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(56) Documents cited
GB 0888575 GB 0675242 US 4469276
GB 0677636 WO 8102620 US 4372287

(58) Field of search
F4W
F4B

(54) Boiler

(57) A closed boiler with an arrangement of chimneys 10,11 to slow down combustion but still be able to introduce more air to the combustion chamber 15 without fierce combustion. Chimney 10 at the top of the boiler returns to the area underneath the firebed 16, and chimney 11 exhausts to the atmosphere. The arrangement ensures that volatiles not fully burnt are returned to the firebed, and provides greater heat transfer at higher temperatures for less fuel.

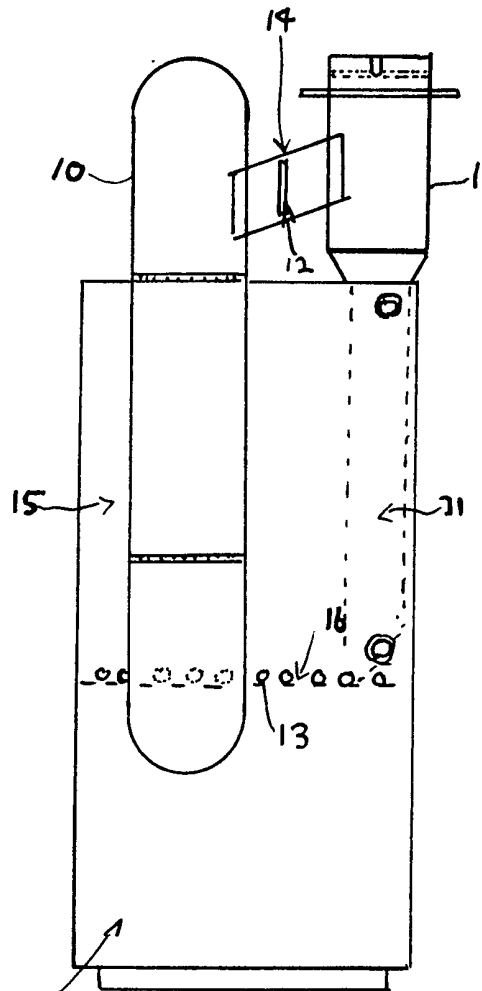


FIG I

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Fig 1

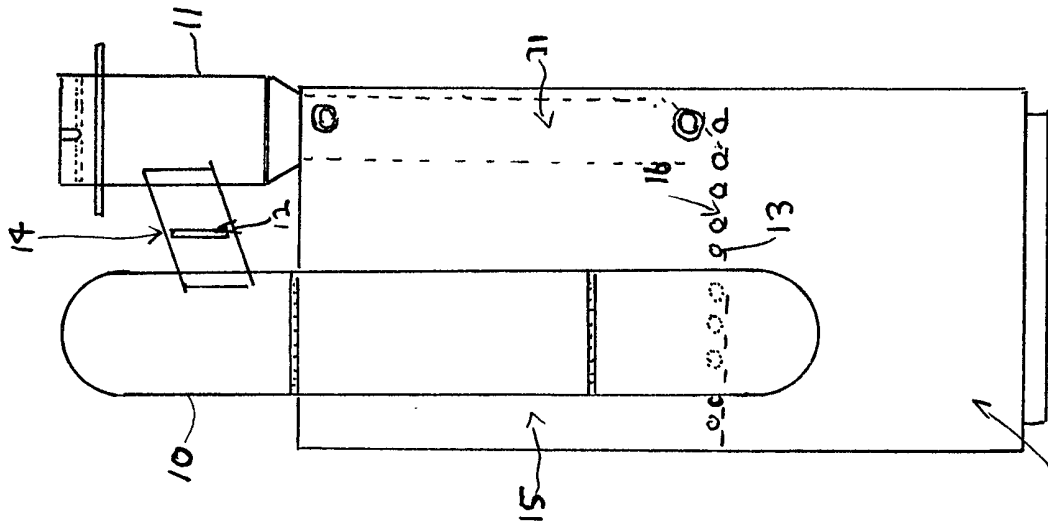


Fig 2

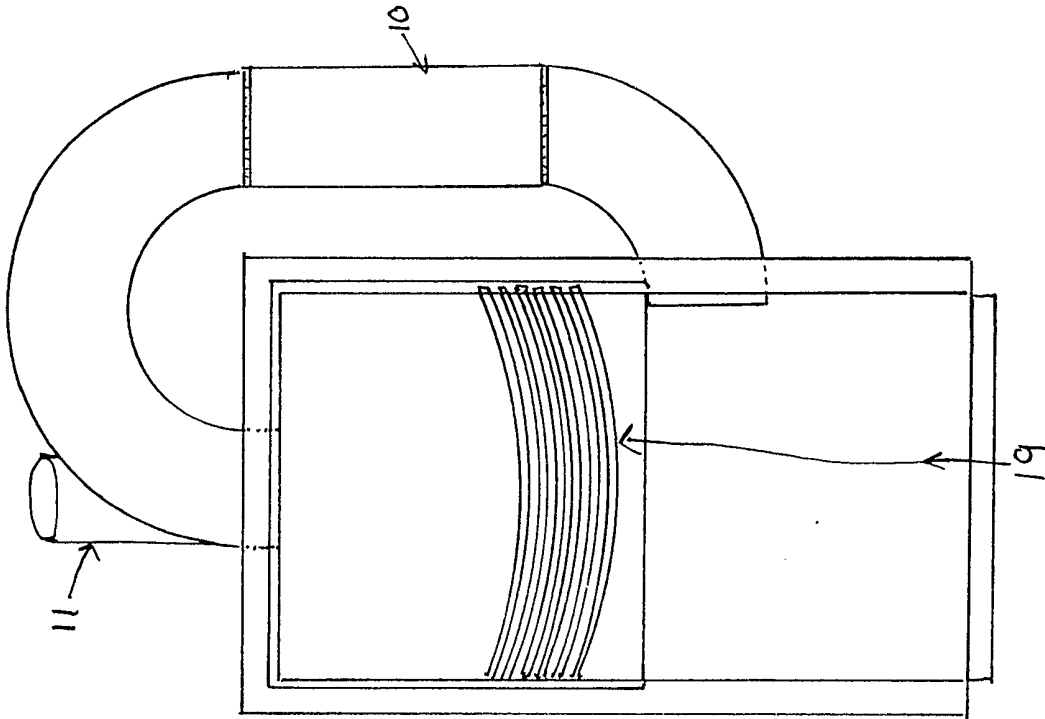
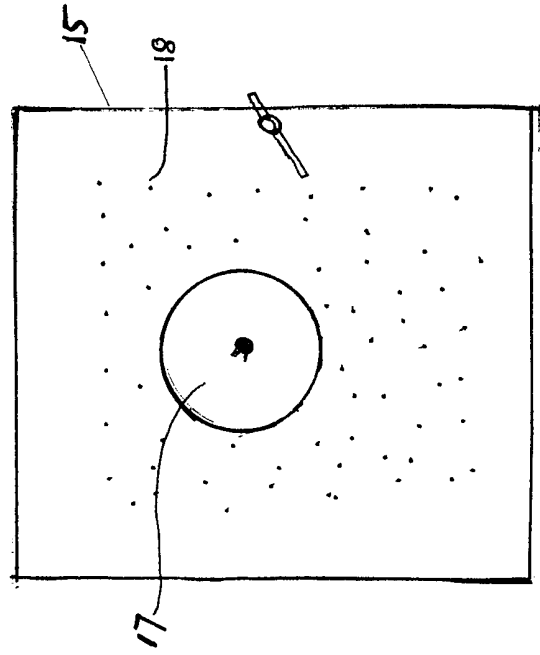


FIG 3



SPECIFICATION

Siamese chimney

5 Improvement to combustion of fossil and solid
fuels on a domestic open and closed fires and
also commercial boilers and fires that exhaust
waste combustion and gasses into the atmos-
10 phere through flues, ducts, chimneys and the
like.

The present invention relates to domestic
solid fuel and central heating boilers and
boilers where heat exchange takes place with
water or air. This invention can be used on
15 multi fuels and the like. It is widely recog-
nised in all combustion that fuel is burnt
rapidly. Many novelties are available to either
help combustion or slow down combustion.
The primary novelty is to control the air ie. the
20 least air the slower combustion takes place.
The greater the flow of air the greater the
combustion.

This method is very unsatisfactory the rea-
son being you can only have no air at all
25 leaving the fire to idle. Say the thermostat is
on a scale of 1 to 10 1 and 2 possibly 3 have
the same effect sleeping fire, 3 to 10 has also
got the same effect rapid and fierce combus-
tion as explained not very satisfactory.

30 The present invention gives a much better
control of combustion even though twice or
three times the volume of air is required for
different fuels. For example burning wood
takes a very small amount of air because it is
35 very volatile. On the other end of the scale
coke needs more air because of its solidness
and absence of volitiles. Lets take for example
when certain types of wood are burnt on the
present invention its burning rate is slowed
40 down 20 times to the same amount of wood
burnt on a similar type of appliance. Different
thickness in wood also slows down the burn-
ing rate.

The present invention is unique and has this
45 ability of slowing down burning rate because
of the arrangement of the flues exhausting the
gasses. On any other type of appliance there
is one chimney and one exhaust hole from the
combustion chamber. On the present inven-
50 tion there are two exhaust holes and two
chimneys from the combustion chamber. One
chimney is slightly smaller and one slightly
larger in this case. The larger chimney is at
the top of the boiler and is returned into the
55 ashcan area just under the fire bed. This is to
take the volatiles which have not fully burned
and return them through the fire bed. Air is
mixed with these volatiles in the ash pit area
this is then pulled through the fire bed with a
60 fan or any other means but in this case under
its own hot air. This rises through the bed and
burns off any volatiles and then exhausts
some of the waste hot gasses up the smaller
flue.

65 The smaller chimney is located in the bot-

tom of the combustion chamber just above
the fire bed. This takes some of the volatiles
but mostly it is super burnt gasses. The flues
as mentioned are not nesseserally in that
70 order of sizes but are in that arrangement.

The present invention is to slow down com-
bustion as well as burn volatiles and also give
greater heat transfer at much higher tempera-
tures for far less fuel. As mentioned wood can
75 be now used more economically. Present
wood burners are hungry and uneconomical.
On the chimney which goes down to the ash
pit is a bypass for when re fuelling. This
allows the exhausted gasses and smoke to go
80 up the smaller chimney and exhaust into the
atmosphere.

This is required on closed boilers because
when the door is open smoke comes into the
room. There is no baffles inside this boiler as
85 in other wood burning stoves and fossil fuel
burners. The siamese chimneys either pass
volatiles back by means of the larger chimney
or extract the gasses into the atmosphere. To
make things clear I will explain with a draw-
90 ing on Fig. 1.

For uses with combustion Fig. 1 is a side
veiw has one flue 10 from combustion cham-
ber 15 to ash pit for carrying and gasses for
re cyclalng through fire bed 16. It also has
95 another flue 11 which comes from bottom of
fire be out into the atmosphere with connect-
ing flue 14 for bypass from 10. To control air
a butterfly 12 are put into the flues. Combus-
tion takes place on the fire bars 13. Fig. 2 is
100 a front elevation showing the flue 10. Bend-
ing down to ash pit carrying smoke and flue
11 going to the atmosphere 15 Fig. 3 shows
the door to the fire box 19 with air inlets 17
allowing air to enter a hollow door with smal-
105 ler air holes 18 spaced out on the inside plate
of the door.

CLAIMS

- 110 1. A siamese arrangement of chimneys
mounted on a boiler or boilers for maximum
heat exchange. The heat exchange can be on
air heating or a wet system. The chimneys
arranged to recycle waste gasses and vola-
tiles.
- 115 2. An arrangement of chimneys as in
claim 1 to pass super heated gasses through
the fire bed.
3. An arrangement of chimney as in
claims 1 and 2 to exhaust waste gasses out
120 into the atmosphere.
4. An arrangement of chimneys as in
claim 3 to slow combustion down and give
more heat transfer.
5. An arrangement of chimneys as in pre-
125 vious claim to re heat gasses over and over
again to take heat out through heat transfer.
6. An arrangement of chimney as substan-
tially described wiyh reference to Fig. 1 and 2
of the attached drawing.

CLAIMS

Amendments to the claims have been filed, and have the following effect:—

5 Claims 1 to 6 above have been deleted or textually amended.

New or textually amended claims have been filed as follows:—

- 10 1. Twin flued boilers and appliances having one flue for exhausting spent gases into the atmosphere and one flue for recycling unburnt combustible gases through the fire bed.
- 15 2. As claimed in claim one twin flued boilers and appliances the flues evenly balanced between each other as to create the proper air flow through the fire bed giving maximum combustion.
- 20 3. As claimed in one and two twin flues arranged having one flue at the seat of the combustion chamber going out into the atmosphere. This promotes the flow of air through the fire bed and also cleans the spent gases making a cleaner environment.
- 25 4. As claimed in one, two and three twin flues arranged to become one by a sliding lever situated at the bottom of both flues at the top of the boiler this is a bypass straight into the atmosphere.
- 30 5. As claimed in one, two, three and four twin flued boilers and appliances having sloping fire bars from back flue to front of boiler.