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MEANS AND METHOD FOR CONSERVING HEAT GENERATED IN GAS MAKING APPARATUS

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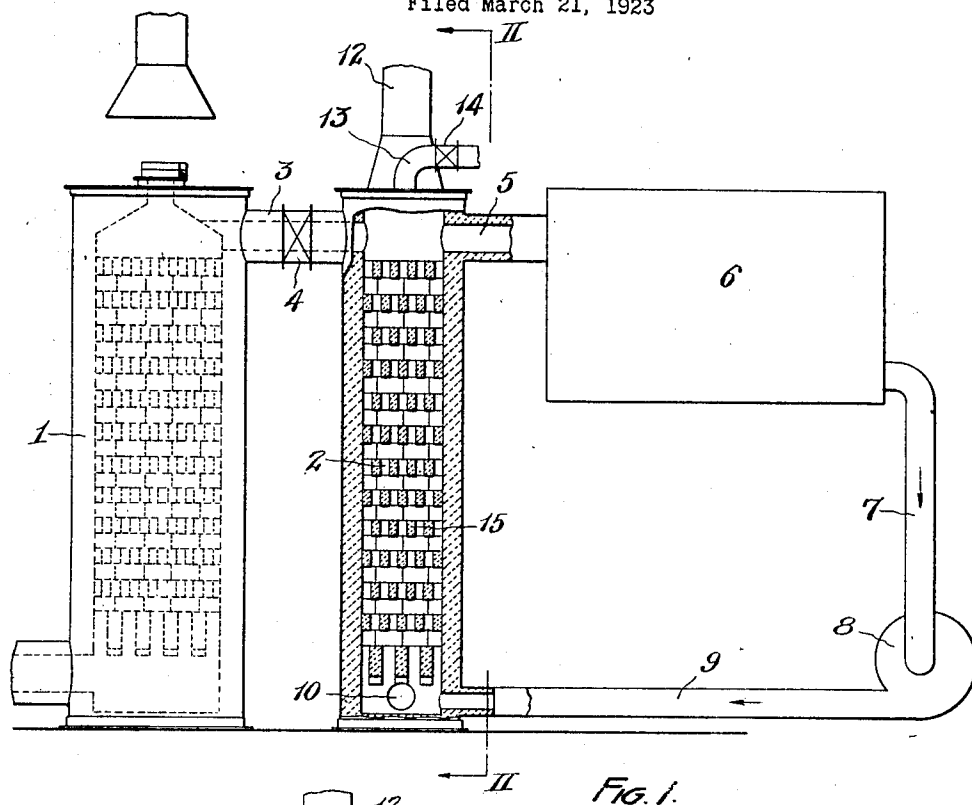


FIG. 1.

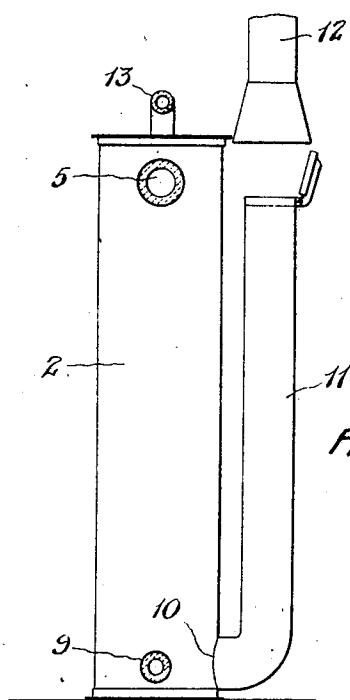


FIG. 2.

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MEANS AND METHOD FOR CONSERVING HEAT GENERATED IN GAS-MAKING APPARATUS.

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My invention relates to means and methods of conserving heat generated in gas making apparatus and particularly the heat contained in the waste gases formed in a water-gas set. The object of the invention is to provide means for and a method of economically utilizing such heat.

The said invention consists of means hereinafter fully described and particularly set forth in the claims.

As is well known to those skilled in the art, the operating of a water-gas set is divided into two periods, the "blow" and the "run". During the "blow" the superheater of the set is heated and during the "run" the water-gas is being manufactured. A common expedient for recovering the heat from these waste gases is to pass them through a steam boiler. Owing, however, to the large amount of hydro-carbons carried by the "run" gas, it has been impractical to utilize the same for such steam making purposes and practice in this respect is being, therefore, confined to the utilization of the "blow" gases. These gases are extremely hot and are generated only a comparatively short time, that is, about one third of the duration of the cycle consisting of the "blow" and two-thirds consisting of the "run", and in order to economically utilize the heat of these gases and prevent excessive back pressure, it was necessary to make the boiler of excessive size.

More specifically, therefore, the object of my invention is to so utilize the heat of the "blow" gas as to permit the use of a smaller size of boiler, permit the same to generate steam during the entire cycle.

This I accomplish by connecting the superheater of the water-gas set with a heat-absorbing and transmitting member which in turn is connected with a boiler, the latter being connected with another portion of the said member and with a fan whereby a circulation through the heating member and boiler may be obtained.

The annexed drawing and the following description set forth in detail certain means embodying my invention, the disclosed means, however, constituting but one of various forms in which the principle of my invention may be employed.

In said annexed drawing:

Fig. 1 represents a diagrammatic front ele-

vation partly in section of an apparatus embodying my invention.

Fig. 2 represents a side elevation taken upon the plane indicated by line II—II in Fig. 1.

In the illustrated embodiment of my invention, only the superheater 1 of the water-gas is shown, which latter is connected with the heating and absorbing member 2 by means of a duct 3 which is provided with a valve 4, said duct being connected with said member at its upper end as shown. This upper end is provided with an outlet duct 5 which establishes connection with a boiler 6. This boiler is provided with an outlet conduit 7 connected with a blower 8 whose outlet side is connected with the bottom of the member 2 by means of a conduit 9. The bottom of said member 2 is furthermore provided with an outlet 10 opening into a conduit 11 discharging into a stack 12.

The upper end of the member 2 is provided with an air duct 13 provided with a suitable controlling valve 14.

The interior of the member 2 is provided with checker-work 15 as shown in section in Fig. 1.

During the "blow", the hot waste gases from the superheater 1 pass into the upper end of member 2. A portion of these gases passes downwardly through the checker-work out through opening 10, up through conduit 11 and are discharged into the stack 12. The remainder of these gases passes through the boiler 6 and is utilized for steam-making purposes therein. These boiler gases pass out through the conduit 7 and are discharged by the fan or blower 8 through the conduit 9 from which they emerge, pass through the opening 10 and out through the stack.

If the waste "blow" gases contain any unconsumed or combustible gas, the same may be burned by admitting the air through the duct 13 as will be understood.

When the "blow" is completed, valve 4 is shut off whereupon the circulation established by the blower 8 causes the gases which are present in the heater, boiler and conduits to pass from the conduit 9 up through the hot checker-work 15 into duct 5, thence into the boiler and back to the blower through the conduit 7. As these gases pass through the hot checker-work they are

heated, pass through duct 5 and are utilized to continue the steam-making operation in the boiler.

During the "run" the water-gas produced passes out of the superheater into the seal (not shown), as will be understood by those skilled in the art.

Also it will be apparent that the fan or blower may be operated continuously or during the "run" period only.

What I claim is:

1. The combination of a source of waste hot gas; a boiler; a heat-absorbing member connected with said source and provided with an outlet connected with said boiler and with a stack-outlet; a conduit connecting the boiler outlet with said heat-absorbing member; and means for creating a circulation through said boiler and member.

2. The combination of a source of waste hot gas; a boiler; a heat-absorbing member connected with said source and provided with an outlet connected with said boiler and with a stack-outlet; an air supply connected with said member; a conduit connecting the boiler outlet with said heat-absorbing member; a valve for shutting the latter off from said source of hot waste gas; and a blower

connected with said conduit, whereby a circulation may be effected through said boiler and absorbing member.

3. The method of conserving the heat contained in the waste gases of a water-gas apparatus, which consists in passing the blow-gases through a boiler and through a separate heat absorbing member; and thereafter creating a serial circulation through the said boiler and member.

4. The method of conserving the heat contained in the waste gases of a water-gas apparatus, which consists in burning the un-oxidized gas in the waste blow gases; passing the gases of combustion through a boiler and through a separate heat-absorbing member; and thereafter creating a serial circulation through the boiler and member.

5. The process of utilizing the waste heat gases of a water-gas set consisting in passing the hot waste gases simultaneously to a boiler and to a heat-absorbing member, and subsequently circulating the gases through the heat-absorbing member and boiler during the gas-making run.

Signed by me this 22nd day of February, 1923.

PIERRE PLANTINGA.