

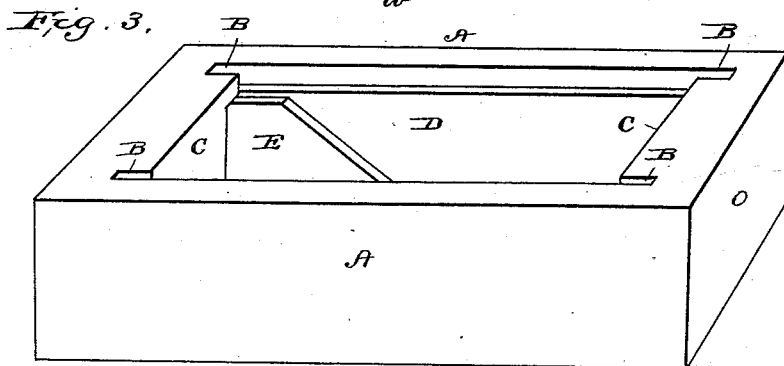
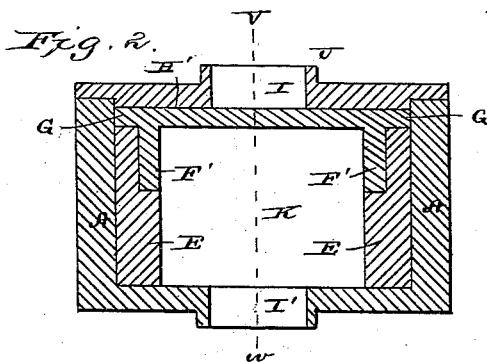
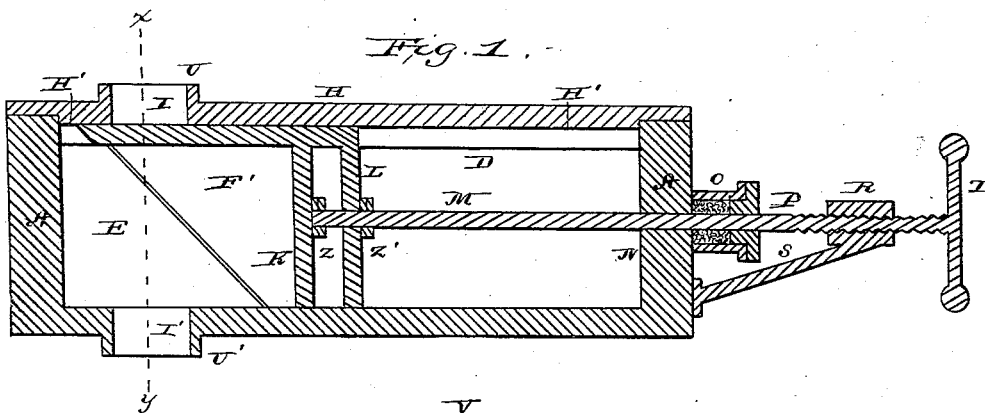
(No Model.)

T. ATCHESON.

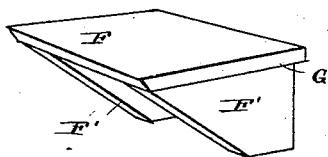
PAPER PULP DIGESTER SLIDING VALVE.

No. 259,658.

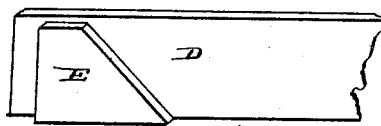
Patented June 20, 1882.



*Fig. 5.*



*Fig. 4.*



Witnesses,

Edwin L. Yewell.

J. J. McCarthy.

Inventor,

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per George C. Buckley.  
Atty.

# UNITED STATES PATENT OFFICE.

THEOPHILUS ATCHESON, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR  
TO HIMSELF AND JOHN SAUNDERS, OF WILMINGTON, DELAWARE.

## PAPER-PULP-DIGESTER SLIDING VALVE.

SPECIFICATION forming part of Letters Patent No. 259,658, dated June 20, 1882.

Application filed March 23, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, THEOPHILUS ATCHESON, of Philadelphia, Pennsylvania, have invented certain new and useful Improvements in Paper-Pulp-Digester Sliding Valves; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the annexed drawings, making part hereof.

The nature of my invention will be fully apparent from the following specification and claims.

In the drawings, Figure 1 is a longitudinal vertical sectional view of my invention on the line V W of Fig. 2; Fig. 2, a vertical cross-sectional view on the line X Y of Fig. 1. Fig. 3 is a perspective view of the box and the adjustable guide and wedge in position; Fig. 4, a detached view of the combined adjustable guide and wedge; Fig. 5, a detached perspective view of the sliding valve.

My invention relates to the class of valves used to discharge the contents of paper-pulp digesters, though the device may be used for many other purposes—for instance, discharging the contents of crude-petroleum tanks and other liquids and masses of suspended matter in liquids.

A is the valve chest or box, so constructed as to have two opposite slots, B B, at each end, which in my apparatus I accomplish by the projections C, which extend transversely partially across the inner space of the box A, as shown in Fig. 3.

D is the guide for the sliding valve, the edges G G of the valve overlapping and sliding upon the guides, one of which guides D is placed in each side of the inner space of the chest A.

E is the wedge or incline, set upon the inside of each of the guides and forming integral parts thereof, though lettered separately.

F is the sliding valve, provided with overlapping edges G G and downwardly-projecting pieces F' F', backwardly inclined at their front edges, after the manner of sledge-runners, to correspond with the angle of the inclines of wedges E, and adapted to run up thereon in such manner as to keep the upper face of the valve F in a true horizontal plane. The overlapping edges G G of the face of the valve F,

Fig. 5, bear upon the upper edges of guides D D. (See Fig. 2.)

H forms the top of the valve-chest, and its lower surface, H', (which is shown projecting down into the inner space of the chest,) forms the seat for the sliding valve F.

I I' are the valve-openings through the top H and bottom J, respectively, of the valve-chest. The sliding valve F is furnished between and at the back of the pieces F' F' with a double back, the more forward one, K, being "full," so as to back completely the space between pieces F' F' and from the lower surface of the top face of valve F to the upper surface of the bottom of the chest, while the true back L of the valve is slotted from a point a little above its middle to its lower edge to receive the adjusting-rod M to open and close it. The rod M is plain and round from its connection with the valve F to a point so far outside of the back N of the chest A as to allow for the length of its plain surface for the free movement of valve F for the length of the forward and backward movement of the valve, and the rod passes through the back N of the chest A through a stuffing-box, O. The rod is screw-threaded at P, near its extremity, for a length equal to or slightly longer than the required movement of the valve, and this screw-threaded portion engages with and passes through a correspondingly female-screw-threaded box or bearing, R, which box or bearing is sustained by an arm, S, or other suitable device. A hand-wheel, T, serves to turn the rod M and move it and the valve F backward and forward.

U' is a flange, by which the valve-chest is secured to the flange of the discharge-opening in the bottom of the pulp-digester or other vessel, the contents of which are to be discharged.

I have shown two collars or rings, Z Z', on the inner end of rod, M, to bear against each back of the valve in throwing it forward; but the ring Z' may be dispensed with, as it only operates in closing and not in opening the valve.

All the parts of my valve are constructed of cast-iron excepting the rod M, which I make of wrought-iron and turn the thread upon it. The guides D D, as they become worn by the friction of the sliding valve upon them, can be

"set up" by merely setting beneath each of them a strip of sheet metal equal in thickness to the depth of wear and extending beneath each guide in its whole length from slot B to opposite slot B.

5 The operation is as follows: The flange U', as mentioned above, is attached to the flange of the discharge-orifice of the pulp-digester, the interior of which digester is under great  
10 steam-pressure. By turning the rod M the valve F is drawn back from the opening I and the contents of the digester rush out through the openings I I'. After this the valve is closed by reversing the motion employed in  
15 turning rod M. The valve F is pushed forward, and as it moves it mounts upon the inclines of wedges E E by means of its correspondingly-slanted pieces F' F', and the upper full face of the upper surface of the valve F is thrown  
20 into close contact with the lower surface or seat, H', of the cover H of the valve-chest, as shown in Fig. 1, thus effectually closing the exit from the digester. The cover H projects downward slightly into the space within the  
25 valve-chest A, which is done simply to add thickness to the cover, to provide for the wear occasioned by planing, grinding, or "truing" the seat from time to time, and to give opportunity for giving it a uniform surface in so  
30 truing it by planing the said projection only. By means of the false back K to the valve F the pulp or matter in suspension in the contents of the digester or vessel being discharged is prevented from passing through to the back  
35 of the valve, as the back K fills all the space across, and the said contents are thus forced to seek their only exit through the lower opening, I. Thus I avoid the danger of getting a lot  
40 of solid matter back of the valve F and between it and the back N of the chest A, which might prevent the full opening of the valve eventually.

In applying my valve to oil and other tanks where there is no danger of solid matter clogging the valve, the false back K may be dispensed with. 45

What I claim as new is—

1. In a valve for paper-pulp digesters, the combination of chest A H, seat H', sliding valve F, with its inclined pieces F' F', full back K to the sliding valve, wedges E E for throwing the upper surface of the valve F truly against the seat H', and a stem or rod, M, for opening and closing the valve, substantially as described. 50

2. In a valve for paper-pulp digesters, the combination of chest A H, seat H', sliding valve F, with its inclined pieces F' F', full back K to the sliding valve, detachable adjustable guides D D, wedges E E, for the purpose described, and a stem or rod, M, to open and close the valve, substantially as described. 55

3. In a sliding valve for discharging the contents of vessels after the treatment of said contents, the combination of chest A H, seat H', sliding valve F, with its inclined pieces F' F', wedges E E for throwing the valve and its seat into contact, and stem M to open and close the valve, substantially as described. 60

4. In a sliding valve for discharging the contents of vessels after the treatment of said contents, the combination of chest A H, seat H', sliding valve F, with its inclined pieces F' F', wedges E E for throwing the valve and its seat into contact, adjustable removable guides D D, and stem M to open and close the valve, substantially as described. 65 70 75

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Witnesses:

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