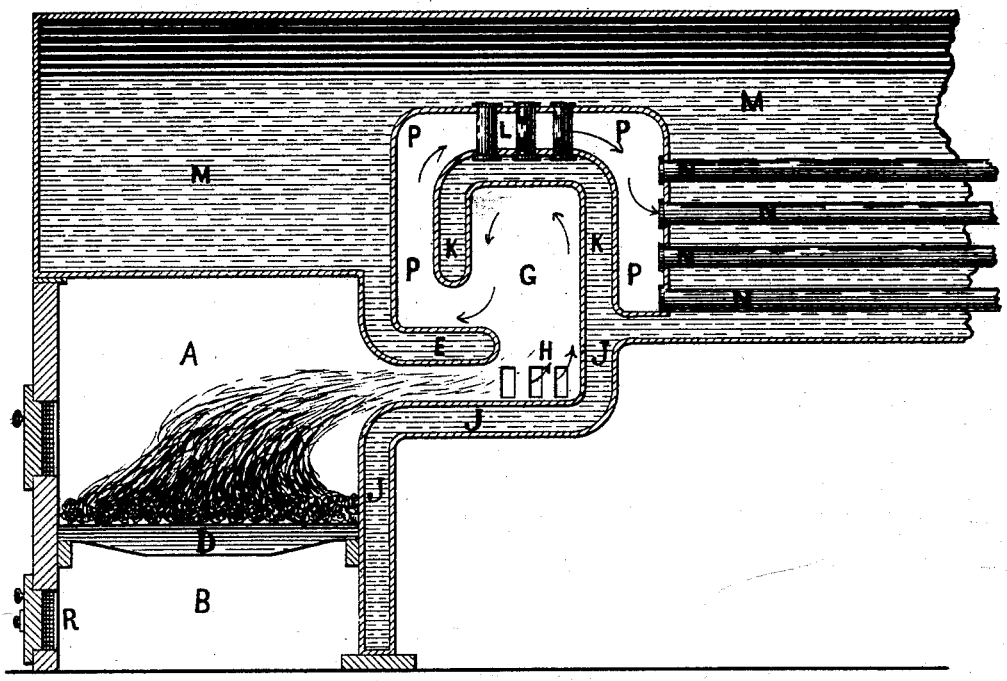
(No Model.)

C. N. BACON.

STEAM BOILER AND FURNACE.

No. 346,083. Patented July 27, 1886.



Witnesses:

William H. Parry.

W. R. Marble

Inventor:

Clovis N. Bacon,

By Sylvenus J. Walker

Attorney

UNITED STATES PATENT OFFICE.

CLOVIS N. BACON, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF ONE-FOURTH TO JAMES SMITH, OF SAME PLACE.

STEAM-BOILER AND FURNACE.

SPECIFICATION forming part of Letters Patent No. 346,083, dated July 27, 1886.

Application filed April 1, 1886. Serial No. 197,485. (No model.)

To all whom it may concern:

Be it known that I, CLOVIS N. BACON, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Steam-Boilers and Furnaces, of which the following is a specification.

My invention relates to furnaces, locomotive and stationary boilers, and apparatus for the conversion of water into steam; and it consists in the construction, combination, and arrangement of the air-inlet passages, drafts, and water-legs, and gas-combustion chambers, whereby the greatest intensity of heat is secured and the largest area of water-surface is exposed to the heat, so as to convert the greatest amount of water into steam with the least amount of fuel, and thereby utilize the heat to the utmost extent, as hereinafter more fully described, and specifically set forth in the claims.

The drawing represents a vertical longitudinal section of a boiler constructed so as to embody the several features of my invention.

A represents the fire-box, and B represents the ash-box, separated by the horizontal grate-bars D, upon which the fuel rests, as usual.

From the crown-sheet or top of the fire-box A, near the rear end thereof, depends the water-leg E, which extends downward about one-half the depth of the fire-box (more or less) and then turns at a right angle and extends horizontally rearward and terminates within the air or gas combustion-chamber G, the lower portion of which is provided with air-inlet openings H, provided with a sliding or adjustable door or draft-regulator, as shown. A water-leg, J, extends downward from the rear of the said gas-combustion chamber G a short distance, and then turns at a right angle and extends forward horizontally beneath the said chamber G to the rear of the fire-box A, thence vertically downward to the rear of the ash-box B, where it terminates. A water-leg, K, extends upward from the former one, J, at the rear of the said chamber G, and then extends at a right angle forward over the top of the same, and then turns downward at a right angle and terminates a short distance above the horizontal portion of the water-leg E, as shown. The horizontal portion of the said water-leg K is connected with the main boiler M by a series of short tubes, L, which pass through the upper horizontal portion of the draft-flue P, which commences at the forward side of the combustion-chamber G, passing forward above the horizontal portion of the said water-leg E, and thence upward in front of the terminal vertical portion of the said water-leg K, and thence at a right angle horizontally between the said short tubes L, above the said water-leg K, rearward, and thence at a right angle downward past the open ends of the horizontal series of boiler-tubes N, as shown. The supply of air which supports combustion enters the ash-box through the grated door R, and then passes upward through the fuel placed on the grate-bars D, as usual, then laterally over the same and between the water-legs E and J into the air and gas combustion-chamber G, and is then deflected by the angular water-leg K, and passes between the terminal ends of the said legs E and K, and is then deflected upward, passing at the opposite side of the said water-leg K, and impinges on the short connecting water-tubes L, thence rearward and downward, where it enters the horizontal series of tubes N, provided within the cylindrical part of the boiler M, as usual.

It will be seen and understood that when the air-inlets H are opened, a current of cold air rushes into the gas-combustion chamber G, and thereby intensifies the heat by the more perfect combustion of the liberated gases, which mingle with the heated air and converts the same into gases, which are burned with intense heat and utilized as fuel.

Having thus described my invention, what I claim is—

1. In a steam-boiler or furnace, the angular water-leg E and angular water-leg J, in combination with the auxiliary combustion-chamber G, provided with the air-inlets H, as described.

2. In a steam-boiler or furnace, the angular water-leg K and flue P, having a series of short vertical tubes, L, connecting the main boiler M with the said water-leg K, in combination with the auxiliary chamber G, as described.

CLOVIS N. BACON.

Witnesses:
SYLVENUS WALKER,
JAMES SMITH.