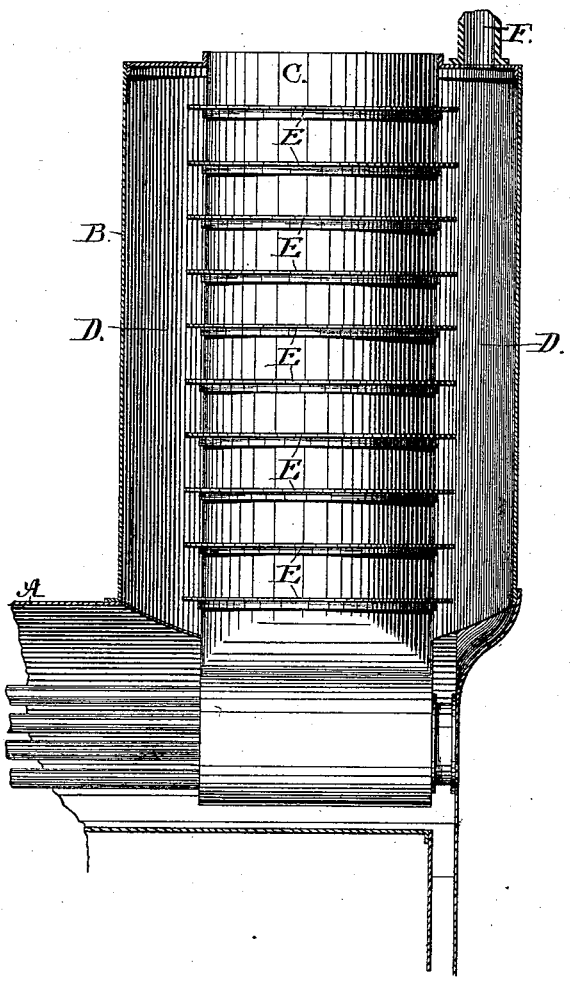
(No Model.)

J. RODIE.

STEAM BOILER.

No. 261,258. Patented July 18, 1882



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UNITED STATES PATENT OFFICE.

JAMES RODIE, OF RONDOUT, NEW YORK.

STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 261,258, dated July 18, 1882.

Application filed March 16, 1882. (No model.)

To all whom it may concern:

Be it known that I, JAMES RODIE, of Rondout, in the county of Ulster and State of New York, have invented certain new and useful Improvements in Steam-Boilers, of which the following is a full and exact description, reference being had to the accompanying drawing, which forms part of this specification, and which contains a vertical section of the outer cylinder of the steam-chimney of an ordinary return-flue low-pressure steam-boiler, the inner cylinder or "lining" of the steam-chimney being shown in elevation for the purpose of exhibiting my improvement.

One of the commonest and best-known defects in steam-boilers that are provided with steam-chimneys arises from the rapid wasting away of the lining of the steam-chimney, and this wasting is always found to occur from the surface of the metal in said lining, while it is hot, by the action of the heated products of combustion, which pass through the uptake-flue formed by said lining, and where it is exposed to the steam, and it is occasioned by the erosive action of the currents of steam as they rush upward from the surface of the water in the boiler toward the steam-pipe, at or near the top of the steam-chimney.

The object of my improvement is to provide the means for remedying the aforesaid defect; and I attain this object by means of the construction illustrated in the accompanying drawing and described herein.

As shown in the drawing, A indicates the horizontal shell of the boiler; B, the outer shell of the vertical steam-chimney; C, the inner cylinder or lining of said steam-chimney, which lining forms the uptake-flue for conveying the hot products of combustion to the smoke-pipe, always placed on the top of such chimneys; D, the annular steam-space between the cylinders B and C; E, steam-deflectors consisting of annular flanges or shelves secured to the periphery of the lining C, and F a steam-pipe leading from the top of the steam-chimney.

The steam-chimney, composed of the cylinders B and C, is secured to the shell A in the usual manner, but with my improvement the bracing between the two cylinders of the steam-chimney by means of socket-bolts may be dispensed with. Around the circumference of the lining C a series of steam-deflectors, E, is secured. Each of said deflectors consists of a horizontal shelf or flange that forms a complete ring or hoop which fits steam-tight against and around the said lining. Said deflectors I preferably make of hoops of angle-iron, and they are secured to the lining, as shown in the drawing, at distances of about ten inches, more or less, according to the pressure of steam required to be carried on the boiler, and when so secured these hoops form a series of circumferential flanges that extend outwardly from the lining C into the annular steam-space D, contained in the steam-chimney, but whose outer edges are kept away from the outer cylinder, B, sufficiently far to leave an annular opening between the perimeter of each of said flanges and said outer cylinder, so that the said openings will have a greater width than the horizontal portions of said flanges.

By means of the deflectors E all the steam that is brought into contact with the lining C, between the said deflectors, will remain in a comparatively dormant condition, where it will absorb from the lining the heat imparted thereto by the escaping heated products of combustion, while the more active currents of the steam will pass rapidly upward through the steam-space D, beyond the outer diameter of the deflectors, to the steam-pipe F without being brought into contact with the lining C, and in this manner the said lining is protected from the destructive erosive action of the steam-currents hereinbefore referred to.

The deflectors E, when formed of angle-iron hoops, as above described, may be utilized for forming the bracing necessary to sustain the lining C against a pressure that would otherwise collapse the said lining; or, when preferred, the said deflectors may be used in conjunction with the ordinary mode of bracing such steam-chimneys.

I claim as my invention—

In a steam-chimney composed of an outer cylinder, B, and lining C, which forms an uptake-flue for carrying off the heated products of combustion, the steam-deflectors E, consisting of a series of annular flanges secured to the lining C, and projecting outwardly into the steam-space D in such manner that an annular opening will be formed between the perimeter of each of the said deflectors and the outer cylinder, B, as and for the purpose herein specified.

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