

No. 674,493.

Patented May 21, 1901.

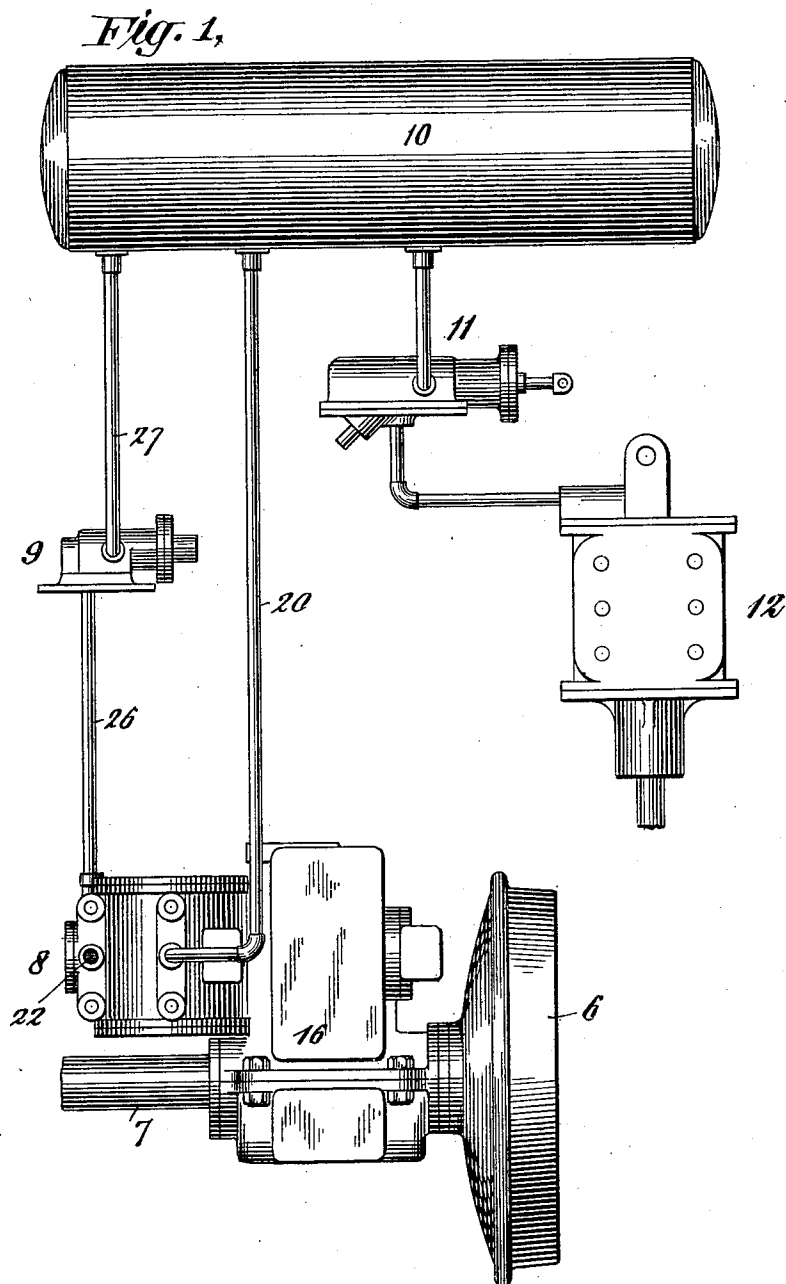
A. J. BRISLIN.

AIR BRAKE.

(Application filed May 28, 1900.)

(No Model.)

3 Sheets—Sheet 1.



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Fig. 4,

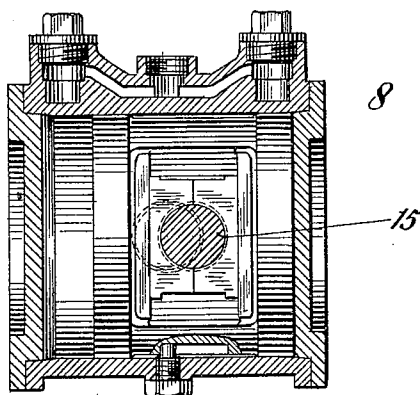
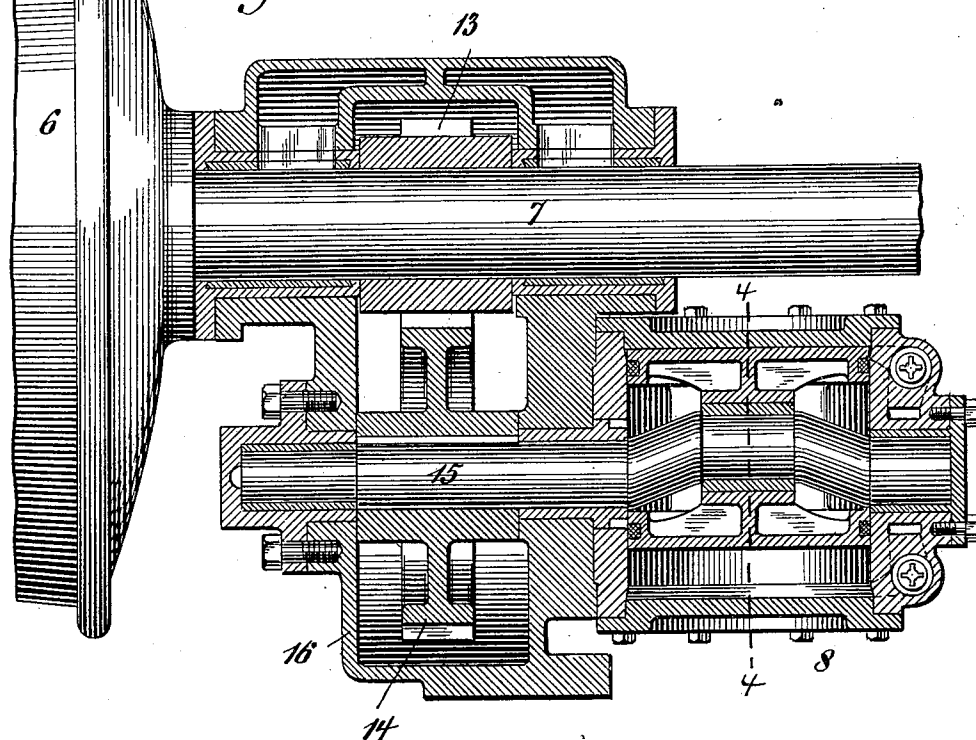


Fig. 2,



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Fig. 5,

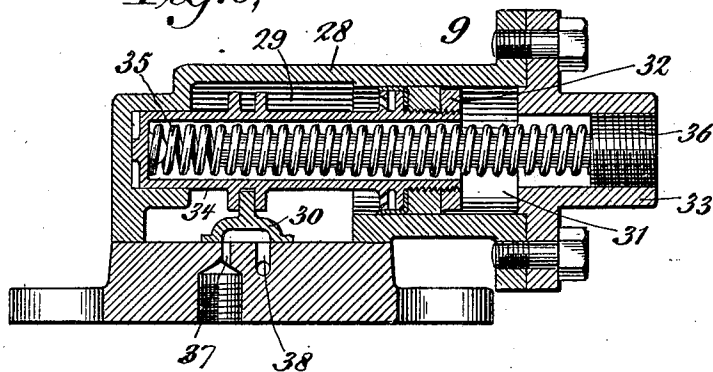
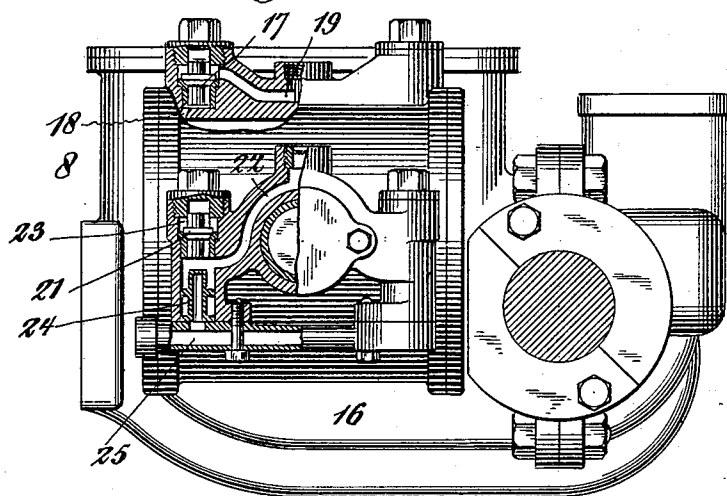


Fig. 3,



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UNITED STATES PATENT OFFICE.

ANDREW J. BRISLIN, OF NEW YORK, N. Y., ASSIGNOR TO THE STANDARD AIR BRAKE COMPANY, OF SAME PLACE.

AIR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 674,493, dated May 21, 1901.

Application filed May 28, 1900. Serial No. 18,230. (No model.)

To all whom it may concern:

Be it known that I, ANDREW J. BRISLIN, a citizen of the United States of America, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Air-Brakes, of which the following is a specification.

My invention relates to improvements in air-brakes in which the pressure of air is supplied by a pump actuated from the axle of a car; and my invention consists in a new and improved means for automatically relieving the pump from its work of compressing air when the air in the reservoir has attained a sufficient pressure and in again causing the pump to operate when the air in the reservoir falls below such point of pressure. Heretofore it has been common to throw the pump into and out of operation by the interposition of a clutch and clutch mechanism between the pump and the pump-operating means.

By my invention I have provided for the continuous driving of the pump from the axle of the car, but have provided for the lifting of certain of the pump-valves through the action of a suitable governing device at such times as a predetermined point of air-pressure has been attained. Thus while the pump will be running at all times the car-axle is revolving the pump will be relieved from operative action at such times as may be desired.

The objects of my invention are to simplify brake mechanism, to dispense with clutches or locking mechanism intermediate of the pump and pump-operating means, to lessen the cost of construction and the weight of the parts, and to govern the action of the pump by the simplest and most direct means.

I will now proceed to describe an air-brake system embodying my invention and will then point out the novel features in claims.

Referring to the accompanying drawings, Figure 1 is a general view of an air-brake system, showing a pump and pump-operating mechanism, a pump governor or controller, a storage-reservoir, a service-valve, and a brake-cylinder. Fig. 2 represents a central horizontal section of the pump and pump-operating mechanism. Fig. 3 represents an end view of the same looking from the right-hand

end of Fig. 2, certain parts being broken away in order to illustrate portions of the pump-valves and mechanism connected therewith. Fig. 4 is a central section through the pump, taken on the line 4 4 of Fig. 2. Fig. 5 is a central longitudinal section of the pump governor or controller.

Similar reference characters denote corresponding parts throughout the several views.

Referring at first more particularly to Fig. 1, which is a diagrammatic view of the system, the said system will be seen to be in operative connection with a car wheel and axle from which the pump obtains its source of power. 6 designates the car-wheel, and 7 the axle upon which it is mounted. A pump (designated by the reference-character 8 as a whole) is provided and suitably driven by gearing from the axle in a manner to be hereinafter described. The action of the pump is controlled by a suitable governor or controller, (designated as a whole by the reference character 9 and shown more fully and in detail in Fig. 5.) A storage-reservoir 10 is in communication with the discharge side of the pump 8 and receives and stores the air under pressure therefrom. A service-valve 11 and brake-cylinder 12 are supplied, which may be of any well-known or desired construction.

Referring now more particularly to Fig. 2, it will be seen that the axle 6 is provided with a gear-wheel 13, suitably secured thereon and arranged to mesh with a corresponding gear-wheel 14, secured upon the pump-shaft 15 of the pump 8. A suitable casing 16 incloses the said gearing and serves to support the pump. The interior of the casing 16 may be provided with a lubricant for the gearing, and the parts may thus be kept in good running condition. The pump 8 is here shown as having two suction and two discharge valves. These valves are most clearly illustrated in Fig. 3. The discharge-valves, of which there are two, are designated by reference character 17. They communicate on their inlet sides with the interior of the pump-cylinder through ports 18 and on their discharge sides with a common discharge-port 19. The discharge-port 19 is connected with the storage-reservoir by a pipe 20. (See Fig. 1.) The inlet or suction valves 21, of which there are

preferably also two, communicate with the atmosphere through a common passage-way 22 upon their inlet sides and upon their outlet sides with the interior of the pump-cylinder through ports 23. Below each of the suction-valves there is provided a plunger 24, fitted in a cylindrical bore arranged therefor, and the lower end of each bore is open to a passage 25, which is in communication with the governor 9 through a pipe 26. (See Fig. 1.) The governor is in communication with the storage-reservoir 10 through pipe 27 and is adapted in its movement to open and close communication with the said storage-reservoir. When the pressure in the reservoir rises above a certain point, the governor will, in a manner to be hereinafter explained, open communication with the reservoir 10 and air under pressure will flow through the pipe 26 and into the passage 25. The plungers 24 will then be lifted and the suction-valves 21 forced from their seats. The effect of this will be that though the pump-piston will continue to move backward and forward no more air will be pumped into the reservoir. Any air that is drawn into the pump-cylinder through the suction-valves upon a stroke in one direction will be discharged through the said valves upon the return stroke. Instead of lifting the suction-valves the discharge-valves might be lifted, with the same result of putting the pump out of action. In such case the suction-valves would remain closed, while air from the reservoir would be churned backward and forward on either side of the piston. Such arrangement is not such a desirable one, but is a possible modification of my invention.

Referring now more particularly to Fig. 5, which represents a central sectional view of the governor or controller 9, the said governor will be seen to consist of a casing 28, inclosing a valve-chamber 29, which is in open communication with the compressed-air supply, a slide-valve 30, arranged within the said valve-chamber, and actuating means spring-pressed in one direction and operated by air-pressure in the opposite direction to operate the said slide-valve. A portion of the interior of the casing 28 is formed into a cylinder 31, in which is mounted a piston-head 32. A cylinder-head 33 closes the end of said cylinder. The piston-head 32 has a hollow piston-rod 34, which is conveniently arranged to slide in a suitable slideway arranged in the end of the chamber 29, as shown. The piston-rod 34 engages the slide-valve 30 and in its movement moves the said valve. A spring 35 is arranged within the hollow piston rod or stem 34 and bears between the end of same and the cylinder-head 33. The cylinder-head may be, and preferably is, supplied with an adjusting-nut 36 for adjusting the tension of the spring 35. The slide-valve in its movement controls two ports—the port 37, which communicates through the pipe 26 with the passage 25 below the plungers controlling the

pump suction-valves, and a port 38, which is an exhaust-port to atmosphere or elsewhere, as may be desired.

With the parts in position as in Fig. 5 the port 37 is closed to the interior of the valve-chamber, and hence to the reservoir, but is open through the exhaust-chamber in the valve to the exhaust-port 38. The pipe 26 and passage 25 are hence open to exhaust, and the pump 8 is in condition for active operation. When the pressure in the reservoir reaches the point at which the spring 35 will be overcome, the piston-head 32, rod 34, and valve 30 will be forced over, the exhaust-port 38 closed, and the feed-port 37 opened. Air under pressure will rush through the port 37 from the interior of the valve-chamber 29 to the passage 25 and will lift the plungers 24 and throw the suction-valves 21 off their seats. The valves will be so held until the pressure in the reservoir, falling below the predetermined point, permits the spring 35 to react and the position of the valve 30 to be again reversed.

Various different constructions and modifications of my invention may obviously be made without departing from the spirit and scope thereof. Hence I do not wish to be limited to the exact details as shown and described; but

What I do claim, and desire to secure by Letters Patent, is—

1. In an air-brake system the combination with an air-reservoir, a pump and pump-operating means, and a governor in communication with the air-reservoir and containing a valve operated by variations of pressure in the air-reservoir, of actuating means for lifting and holding open the pump suction-valves, and a communication leading from the said actuating means to the governor, the said communication controlled by the valve in said governor.

2. In an air-brake system the combination with an air-reservoir, a pump and pump-operating means, and a governor in communication with the air-reservoir and containing a valve operated by variations of pressure in the air-reservoir, of actuating means for lifting and holding open the pump suction-valves; and a communication leading from the said actuating means to the governor and to exhaust, the said communication alternately connected to air-reservoir pressure and to exhaust by the valve in said pump-governor.

3. In an air-brake system the combination with an air-reservoir, a pump and pump-operating means and a governor comprising an air-chamber in open communication with the air-reservoir, a valve in said air-chamber and valve-actuating means, spring-pressed in one direction, and operated in the other direction by an excess of pressure in the air-reservoir, of actuating means for lifting and holding open the pump suction-valves, and a communication between the said actuating means

and the pump-governor, said communication being controlled by the said governor-valve.

4. In an air-brake system the combination with an air-reservoir, a pump and pump-operating means and a governor having a valve, spring-actuated in one direction and operated in the other direction by excess of pressure in the air-reservoir, of plungers with which the suction-valves of the pump are fitted, said plungers being adapted in their movements in one direction to lift the said pump suction - valves, a communication through the pump-governor from the air-reservoir to the said plungers, said communica-

tion being controlled by said governor-valve and a port to exhaust with which that portion of the said communication leading from the pump-governor to the plungers is connected by said valve when that portion of the communication leading from the said air-reservoir to the pump-plunger is closed.

Signed by me at New York, N. Y., this 26th day of May, 1900.

ANDREW J. BRISLIN.

Witnesses:

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