

No. 869,814.

PATENTED OCT. 29, 1907.

J. H. TAUSSIG.
WATER GAS APPARATUS.
APPLICATION FILED AUG. 6, 1906.

4 SHEETS—SHEET 1.

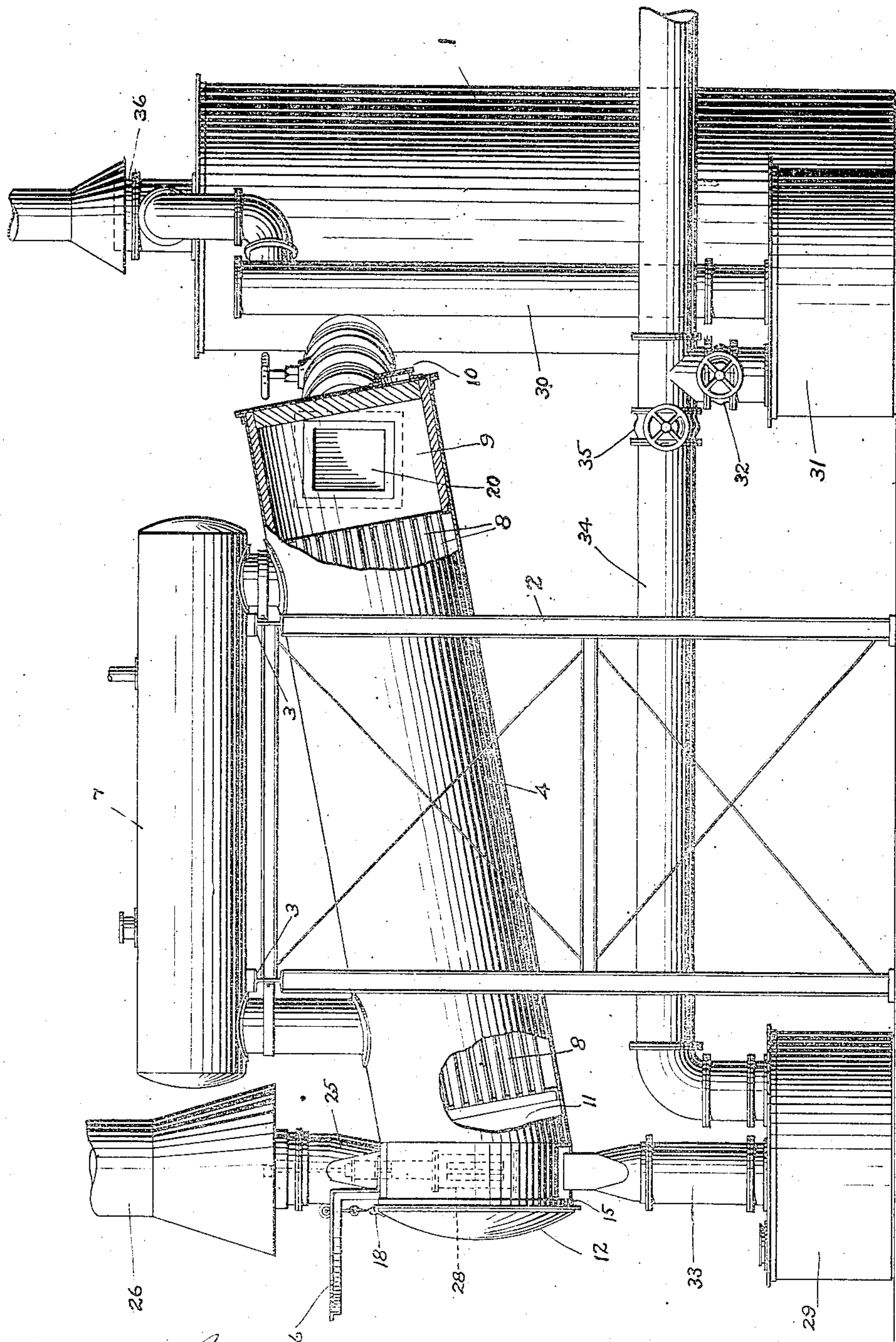


FIG. 1.

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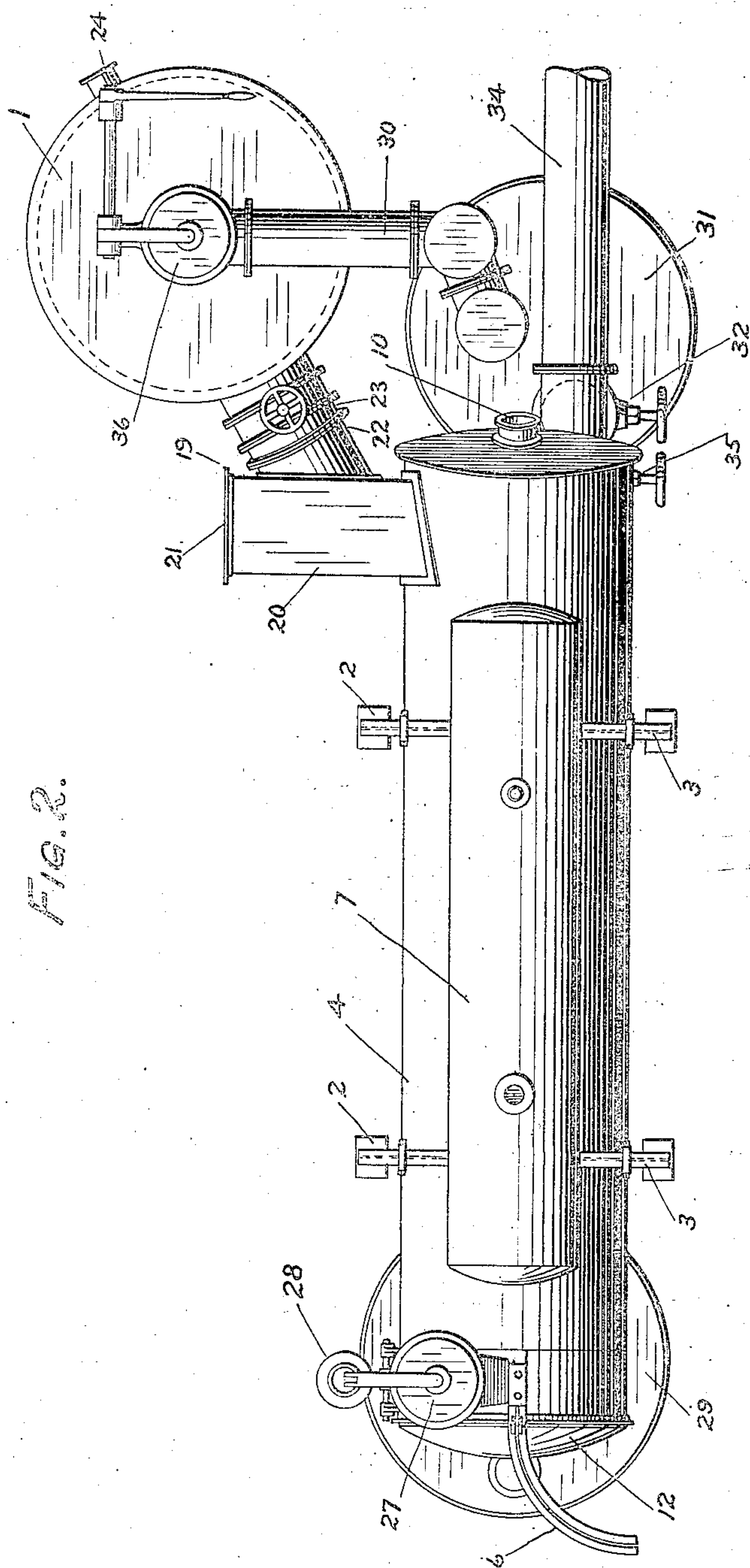
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4 SHEETS—SHEET 2.



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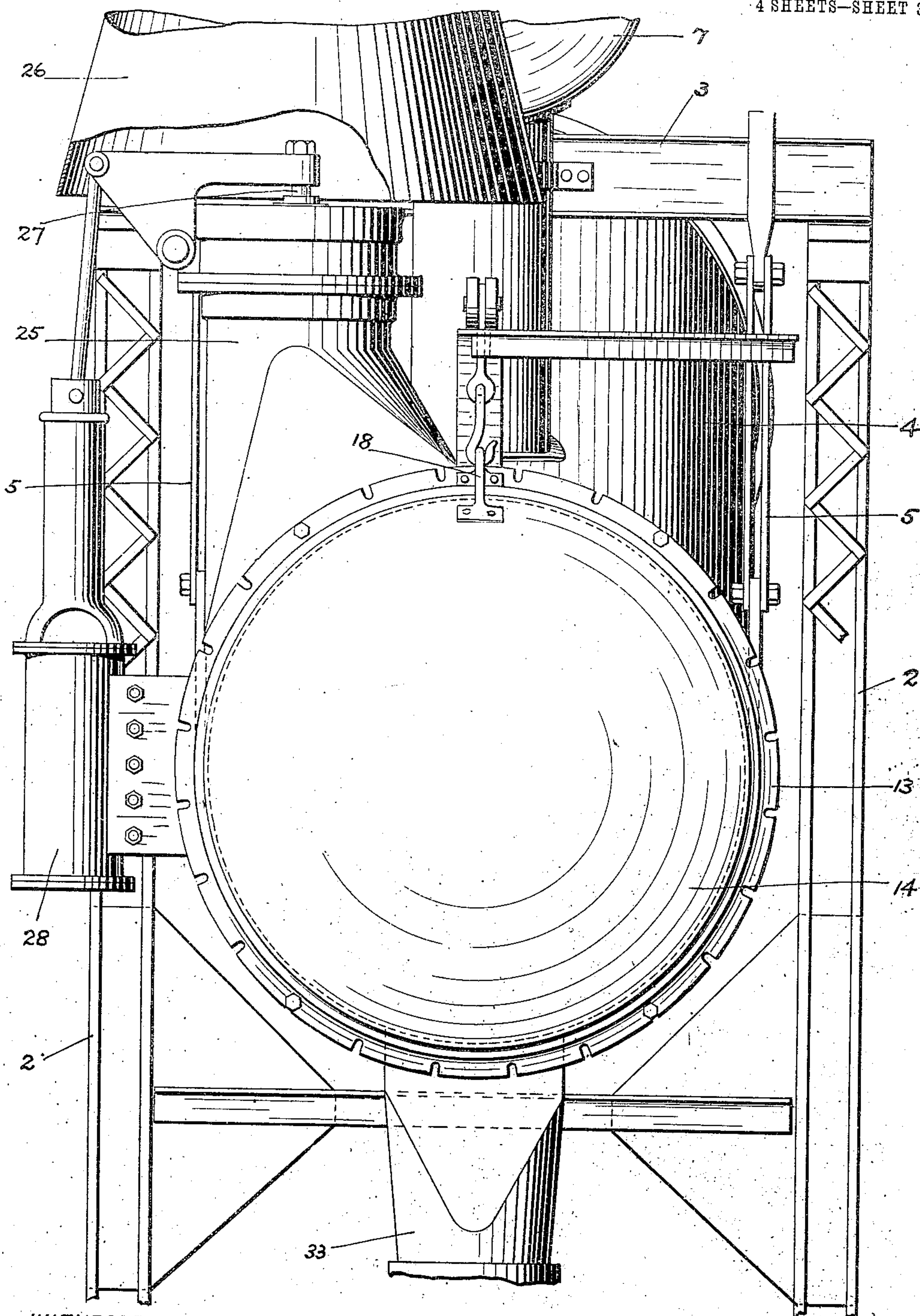
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4 SHEETS—SHEET 3.



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FIG. 3.

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4 SHEETS—SHEET 4

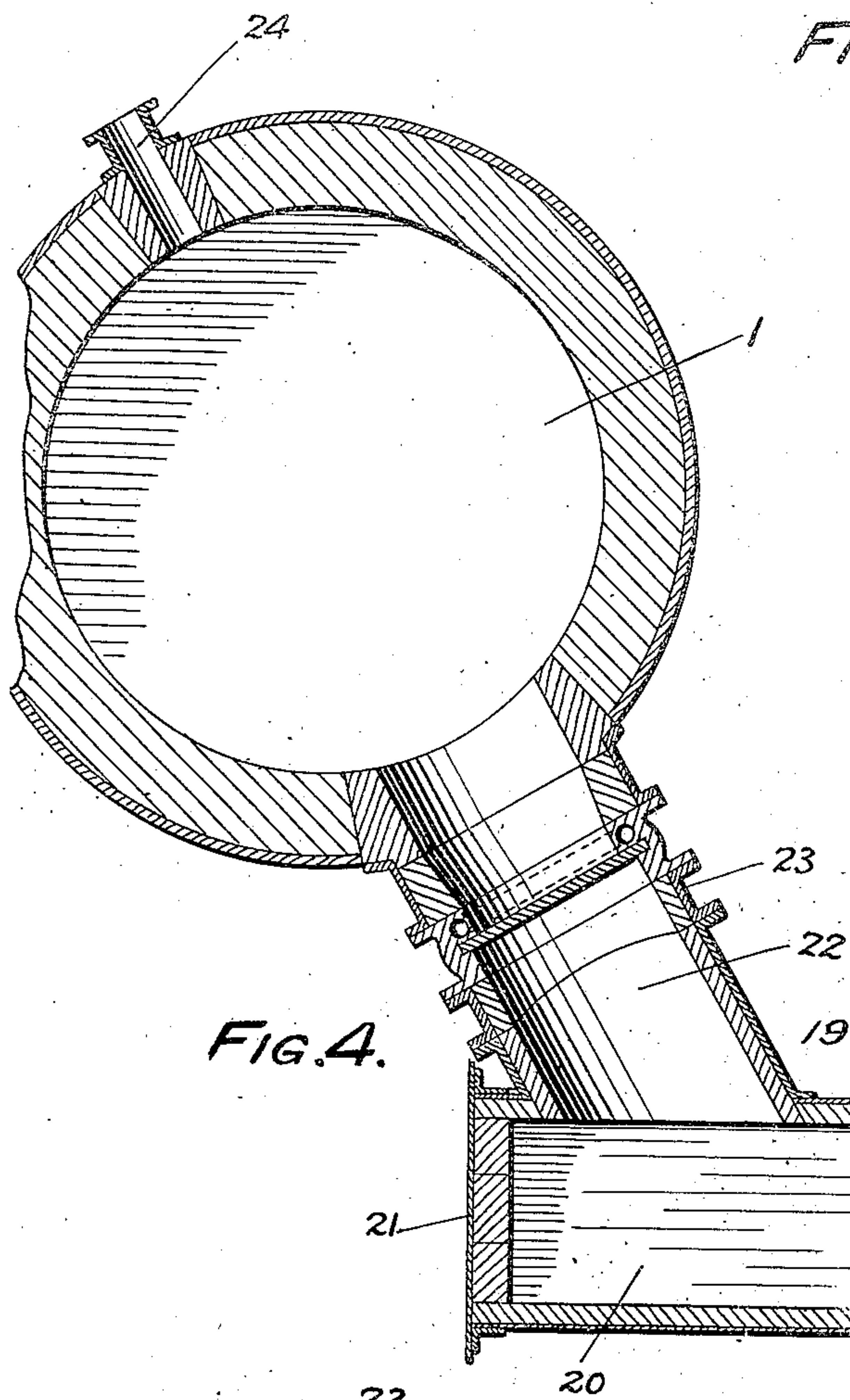


FIG. 4.

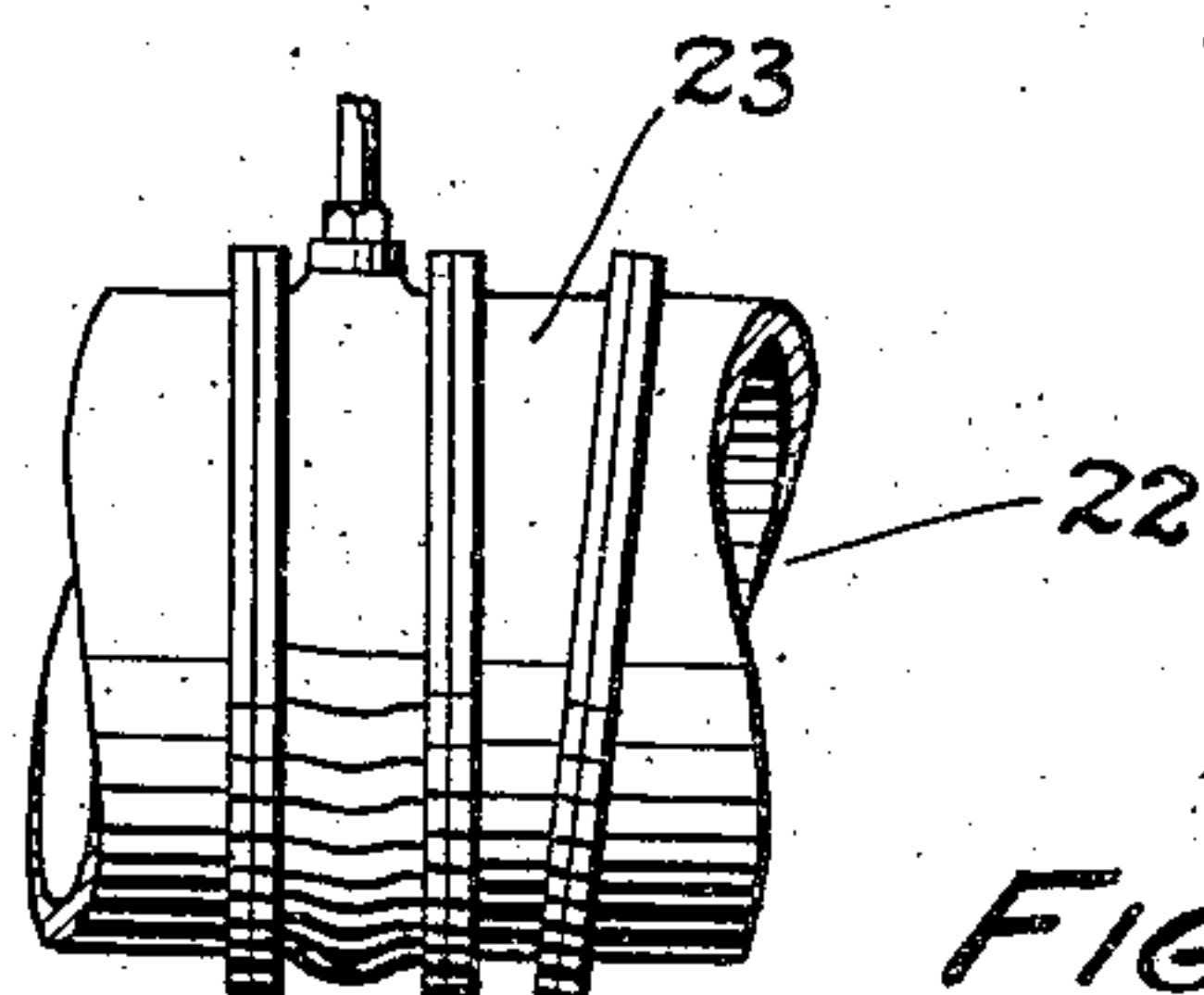
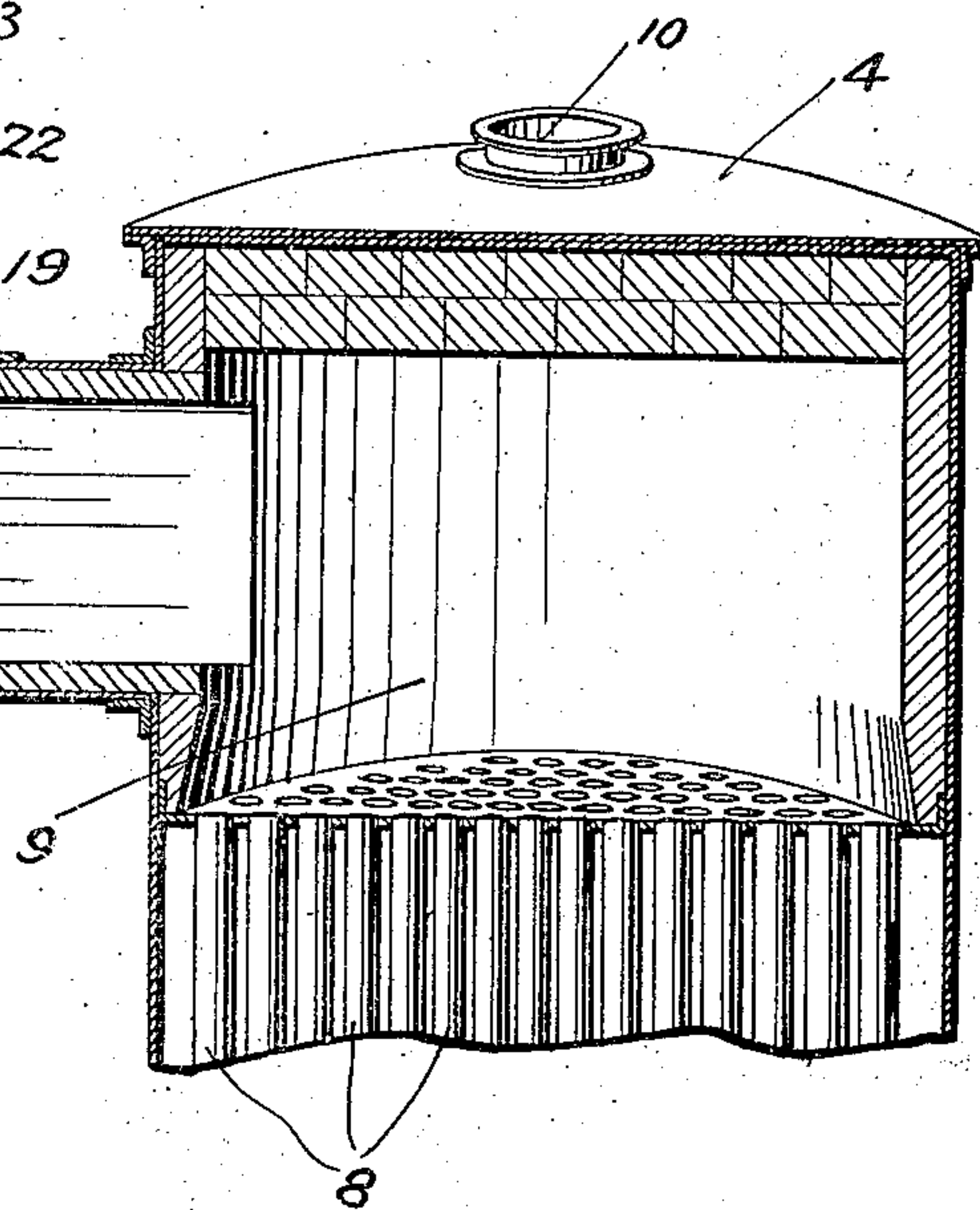
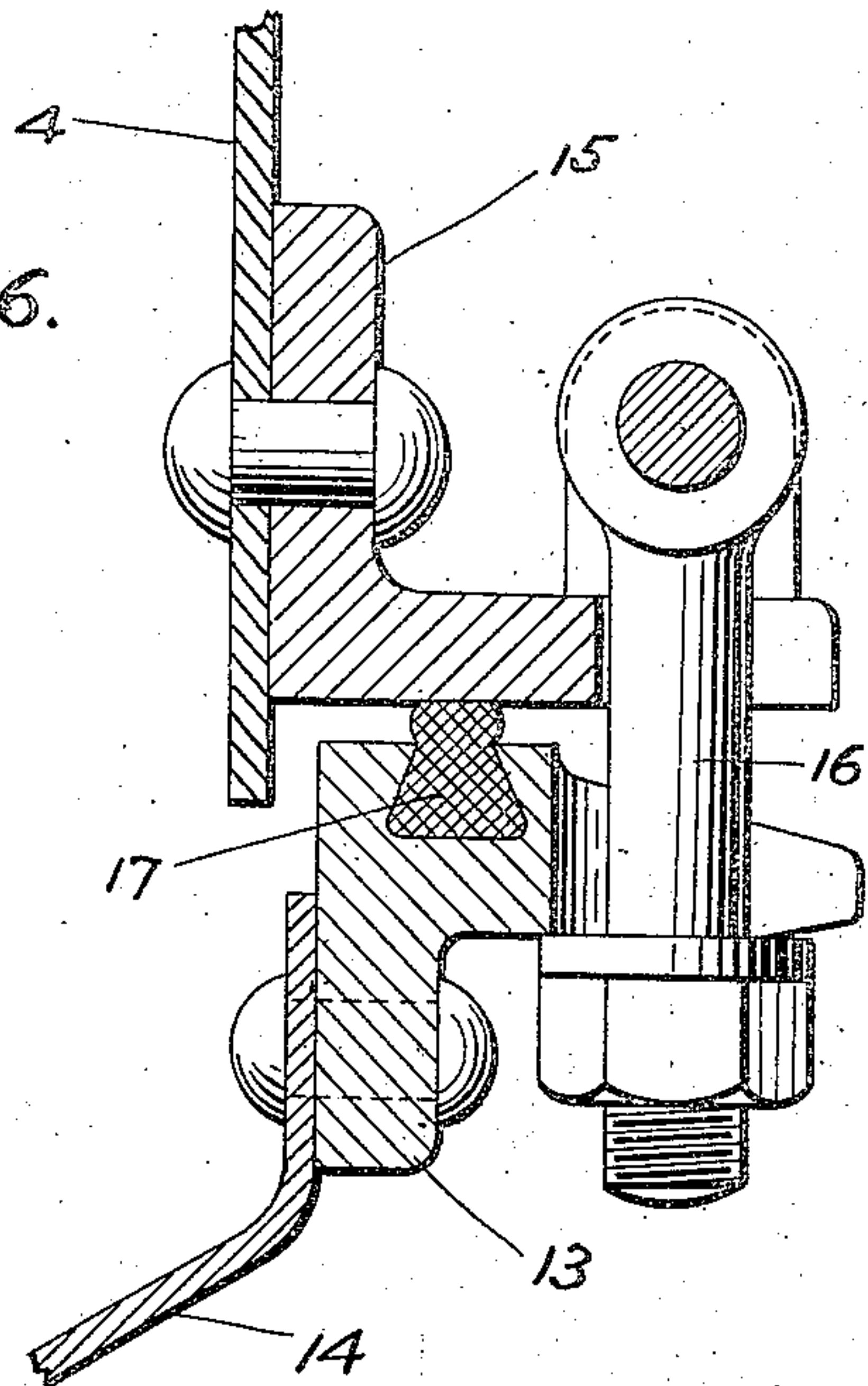


FIG. 5.

FIG. 6.



WITNESSES

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UNITED STATES PATENT OFFICE.

JOHN HAWLEY TAUSSIG, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE UNITED GAS IMPROVEMENT COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

WATER-GAS APPARATUS.

No. 869,814.

Specification of Letters Patent.

Patented Oct. 29, 1907.

Application filed August 6, 1906. Serial No. 329,378.

To all whom it may concern:

Be it known that I, JOHN HAWLEY TAUSSIG, a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Water-Gas Apparatus, of which the following is a specification.

Objects of the present invention are to provide an improved and commercial apparatus by means of which the heat of the water and blast gases may be practically utilized for generating steam; to provide for passing either the blast or illuminating gases or both, through the boiler as well as for cutting out the boiler so that the gas making operation need not be interrupted when the boiler is not used.

To these and other ends hereinafter set forth the invention, stated in general terms, comprises the improvements to be presently described and finally claimed.

The nature, characteristic features and scope of my invention will be more fully understood from the following description taken in connection with the accompanying drawings forming part hereof and in which:

Figure 1, is an elevational view of apparatus embodying features of the invention. Fig. 2, is a top or plan view of the same. Fig. 3, is a front view drawn to an enlarged scale and illustrating portions of the apparatus. Fig. 4, is a top or plan view, principally in section, illustrating portions of the apparatus. Fig. 5, is a side view illustrating details of construction not shown in Fig. 4, and Fig. 6, is a sectional detached view showing details of construction.

In the drawings 1, is the chamber from which the water and blast gases leave the water gas apparatus. It is commonly called a fixing chamber and will be referred to by that name in the following description. It is cylindrical and the gases leave it at its top by means of connections through its generally flat top.

2, is a generally rectangular framework shown to consist of lattice uprights having suitable tie rods and of cross-wise ranging angle-beams 3. From this framework the boiler 4, is suspended as shown by links 5, connected at one of their ends to the beams 3, and at the other of their ends to ears secured to the shell of the boiler. The boiler is thus conveniently and properly supported in proximity with the top of the fixing chamber and in such a way as to allow for expansion and contraction of the fixing chamber, connections and boiler. By arranging the boiler horizontally or at an inclination to the horizontal, as shown, it may be conveniently and properly cleaned at such intervals as are rendered necessary for removing the deposits necessarily made by reason of the characteristics of the gases which traverse it. The inlet end of the boiler is higher than the outlet end so that the tarry deposits occur near the cooler

lower end and thus do not fall back to the hot part where they would be baked. The boiler is shown as provided with a steam drum 7, so that the shell can be filled with tubes 8, thus affording a large heating surface for the diameter of shell. At the right-hand or high end of the boiler there is a chamber 9, lined with fire brick or the like, and which may be called a combustion chamber, and it is shown as provided with a man-hole 10. At the lefthand or low end of the boiler there is a chamber or smoke box 11.

12, is a door for removably closing the end of the smoke box. This door is shown to consist of a cast iron rim 13, provided with a wrought iron plate 14. The shell of the smoke box is provided with a rim 15, constituting a seat for the door. The rim 15, is provided with pivotal bolts 16, adapted to detachably engage peripheral notches in the rim 13.

17, is an asbestos washer dove-tailed into the rim 13, and adapted to be pressed upon the rim 15, so as to make a tight joint. The door is provided at its top with an eye 18, by means of which it can be suspended from a wheel traveling on a track 6, so that when the bolts are released the door can be moved out of the way. Thus the door may be removed and applied rapidly and easily for the purpose of cleaning the tubes and when in position it makes a tight joint. There is a passage 19, from the superheater 1, to the combustion chamber 9 and it is lined with fire brick or the like. The length of this passage is comparatively short when the boiler is supported in proximity with the top of the fixing chamber. The gases leave the top of the fixing chamber at a very high temperature. The described construction of the passage 19, and fire box enables them to properly play their parts in providing a commercially operative apparatus. This passage is shown to consist of a portion 20, of generally rectangular cross-section and provided with a hole 21, by means of which it can be cleaned, or which may be employed for the introduction of secondary air for the purpose of burning the blast gases. This passage also consists of a branch 22, which is made with a removable wedge-like section 23, so that this section can be readily removed and a section employed which is solid when it is desired to close the passage, as for instance during repairs. A watercooled valve is arranged in the branch 22. In the apparatus shown the air inlet or blast 24, is arranged through the wall of the fixing chamber near its top. By introducing the air to the blast gases prior to their entry into the boiler, the air and blast gases have time to become thoroughly mixed and burn before becoming chilled by the boiler. The smoke box 11, is provided with an off-take 25, which leads to the stack 26, and is provided with a valve 27, shown as operated by means of a hydraulic cylinder 28. The smoke box 11, also has communication with the wash box 29, by way of a connection 110.

tion 33. 30, is the gas take-off by which the illuminating gas may be led from the fixing chamber 1, to the wash box 31, without traversing the boiler. The outlet of the wash box is provided with a valve 32.

5 During the blow the blast gases from the fixing chamber 1, pass through the boiler which absorbs their heat, and they escape by way of the off-take 25, and stack 26; the valve 27, having been opened to permit of their passage. During the run the water gas traverses the
10 boiler to which it imparts its sensible heat, thereupon the water gas traverses the pipe 33, reaches the wash box 29, and thence may be led by way of the pipe 34; the valve 35, being open. The valve 27, is of course closed during the run. If it is not desired to pass the
15 illuminating gas through the boiler the valve 35, is closed and the valve 32 is open and the gas passes by pipe 30 to the wash-box 31, and thence to the pipe 34, which leads to the relief holder. It is possible to connect more than one set of water gas apparatus with the
20 part 20, so that the gas from them may be utilized for heating the boiler. In case it is not desired to pass the blast gases through the boiler the valve 27, is kept closed and the valve 36 is operated. The valve in the part 22, of the connection 19, may be closed when the
25 boiler is to be isolated from the set either for cleaning or other purposes.

I claim:

1. The combination of a boiler, the fixing chamber of a water gas apparatus provided with eduction connections
30 for illuminating and blast gases which eduction connections by-pass the boiler structure, a connection for convey-

ing either gas into the boiler structure, and eduction connections from the boiler structure for each kind of gas, whereby either or both gases can be passed through the boiler or excluded from the entire boiler structure without
35 interfering with the operation of the gas apparatus.

2. The combination of a water gas apparatus, tubes through which gases pass and which are inclined for the eduction of tarry deposits, a boiler shell filled with said tubes and provided with an elevated communicating steam
40 drum adapted to contain water and thereby insure complete immersion of the tubes and prevent their burning by the incoming gases, and means for leading either blast gas or illuminating gas or both from the apparatus through the tubes from the higher to the lower end thereof, whereby
45 tarry deposits from the illuminating gas flow to the eduction end of the boiler thus preventing coking and obstruction, substantially as described.

3. The combination of the fixing chamber, a boiler, and a sectional passage interposed between the two and whereof
50 some of the sections are wedge shaped and detachable, substantially as described.

4. The combination of a water gas apparatus, an inclined fire tube boiler of which all parts of all the tubes are arranged below the water level and the inclination of the
55 boiler permitting of the escape of steam from the upper tube sheet thereof without the formation of steam pockets which if present would permit of the burning of the ends of the tubes, and means for leading either blast gas or illuminating gas or both from the apparatus through the tubes
60 from the higher to the lower end thereof, whereby tarry deposit from the illuminating gas flows to the eduction end of the boiler thus preventing coking and obstruction, substantially as described.

In testimony whereof I have hereunto signed my name. 65

JOHN HAWLEY TAUSSIG.

Witnesses:

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FRANK E. FRENCH.