

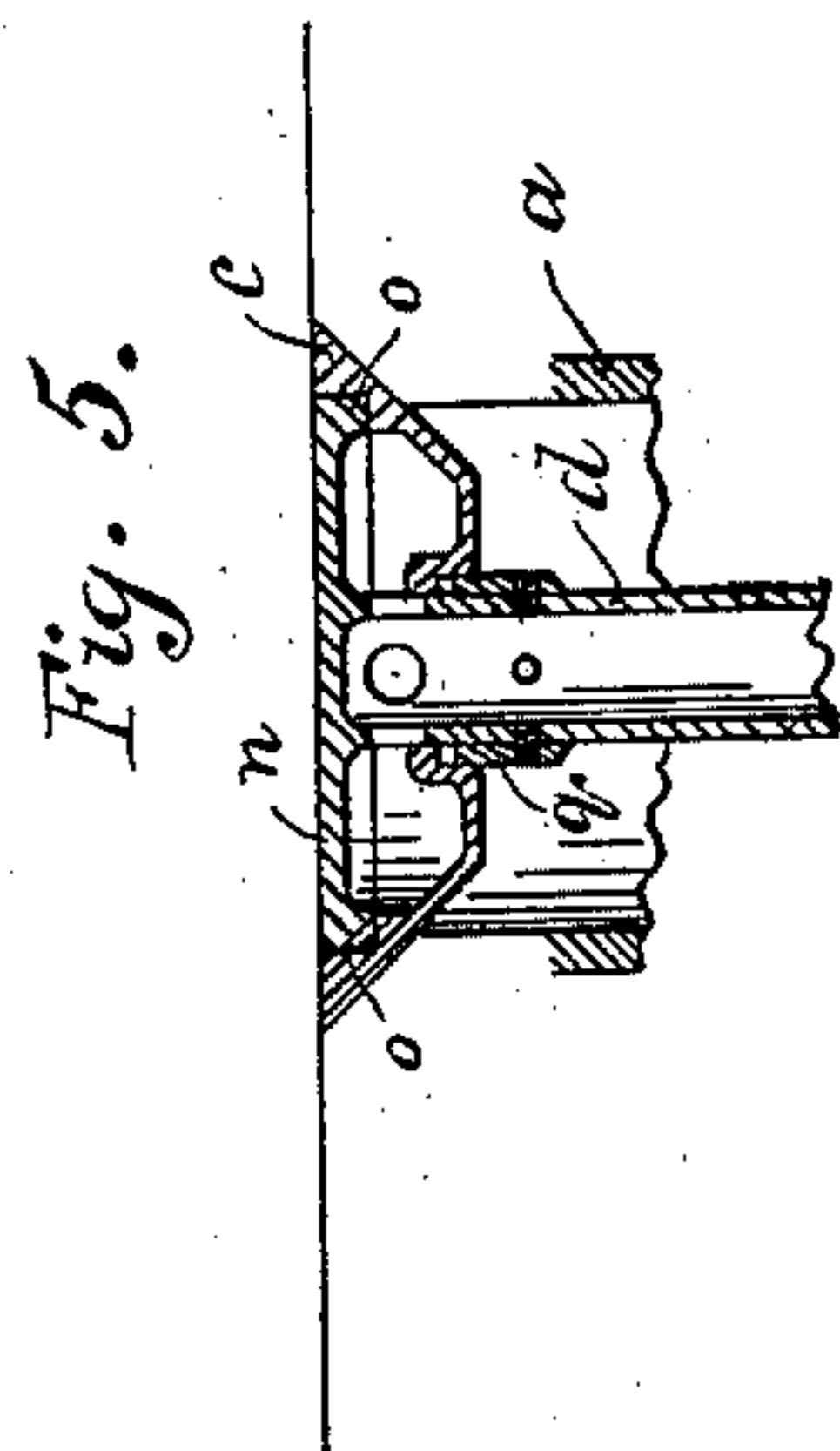
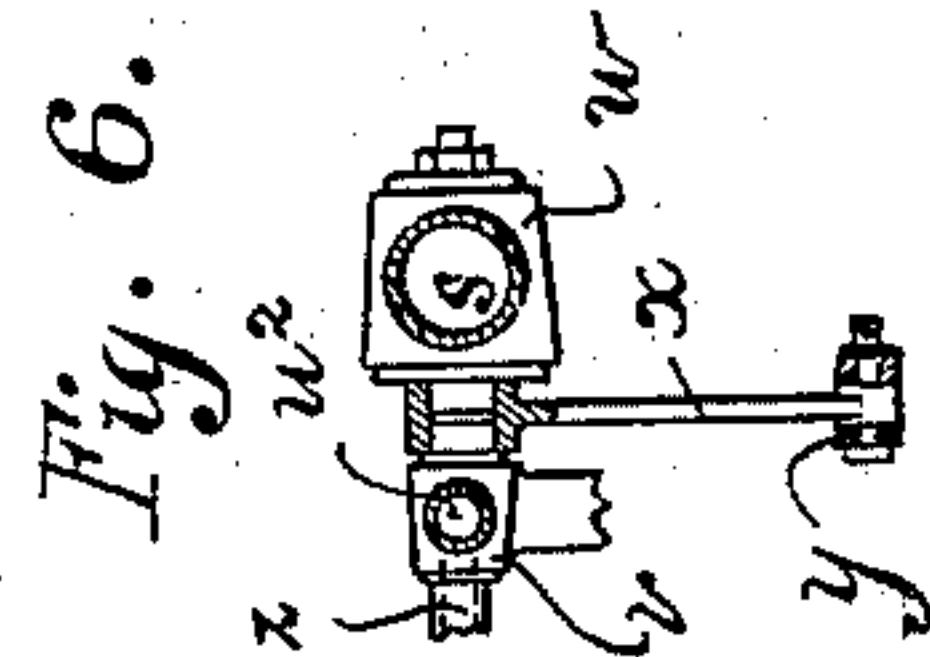
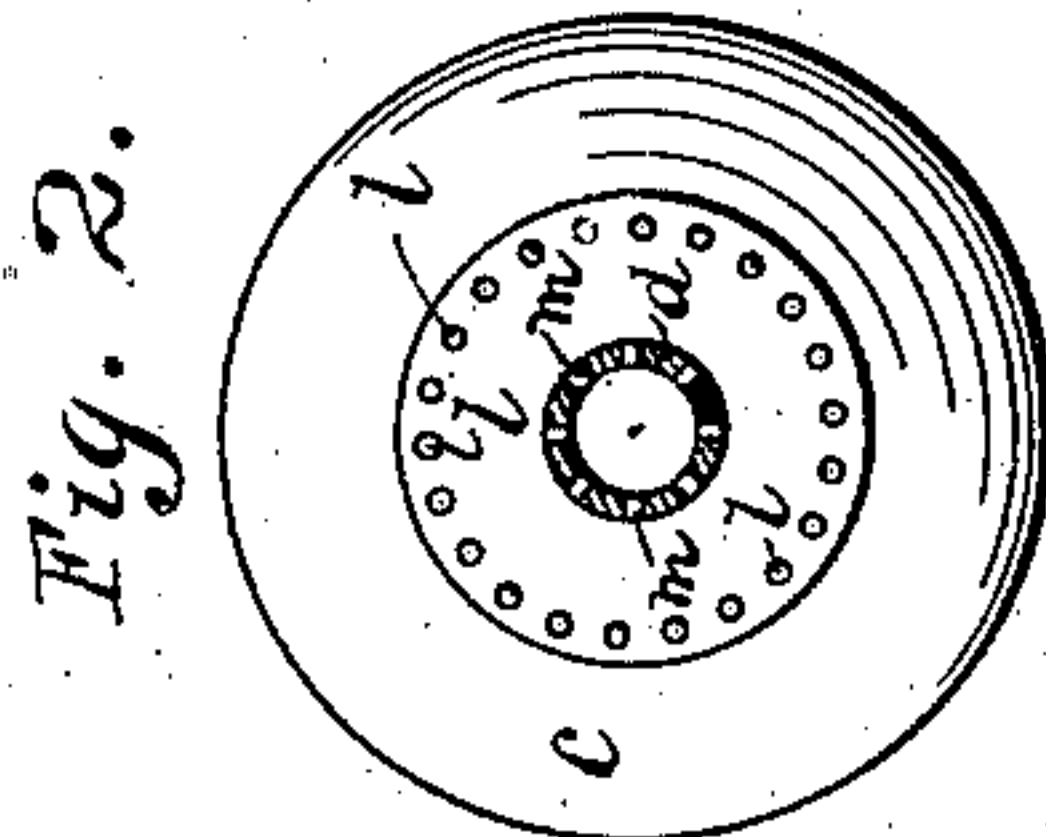
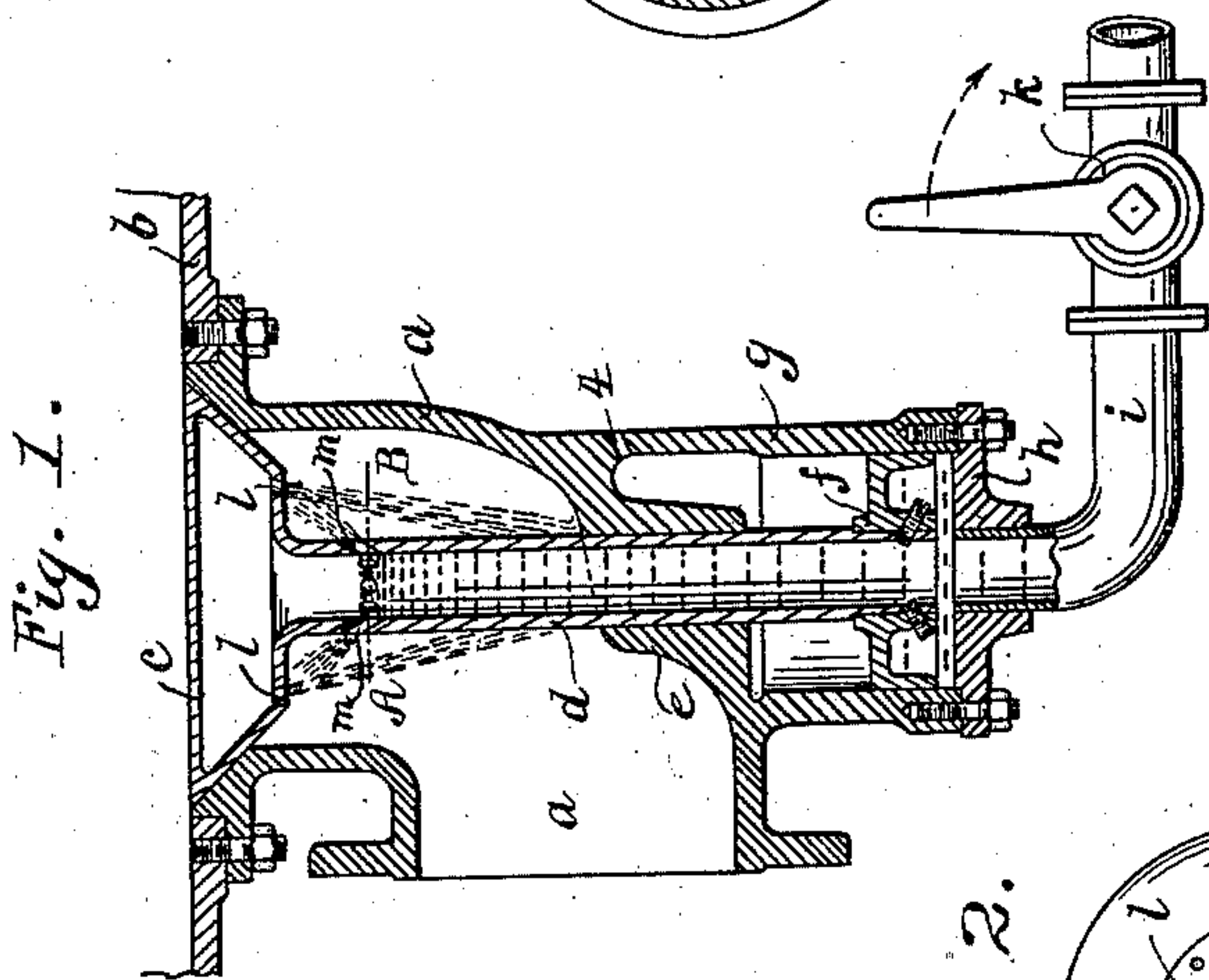
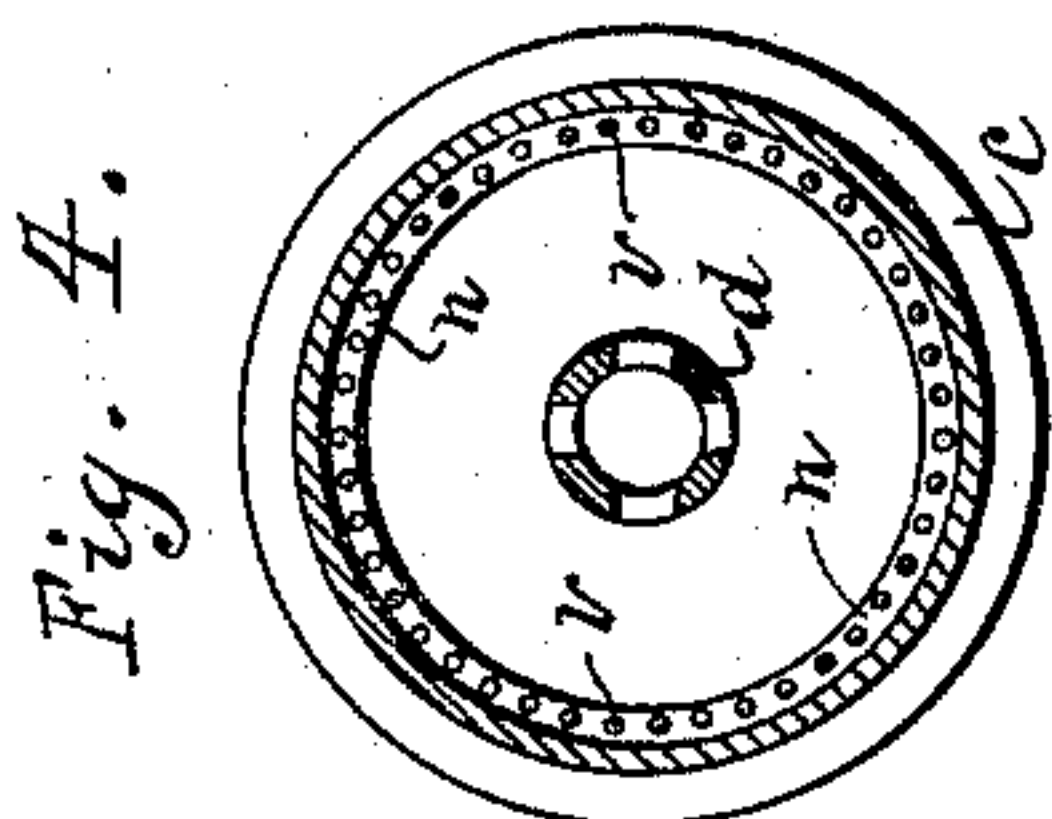
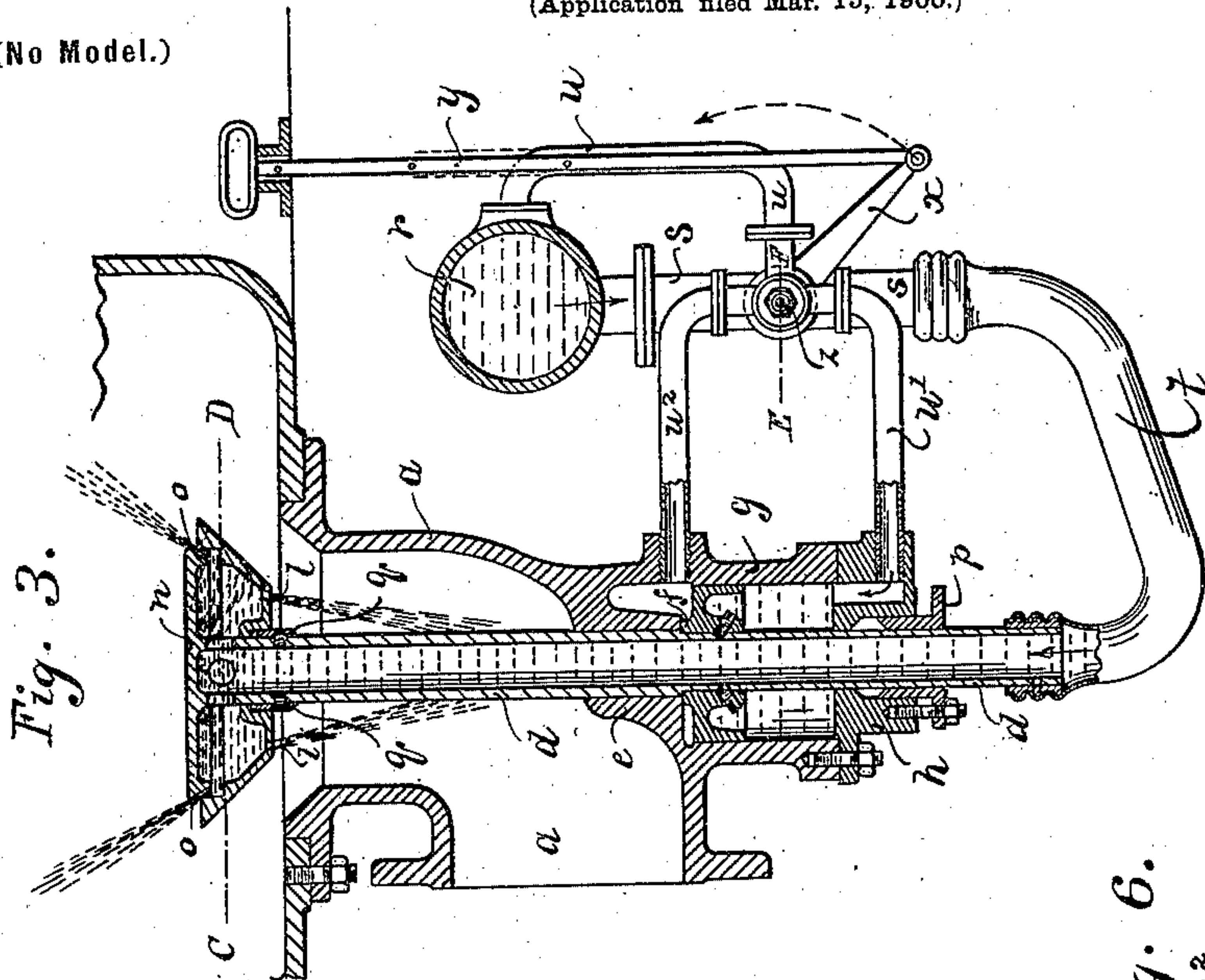
No. 691,975.

Patented Jan. 28, 1902.

H. SCHAAF.  
PAPER PULP DISCHARGE VALVE.

(Application filed Mar. 15, 1900.)

(No Model.)



WITNESSES:

Frank J. Smith.  
Belle Patterson.

INVENTOR

H. Schaaf

BY

Charles D. Davenport

ATTORNEYS



# UNITED STATES PATENT OFFICE.

HEINRICH SCHAAF, OF NEUSTADT-ON-THE-HARDT, GERMANY, ASSIGNOR  
TO ROBERT DIETRICH, OF MERSEBURG-ON-THE-SAALE, GERMANY.

## PAPER-PULP-DISCHARGE VALVE.

SPECIFICATION forming part of Letters Patent No. 691,975, dated January 28, 1902.

Application filed March 15, 1900. Serial No. 8,717. (No model.)

*To all whom it may concern:*

Be it known that I, HEINRICH SCHAAF, a subject of the German Emperor, and a resident of Neustadt-on-the-Hardt, in the Palatinate of the Rhine, in the German Empire, have invented certain new and useful Improvements in Paper-Pulp-Discharge Valves, of which the following is a specification.

This invention relates to improvements in paper-pulp-discharging valves.

The nature and object of the invention will be fully understood from the following general description and the annexed drawings, and will be subsequently pointed out in the claims.

Figure 1 is a longitudinal sectional view of my improved valve. Fig. 2 is a sectional view of the valve-spindle, taken on the line A B of Fig. 1, showing the valve-cone from below. Fig. 3 is a longitudinal sectional view of a modification of my improved valve when open. Fig. 4 is a sectional view of the valve-cone, taken on the line C D of Fig. 3 looking from below. Fig. 5 is a detail sectional view of the valve-cone when closed. Fig. 6 is a sectional view of the cocks of the water-pressure conduits, taken on the line E F of Fig. 3.

Heretofore paper manufacturers have been much hindered and annoyed by the pulp which they were manipulating sticking in the conduits through which it was passed and choking them so as to retard the work. My present invention has been devised to obviate this difficulty.

Referring to the drawings hereto annexed, which are hereby made a part of this specification, *a* designates the body of the valve, which is of the curved form illustrated. This is to be secured to the bottom of the paper-pulp engine by means of screws or in any other common and well-known way that will be sufficiently strong. Pulp from the engine passes through the valve in the common and well-known way. The hollow valve-cone *c* and the tubular valve-spindle *d* are made integral with each other. This valve-spindle *d* passes through the hub *e* of the body *a* of the valve.

A piston (designated by *f*) is rigidly mounted on the lower end of the spindle *d*. This

piston reciprocates upward and downward in the chamber *g*. The chamber *g* is closed by the cover *h*. The tubular valve-spindle *d* communicates with the pipe *i*. This pipe *i* is fitted with a stop-cock *k*. The bottom of the valve-cone *c* is perforated all around with a series of holes *ll*. The valve-spindle is also in like manner perforated with holes *m* at the line A B.

In the wall of the chamber *g* is an orifice *4*. In this may be inserted a cock, by opening which the pressure in said chamber may be relieved, if it should be found that such relief is expedient.

When the stop-cock *k* is opened, water from an adequate supply under pressure runs through the pipe *i*, under the piston *f*, through the hollow spindle, and into the cone *c*. This action raises the piston *f* and with it the spindle *d* and the cone *c*, and at the same time the water escapes in jets from the holes *l* and *m*. These jets of water prevent the pulp from adhering to the cone *c*, the spindle *d*, or hub *e* while being discharged through the valve and greatly assist in such discharge. When the pulp has been discharged and the stop-cock *k* has been closed, the surplus water which had run into the spindle *d* and the cone *c* continues to escape from the holes *l* and *m* until it is exhausted. Then the cone *c*, the spindle *d*, and the piston *f* automatically sink down to their former positions.

In the example of my invention illustrated in Fig. 3 the supply of water for the jet-holes is separate from that which operates the piston. In this case the valve-cone *c* is loosely mounted on the spindle *d*. To the top of the spindle is fitted the cover *n*, perforated all around with a series of holes *o*. The spindle *d* extends through a tight stuffing-box *p* in the cover *h* of the chamber *g* and is furnished with a hose connection at its lower end. Water under pressure is conveyed to the tubular spindle *d* from the conduit *r* through the short pipe *s* and the hose *t*. Conduits *u*, *u'*, and *u''* convey this same water under pressure to the chamber *g* to actuate the piston *f*. The stop-cocks *v* and *w* open and shut the conduits *s* and *u* and are operated together by the lever *x* and draw-bar *y*. When the stop-cocks *v* and *w* are closed, the surplus water in the con-



duit  $u'$  runs off through a hollow in the stop-cock  $v$ . It is evident that compressed air may be used instead of water for actuating the piston  $f$  in the chamber  $g$ .

5 In Fig. 3 the valve is illustrated in open position, with the valve-cone  $c$  resting on the ring  $g$ , which surrounds and is supported by the valve-spindle  $d$ ; but if the stop-cocks  $v$  and  $w$  be reversed the water feeding the jet-  
 10 holes  $l m o$  in the cone  $c$  and the spindle  $d$  will be shut off. At the same time water passing through the pipe  $u^2$  into the chamber  $g$  will force the piston  $f$  downward and close the valve, and at the same time the spindle  $d$   
 15 is moved toward the piston  $f$ , the holes  $o$  are thereby closed to prevent the pulp from getting into them, and the holes  $m$  of the spindle passing into the hub  $e$  are also closed, and thus by changing the stop-cocks  $v$  and  $w$  the  
 20 valve may be opened and closed at pleasure.

Otherwise than hereinbefore described this valve is to be used in connection with an ordinary paper-pulp engine in the common and well-known way.

25 What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of a curved valve-body substantially as specified, with a hollow perforated valve-cone, and a tubular perforated  
 30 valve-spindle, all arranged, and substantially as and for the purpose set forth.

2. In a paper-pulp-discharging valve, the combination with a curved valve-body substantially as specified, a pressure-chamber in said body, and a piston reciprocating in said  
 35 chamber, of a hollow perforated valve-cone, a tubular perforated valve-spindle connected thereto and connected with said piston, and working therewith, and means for supplying the same with water under pressure, all sub-  
 40 stantially as and for the purpose set forth.

3. In a paper-pulp-discharging valve, the combination with a curved valve-body substantially as specified, a pressure-chamber in said body, and a piston reciprocating in said  
 45 chamber, of a tubular valve-spindle passing through said piston, and the bottom of said chamber, a ring upon said spindle, a hollow perforated valve-cone loosely mounted on said spindle, and resting on said ring, water-  
 50 conduits to supply said valve with water under pressure, and stop-cocks in said conduit to regulate and control the flow of said water, all substantially as and for the purpose set forth.

In witness whereof I have hereunto set my hand in presence of two witnesses.

HEINRICH SCHAAF.

Witnesses:

MICHAEL ZIMMERMANN,  
 FRIEDRICH HEIL.