

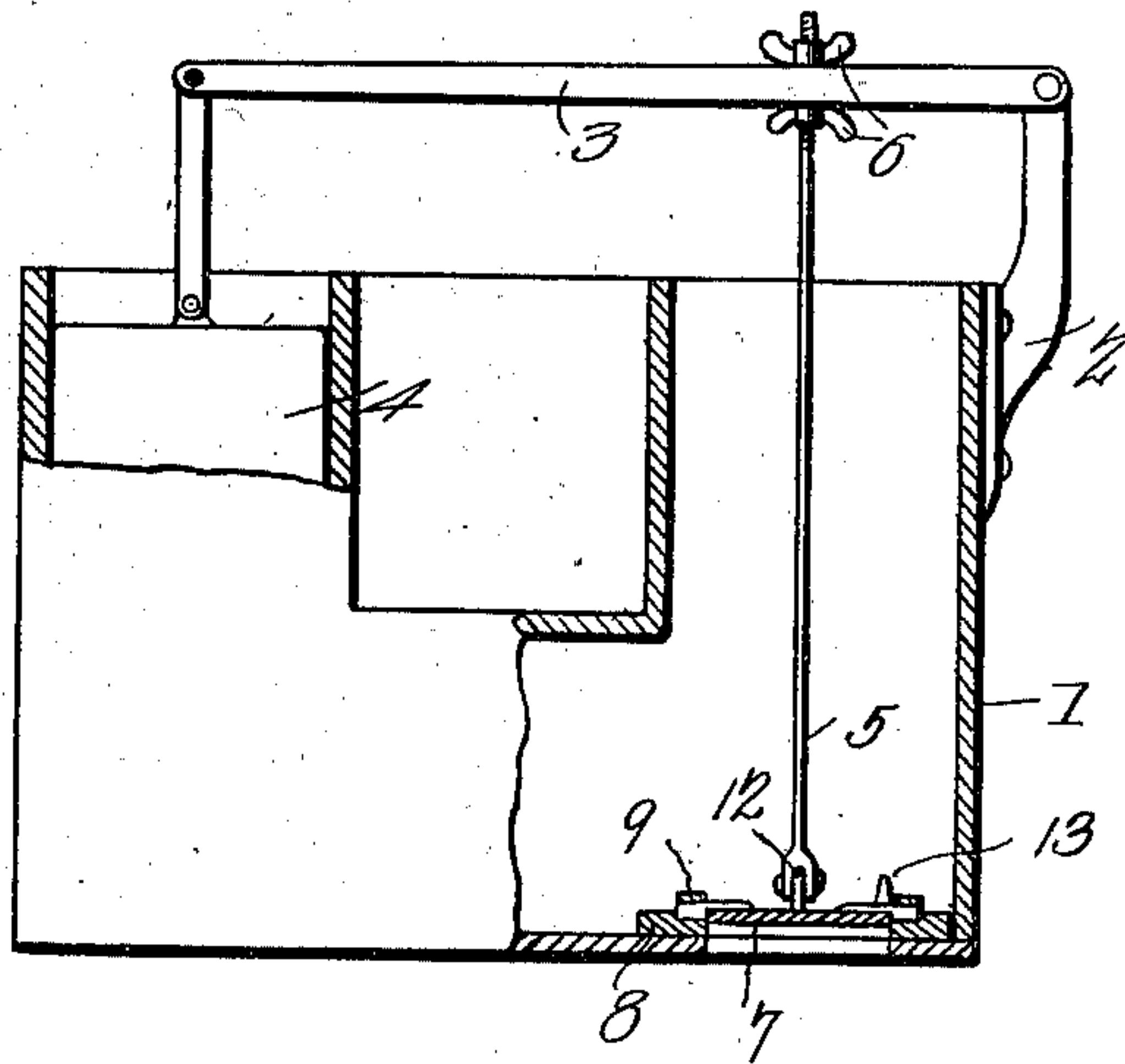
No. 733,022.

PATENTED JULY 7, 1903.

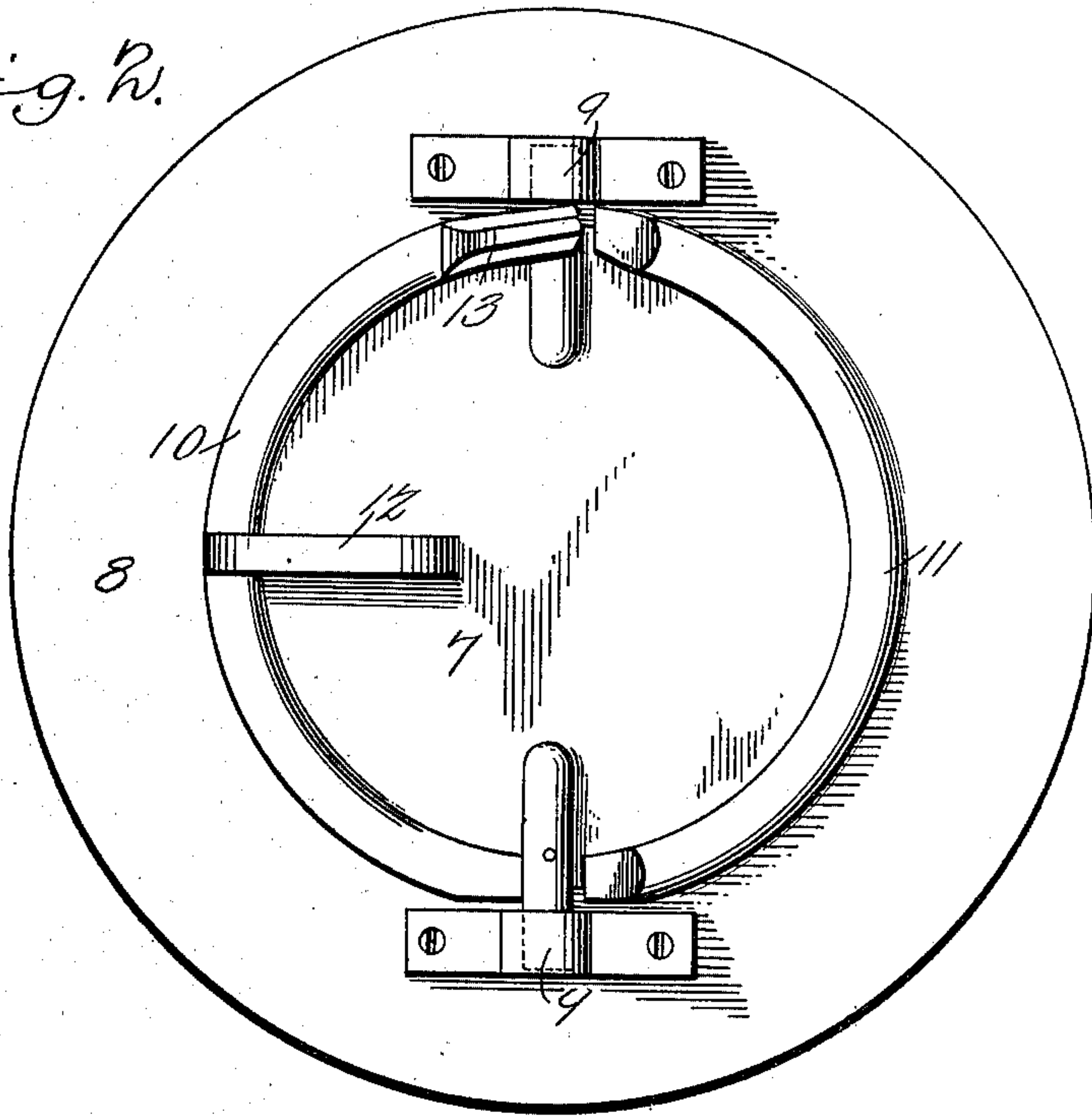
J. E. FOY.  
VALVE FOR PAPER MACHINE VATS.  
APPLICATION FILED FEB. 11, 1903.

NO MODEL.

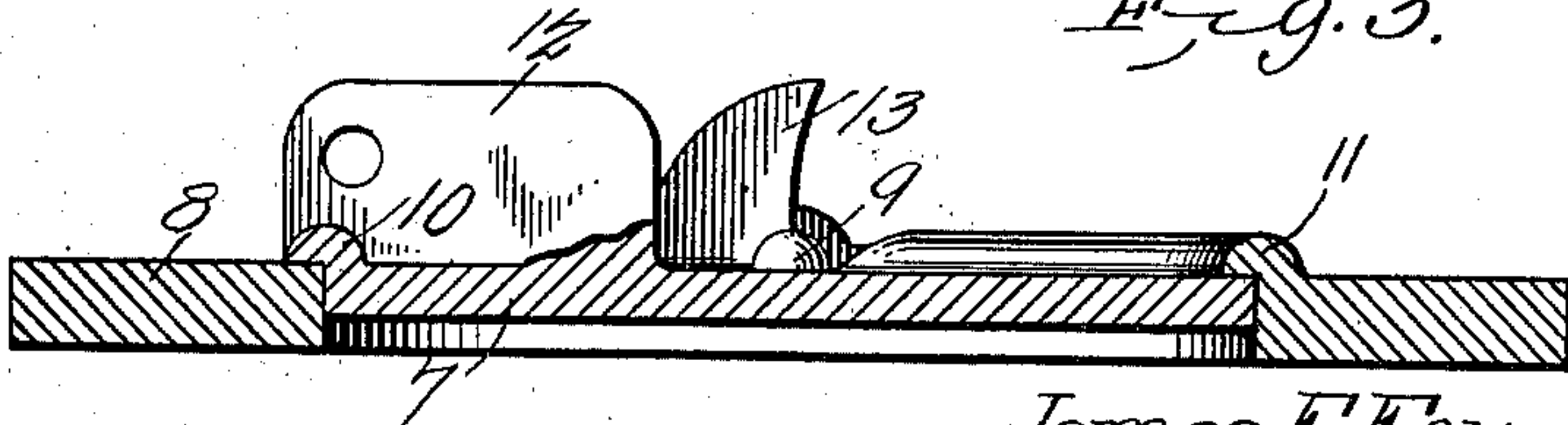
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



Witnesses  
*E. J. Stewart*  
*Dexter Morton.*

James E. Foy, Inventor.  
by *C. A. Snow & Co.*  
Attorneys



## UNITED STATES PATENT OFFICE.

JAMES EMMET FOY, OF TROY, NEW YORK.

## VALVE FOR PAPER-MACHINE VATS.

SPECIFICATION forming part of Letters Patent No. 733,022, dated July 7, 1903.

Application filed February 11, 1903. Serial No. 142,871. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES EMMET FOY, a citizen of the United States, residing at Troy, in the county of Rensselaer and State of New York, have invented a new and useful Valve for Paper-Machine Vats, of which the following is a specification.

This invention relates to an improvement in valves designed especially for use in the pulp-vats of paper-making machines in order to keep the level of the mixture of paper-pulp and water in the vat at a constant height.

It is a desideratum of importance in machines of the class to which the invention relates to keep the height at which the contents of the pulp-vat stand constant during the operation of the paper-making machine; and the object of this invention is to provide a simple, practical, durable, and inexpensive mechanism by means of which the level of the contents of the vat may be automatically kept at a constant height.

In the accompanying drawings, in which corresponding parts are indicated by the same characters of reference throughout, is shown a preferred form of embodiment of my invention, it being of course understood that I do not wish to be limited to the exact form, proportions, or mode of assemblage of the elements shown therein, but reserve the right to make such changes as do not depart from the spirit of the invention and which lie within the scope of the appended claims.

In the drawings, Figure 1 is a view in side elevation of a vat with the valve and operating mechanism mounted therein, parts of the vat being broken away to show the valve mechanism. Fig. 2 is a plan view of the valve, and Fig. 3 is a view of the valve in vertical section.

Referring to the drawings by reference characters, 1 represents a pulp-vat to which my improved valve and operating mechanism have been attached.

2 is a bracket secured at one side to the vat and supporting the valve-controlling mechanism.

3 is an arm pivotally mounted in the bracket 2 and having secured at its free end a float 4, which rests upon the surface of the water in the vat.

5 is a rod connecting the arm 3 with the

valve-flap 7 and made adjustable by means of thumb-nuts 6 6.

The valve consists of a flap 7, mounted in an annular frame 8 and adapted to turn on trunnions 9 9, which have bearings provided for them in the annular frame 8. The trunnions are diametrically disposed on the flap 7 in order to keep the pressure of the contents of the vat on either side of the line connecting the trunnions even. The flap 7 is preferably circular in outline, though it may be of different configuration, if desired, and for half of its circumference on the upper surface it is provided with a flange 10, which is adapted to contact with the frame 8 and to serve as a stop to limit the movement of the flap 7 in the annular frame and form a portion of the valve-seat. A similar flange 11 is provided at the margin of the opening in the annular frame 8 on the side of the trunnions opposite to that on which the flange 10 is located. The flange 11 of the frame 8 completes the valve-seat and also serves, as does the flange 10, to limit the movement of the flap 7 in the frame. Mounted on the flap 7 on the same side as the flange 10 is a lug 12, which forms a suitable means of attachment for the rod 5, which connects the flap with the pivoted arm 3. At one end of the flange 10 there projects upward a lug 13, which contacts with the flange 11 when the flap 7 has been opened until it stands almost at right angles with the plane of the frame 8. The purpose of the lug 13 is to prevent tilting of the flap 7 until it passes the plane at right angles to the plane of the frame 8, and consequently tends to turn completely over on its trunnions. If means were not provided to limit the opening movement of the flap, it might be accidentally turned until the flange 10 came on the same side of the opening in the frame 8 as the flange 11, in which position the pressure of the contents of the vat would tend to hold the flap and would prevent its automatic action.

In making my improved valve for paper-machine vats any suitable material may be employed; but a metal not easily affected by corrosion or some substance like vulcanite, which may be readily molded and which is also unaffected to any appreciable extent by chemical agents, forms the most suitable material for use in constructing the valve.



It is obvious that the valve-flap, its trunnions, the flange 10, the lug 12, and lug 13 may be cast in one piece and that the frame 8 and its flange 11 may also be cast in one piece; but at least one of the bearings provided on the frame 8 for the trunnions 9 must comprise a removable member to permit the assembling of the flap and the frame in proper relation.

10 The operation of my improved valve for paper-machine vats is so simple that it will be readily understood by persons skilled in the art to which it pertains from a mere inspection of the accompanying drawings and  
15 the reading of the foregoing description; but to avoid the possibility of misunderstanding the operation of the valve may be stated as follows: The height at which the level of the contents of the pulp-vat is to be maintained having  
20 been determined, the thumb-nuts 66 on the rod 5 are adjusted in position until when the float 4 is at the desired height the flap 7, which is of course pivotally connected with the rod 5, is closed, so as to prevent any escape of the  
25 contents of the vat through the valve. Now if the level of the contents of the vat rises the float 4 will move upward, lifting the arm 3, which through the rod 5 will also lift one side of the flap 7, so opening the valve and  
30 permitting the escape of a small amount of the vat contents through the valve. As soon as the quantity of water which escapes through the opened valve is sufficient to restore level of the vat contents to its original  
35 height the float will have reached its original position, the arm 3 will have descended with the float, and the valve will have been closed. As the pressure of the contents of the vat upon the valve-flap 7 is the same on each side  
40 of a line connecting the trunnions, it is evident that a very slight pull on the lug 12 will cause the valve to open, and consequently a very slight variation in the level of the contents of the vat will cause the valve to open  
45 promptly and at once permit the escape of the excess of water through the valve. It will also be noted that as the valve is adapted to open promptly any considerable rise in the level of the vat contents is impossible, and

consequently the valve can never be opened 50 so wide that it may not be closed before any appreciable amount of water in excess of that necessary to restore the original level of the vat contents has escaped.

If desired, the flanges 10 and 11 and the 55 portions of the flap and frame which cooperate therewith may be provided with gaskets of rubber or other suitable packing material. Such provision is, however, common in valves of all sorts, and hence special illustration 60 thereof is regarded as unnecessary.

Having thus fully described the construction and operation of my improved valve for paper-machine vats, what I claim as new, and desire to secure by Letters Patent, is— 65

1. In a pulp-vat for paper-making machines, the combination of a ring forming a valve-seat and having an opening, a flange at the upper margin of said opening at one side thereof, a valve-flap mounted in said opening 70 upon diametrically opposite trunnions, a flange alongside the side of the flap opposite the flange on the ring, means for limiting the movement of said valve-flap on its trunnions, and mechanism controlled by the level of the 75 contents of the vat for opening and closing said valve.

2. In a pulp-vat for paper-making machines, a ring having an opening and forming a valve-seat, a flap rotatably mounted in said 80 opening upon diametrically opposite trunnions, a flange along the margin of said opening at one side of said trunnions, a flange along the margin of said flap at the other side of said trunnions, an upwardly-projecting lug 85 on said flap adapted to contact with the flange on said ring to limit the turning of the flap upon its trunnions, and means controlled by the level of the contents of the vat for opening and closing said valve. 90

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JAMES EMMET FOY.

Witnesses:

PATRICK J. HURLEY,  
ARTHUR L. RILEY.