(No Model.)

J. MILNE & W. H. GREENE.

TRIPLE VALVE FOR AIR BRAKES.

No. 541,175. Patented June 18, 1895.

FIG. 1.

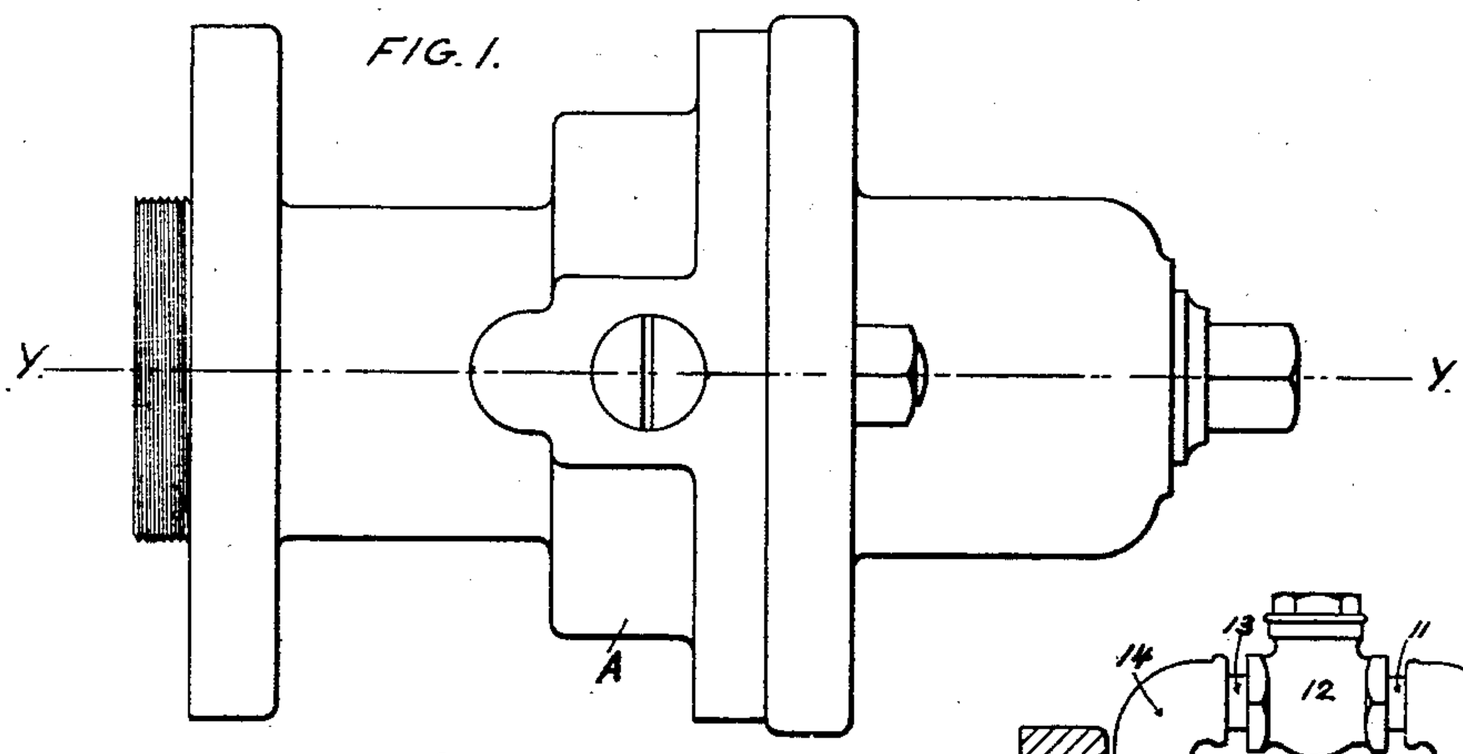

FIG. 3.

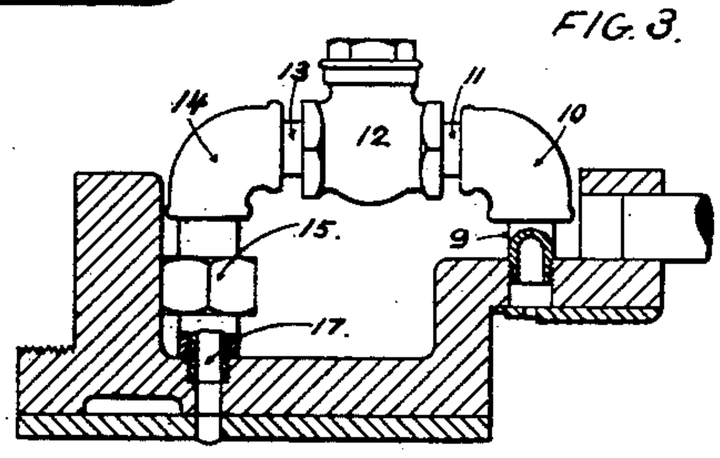

FIG. 2.

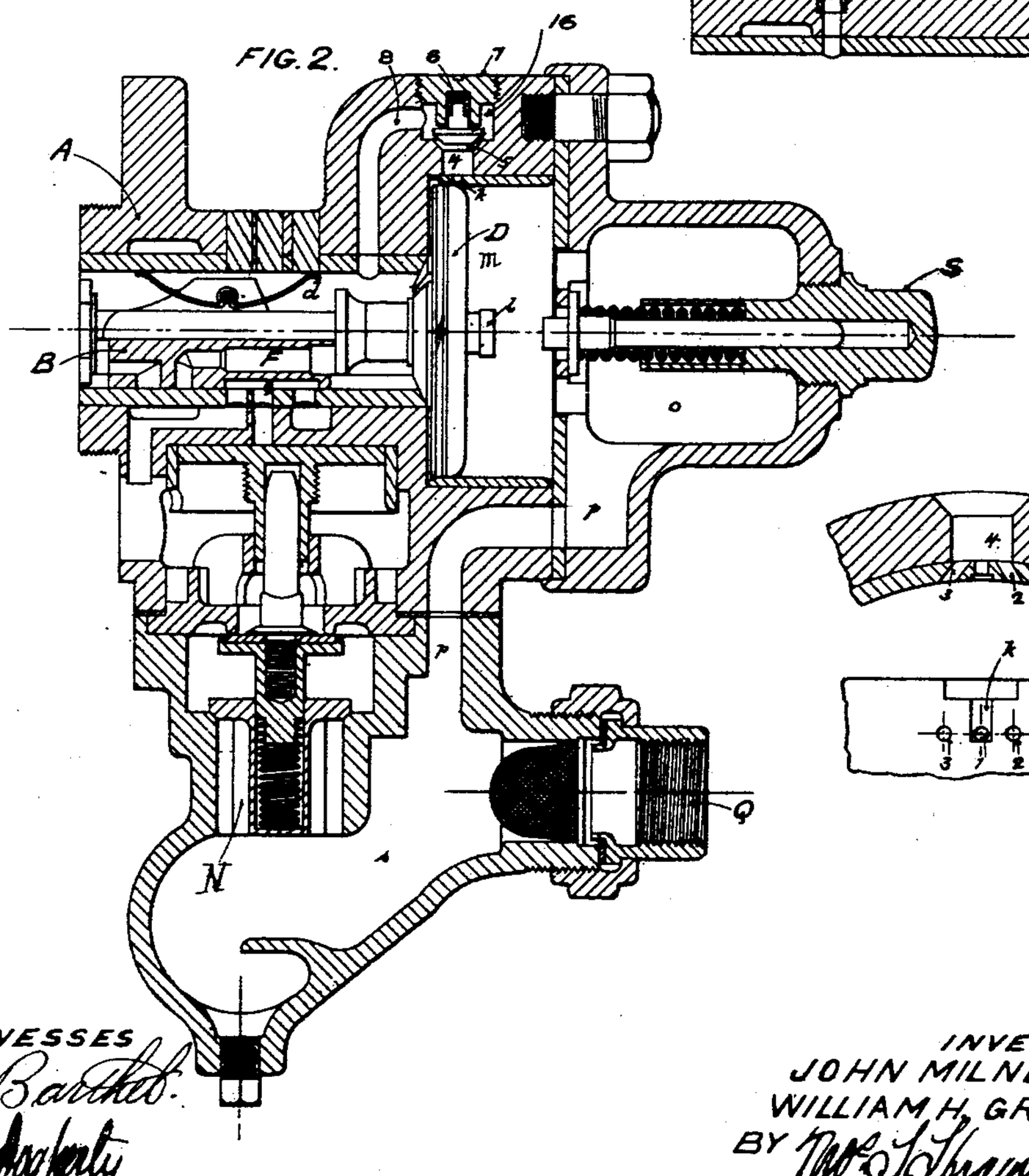

FIG. 4.

FIG. 5.

WITNESSES

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TRIPLE VALVE FOR AIR-BRAKES.

SPECIFICATION forming part of Letters Patent No. 541,175, dated June 18, 1895.

Application filed January 14, 1895. Serial No. 534,897. (No model.)

To all whom it may concern:

Be it known that we, JOHN MILNE, a subject of the Queen of Great Britain, and WILLIAM H. GREENE, a citizen of the United States, residing at Marquette, in the county of Marquette and State of Michigan, have invented certain new and useful Improvements in Triple Valves for Air-Brakes, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention consists in the peculiar construction of a quick action triple valve for air brakes, and particularly in the construction of a by-pass around the valve-controlling piston of the well known Westinghouse triple valve, whereby the auxiliary reservoir may be more quickly recharged than with the present construction, without in any way detracting from the ordinary operation of the valve in applying the brakes, all as more fully hereinafter described.

In the drawings, Figure 1 is a top plan view of a quick-action triple valve of known construction, showing our improvement applied thereto. Fig. 2 is a section on *y y*, Fig. 1. Fig. 3 is a similar section of the upper part of a triple valve, showing the manner of applying it to such valves as may now be in use. Fig. 4 is a cross-section through the cylinder-casing, showing one end of the by-pass. Fig. 5 is a plan of the inner face of that portion of the cylinder shown in Fig. 4.

A is the casing of a well known quick action, triple valve for air brakes, which is applied in a branch pipe from the train pipe, and which has connections to the brake cylinder, and the auxiliary reservoir.

Q is a coupling which connects the interior of the casing with the branch from the train pipe.

N is a passage from the entering chamber in the casing to the well known emergency valve, the construction and operation of which form no part of our invention, and therefore need not be described.

p is a passage leading to the cylinder *m* in which is the usual valve controlling piston D.

k is a restricted port formed in the inner edge of the cylinder casing, and connecting the chambers *m* and *d*, when the piston is at the inner end of its movement, as shown in Fig. 2.

B and F are the air controlling valves operated by the piston D to supply air from the auxiliary reservoir to the air brake cylinder, when the piston D is moved, which is done by reducing the pressure in the train pipe.

After the brakes are operated it becomes necessary to re-charge the auxiliary reservoir and this is accomplished by pumping the air into the train pipe, which air passes through the passage *p* in the casing into the cylinder *m* and moves the piston D to the position shown in Fig. 2, opening the port *k* and passing therethrough and through the chamber *d* to the auxiliary reservoir. The parts thus far described are of known and usual construction and operation.

In the position of the parts, shown in Fig. 2, the valves B and F close communication from the chamber *d* to the brake cylinder. The port *k* necessarily being a restricted port, to prevent the air from the auxiliary reservoir equalizing the pressure on both sides of the piston D when the pressure is reduced in the train pipe, and thereby preventing its travel, it requires considerable time to recharge the auxiliary reservoir. By our invention an enlarged by-pass from the chamber *m* into the chamber *d* around the piston D is provided, which will form a free passage for the air and thus permit of more quickly recharging the auxiliary reservoir than heretofore.

In Fig. 2, we have shown this by-pass formed integral with the casing of the triple valve, and in Fig. 3 we have shown it in the nature of pipe fittings applied to old triple valves, which may now be in use.

1, 2 and 3 are three ports through the cylinder casing, the port 1 being located in the initial portion of the passage *k*, and the ports 2 and 3 being bores or apertures upon each side thereof. Instead of boring three ports, however, one large port of the proper width may be used to effect the same result. These ports connect into a passage 4, controlled by a check valve 5, preferably closed by a spring 6, the spring being held in the recess in the plug cap 7, as shown in Fig. 2.

8 is a passage from the chamber 16, around the check valve, leading to the chamber *d*.

Now it will be evident that just as soon as the piston D uncloses the port *k* it will simultaneously open the ports 1, 2, 3 (or the sin-

gle port used in lieu of the three) and permit the air from the train pipe to pass quickly and freely into the auxiliary reservoir through the passage 4, chamber 16 and passage 8 and chamber *d*, as well as through the port *k*.

In applying our by-pass to old valves, we may use the ordinary pipe fittings, as shown in Fig. 3, comprising the nipples 9, 11, 13, and 17, elbows 10 and 14, check valve 12 and coupling 15. With this construction, when the brakes are to be operated, it is evident that no air can pass through the by-pass into the cylinder *m* as the check valve 5 will immediately be closed if the pressure below is decreased.

What we claim as our invention is—

1. The combination with a valve-controlled piston of a triple valve, having chambers on both sides thereof, and a restricted port around the piston connecting the chambers, of an enlarged by-pass located at one side of and beyond the piston connecting the two chambers, having its inlet port in the wall of the piston chamber at a point adjacent to the inner end of the chamber, and a check valve therein, substantially as described.

2. The combination with the valve-controlled piston of a triple valve, having chambers on both sides, and a restricted port around the piston connecting the chambers, of a by-pass extending outside the casing connecting the two chambers around the piston and having its inlet port at a point adjacent to the point of extreme inward movement of the piston, and a check valve in said by-pass, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN MILNE.
WILLIAM H. GREENE.

Witnesses:
ALBERT E. MILLER,
MATTIE E. LEHNEN.