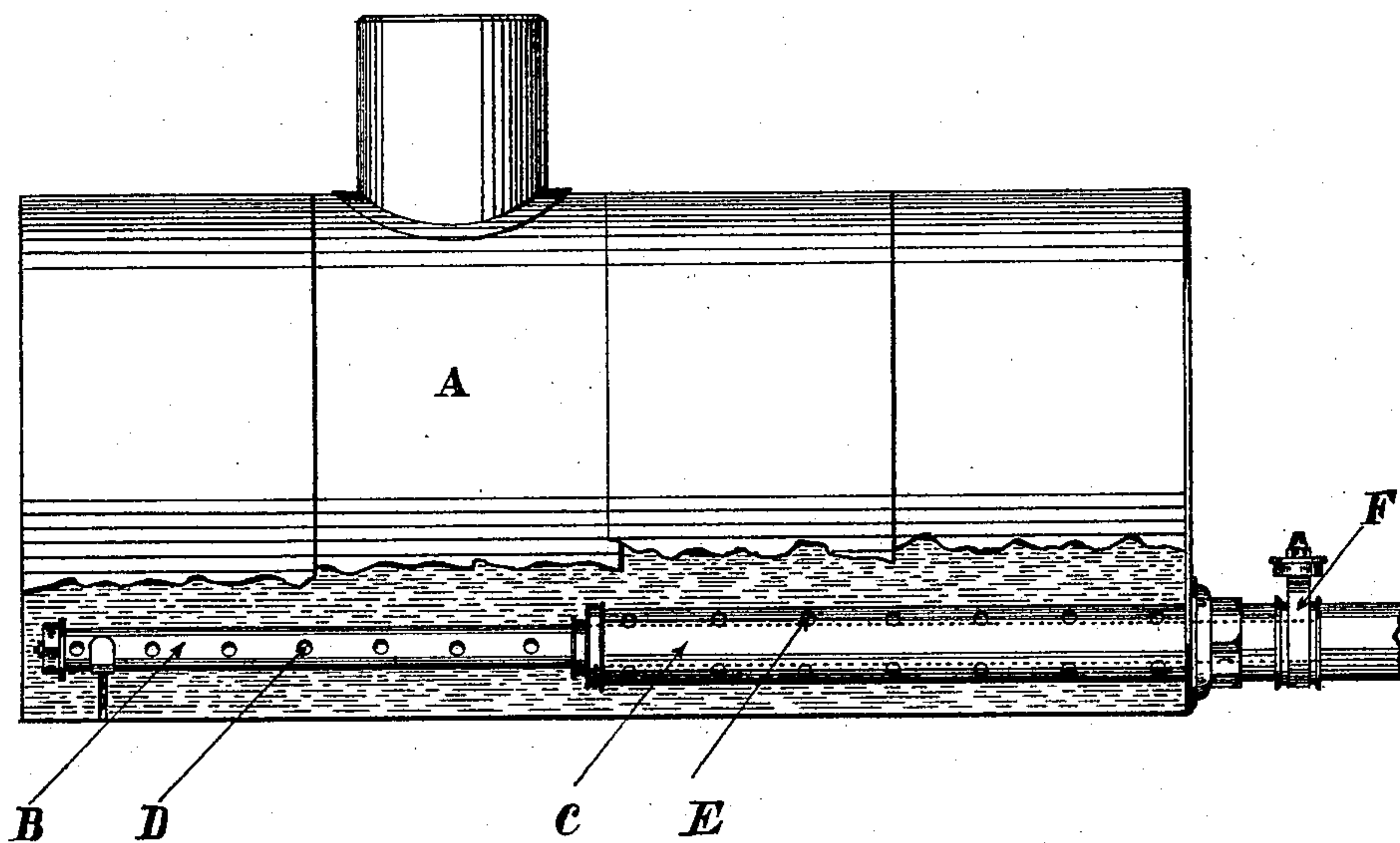


(No Model.)

H. W. LESLIE.  
BLOW-OFF FOR STEAM BOILERS.

No. 539,435.

Patented May 21, 1895.



WITNESSES:

*Josh. H. Amies*  
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INVENTOR

BY

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ATTORNEY.

# UNITED STATES PATENT OFFICE.

HERMANN WALTER LESLIE, OF CAMDEN, NEW JERSEY, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF THREE-FOURTHS TO ROBERT ALEXANDER CARSON, OF PHILADELPHIA, PENNSYLVANIA, AND THE O. F. ZURN COMPANY, OF NEW JERSEY.

## BLOW-OFF FOR STEAM-BOILERS.

SPECIFICATION forming part of Letters Patent No. 539,435, dated May 21, 1895.

Application filed August 21, 1894. Serial No. 520,924. (No model.)

*To all whom it may concern:*

Be it known that I, HERMANN WALTER LESLIE, a citizen of the United States, residing at Camden, in the county of Camden and State of New Jersey, have invented a new and Improved Blow-Off for Steam-Boilers, of which the following is a specification.

The object of my improvement is to prevent sedimentary deposits and incrustation in steam boilers. For this purpose I place a pipe horizontally within the boiler near its bottom and running its whole length. Said pipe is of the peculiar construction illustrated in the accompanying drawing, to which I beg to refer.

A is a steam boiler, near the bottom of which is fixed a pipe consisting of two concentric lengths or sections, B and C. I shall refer in the following to B as the first section, and C as the second section. Said pipe extends outside and beyond said boiler at its rear and terminates in the valve-chest F. The first section B is of smaller diameter than the second section C, and it runs the whole length from the valve-chest aforesaid, partly inside and partly outside the second section C, to the front end of the boiler, while the second section C runs from said valve-chest to about midway within said boiler, the two sections being concentric. The surface of said pipe, which is exposed within the boiler, is pierced with a number of apertures D and E at regular intervals along the length of both sections. These apertures may be of any desired shape, that is, round, oval or oblong, &c., and they may be lined with any non corrosive metal to prevent rust. The ends of each section within the boiler are closed. In the valve chest is placed a quick acting valve of any ordinary pattern easily opened and shut, while a connecting pipe carries away to the sewer.

In operation, when the valve is opened, as the area of the exhaust capabilities of the pipe is greater than the sum of all the apertures in the same, the sudden discharge of the water and steam creates a temporary vacuum and causes a suction, inducing a powerful agitation in close proximity to the bottom of

the boiler, which detaches any scale formed thereupon and breaking it up into small particles carries it and all other sedimentary matters in solution through the apertures in said pipe and away to the sewer.

By the peculiar construction of my blow-off the two concentric sections operate in different portions of the boiler; the first section in the forward portion and the second section in the rear portion, with the result of serving each portion in the most thorough manner.

It will be observed that there are no apertures in that portion of the first section of the blow-pipe which lies within the second section. This feature contributes greatly to the efficiency of the device, and is its special characteristic and value. Owing to this, the entire exhaust force of the inner pipe operates along the rear half of the boiler only, while the exhaust force of the larger outer pipe operates along the forward half of the boiler only. If a single tube perforated along its entire length be employed, as is common, the rush of matter through it on opening the valve will often clog it so as to make it imperfectly operative. If the tube is made of large diameter throughout its length, of course this defect will be avoided, but the strength of its exhaust action will be enfeebled. By my construction the matter to be removed is distributed between two or more tubes doing away with the risk of clogging. As the outer tube is partly occupied by the inner one its capacity to the inch of length is not great enough to lessen its power in exhausting. The pipes also act on different strata or layers of water, by reason of their different diameters, and as a result eddies and currents will be produced in exhausting which will more effectually cleanse the boiler surface than would be practicable if the holes were all on a level. The concentric tubes also brace each other and the outer tube protects a part of the inner, although the telescopic arrangement does not confine their action to the same part of the length of the boiler.

I have shown but two sections. It is evident that more may be used under certain conditions with advantage.



I do not lay any claim to the broad feature of a perforated pipe placed within a steam boiler and connected with a valve and other apparatus for cleaning said boiler by a blow-off, for I am aware that such devices have been known heretofore, but

What I do claim as new, and desire to secure by Letters Patent, is—

The combination with a steam boiler of a blow-off, consisting of two or more concentric tubes of different lengths and diameters each separately connected with a quick acting valve common to all, the tubes of smaller diameter extending beyond those of greater di-

ameter as in a telescope, the exposed surface of the whole length of tubing within said boiler being perforated by regularly placed apertures, but each smaller tube being without perforations in that part which is within a larger tube, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HERMANN WALTER LESLIE.

Witnesses:

JOS. H. AMIES,

JAS. U. ROBERTSON.