

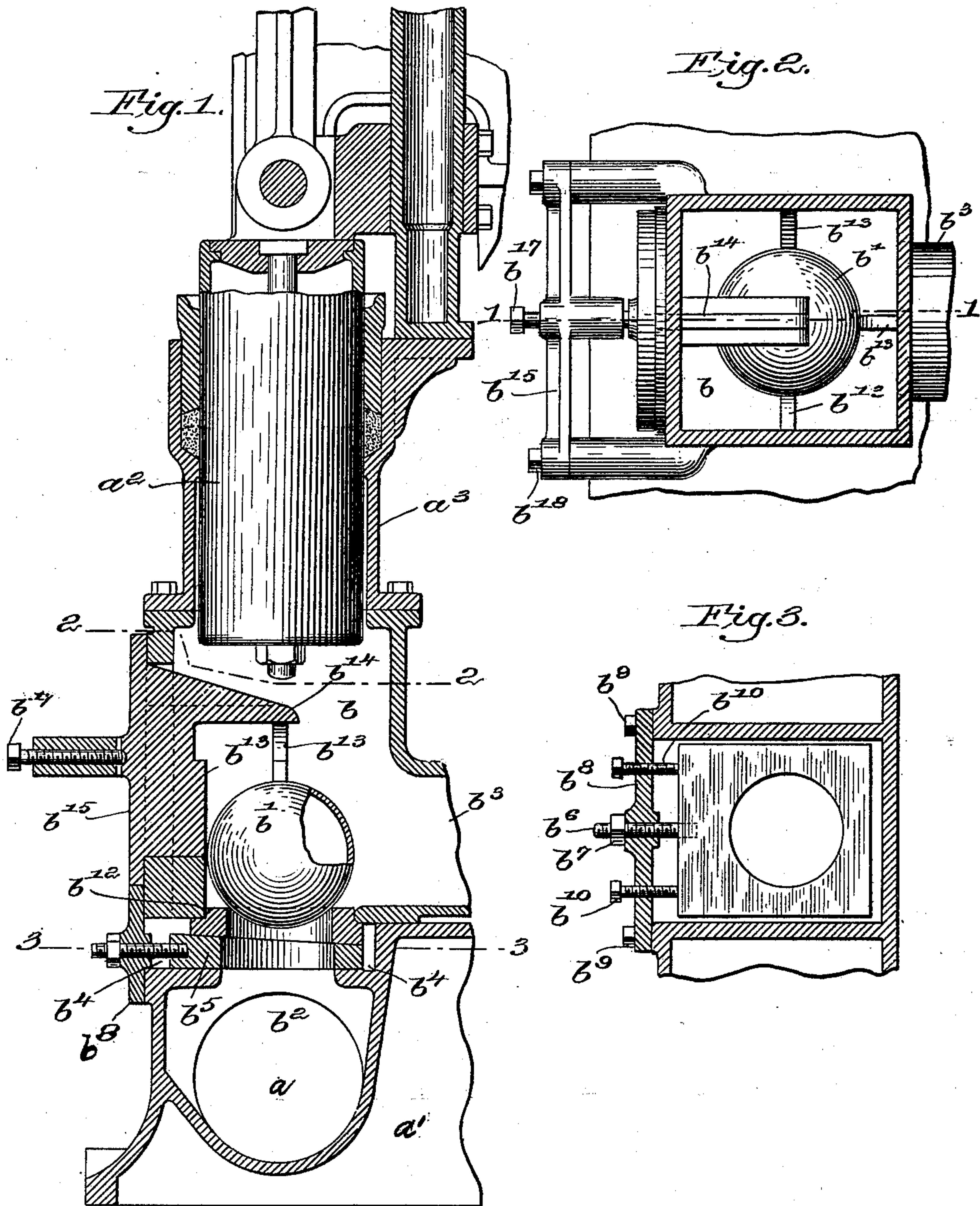
No. 666,089.

Patented Jan. 15, 1901.

I. P. DILLON.
PAPER STUFF PUMP.

(Application filed Nov. 14, 1899.)

(No Model.)



Witnesses.
Thomas J. Drummond,
Edward H. Allen.

Inventor.
Irwin P. Dillon,
by Lewis H. Gregory, atty.

UNITED STATES PATENT OFFICE.

IRWIN P. DILLON, OF LAWRENCE, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO HENRY C. KING, OF SAME PLACE.

PAPER-STUFF PUMP.

SPECIFICATION forming part of Letters Patent No. 666,089, dated January 15, 1901.

Application filed November 14, 1899. Serial No. 736,906. (No model.)

To all whom it may concern:

Be it known that I, IRWIN P. DILLON, a citizen of the United States, residing at Lawrence, county of Essex, and State of Massachusetts, have invented an Improvement in Paper-
5 Stuff Pumps, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 The present invention is an improvement in paper-stuff pumps such as are used in paper-mills for pumping up the paper-stuff, the pump as herein partially shown being of the ball-valve kind, in which a rising and falling
15 ball or sphere operates to open and close the valve. In such pumps the valve-seats wear out rapidly because of the incessant pounding thereon of the valves, and also the valves themselves frequently wear out, and as heretofore
20 constructed these parts have not been readily accessible, and it has been necessary to take the entire pump more or less to pieces, and, in fact, in many cases to remove the pump itself when either of its parts is worn
25 out in order that they may be remedied or the pump replaced by a new one, thereby incurring much delay and considerable expense and trouble.

My invention has for its object the provision of means for the instant removal of the valve-seat, either for inspection or repair or for the replacing thereof by another one, and means for the instant removal also of the valve when required.

30 In the drawings, Figure 1 is a vertical section on line 1 1, Fig. 2, of a portion of a pump, sufficient details being shown to enable my invention to be understood. Fig. 2 is a horizontal sectional view taken on the
40 line 2 2, Fig. 1. Fig. 3 is a horizontal view taken on the irregular line 3 3, Fig. 1.

As herein shown, the inlet for the paper-stuff or other material which is to be pumped is located at a in the base a' of the pump, and the piston a^2 is indicated at the upper
45 end a^3 of the frame, my special valve-box b being located between these parts. The ball-valve b' , normally closing against its seat b^2 , rises to permit the flow of pulp out through the outlet b^3 to the other part of the pump.
50 (Not herein shown.)

The valve-seats, as already mentioned, are inclined to wear out rapidly in this class of pumps, and accordingly I have provided a recess or chamber b^4 in the frame of the
55 pump, adapted to receive the valve-seat loosely therein, said valve-seat being herein shown as having a horizontal upper surface and an inclined lower surface and being held in by suitable tightening means, herein shown
60 in the form of a centrally-apertured wedge block or plate b^5 , which is also placed in the recess or pocket b^4 , said tightening means being normally connected by a bolt b^6 and nut b^7 to a cap or plate b^8 , secured to the front of
65 the recess b^4 by suitable means, as by nuts b^9 , said cap or plate also preferably serving to close said recess tightly. At either side of the bolt b^6 are set screws or bolts b^{10} for properly alining the wedge-block b^5 and
70 wedging it tightly into proper position.

The class of pumps in question are used to convey paper-stuff, which, as is well known, is quite heavy and thick, so that when the valve is about to descend the backward flow
75 of the stuff tends to accelerate the movement of the valve, and thereby increase the damage due to pounding, and, on the other hand, inasmuch as the stuff is slow to move at the best it is necessary that the valve should be
80 raised readily from the valve-seat, and accordingly I make the valve hollow, as indicated in Fig. 1, so that it will rise readily from its seat and will likewise fall with the least momentum. Furthermore, this class of
85 pumps as heretofore constructed give considerable lateral play to the valve, so that the latter does not always descend properly upon the valve-seat, but especially because of the lateral backward movement of the stuff while
90 the valve is descending the valve strikes most frequently and severely upon the left-hand side of the valve, Fig. 1, and accordingly I have provided the valve-seat with shoulders
95 b^{12} in order that it may always maintain an accurately-centered position irrespective of the position of the wedge b^5 , and cooperating with the shoulder b^{12} and with the valve b' I provide a plurality of directing or seating ribs
100 b^{13} , these ribs being herein shown as four in number. As, therefore, the valve rises and falls it is obliged to follow the same path in-

variably, irrespective of whether there is a severe side pressure due to the back flow of the pulp or not. Furthermore, I have found that the valve is quite variable in its movements, so that at times it will rise to such an extent that when it falls it pounds the valve-seat unduly, and accordingly I have provided an overhanging bar or stop b^{14} , herein shown as extending from the upper end of one of the ribs b^{13} . This feature of the invention is of considerable practical importance for the reason that while it permits sufficient movement of the valve from its seat it prevents the valve from rising so far as to injure the valve-seat unduly by its fall.

In order that the valve-seat may be quickly inspected at any time without removal and that the valve may be removed quickly without taking the pump to the maker, I have made the front b^{15} of the valve box or chest removable, and also inasmuch as the stop b^{14} is pounded considerably by the valve I have mounted the same upon the removable part b^{15} . These parts are held in by a yoke b^{16} and bolt b^{17} , the yoke being secured by bolts and nuts b^{18} to the frame of the machine, as shown in Fig. 2.

In use if a valve becomes injured or anything becomes permanently lodged on the valve-seat so as to prevent the proper closing thereof the face-plate or front b^{15} is quickly removed and the valve taken out and repaired or the valve-seat inspected and cleaned, whereupon the valve, or if the latter is broken another one, is at once put in place and the front mounted again in position, whereupon the pump can resume its work, all with only a few moments delay. If now the valve-seat should become worn down too thin for practical use or should become broken or injured in any way, the cap or plate h^8 is loosened from the bottom frame and the tightening means b^5 pulled out, so as to permit the valve-seat to be lowered and removed from the recess b^4 , whereupon another valve-seat may be quickly inserted and wedged into proper position by the wedge-block b^5 , said valve-seat automatically centering itself by reason of its conical flange b^{12} . This flange also provides a considerable depth of metal to be worn away before the seat becomes useless.

The valve being hollow and weighted to correspond to the quality and density of stuff

being pumped rises readily and falls with a minimum blow upon the seat, being always sure to strike the seat accurately because of the direction-ribs b^{13} and the accurate centering of the valve-seat relatively thereto.

I do not intend to restrict myself to the details herein shown and described otherwise than as hereinafter expressed in the claims, inasmuch as very many changes may be made without departing from the spirit of my invention, nor do I intend to restrict my invention in all cases to a pump used for paper-stuff.

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

1. A pump having a valve-chamber containing a guided valve, and an independent recess opening externally beneath said valve-chamber, a removable valve-seat located in said recess and independent of said valve-chamber and provided with centering means for guiding said valve-seat into centered position and shifting the same when necessary relatively to said valve and transversely of the valve-chamber in being tightened into place, substantially as described.

2. In a pump for handling paper-stuff, a valve, a box or chest containing said valve, a recess at the lower end of said valve-chest, a removable valve-seat provided with shoulders closing against the lower end of said valve-chest with a vertical movement transversely of the length of said recess, said valve-seat when in said closing position having its under side inclined downwardly and rearwardly, and a wedge-block centrally apertured to form a passage between said valve-chamber and the pump - passage below said chamber, said wedge-block having its upper face corresponding in inclination to said valve-seat and having its lower side in the same plane as the bottom of said recess, said valve-seat and block cooperating with said chest and recess to form a closed passage.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

IRWIN P. DILLON.

Witnesses:

GEO. H. MAXWELL,
GEO. W. GREGORY.