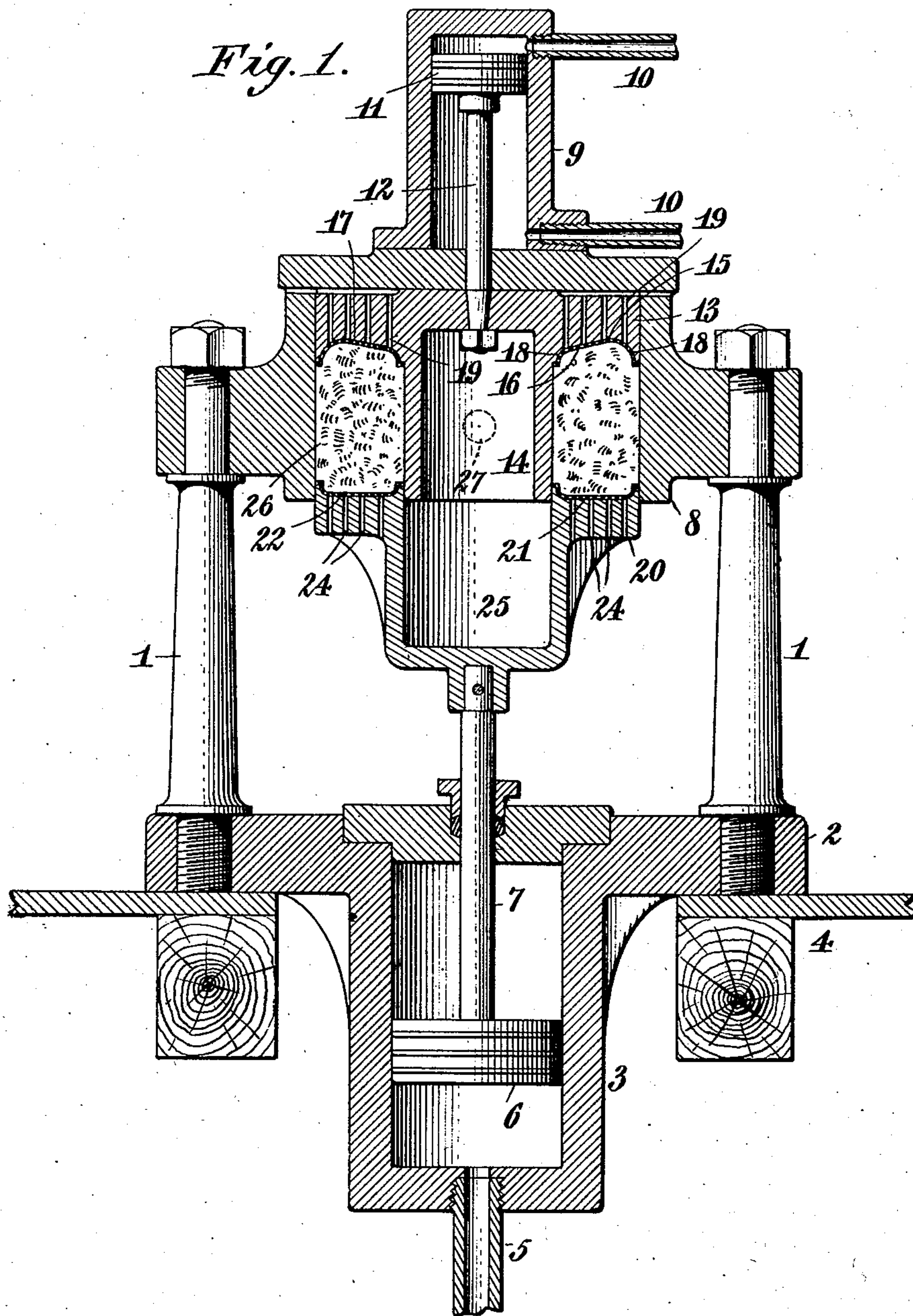


No. 827,815.

PATENTED AUG. 7, 1906.

C. D. ORMISTON.
PULP MOLDING MACHINE.
APPLICATION FILED APR. 13, 1905.

5 SHEETS—SHEET 1.



WITNESSES:

Julius Lanke

Harry Harris

Cyrus D. Ormiston, INVENTOR,

BY

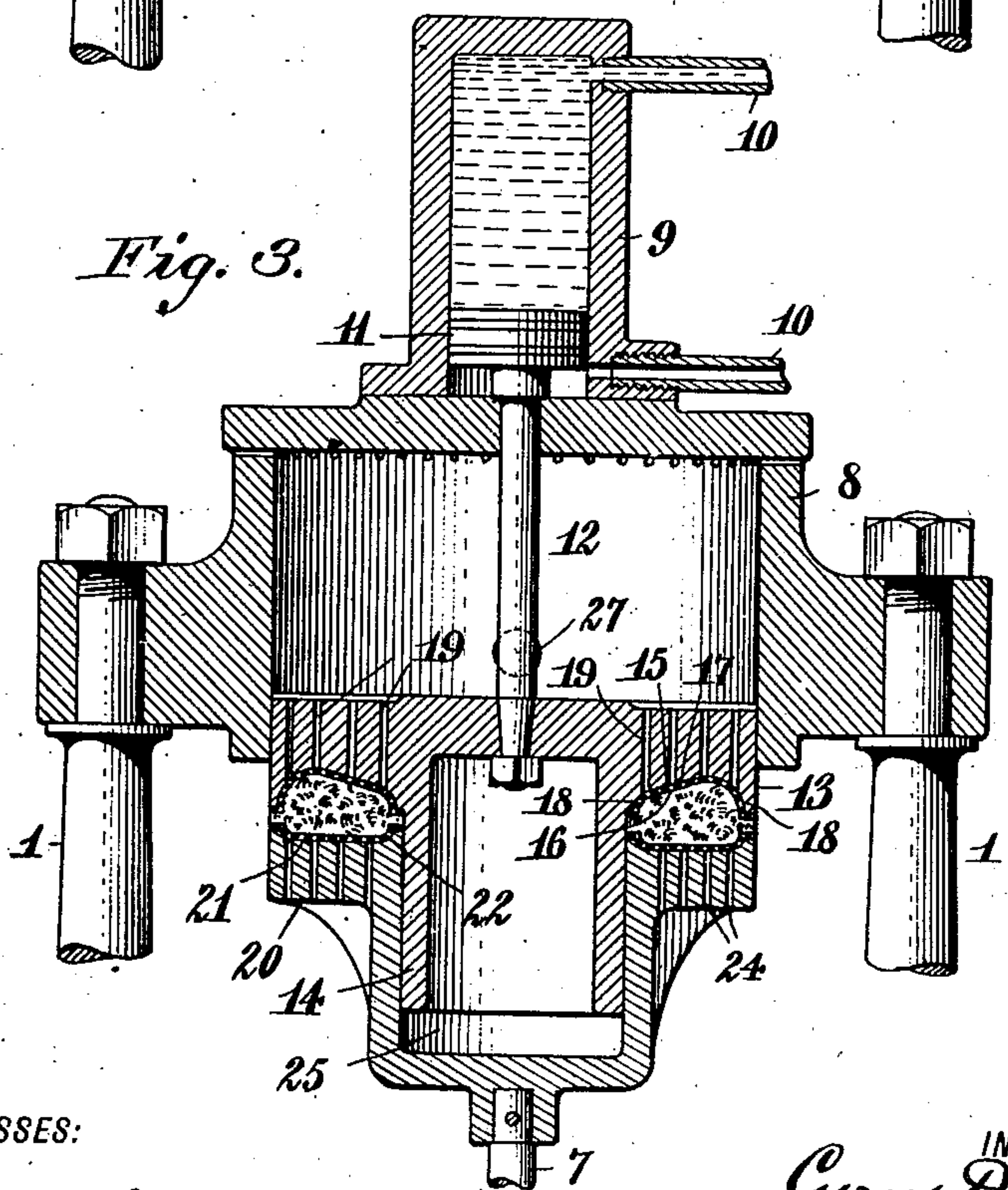
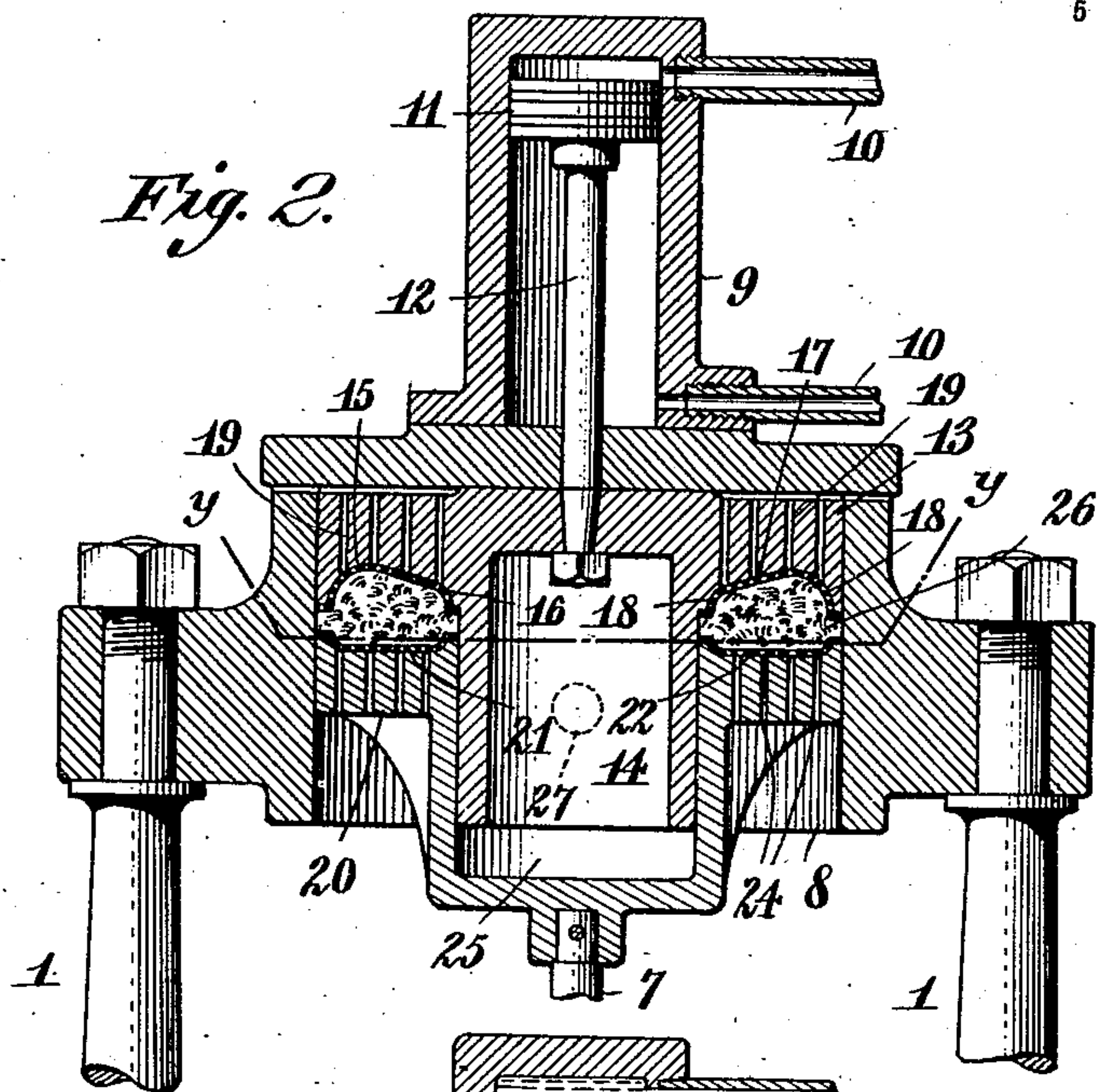
Emil Neuhart
ATTORNEY.

No. 827,815.

PATENTED AUG. 7, 1906.

C. D. ORMISTON.
PULP MOLDING MACHINE.
APPLICATION FILED APR. 13, 1905.

5 SHEETS—SHEET 2.



WITNESSES:

Julius Lanke
Harry Harris

INVENTOR:

Cyrus D. Ormiston,

BY

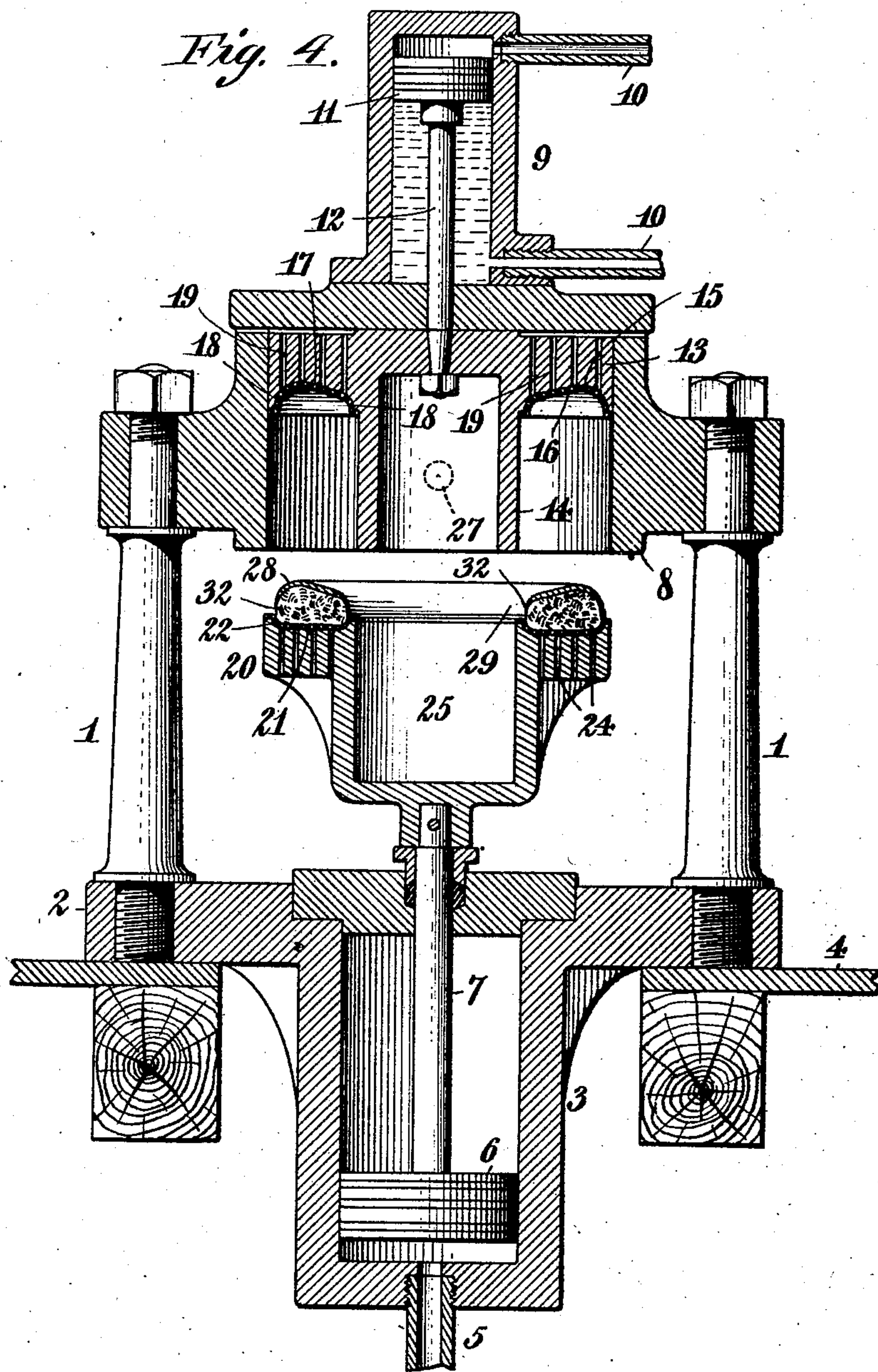
Emil Neuhart,
ATTORNEY.

No. 827,815.

PATENTED AUG. 7, 1906.

C. D. ORMISTON.
PULP MOLDING MACHINE.
APPLICATION FILED APR. 13, 1905.

5 SHEETS—SHEET 3.



WITNESSES:

Julius Lanke
Harry Harris

Cyrus D. Ormiston, INVENTOR,

BY Emil Neuhart,

ATTORNEY

No. 827,815.

PATENTED AUG. 7, 1906.

C. D. ORMISTON.
PULP MOLDING MACHINE.
APPLICATION FILED APR. 13, 1905.

5 SHEETS—SHEET 4.

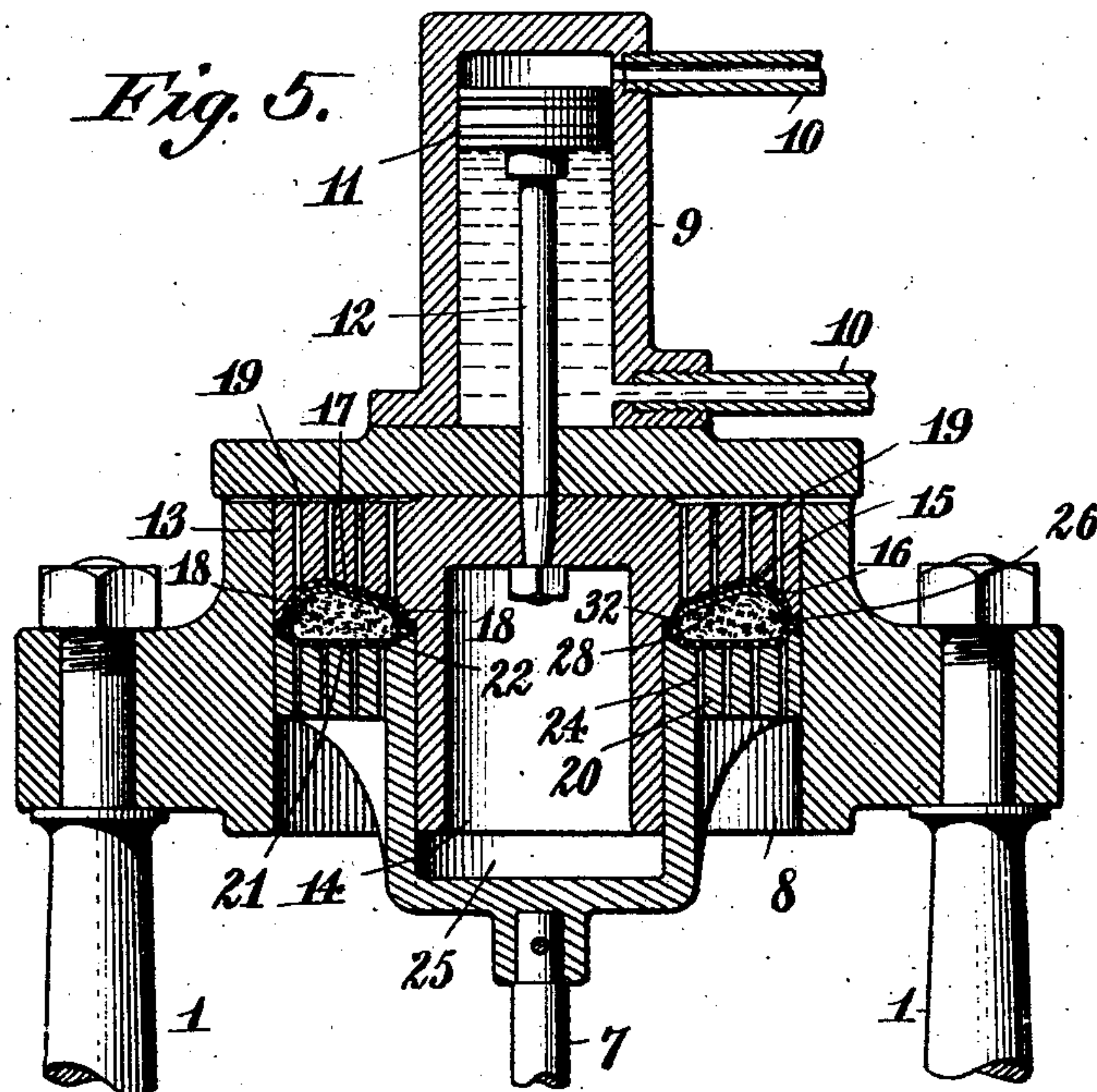


Fig. 6.

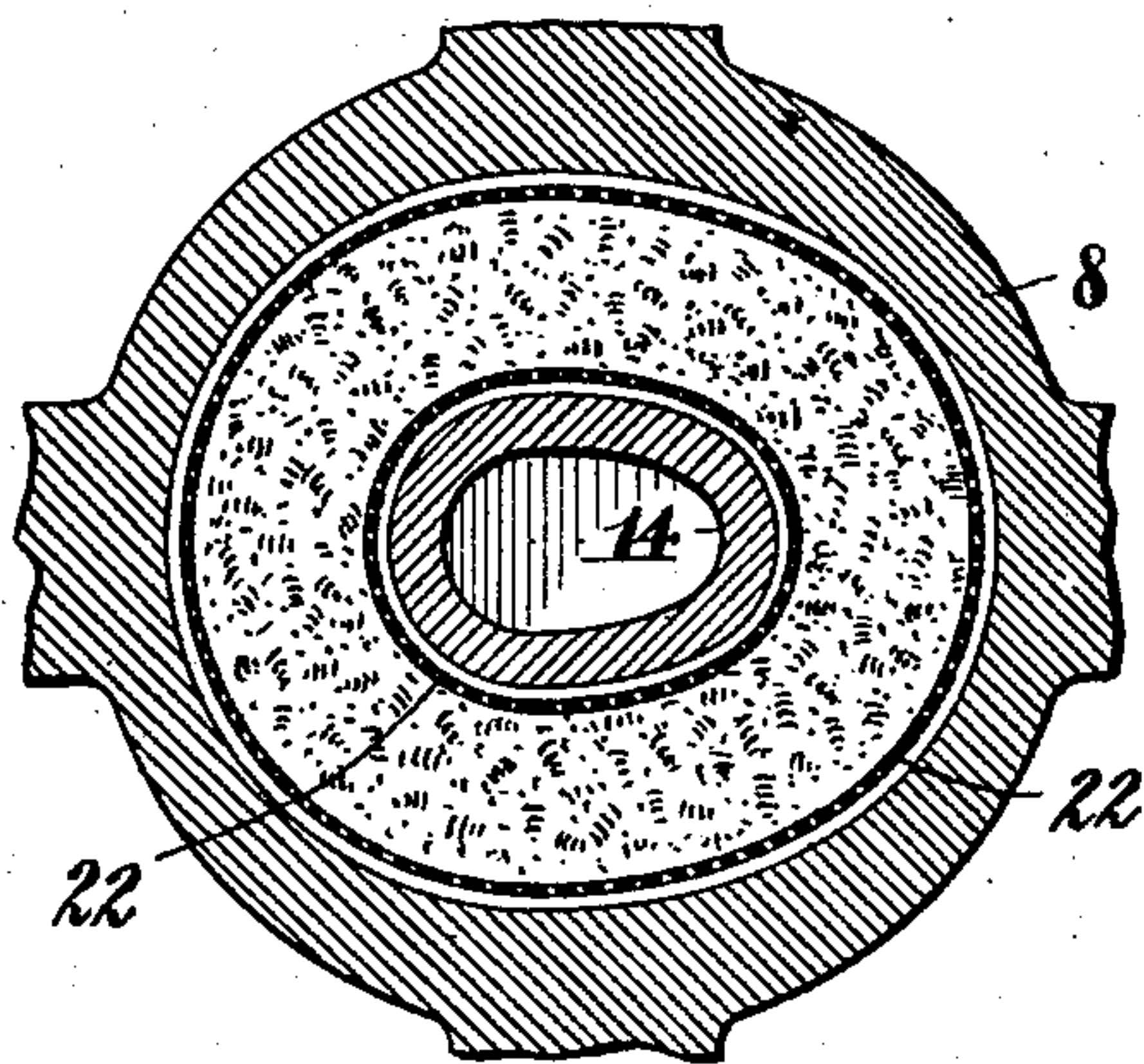
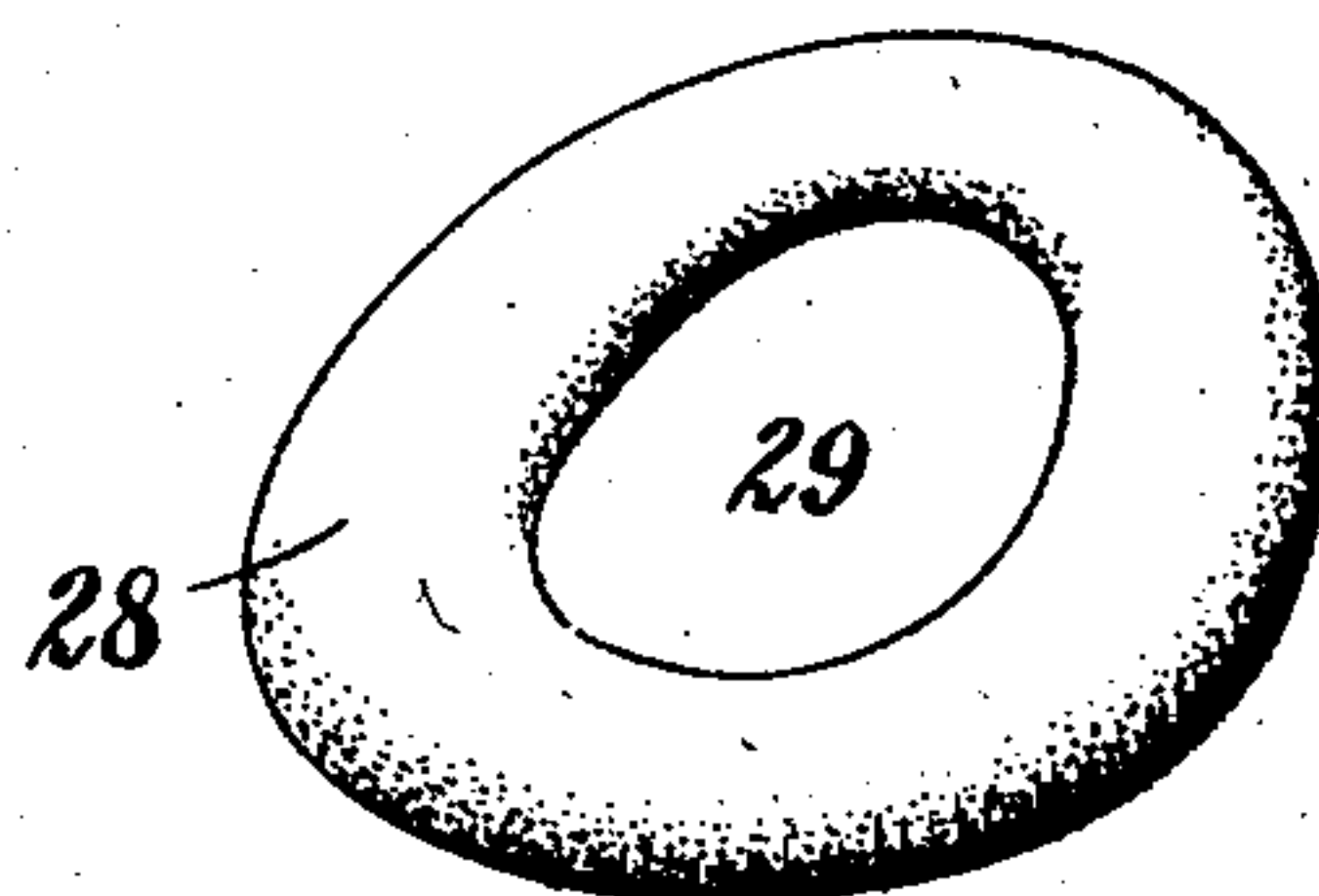


Fig. 7.



WITNESSES:

Julius Lanke
Harry Harris

Cyrus D. Ormiston, INVENTOR

BY *Emil Neuhart,*
ATTORNEY.

No. 827,815.

PATENTED AUG. 7, 1906.

C. D. ORMISTON.
PULP MOLDING MACHINE.
APPLICATION FILED APR. 13, 1905.

6 SHEETS—SHEET 5.

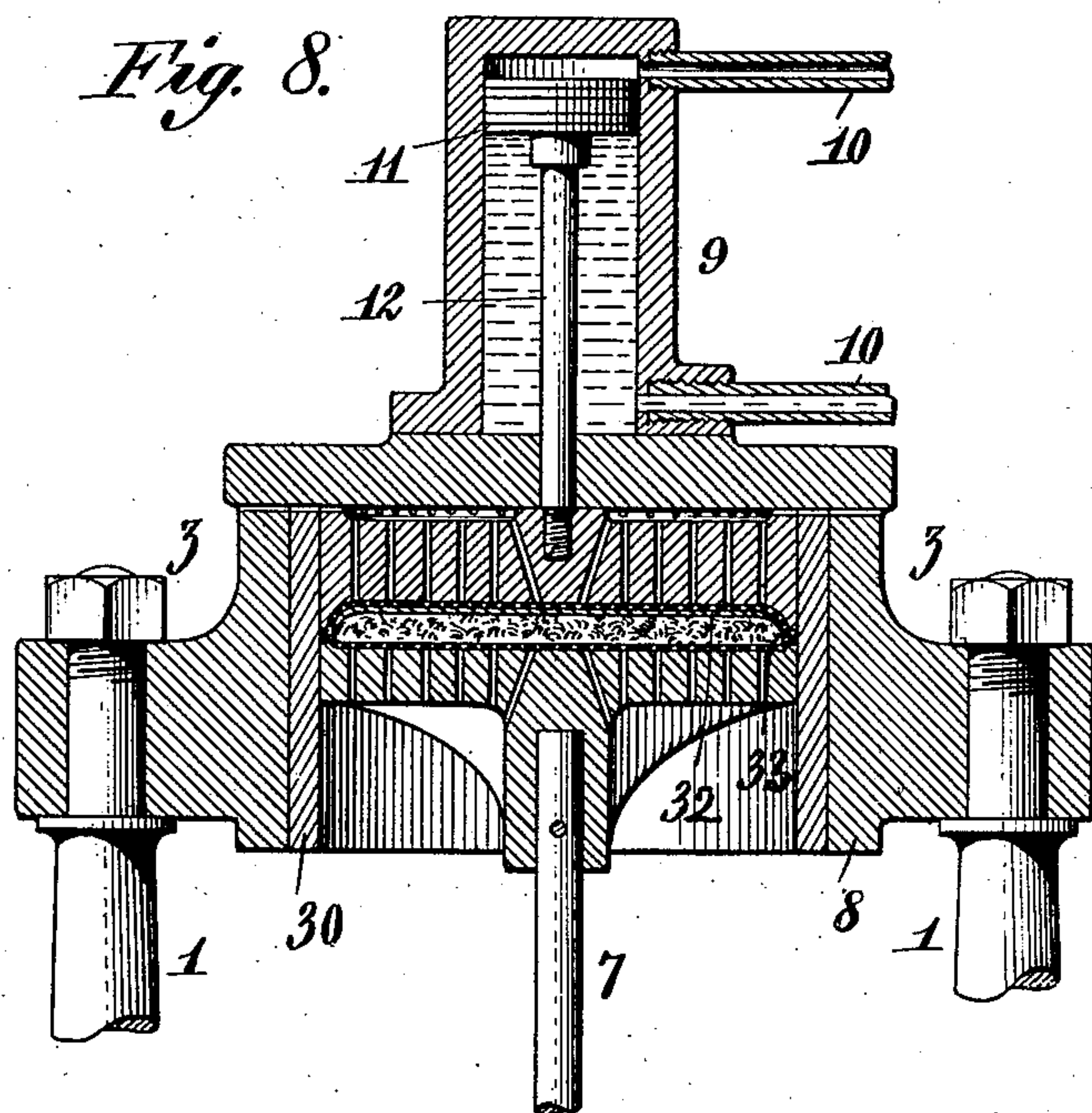


Fig. 9.

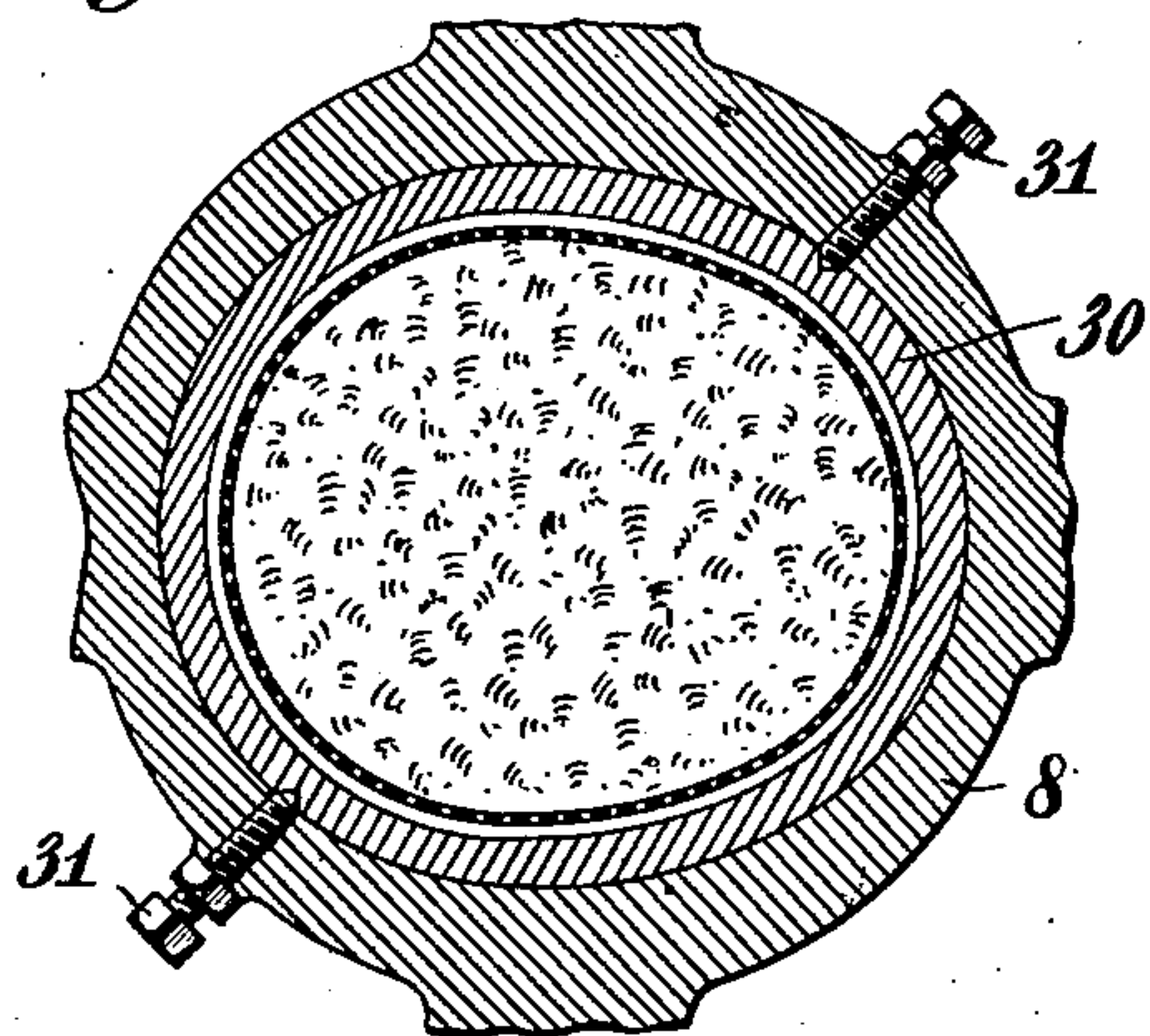


Fig. 10.

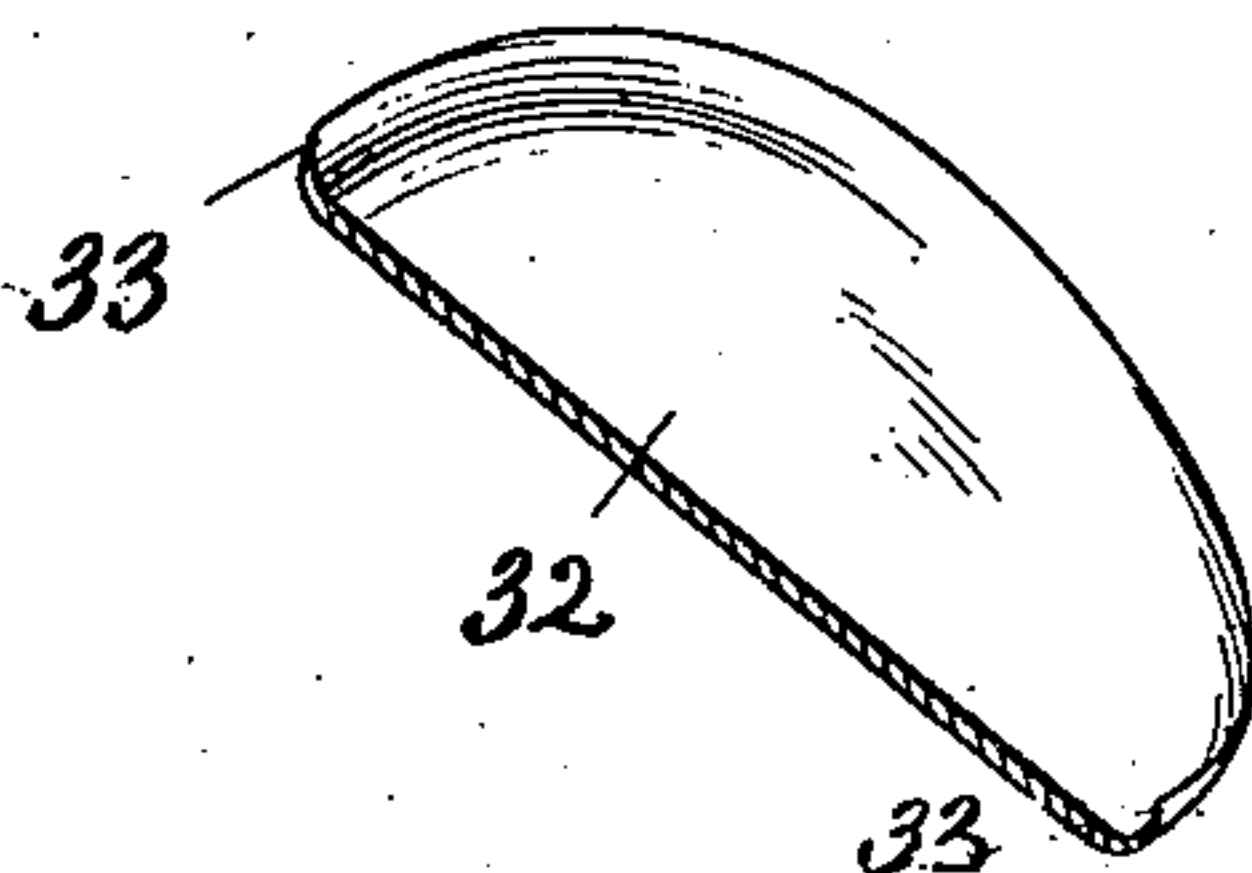
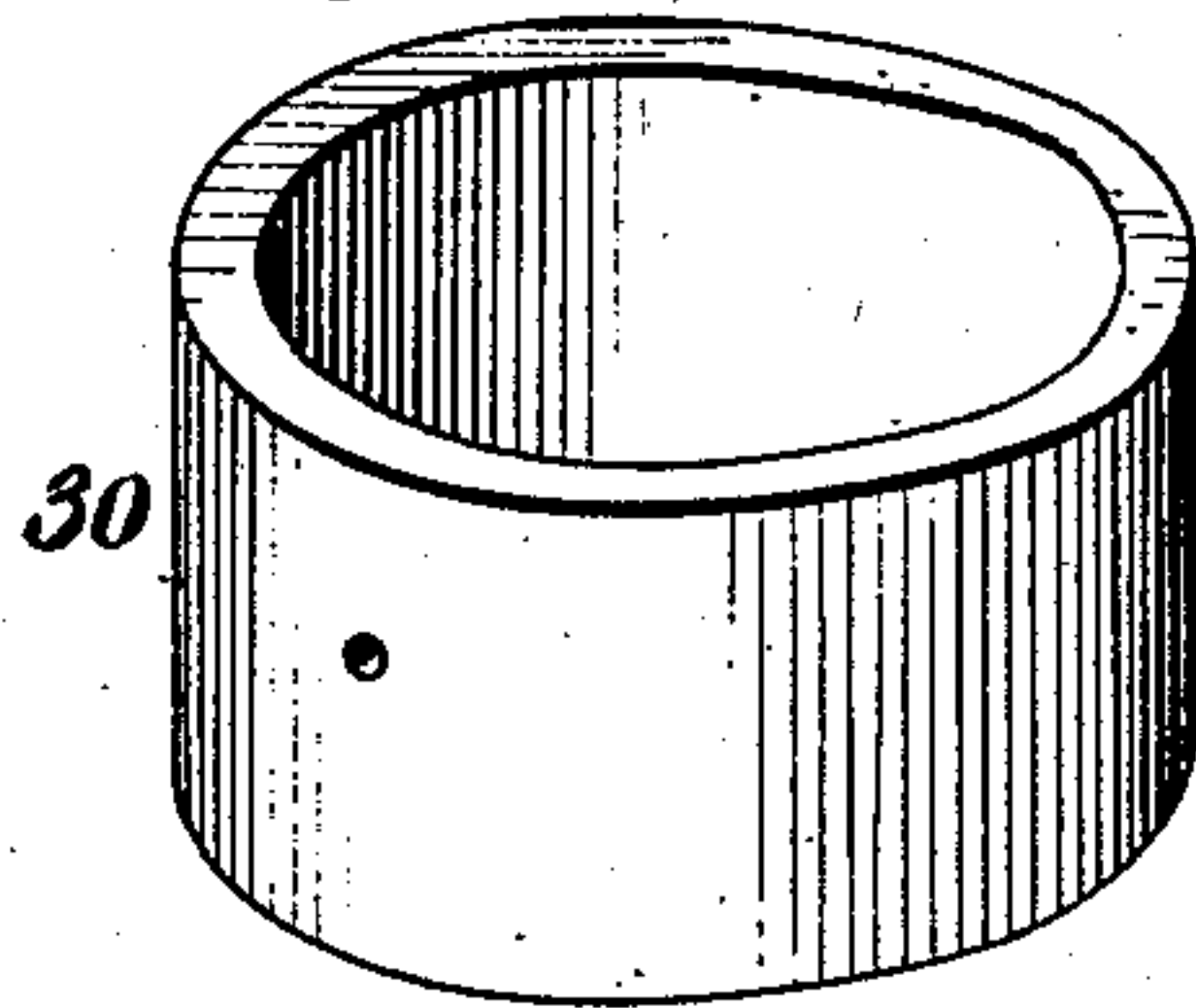


Fig. 11.



WITNESSES:

Julius Lauke
Harry Harris

Cyrus D. Ormiston, INVENTOR

BY *Emil Neuhauf,* ATTORNEY.

UNITED STATES PATENT OFFICE.

CYRUS D. ORMISTON, OF LOCKPORT, NEW YORK, ASSIGNOR OF ONE-HALF
TO JESSE PETERSON, OF LOCKPORT, NEW YORK.

PULP-MOLDING MACHINE.

No. 827,815.

Specification of Letters Patent.

Patented Aug. 7, 1906.

Application filed April 13, 1905. Serial No. 255,411.

To all whom it may concern:

Be it known that I, CYRUS D. ORMISTON, a citizen of the United States, residing at Lockport, in the county of Niagara and State of New York, have invented certain new and useful Improvements in Pulp-Molding Machines, of which the following is a specification.

This invention relates to improvements in pulp-molding machines.

The objects of my invention are to provide means whereby an opening can be formed centrally in a pulp article, to provide reducing-liners for the molding-chamber whereby articles of various sizes can be molded in said chamber, and to provide means whereby a smooth surface is given the molded article when being formed, thereby dispensing with the necessity of trimming heretofore resorted to for this purpose.

With these ends in view my invention consists in arranging within the molding-chamber opposing perforated dies provided, respectively, with a center former or tube and a center chamber into which said former or tube fits, in providing reducing-liners which fit into the molding-chamber, and in the supplemental imperforate dies whereby the surface of the article is given a smooth finish.

My invention further consists in the construction, arrangement, and combination of parts to be hereinafter described, and particularly pointed out in the appended claims.

In the molding of pulp articles the stock is forced into the molding-space in a liquefied state, and provision must therefore be made for draining the water during compression of the stock. This is always done by providing the dies or formers with small drainage-perforations and facing the same with fine screening to prevent the stock entering said perforations and closing the drainage. The surface of the molded article receives the impression of the screen and is therefore pitted. Heretofore in all cases where a smooth surface was desired on molded articles it has been necessary to trim the same with a suitable trimming-machine, necessitating re-handling and the expenditure of much time and labor in trimming, which must always be done after the articles are thoroughly dried. As the material when dried is very tough, it is apparent that the trimming operation is necessarily slow.

My invention is designed for use on all articles where a smooth surface is desirable, such as imitations of highly-polished wood articles, and it is particularly designed for the manufacture of closet-seats and covers therefor, which may be grained and varnished, and without the necessity of rubbing with powdered pumice or horsehair be given a high polish and a perfect imitation of wood.

As is well known, closet-seats made of wood are liable to split, and are therefore unsanitary. This my invention fully overcomes, as the splitting of the seat is impossible, and when thoroughly dried will not take up moisture.

Referring to the drawings, Figure 1 is a central vertical section of a molding-machine embodying my invention, the molding-dies being positioned to allow the introduction of the stock into the molding-chamber. Fig. 2 is a similar view of the upper portion of the machine, the stock being compressed to almost its full extent. Fig. 3 is a view similar to Fig. 2 with the molding-dies lowered. Fig. 4 is a view similar to Fig. 1, with the lower die lowered and the upper die elevated to render the partly-molded article accessible. Fig. 5 is a view similar to Fig. 2 with the stock fully compressed and showing the supplemental die between the article and the upper die. Fig. 6 is a horizontal section taken on line *y y*, Fig. 2. Fig. 7 is a perspective view of the supplemental die used in molding closet-seats. Fig. 8 is a vertical section of the upper part of a molding-machine embodying my improvements and adapted for molding covers for closet-seats. Fig. 9 is a horizontal section taken on line *z z*, Fig. 8. Fig. 10 is a sectional perspective view of the supplemental die used in molding covers for closet-seats. Fig. 11 is a perspective view of the reducing-liner used in molding articles smaller than the size of the dome or housing.

Referring to the drawings in detail, similar numerals of reference refer to similar parts throughout the drawings.

The reference-numeral 1 designates the standards, which are secured to a flange 2, extending horizontally from the upper end of the lower water-cylinder 3, which, as shown, may be supported by and extend through the floor 4. Said cylinder is provided with an inlet and outlet pipe 5 at its lower end and with a piston 6, having a piston-rod 7 extend-

ing through the upper end of said cylinder. Secured to the upper ends of the standards 1 is the downwardly-opening dome or housing 8, having mounted thereon a cylinder 9, provided with the usual inlet and outlet pipes 10. Within said cylinder is an ejecting-piston 11, having a piston-rod 12 extending through the head of the dome or housing.

The parts thus far described form no part of my invention and may be constructed and supported in any manner desired.

Secured to the lower end of the piston-rod 12, which works through the top of the dome or housing, is a combined forming and ejecting die 13, having a central depending tube 14, whose outer surface defines the outline of the opening in the article to be molded, the cross-section of said tube, as shown in the drawings, being substantially oval; but it is to be understood that a circular, square, octagon, or any other shaped tube may be employed to form corresponding openings. The molding-face of said die is provided with an annular groove 15, faced with screening 16 and being by preference slightly inclined inwardly, as at 17, and provided with curved sides 18. The usual drainage-perforations 19 are provided, through which the water from the stock oozes when subjected to pressure. Normally said die is held against the top of the dome.

A forming and supporting die 20 is secured to the upper end of the piston-rod 7 and is adapted to be forced up into the dome, as shown in Figs. 1 and 2. This die is preferably provided in its molding-face with a slight depression 21, faced with screening 22, it having also the usual drainage-perforations 24. Centrally said die is provided with a chamber or pocket 25, into which the tube 14 of the coacting die enters when the die 20 is forced upward into the dome.

The initial operation of the machine is as follows: The upper die is held against the top of the dome and the lower die forced upward under pressure until it closes the lower open end of the dome, and the depending tube of the upper die enters the chamber or pocket in the lower die, as shown in Fig. 1. When in this position, a molding-chamber 25 is formed, into which the stock is forced under pressure through an inlet 27. The upper die, with its depending tube, forms the top and inner walls of said chamber, the dome the outer wall thereof, and the lower die the lower wall, as clearly shown. When the stock enters the molding-chamber, the water immediately oozes through the drainage-perforations in the lower die, and as soon as said chamber is filled the lower die is forced upward by hydrostatic pressure applied to the lower piston 6, which causes compression of the stock, and as the upper die is fitted with drainage-perforations the water oozes through the coacting-dies, and a uniform drainage is

thereby obtained, this being necessary to provide an article of uniform hardness and density. When the stock is almost compressed to its full extent, as shown in Fig. 2, both dies by manipulating their controlling-pistons are lowered, the upper or ejecting die traveling downward with the lower or supporting die, as shown in Fig. 3. When the latter approaches the end of its downward travel, the upper or ejecting die is elevated. The two dies therefore travel in opposite directions during the final portion of the downward movement of the lower or supporting die. This opposite movement may be imparted to the dies as soon as the partly-molded article passes the lower end of the dome and clears the walls of the same. In this partly-molded condition the water has almost entirely been forced from the stock, and the little remaining would be insufficient even under pressure to pass through the drainage-perforations in the upper die. Therefore I provide an imperforate supplemental die 28, having a central opening 29, and its upper and lower face of substantially the same contour as the upper molding and ejecting die. Said supplemental die is laid upon the partly-molded article when the lower or supporting die is lowered, as shown in Fig. 4, after which said die is elevated and the supplemental die brought into contact with the screened upper die. Final pressure is then applied, and a perfectly-smooth article provided. The water or moisture, if any remains, may ooze through the drainage-perforations in the lower or supporting die.

As the cover for a closet-seat is usually smaller than the seat, I insert a reducing-liner 30 into the dome and secure the same by bolts 31. As no opening is required in covers for closet-seats, the depending tube and chamber in the upper and lower dies, respectively, are dispensed with. The supplemental die 32 is of course shaped to conform to the upper die, which forms the exposed side of the cover. In molding other articles it may be desirable to place the supplemental die between the partly-molded article and the lower die. In order to prevent the formation of ridges on the molded article, I provide the supplemental dies with sharp edges 33, which assure a finished product.

This invention is susceptible to many changes in construction and arrangement of parts without departing from the principle involved, and I therefore do not wish to limit myself to the construction shown and described, as the same merely illustrates a representative way of applying my invention.

It is to be understood that wherever the word "screening" is used hereinafter in the claims it shall mean and include all manner and kind of material sufficiently porous or open to permit the passage of water to be expelled from the pulp.

Having thus described my invention, what I claim is—

1. In a pulp-molding machine, the combination of coacting perforated dies, and a supplemental imperforate die adapted to be used in cooperation with said coacting dies.

2. In a pulp-molding machine, the combination of coacting dies embodying means for draining the water in the stock and having their molding-faces provided with screening, and means cooperating with said dies for removing the impression of the screening from the stock during the final pressing action of said dies.

3. In a pulp-molding machine, the combination of coacting dies having their molding-faces provided with screening, and a smooth supplemental die adapted to be employed in cooperation with said dies during the final pressing action of the machine.

4. In a pulp-molding machine, the combination of coacting dies provided with means for draining the water from the stock introduced between said dies, and a supplemental die adapted to be placed between one of said coacting dies and the stock, as and for the purpose described.

5. In a pulp-molding machine, the combination with the dome or housing, of a perforated die having a projecting portion, a coacting perforated die into which said projecting portion fits, and an imperforate supple-

mental die having an opening to permit the projecting portion of the first-mentioned die to pass thereinto.

6. In a pulp-molding machine, the combination with the dome or housing, of a perforated and screened die having a center projecting portion and an endless depression in its molding-face surrounding said projecting portion, said depression having its inner wall inclined toward said projecting portion and its side curved, a coacting die, and an imperforate supplemental die adapted to fit said depression.

7. In a pulp-molding machine, the combination with the dome or housing, of a perforated and screened die having a center projecting portion and an endless depression in its molding-face surrounding said projecting portion, said depression having its inner wall inclined toward said projecting portion and its sides curved, a coacting die, and an imperforate supplemental die adapted to fit said depression and having a sharp edge to prevent the forming of ridges on the edge of the molded article.

In testimony whereof I have affixed my signature in the presence of two subscribing witnesses.

CYRUS D. ORMISTON.

Witnesses:

A. H. FERGUSON,
ERNEST H. HAINES.