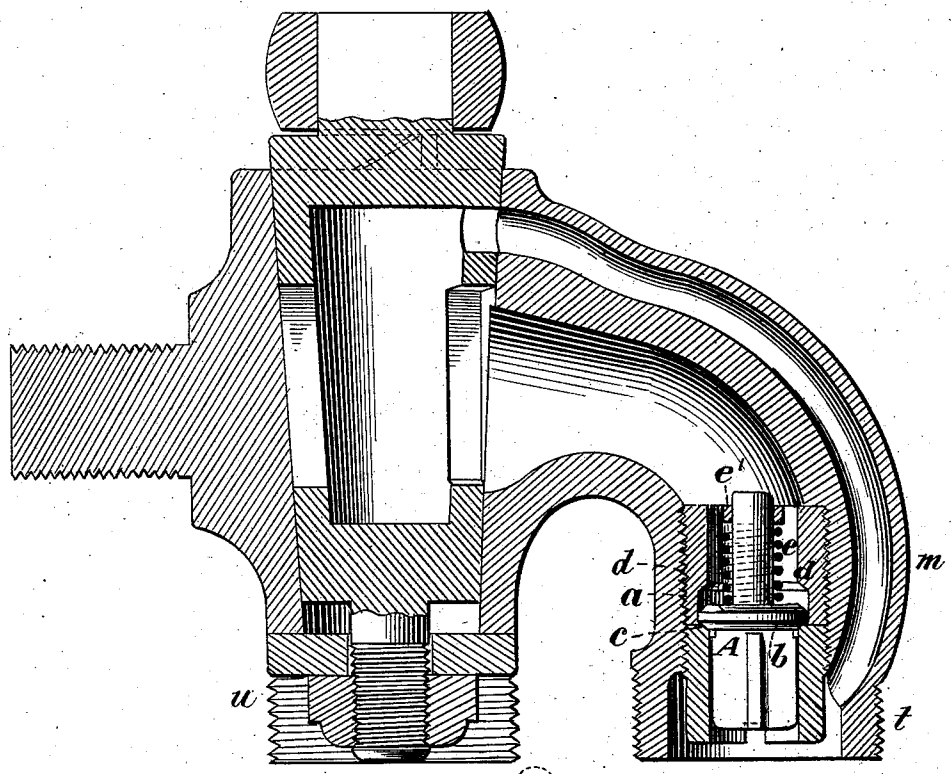
(No Model.)

N. J. PARADISE.

COCK FOR AIR BRAKES.

No. 293,774. Patented Feb. 19, 1884.

Fig. 1.



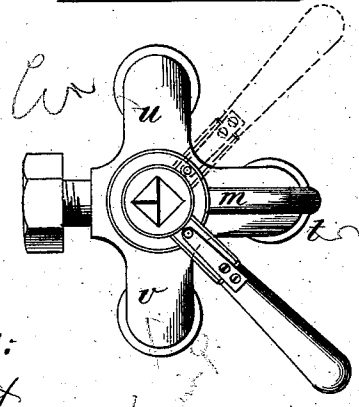


Fig. 2.

Witnesses:
A. Ruppert.
E. Price.

Inventor:
Norman J. Paradise
by Gifford W. J. Howard
Attys.

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

NORMAN J. PARADISE, OF AURORA, ILLINOIS.

COCK FOR AIR-BRAKES.

SPECIFICATION forming part of Letters Patent No. 293,774, dated February 19, 1884.

Application filed November 27, 1883. (No model.)

To all whom it may concern:

Be it known that I, NORMAN J. PARADISE, of Aurora, in the county of Kane and State of Illinois, have invented certain new and useful Improvements in Cocks for Air-Brakes, of which the following is a specification, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

This invention is an improvement upon that described in Letters Patent No. 259,710, granted to me June 20, 1882. The invention described in that patent is designed to be used in connection with the well-known automatic air-brake, and is placed in the locomotive-cab within the control of the engineer. In the automatic system air is compressed to the required density in a main reservoir situated on the locomotive by means of an air-compressor. The brake or train pipes attached to and connected between the cars are, during the running of the train with the brakes off, kept charged with compressed air. Under each car are placed an auxiliary reservoir and a brake-cylinder connected by a pipe, both being united with the brake-pipe through the medium of a device known as a "triple valve," the arrangement being such that while the brakes are off and the train is in motion the piston of the brake-cylinder shall be subjected only to the pressure of the atmosphere and each auxiliary reservoir kept charged from the brake-pipe. In applying brakes, the pressure in the brake-pipe is reduced and the compressed air stored in each auxiliary reservoir admitted to its brake-cylinder, the piston being moved and the brakes applied through intermediate mechanism. Any reduction of pressure in the brake-pipes under abnormal conditions—as by the bursting of the hose or the opening of the conductor's valve on the train—produces the same effect of admitting the air from the auxiliary reservoir into the brake-cylinder so as to apply the brakes. The release of the brakes is effected by increasing the pressure in the brake-pipe above that in the auxiliary reservoir.

The object of the invention described in my said Patent No. 259,710 is to reserve a pressure of air within the main reservoir, which may be thrown suddenly into the brake-pipes and upon the triple-valves to effect the quick release of the brakes. In the patent one nozzle of the cock connects with the main reservoir, another with the exhaust, and a third with the train pipe. A spring-valve seats against the pressure in the main reservoir, the tension of the spring being such as to have a resisting power equal to the reserve force to be retained in the reservoir. The air reserved may be suddenly thrown upon the triple valves under the cars through a supplemental passage provided in the cock for the purpose. By means of this passage communication is established between the main reservoir and the train pipe, the reserved pressure raising the triple valves and cutting off communication between the auxiliary reservoirs and brake-cylinders.

The object of the present invention is to improve the construction described in said patent, and to enable the air to be retained in the main reservoir at all times and under all circumstances. This is effected by a change in the construction of the valve of the patent whereby when from any cause air is taken from the train-pipes the pressure from the main reservoir under the valve will at once raise it to an upper seat. The valve thereupon holds all the air in the main reservoir, so that in the event of accident, as the bursting of hose, there will be sufficient pressure in the main reservoir to let off the brakes as soon as the accident is repaired.

In the drawings, Figure 1 represents a vertical longitudinal section of the improved cock constituting my present invention. Fig. 2 shows on reduced scale a plan or top view of the cock.

Similar letters of reference indicate similar parts in both views.

The construction of the cock is substantially the same as that described in my said Patent No. 259,710, the cock having three branches, one of which, *v*, connects with the train-pipe, another, *u*, with the exhaust, and the third, *t*, with the main reservoir, the supplementary air-passage being shown by *m*, and for a general description of the cock reference may be made to that patent.

Instead of the valve only having one face—namely, on its under side—as in that patent, the valve A of my present invention has an upper face, *a*, as well as a lower face, *b*. The lower face, *b*, seats upon or against *c*, and the upper

face upon or against *d*. A spiral spring, *e*, is interposed upon the stem of the valve, between the top of the valve and the cage *e'*. Under normal conditions, whether applying or releasing brakes, there will be a pressure in the brake-pipes. In my present invention this back-pressure in the train-pipe under normal conditions sufficiently counteracts the force in the main reservoir to prevent the seating of the upper face, *a*, of the valve. If, however, a break occurs in the hose, or any other contingency arises, (as the opening of a conductor's valve,) whereby the pressure in the train-pipe is reduced below the normal limit, the counteracting pressure being thus removed from above the valve, the upper face, *a*, will be automatically seated against *d* and the storage air, instead of escaping, will be automatically confined within the main reservoir.

By the means described the duty heretofore imperfectly performed by the engineer of preventing the exhaustion of the main reservoir, in the event of accident to the hose, &c., is automatically and effectually accomplished.

I claim as my invention—

In combination with a cock for air-brakes, a spring double-faced valve arranged in the branch connecting with the main reservoir, and seats provided therefor, substantially as and for the purposes set forth.

In testimony whereof I have hereunto set my hand and seal this 24th day of November, A. D. 1883.

NORMAN J. PARADISE. [L. S.]

Witnesses:
C. R. BABEUF,
JOHN CARLSON.