H. Pohls. Sheet 2. 2 Sheets.

Pulp Digester

No. 7,497. Patented Jul. 9, 1850.

Fig. 3.

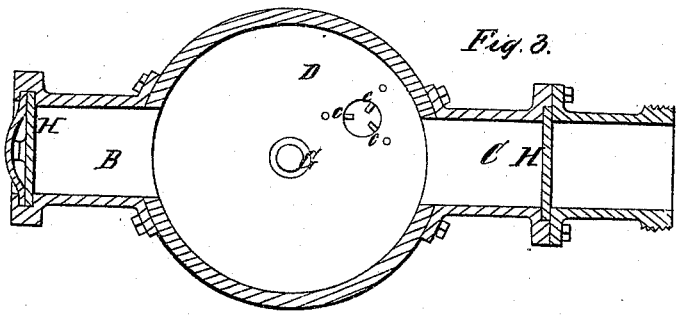
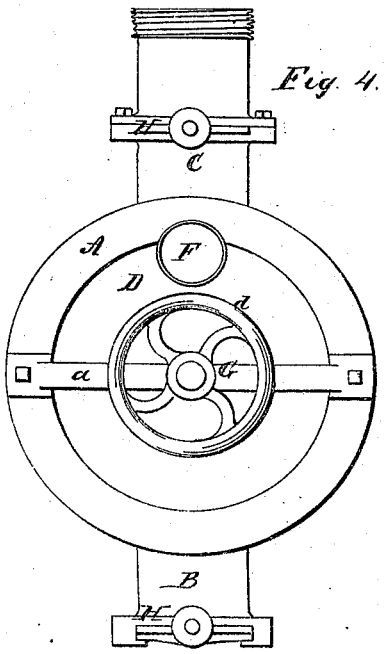


Fig. 4.



UNITED STATES PATENT OFFICE.

HENRY POHL, OF PATERSON, NEW JERSEY.

IMPROVEMENT IN MACHINERY FOR MEASURING PULP IN THE MANUFACTURE OF PAPER.

Specification forming part of Letters Patent No. **7,497**, dated July 9, 1850.

To all whom it may concern:

Be it known that I, HENRY POHL, of Paterson, in the county of Passaic and State of New Jersey, have invented a new and useful improvement on a machine for regulating the quantity of pulp for sheets of paper, to make paper of different kinds, such as post and drawing paper, &c.; and I hereby do declare that the following is a full, clear, and exact description, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a vertical section. Fig. 2 is an elevation. Fig. 3 is a horizontal section to show the ball-guard. Fig. 4 is a bird's-eye or plan view.

The same letters refer to like parts on all the figures.

The nature of my invention consists in providing a movable lid in the regulator-cylinder, the said lid being operated by a screw to set the lid in the cylinder at any point desired to regulate the quantity of pulp to be admitted to make sheets of paper of various thicknesses.

The nature of my invention further consists in providing the movable lid with an orifice in it communicating with the pulp-chamber of the cylinder and with the atmosphere by a tube, at the bottom of which tube there is a small cylindrical air-chamber with a ball fitting to move up and down to act as a valve, to allow the air to pass out by the tube when the pulp is forced into the cylinder, and to close the tube when the air is all forced out, then to allow the air to rush in when the discharge-gate is open, to assist in forcing out the pulp, and to do this with the utmost regularity.

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

A is a cylinder to receive the pulp, to regulate the quantity of pulp for different thicknesses of sheets of paper, and to regulate the quantity of pulp for different sheets of one thickness.

C is the conduit or pipe through which the pulp is directed by gravitation or light mechanical pressure into the cylinder A.

B is the conduit or tube which receives or conducts the regulated or measured pulp from the cylinder, delivering it to the spreading machinery in the common way.

D is the movable lid of the cylinder, or it may be termed a "circular head." It is made of any material most suitable, and of such an area as to fit inside of the cylinder snugly and be moved by the screw up and down to any position in the cylinder. It has a socket in its center to receive and retain the lower end of the screw G.

a is a metal bow secured by bolts to the top of the cylinder. It has a collar, *b*, with an opening through it to retain the sleeve of the wheel *d*, which has a thread cut around on its interior, meshing with the thread of the screw which passes through it. By turning this wheel in the proper direction the screw-rod G is wormed up and down, thereby elevating or depressing the lid D.

E is a small cylindrical air-chamber secured to the lid, which has an opening made in it to receive the said cylinder. This small cylinder is secured to the lid by screws or by other common devices. On the under side of the lid are secured three bars, *c c c*, constructed and arranged under the orifice through the lid below the small air-chamber, as represented in Figs. 1 and 3. These bars form a guard for the hollow ball *e*.

F is a tube communicating with the small air-cylinder E.

H H are the two vertical gates of the conduits B and C. These gates are united by a bolt or any common means to the arms K K, (both alike,) as represented by Fig. 2.

I′ I² are two revolving cams, which as they revolve act upon the lower ends of the gate-arms to lift them up to open the passages of the conduits C B, and to allow the gates to drop down (alternately) to close the said passages. The cam I′ has a smaller projection on it than the cam I². The gate of the discharging-passage B is therefore kept open for a longer period than the gate of the inlet-passage. This is common, and need not be further described.

M is the bottom or bed below the cylinder A. It is made with an inclination toward the discharge-conduit B.

Operation: The gate of the outlet-passage B being closed, the cam I′ acts upon the arm K and lifts the gate of the inlet-passage C. This passage or conduit is connected by a screw or otherwise to the pulp-reservoir, and the pulp, which is very thin, immediately flows from the reservoir through the passage C into that

part of the cylinder A under the lid D. Then when the cylinder has received the quantity of pulp necessary for the required sheet of paper, the other gate is opened and the inlet-gate closed, when the pulp in the cylinder flows out and is received on the common machinery for that purpose. As there is a quantity of air in the cylinder when the pulp commences to flow in, it escapes through the tube F, past the ball, and through the small air-chamber; but when the pulp rises to the ball, it being hollow, (the ball,) it floats up the small air-chamber into its seat, closing up the aperture of the tube F at the bottom of it. When the gate of the outlet-passage B is opened, the ball drops down upon its guard-bars, and the air rushes down through the tube F, acting upon the pulp to press or assist it to flow out of the passage B. This method of allowing the air to escape and to flow in is far superior to cocks or any other plan which has heretofore been employed for this purpose.

The movable lid D is for regulating the quantity of pulp for sheets of different thicknesses. The higher the lid is screwed up the greater the quantity of pulp will flow into the cylinder to make a thicker sheet than when the lid is screwed farther down. The pulp being very thin, the compression of it is very difficult, nearly equal to the water which composes the greatest part of it. When the lid, therefore, is screwed down for gaging the quantity of pulp for a thin sheet, the flow from the reservoir is soon checked independent of the gate, and the inlet-gate is then only closed when the outlet-gate is open to allow the pulp to flow out from the cylinder.

The lid can be elevated and lowered by the screw to regulate or gage the pulp for different thicknesses of paper with great exactness.

No lid for regulating the quantity of pulp in the same manner, so far as is known to the subscriber, has ever been employed before.

I claim—

In combination with the measuring-vessel herein described, the adjustable lid D, constructed with an opening in it communicating with the pulp-chamber in the cylinder and with the atmosphere through the small cylindrical chamber E and the pipe F, the communication being closed and opened by the ball, in the manner substantially as described, for the purposes set forth.

HENRY POHL.

Witnesses:
O. D. MUNN,
S. H. WALES.