No. 647,078. Patented Apr. 10, 1900.

J. A. CRAWFORD.

SMOKE CONSUMER FOR LOCOMOTIVE OR OTHER BOILERS.

(Application filed Jan. 8, 1900.)

(No Model.)

Fig. 1

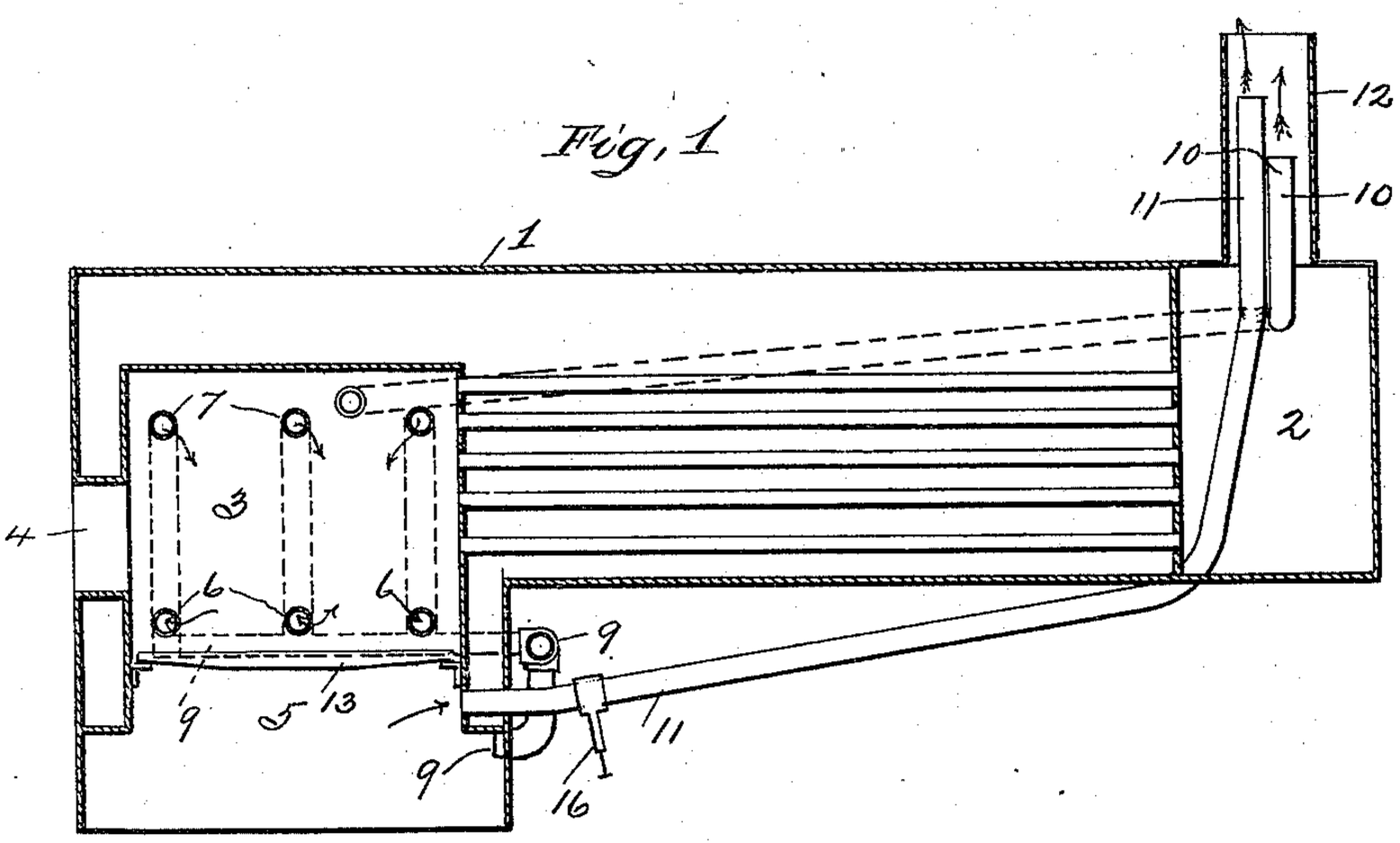


Fig. 2

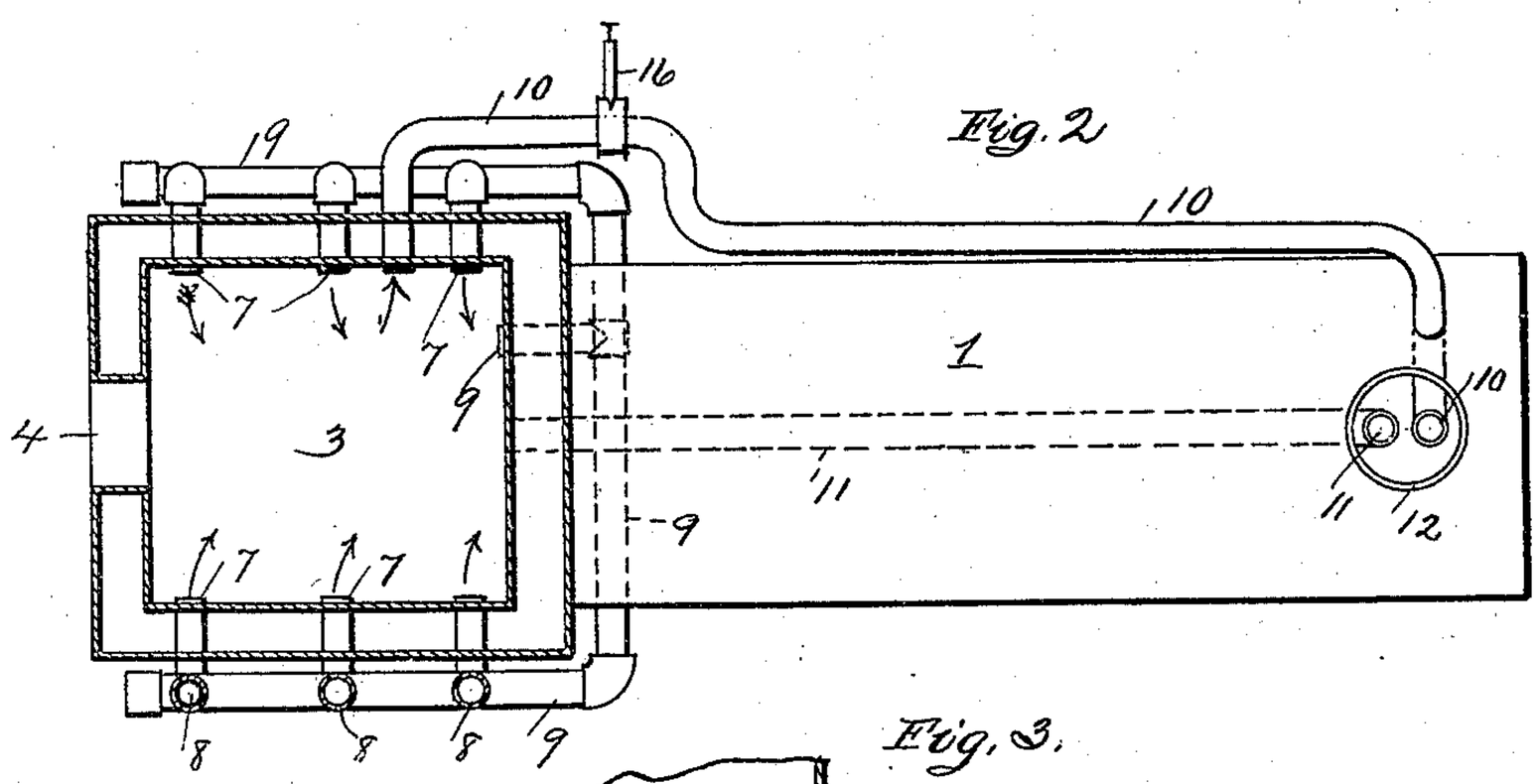
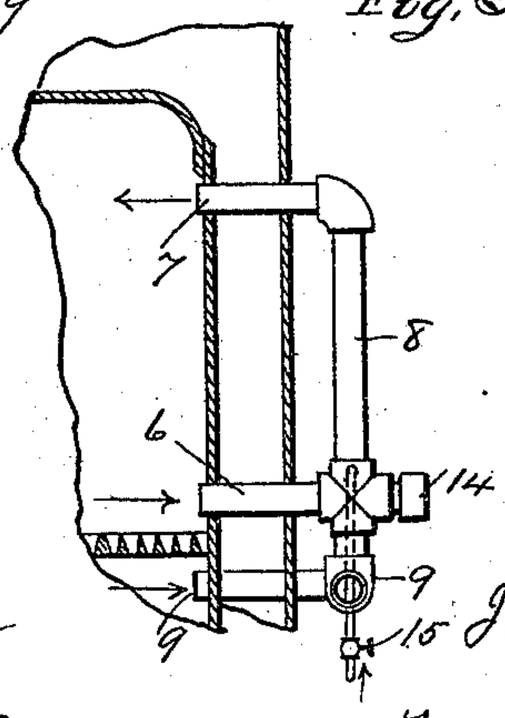


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN A. CRAWFORD, OF ALLEGHENY, PENNSYLVANIA.

SMOKE-CONSUMER FOR LOCOMOTIVE OR OTHER BOILERS.

SPECIFICATION forming part of Letters Patent No. 647,078, dated April 10, 1900.

Application filed January 8, 1900. Serial No. 733. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. CRAWFORD, a citizen of the United States of America, residing at No. 68 Washington street, Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Smoke-Consumers for Locomotive or other Boilers; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to an improved smoke-consumer for locomotive and other boilers; and it consists in the certain details of construction and combination of parts, as will be fully described hereinafter.

In the accompanying drawings, Figure 1 is a side sectional elevation of a locomotive boiler and fire-box provided with my improved smoke-consumer, which is constructed and arranged in accordance with my invention. Fig. 2 is a plan view of the same, a part of which is in section the better to show the working parts. Fig. 3 is an end sectional elevation of a portion of the fire-box, showing the arrangement of the hot-air pipes.

To put my invention into practice with a locomotive-boiler of ordinary construction, consisting of the boiler 1, the fire-box 3, grate-bars 13, dust-collector 2, and smoke-box 3, together with other well-known features not necessary to describe, I arrange at either side of the fire-box 3 hot-air pipes 8, having an entrance through the water-leg into the said fire-box (as in my former patents hereinafter mentioned) and discharging at points 7 beneath the crown-sheet. These hot-air pipes 8 are connected at the base to a pipe 9, (leading from the ash-pit 5,) the one with the other, and in which steam-jets 15 are introduced to create a draft from points 6 just above the grate-bars 13 through the pipes 8 and discharged from the openings 7 below the crown-sheet. Entering the fire-box 3, beneath the crown-sheet, is a hot-air pipe 10, provided with a damper 16 and terminating in the smoke-stack 12. This hot-air pipe 10 is used for the purpose of forming a direct draft from the fire-chamber to the smoke-stack. Entering the ash pit or box 5 is a pipe 11, fitted with a damper 16′, and the said pipe terminates in the smoke-stack 12 at a point a short distance above the hot-air flue 10 and is used for the purpose of retarding the draft and drawing the smoke down through the body of the fire.

In operation the steam-jets 15 are opened, which will create a suction about the level of the grate-bars 13 and draw the unconsumed particles of combustion into the pipes 8 and discharge the same from the openings 7 over the fire, by which time the gases are heated and immediately consumed.

The above-described invention is an improvement on Letters Patent granted to me bearing date of May 21, 1895, No. 539,768, and No. 586,477, dated July 13, 1897, for smoke-consuming devices, and also upon Patent No. 638,800, dated December 12, 1899.

The above-described smoke-consuming apparatus may be adapted to use upon upright boilers with but slight changes in the arrangement of the parts, and, in fact, can be adapted to any style of steam-boiler now in use.

Various slight changes or modifications may be made in the general construction and arrangement of the parts without departing from the spirit of the invention.

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

In combination with a locomotive or other steam-boiler, the hot-air pipes 8, having an entrance at points near the grate-bars, and exit-openings beneath the crown-sheet, the pipe 9 joining the said hot-air pipes, the steam-jets 15 entering the same, the hot-air flue 10 communicating with the fire-box and terminating in the smoke-stack 12, and the cold-air flue 11 entering the ash-pit 5 and terminating in the smoke-stack at a point a short distance above the hot-air pipe 10, both of said pipes being provided with a suitable damper 16, all arranged and combined for service, substantially as and for the purpose described.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

JOHN A. CRAWFORD.

Witnesses:
M. E. HARRISON,
JOHN GROETZINGER.