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T. REES.
SMOKE CONSUMER.
APPLICATION FILED SEPT. 13, 1905.

2 SHEETS—SHEET 1.

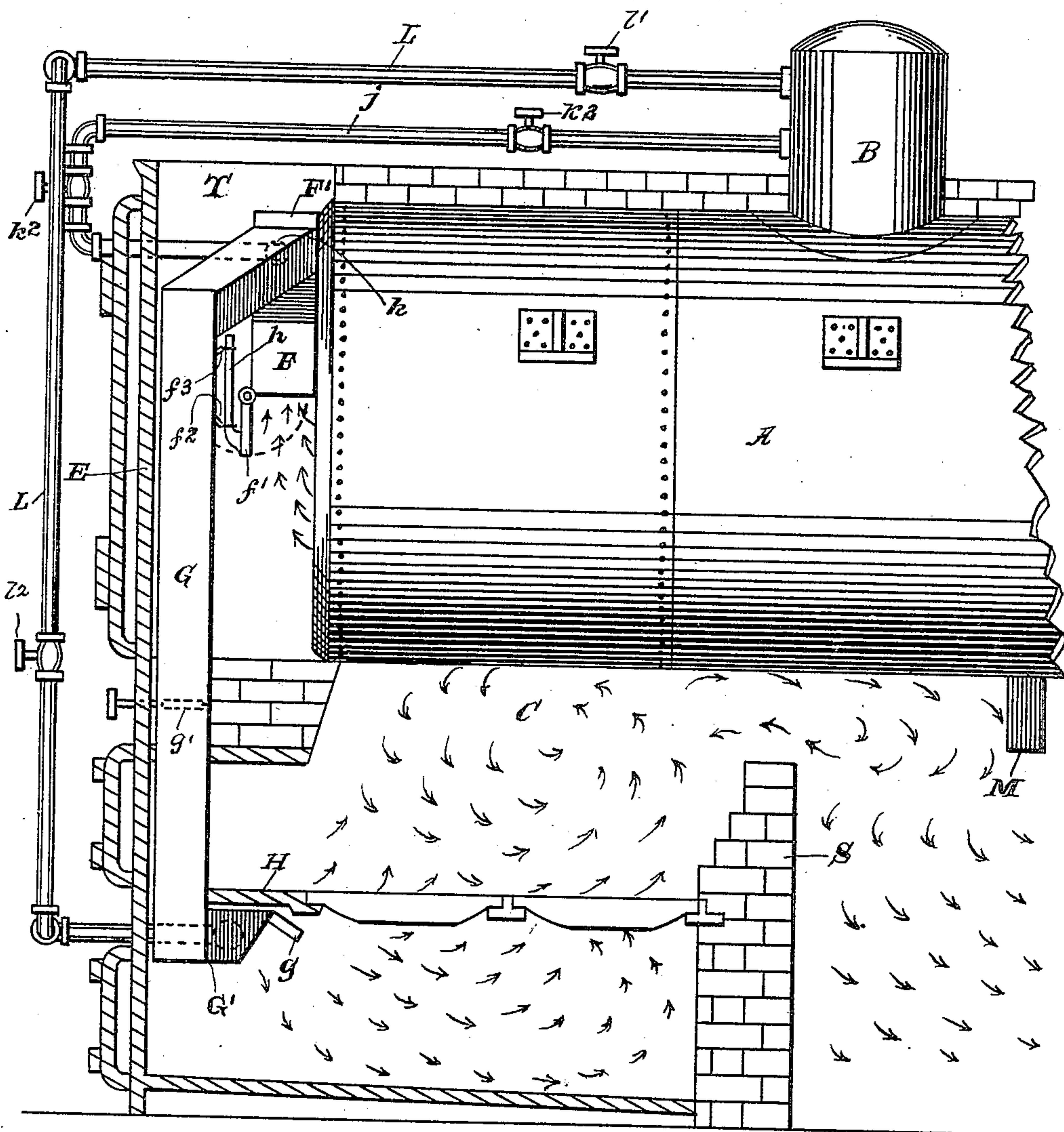


Fig. 1

Witnesses

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SMOKE-CONSUMER.

No. 816,739.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, THOMAS REES, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Smoke-Consumers, of which the following is a specification.

This invention relates to new and useful improvements in smoke-consumers; and it relates more particularly to that class of smoke-consumers wherein the products of combustion are caused to pass and repass the fire-bed and wherein steam is employed to create sufficient pressure for the travel of the products.

It is an object of this invention to provide, in a device of this character, novel means whereby the products of combustion are caused to travel or return to the fire-box; and it consists of a hood adapted to receive the products, said hood communicating with draft-pipes which lead to the ash-pit of the furnace.

It is also an object of the invention to provide a novel device of this kind wherein means are employed for controlling the passage of the products of combustion in their travel, which is done by placing dampers within the draft-pipes.

Another object of the invention is to provide a novel means, in a device of this kind, for creating or applying the steam-pressure; and it is still further an object of the invention to provide a device of the character noted that will be simple in construction, efficient in practice, and economical to manufacture.

With the foregoing and other objects in view the invention consists in the details of construction and in the arrangement and combination of parts to be hereinafter more fully set forth and claimed.

In describing the invention in detail reference will be had to the accompanying drawings, forming part of this specification, wherein like characters denote corresponding parts in the several views, in which—

Figure 1 is a fragmentary view, partly in elevation and partly in section, illustrating the invention. Fig. 2 is a cross-section of a boiler-furnace with the invention applied, the section being taken on such a line as to illustrate certain details of the invention. Figs. 3 and 4 are detail views of a damper employed in the invention.

In the drawings, A indicates a tubular

boiler provided with a dome B, C is the fire-box arranged beneath the boiler, and D the ash-pit, S is the bridge-wall of the fire-box, E is the face-plate of the furnace, and T is the chimney-draft of the furnace, all of which is of any ordinary or preferred construction, as the necessities of practice or circumstances may require.

Secured to the chimney-draft end of the boiler A, above the tubes *a* thereof, is an approximately rectangular hood F, having its lower side open. This hood F is equal in width to the boiler and projects outwardly about midway of the chimney-draft T. Approximately centrally of the top of the hood F is a chamber or dome F', which has communicating therewith at opposite sides the draft-pipes G, which extend to the side walls and pass downwardly parallel with the walls and terminate within the ash-pit D at a point slightly beneath the dead-plate H of the fire-box. The pipes then extend at right angles parallel with the face-plate E, approaching each other and terminating approximately centrally of the face-plate, as at G'. The inner sides of the portions G' are open, and depending from the upper edge thereof are lips or deflectors *g*, which are intended to direct the products passing through the pipes or conduits toward the bottom of the ash-pit D.

Hinged to the lower outer edge of the hood F is a damper *f'*, which is intended to close the open side of said hood when required. This damper is provided with an arm *h*, to which the chain *f*³ is secured for operating the same. The chain passes through the face-plate E and terminates at a suitable point exterior of the furnace, it being only necessary that the said chain be within easy reach for operation. A second chain *f*² is also secured to the arm *h*, and it is the intention of this chain to so elevate the damper as to close the chimney-draft, if required. It may be stated that the damper is held normally open by its own weight.

Leading from the dome B of the boiler A is a pipe *j*, which is so arranged as to pass through the face-plate E and terminates within the chamber F' of the hood F. Carried by the pipe *j*, within the hood, is a cross-pipe *k*, which has its ends provided with nozzles *k'*, which extend within the draft pipes or conduits G. When the controlling-valves *k*² of the pipes *j* are open, steam is caused to travel from the dome B and discharge through the nozzles *k'* into the pipes G. This creates

sufficient suction or draft to draw the products of combustion into the hood F, as will be, it is thought, readily understood. To continue the travel through the pipes G, pipes L extend within the portions G' and are provided with jet-openings which discharge into the ash-pit and tend to throw the products passing through the pipes G toward the bottom of the ash-pit. For controlling the flow of steam through the pipes L valves l^1 and l^2 are provided.

Attached to the boiler at a point in the rear of the bridge-wall S is an inverted arch M, the purpose of which is thought to be readily understood by those familiar with this class of invention.

When a fire is started in the box C, the damper f' is caused to close the open side of the hood F. The products of combustion from the fire-box are forced by the created draft against the boiler-plate, which tends to throw the same back upon the fire-bed, passes over the bridge-wall S, and is obstructed by the arch M and is caught by the current formed at the bridge-wall. It is then drawn back to the fire-box and reburned until it becomes too light to be caught, when it escapes and passes through the tubes a of the boiler A and passes through the chimney in the ordinary way. After the fire is under way the damper f' is pened, when the products passing through the tubes are caught by the hood F and caused to travel through the pipes or conduits G to the ash-pit D, into which it escapes through the open side of the portions G'. The lips g of the portions G' deflect the products to the bottom of the ash-pit, where they mix with the draft and are carried through the fire-bed and reburned. This operation continues until the products have been rarefied and escape through the chimney as air.

It has been found in practice that to successfully carry the invention into practice it is necessary to provide means to control the passage through the pipes G. For this purpose the dampers g' are provided.

The arrangements of the steam-pipes have not been given in detail, as this is not an important feature of the invention, as the only feature of importance is their termination.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination with a furnace, a tubular boiler, a hood arranged at one end of the boiler above the tube-openings said hood having its lower side open, conduits leading from the hood to beneath the fire-box, means for directing the discharge of the conduits toward the base of the ash-pit at a point in advance of the bridge-wall, and means for creating a draft within the conduits.

2. In combination with a furnace, a tubular boiler a hood secured to one of the boilers

above the tubular openings, a chamber carried by the hood, conduits leading from the chamber to beneath the fire-box of the furnace, means for directing the discharge of the conduits toward the base of the ash-pit at a point in advance of the bridge-wall, and means for creating a draft within the conduits.

3. In combination with a furnace, a tubular boiler therein, a hood arranged at one end of the boiler above the tubular openings, said hood having its lower side open, distributors within the ash-pit at the forward end thereof, conduits leading from the hood to the distributors, each of said distributors having the inner side open, a deflector for the open portion of the distributors and means for creating a draft within the conduits.

4. In combination with a furnace, a tubular boiler, a hood at one end of the boiler and arranged above the tubular openings said hood having its lower side open, conduits leading from the hood to the ash-pit of the furnace, means for directing the discharge of the conduits toward the base of the ash-pit at a point in advance of the bridge-wall, and means within the hood for creating a draft through the conduits.

5. In combination with a furnace, a tubular boiler, a hood arranged at one end of the boiler above the tube-openings said hood having its lower side open, conduits leading from the hood to beneath the fire-box, means for directing the discharge of the conduits toward the base of the ash-pit at a point in advance of the bridge-wall, means for creating a draft within the conduits, and means for controlling the passage through the conduits.

6. In combination with a furnace, a tubular boiler, a hood arranged at one end of the boiler said hood having its lower side open, conduits leading from the hood and terminating within the ash-pit, pipes leading from the boiler and terminating within the hood for creating a draft and means for directing the discharge of the conduits within the ash-pit toward the bottom of said ash-pit at a point in advance of the bridge-wall.

7. In combination with a furnace, a tubular boiler, a hood arranged at one end of the boiler said hood having its lower side open, conduits leading from the hood and terminating within the ash-pit, pipes leading from the boiler and terminating within that portion of the conduits within the fire-box for creating a draft and means for directing the discharge of the conduits within the ash-pit toward the bottom of said ash-pit at a point in advance of the bridge-wall.

8. In combination with a furnace, a tubular boiler, a hood arranged at one end of the boiler, said hood having its lower side open, conduits leading from the hood and terminating in transversely-extending portions within the ash-pit, the inner side of each transversely-extending portion being open.

9. In combination with a furnace, a tubu-
lar boiler, a hood arranged at one end of the
boiler, said hood having its lower side open,
conduits leading from the hood and terminat-
5 ing in transversely-extending portions with-
in the ash-pit, the inner transverse side of
each transversely-extending portion being
open, and deflecting-lips carried by the trans-

versely-extending portions of the conduits
and extending above the open side thereof. 10

In testimony whereof I affix my signature
in presence of two witnesses.

THOMAS REES.

Witnesses:

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