March 31, 1931. G. W. BRUGH 1,798,520

WINDOW WIPER

Filed Aug. 8, 1928 2 Sheets-Sheet 1

Fig. 1.

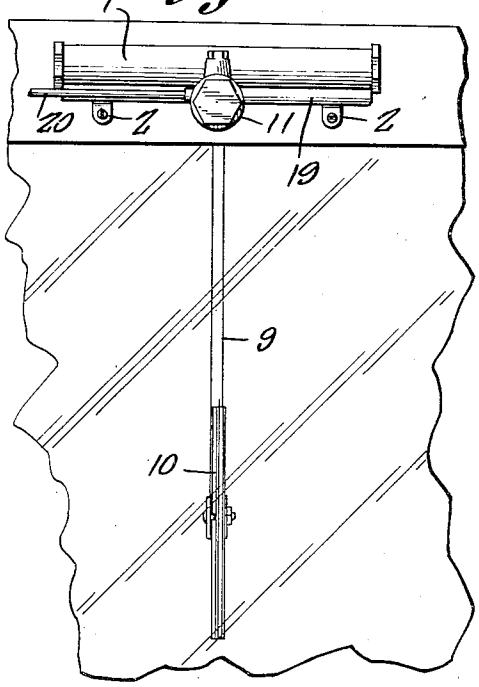


Fig. 2.

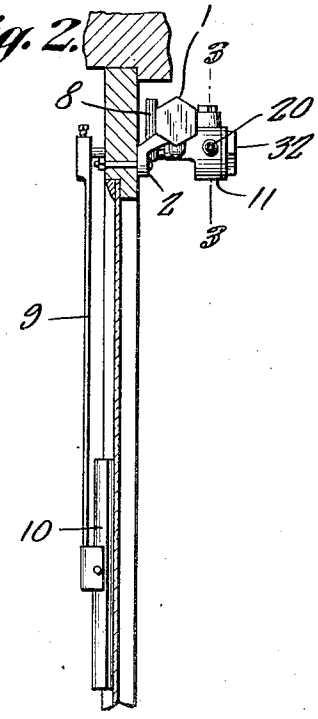


Fig. 9.

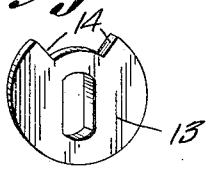
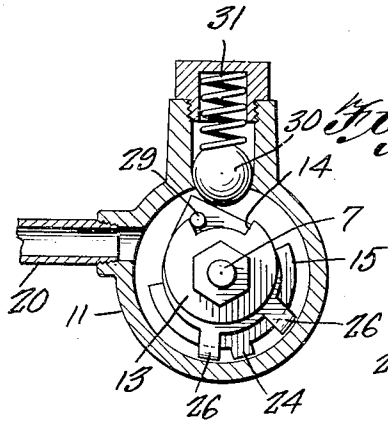


Fig. 3.



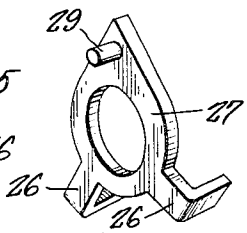


Fig. 10.

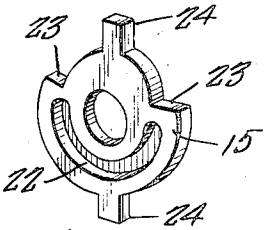


Fig. 11.

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WITNESS:

March 31, 1931. G. W. BRUGH 1,798,520

WINDOW WIPER

Filed Aug. 8, 1928 2 Sheets-Sheet 2

Fig. 4.

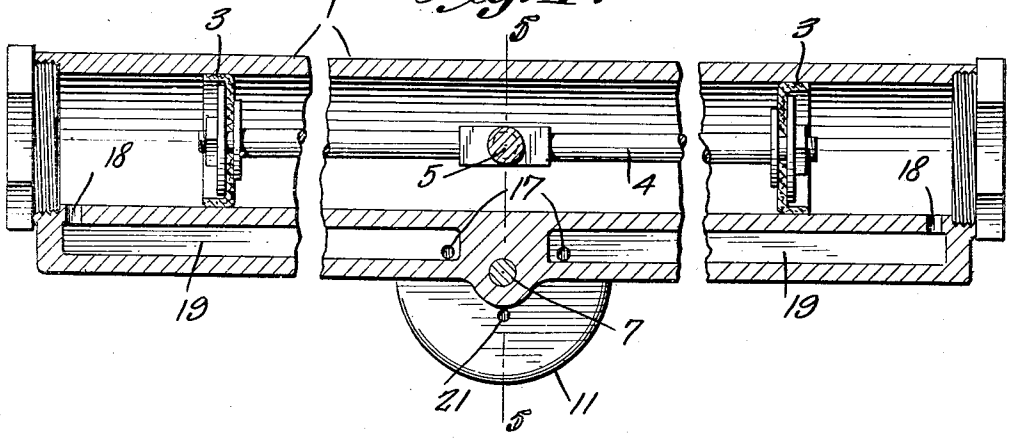


Fig. 5.

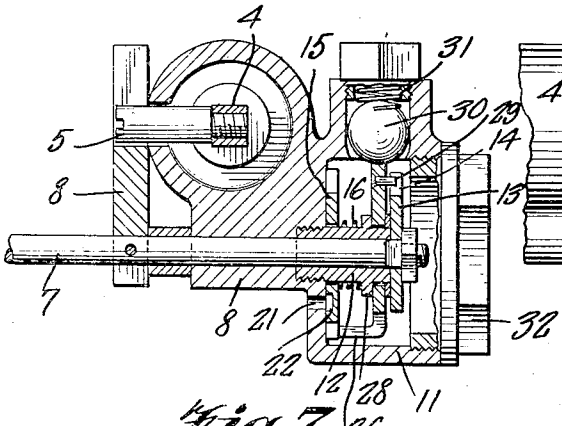


Fig. 6.

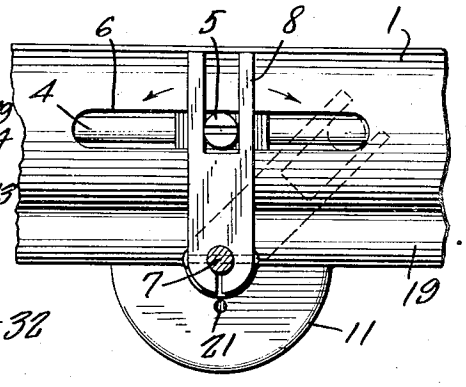


Fig. 7.

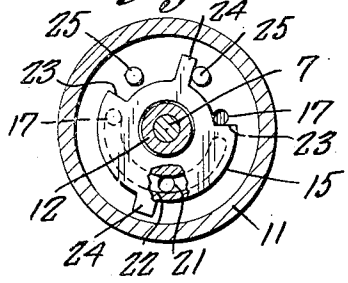
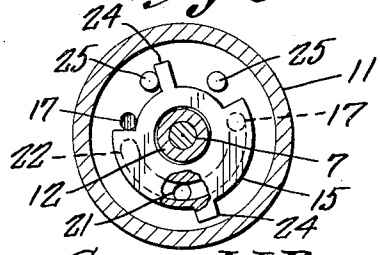


Fig. 8.



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WITNESS:

Patented Mar. 31, 1931 1,798,520

UNITED STATES PATENT OFFICE

GEORGE W. BRUGH, OF SOUTH BEND, INDIANA

WINDOW WIPER

Application filed August 6, 1928. Serial No. 298,310.

This invention relates to a window wiper which is mainly designed for wiping widows of street cars, busses and other vehicles provided with air pressure, the general object of the invention being to provide a cylinder containing two pistons which are connected together and the reciprocatory movement of which operates a wiper, with valve means operated by the reciprocatory movement of the pistons for controlling the flow of compressed air to the ends of the cylinder whereby the pistons are reciprocated by the compressed air.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claim.

In describing the invention in detail, reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:—

Figure 1 is a view showing the device in use.

Figure 2 is a vertical sectional view through Figure 1.

Figure 3 is a section on line 3—3 of Figure 2.

Figure 4 is a longitudinal sectional view through the cylinder.

Figure 5 is a section on line 5—5 of Figure 4.

Figure 6 is a fragmentary elevation, showing the means for connecting the piston rod with the valve operating member.

Figure 7 is a sectional view through the valve means, showing the parts in one position.

Figure 8 is a similar view, showing the parts in another position.

Figure 9 is a view of the disk connected with the valve shaft for operating the valve.

Figure 10 is a view of the member operated by the movement of the disk.

Figure 11 is a view of the valve member.

In these views, the numeral 1 indicates a cylinder which is provided with a bracket 2 which is adapted to be supported on a part of the window or other transparent member which is to be wiped. A pair of pistons 3 is arranged in the cylinder and these pistons are connected together by the rod 4, to the center of which a stub shaft 5 is connected, this shaft passing through an elongated slot 6 formed in the cylinder so that the shaft can move back and forth through the slot during the reciprocatory movement of the pistons.

A shaft 7 is journaled in the body 8 which is formed with the lower part of the cylinder at the center thereof, and this shaft has attached thereto a slotted arm 8′, the slot of which receives the outer end of the shaft 5, so that the shaft 7 will be rocked by the reciprocatory movement of the pistons. This shaft passes through a part of the window, as shown in Figure 2, and the arm 9, which carries the wiper element 10 is attached to the outer end of this shaft. A valve chamber 11 is formed in the body 8 and a bushing 12 has one end threaded into the body, with its major portion being positioned in the chamber. The shaft 7 passes through the bushing and has a non-circular end projecting therefrom. A disk 13 is fastened to this non-circular end of the shaft so that the disk will move with the shaft and said disk is notched on its periphery to form the shoulders 14.

A valve forming disk 15 is rotatably mounted on the bushing and is pressed by a spring 16 against one wall of the chamber 11 in which is formed the two ports 17, each of which is connected with a port 18 in each end of the cylinder by a passage 19 formed in the cylinder wall. Compressed air is supplied to the chamber 11 from any suitable source through means of the tube 20, and said chamber is also provided with an exhaust port 21 which is in communication with an arc-shaped groove 22 formed in one face of the valve member 15. This valve member is of two diameters, as shown, to provide the shoulders 23 and the ports 21 and 17 are so positioned that in one position of the valve member, one port 17 will be uncovered while the other port 17 is covered by the shouldered portion of the valve member so that this covered port 17 will be in communication with the exhaust port 21 through

means of the groove 22 whereby the compressed air in one end of the cylinder can escape through the port 18, passage 19, port 17, groove 22 and the discharge port 21, and the compressed air in the chamber 11 will pass through the uncovered port 17, the other passage 19 and its port 18 into the other end of the cylinder and thus force the pistons to that end of the cylinder which is connected with the exhaust port.

The valve member 15 is provided with a pair of oppositely arranged projections 24, one of which operates between two stop pins 25 in the valve chamber, which limits the movement of the valve member, and the other projection 24 is adapted to be engaged by the pair of angle arms 26 formed on a substantially heart-shaped member 27 which is rotatably mounted on the bushing 12 between the disk 13 and a collar 28 on the bushing. This member 27 carries a pin 29 which is engaged by the shoulders 14 on the disk 13, whereby the member 27 is rocked by the movement of the shaft 7 through said disk and in turn, this member 27 will rock the valve member 15 through means of its arms 26 engaging the projection 24 on the valve member. The pointed part of said member 27 engages a spring pressed ball 30 arranged in a recess 31 formed in a wall of the chamber 11, this ball acting to complete the movement of the member 27 and the valve member 15 with a quick action after said member 27 has been initially moved by the disk 17 engaging the pin 29, for as soon as the point moves beyond the center of the ball, the pressure of the ball on the inclined edge of the member 27 will act to throw the member 27 over with a quick action until it is stopped by the second projection 24 on the disk 15 engaging one of the stop pins 25.

In order to provide access to the parts, threaded plugs 32 are used to close the ends of the cylinder and openings in the valve chamber 11 and its recess 31.

From the foregoing it will be seen that the flow of compressed air into the ends of the cylinders is controlled by the valve member 15 which is operated from the shaft 7 through means of the disk 13 and the member 27, and this shaft in turn is operated by the reciprocatory movement of the pistons and the wiper arm is actuated by said shaft.

It is thought from the foregoing description that the advantages and novel features of the invention will be readily apparent.

It is to be understood that changes may be made in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claim.

What I claim is:—

A window wiper including a cylinder having a compressed air valve chamber with passages in communication with the cylinder and pistons in the cylinder and connected to a wiper, a bushing carried by the cylinder and extending into the chamber, a shaft journaled in the cylinder and bushing, means connecting the shaft to the pistons, a notched operating disk fixed to the shaft in the chamber and abutting one end of the bushing, a valve plate for controlling the passages journaled on the bushing, oppositely disposed lugs on said valve plate, spaced stops in the chamber to be engaged by one of the lugs to limit the oscillation of the valve plate, an intermediate plate journaled on the bushing adjacent the operating disk, a lug on said intermediate plate to engage the notch of the operating disk, angular lugs on the intermediate plate to engage the other lug of the valve plate, converging faces on said intermediate plate forming a pointed portion thereto, and a spring pressed ball in said chamber to engage the pointed portion and the inclined faces of the intermediate plate to throw the intermediate plate over with a quick action.

In testimony whereof I affix my signature.

GEORGE W. BRUGH.