

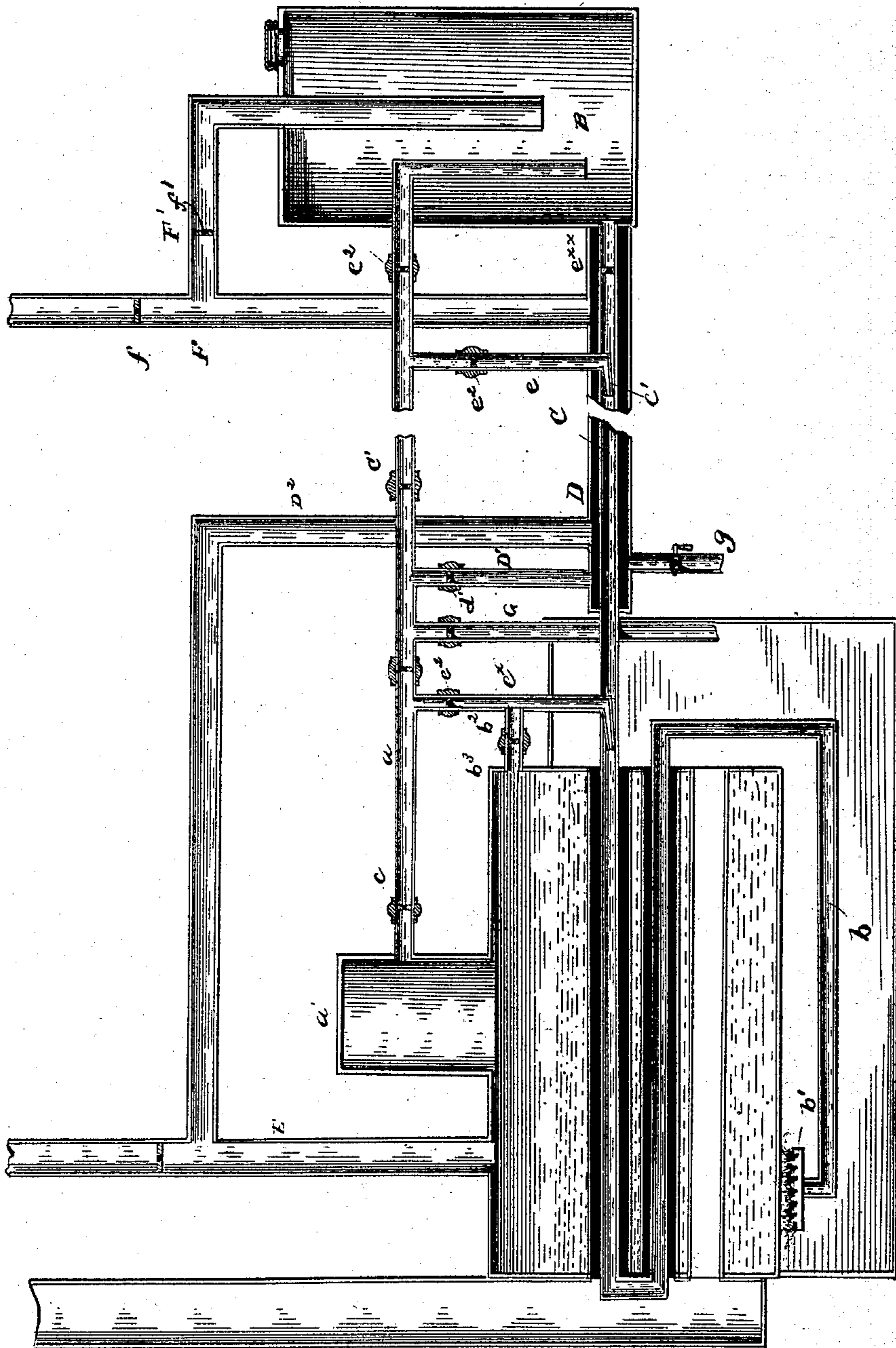
(No Model.)

W. S. BACON & S. L. HOLSINGER.

APPARATUS FOR BURNING HYDROCARBON OIL.

No. 413,473.

Patented Oct. 22, 1889.



Witnesses
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UNITED STATES PATENT OFFICE.

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APPARATUS FOR BURNING HYDROCARBON OIL.

SPECIFICATION forming part of Letters Patent No. 413,473, dated October 22, 1889.

Application filed June 8, 1889. Serial No. 313,599. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM S. BACON and SAMUEL L. HOLSINGER, citizens of the United States of America, residing at Tiffin, in the county of Seneca and State of Ohio, have invented certain new and useful Improvements in Apparatus for Burning Hydrocarbon Oil, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention is directed to certain improvements in apparatus for burning hydrocarbon oils; and it consists of the novel combination of parts and their construction, as will fully appear from the following description and accompanying illustration, in which the figure is a broken-away sectional elevation of our invention.

In the embodiment of our invention we employ a pipe a , leading from the steam-dome a' of the boiler A to and entering an oil-tank B, which pipe is provided with a number of cocks c c' c^2 .

C is an oil-pipe extending from the oil-tank B near its bottom and passed directly through a flue of the boiler and then returned through a second flue, whence it is extended down and connected to a coil of pipe b , which terminates in a jet pipe or burner b' for the combustion of the carbureted oil or hydrocarbon, which impinges upon and heats the boiler. The pipe C is inclosed between the oil-tank and the boiler by a steam-jacket D, which is connected by the pipe D' with the live-steam pipe a and by the pipe D^2 with the exhaust-steam pipe E of the engine.

The cock d' is used to cut off steam from or turn on the same to the steam-jacket D. The pipe a has connection through branch pipes e e^x with the oil or hydrocarbon pipe C, the lower ends of said branch pipes e e^x having each a nozzle or jet pipe e' entering the latter pipe and extending in the direction of the flow of the oil or hydrocarbon. The steam thus admitted to the pipe C renders the oil or hydrocarbon more fluid or fluent, besides reheating it, having received the initial heating in its tank from steam introduced therein through the pipe a . The passage of the steam and hydrocarbon or oil through the pipe C, where the latter passes through the flues of the boiler, superheats the steam and

vaporizes the oil or hydrocarbon, rendering them more suitable as a fuel. The pipes e e^x are each provided with a valve e^2 to regulate the flow of steam into the pipe C, while the flow of oil or hydrocarbon to the pipe C is regulated by a valve e^{xx} . The heating of the oil in the tank can be also effected by the combined action of the exhaust and live steam which have been previously let into the jacket D, a pipe F for this purpose connecting with said jacket, and having an arm F' extending to and down into the said tank. A valve f in pipe F and a valve f' in pipe F' regulate the passage of the steam through the pipe F and into the tank B, respectively.

The jacket D has a valved drip-pipe g to drain off the water of condensation.

This invention utilizes the heat of live steam from the boiler and exhaust-steam from the engine in producing a fuel of hydrocarbon for generating the steam itself, the combined oil and steam also being superheated.

The tank can be placed a suitable distance from the boiler to prevent accident from explosion of the oil and to remove the disagreeable smell. The introduction of steam into the oil-tank also prevents the coagulation of the fluid, especially in cold weather. If desired, a pipe G may be led from the pipe a to the pipe b and connection be effected between the oil-pipe C and pipe G to supply the commingled oil and steam to the furnace without passing through the flues. In summer weather it may not be necessary to supply steam to the oil-tank, and in that case the steam can be readily cut off therefrom.

In case the boiler should be without a steam-dome, connection is made between the steam-chamber of the boiler and the pipe e^x , connecting with the oil-pipe C by means of a pipe b^3 , having a valve b^3 .

Having thus fully described our invention, what we claim, and desire to secure by Letters Patent, is—

1. The combination, with the boiler and the hydrocarbon tank or holder, of the series of steam-pipes connecting with the said tank or holder and vaporizing the hydrocarbon, an oil-pipe passing through a flue or flues of the boiler, and a steam-jacket surrounding the exposed portion of said oil-pipe, said steam-pipes having valved branch connections with

the oil-pipe and the steam-jacket, substantially as specified.

2. The combination, with the boiler and oil or hydrocarbon holder, of the steam-pipes, 5 the oil-pipes, and the steam-jacket inclosing the exposed portion of said oil-pipe, one of said steam-pipes connecting with said jacket, said oil-pipe passing through the boiler flue or flues and under the boiler and having a 10 burner connected thereto, substantially as set forth.

3. The combination, with the tubular boiler and an oil tank or holder, of a steam-pipe connecting the steam-space of said boiler with 15 said tank, an oil-pipe leading from the tank through the tubes of the boiler to the combustion-chamber, a steam-jacket surrounding the exposed portion of said oil-pipe, and a burner located under the boiler in the com- 20 bustion-chamber and communicating with the oil-pipe, substantially as set forth.

4. The combination, with the boiler and oil or hydrocarbon holder, of the steam-pipes and oil-pipe, one of said steam-pipes connecting 25 with and entering said oil-pipe and terminating or provided in the latter with a jet pipe or nozzle, said oil-pipe passing through a

flue or flues of the boiler and under the boiler and having a burner connected thereto, and a steam-pipe connecting with the steam-cham- 30 ber of the boiler and having a valved-pipe connection with the pipe leading from the live-steam chamber of the boiler to the oil-pipe, substantially as set forth.

5. The combination, with the boiler and oil- 35 tank, of the series of steam-pipes, the oil-pipe, and the steam-jacket surrounding the exposed portion of said oil-pipe, said steam-pipes connecting with said jacket and the oil-pipe, one of said steam-pipes leading from 40 the said jacket into and depending in said tank, the steam-pipe connecting the steam-chamber of the boiler with said holder, and a valved steam-pipe connecting with said steam-pipe and the oil-pipe, substantially as 45 set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

WILLIAM S. BACON.
SAMUEL L. HOLSINGER.

Witnesses:

HARRY TAGGART,
F. W. BACON.