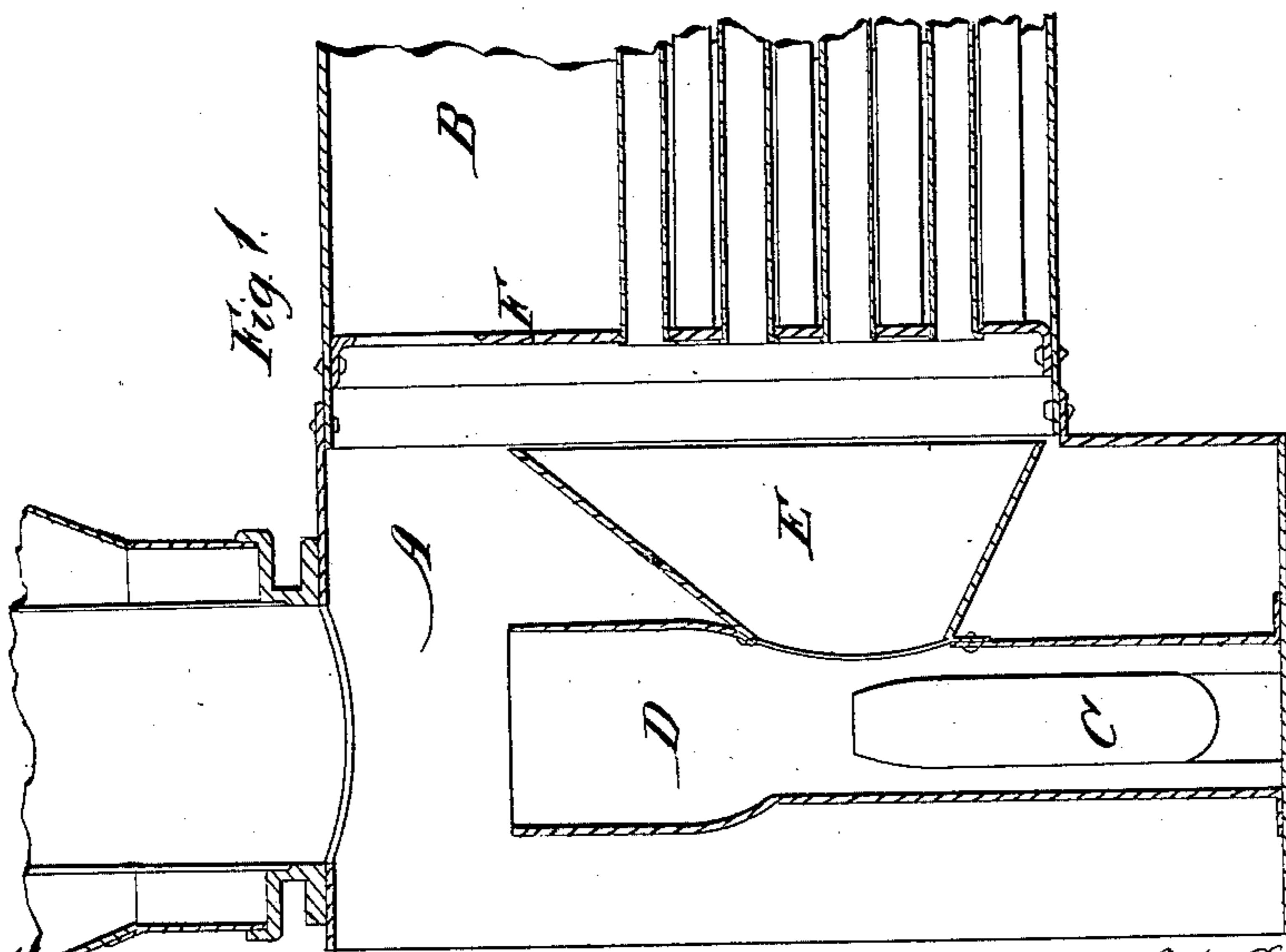
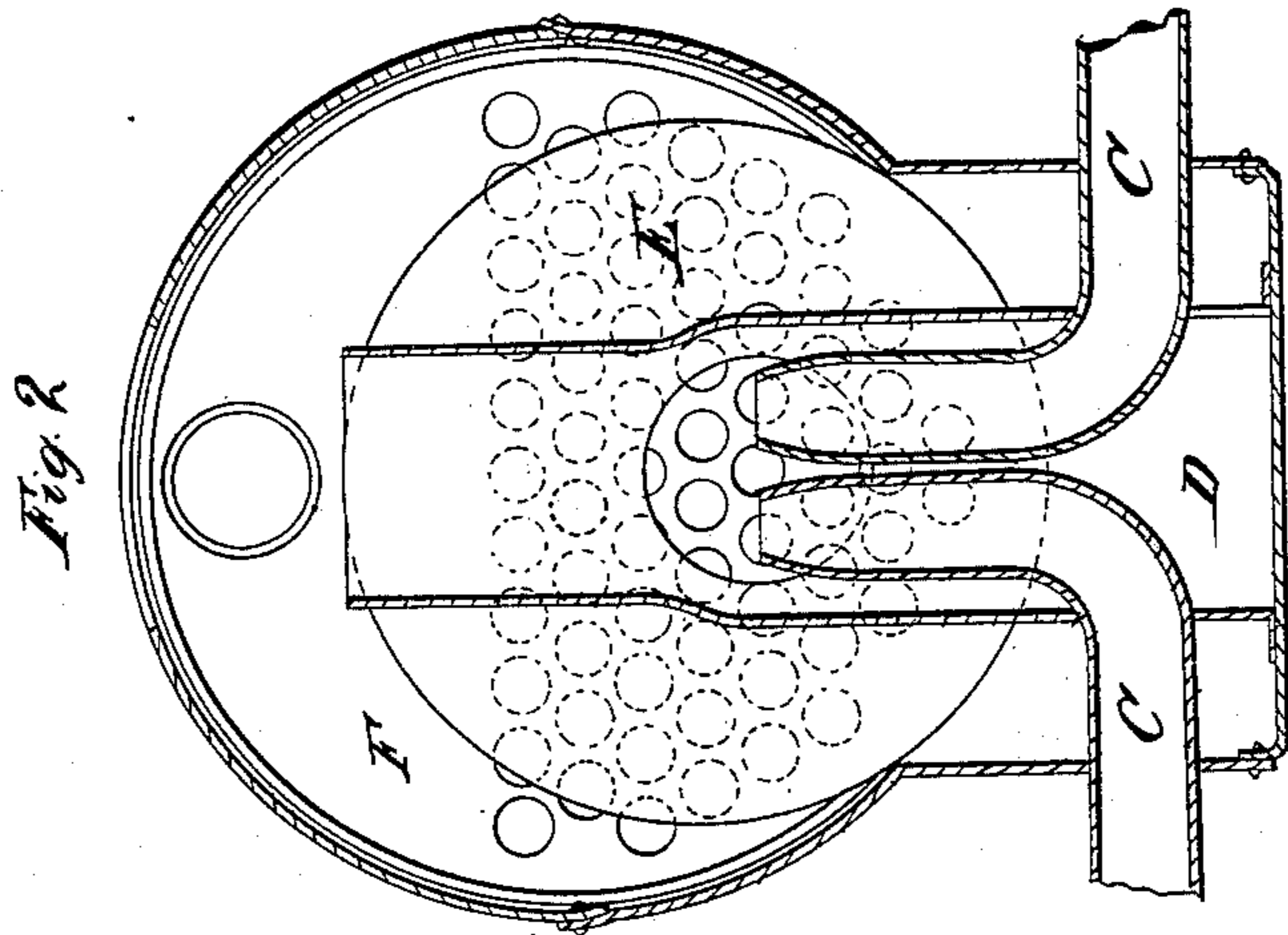


W. G. Freeman,
Locomotive Attachment.
No 78,658. Patented June 9, 1868.



Witnesses
J. Snowden Bell
John Alfred Ellis

Inventor:
W. G. Freeman
per J. H. Alexander
att'y

United States Patent Office.

W. G. FREEMAN, OF RICHMOND, VIRGINIA.

Letters Patent No. 78,658, dated June 9, 1868.

IMPROVEMENT IN PETTICOAT-PIPES FOR LOCOMOTIVES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, W. G. FREEMAN, of Richmond, in the county of Henrico, and State of Virginia, have invented certain new and useful Improvements in Petticoat or Blast-Pipes for Locomotives; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification, in which—

Figure 1 represents a longitudinal section of a portion of a locomotive-boiler with my improved petticoat-pipe attached, and

Figure 2 a transverse section of the same.

The object of my invention is to effectually equalize the draught through the different tubes of a locomotive-boiler, thereby imparting heat more rapidly to the water contained in the boiler, and generating steam easily with less expenditure of fuel and less destructive action upon the fire-box and grate-bars; and to this end my improvement consists—

In providing the petticoat-pipe, which surrounds the openings of the exhaust-pipes, with a cone or converging sheet, having its largest opening placed opposite to and a short distance from the front flue-sheet, and communicating at its small end with the petticoat-pipe, for the purpose of causing the blast made by the exhaust steam to draw equally through all the tubes.

In the accompanying drawings, A represents the smoke-arch, and B the cylindrical or waist part of a locomotive-boiler.

The exhaust-pipes C C are carried into the smoke-arch in the usual manner, and have their openings in the petticoat-pipe D. This pipe is made of oblong section at its lower part, having its greatest diameter placed transversely to the tubes, and having a converging sheet or cone, E, fastened to that side of it which is opposite the front tube-sheet F. The larger opening of this cone is placed in front of the tube-sheet, and at a distance of about six inches from it.

The sheet should be bent as nearly as possible to the form of a circle, which will cover the mouths of all the tubes, and at its smaller end, by which it is fastened to the petticoat-pipe, it should present a circular opening of about four-fifths the diameter of the cylinder, and having its centre on a line with the mouths of the exhaust-pipes, or nearly so.

The operation of the device is as follows: The exhaust steam from the cylinders, escaping through the contracted orifices of the exhaust-pipes, creates a vacuum in the smoke-arch, and consequent draught through the tubes, which ordinarily is greatest in the lower rows. The smoke and gases, passing out of the mouths of the tubes, strike against the cone E, which causes them to converge toward the centre of its smaller opening, through which they pass, and find exit through the petticoat-pipe into the stack.

By this means the action of the blast is equalized through the different tubes, enabling the heat of the products of combustion, passing through them, to be more effectually utilized, and an abundance of steam to be made with an easier fire, reducing the destructive action caused by intense heat on the fire-box.

I do not claim the use of a petticoat-pipe provided with a number of openings, either of the same or different sizes, such devices having been heretofore patented; but

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

The combination of the cone or converging sheet E with a petticoat-pipe, D, closed at its lower end, when arranged and operating as described, for the purpose of equalizing the draught through the tubes by converging the escaping products of combustion towards the mouths or nozzles of the exhaust-pipes.

In testimony that I claim the foregoing as my own, I affix my signature in presence of two witnesses.

W. G. FREEMAN.

Witnesses:

BENJ. PLANT,

A. B. ARMSTRONG.