

No. 788,405.

PATENTED APR. 25. 1905.

N. G. HOCK.  
APPARATUS FOR MAKING GAS FROM OILS.

APPLICATION FILED JULY 23, 1903.

3 SHEETS—SHEET 1.

FIG. 1

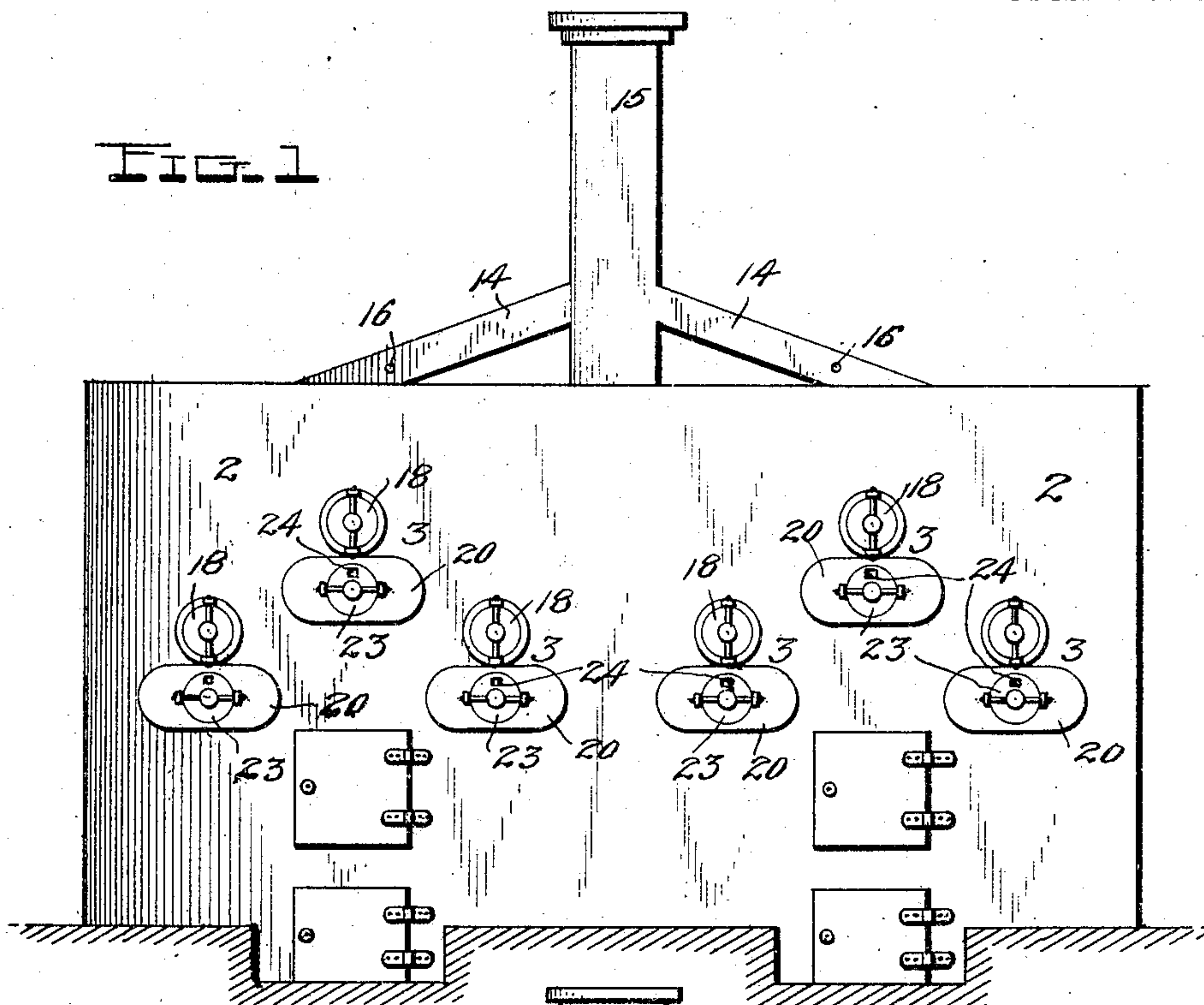
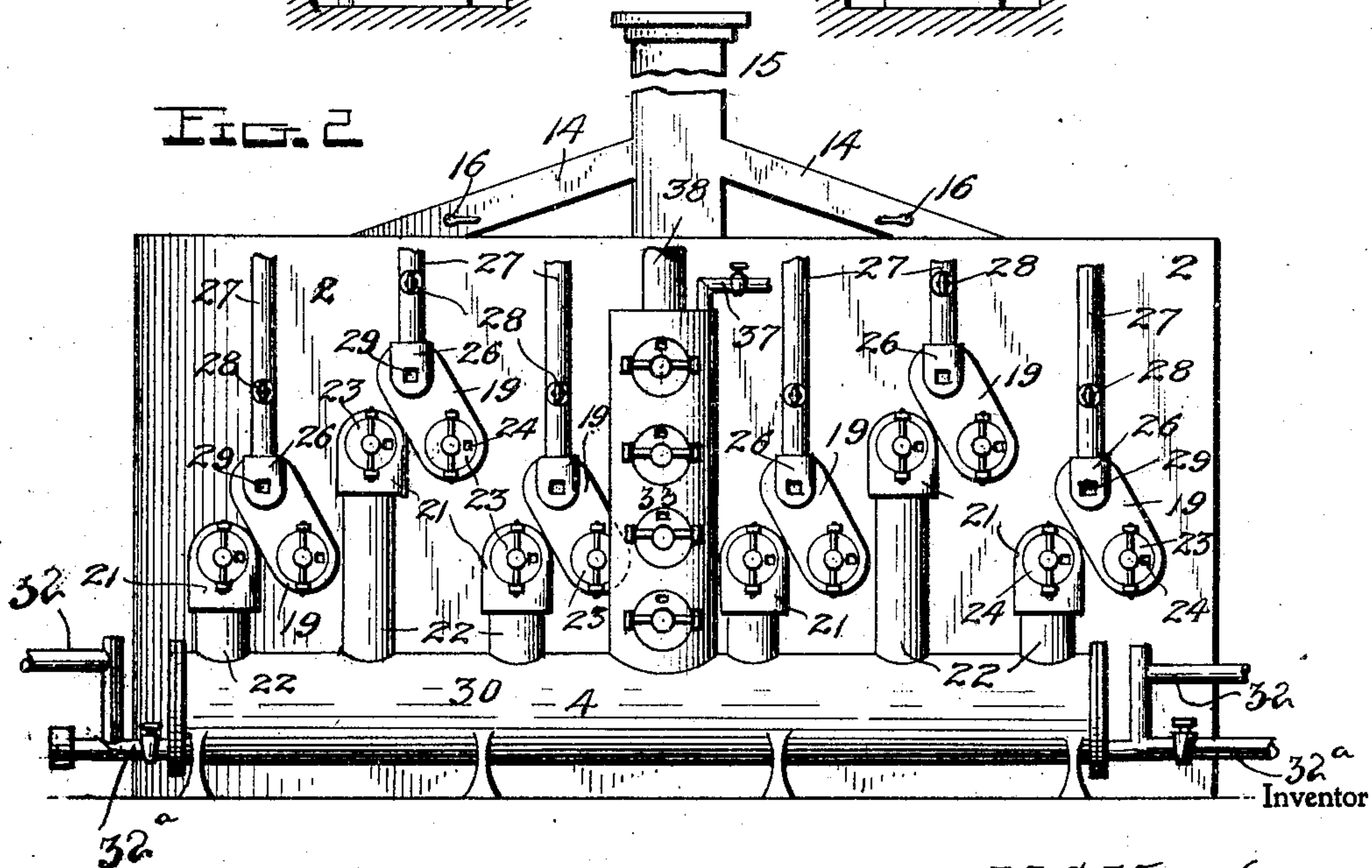


FIG. 2



Witnesses

*J. A. Grissman, Jr.*  
*J. Wilson*

By

*N. G. Hock*

*A. B. Wilson*

Attorney



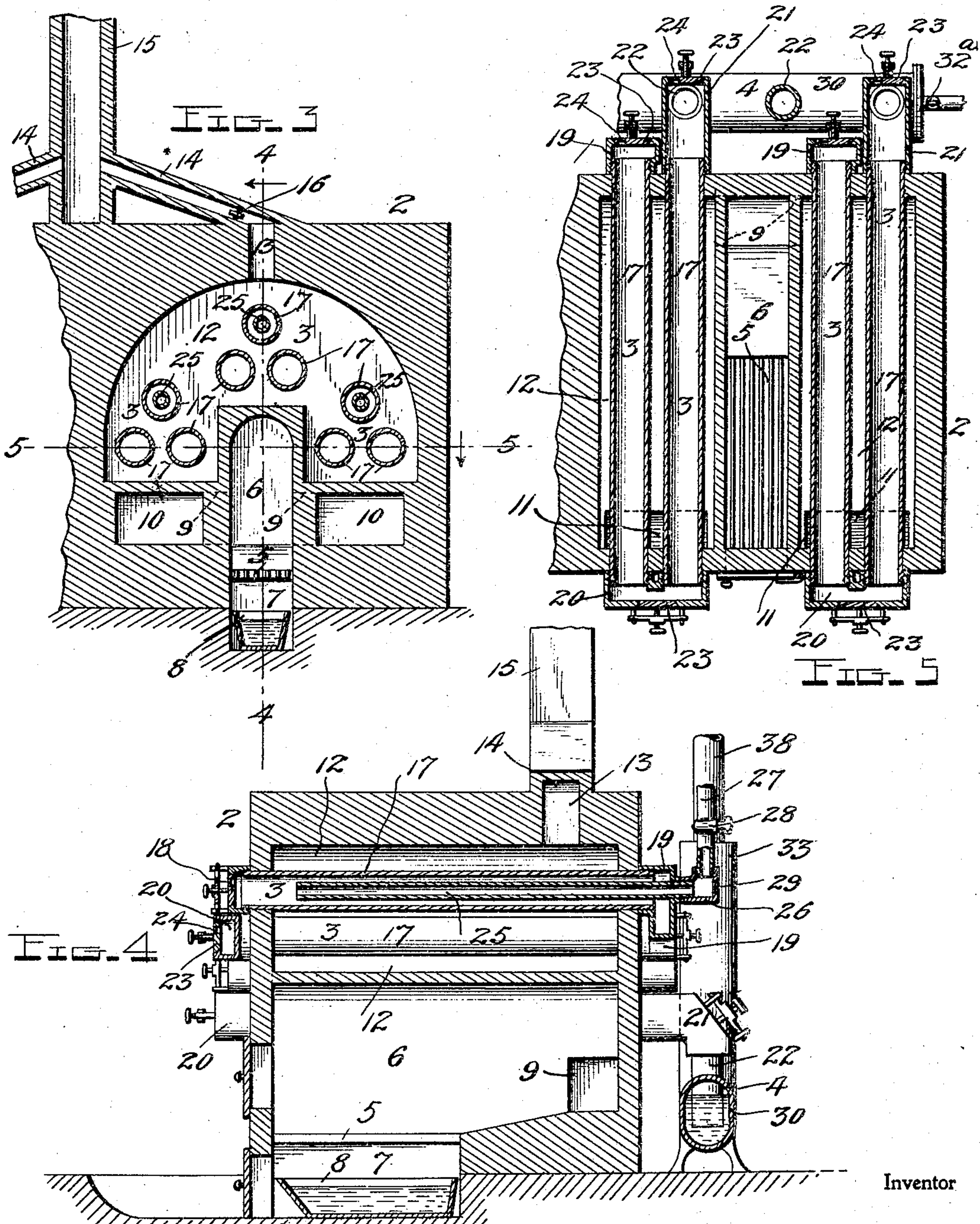
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Inventor

Witnesses

*J. A. Griesbauer, Jr.*  
*E. J. Wilson*

*N. G. Hock*

By

*A. B. Wilson*

Attorney

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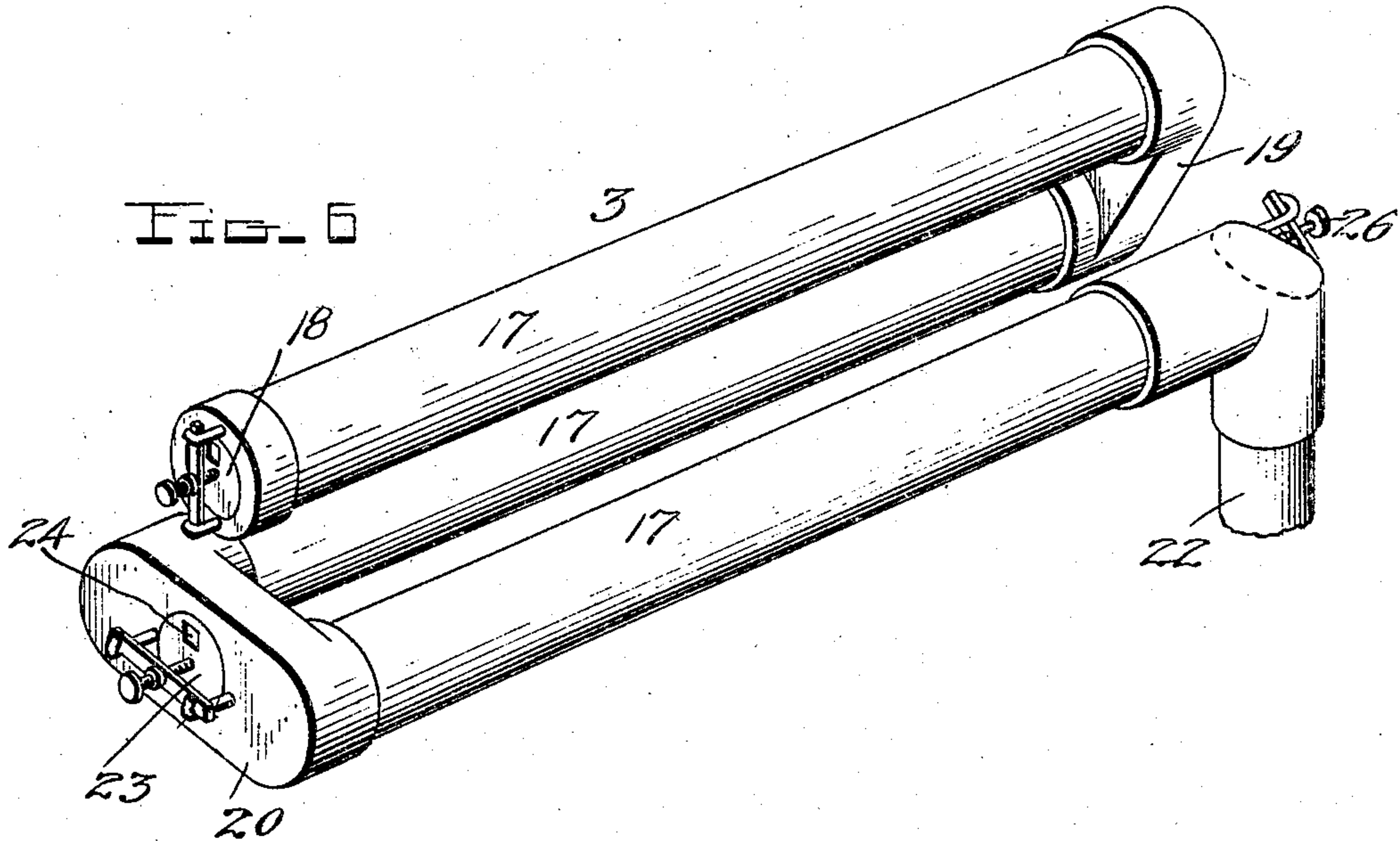
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3 SHEETS—SHEET 3.



Witnesses

J. A. Griesbauer, Jr.  
J. B. Wilson

By

N. G. Hock

H. B. Wilson

Attorney



# UNITED STATES PATENT OFFICE.

NICHOLAS GEORGE HOCK, OF GREELEY, COLORADO.

## APPARATUS FOR MAKING GAS FROM OILS.

SPECIFICATION forming part of Letters Patent No. 788,405, dated April 25, 1905.

Application filed July 23, 1903. Serial No. 166,748.

*To all whom it may concern:*

Be it known that I, NICHOLAS GEORGE HOCK, a citizen of the United States, residing at Greeley, in the county of Weld and State of Colorado, have invented certain new and useful Improvements in Apparatus for Making Gas from Crude or other Oils; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to the manufacture of gas from crude or other oils for fuel and illuminating purposes; and it consists of certain novel features of construction, combination, and arrangement of parts, as will be hereinafter more fully described, and particularly pointed out in the appended claim, reference being had to the accompanying drawings, in which—

Figure 1 is a front elevation of my improved apparatus or machine for manufacturing gas from oil. Fig. 2 is a rear elevation of the same. Fig. 3 is a vertical longitudinal sectional view through one side of the apparatus. Fig. 4 is a vertical transverse sectional view taken on the line 4 4 of Fig. 3. Fig. 5 is a horizontal sectional view taken on the line 5 5 of Fig. 3. Fig. 6 is a detail perspective view of one of the retorts removed from the furnace.

In the embodiment of my invention as illustrated in the accompanying drawings I have provided a double furnace, in the two sides 2 of which I mount three sets of retorts 3, into which oil is fed and from which the gas generated from the oil is discharged into a washer and scrubber 4, located at the rear of the furnace.

The furnace may be of any desired construction, each side being the same and having a fire-grate 5, a combustion-chamber 6 above said grate, and an ash-chamber 7 below the same. A removable pan or receptacle 8 is placed in the bottom of the ash box or chamber 7 to receive the ashes as they fall from the grate. Said pan preferably contains water to prevent the formation of

clinkers. The grates and combustion-chambers extend from front to rear and are disposed in the center of each side of the double furnace. The products of combustion from the grate pass rearwardly under the arched top of the combustion-chamber, above which the central and upper set of retorts is located. At the rear end of said chamber the products of combustion pass through openings 9 into return-passages 10, located upon each of the combustion-chambers. The two lower sets of retorts are located above these passages, and the products of combustion after passing through the latter to the front of the furnace are discharged through openings 11 into an upper chamber 12, in which the three sets of retorts are located. After circulating about these retorts below the arched top of said chamber 12 the smoke and products of combustion pass up through an opening 13 into a branch flue 14, which communicates with a chimney or smoke-stack 15 in the center of the rear portion of the furnace. Suitable dampers 16 are located in these branch flues to regulate the operation of the furnace.

Each of the sets of retorts consists of three retort-chambers formed of pipes or cylinders 17, pyramidally arranged and extending through the front and rear walls of the furnace. The front end of the upper pipe of each series is closed by a removable door or cover 18, and the rear end of said pipe is screwed into one arm of a return-elbow 19, the other arm of which is similarly engaged with the rear end of the left-hand lower pipe 17. The front ends of the two lower pipes 17 are connected by a similar return-elbow 20, and the rear end of the right-hand lower pipe 17 is connected by an elbow 21 to a vertical pipe 22, which projects downwardly into the gas-washer 4. Each of the elbows 19, 20, and 21 is provided with a removable cover or lid 23, which is formed with an aperture 24, closed by isinglass or mica to permit the interior of the pipes 17 to be seen without removing said covers or lids. Projecting through each of the elbows 19 and extending into the upper pipe 17 to within a



short distance of the front end of the same is a small pipe 25, which feeds oil into the retort. The outer or rear end of this pipe 25 is connected by an elbow 26 to an oil-supply pipe 27, provided with a stop-cock or controlling-valve 28. The elbow 26 may also be provided with a sight-aperture 29, covered with mica.

The operation of the apparatus is as follows: Coal, coke, or other fuel is burned upon the grates 5 until the retorts are heated to the desired degree, and crude or other oil is then permitted to flow into the retorts through the pipes 25. The gas generated from the oil passes through the pipes 17 of the retorts and then discharges into the gas-washer 4, from which it passes through the pipe 38 to a suitable storage-tank.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the prin-

ciple or sacrificing any of the advantages of this invention.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

An apparatus of the class described having retorts at different elevation, return-elbows forming conduits detachably secured to the retorts and connecting the opposite ends thereof together in pairs, to secure a flow of the liquid lengthwise through a series of retorts, and a substantially horizontally disposed pipe extending through the return-elbows at one end of the upper retort and detachable from the said retort with the said elbow when the latter is removed from the said retort, the said pipe when the elbow is secured to said retort extending into the latter to supply material thereto.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

NICHOLAS GEORGE HOCK.

Witnesses:

GEORGE JOHN SPEAR,  
A. RILEY.