

May 16, 1933.

C. H. MIKODY

1,909,207

SMOKE CONSUMER

Filed Nov. 16, 1929

3 Sheets-Sheet 1

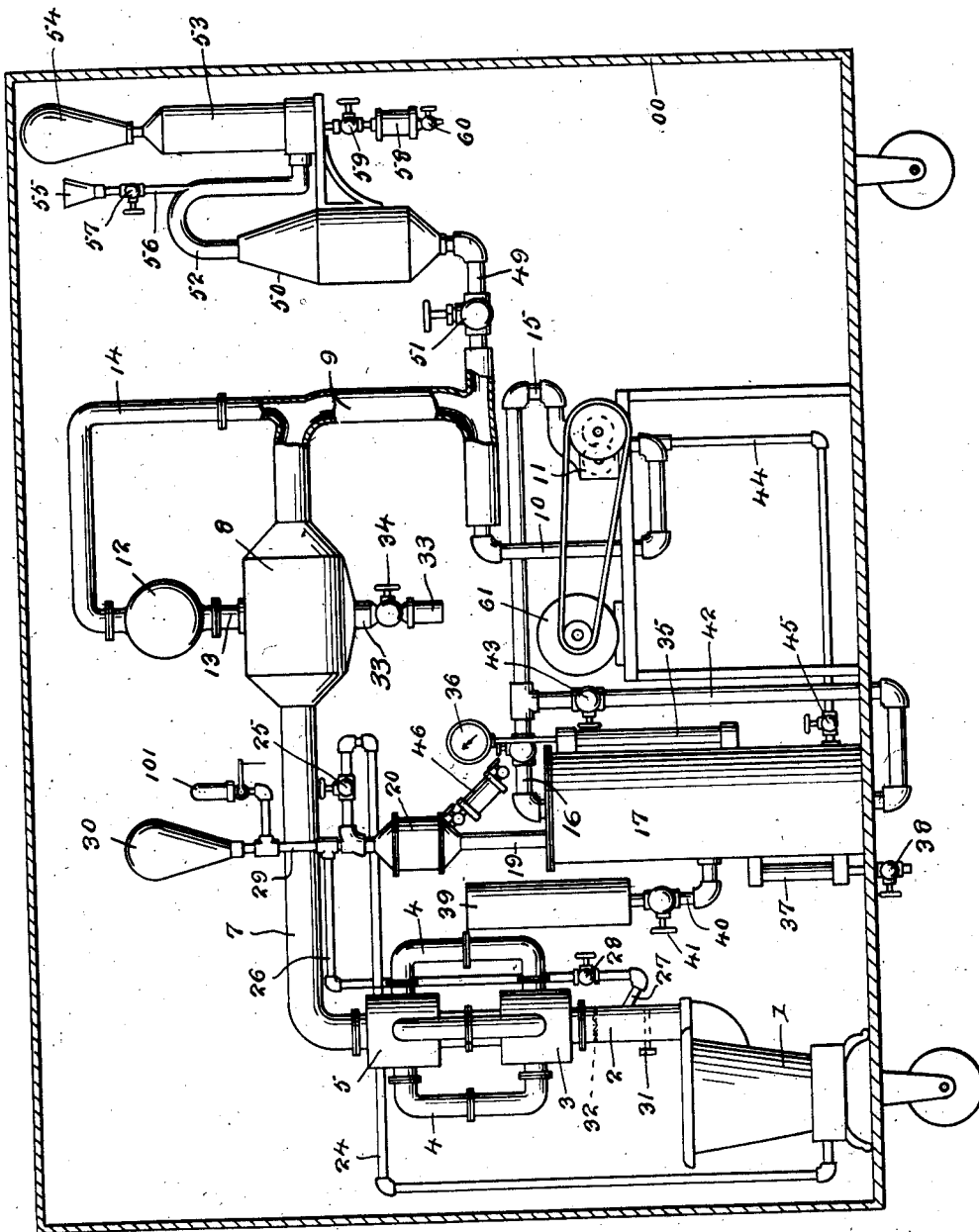


Fig. 1.

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Fig. 5.

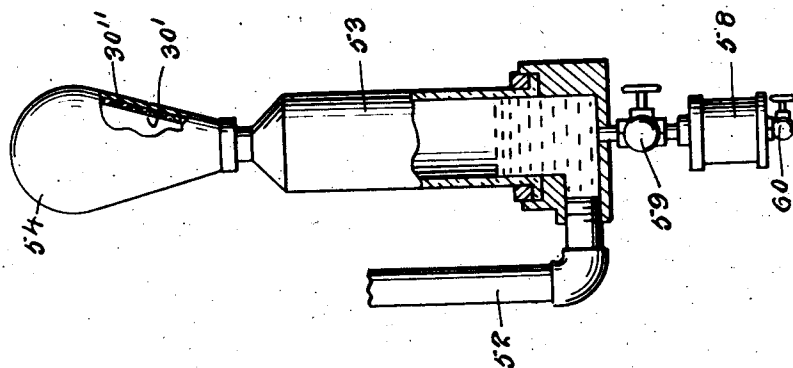


Fig. 3.

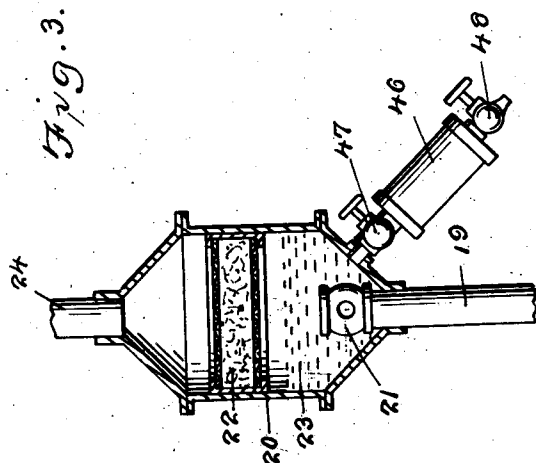


Fig. 4.

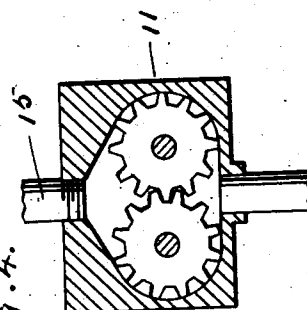
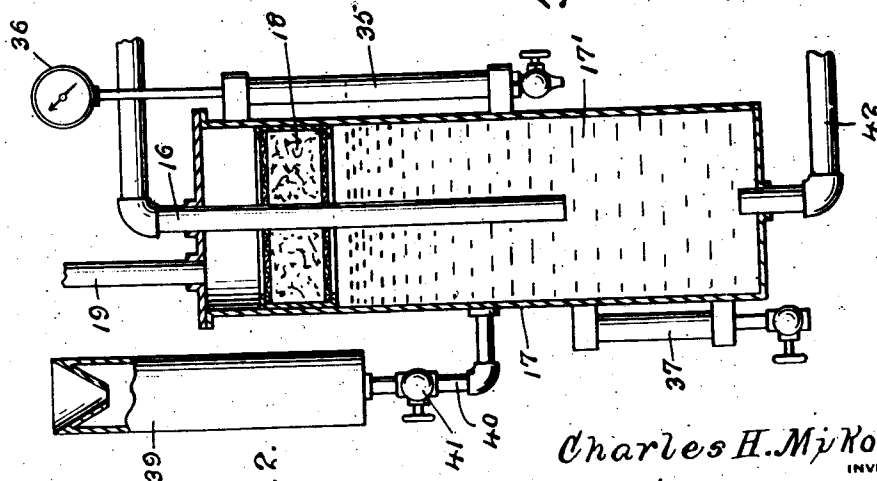


Fig. 2.



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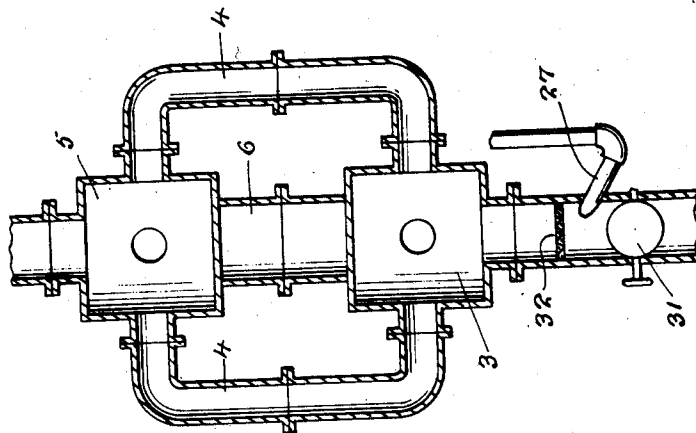


Fig. 6.

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UNITED STATES PATENT OFFICE

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SMOKE CONSUMER

Application filed November 16, 1929. Serial No. 407,689.

This invention relates to a smoke consumer for use with any kind of a heating system or other system or apparatus which produces smoke, the general object of the invention being to provide means whereby all the obnoxious elements in the products of combustion from a smoke producing device are eliminated so that the residue can be expelled into a room or any other place without causing discomfort or injury to persons, etc. in said room or place. Thus this invention will eliminate the use of chimneys and other exhaust means for smoke producing apparatus.

Another object of the invention is to provide means whereby all the heat is extracted from the products of combustion so that the room or other place to be heated is heated with the minimum amount of fuel.

A still further object of the invention is to arrange the invention on a wheeled support so that it can be pushed from one room to another to heat the various rooms.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claim.

In describing the invention in detail, reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:—

Figure 1 is a sectional view through a truck or other wheeled support, showing the invention thereon, the parts of the invention being shown in elevation.

Figure 2 is a sectional view with parts in elevation of the tank and the parts associated therewith.

Figure 3 is a sectional view through the small tank arranged above the large tank.

Figure 4 is a sectional view through the pump.

Figure 5 is an elevation partly in section through the purifying means used when the pump is not in operation.

Figure 6 is a sectional view through the heat extracting means which receive the products of combustion from the stove.

Referring to Figures 1 to 6, both inclusive, the numeral 1 indicates a stove or other heating element and the numeral 2 indicates a pipe through which the products of combustion from the stove pass. This pipe leads the products of combustion into a drum 3 from which they pass through the four pipes 4 into a second drum 5 which is supported from the first drum by the tubular connection 6. A pipe 7 leads the products of combustion from the drum 5 into a drum 8 which is provided with an outlet pipe 9, this outlet pipe being connected by the small pipes 10 with the intake of a gear pump 11. A small drum 12 is connected with the top of the drum 8 by the pipe 13 and pipes 14 connect the top of the drum 12 with a depending part of the pipe 9. Pipes 15 lead the products of combustion from the outlet of the pump to a pipe 16 which extends downwardly through the top of a tank 17 which contains a liquid 17' having a suitable chemical therein. The pipe 16 extends an appreciable distance into the liquid so that the products of combustion escaping from the pipe must pass upwardly through the liquid and thus be cleaned thereby. A filter 18 is placed in the upper part of the tank and acts to filter the products of combustion passing from the same.

A pipe 19 connects the top of the tank 17 with a small tank 20, while within said latter tank and attached to the upper end of the pipe 19 is a pressure valve 21. A filter 22 is also arranged in the tank 20 above liquid 23 in said tank, this liquid also containing chemicals and is similar to the liquid in the tank 17. The pressure valve 21 will prevent the products of combustion from passing into the tank 20 until a certain pressure exists in the tank 17. Pipe 24 conducts the residue of the products of combustion from the tank 20 to the lower draft opening of the stove, a valve 25 being arranged in said pipe line and a branch line 26 leads some of the residue from the tank 20 to a nozzle 27 in the pipe 2, this line also containing a valve 28. The remaining residue of the products of combustion is carried by a pipe 29 into a discharge member 30 which is formed of wire mesh 30' covered with cloth 30'', as shown in

Figure 5. From this member, the purified residue of the products of combustion escape into the atmosphere.

Thus it will be seen that the products of combustion passing through the drums 3 and 5, the pipes 4 and 7 and the drums 8 and 12 and their pipes will have all heat contained therein extracted by said drums and pipes so that the room or other place in which the apparatus is located will be heated with the minimum amount of fuel. The pump acts to give a circulation to the products of combustion and as it is a geared pump, its gears will crush any particles of foreign matter carried by the smoke or products of combustion. Then the smoke or products of combustion will pass through the liquid containing chemicals in the tanks 17 and 20 so that it is thoroughly cleaned and the purified residue is delivered to the stove and to the pipe 2 to increase the draft of the stove and the remainder passes through the strainer 30 into the room. The purified residue is free of all obnoxious gases and the like so that it will not cause discomfort or injury to persons in the room, and the use of a chimney or other discharge for the smoke is eliminated. The flow of the purified residue to the nozzle and stove is controlled by the valves 25 and 28.

The pipe 2 contains the usual damper 31 and a screen 32 is placed in the pipe below the drum 3 to prevent particles of foreign matter entering the drums. The nozzle 27 discharges into the pipe 2 between the damper and the screen. It will, of course, be understood that some of the products of combustion passing in the drum 8 will pass directly through the pipe 9, while another portion will pass through the drum 12 and its pipe 14 into the pipe 9. A discharge pipe 33 is connected with the bottom of the drum 8 and contains a valve 34, so that any foreign matter collecting in the drum can be discharged therefrom by opening the valve.

A sight gauge 35 is provided for the tank 17 for indicating the liquid level therein and a pressure gauge 36 is connected with the upper end of this gauge. A small sight gauge 37 is in communication with the lower part of the tank so that one can tell when the liquid in the tank contains so much foreign matter that the tank must be emptied and recharged. A valve 38 is connected with the bottom of this gauge and by opening this valve, the liquid in the tank can be discharged. A funnel 39 is connected with the tank 17 by a pipe 40 which contains a valve 41 so that by opening the valve 41 and pouring liquid into the funnel, the tank can be refilled with liquid.

A branch pipe 42, containing a valve 43, connects the pipe line 15 with the bottom of the tank and by slightly opening this valve

43, some of the products of combustion will pass through the pipe 42 into the lower part of the tank and thus agitate the liquid therein to prevent sediment from settling to the bottom of the tank. A small pipe 44 connects the discharge of the pump with the lower part of the tank 17 and contains a valve 45 so that when the smoke is heavy or contains a large amount of foreign matter, the valve 45 can be opened so that a portion of the smoke can pass into the bottom of the tank. A sight glass 46 is connected with the lower part of the tank 20 so that by slightly opening a valve 47, some of the liquid in the tank 20 will pass drop by drop into the gauge 46, so that one can tell when the liquid in the tank 23 needs replenishing. By opening a valve 48, the liquid will be discharged from the sight gauge and the tank. The pressure created by the pump will force some of the liquid from the tank 17 into the tank 20 when the apparatus is put in operation.

A pipe 49 connects the lower part of the pipe 9 with a drum 50 and contains a valve 51. The upper end of the drum is connected by a gooseneck pipe 52 with the bottom of a liquid container 53, the major portion of which is preferably formed from glass and carries at its top a screen 54, similar to the screen 30. Liquid is placed in this container 53 through the funnel 55 and the pipe 56 which contains the valve 57. A sight member 58 is connected with the bottom of the member 53 so that by opening the valve 59, some of the liquid will pass into the member 58 to permit one to tell whether or not the liquid is so dirty as to need renewal. By opening the valve 60, this liquid can be discharged from the members 53 and 58. This arrangement is used at night or when the fire in the heating apparatus is banked and very little smoke is given off by the fire. Under these conditions, the pump is rendered inactive and the valve 51 opened so that the products of combustion will pass from the pipe 9 through the pipe 49 into the drum 50 and then through the liquid in the member 53, which purifies the same, and then the purified residue will pass through the screen or filter 54. It will, of course, be understood that besides purifying and extracting the heat from the products of combustion, all danger of fires is eliminated as all sparks contained in the products of combustion are extinguished as the products of combustion pass through the device.

Figure 1 shows the entire system arranged in a wheeled vehicle 100 so that the system can be wheeled from room to room and place to place to heat the various rooms and places and it will, of course, be understood that the device may be placed in a cabinet of ornamental form so that the parts of the system will not be visible and that it can be used in any place desired. A whistle 101 can be connected with the pipe 29, as shown in Figure 1.

I use a special kind of chemical mixture in the liquid, such mixture forming the subject matter of another application.

It is though from the foregoing description
5 that the advantages and novel features of the invention will be readily apparent.

It is to be understood that changes may be made in the construction and in the combination and arrangement of the several parts,
10 provided that such changes fall within the scope of the appended claim.

What I claim is:—

In a device of the kind described, a series of spaced communicating drums arranged at
15 respectively different elevations, means effecting communication between the first pair of drums of the series at a plurality of different points, a heater having its smoke discharge in communication with the first drum of the
20 series, main and auxiliary tanks containing chemically treated liquid, the auxiliary tank being in communication with the main tank through the top of the latter, and a pump having its intake in communication with the
25 final drum of the series and its discharge in communication with the main tank, the auxiliary tank at its upper end being in communication with the heater in the fire box of the latter, the means effecting communication between the discharge of the pump and the
30 main tank being branched with the branches connected respectively with the top and bottom of the main tank and provided with valves for selectively directing the discharge
35 of the pump into the top or bottom of the main tank, both the main and auxiliary tanks being provided with filters above the plane of the liquid contents thereof, and that
40 branch connecting with the top of the main tank discharging below the plane of the level of the liquid contents of the tank.

In testimony whereof I affix my signature.

CHARLES H. MIKODY.

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