

(No Model.)

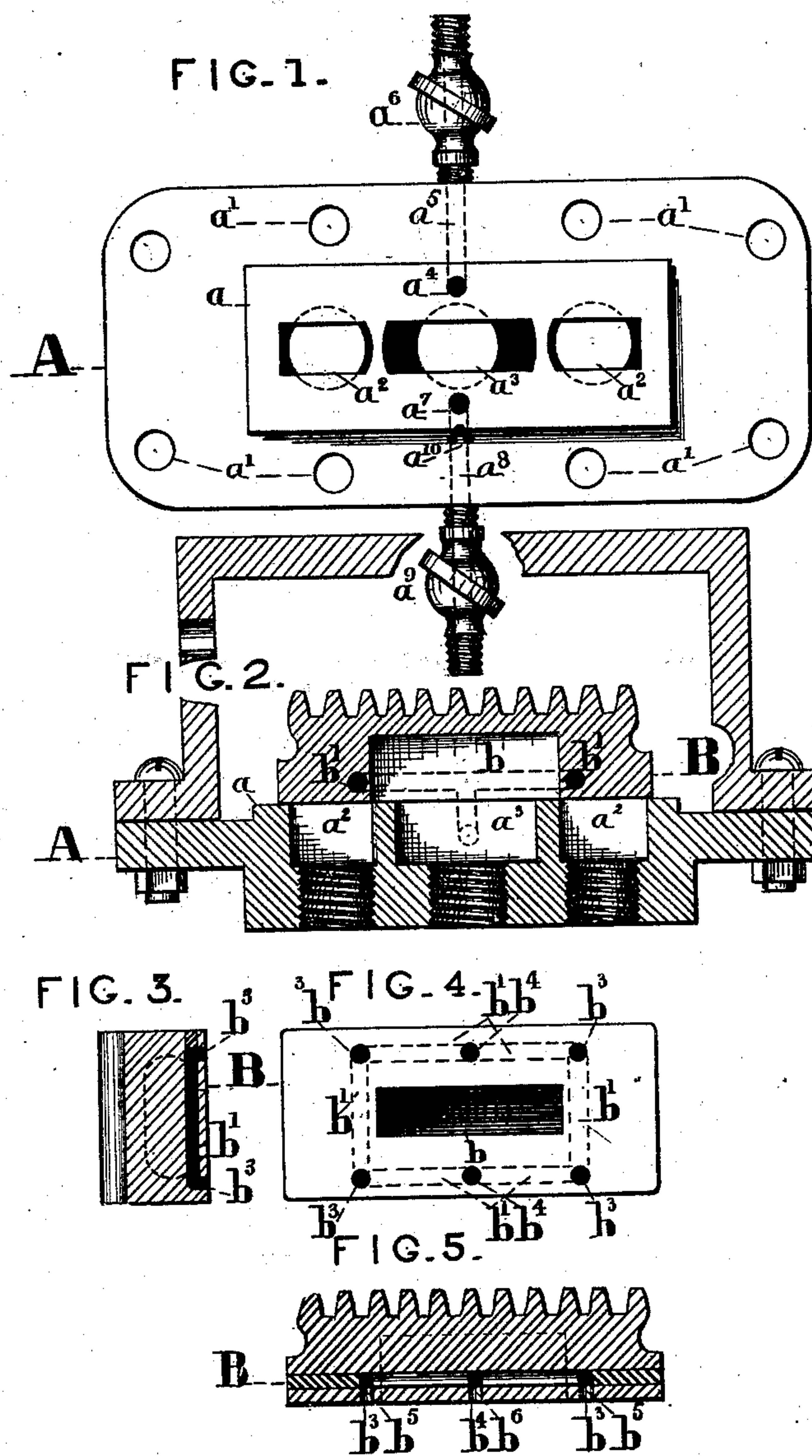
2 Sheets—Sheet 1.

J. GATES.

Device for Lubricating Slide Valves.

No. 239,483.

Patented March 29, 1881.



WITNESSES:

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*Cornelius Cox*

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ATTY S.

(No Model.)

2 Sheets—Sheet 2.

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FIG. 6.

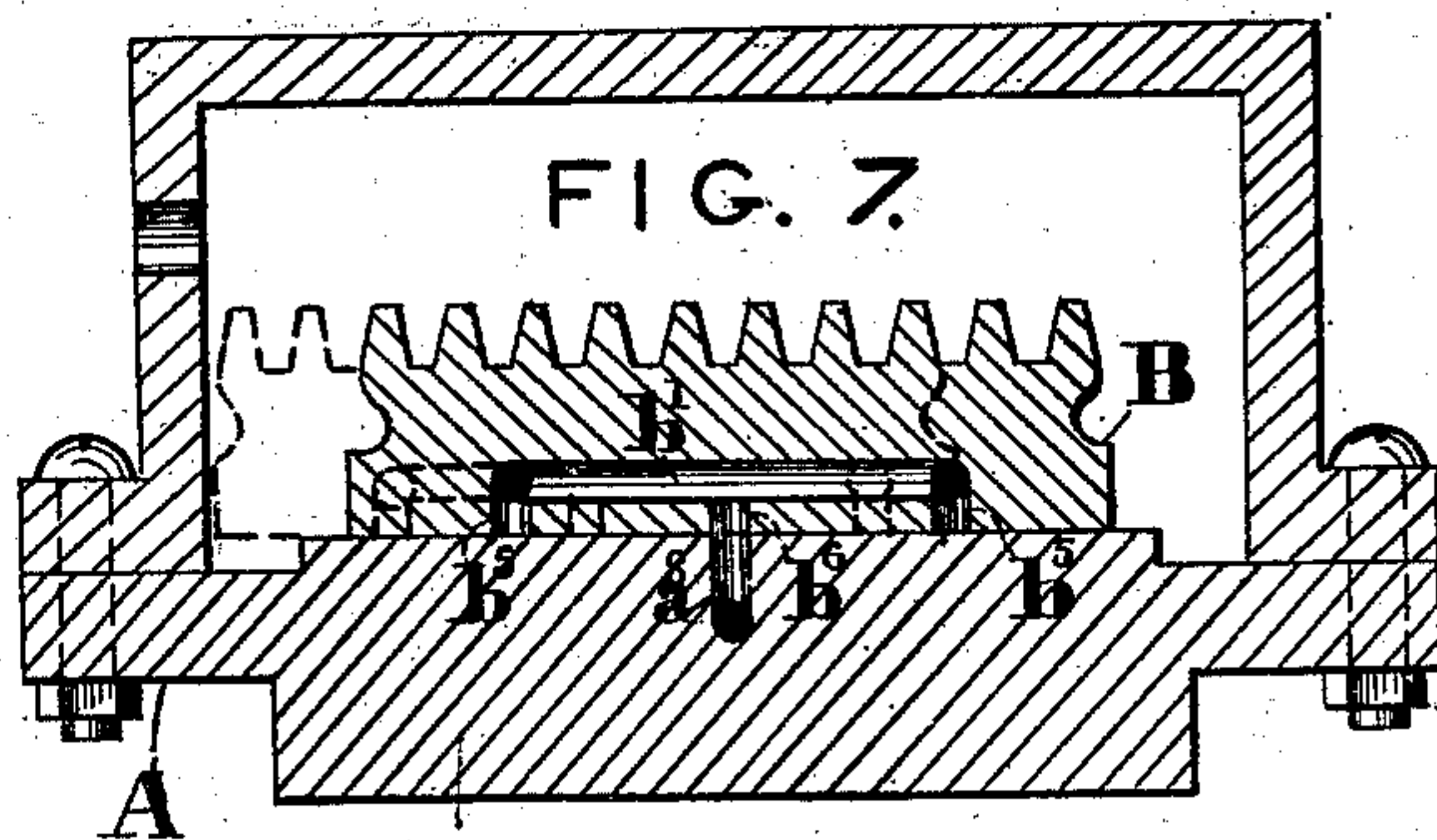
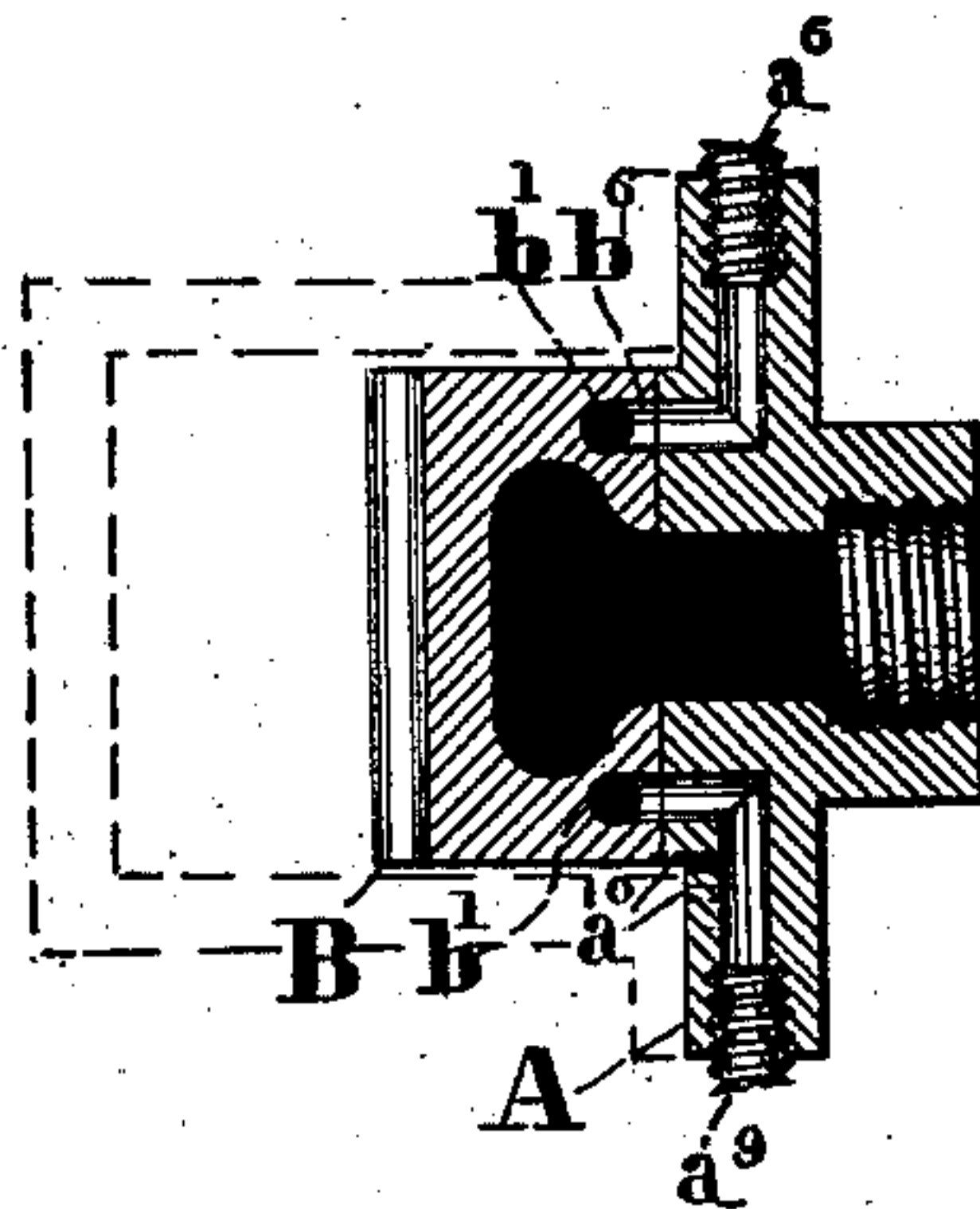
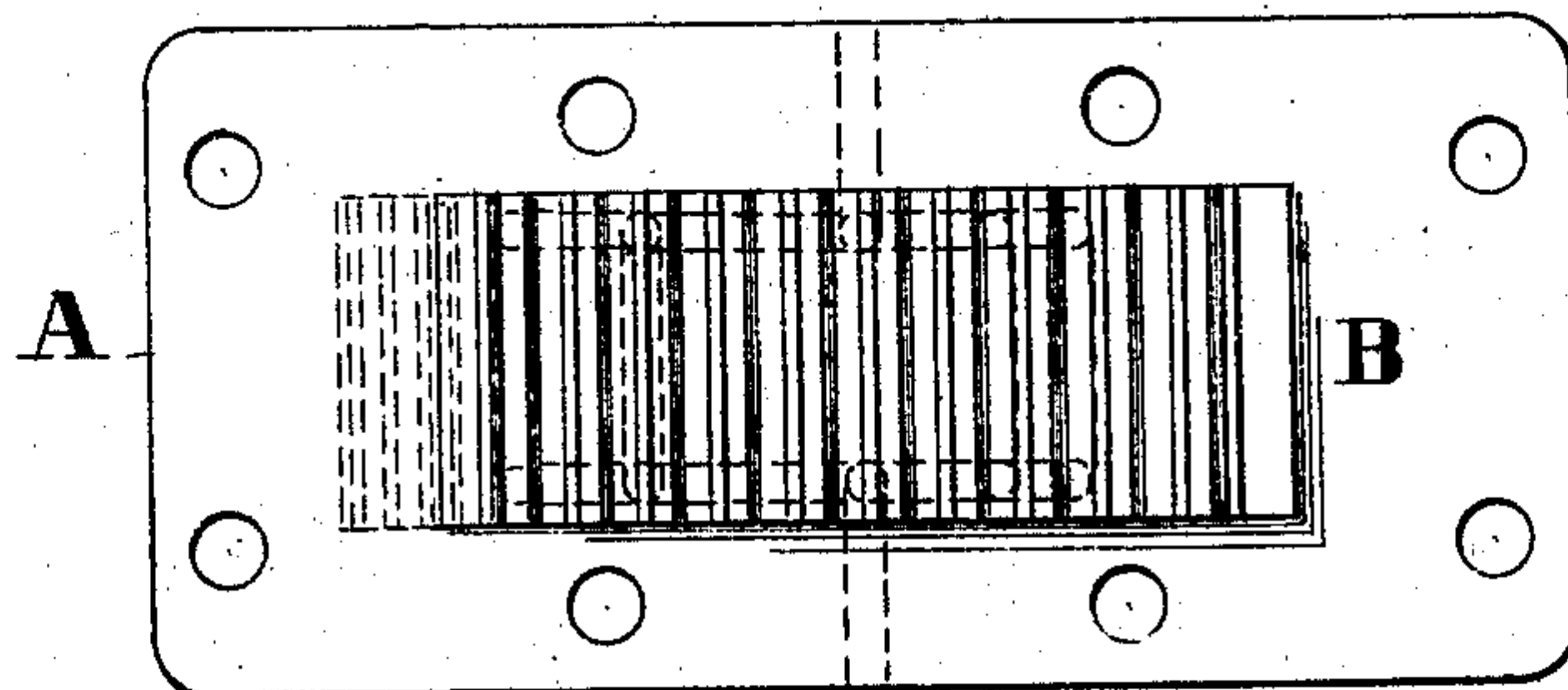


FIG. 8.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

JOHN GATES, OF PORTLAND, OREGON.

## DEVICE FOR LUBRICATING SLIDE-VALVES.

SPECIFICATION forming part of Letters Patent No. 239,483, dated March 29, 1881.

Application filed March 19, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN GATES, of Portland, county of Multnomah, and State of Oregon, have invented a new Device for Lubricating Slide-Valves; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

10 This invention consists mainly, first, in the combination, with the valve-seat having perforations centrally located relatively to the longitudinal movement of the valve, of a valve having perforations also centrally located, the  
15 construction being such that when the valve is in a central position the communication between the perforations of the seat and valve is established, and when the valve is not in a central position communication is cut off.

20 In the drawings, Figure 1 represents a plan view of the valve-seat; Fig. 2, a longitudinal section of the valve and seat; Fig. 3, a transverse section of the valve through the oil-channel; Fig. 4, a plan view of the valve; Fig. 5,  
25 a longitudinal section of the valve through the oil-channel; Fig. 6, a transverse section of the valve and seat; Fig. 7, a longitudinal section of the valve and seat, the central perforations coinciding with each other to establish com-  
30 munication between the two; and Fig. 8, a plan view of the valve and seat.

To enable others skilled in the art to make and use my invention, I will now proceed to describe fully its construction and manner of  
35 operation.

A, Figs. 1, 2, and 6, represents the valve-seat, provided centrally on its face with the rectangular valve-rest  $a$ , and around its edges with the holes  $a'$   $a'$ , for proper attachment  
40 within the steam or water chest.

$a^2$   $a^2$ , Figs. 1 and 2, are the steam or water ports, situated on each side of the exhaust-port  $a^3$ , and constructed in the usual or any other proper manner.

45  $a^4$  is an opening situated on the central perpendicular line of the valve-rest  $a$ , above the ports; and  $a^5$ , Figs. 1 and 6, a channel leading therefrom into the substances of the valve-seat, then bending at right angles, and open-  
50 ing centrally on the upper edge of the valve-seat, its upper opening having an internal thread to receive the tube and cock  $a^6$ .

$a^7$  is an opening in the valve-rest, below the ports, similar to  $a^4$ ; and  $a^8$ , Figs. 1 and 6, a channel therefrom, similar to the channel  $a^5$ ,  
55 but opening on the lower edge of the valve-seat, and receiving the tube and cock  $a^9$ .

$a^{10}$  are small channels, which pass from the valve-seat, at or near the lower edge of the valve-rest  $a$ , into the channel  $a^8$ , as seen in  
60 Figs. 1 and 6, for the purposes hereinafter stated.

B represents the valve, provided on its back with a rack or other device proper for receiving motion from the valve-spindle, and with  
65 the usual central cavity,  $b$ , to connect the ports.

$b'$  is a rectangular channel surrounding the cavity  $b$ , and made in the body of the valve.

$b^3$   $b^3$  and  $b^4$   $b^4$  are openings in the bearing-surface of the valve, which lie above and be-  
70 low the central cavity, in line of the channel  $b'$ , and communicate with the latter by means of short channels  $b^5$  and  $b^6$ , respectively, the openings  $b^3$  being situated near the ends of the valve-rest, and the openings  $b^4$  in its central  
75 perpendicular line above and below the central cavity. The latter openings lie, when the valve is in its central position, opposite the openings  $a^4$  and  $a^7$  of the valve-seat, allowing free communication between the channels  $a^5$ ,  $a^8$ , and  $b'$   
80 by means of the short channels  $b^6$ . The openings  $b^3$ , whatever may be the position of the valve, have the bearing-surface of the valve-rest  $a$  opposite them.

The manner of lubricating the valve is substantially as follows: Either water or air may  
85 be used to drive the oil through the valve. When water is used the upper cock,  $a^6$ , connects with a pipe from the upper part of the lubricating-cup, through which the oil is floated  
90 into the valve on top of a column of water, and the lower cock,  $a^9$ , with a tube running to the bottom of the lubricating-cup. As the oil is used up on the bearing-surfaces of the valves the water in the water-chest enters the small  
95 channels  $a^{10}$ , and, descending through the cock  $a^9$ , occupies a space in the lubricating-cup equal to that left vacant by the oil used. In this case the lubricator is situated somewhat below the level of the valve. When air is used the  
100 oil enters from the bottom of the lubricating-cup through the cock  $a^9$ , and the cock  $a^6$  admits air, when necessary, from the top of the lubricating-cup, which in this case is under di-



rect air-pressure, and is situated above the level of the valve. The holes  $a^{10}$  also permit oil to be driven in jets into the steam-chest and around the edges of the valve when desirable; and, furthermore, they allow the lower pipes to be blown out and cleaned by direct water or air pressure when necessary.

When it is necessary to clear the water-valve of oil, both cocks are opened and the tube joining the cock  $a^6$  is detached from the lubricator, when, by means of water-pressure through the lower pipe, the oil may be quickly forced up and out. In clearing by air-pressure, the oil is made to descend through the lower tube, detached from the lubricator, by means of air-pressure through the upper tube.

The construction of the parts is such that when the central perforations of the valve coincide, as shown in Fig. 7, communication between the two is established; but when the valve is moved to either side, as indicated in dotted lines, Fig. 7, communication is entirely cut off; but what oil is inclosed in the channels is delivered to the bearing-faces. By means, also, of the small perforations  $a^{10}$ , the pressure of the chest is communicated to the entire lubricating system, and hence, the pressure being equalized, the oil is permitted simply to float upon the top of the water.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination with a valve-seat pro-

vided with perforations centrally located relative to the longitudinal movement of the valve, and having oil-supply and water-delivering pipes communicating with said centrally-located perforations, a valve having central and end perforations, with communicating distributing-channels, substantially as described.

2. In combination with a lubricating-pipe system, a valve-seat provided with openings  $a^{10}$ , the construction being such that by means of the openings the pressure of the chest is communicated to the system, substantially as described.

3. In combination with the pipes  $a^6$  and  $a^9$ , the valve-seat A, provided with openings  $a^4$  and  $a^7$ , and the valve-body B, provided with channel  $b'$ , opening at one or more points on its bearing-surface, substantially as shown and described.

4. In combination with the pipes  $a^6$  and  $a^9$  and the valve-seat A, provided with openings  $a^4$   $a^7$  and channels  $a^5$ ,  $a^8$ , and  $a^{10}$ , the valve-body B, provided with channels  $b'$ , openings  $b^3$   $b^4$ , and communicating channels  $b^5$   $b^6$ , all arranged substantially as shown and described, for the purpose specified.

This specification signed and witnessed this 25th day of February, 1880.

JOHN GATES.

Witnesses:

E. W. CORNELL,  
L. C. PARRISH.