

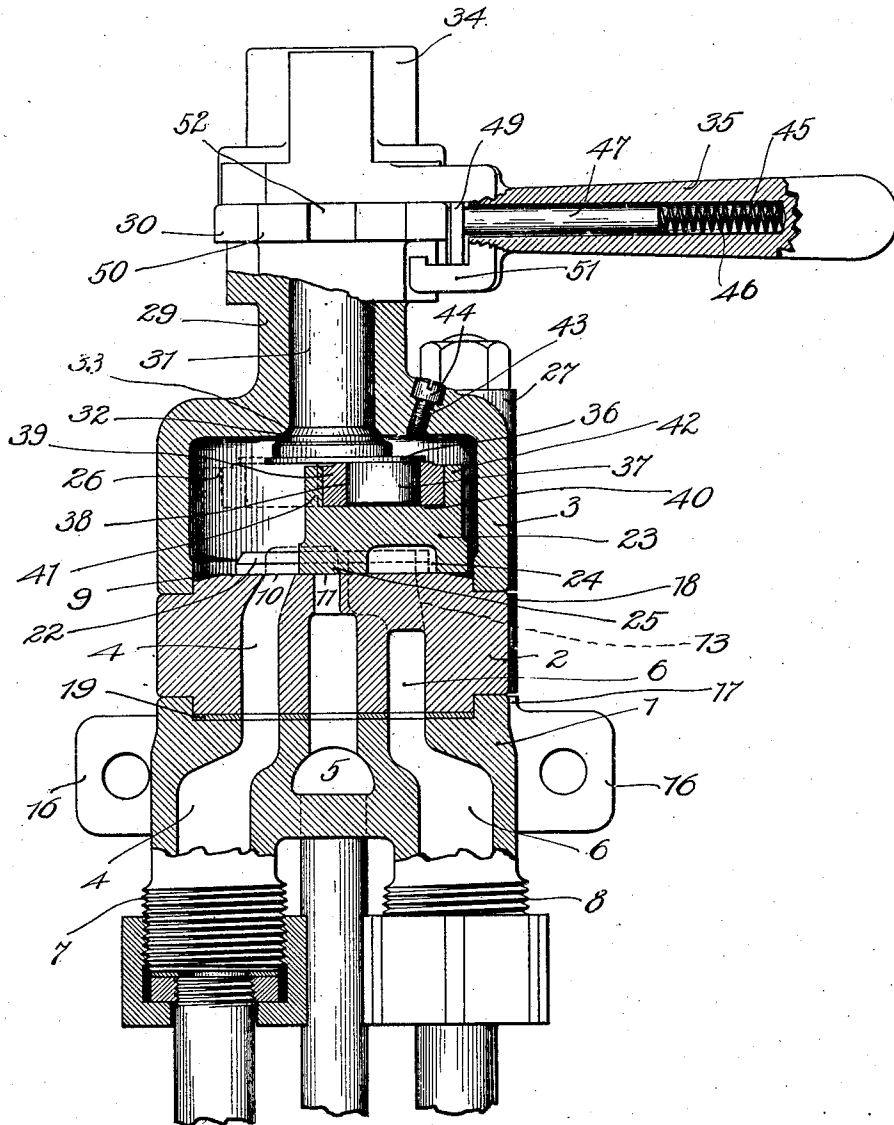
W. OHLSEN.
ENGINEER'S VALVE.
APPLICATION FILED APR. 11, 1907.

938,169.

Patented Oct. 26, 1909.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses:
Fred W. Koehn.
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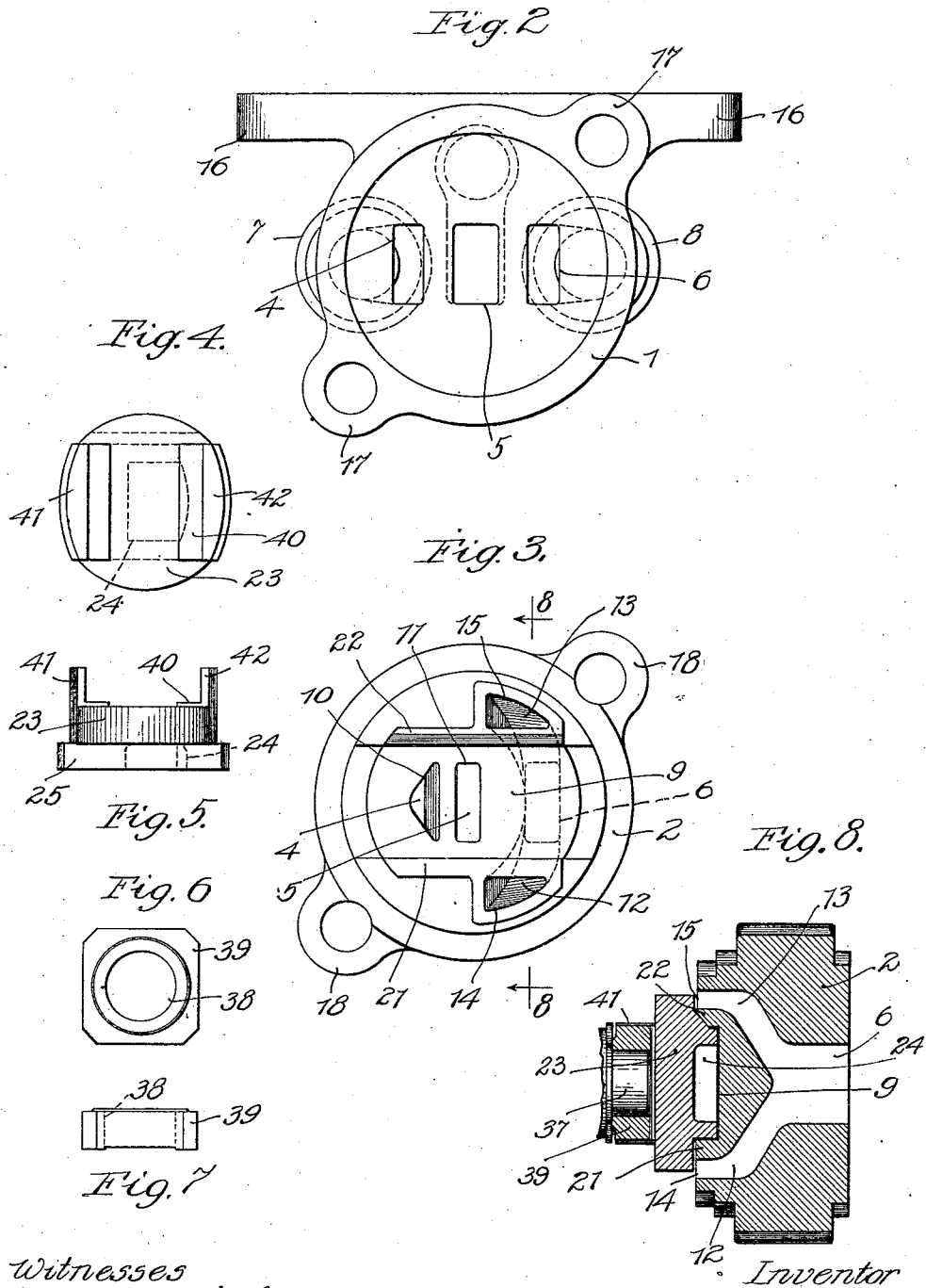
Inventor
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UNITED STATES PATENT OFFICE.

WILLIAM OHLSEN, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO NATIONAL BRAKE & ELECTRIC COMPANY, OF MILWAUKEE, WISCONSIN, A CORPORATION OF WISCONSIN.

ENGINEER'S VALVE.

938,169.

Specification of Letters Patent.

Patented Oct. 26, 1909.

Application filed April 11, 1907. Serial No. 367,631.

To all whom it may concern:

Be it known that I, WILLIAM OHLSEN, citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a certain new and useful Improvement in Engineers' Valves, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to engineers' valves and contemplates improved features of construction and operation thereof which will appear best when described with reference to the accompanying drawings in which—

Figure 1 is a front elevation view, the base, the valve seat, valve bonnet and valve being shown in section; Fig. 2 is a top view of the base part; Fig. 3 is a top view of the valve seat; Fig. 4 is a top view of the slide valve; Fig. 5 is a side view of the slide valve; Fig. 6 is a top view of an auxiliary slide; Fig. 7 is a side view of the auxiliary slide, and Fig. 8 is a sectional view taken on line 8—8 of Fig. 3, the slide valve and auxiliary slide being also shown thereon and in section.

The valve mechanism frame comprises a base part 1, a valve seat part 2 and a valve bonnet 3. The base part 1 has the usual port passageways 4, 5 and 6, the threaded ends 7 and 8 being provided for connecting the port passageways 4 and 6 respectively with piping leading to the train pipe and the main reservoir respectively. The passageway 5 leads to atmosphere, and the valve seat part is cored to form extensions of the passageways 4, 5 and 6, the passageways 4 and 5 terminating in the horizontal seat surface 9 through the port openings 10 and 11, as best shown in Figs. 1 and 3, while the passageway 6 bifurcates into the passageways 12 and 13, terminating at the slide surface at the outlets 14 and 15, as shown in Fig. 3. The base part may also have ears or lugs 16 by means of which the outfit may be secured to the support. This base part has also the lugs 17, as shown in Fig. 2, and the seat part has lugs 18, as shown in Fig. 3, registering with lugs 17, so that these frame parts may be secured together by bolts, a gasket 19, however, intervening to prevent leakage of air. The valve seat top surface 20 is substantially rectangular, as best shown in Fig. 3, and at the sides

of this seating surface are the parallel guide-ways or projections 21 and 22 between which are disposed the port openings 10 and 11, the port openings 14 and 15, however, being outside of these guide extensions, as shown. The slide valve construction is best shown in Figs. 1, 4, 5 and 8. This slide valve 23 is also rectangular in shape and adapted to engage the slide surface 9 between the guide-ways 21 and 22, the top edges of which guide-ways may be beveled, if desired, as shown in Fig. 8. In the base of the slide valve is the valve pocket 24 which is adapted to connect together the port openings 10 and 11 when the slide valve is in its left position to thereby connect the train pipe with the exhaust outlet, while when the valve is at the right end of its stroke, the solid part 25 thereof closes the exhaust outlet and exposes the train pipe inlet whereby compressed air from the main reservoir may enter from the passageway 6 through the port openings 14 and 15 and through the port opening 10 into the passageway 4 and thus to the train pipe connected with the brake cylinders.

The main feature of my invention resides in improved means for causing reciprocation of the slide valve across the seat upon swinging of a handle or lever operated by the engineer or motorman. The valve bonnet 3 forms the valve chamber 26 and has the lugs 27 which register with the lugs 18 and 17 of the seat and base parts respectively, and thus these three parts may be held together by bolts or screws passing through the registering lugs. The neck 29 extends upwardly from the valve bonnet and terminates in a flange 30. Through this neck passes a valve stem 31 having a beveled shoulder 32 at its lower end for engaging the beveled edge 33 of the neck part. The upper end of the valve stem extends beyond the flange 30 to be engaged by the cap 34 carried by the handle 35, the end of the stem being polygonal and the cap having a polygonal opening for receiving the head whereupon swinging of the handle will cause turning of the valve stem. From the lower end of the stem within the valve chamber extends the crank arm or plate 36 terminating at its end in a crank pin or stud 37 which engages in the opening 38 through the auxiliary slide block 39, as best shown in Figs. 1, 6 and 7. This auxiliary slide block en-

gages the upper surface 40 of the slide valve and is confined and guided between the guide rails or extensions 41 and 42 on the slide valve which guide rails are preferably at right angles to the guide-ways 21 and 22 on the valve seat. Thus, upon swinging of the handle 35, the valve stem will be rotated and the crank arm swung to reciprocate the auxiliary slide block across the slide valve whereupon the slide valve may be reciprocated across the valve seat between the guide-ways 21 and 22 in a direction at right angles to the reciprocation of the slide block, and thus the position of the slide valve with respect to the valve ports can be controlled by the swinging of the handle 35. This particular arrangement of slide valve, slide block and guiding ways and rails causes the valve to be very easily operated, as there is very little friction, the relative movable parts being readily oiled through an opening 43 through the roof of the valve bonnet, the oil falling on the top of the parts and flowing to and along the various engaging surfaces, a screw 44 serving to close the opening. The handle is cored out or drilled to form a compartment 45 for receiving the compression spring 46 and a latch plunger 47 carrying at its outer end the latch block 49 adapted for engagement in notches 50 cut in the edge of the flange 30, the position of these notches with respect to the handle corresponding to the position of the slide valve with respect to the port openings, thus serving as a guide to the engineer in informing him of the position of the slide valve. The handle at its forward end has also the hook 51 whose end extends under the flange 30 to prevent removal of the handle from the stem unless the handle is in its normal position in which position the hook 51 may escape from the deep middle notch 52 in a manner well known in the art. As the slide valve in a device of this kind is always pressed more or less against its seat by the compressed air in the valve chamber, there is necessarily considerable friction, and the mechanism for causing reciprocation of the slide valve across the seat should entail as little friction as possible, and I find that with the arrangement I have described, the friction is greatly reduced and the slide valve easily operated.

I claim as new and desire to secure by Letters Patent:

1. In an engineer's valve, the combination with a valve seat, of a slide valve mounted on and adapted to reciprocate across said seat, guide-ways between which the reciprocating slide valve is confined, guide-ways extending from the top of the slide valve at right angles to the valve seat guide-ways, a slide block adapted to reciprocate on the slide valve between the guide-ways thereon, a crank lug engaging said slide block, a

valve stem, and a crank arm connecting said stem and crank stud whereby rotation of the stem will cause reciprocation of the slide block on the slide valve and reciprocation of the slide valve over the valve seat.

2. In an engineer's valve, the combination with a valve seat, of parallel guide walls extending from said seat, a slide valve adapted to reciprocate on the valve seat between said guide walls, parallel guiding walls extending upwardly from the slide valve, a slide block adapted to reciprocate on said slide valve between the guide walls thereon, a crank stud engaging said slide block, a valve stem, and a crank arm connecting said valve stem and crank stud whereby rotation of the stem will cause reciprocation of the slide block on the slide valve and reciprocation of the slide valve across the valve seat.

3. In an engineer's valve, the combination with a valve seat, of parallel guide walls extending from and across the seat, a valve bonnet over the valve seat forming a valve chamber, valve ports opening into the chamber at the valve seat between the guiding walls, additional port openings opening directly into the valve chamber outside of the valve seat between the guiding walls, a slide valve adapted to reciprocate on the valve seat between the guiding walls to control the connection of the ports between the guiding walls with each other and with the valve chamber, a slide block adapted to reciprocate on the slide valve, a valve stem extending from the valve bonnet, and a crank arm connecting said valve stem and said slide block whereupon rotation of the valve stem will cause reciprocation of the slide block on the valve and reciprocation of the slide valve over the valve seat.

4. In an engineer's valve, the combination with a valve seat, of parallel guide walls extending from and across the seat, a valve bonnet over the valve seat forming a valve chamber, valve ports opening into the chamber at the valve seat between the guiding walls, additional port openings opening directly into the valve chamber outside of the valve seat between the guiding walls, a slide valve adapted to reciprocate on the valve seat between the guiding walls to control the connection of the ports between the guiding walls with each other and with the valve chamber, a slide block adapted to reciprocate transversely on the slide valve, a valve stem, and a crank arm connecting the valve stem with the slide block whereby rotation of the stem will cause reciprocation of the slide block transversely on the valve and reciprocation of the valve over the valve seat in a direction at right angles to the reciprocation of the slide block.

5. In an engineer's valve, the combination with a valve seat, of parallel guide walls extending from and across the seat, a valve

bonnet over the valve seat forming a valve chamber, valve ports opening into the chamber at the valve seat between the guiding walls, additional port openings opening directly into the valve chamber outside of the valve seat between the guiding walls, a slide valve adapted to reciprocate on the valve seat between the guiding walls to control the connection of the ports between the guiding walls with each other and with the valve chamber, parallel guide walls extending upwardly from the slide valve, said walls being at right angles to the guide walls on the valve seat, a slide block adapted to reciprocate on the valve between the guide walls thereon, a crank pin engaging said slide block, a valve stem extending from the valve bonnet, and a crank arm connecting the valve stem with the crank pin whereby rotation of the pin will cause reciprocation of the slide block on the valve and simultaneous reciprocation of the valve on the valve seat.

6. The combination with a valve-seat provided with ports, of a valve member resting against said seat, said seat being provided with guides to restrain the movement of said valve member, said valve member being pro-

vided with guides disposed at an angle with respect to the guides upon said valve-seat, a stem provided with a pin eccentric to the axis thereof, a block adapted to move between the guides on said valve member, said block being provided with an aperture adapted to receive said pin.

7. The combination with a valve-seat provided with ports, of a rectangular valve member adapted to control said ports, guides for compelling said valve member to move in a right line, a valve-stem provided with a pin disposed eccentrically to the axis of said stem, a rectangular block provided with an aperture adapted to receive said pin, said valve member being provided with guides disposed at right angles with respect to the guides on the valve-seat, said guides being adapted to restrain the movement of said block to a right line.

In witness whereof, I hereunto subscribe my name this 9th day of April A. D., 1907.

WM. OHLSEN.

Witnesses:

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R. A. WEGNER.