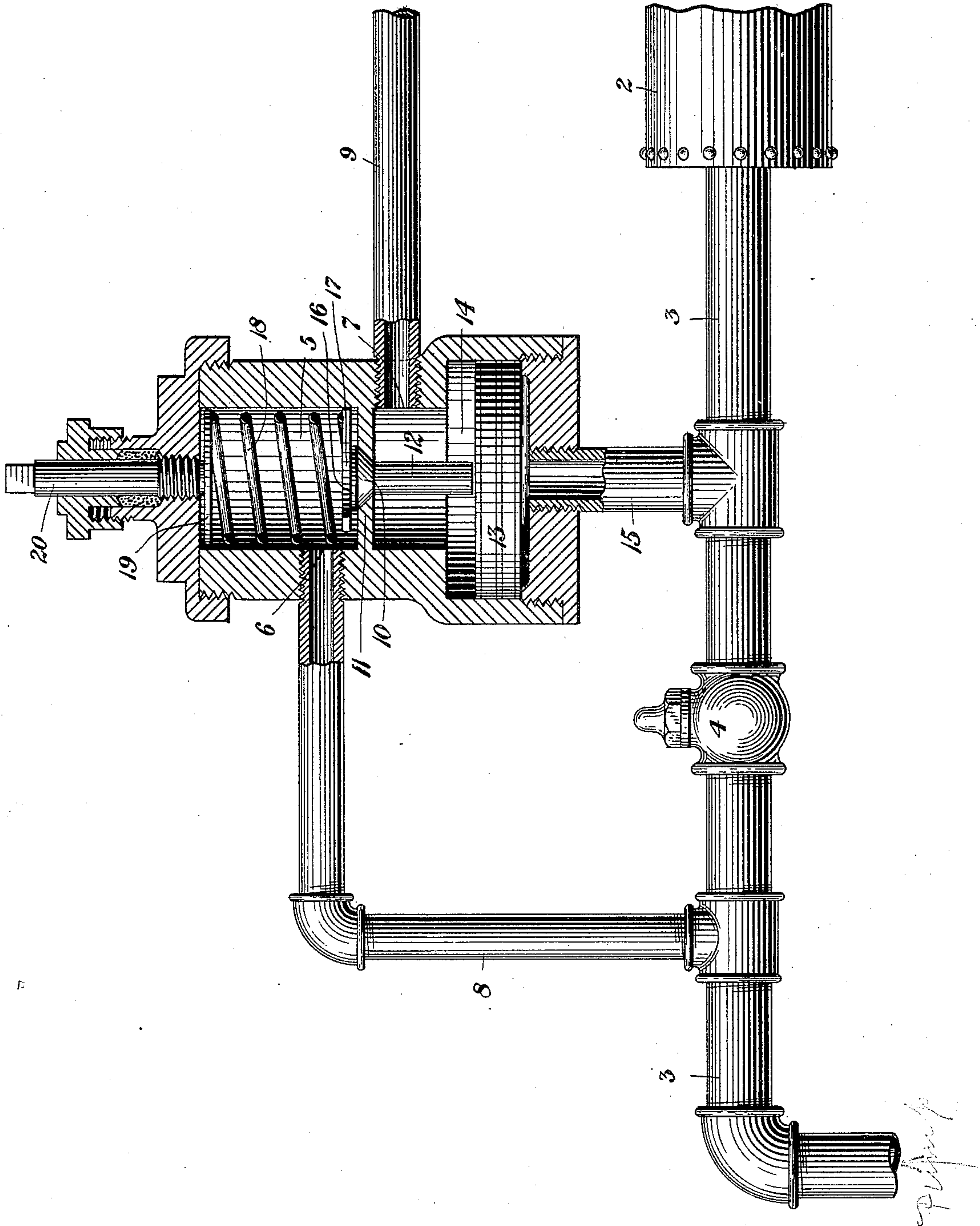


(No Model.)

H. E. HUNT.
AIR BRAKE REGULATING APPARATUS.

No. 529,270.

Patented Nov. 13, 1894.



WITNESSES

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INVENTOR

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UNITED STATES PATENT OFFICE.

HERBERT E. HUNT, OF PITTSBURG, PENNSYLVANIA.

AIR-BRAKE-REGULATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 529,270, dated November 13, 1894.

Application filed May 2, 1894. Serial No. 509,775. (No model.)

To all whom it may concern:

Be it known that I, HERBERT E. HUNT, of
Pittsburg, in the county of Allegheny and
State of Pennsylvania, have invented a new
5 and useful Improvement in Air-Brake-Regu-
lating Apparatus, of which the following is a
full, clear, and exact description, reference be-
ing had to the accompanying drawing, form-
ing part of this specification, which shows in
10 elevation, partly in section, apparatus con-
structed in accordance with my invention.

My improvement is designed to form part
of an air-brake system for cars, in which the
air reservoir is supplied by a pump adapted
15 to be constantly operated during the motion
of the car, by connection with one of the mov-
ing parts of the latter. It is principally in-
tended for use upon street railway cars, and
its object is to economize power and to save
20 wear upon the pump, by providing automatic
means whereby when a proper degree of air-
pressure is attained in the reservoir, the con-
nection of the pump therewith is throttled or
cut off, and a connection is established be-
25 tween the pump and the atmosphere so that
the pump may then operate without substan-
tial back pressure or resistance. The advan-
tages gained by this improvement are very
material and will be appreciated by those
30 skilled in the art.

In the drawing, 2 represents the air reser-
voir for supplying air to the brake cylinder.
It is connected by a pipe 3 with the air pump,
(not shown) which is driven constantly dur-
35 ing motion of the car by connection with the
axle or other moving part of the traction or
electric motor car to which the apparatus is
applied.

4 is a check-valve interposed in the pipe 3,
40 and adapted to permit the air to be forced
from the pump into the reservoir and to pre-
vent its back flow.

5 is a regulating valve chamber having
ports 6, and 7, one communicating by a pipe
45 8 with the pump by way of the pipe 3, and the
other, a by-port, opening directly or through
an exhaust pipe 9 into the atmosphere.

10 is a valve of inverted conical shape which
fits a similarly shaped seat in the partition or
50 plate 11 fixed within the chamber, and 12 is
the stem of the valve which at its lower end
abuts against the upper face of a piston 13

contained within a chamber 14, which prefer-
ably forms an enlarged portion of the cham-
ber 5 and communicates with the air reservoir 55
by a pipe 15. Upon the upper face of the valve
rests a boss 16 projecting from the under face
of a triangular or other irregularly shaped
plate or guide 17, which is pressed down-
wardly by a spiral spring 18. A disk 19 rests 60
upon the spring inside the upper cylinder-
head, and the tension of the spring is regu-
lated by the screw spindle 20, which passes
through the head and abuts against the disk
19, this spindle having a squared upper end 65
for the application of a wrench.

The operation of the apparatus is as follows:
Suppose the air in the reservoir 2 to be at at-
mospheric pressure, and the car to be starting.
The valve 10 is in such case held down by the 70
spring 18 so that communication between the
ports 6 and 7, is closed, and as the pump is
operated the air compressed thereby will pass
through the pipe 3 and check-valve 4 to the
reservoir. When the air pressure in the latter 75
has become sufficiently high to exert upon the
piston 13 and valve 10 a force greater than
the resistance offered by the spring, the valve
will be lifted from its seat so as to open com-
munication between the ports 6 and 7, and 80
thereupon the air compressed by the pump
will pass freely through the pipe 8, and ports
6 and 7 to the atmosphere, and the work of
compression will be relieved immediately
from the pump. When the air in the reser- 85
voir is reduced below the point necessary to
move the valve against the spring, the valve
will be forced into the position shown in the
drawing, thus shutting off connection of the
exhaust port with the pump, and causing the 90
pump to discharge into the reservoir. By
means of the adjusting mechanism of the
valve, the tension of the spring may be regu-
lated so as to maintain any desired degree of
pressure within the reservoir. 95

Within the scope of my invention, modifi-
cations in the form, construction and relative
arrangement of the parts may be made by the
skilled mechanic. Thus a diaphragm may re-
place the piston and valve-regulating mech- 100
anism, or valves of other kinds may be sub-
stituted for those shown in the drawing.

I claim—

1. In air-brake apparatus, the combination

of a constantly operated pump, an air-reservoir connected therewith, a regulating valve adapted to connect the pump with a by-port, communicating with the atmosphere and
5 means whereby said valve is operated automatically by the pressure of air in the reservoir; substantially as described.

2. In air-brake apparatus, the combination of a constantly operated pump, an air-reservoir connected therewith, a regulating valve adapted to connect the pump with a by-port, communicating with the atmosphere means whereby said valve is operated automatically by the pressure of air in the reservoir, and a
10 check-valve between the pump and reservoir; substantially as described.

3. In air-brake apparatus, the combination

of a constantly operated pump, an air-reservoir connected therewith, a check valve in the connection between the pump and reservoir, 20 a regulating valve controlling a by-port leading to the atmosphere and a port communicating with the pump at a point between the check-valve and the pump, and a piston or diaphragm which operates the regulating 25 valve, and is subjected to pressure from the air reservoir; substantially as described.

In testimony whereof I have hereunto set my hand.

HERBERT E. HUNT.

Witnesses:

W. B. CORWIN,
H. M. CORWIN.