

Oct. 7, 1930.

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1,777,301

APPARATUS FOR MAKING GAS

Filed May 27, 1925

2 Sheets-Sheet 1

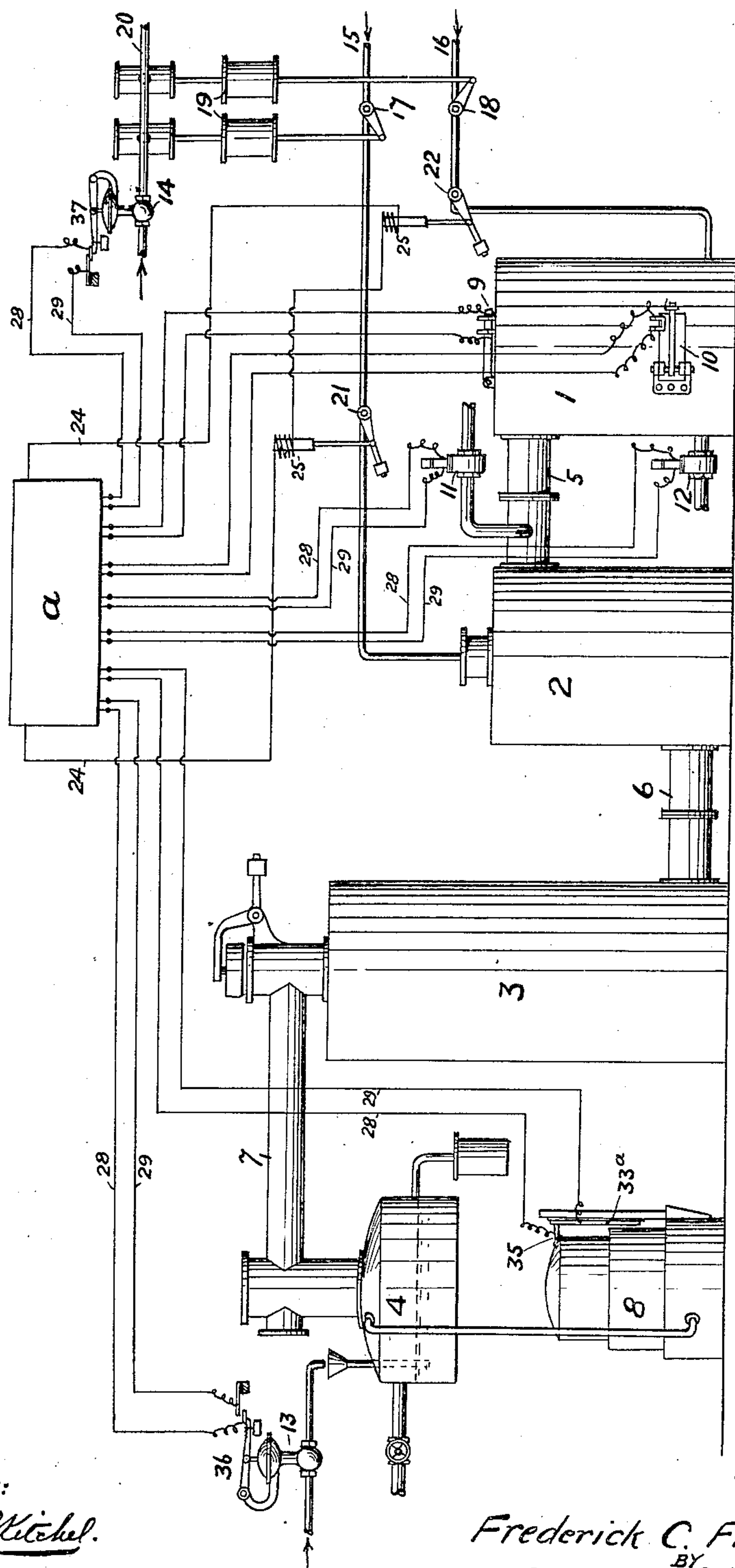


FIG. 1.

WITNESS:

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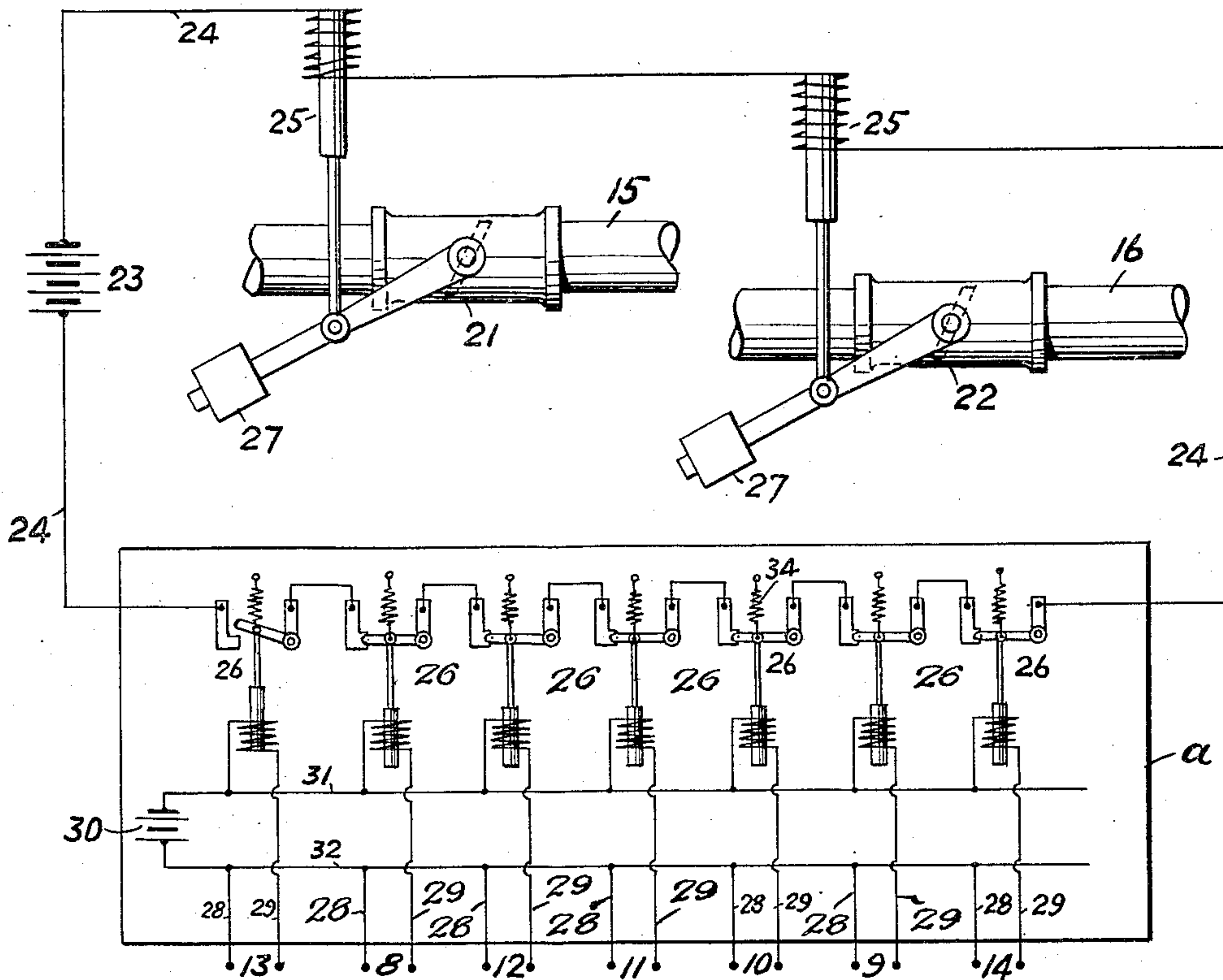


FIG. 2.

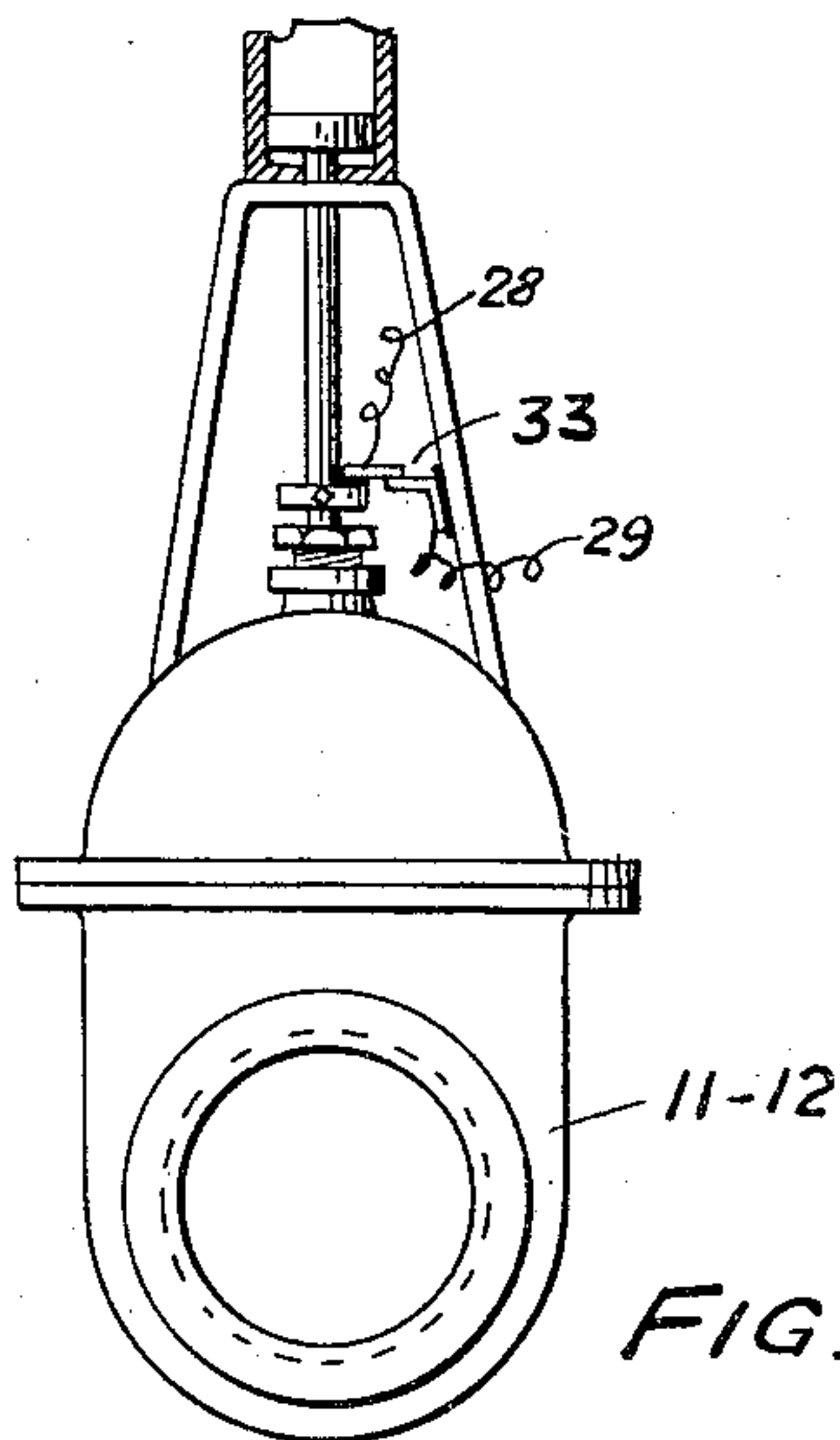


FIG. 3.

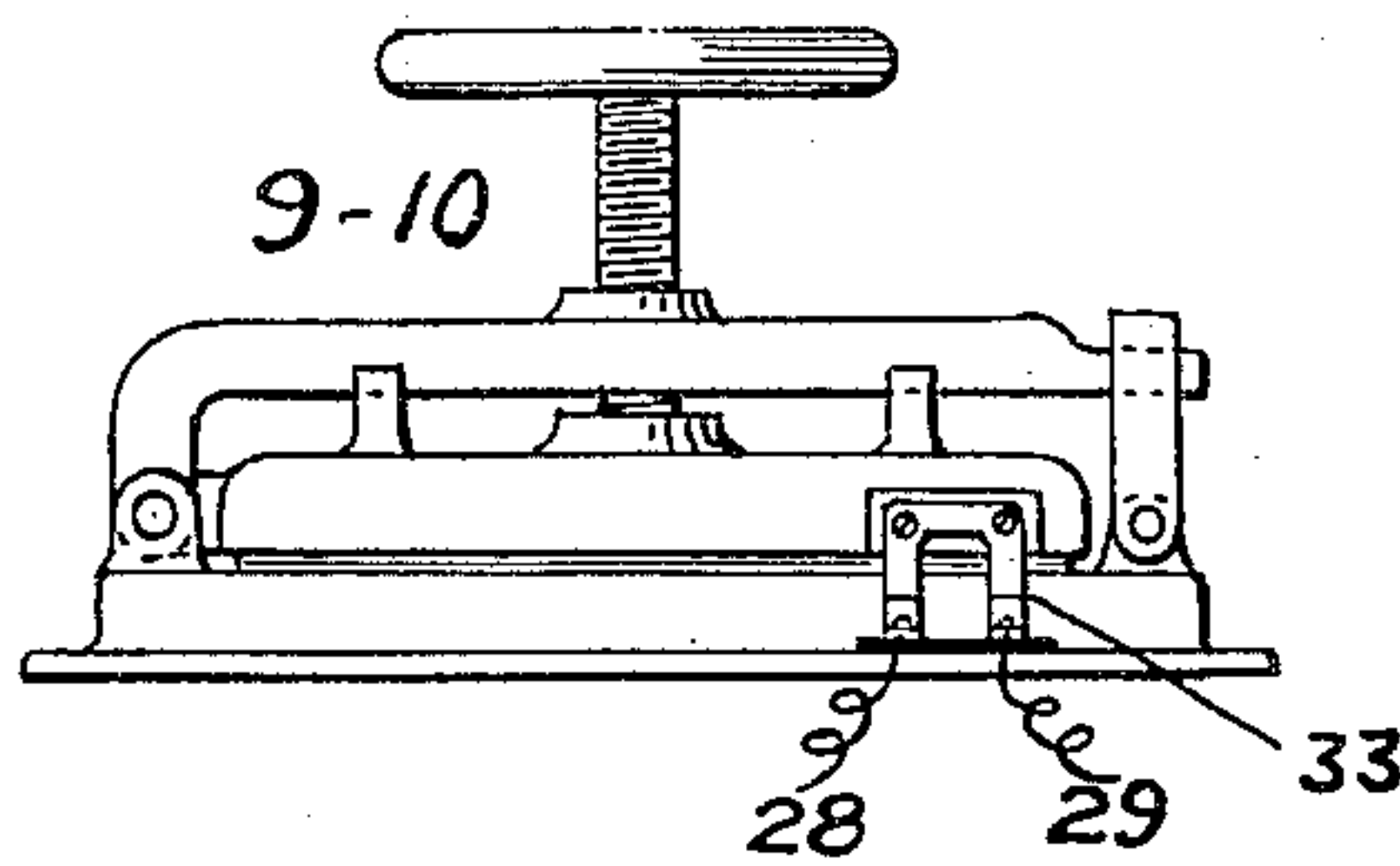


FIG. 4.

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UNITED STATES PATENT OFFICE

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APPARATUS FOR MAKING GAS

Application filed May 27, 1925. Serial No. 33,107.

One object of the present invention is to automatically exclude gas making fluid, oil and steam, from the apparatus when by reason of improper positioning of some of its elements, such as the opening of generator doors, the apparatus is not in condition to safely receive gas making fluid, all independently of and without regard to the position of the running flow valve for the gas making fluid whether set manually or automatically as by apparatus known as an automatic control, and further to again permit of flow of gas making fluid when the apparatus has been restored to proper condition for its safe reception.

Other objects of the invention will appear from the following description at the end of which the invention will be claimed. However, it may be said that, generally stated, the invention comprises apparatus for making gas having elements that have to be properly positioned for safe and satisfactory gas making and having an inlet connection for gas making fluid, and provided with flow valves arranged in series and interposed in said connection and of which one is an operating valve and of which the other is an emergency valve, and means independent of the running valve and interposed between said elements and the emergency valve and adapted to close the latter in response to improper positioning of the former and to open the latter in response to proper positioning of the former.

In the following description the invention will be described in connection with apparatus for making gas of the type usually designated a water gas set and for that reason such apparatus to the extent that may be necessary for an explanation of the invention is illustrated in the accompanying drawings forming part hereof and in which

Figure 1 is a diagrammatic elevational view illustrative of a water gas set having my invention in application thereto.

Fig. 2 is a detached schematic elevational view drawn to an enlarged scale and diagrammatically illustrating certain electrical equipment shown as housed at the upper part of the center of Fig. 1.

Fig. 3 is an enlarged side view of one of the valves shown in Fig. 1, and

Fig. 4 is an enlarged side view of one of the generator closures shown in Fig. 1.

The apparatus for making gas shown in the drawings comprises a water gas generator 1, a carbureter 2, a superheater 3, and a wash box 4, properly interconnected as by pipes 5, 6 and 7. There is also shown a relief holder 8 which is perhaps diagrammatic as to proportion and which is usually located in the yard and which is too well understood to require further illustration or description. However, it may be said that the gas passes through it on its way to the storage holder not shown because too well understood to require illustration. Apparatus for making gas has elements that have to be properly positioned for safe and satisfactory gas making. Examples of these elements are the generator doors or closures 9 and 10, the carbureter air valve 11, the generator air valve 12, the relief holder 8, (which should not be too high or too low) and the water supply 13 to the wash box which should be maintained. The pressure of the power used to operate the valves 14 is another example of such an element. Apparatus for making gas also has inlet connections for gas making fluids. The oil line 15 is an example of such a connection as is also the steam line 16. The apparatus for making gas is provided with flow valves arranged in series and interposed in the inlet connection for gas making fluid and one of these flow valves is an operating valve and the other of these flow valves is an emergency valve. 17 is the operating flow valve of the oil inlet connection 15, and 18 is the operating flow valve of the steam connection 16. By operating

flow valve is meant the valve that is operated periodically in accordance with a gas making cycle. The operating flow valve may be operated manually according to the cycle, or it may be operated automatically by mechanism known as an automatic control of which the valve operating cylinders 19 as well as the power supply connection 20 exemplify parts. It is unnecessary to show an automatic control because they are well understood and examples of them may be found in U. S. Patents Nos. 1,152,869 and 1,184,692. 21 is the emergency valve of the oil supply connection and it is interposed in the oil pipe 15 in series with the operating valve 17. 22 is the emergency valve of the steam line 16, and it is interposed in series with the steam operating valve 18. There are means independent of the operating valve or valves and they are interposed between the emergency valve or valves and those elements, 8 to 14 inclusive, which have to be properly positioned for safe and satisfactory gas making, and their operation is confined to those elements and takes place independently of the steam operating valves 17 and 18, so that no matter what may be the position of the operating valves 17 and 18 the means last referred to operate to perform their function. As shown the means comprise, referring to Fig. 2, a source of current 23, having a current path 24 in which are interposed electromagnetic devices 25, one for each valve 21 and 22, and a series of electromagnet circuit makers and breakers 26, one for each of the elements 9 to 14. When all of the circuit closers 26 are closed the circuit path 24 is uninterrupted and the devices 25 hold the valves 21 and 22 in open position which is the normal position. When any one of the circuit closers 26 is open the circuit 24 is broken and the valves 21 and 22 are closed as by the weights 27. Each electromagnetic circuit closer 26 is included in a local circuit 28 to 29 across a source of current 30, or more specifically, across the leads 31 and 32 thereof. The electromagnetic circuit closers 26 are indicated as arranged in an enclosure or casing indicated at *a*, more for the sake of illustration than anything else and in order to connect Figs. 1 and 2. Each local circuit 28 and 29 includes a contact 33 which is normally closed when the elements 9 to 14 with which it is associated is in proper position for the apparatus to receive gas making fluid and which is open when the element with which it is associated is not in that position. To illustrate if one of the valves 17 or 18 and also the corresponding emergency valve is open, it would not be proper to open the door 9 or the door 10, because the person so doing exposes himself to danger from fire. In the present invention if one of these doors, for example 10, is opened its contact 33 is opened, its electromagnetic circuit closer 26

(the third one from the righthand end in Fig. 2) is de-energized and opened by its spring 34 breaking the circuit 24 and permitting the emergency valves 21 and 22 to close which they do before the door can be opened to any substantial extent so that all danger of burning is avoided. The operation of the contacts 33 and accessories of the various other elements 9 to 14 will be understood from the foregoing description because it is the same with the following exceptions: One of the members of the contact 33^a of the relief holder 8 is elongated so that the other element 35 only breaks contact when it runs off the end of element 33^a, and the pressure responsive devices 36 and 37 interrupt their contacts 33 only when the pressure for the elements 13 and 14 falls too low.

It will be obvious to those skilled in the art to which the invention relates that modifications may be made in details of construction and arrangement and in matters of mere form without departing from the spirit of the invention which is not limited as to such matters or otherwise than as the prior art and the appended claims may require.

I claim:

1. Apparatus for making carburetted water gas, having in combination, a gas generator, a carbureter, and having elements that have to be properly positioned for safe and satisfactory gas making and having oil and steam inlets communicating with the interior of the generator and carbureter, and provided with flow valves arranged in series in said inlets and of which one is an operating valve and the other is an emergency valve, and means independent of the operating valve and interposed between said elements and the emergency valves and adapted to operate the latter.

2. An automatically controlled carburetted water gas set, including in combination, automatic control means, a water gas generator, a carbureter, a superheater, elements operatively independent of the automatic control means and that have to be properly positioned for safe and satisfactory gas making, connections communicating with the interior of the vessels of the set for the introduction of gas making fluids, two flow valves arranged in series and interposed in each of said connections and of which one is operatively connected with the automatic means for normal operation, and means independent of said last mentioned valves and of the automatic control means and interposed between said elements and the others of said pairs of valves for operating the valves.

3. An automatically controlled carburetted water gas set, having in combination, a water gas generator, a carbureter, automatic control means, connections leading to the interior of the chambers of the set for gas making fluids, elements which play no part in the

cyclic operation of the set, valves arranged
in pairs and in series in said connections,
means interposed between one of the valves
of the pairs of valves and the automatic con-
5 trol means for producing cyclic operation of
the set, and connections independent of the
automatic control means and of the valves
controlled thereby and interposed between
said elements and the other of the valves of
10 the pairs.

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