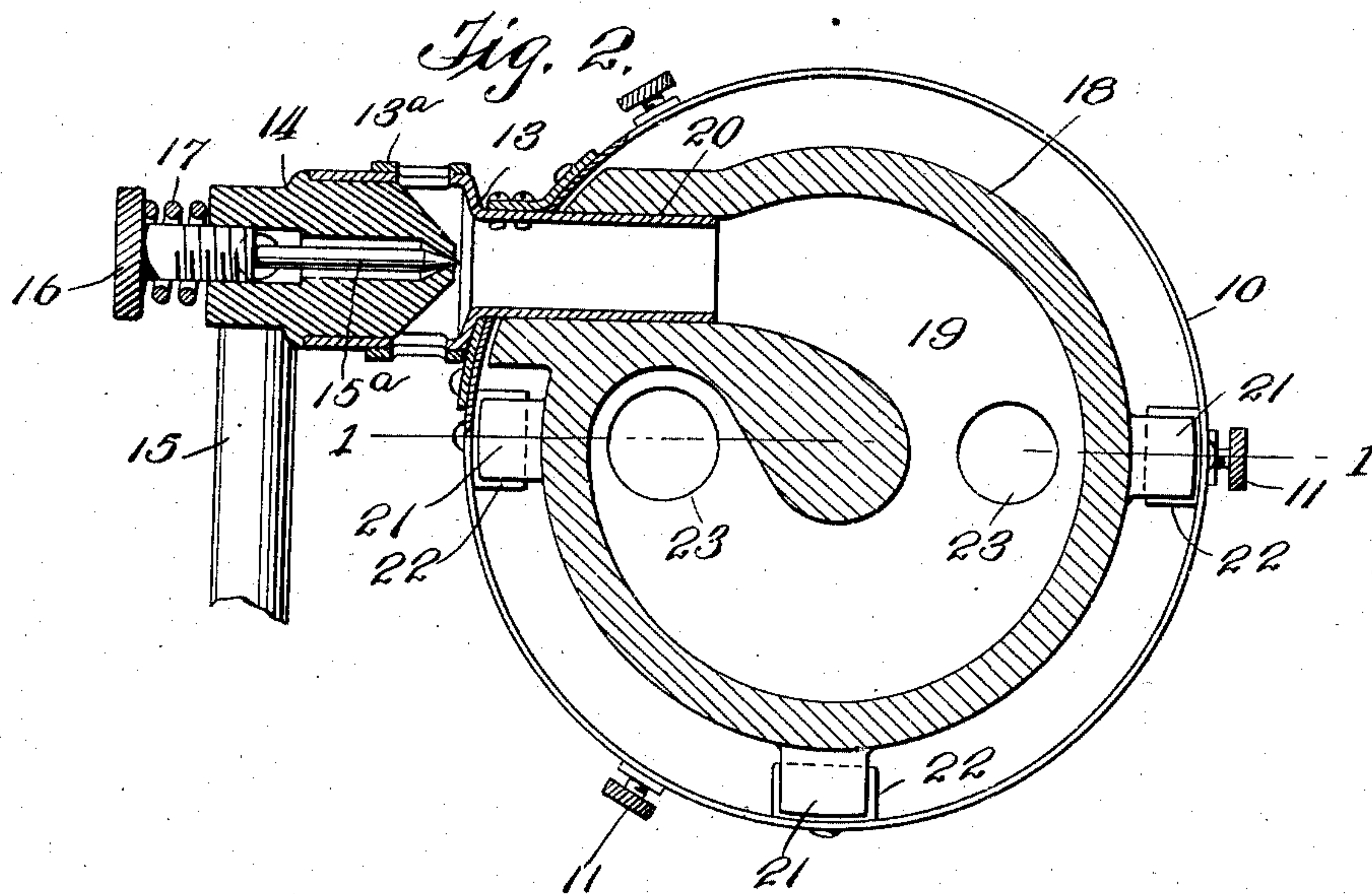
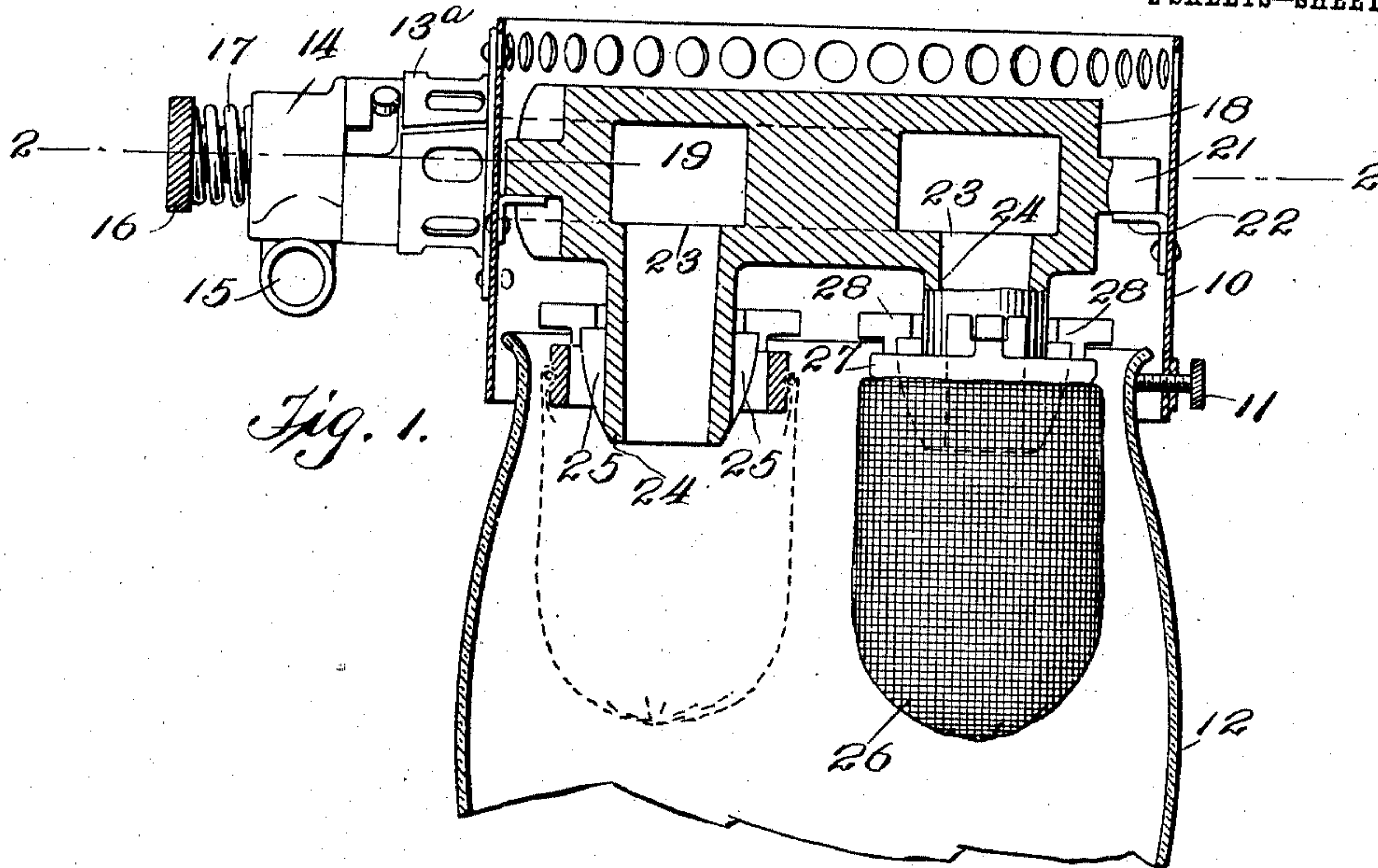


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PREHEATING LIGHTING FIXTURE.  
APPLICATION FILED JULY 9, 1908.

928,241.

Patented July 20, 1909.

2 SHEETS—SHEET 1.



WITNESSES

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*William Newton Best Sr.*

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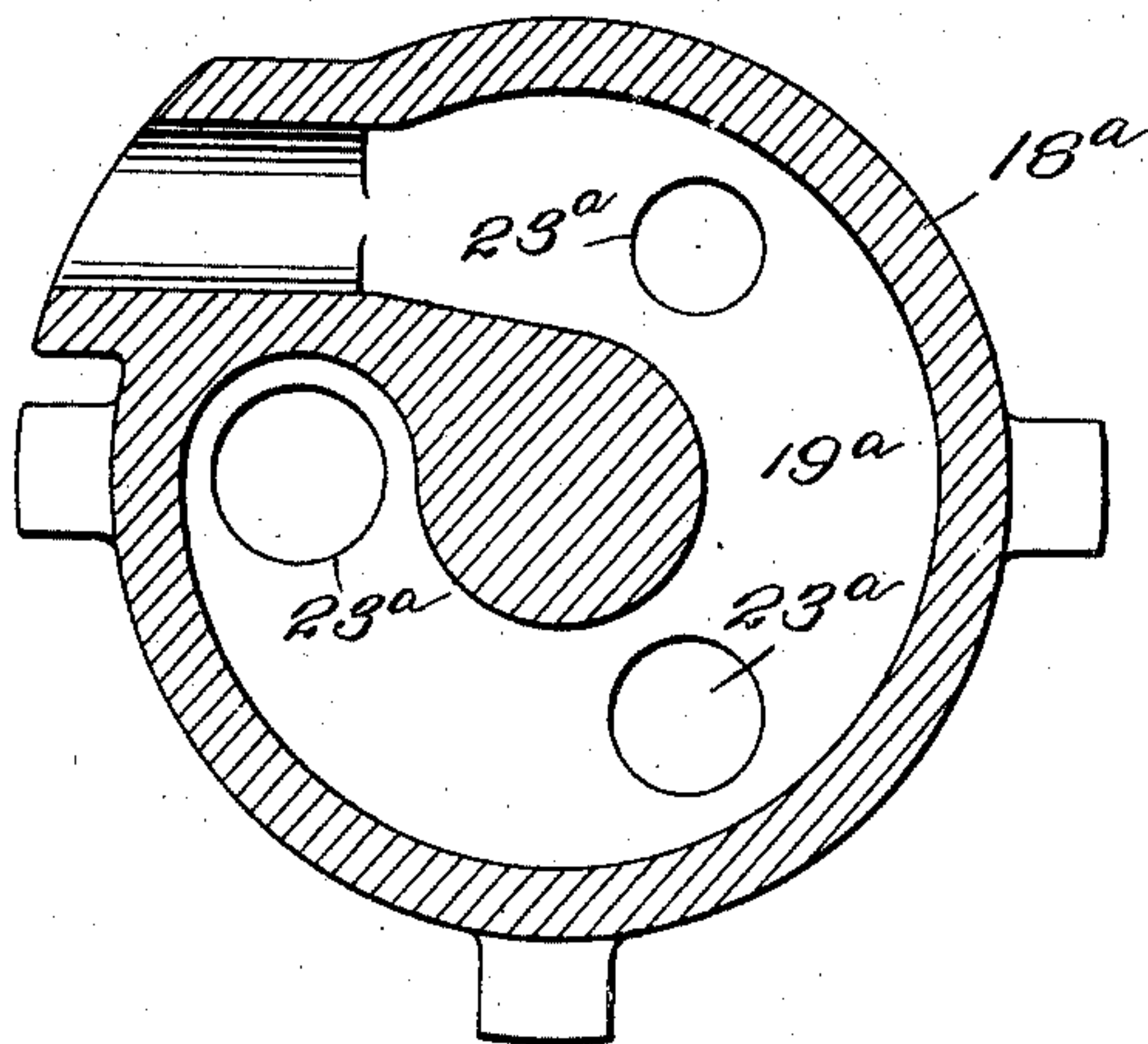
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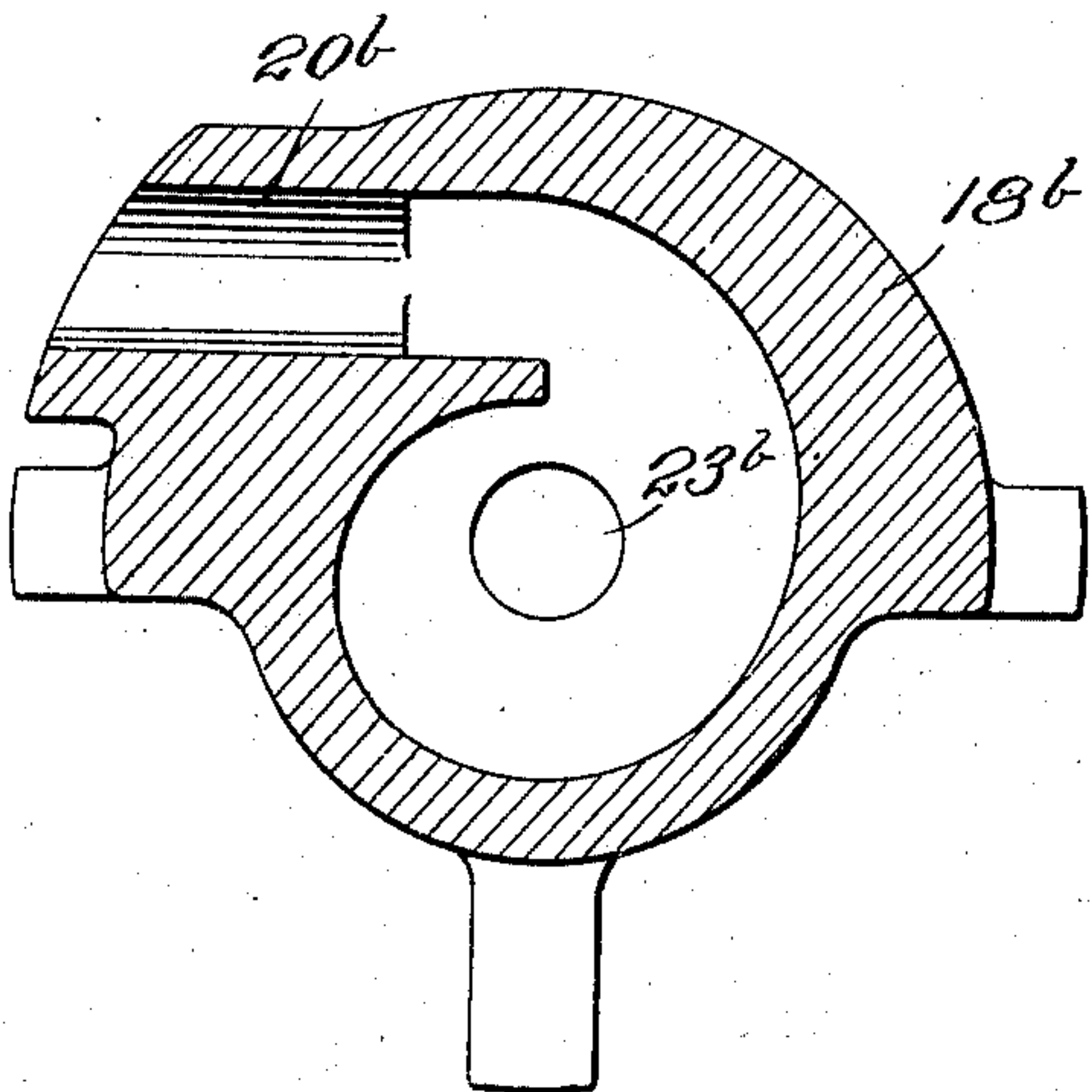
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2 SHEETS—SHEET 2.

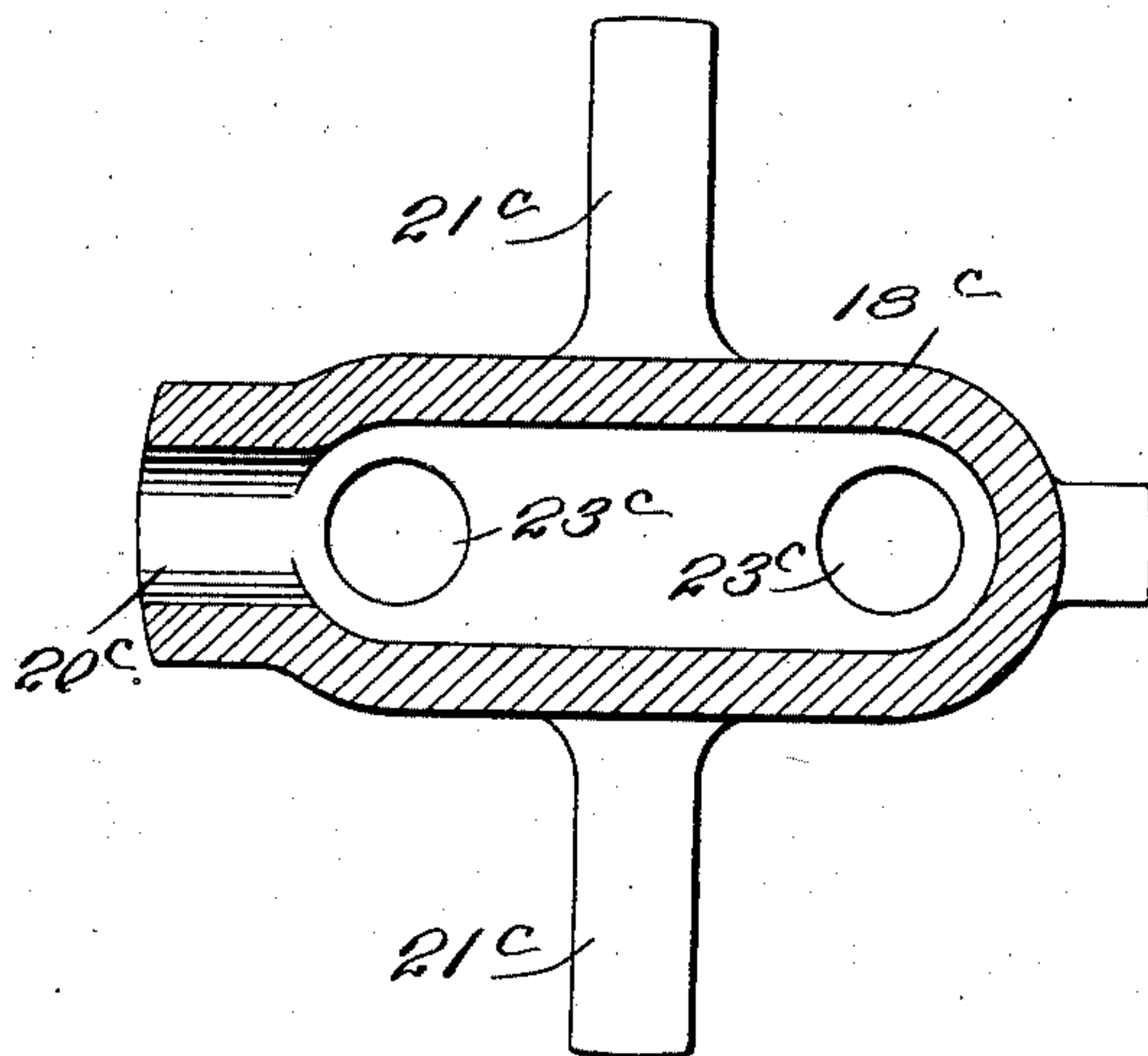
*Fig. 3.*



*Fig. 4.*



*Fig. 5.*



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# UNITED STATES PATENT OFFICE.

WILLIAM NEWTON BEST, SR., OF NEW YORK, N. Y., ASSIGNOR OF ONE-FOURTH TO WILLIAM  
NEWTON BEST, JR., OF NEW YORK, N. Y.

## PREHEATING LIGHTING-FIXTURE.

No. 928,241.

Specification of Letters Patent.

Patented July 20, 1909.

Application filed July 9, 1908. Serial No. 442,685.

*To all whom it may concern:*

Be it known that I, WILLIAM NEWTON BEST, Sr., a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Preheating Lighting-Fixture, of which the following is a full, clear, and exact description.

10 This invention relates to certain improvements in lighting fixtures, and more particularly to that type of fixture in which a combustible gas is burned and the products of combustion of the flame are delivered to the  
15 interior of an inverted mantle.

The object of the invention is to provide an improved device for supporting the mantle and permitting the gas to be heated to a high temperature before it is burned  
20 and before it is delivered to the mantle.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the  
25 figures.

Figure 1 is a central vertical section through a fixture constructed in accordance with my invention, said section being taken on the line 1—1 of Fig. 2; Fig. 2 is a trans-  
30 verse section through the device shown in Fig. 1, said section being taken on the line 2—2 in said figure, and Figs. 3, 4 and 5 are transverse sections, similar to a portion of Fig. 2 but showing different forms of the  
35 heating and mantle supporting member.

In the specific form illustrated in the accompanying drawings, I employ a sleeve or collar 10, formed of sheet metal and having set screws 11 or other suitable means at the  
40 lower end thereof, for supporting the lampshade or globe 12. The sleeve is supported upon a tube 13, which enters the sleeve substantially tangentially, and at the outer end of this tube 13 there are provided means  
45 for admitting both air and gas thereto and independently controlling the amount of both the air and the gas.

As illustrated, the outer end of the tube 13 is expanded and of slightly larger diameter, and into this outer expanded portion there is inserted a plug 14, connected directly to a gas-delivery pipe 15. The tube 13 is provided with an annular row of apertures, through which air may enter adjacent the

inner end of the plug 14, and encircling the  
55 tube is a sleeve 13<sup>a</sup>, having a corresponding number of apertures which, by rotating the sleeve, may be brought into or out of registry with the openings of the tube, to control the  
60 inflow of air. The plug 14 is preferably connected to the tube by a bayonet joint, as shown in Fig. 1, and is hollow and terminates in a conical end adjacent the entrance to the reduced portion of the tube 13, and the interior of the plug communicates with  
65 the interior of the tube through a very small opening at the apex of the conical end. A needle valve 15<sup>a</sup> extends through the plug to a seat at the inner end thereof, and may be controlled in any suitable manner, as, for  
70 instance, by an outer milled head 16 and a coil spring 17 for resisting the free turning of the valve and holding it in the desired position.

Within the sleeve 10 I mount my improved  
75 pre-heating member, which is supported by said sleeve, is connected to the tube 13 and serves to support the mantles. In the specific form shown in Figs. 1 and 2, this member is formed of a block of magnesia or  
80 other refractory, non-combustible material. This block 18 is provided with an interior chamber 19 of curved form, extending around, adjacent the periphery of the block. One end of the chamber terminates in a  
85 passage 20 extending through the outer wall of the block, substantially tangentially thereof, and into this passage 20 extends the inner end of the tube 13. The block is supported by the tube and also by lugs 21 ex-  
90 tending outwardly from the outer wall and resting upon lugs or flanges 22 formed of sheet metal and mounted upon the inner surface of the sleeve 10. The block is provided with a plurality of apertures 23 in  
95 the lower surface thereof, through which the mixture of gas and air may escape from the chamber 19 to the mantle. The openings 23 may, if desired, vary in size, the smaller openings being nearer the inlet tube 15 and  
100 the larger being the farthest therefrom. Surrounding each opening and extending downwardly therefrom I provide sleeves or tubes 24, integral with the body of the block and having outwardly-extending flanges or  
105 shoulders 25 adjacent the lower end thereof, for detachably supporting the mantles. The mantles may be of any desired form, but



preferably include a body portion 26, closed at its lower end and mounted upon a ring or collar 27 at its upper end. The said ring or collar is provided with upwardly and inwardly extending lugs, which may be inserted between the lugs or shoulders 25 and rotated to bring them directly over the latter. The pre-heating and mixing chamber provides ample space for the explosion of the gas and also reduces the friction and permits a free flow to the burners. The arrangement of the chamber in the form of a curve with the entrance tangentially disposed and of a cross-sectional area greater than the cross-sectional area of the supply pipe, serves to take up any inequalities in the pressure of the gas delivered to the chamber and to deliver the gas to the burners at a uniform pressure. Furthermore, the pressure at all of the burners will be the same.

In the operation of this form of my device, the gas entering through the tube 15 and the air entering through the openings in the sleeve 13<sup>a</sup> become thoroughly mixed within the tube 13 and within the chamber 19. They enter the chamber substantially tangentially and flow through the curved chamber 19 to the openings 23, through which they escape to the lower ends of the tubes 24, which latter constitute the burners. The heat resulting from the combustion of the gases rises from the mantles, to raise the temperature of the block 18 to a very high degree, and the heating of this block results in a corresponding heating of the mixture of air and gas before it is delivered to the burner. The hotter the gas at the instant of combustion the greater will be the heat available for raising the temperature of the mantles, and therefore with my improved pre-heating device the same amount of illumination may be obtained with a smaller quantity of gas.

In the specific form of device shown in Figs. 1 and 2, my improved pre-heating device is provided with two burners. It is evident that a greater or less number may be employed, for instance, in the form illustrated in Fig. 3, my pre-heating member comprises a block 18<sup>a</sup>, having a curved chamber 19<sup>a</sup>, having three openings 23<sup>a</sup> down through which the gas may escape.

In the form shown in Fig. 4, I provide a block 18<sup>b</sup> having only a single gas-escape opening or a single burner, but the chamber is of curved form and terminates in an entrance passage 20<sup>b</sup>, arranged tangentially in respect to the block. The block has a curved chamber 19<sup>b</sup> and a single opening 23<sup>b</sup>.

An extremely simple form of device may be constructed as shown in Fig. 5, in which there is employed a hollow block 18<sup>c</sup> of magnesite or the like, and having an entrance opening 20<sup>c</sup> at one end and two exit

passages 23<sup>c</sup> directly in alinement with the entrance-opening. As this block is of curved form the supporting lugs 21<sup>c</sup> are of considerably greater length and a larger passage is left about the body of the block for the escape of the gases after they leave the mantle.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A lighting fixture, including a combined pre-heating and mixing chamber of curved form and having an entrance passage extending substantially tangentially thereof and having a plurality of downwardly-extending burners arranged along the length of said curved chamber.

2. A lighting fixture, including a combined pre-heating and mixing chamber of curved form and having an entrance passage extending substantially tangentially thereof and having a plurality of downwardly-extending burners arranged along the length of said curved chamber at varying distances from said entrance passage, the openings through said burners at greater distances from said entrance passage being of greater size.

3. A lighting fixture, including a block of refractory material of curved form, and having a curved chamber therein, one end of said chamber opening through the block substantially tangentially, a plurality of outlet openings in the under side of said chamber, a burner in each of said openings, and a mantle for each of said burners.

4. A lighting fixture, including a block of refractory material having a chamber therein, outwardly-extending lugs for supporting said block, means for delivering a mixture of air and gas thereto, a burner extending downwardly from said block, and means for supporting a mantle adjacent said burner.

5. A lighting fixture, including a substantially cylindrical sheet metal body, a pre-heater arranged therein, a tube extending through said body substantially tangentially thereof and delivering to said pre-heater, and a downwardly-extending burner carried by the latter, said pre-heater being formed of refractory material, and having outwardly-extending lugs for engagement with said sheet metal body to support said pre-heater.

6. A lighting fixture, including a pre-heater formed of refractory material and having an interior chamber and outwardly-extending lugs, said chamber being provided with an inlet passage at one side thereof and a downwardly-extending burner on the lower side thereof, means for supporting a mantle adjacent said burner, and means for engagement with said lugs for supporting said pre-heater.



7. A lighting fixture, including a substantially cylindrical sheet metal body, a pre-heater disposed therein and having its body portion spaced from said sheet metal body,  
5 a burner extending downwardly from the body of said pre-heater, a tube extending through the wall of said sheet metal body and rigidly secured to said pre-heater and delivering to the latter, and co-acting lugs

for supporting said pre-heater body from 10 said sheet metal body.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM NEWTON BEST, Sr.

Witnesses:

EVERARD B. MARSHALL,  
CLAIR W. FAIRBANK.