

J. F. KING & J. NEARY.
 SUCTION ROLL FOR PAPER MAKING MACHINES.

APPLICATION FILED JULY 11, 1910.

Patented Nov. 22, 1910

976,185.

3 SHEETS-SHEET 1.

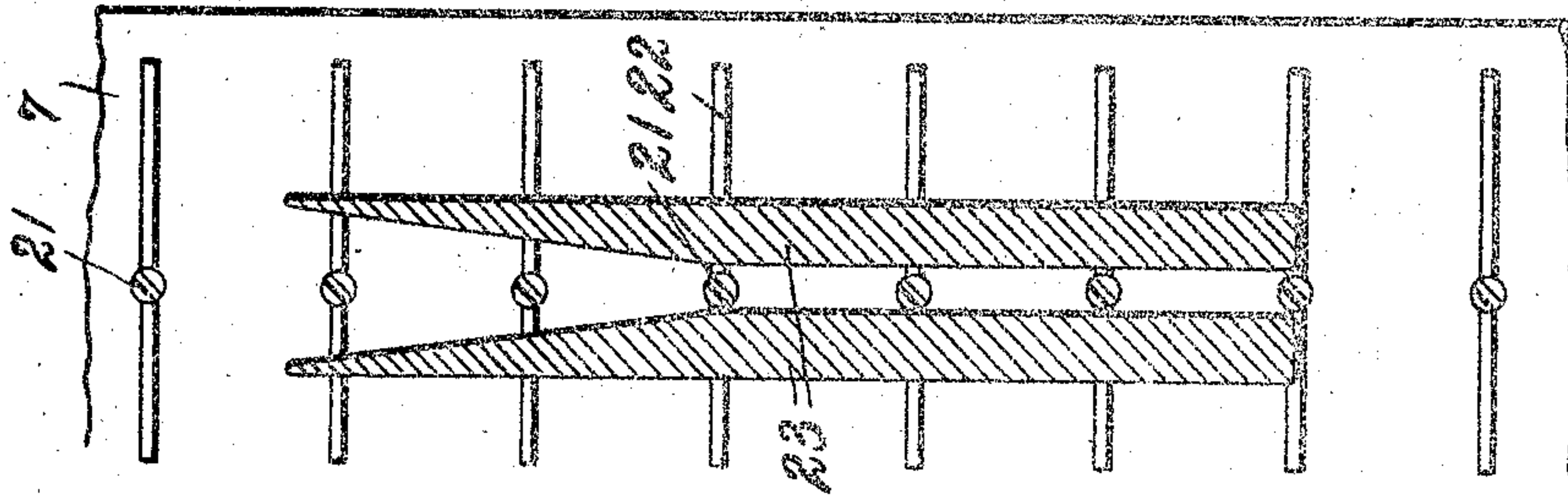


Fig. VII.

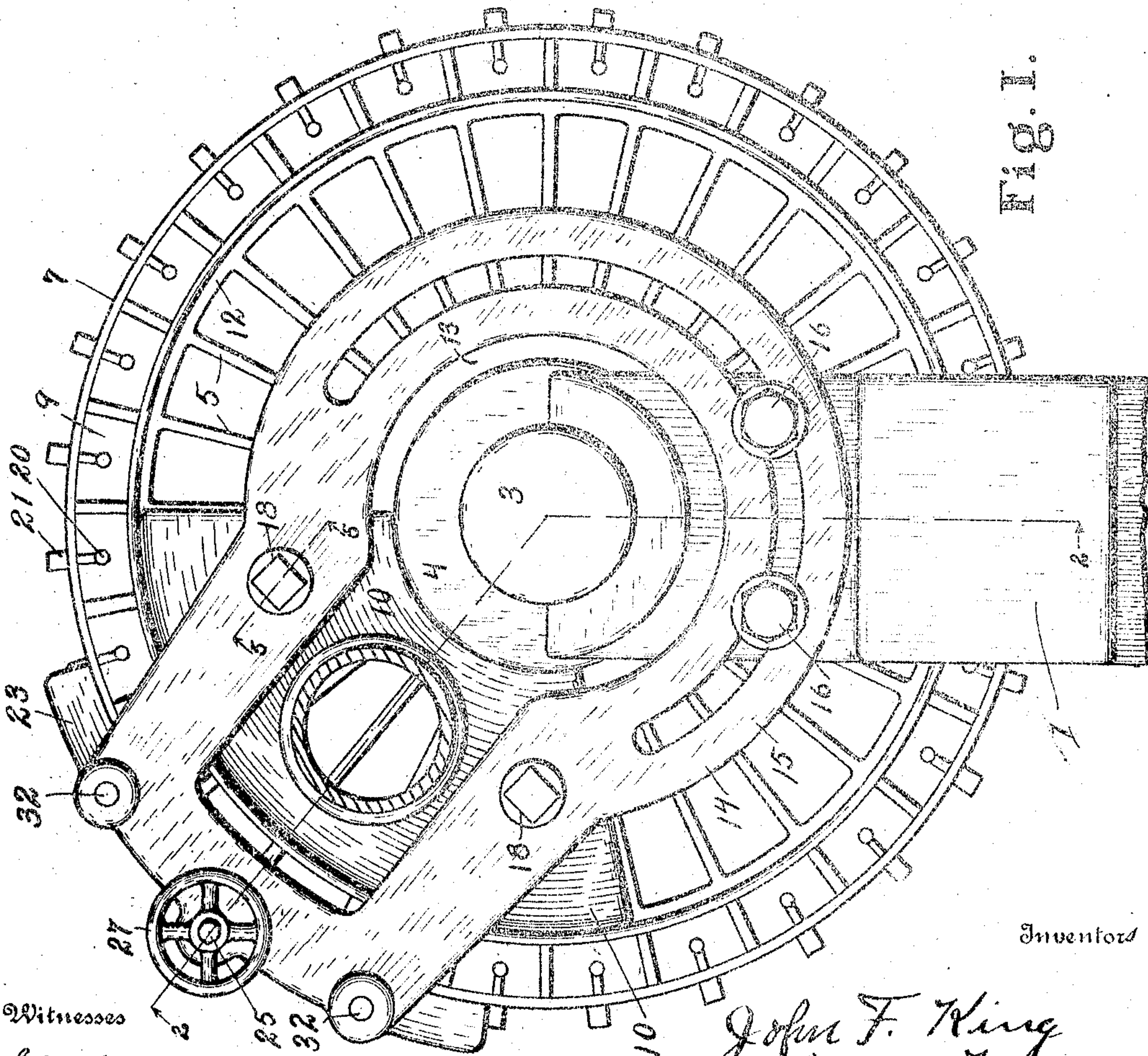


Fig. I.

Inventors

Witnesses

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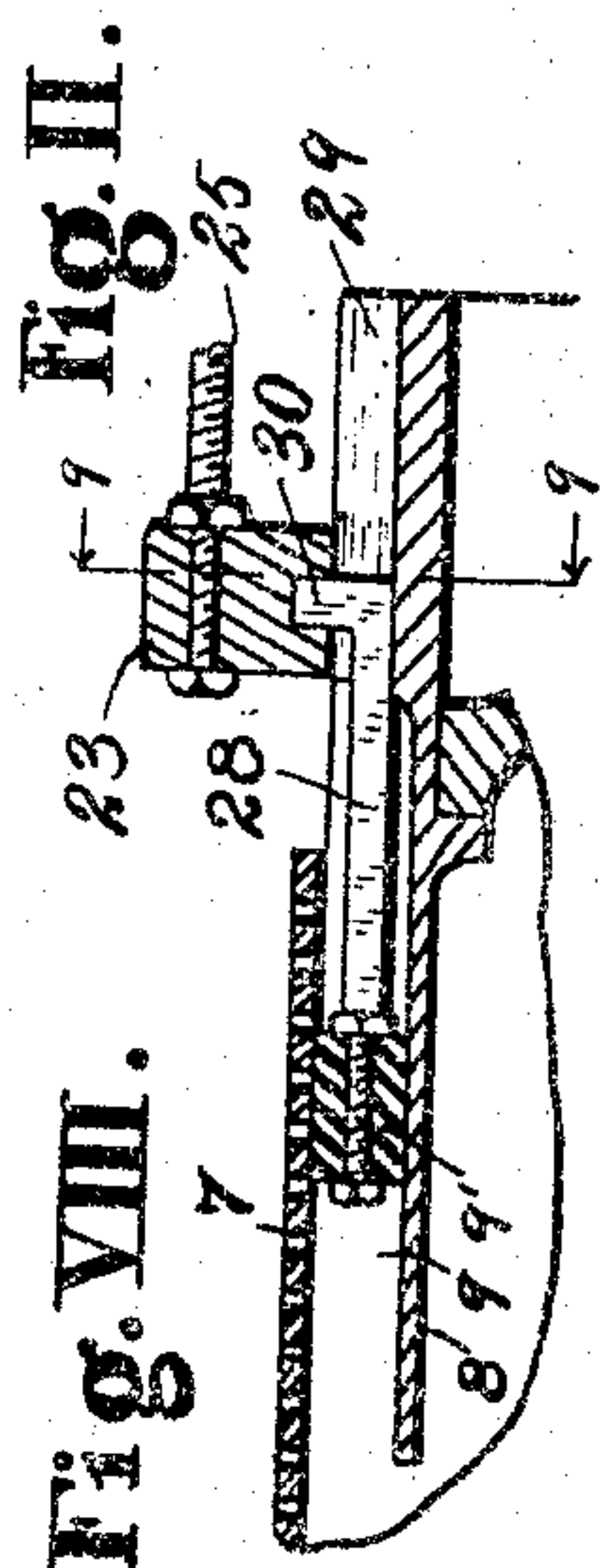
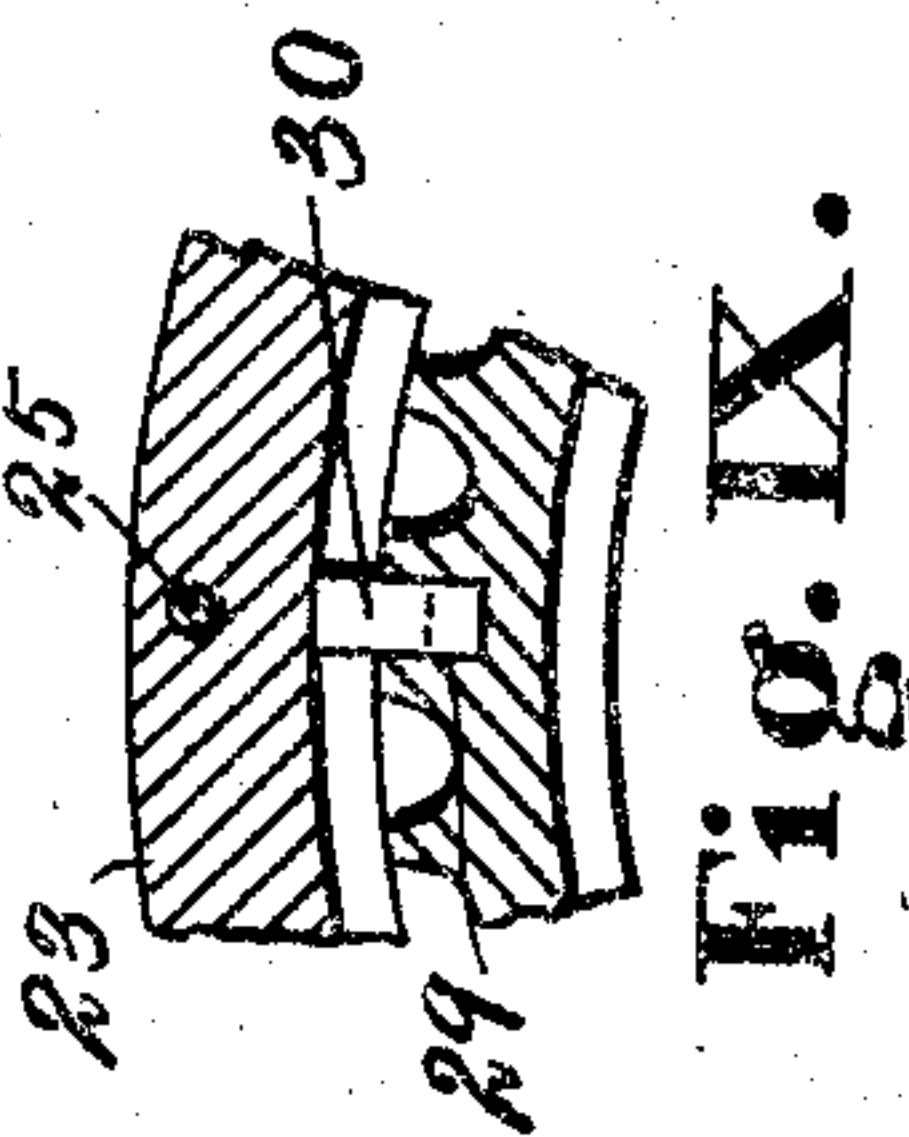
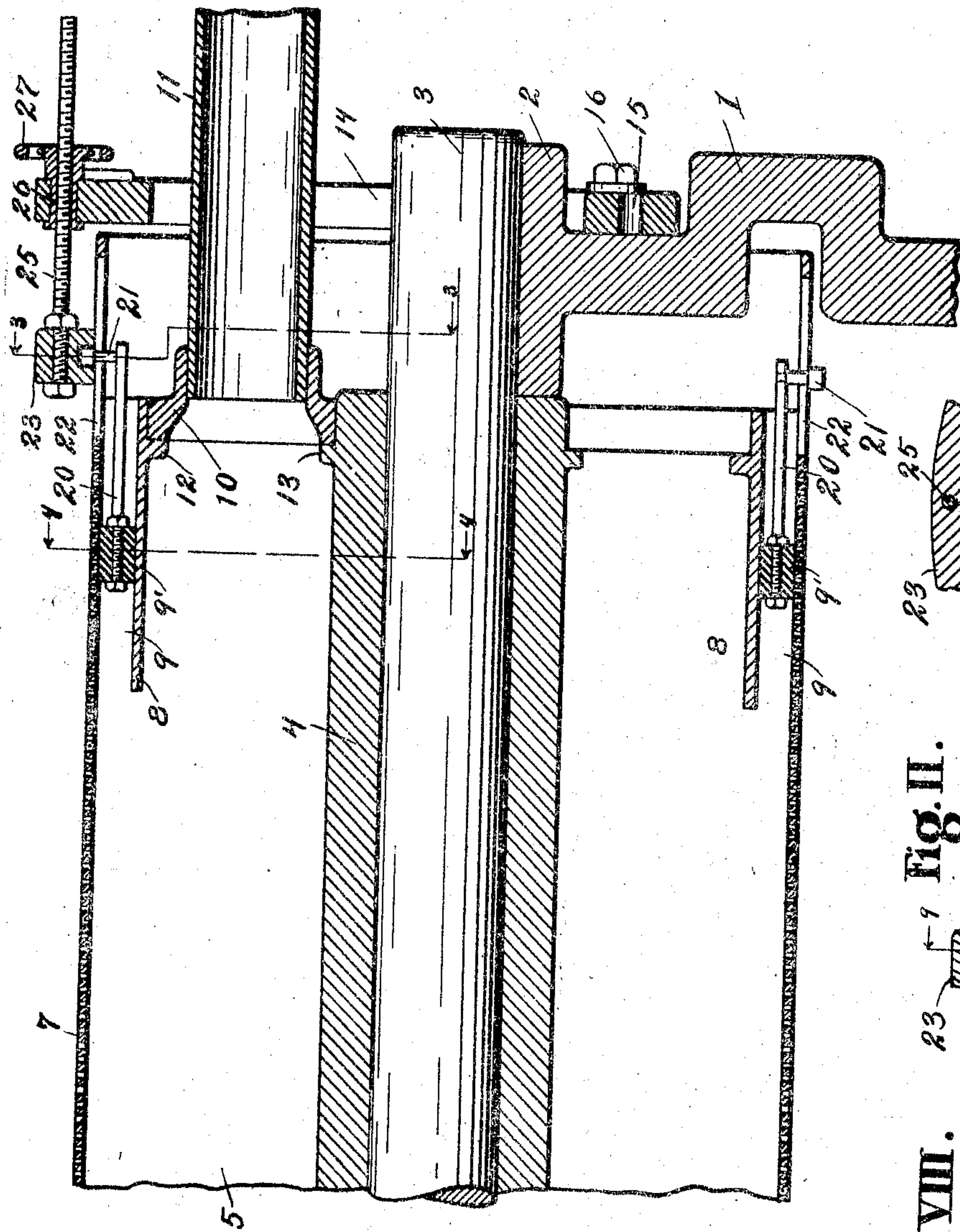


Fig. II.

Fig. VIII.

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3 SHEETS-SHEET 3.

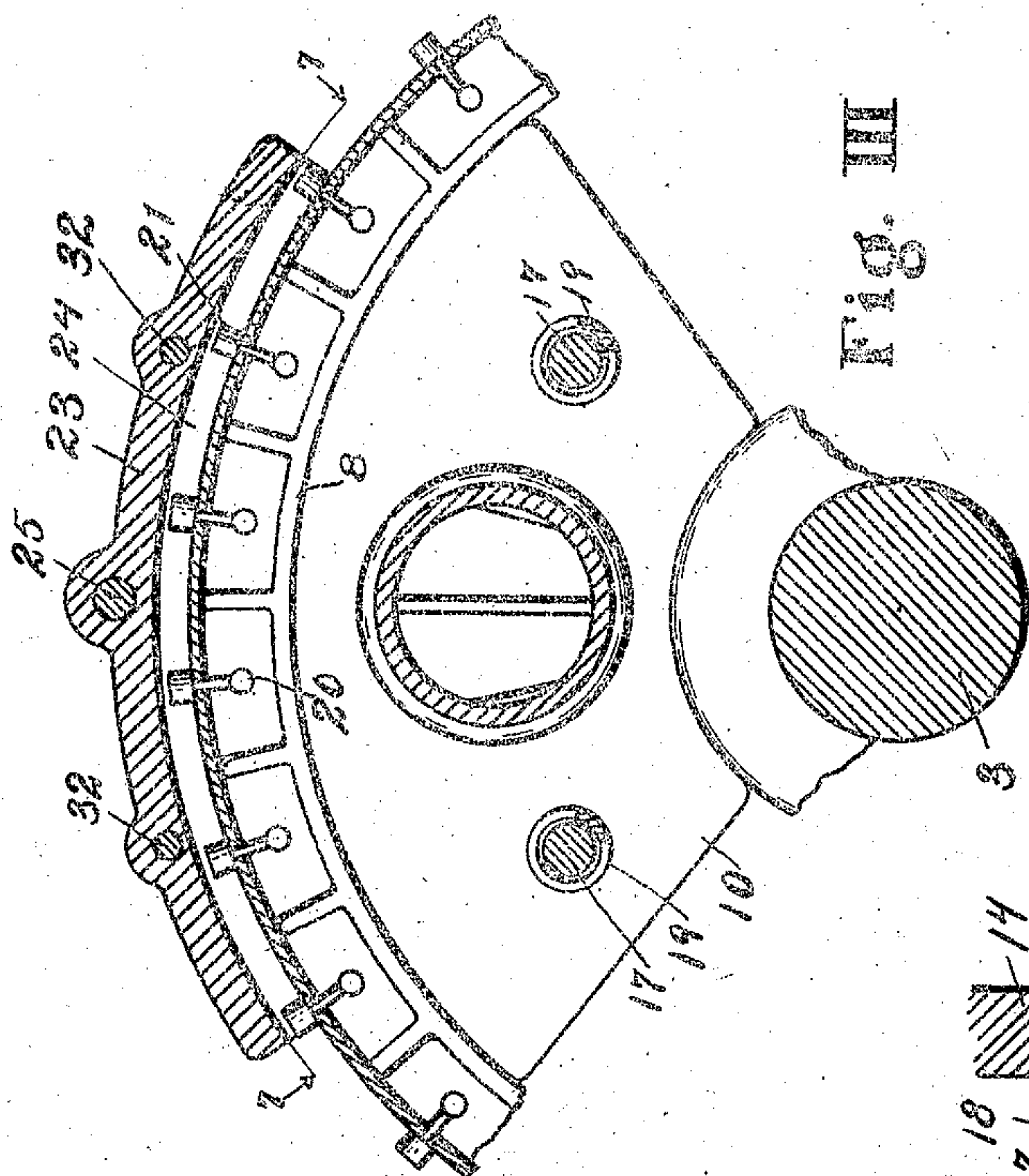


Fig. III

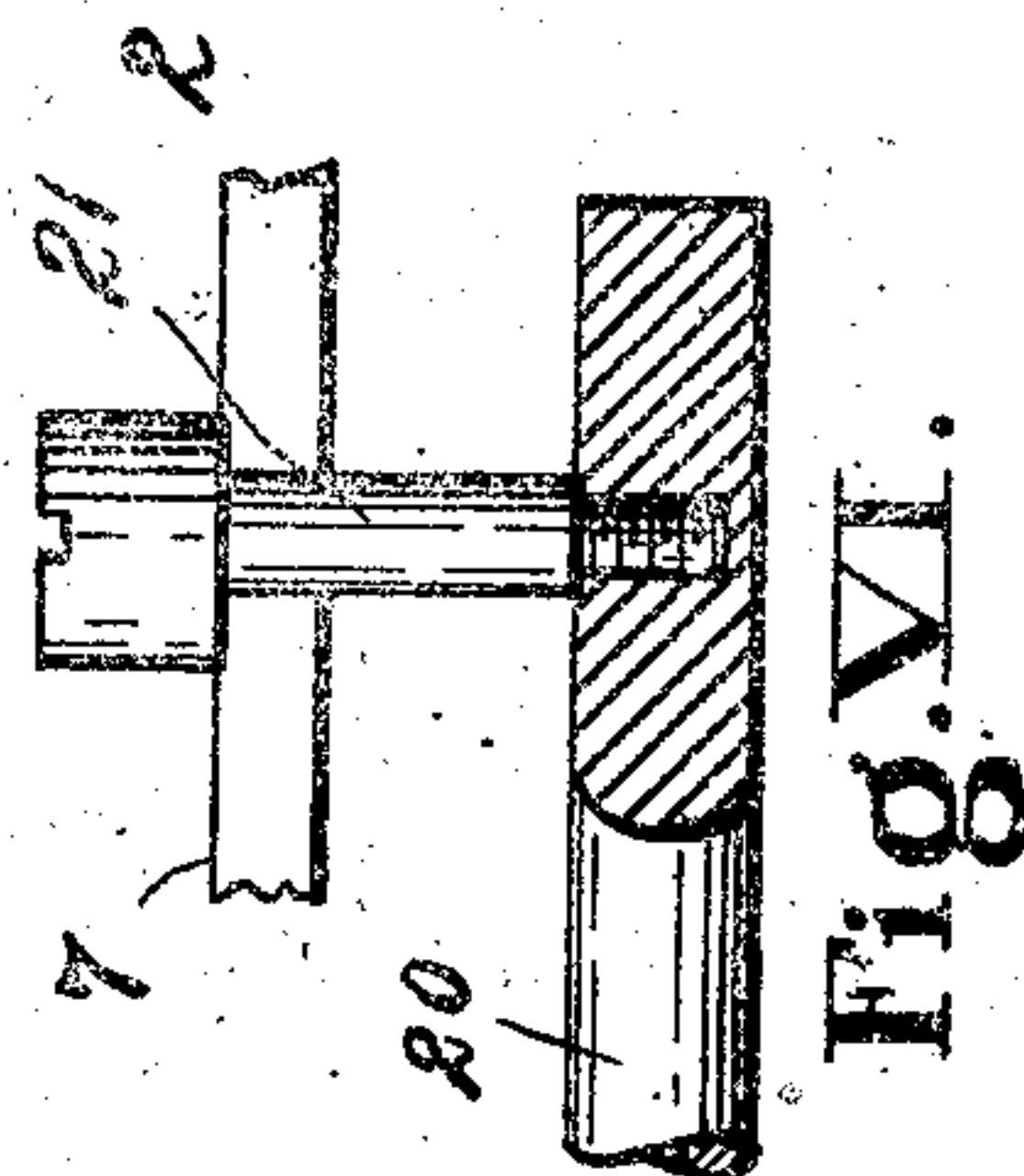


Fig. VI.

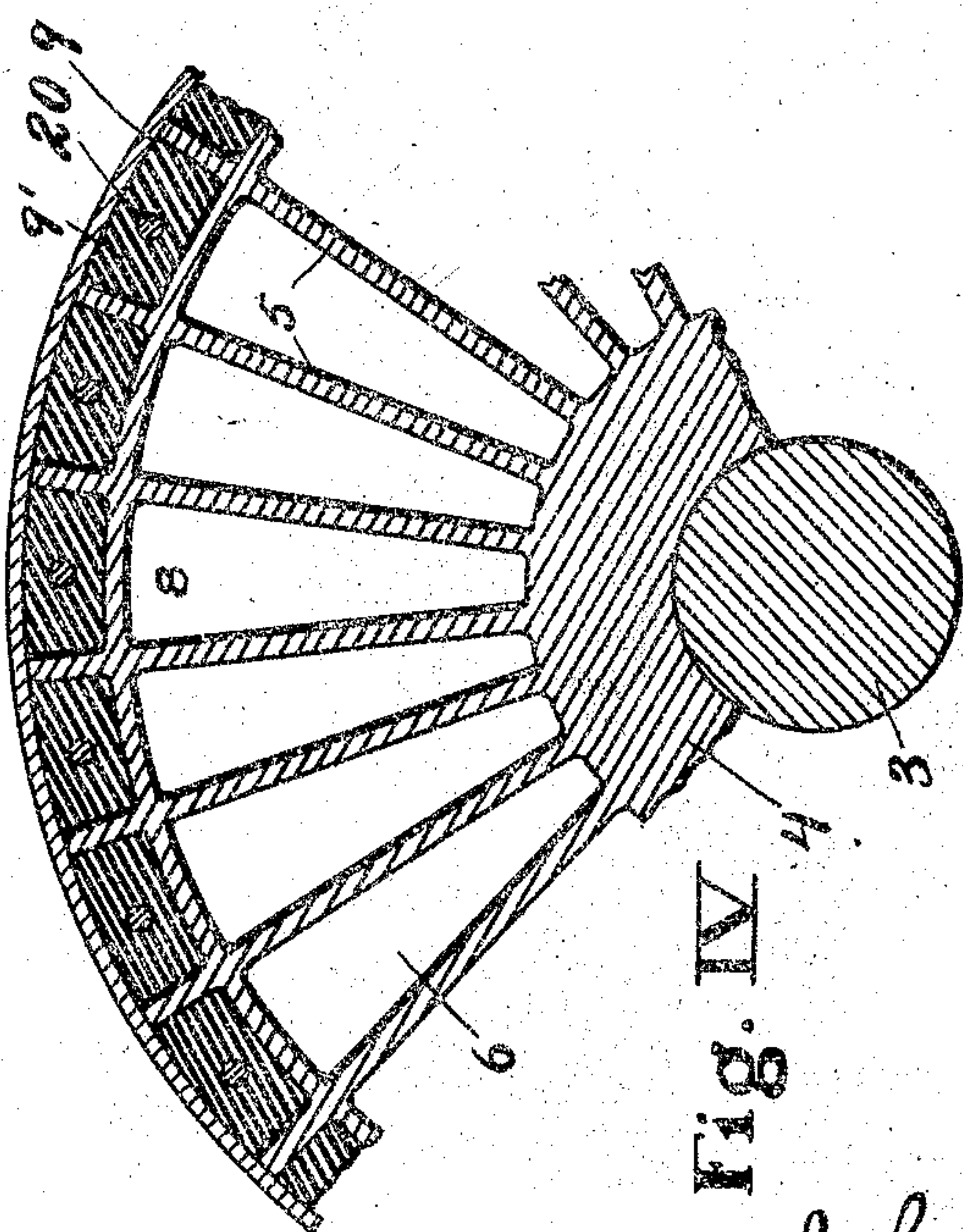


Fig. IV

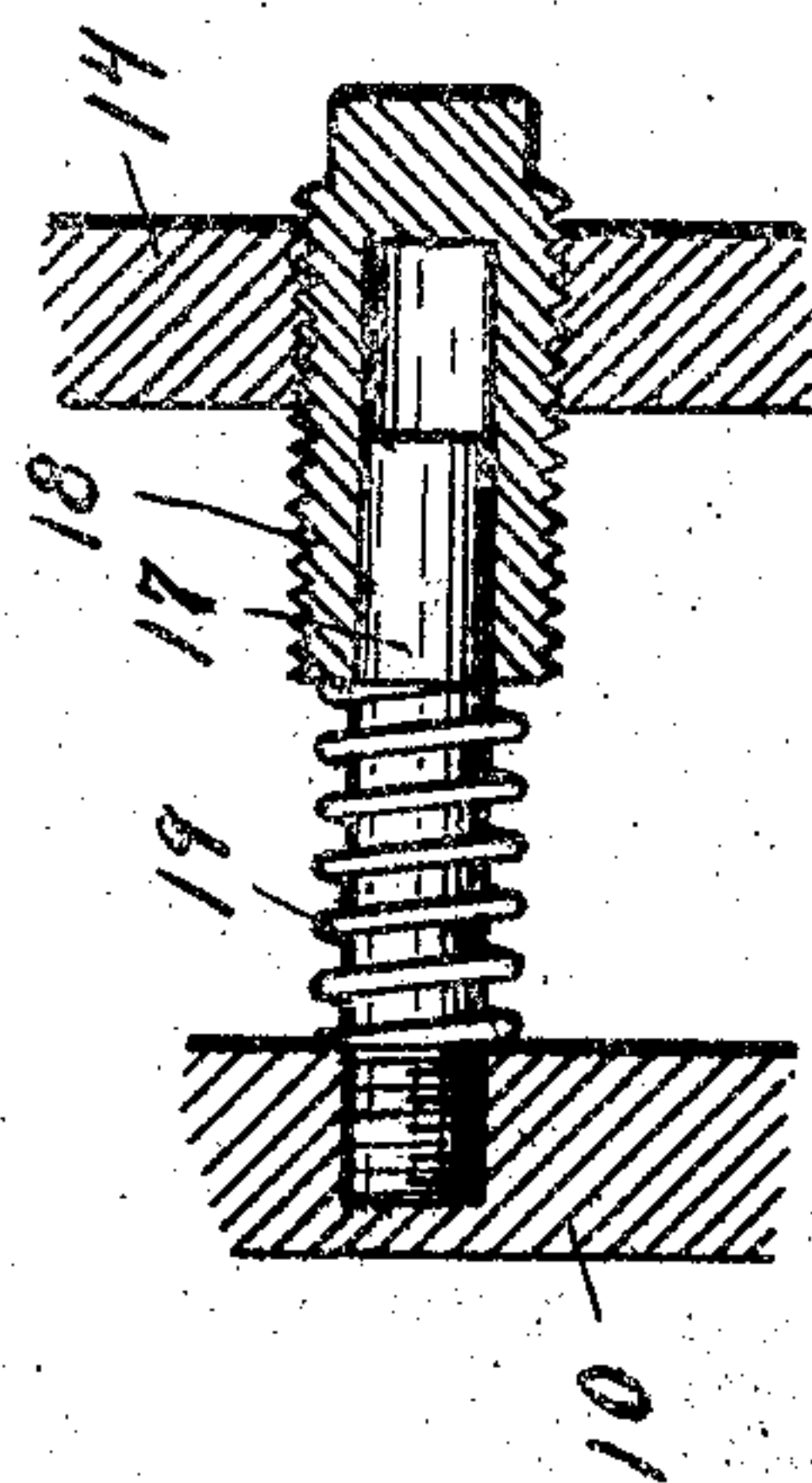


Fig. V

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UNITED STATES PATENT OFFICE.

JOHN F. KING AND JAMES NEARY, OF KALAMAZOO, MICHIGAN.

SUCTION-ROLL FOR PAPER-MAKING MACHINES.

976,185.

Specification of Letters Patent.

Patented Nov. 22, 1910.

Application filed July 11, 1910. Serial No. 571,356.

To all whom it may concern:

Be it known that we, JOHN F. KING and JAMES NEARY, citizens of the United States, residing at Kalamazoo, Michigan, have invented certain new and useful Improvements in Suction-Rolls for Paper-Making Machines, of which the following is a specification.

This invention relates to improvements in suction rolls for paper making machines.

Our improved suction roll is particularly designed by us for use as a suction box, although it may be readily adapted and is desirable for use as a suction web forming roll for paper making machines.

The main objects of our invention are: First, to provide an improved suction roll for paper making machines which may be quickly adjusted to webs of the desired width while the roll is revolving. Second, to provide an improved suction roll for paper making machines, which is comparatively simple in structure and, at the same time, very effective for the purpose.

Further objects, and objects relating to structural details, will definitely appear from the detailed description to follow.

We accomplish the objects of our invention by the devices and means described in the following specification.

The structure described constitutes one effective embodiment of our invention. Other embodiments could be readily devised by those skilled in the art.

The invention is clearly defined and pointed out in the claims.

A structure constituting an effective and preferred embodiment of the features of our invention is clearly illustrated in the accompanying drawing, forming a part of this specification, in which:

Figure 1 is an end elevation of a structure embodying the features of our invention, the lower portion of the pedestal being broken away. Fig. 2 is a detail longitudinal sectional elevation taken on a line corresponding to the irregular line 2—2 of Fig. 1, the shaft being shown in full lines. Fig. 3 is an enlarged detail transverse sectional view, taken on a line corresponding to the irregular line 3—3 of Fig. 2. Fig. 4 is an enlarged detail transverse sectional view, taken on a line corresponding to line 4—4 of Fig. 2. Fig. 5 is an enlarged detail longitudinal sectional view taken on a line corresponding to

line 5—5 of Fig. 1, showing details of the header support. Fig. 6 is an enlarged detail view, partially in longitudinal section, showing the structural details of the rods 20. Fig. 7 is an enlarged detail sectional view, taken on a line corresponding to the curved line 7—7 of Fig. 3, showing details of the head adjusting mechanism. Fig. 8 is a detail longitudinal section corresponding to that of Fig. 2, of a modified construction. Fig. 9 is a detail section taken on line 9—9 of Fig. 8.

In the drawings, similar reference numerals refer to similar parts throughout the several views, and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

Referring to the drawing, we have illustrated our improved suction roll only, as its adjustment in relation to the web carrying felt or belt when used as a suction box, or in conjunction with a suitable screen when used as a web forming roll, will be readily understood by those skilled in the paper making art.

The pedestal 1 is provided with a bearing, as 2, for the roll shaft 3. The shaft 3 is provided with suitable driving connections, not here illustrated.

Our improved suction roll comprises a core or hub 4, having a plurality of radially-disposed longitudinal partitions 5 thereon, forming a series of radially-disposed compartments 6. The outer wall or shell 7 is foraminated. At one end we provide an inner annular wall 8, which is spaced from the outer wall and forms, in connection with the longitudinal partitions 5, a series of head chambers 9. In these head chambers 9 are piston heads 9', the piston heads being slidably fitted into the chambers to be adjusted therein and thus to regulate the length of the suction surface of the roll. The wall 8 projects beyond the ends of the partitions 5, as clearly appears in Fig. 2, as does also the hub or core. Between this inner wall 8 and the hub, we arrange a segment-like suction header 10 to which the suction pipe 11 is connected. An annular flange 12 is on the inner wall 8, and a flange 13 is on the hub of the roll, and, with the ends of the partitions 5, present bearing surfaces for the suction header. The suction header is adjustably supported by means of the yoke-like bracket 14, having a curved slot 15

therein through which the clamping bolts 16 are arranged.

The header is connected to the supporting bracket 14 by means of the pins 17 on the header, which slidably engage the adjustable sockets 18, which are screw-threaded through the support. Between the ends of these sockets 18 and the header we arrange the spiral springs 19, which hold the header yieldingly against its bearings so that, as the suction roll revolves, the compartments are successively brought into connection with the header. A suitable port in the header provides for this connection.

To adjust the heads 9' in the head chambers, we provide them with rods 20, having laterally-projecting pins 21 thereon, which project through the longitudinal guiding slots 22 in the outer wall of the roll, (see Figs. 2 and 3.) The adjusting member 23 is provided with a cam groove 24, expanded at its forward end to engage these projections as the roll is revolved, and to bring them into alinement. This cam may engage any projecting member connected to said heads. The adjusting member is shifted laterally by means of the screw 25, secured thereto, which is engaged by the nut 26 bearing the hand wheel 27, journaled on the bracket 14.

The adjusting member 23 is curved to correspond to the curvature of the roll,—see Fig. 3,—and is suitably guided longitudinally by the rods 28. By this simple device, the heads 9' may be adjusted in or out uniformly by the manipulation of a single adjusting member, the adjustment being rapid and easy and while the roll is in motion. This adjusting member is of sufficient length to engage all the head connections that are acted upon by the suction at any particular instant.

In Figs. 8 and 9 we show a modified structure in which the wall 8 is extended and provided with guide grooves 29 for the head rods 28, which are offset at 30 to engage the groove of the member 23.

We have illustrated and described our improvements in detail in the form in which we have embodied them. We are aware, however, that the structure is capable of considerable variation in its details without departing from our invention, but as such variations will be readily understood by those skilled in the art to which this invention relates, we have not attempted to describe or illustrate the same in detail herein.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:—

1. A suction roll comprising a plurality of radially-disposed compartments, each compartment being provided with a head chamber; a foraminated outer wall having longitudinal guide slots extending beyond

said head chambers; a suction connection arranged to successively connect with the said compartments as said roll is revolved; heads arranged in said head chambers; and means for adjusting said heads comprising rods connected thereto having lateral projections arranged through said guide slots in said outer wall, an adjusting member having a cam therein adapted to engage said rods successively as said roll is revolved to adjust and maintain the position of said heads, and a screw connection for controlling said adjusting member.

2. A suction roll comprising a plurality of radially-disposed compartments, each compartment being provided with a head chamber; a foraminated outer wall having longitudinal guide slots extending beyond said head chambers; a suction connection arranged to successively connect with the said compartments as said roll is revolved; heads arranged in said head chambers; and means for adjusting said heads comprising rods connected thereto having lateral projections arranged through said guide slots in said outer wall, an adjusting member having a cam therein adapted to engage said rods successively as said roll is revolved to adjust and maintain the position of said heads, and means for controlling said adjusting member.

3. A suction roll comprising a plurality of radially-disposed compartments, each compartment being provided with a head chamber; a foraminated outer wall for said roll; a suction connection arranged to successively connect with said compartment as said roll is revolved; heads arranged in said head chambers; and an adjusting member with a cam surface to engage members to adjust said heads and maintain them in position while the roll is in motion, as specified.

4. A suction roll comprising a plurality of radially-disposed compartments, each compartment being provided with a head chamber; a foraminated outer wall; a suction connection arranged to successively connect with the said compartments as said roll is revolved; heads arranged in said head chambers; and means for adjusting said heads comprising projecting members, an adjusting member having a cam therein adapted to engage said projecting members as said roll is revolved, and a screw connection for controlling said adjusting member.

5. A suction roll comprising a plurality of radially-disposed compartments, each compartment being provided with a head chamber; a foraminated outer wall; a suction connection arranged to successively connect with the said compartments as said roll is revolved; heads arranged in said head chambers; and means for adjusting said heads comprising projecting members, an adjusting member having a cam therein

adapted to engage said projecting members as said roll is revolved, and means for controlling said adjusting member.

5 6. A suction roll comprising a plurality of radially-disposed compartments, each compartment being provided with a head chamber; a foraminated outer wall; a suction connection arranged to successively connect with the said compartments as said roll is revolved; heads arranged in said head chambers; projecting members on each of said heads, an adjustable member adapted to engage said projecting members as said roll is revolved, and regulate their position and means to control said adjustable member.

15 7. A suction roll comprising a foraminated outer wall; a body portion having radially-disposed partitions, an annular inner wall, a hub or core, said hub and inner wall being arranged to project beyond said partitions, and an annular bearing surface formed thereon; a suction header arranged to contact with said bearing surface to embrace the said chambers successively; a supporting pedestal for said roll; a support for said suction header having a curved slot therein, bolts arranged through said slot to engage said pedestal, pins on said header, sockets for said pins threaded through said header support, and springs arranged on said pins to engage said header and said sockets.

35 8. A suction roll comprising a foraminated outer wall, a body portion having radially-disposed partitions, an annular inner wall, a hub or core, said hub and inner wall being arranged to project beyond said partitions, and an annular bearing surface formed thereon; a suction header arranged to contact with said bearing surface to embrace the said chambers successively; a support for said suction header having a curved slot therein, securing bolts arranged through said slot, pins on said header, sockets for

said pins threaded through said header support, and springs arranged on said pins to engage said header and said sockets.

9. A suction roll comprising a foraminated outer wall, a body portion having radially-disposed partitions, an annular inner wall, a hub or core, said hub and inner wall being arranged to project beyond said partitions, and an annular bearing surface formed thereon; a suction header arranged to contact with said bearing surface to embrace the said chambers successively; and a support for said suction header having a curved slot therein and securing bolts arranged through said slot.

10. A suction roll provided with a plurality of radially-disposed compartments; a suction header adapted to successively connect with said compartments as said roll is revolved, a support for said suction header having a curved slot therein, clamping bolts arranged through said slot, pins on said header, sockets for said pins threaded through said header support, and springs arranged on said pins to engage said header and said sockets.

11. A suction roll provided with a plurality of radially-disposed compartments; a suction header adapted to successively connect with said compartments as said roll is revolved, a support for said suction header, pins on said header, sockets for said pins threaded through said header support, and springs arranged on said pins to engage said header and said sockets.

In witness whereof, we have hereunto set our hands and seals in the presence of two witnesses.

JOHN F. KING. [L. S.]
JAMES NEARY. [L. S.]

Witnesses:

L. G. GREENFIELD,
F. GERTRUDE TALLMAN.