

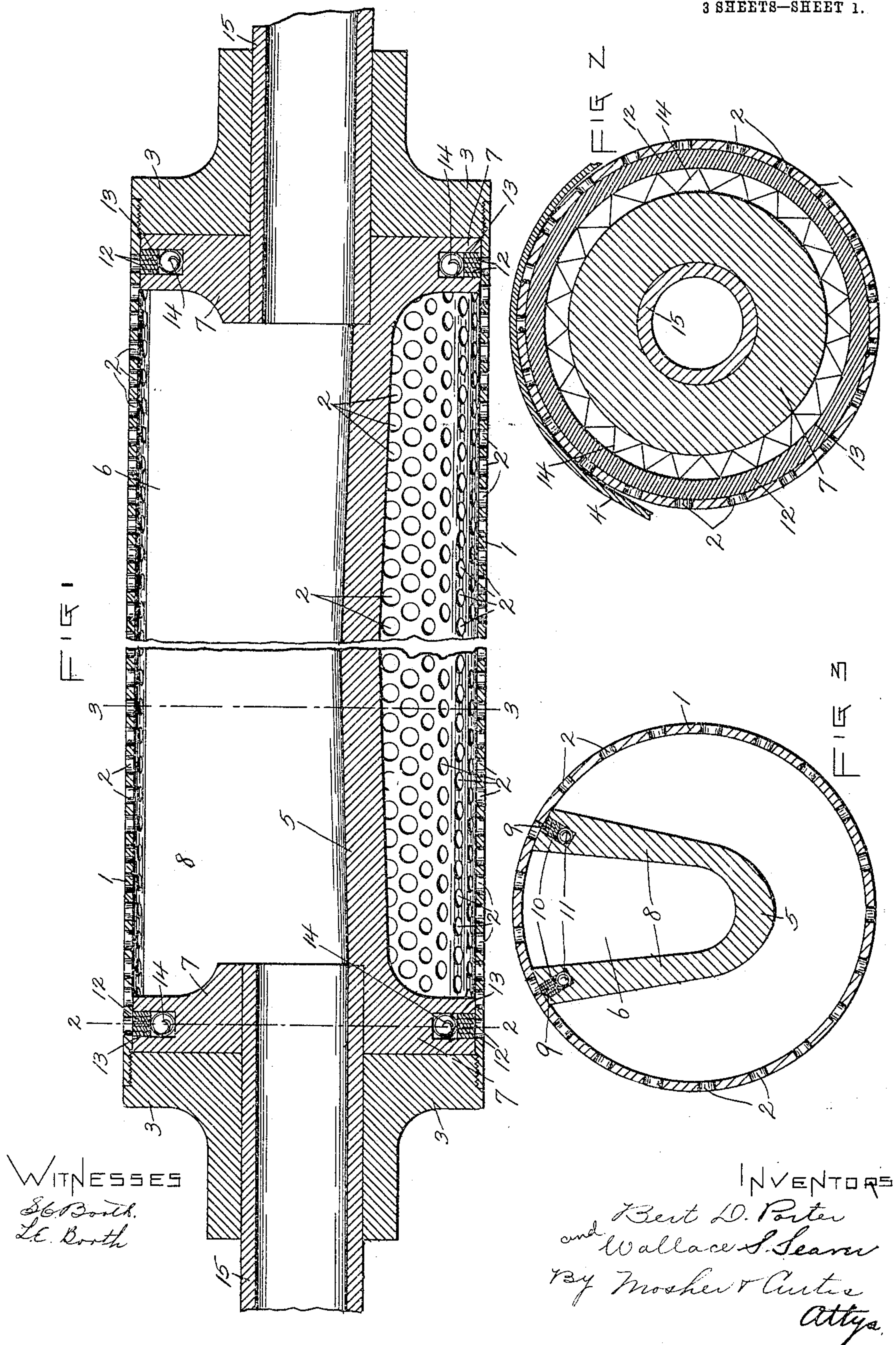
No. 793,092.

PATENTED JUNE 27, 1905.

B. D. PORTER & W. S. SEAVER.
SUCTION ROLL FOR PAPER MACHINES.

APPLICATION FILED JUNE 20, 1904.

3 SHEETS—SHEET 1.



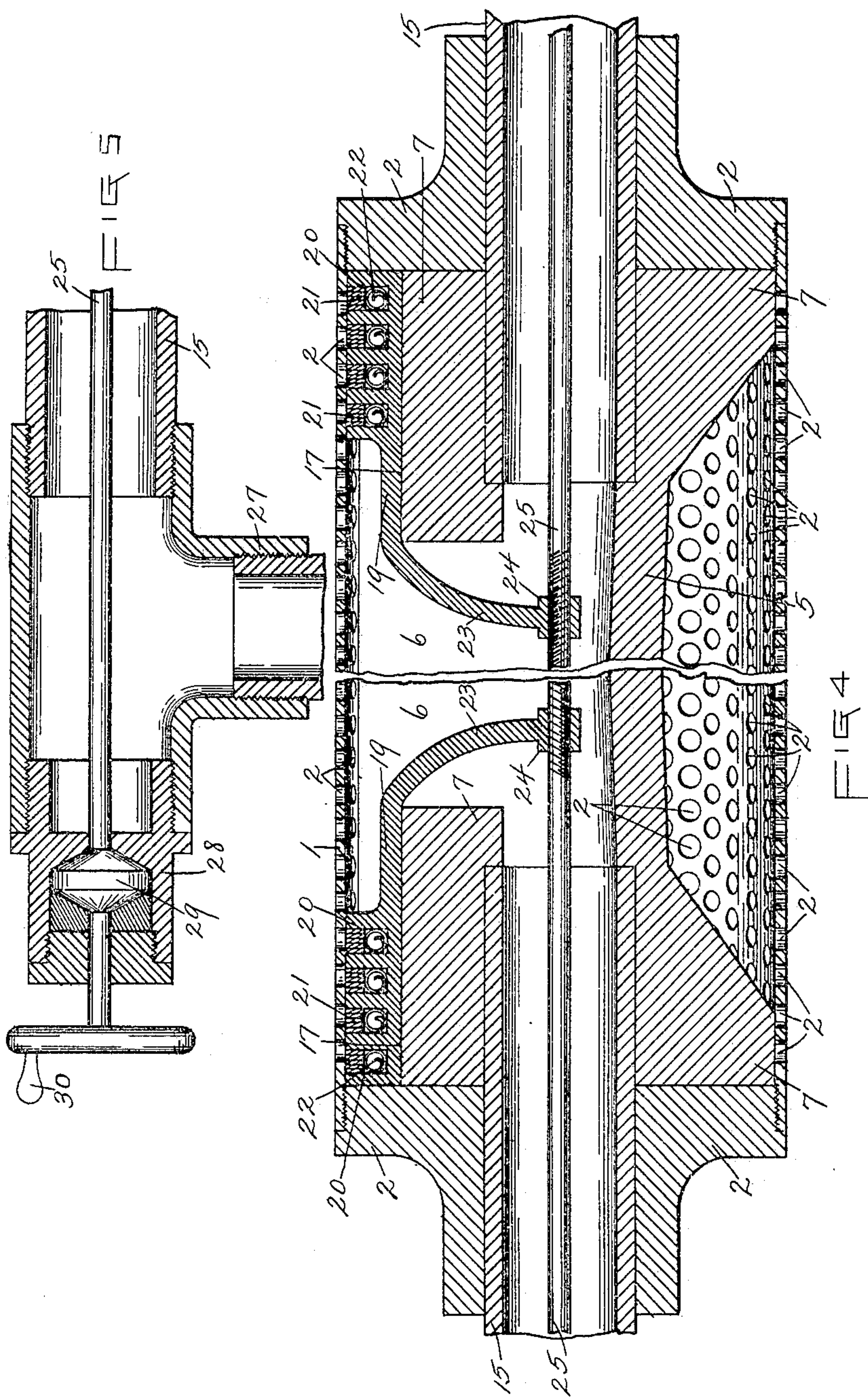
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WITNESSES
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L. E. Booth.

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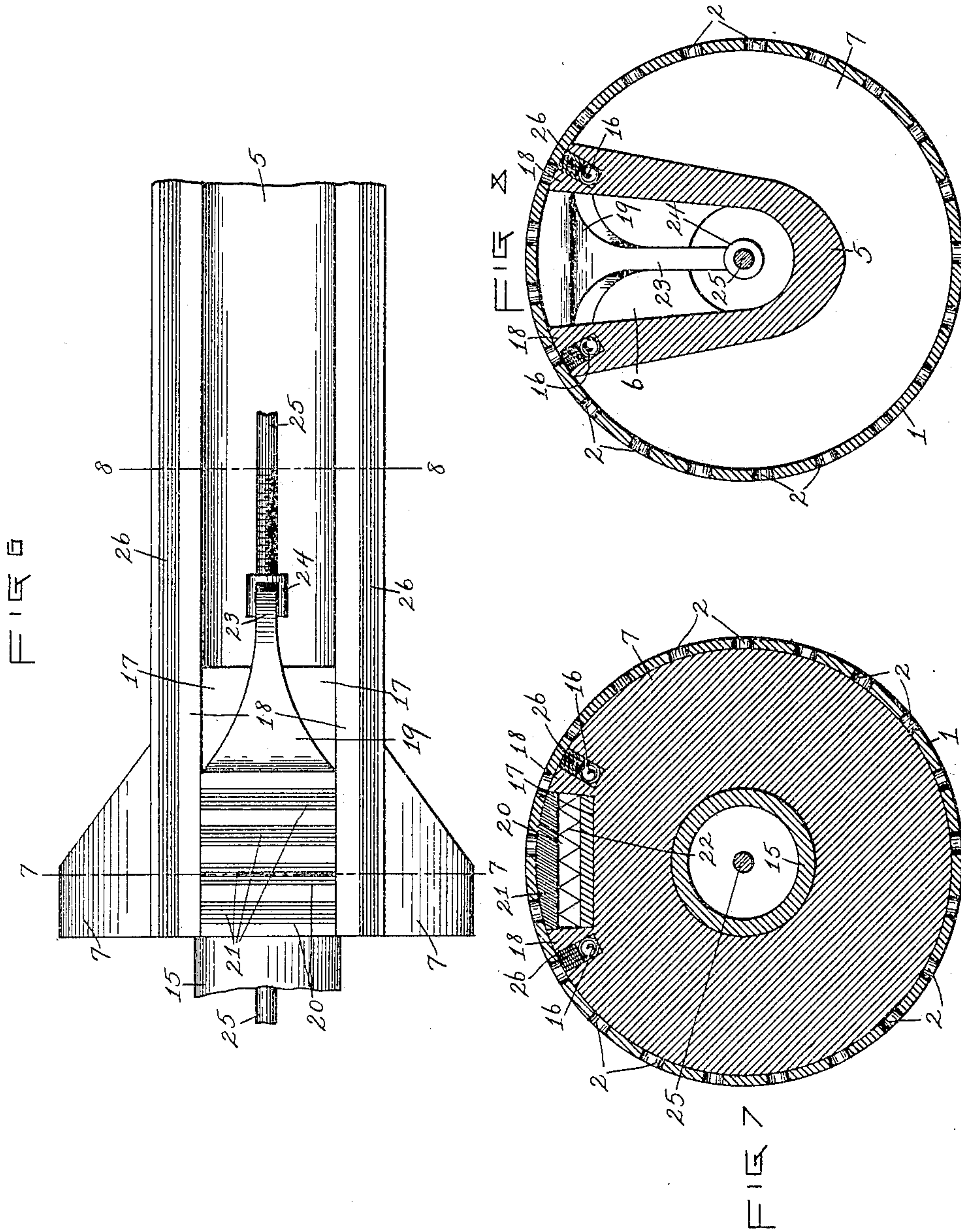
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UNITED STATES PATENT OFFICE.

BERT D. PORTER AND WALLACE S. SEAVER, OF FORT EDWARD,
NEW YORK.

SUCTION-ROLL FOR PAPER-MACHINES.

SPECIFICATION forming part of Letters Patent No. 793,092, dated June 27, 1905.

Application filed June 20, 1904. Serial No. 213,259.

To all whom it may concern:

Be it known that we, BERT D. PORTER and WALLACE S. SEAVER, citizens of the United States, residing at Fort Edward, county of Washington, and State of New York, have invented certain new and useful Improvements in Suction-Rolls for Paper-Machines, of which the following is a specification.

The invention relates to such improvements; and it consists of the novel construction and combination of parts hereinafter described and subsequently claimed.

Reference may be had to the accompanying drawings and the reference characters marked thereon, which form a part of this specification. Similar characters refer to similar parts in the several figures therein.

Figure 1 of the drawings is a central vertical longitudinal section of our improved suction-roll. Fig. 2 is a cross-section of the same, taken on the broken line 2 2 in Fig. 1. Fig. 3 is a similar cross-section taken on the broken line 3 3 in Fig. 1. Fig. 4 is a central vertical longitudinal section of a different form of suction-roll embodying our invention in modified form. Fig. 5 is a similar view of the outlet-pipe and adjusting mechanism broken away from the left-hand end of Fig. 4. Fig. 6 is a top plan view of one end of the roll shown in Fig. 4. Fig. 7 is a cross-section of the same, taken on the broken line 7 7 in Fig. 6 with the outer cylinder in position. Fig. 8 is a similar cross-section taken on the broken line 8 8 in Fig. 6.

Our invention relates to a suction-roll for paper-machines which may be used in connection with either a wire of a Fourdrinier machine or the felt of a cylinder-machine.

The principal object of the invention is to simplify the construction and increase the efficiency of suction-roll apparatus adapted to extract moisture from paper-pulp which is carried over or partly around said roll by a pervious or porous conveyer.

In the drawings the invention is shown in its preferred form applied to a roll over or partly around which the felt travels in an or-

dinary cylinder paper-machine. The roll shown in the drawings and which will be herein described may be either the couch-roll or any other roll over or partly around which the felt passes, with the inner side of the felt in contact therewith.

As shown in Figs. 1, 2, and 3, 1 represents a cylinder provided with numerous perforations 2 and within the opposite ends of which are screwed heads 3, whereby the cylinder is rotatively mounted in the machine in the usual manner to adapt it to be rotated by the traveling felt 4. Within this rotatory cylinder is located a stationary core or cylinder 5, which is shown in the form of a casting, hollow throughout its length, provided with a longitudinal slot 6 between its ends 7, which are enlarged to approximately the full size of the interior of the perforated cylinder. The walls 8 on opposite sides of the slot 6 are projected outwardly approximately to the inner surface of the outer cylinder. A tight joint is formed on opposite sides of said slot 6 between the perforated cylinder and the stationary core or cylinder by packing-strips 9, located in grooves 10, formed in the edges of the slot-walls 8, which packing-strips are forced tightly against the inner surface of the perforated cylinder by means of the coil-springs 11, which extend along the bottoms of said grooves 10 beneath the respective packing-strips. A tight joint is formed between the perforated cylinder and the respective ends 7 of the stationary core or cylinder by means of packing-rings 12, located in peripheral grooves 13, formed in said ends, said strips being forced into tight engagement with the inner surface of the perforated cylinder by means of coil-springs 14, located in the bottoms of said peripheral grooves beneath said packing-strips.

The packing-strips may be made of any desired material, felt being suitable for the purpose.

A pair of pipes 15 are inserted loosely through the heads 3 of the rotatory cylinder and are fixed to the stationary cylinder or core

in communication with its cavity or chamber by brazing or shrinking the ends of said core upon the ends of said pipes, respectively. These pipes serve as outlets for the escape of
 5 water extracted from the pulp and also are connected with exhausting or suction apparatus. (Not shown.) The cavity or chamber in the stationary cylinder or core is thus adapted to communicate, through its slot 6, with the
 10 atmosphere only through the perforations in the rotatory cylinder between the end packings 12 and the longitudinal packings 9.

The stationary cylinder or core is so placed that the packings of its slot-walls 8 engage on
 15 the inner side that part of the rotatory perforated cylinder which on the outer side is in contact with the pulp-carrying felt, which felt is of a width adapted to extend from one end packing 12 to the other.

20 The bottom of the core cavity or chamber is made higher at the center than at the ends to facilitate the escape of the water removed from the pulp.

As successive portions of the felt pass over
 25 or around the perforated cylinder, said cylinder is thereby rotated upon the stationary core or cylinder, bringing different portions of the perforated shell opposite the space inclosed between the end packings 12 and longitudinal
 30 packings 9, thus permitting the moisture from the pulp carried by said felt to be forced by atmospheric pressure inwardly through the felt and such of the perforations 2 as are located within the confines of said packing-
 35 strips into the cavity or chamber in the stationary core or cylinder.

Our invention permits the stationary core or cylinder to be formed of a casting which requires little finishing, permitting the appa-
 40 ratus to be very cheaply constructed.

In the apparatus shown in Figs. 4, 5, 6, 7, and 8 of the drawings a similar perforated rotatory cylinder 1 is employed, having the heads 2, while the stationary cylinder or core 5 has the longitudinal packing-strips 26 extending
 45 from end to end thereof, as shown in Fig. 6, said packing-strips being mounted upon coil-springs 16 in the manner above described. Each end of the stationary core is provided
 50 with a slideway 17, extending longitudinally thereof between the inner side walls 18 of the packing-grooves. Fitting and movable longitudinally of the several slideways 17 is a carriage 19, provided with transverse grooves
 55 20, within which are located packing-strips 21, supported upon coil-springs 22, as above described. These packing-strips abut at their opposite ends against the inner sides of the walls 18, and the several packing-strips are
 60 adapted to make tight engagement with the inner side of the perforated rotatory cylinder. The carriage 19 is provided with an offset arm

or bracket 23, having thereon a nut 24, adapted to fit a screw-threaded spindle 25, the portion of said spindle which engages one of said ends
 65 being screw-threaded oppositely from that which engages the other, whereby rotative movement of said spindle in one direction serves to draw said nuts and their connected carriages and packings toward each other and in the op-
 70 posite direction to separate them from each other. By rotating said spindle it is thus possible to locate the end packings 21 at one end of the stationary core or cylinder at any desired distance from the end packings 21 at the other
 75 end thereof, so that said end packings can be brought within the lines of the edges of sheets of pulp of different widths from time to time, as desired. The spindle 25 is projected at
 80 one end out through the outlet-pipe 15, which pipe is provided exteriorly of the roll with an offset 27 and with a stuffing-box 28, through which the spindle passes and within which a flange or enlargement 29 on the spindle is lo-
 85 cated to prevent endwise movement of the spindle, the outer end of which is provided with an operating-handle 30. The packing-supporting coil-springs are arranged with their axes extending longitudinally of the re-
 90 spective grooves.

What we claim as new, and desire to secure by Letters Patent, is—

1. A suction-roll for paper-machines comprising in combination a perforated rotatory cylinder adapted to receive and be rotated by
 95 a pulp-carrier; a hollow stationary core or cylinder located within the rotatory cylinder provided with a slot and having walls on opposite sides of said slot extended approxi-
 100 mately to the inner end of the perforated cylinder and having on its opposite ends in line with said slot a pair of slideways; a pair of carriages mounted on the respective slideways, said carriages being provided with packing-
 105 grooves extending at right angles to said longitudinal grooves; packing in the respective grooves engageable with the inner side of the perforated cylinder; a right and left hand threaded screw located in the hollow station-
 110 ary core or cylinder and projecting exteriorly thereof; a pair of nuts located upon the respective right and left handed threaded parts of said screw; an arm extending through said slot connecting each of said carriages with one of
 115 said nuts; and means for rotating said screw in opposite directions.

2. A suction-roll for paper-machines comprising in combination a rotatory perforated cylinder adapted to receive and be rotated by
 120 a pulp-carrier; a hollow stationary core or cylinder located within the rotatory cylinder provided with a lateral slot and having its walls on opposite sides of said slot extended approximately to the inner side of said perfo-

rated cylinder, said walls being provided with longitudinal grooves, and said core being provided at its ends with grooves at right angles to said longitudinal grooves; packing-strips
5 located in said grooves engageable with the inner side of said perforated cylinder; and packing-supporting coil-springs disposed in said grooves with their axes extending longitudinally of the respective grooves and packing-strips.

In testimony whereof we have hereunto set our hands this 9th day of June, 1904.

BERT D. PORTER.

WALLACE S. SEAVER.

Witnesses to signature of Bert D. Porter:

E. A. WISE, Jr.,

J. A. McARTHUR.

Witnesses to signature of Wallace S. Seaver:

CHARLES A. LURA,

CHAS. S. KENWELL.