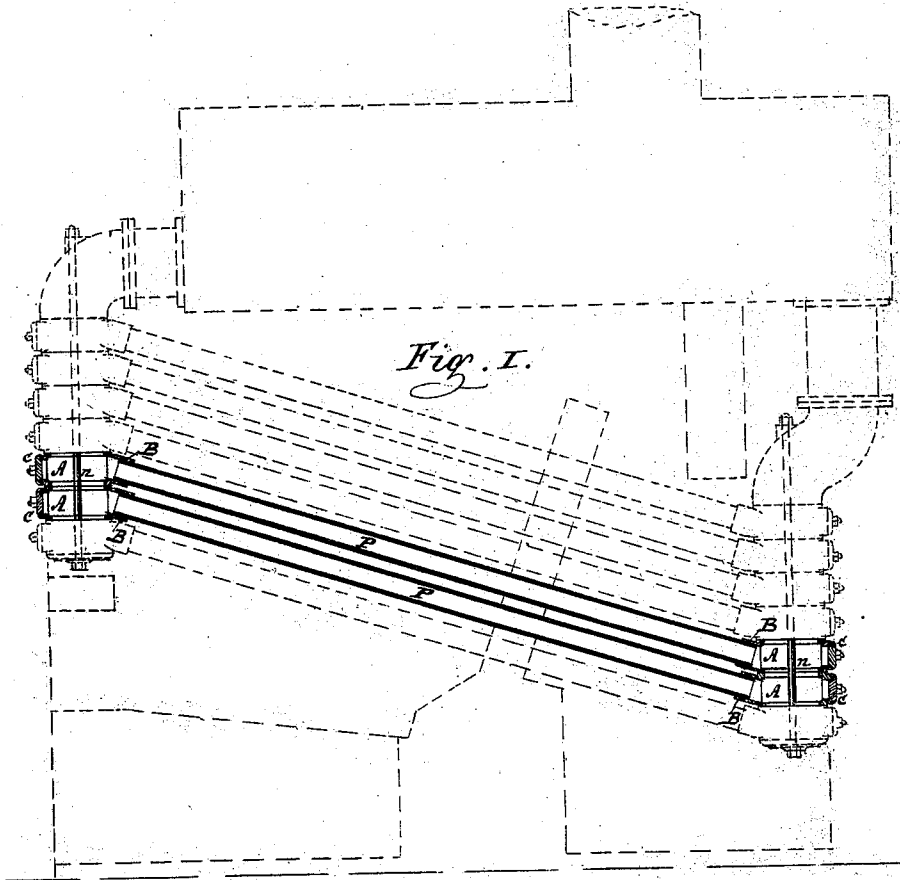


2 Sheets—Sheet 1.

W. P. SKIFFINGTON.
SECTIONAL STEAM-BOILER.

No. 177,757.

Patented May 23, 1876.



Witnesses:
Isaac Aaron
M. S. De Vries

Inventor.
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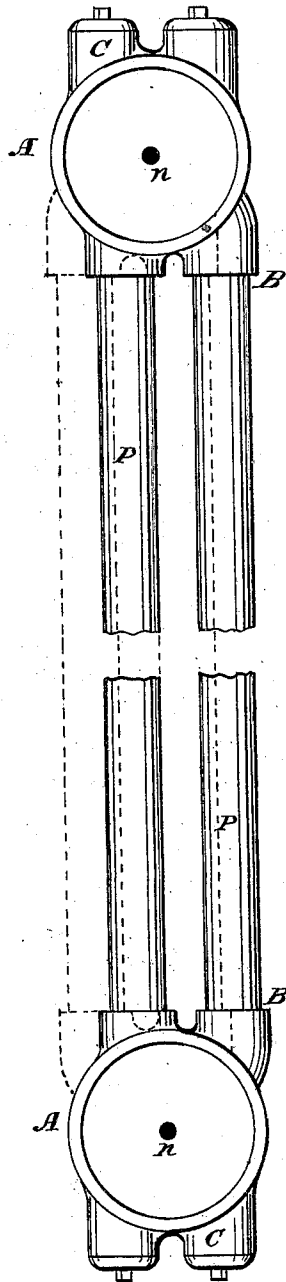
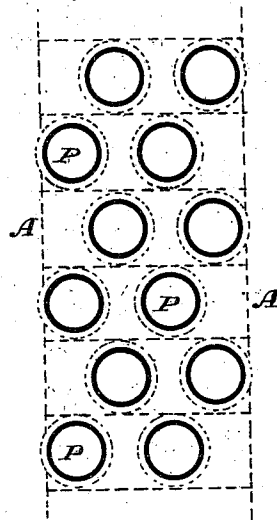


Fig 2.

Fig 3.



Witnesses.

M. E. R. Smith.

J. L. Crane

Wm. P. Skiffington

per Charles H. Smith

Atty.

UNITED STATES PATENT OFFICE.

WILLIAM P. SKIFFINGTON, OF NEW YORK, N. Y.

IMPROVEMENT IN SECTIONAL STEAM-BOILERS.

Specification forming part of Letters Patent No. **177,757**, dated May 23, 1876; application filed November 18, 1874.

To all whom it may concern:

Be it known that I, WILLIAM P. SKIFFINGTON, of New York, in the State of New York, have invented a new and useful Improvement in Sectional Steam-Boilers, of which the following is a specification:

Figure I represents a longitudinal section of my improvement, with the general construction of a boiler shown in dotted lines. Fig. II is a top view of the same.

The nature of my invention consists in the construction of that part of a sectional steam-boiler generally called the "tube-head," by connecting a number of hollow chambers, open at top and bottom, by means of a central bolt, when each of said chambers is arranged to receive two tubes, whereby a greater area, and, consequently, a freer circulation, of water and steam from the tubes through this tube-head is obtained than is possible when each chamber contains only one tube, as at present.

In the accompanying drawing, A A represent the sectional parts, which, when placed one above the other, form the tube-heads, into which the tubes P are screwed or fastened, and constitute a connecting-pipe of continuously equal area from end to end for connecting a series of pairs of tubes. Each of such sections A is of a diameter largely exceeding its length, which is, preferably, only sufficient to afford the space commonly required to receive the tubes P. Such tubes are arranged in pairs in the several sections A, at one side of the center of the connecting-pipe, which they collectively form, and said sections, as they are successively laid up in forming the connecting-pipe, are placed in reversed position alternately, in order that the tubes of one section shall lie partially over the space formed between those of the section next beneath, thus effecting what is known as the "staggered" arrangement of the tubes, whereby the tube-surface is more effectually presented to the flames. These sectional parts A are fastened together by a single bolt, *n*, set in the diametrical center of said sections, and between the two tubes of each pair of the vertical series.

Each of these sectional parts A is provided with two nipples, B B, formed at an angle to the horizontal line of the open-end rings or chambers A to receive the tubes P, as well as

with two openings, *c c*, closed by suitable plates in the usual manner for hand-holes or mud-holes, and for the purpose of cleaning the tubes. Instead of two openings, *c c*, one oblong opening may be made, if desired.

In sectional tube-boilers the tubes are generally four inches in diameter, and seven inches from center to center. By the usual present arrangement of making one of the sectional parts A to contain one tube, they are six and three-fourths inches outside diameter, which, less the facing for the joint, equal to seven-eighths all around, gives an opening of five inches, equal to an area of 19.64 inches, from which deduct the area of the one and a half inch bolt, equal to 1.77 inch, leaves an effective area of 17.87 inches. The area of a four-inch tube is 12.56 inches; consequently we get in this case not quite one and one-half times the area of the tube for circulation through this tube-head.

With my improved tube-head, where each sectional part A contains two tubes, the same are thirteen and three-fourths inches outside diameter, which, less the joint-facing of seven-eighths of an inch all around, gives an opening of twelve inches, equal to an area of 113.09 inches; from which deduct the area of one and a half inch bolt, equal to 1.77 inch, leaves an effective area of 111.32. The area of two four-inch tubes is equal to 25.12 inches; consequently I obtain with my improved sectional tube-head, or nearly, four and one-half times the area of the two tubes without increasing or altering the usual established dimensions of this description of sectional boilers.

It will be seen with my invention that the chambers or rings A are all on a horizontal line, while the tubes P are all on an incline.

What I claim as my invention, and desire to secure by Letters Patent, is—

A tube-head, consisting of a section of a pipe, whose diameter exceeds the length of each section, in combination with a pair of tubes arranged at one side of the diametrical center of such section, substantially as described.

WILLIAM P. SKIFFINGTON.

Witnesses:

HENRY E. ROEDER,
E. SCHULER.