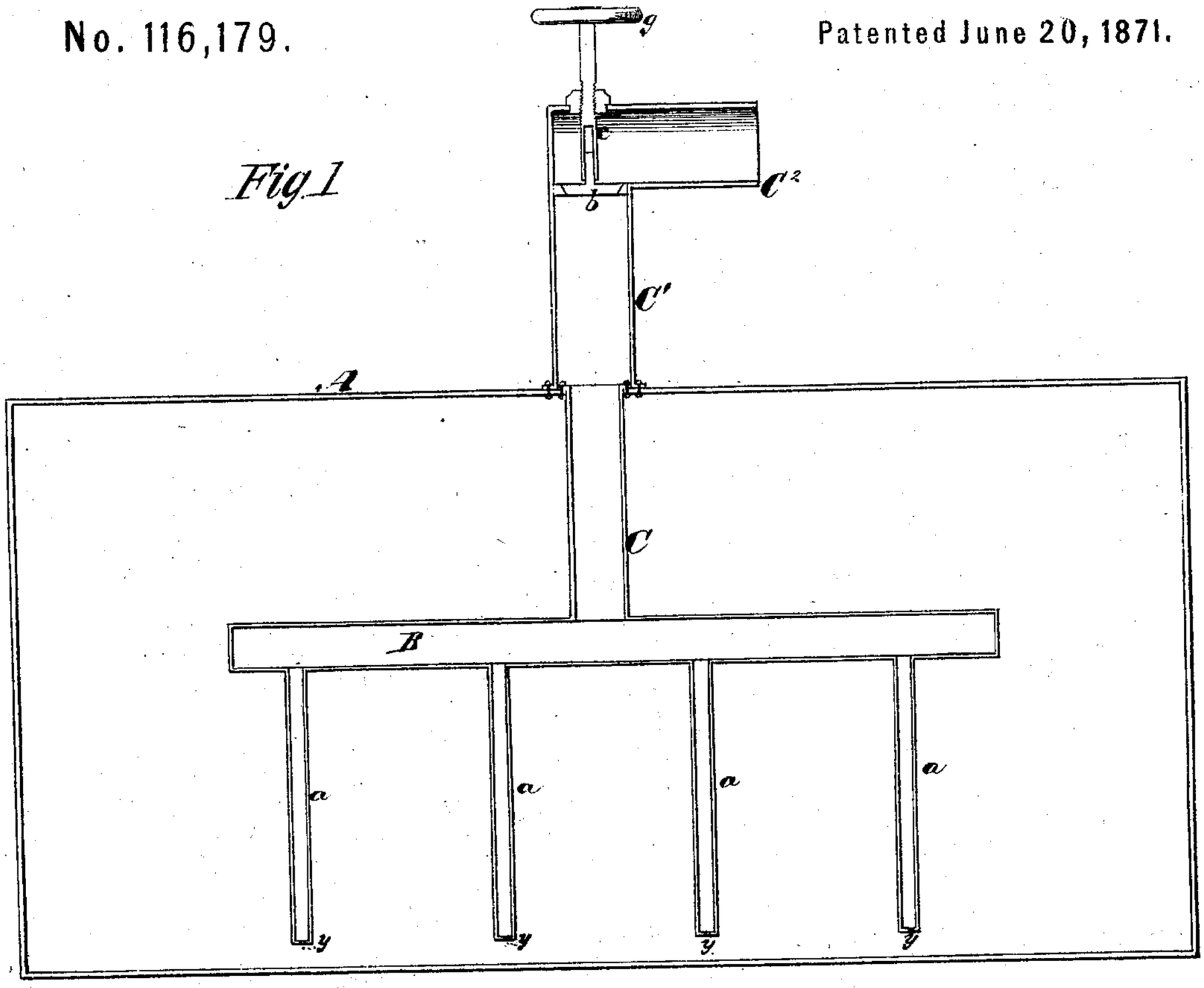
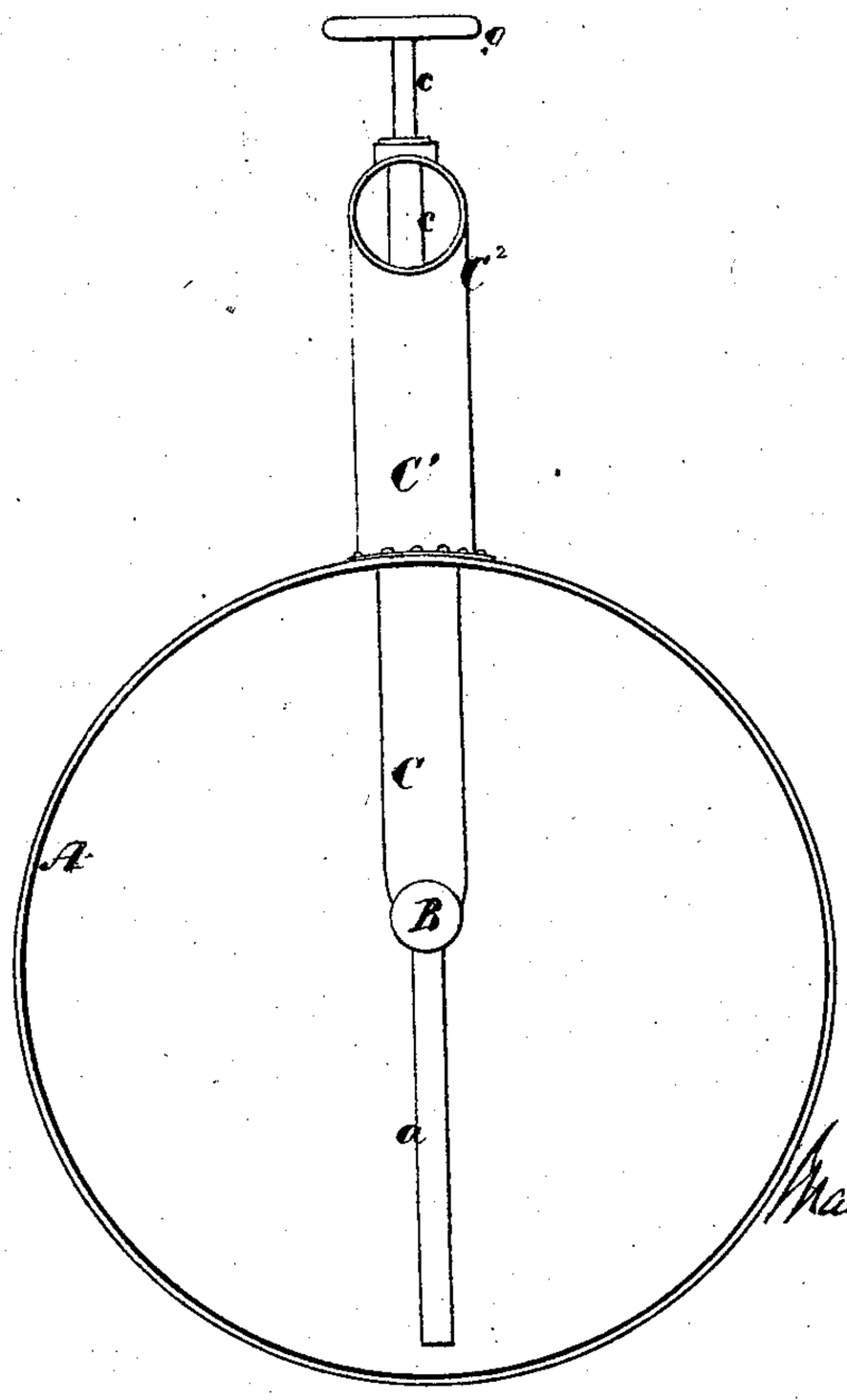
J. S. GRIFFITH.

Improvement in Blow-Off Pipes for Steam Boilers.

No. 116,179. Patented June 20, 1871.

Fig 1





Witnesses
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116,179

UNITED STATES PATENT OFFICE.

JAMES S. GRIFFITH, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN BLOW-OFF PIPES FOR STEAM-BOILERS.

Specification forming part of Letters Patent No. 116,179, dated June 20, 1871.

To all whom it may concern:

Be it known that I, JAMES S. GRIFFITH, of St. Louis, in the county of St. Louis and State of Missouri, have invented an Improved Blow-Off for Steam-Boilers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is section taken longitudinally and vertically through the center of a steam-boiler having my invention applied to it. Fig. 2 is a section taken transversely through the boiler.

Similar letters of reference indicate corresponding parts in both figures.

This invention relates to a new improved blow-off for cleaning steam-boilers of mud and scale.

Prior to my invention steam-boilers were cleaned of mud and scale in an imperfect manner and at great expense of steam by means of pipes arranged inside of the boilers, and extending nearly to the bottoms thereof. Such pipes were in communication with pipes which extended out of the boilers and had valves applied to them. By opening the valves the pressure of steam on the water in the boilers would force water mixed with mud and scale out of the boilers.

The objection attending such arrangement is that the pipes were all of an equal diameter, and would not produce the requisite draught or suction if made large enough to allow that free outlet of water which is necessary to raise and carry off the solid particles.

The object of my invention is to so construct the pipes that they will form a conduit, gradually increasing in size as it leads outside of the boiler.

Te enable others skilled in the art to understand my invention, I will describe it.

In the accompanying drawing, A represents the shell of a steam-boiler, in which a number of small vertical tubes, *a a*, is arranged, whose lower ends are open, and are located near the bottom of the boiler. The upper ends of these vertical tubes *a a* communicate with a pipe, B, which is arranged longitudinally and horizontally in the boiler. This pipe B is always to be of much greater diameter than the pipes *a a*. I prefer to make it equal in capacity to that of the pipes *a* collectively. It is secured to a vertical pipe, C, depending from the top of the boiler, which pipe is larger in diameter than the pipe B. This pipe C communicates with a pipe, C^1, outside of the boiler, which is of a greater diameter than the pipe C, and which is provided with a nozzle, C^2, and a valve, *b*. The valve *b* is applied to a stem, which is applied to a stem which is received into the end of a screw-stem, *c*, carrying a hand-wheel, *g*, on its upper end.

It will be seen from the above description that the conduit that leads out of the boiler gradually increases in size from the tubes *a* to the pipe outside of the boiler; consequently the water, carrying with it the solid matters through said conduit, will not pack therein, but will be allowed free escape. Hence it is obvious that a current can be established through the pipes *a* C C^1, having sufficient velocity and force to raise and carry off with it the said matters which accumulate on the bottom of the boiler.

If desirable the lower ends of the small vertical pipes *a* may be provided with nipples, or they may be partially closed, as at *y y*, so that the entering orifices will be much smaller than the interior of the bores of these pipes. This will further carry out the principle of my invention as above set forth.

I am aware of the English patent No. 3,248, of 1863, and also American patents of A. McD. Sprague, March 22, 1859, and Richard Needham, July 30, 1867, and therefore do not claim the constructions shown in said patents; but

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

The combination and arrangement of the vertical perforated pipes *a y*, horizontal pipe B, vertical pipes C C^1, horizontal pipe C^2, and the valve *b g*, said pipes increasing in diameter from the bottom of the boiler up to the discharge-valve *g*, as shown and described, and the several pipes with the valve forming an attachment which can be applied to a boiler in the manner represented, all for the purpose set forth.

Witnesses: JAMES S. GRIFFITH.

J. N. CAMPBELL,

EDM. F. BROWN.