

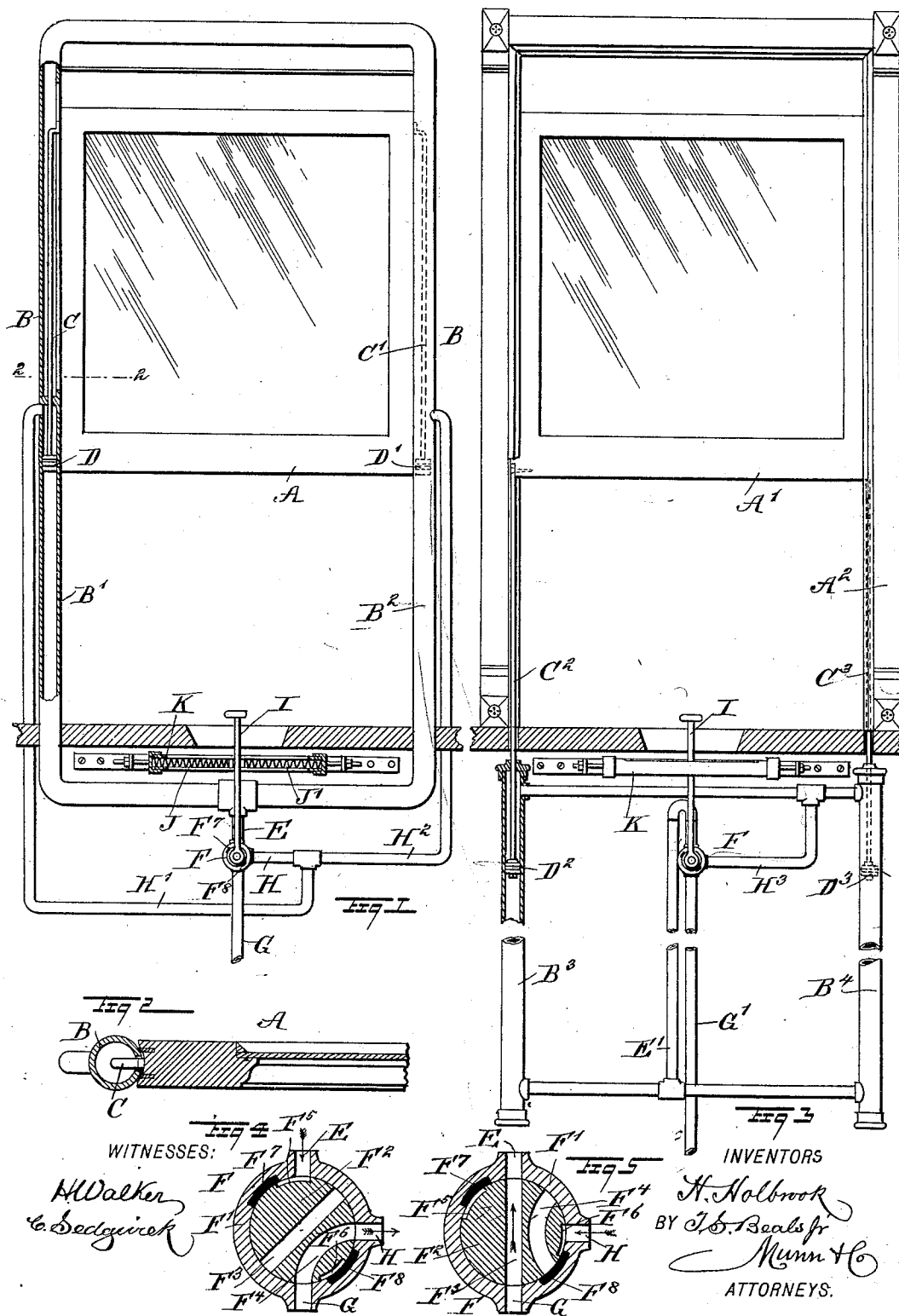
(No Model.)

H. HOLBROOK & T. S. BEALS, Jr.

PNEUMATIC DEVICE FOR RAISING OR LOWERING CAR WINDOWS.

No. 546,854.

Patented Sept. 24, 1895.



UNITED STATES PATENT OFFICE.

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WASHINGTON.

PNEUMATIC DEVICE FOR RAISING OR LOWERING CAR-WINDOWS.

SPECIFICATION forming part of Letters Patent No. 546,854, dated September 24, 1895.

Application filed September 28, 1893. Serial No. 486,683. (No model.)

To all whom it may concern:

Be it known that we, HORACE HOLBROOK and THOMAS S. BEALS, Jr., of Coupeville, in the county of Island and State of Washington, have invented a new and Improved Pneumatic Device for Raising or Lowering Car-Windows, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved device for conveniently raising and lowering the windows of railway-cars by the pressure of air supplied from the air-brake system.

The invention consists of certain parts and details and combinations of the same, as will be hereinafter described, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improvement as applied and with parts in section. Fig. 2 is an enlarged sectional plan view of the same on the line 2 2 of Fig. 1. Fig. 3 is a side elevation of a modified form of the improvement with parts in section. Fig. 4 is an enlarged sectional side elevation of the air-controlling valve, and Fig. 5 is a similar view of the same in a different position.

As illustrated in Figs. 1 and 2, the window-sash A to be raised or lowered is fitted to slide in a metallic tubular frame B, which forms the window-casing and is fastened in the side of the car. The window-sash A is connected near the upper ends of the side styles with piston-rods C and C', carrying pistons D and D', respectively, fitted to slide in cylinders B' and B², respectively, formed in the lower part of the frame B, as plainly shown in the drawings. Now when air is admitted into the cylinders B' and B² at their lower ends the pistons D and D' are forced upward, and by their piston-rods C and C' raise the window-sash A. When air is forced into the upper ends of the cylinders B' and B², then the pistons D and D' are forced downward, so as to carry the sash A in a like direction to close the window.

The lower ends of the cylinders B' and B² are connected by a pipe E with an air-con-

trolling valve F, (shown in detail in Figs. 4 and 5,) the said valve being connected by a pipe G with an air-supply, preferably the main air-reservoir on the engine, so that compressed air is passed to the said valve F. The latter is connected by a pipe H with branch pipes H' and H², leading to the upper ends of the cylinders B' and B². The valve F is provided with a valve-casing F', in which is mounted to turn the valve-plug F², provided with a straight port F³ and a curved port F⁴, of which the former is adapted to connect the inlet-pipe G with the pipe E to cause the compressed air to pass into the lower ends of the cylinders B' and B² for raising the window-sash, as above described. The other port F⁴ is adapted to connect the inlet supply-pipe G with the pipe H, so that compressed air can pass into the pipe H and branch pipes H' and H² to the upper ends of the cylinders B' and B² to force the pistons therein downward to close the window-sash.

When the valve-plug F² is in the position shown in Fig. 4, then air is admitted to the upper ends of the cylinders, and when the plug is shifted to the position shown in Fig. 5, then air passes into the lower ends of the said cylinders B' and B². In order to exhaust the air from the cylinders B' and B², we provide the valve-plug F² with peripheral recesses F⁵ and F⁶, of which the recess F⁵ is adapted to connect the pipe E with a transverse recess F⁷, formed in the valve-casing F' and leading to the outside. The other recess F⁶ is adapted to connect the pipe H with a transverse recess F⁸, likewise formed in the valve-casing F' and leading to the outer air. Now, when the port F⁴ connects the pipe G with the pipe H, (see Fig. 4,) then the recess F⁵ connects the pipe E with the recess F⁷ to permit the air in the lower ends of the cylinders B' and B² to pass out into the open air at the time the pistons D and D' move downward. When the valve-plug F² is shifted to the position shown in Fig. 5, then the pipe H is connected by the recess F⁶ with the recess F⁸, and air from the upper ends of the cylinders B' and B² can leak out to permit the pistons D and D' to slide upward in the cylinders. The valve-plug F² is provided on its outer end with a handle I, arranged within

convenient reach of the operator seated on the seat next the car-window, the said handle being pressed on opposite sides by springs J and J', held in a casing K attached to the side of the car. The springs J and J' hold the handle I normally in such a position that neither port F³ nor port F⁴ makes connections with its respective pipes E G or H G. Now, when the operator pulls the handle I to the left against the tension of the spring J, then the valve-plug F² moves into the position shown in Fig. 5, so that compressed air passes through the valve F into the lower end of the cylinders B' and B² to force the piston D and D' upward to raise the window-sash. Air in the upper ends of the cylinders will now escape through the pipes H' H² H and registering-recesses F⁶ F⁸ to the outer air. When it is desired to close the window, the operator pulls the handle I to the right, so that the plug F² is moved into the position shown in Fig. 4, whereby air is admitted to the upper ends of the cylinders B' and B² to force the pistons D and D' downward to close the sash, the air in the lower ends of the cylinders escaping through the pipe E and registering-recesses F⁵ and F⁷. As soon as the operator releases the pressure on the handle I, the latter is forced back to its normal vertical position by the action of the respective spring J or J'.

As illustrated in Fig. 3, the improvement is applied to the ordinary window as now constructed, the sash A' being fitted to slide in the usual window-frame A². The sash A' is in this case connected at its lower end, at the sides thereof, with piston-rods C² C³, carrying pistons D² D³, respectively, fitted to slide in cylinders B³ B⁴, respectively, connected at their lower ends by a pipe E' with the valve F and connected at their upper ends by the pipe H³ with the said valve. The supply-pipe G' and valve F, as well as the pipes E' H³, are exactly like the pipes and valves before mentioned. The operation in this case is exactly the same as above described, the operator simply shifting the handle I to the left or to the right to open or close the sash A'.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. A pneumatic device for raising and lowering car windows, comprising a cylinder, a piston fitted to slide in the cylinder and having its piston rod connected with the window sash, pipes connecting with the upper and lower ends of the said cylinder on opposite

sides of the piston, and a valve for controlling the admission of air to either of the said pipes, substantially as described.

2. In a pneumatic device for raising and lowering car windows, the combination with a sash, of cylinders, pistons sliding in the cylinders and connected with the sash, an air supply pipe, pipes connecting the upper and lower ends of the cylinders with the supply pipe, and a valve for controlling the admission of air from the supply pipe to either of the pipes which connect with the cylinders, whereby air can be admitted to either the upper or lower ends of the cylinders, substantially as described.

3. In a pneumatic device for raising and lowering car windows, the combination with a sash, of cylinders, pistons sliding in the cylinders and connected with the sash, an air supply pipe, pipes connecting the upper and lower ends of the cylinders with the air supply pipe, and a valve for controlling the admission of air from the supply pipe to either of the pipes which connect with the cylinders, said valve being constructed to permit the air from the cylinders and pipes to escape to the outer air, substantially as described.

4. A pneumatic device for raising or lowering car windows, comprising cylinders, pistons fitted to slide in the said cylinders and having their piston rods connected with the window sash, pipes connecting with the upper and lower ends of the said cylinders, a valve for controlling the admission of air to the said pipes, a handle held on the valve plug of the said valve alternately to connect the said pipes leading to the upper and lower ends of the cylinder with an air supply pipe, and springs pressing on the said handle at opposite sides thereof to hold the latter in a neutral position, substantially as shown and described.

5. In a pneumatic device for raising and lowering car windows, a tubular window frame having cylinders formed in the lower portion, in combination with a sash sliding in the frame, pistons sliding in the cylinders, and having their piston rods connected with the upper part of the sash, and a valve for controlling the admission of air to the cylinders, substantially as herein shown and described.

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