June 19, 1951 D. G. EDWARDS 2,557,419

SMOKE AND GAS CONSUMER

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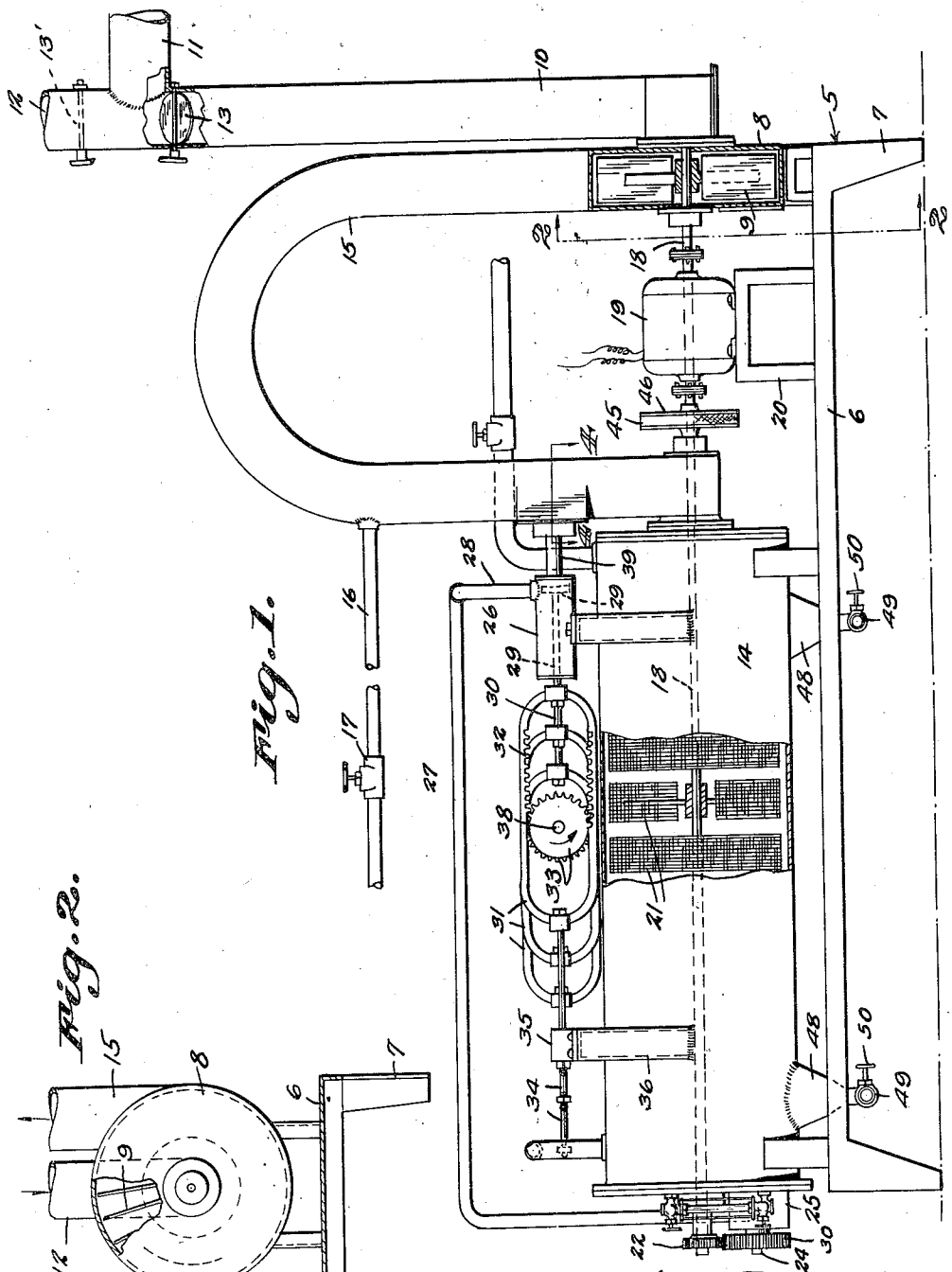


Fig. 1.

Fig. 2.

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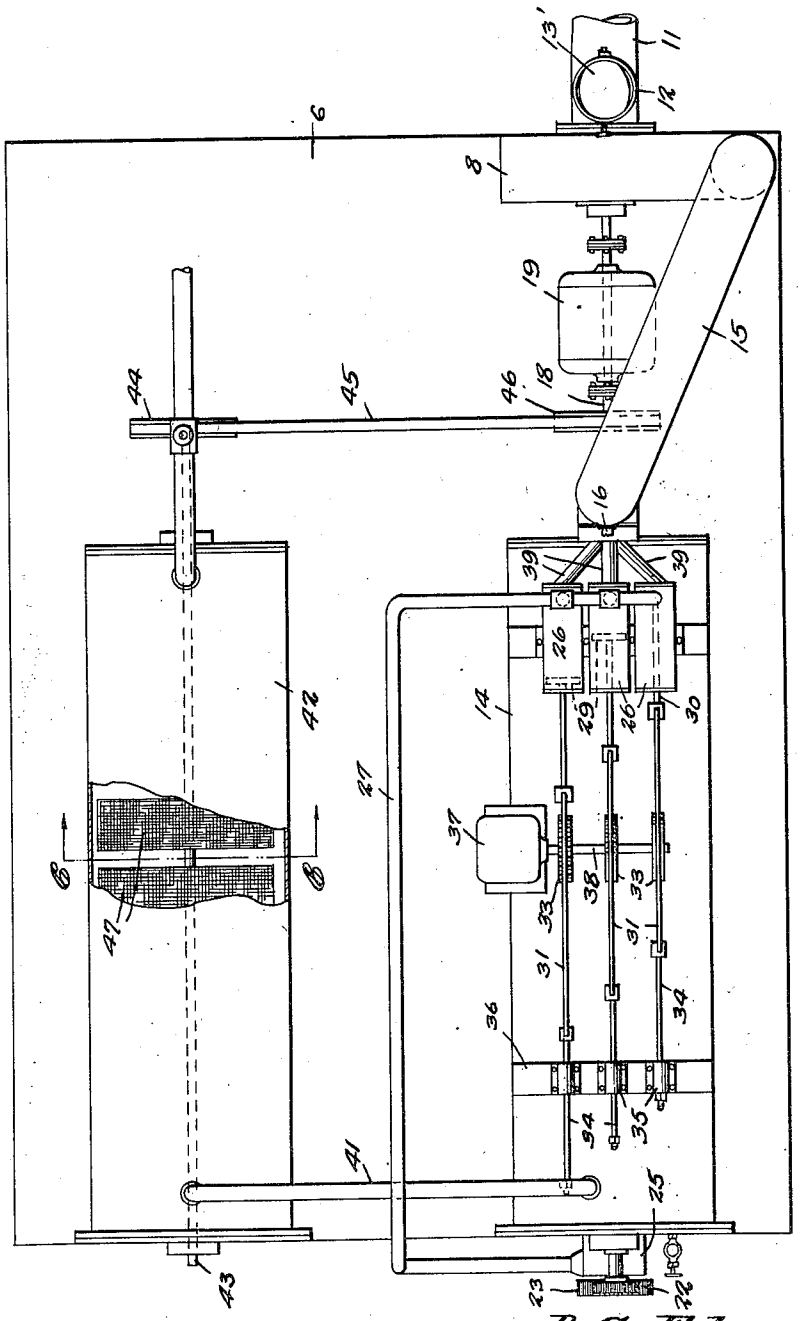
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Fig. 3.



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Fig. 7.

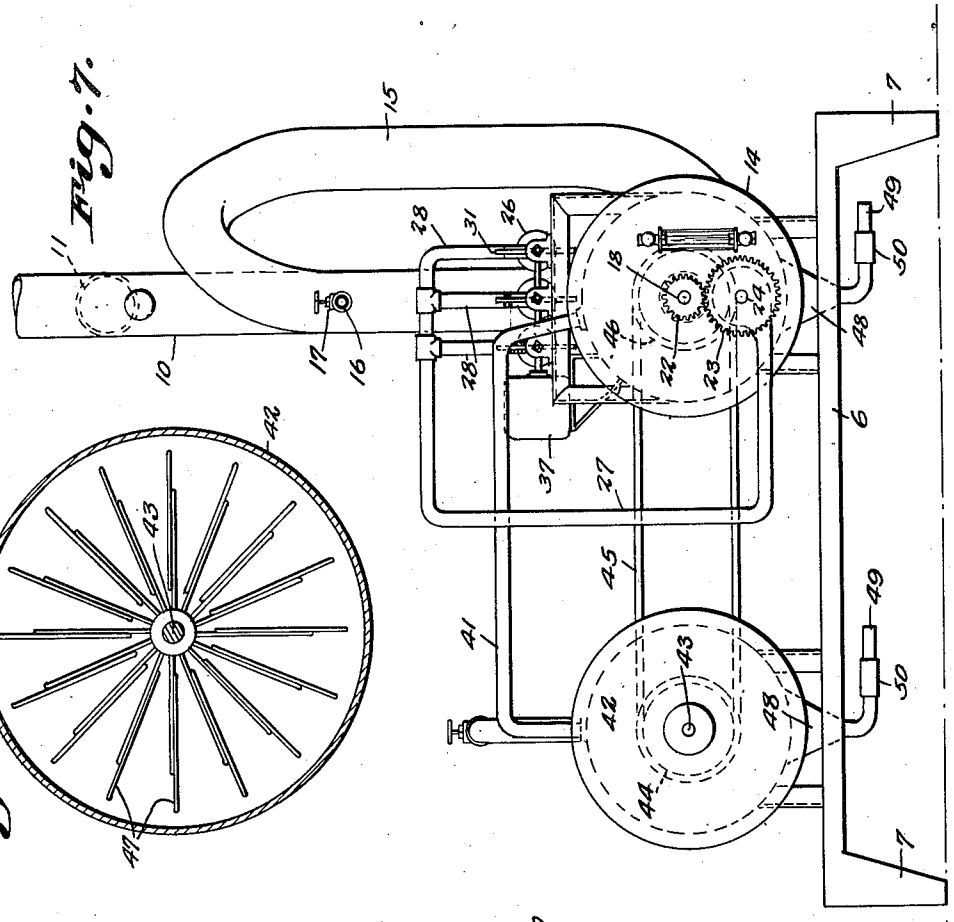
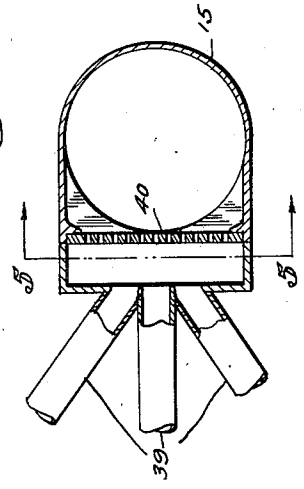


Fig. 6.

Fig. 4.



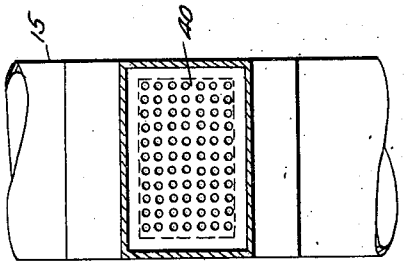


Fig. 5.

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Patented June 19, 1951 2,557,419

UNITED STATES PATENT OFFICE

2,557,419

SMOKE AND GAS CONSUMER

Daniel G. Edwards, Clarksville, Tenn.

Application November 2, 1949, Serial No. 125,036

1 Claim. (Cl. 183—8)

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This invention relates to a smoke and gas consumer, the primary object of the invention being to provide an apparatus of a portable character, which may be connected with the smoke pipe of a furnace, the construction of the apparatus being such that the smoke and gases resulting from the burning of fuel in furnaces, will be treated in such a way as to remove the smoke and gases which are of a harmful nature, and finally liberate the purified air into the atmosphere.

An important object of the invention is to provide an apparatus of this character, including an intake pipe, with a suction fan operating at the base thereof, the suction fan operating to draw the smoke and gases which are the result of combustion, from the furnace, and pass the gases through condenser chambers, liberating the obnoxious gases and smoke therefrom.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claim, it being understood that changes may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

Referring to the drawings

Figure 1 is an elevational view of a smoke and gas consumer, constructed in accordance with the invention.

Fig. 2 is a sectional view taken substantially on lines 2—2 of Fig. 1.

Fig. 3 is a plan view of the apparatus.

Fig. 4 is a sectional view taken on line 4—4 of Fig. 1.

Fig. 5 is a sectional view taken substantially on line 5—5 of Fig. 4.

Fig. 6 is a sectional view taken on line 6—6 of Fig. 3.

Fig. 7 is a front end elevational view of the apparatus.

Referring to the drawings in detail, the reference character 5 indicates the support for the apparatus, which may be in the form of a platform 6 with legs 7 disposed at the corners thereof, supporting the platform 6.

The reference character 8 indicates a suction fan housing in which the suction fan 9 operates, the fan housing 8 being in communication with the inlet pipe 10 that extends laterally at 11, where it is connected with the smoke stack of a furnace, to draw the smoke and gases from the furnace.

An exhaust pipe 12 is provided at the upper

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end of the inlet pipe 10, and the valve 13 is placed in the inlet pipe 10, in such a way that the inlet pipe 10 may be closed off to allow the smoke and gas or products of combustion from the furnace, to be carried off through the exhaust pipe 12, in case of emergency, and for use if for some reason, the apparatus should become inoperative. A valve 13' is provided in the pipe 12 above the pipe 11, the valve 13' operating to close off the pipe 12 when the valve 13 has been moved to its open position to cause products of combustion to be drawn through the pipe 11.

The reference character 14 indicates the main condenser of the apparatus, which is in communication with the suction fan housing 8, through the pipe 15 which extends upwardly an appreciable distance, and then extends downwardly, as clearly shown by Fig. 1 of the drawing, the pipe being of substantially U-shaped formation.

A water inlet pipe indicated by the reference character 16 extends from a suitable water supply, and has one end thereof extended into the pipe 15, as shown by Fig. 1, so that the valve 17 in the pipe 16, may be operated, to admit water to the pipe 15, from where it passes into the main condenser 14. Water enters the condenser 14, until it has reached the desired level in the condenser.

Extending through the main condenser, is the power shaft 18, the power shaft 18 extending through the ends of the pipe 15, as clearly shown by Fig. 1 of the drawings, where it is mounted in bearings, the shaft 18 providing a support for the suction fan 9 which is shown as secured thereto. A motor 19 mounted on the support 20, constitutes the power unit of the device and operates to rotate the shaft 18. The shaft 18 which extends through the condenser 14, provides a support for the agitators 21.

These agitators are constructed preferably of wire mesh material so that water passing into the condenser, will be properly agitated, to absorb the gases and smoke.

Mounted on one end of the shaft 18, is the gear 22 which meshes with the large gear 23 mounted on one end of the pump shaft 24 on which a pump not shown, and which is mounted in the pump housing 25, operates.

This pump housing 25 pumps water from the condenser, and passes the water to the pump cylinders 26, through the pipe 27, the pipe 27 being in communication with the pump cylinders, through the branch pipes 28 which are shown as connected with the pump cylinders, at points adjacent to the forward ends of the pump cylinders.

Operating within the cylinders **26**, are pistons **29**, the pump cylinders **26** and pistons **29** being arranged in horizontal spaced relation with respect to each other, as clearly shown by Fig. 3 of the drawings.

Forming a part of each piston, is a reciprocating piston rod **30**, which rods are connected also with yokes **31** which embody spaced bars formed with teeth **32**, which teeth mesh with teeth of the mutilated gears **33**. Connected with each yoke **31**, is a supporting rod **34**, the rods **34** operating through the bearings **35** that are secured to the bracket **36**, mounted on the housing of the condenser **14**.

Mounted on the upper surface of the condenser **14**, is the motor **37** which is provided with a shaft **38** that extends through the yokes **31**, where they are provided with the mutilated gears **33**, operating the mutilated gears.

Thus it will be seen that due to this construction, as the shaft **38** is rotated by the motor **37**, the mutilated gears will contact the upper and lower teeth of the yokes in such a way as to cause reciprocation of the yokes and pistons which are connected therewith through the medium of the piston rods.

These pump cylinders **26** communicate with the pipe **15**, through the pipes **39**, the pipe **15**, at the point of communication between the pipe **15** and pipes **39**, being widened providing a compartment in which the atomizer **40** is positioned, the atomizer **40** being in the form of a plate perforated, as clearly shown by Figs. 4 and 5 of the drawings, causing the water pumped into the pipe **15**, to enter in a fine spray. Due to this construction, it will be obvious that the products of combustion from the furnace which have been drawn into the pipe **15**, will necessarily pass the spray of water in entering the condenser, which will cause the gases and smoke to be absorbed in the water, which is of course directed to the condenser.

The reference character **41** indicates the exhaust pipe from the condenser **14**, the pipe **41** extending upwardly and laterally, where it connects with the condenser **42**, the pipe **41** extending into the top of the condenser **42**, adjacent to one end thereof.

This pipe **41** carries the smoke and air, or products of combustion in general, from the condenser **14**.

Extending through the condenser **42**, is the shaft **43** which has one of its ends extending beyond the forward end of the condenser **42**, where it is provided with the pulley **44** over which the belt **45** operates, the belt **45** also operating over the pulley **46**, transmitting movement from the power shaft **18**, to the shaft **43**, rotating the shaft.

Mounted on the shaft **43**, and arranged in parallel spaced relation with respect to each other are agitators **47** which are in the form of paddles which with their constant rotation, further act to purify the air and move the obnoxious gases and smoke therefrom.

Each condenser is provided with a funnel-shaped discharge pipe **48** which connects with an exhaust pipe **49**, the passage of water through the pipes **49** being controlled by the valves **50**, so that the water may be removed from the condensers and replaced with fresh water, when desired.

Having thus described the inventon, what is claimed is:

In a smoke consuming apparatus, a platform support, a main water containing condenser and an auxiliary condenser mounted on the support, an inlet pipe, a pipe establishing communication between the inlet pipe and said main condenser, a suction fan mounted within the pipe connecting the inlet pipe with the main condenser, adapted to draw products of combustion into the main condenser from the inlet pipe, means for delivering water in a fine spray into the path of travel of the products of combustion passing into the main condenser, a plurality of horizontal intermittently operating pumps mounted on the main condenser, communicating with the main condenser, pipes providing communication between the pumps and inlet pipe, whereby water is sprayed continuously, means for circulating water through the main condenser, means for directing products of combustion from the main condenser into the auxiliary condenser, and agitators embodying wire mesh blades operating in the condensers adapted to dissipate products of combustion within the condensers.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
217,294	North	July 8, 1878
797,661	Cline	Aug. 22, 1905
879,219	Towns	Feb. 18, 1908
957,849	Kalb	May 10, 1910
1,740,594	Hill	Dec. 24, 1929
1,814,582	Benkert et al.	July 14, 1931
2,040,700	Magaton	May 12, 1936

FOREIGN PATENTS

Number	Country	Date
26,356	Great Britain	Dec. 18, 1905