

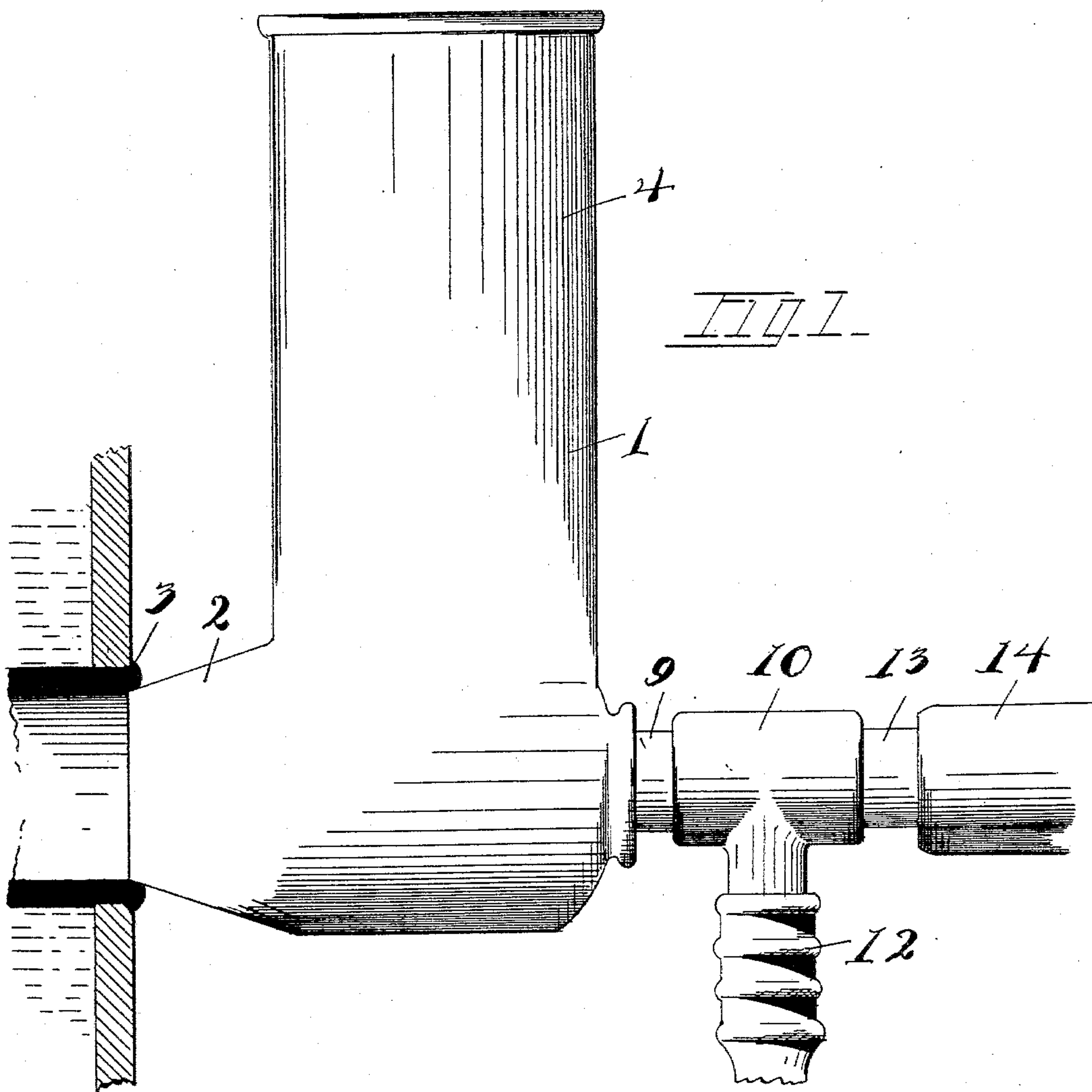
(No Model.)

2 Sheets—Sheet 1.

W. H. HOWE.  
BOILER FLUE CLEANER.

No. 566,763.

Patented Sept. 1, 1896.



WITNESSES

Saml H. Keller.  
Maud Schumacher.

INVENTOR

William H. Howe.  
By William Webster  
Atty

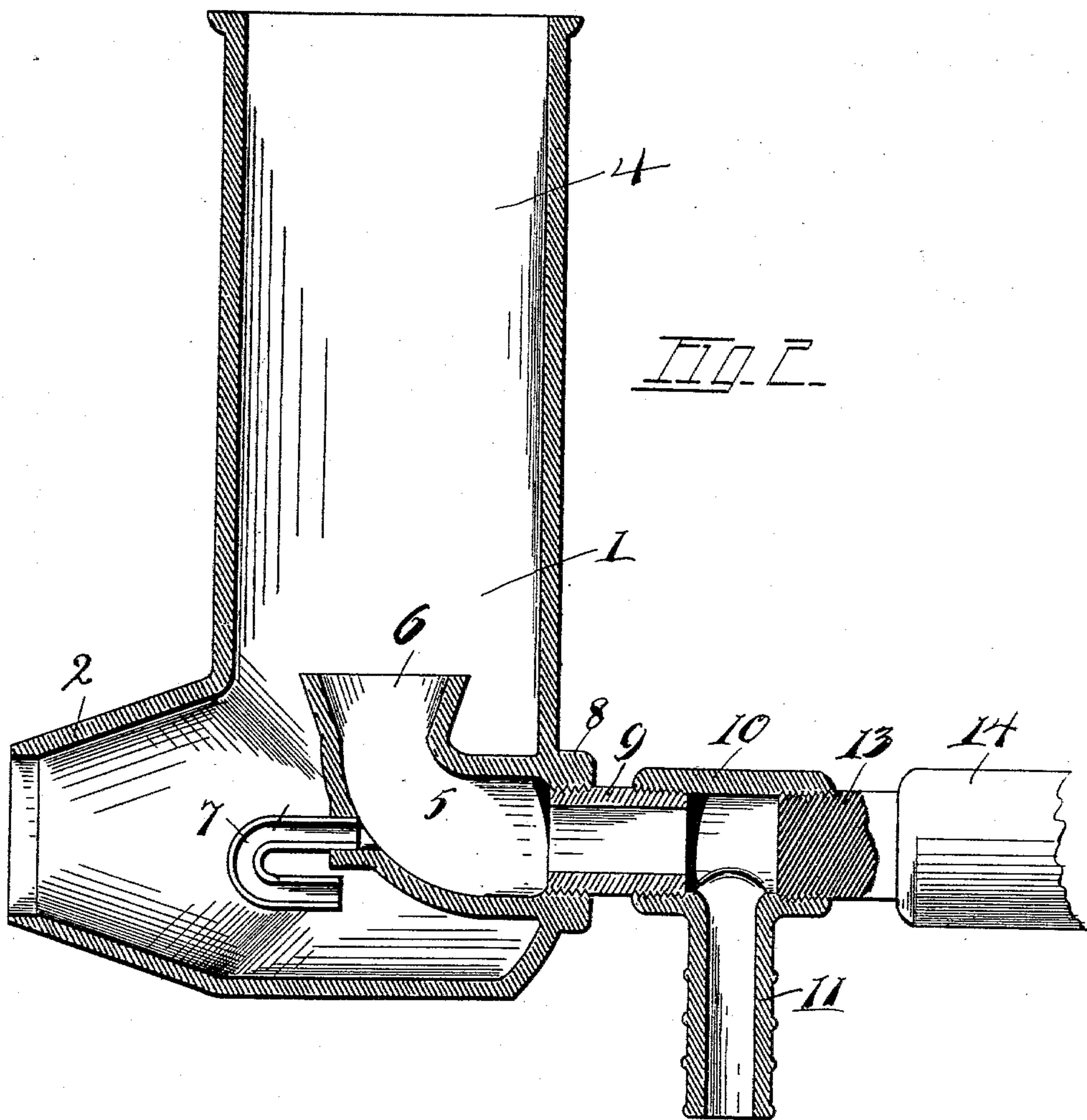
(No Model.)

2 Sheets—Sheet 2.

W. H. HOWE.  
BOILER FLUE CLEANER.

No. 566,763.

Patented Sept. 1, 1896.



WITNESSES

Garret H. Keller.  
Maud Schumacher.

INVENTOR

William H. Howe  
By William H. H. H.  
att'y



# UNITED STATES PATENT OFFICE.

WILLIAM H. HOWE, OF TOLEDO, OHIO, ASSIGNOR TO JOHN S. HARTSHORN  
AND HARRY B. WHITE, OF SAME PLACE.

## BOILER-FLUE CLEANER.

SPECIFICATION forming part of Letters Patent No. 566,763, dated September 1, 1896.

Application filed November 25, 1895. Serial No. 569,998. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM H. HOWE, of Toledo, county of Lucas, and State of Ohio, have invented certain new and useful Improvements in Boiler-Flue Cleaners; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

My invention relates to a flue-cleaner of that character in which the deposit upon the flue or flues is removed by a current of air induced by a vacuum caused by a steam-jet.

The object of the invention is to so compensate between the vacuum pull in the tube and the steam-jet that a minimum steam-jet will result in a thorough cleaning of the boiler-tube.

A further object is to extend the jet centrally of the exit for the matter removed from the tube to thereby obviate the ordinary lodgment of soot, &c., upon the jet.

A further object is to provide an auxiliary jet whereby the steam is projected to the base of the primary jet to further guard against lodgment of the scale, soot, &c., from the tubes in the egress portion of the cleaner.

In the drawings, Figure 1 is a side elevation of a cleaner constructed in accordance with my invention shown as inserted to a boiler-tube. Fig. 2 is a longitudinal central vertical elevation of the same to disclose the construction of the jet and the means for attaching the steam-hose thereto, also showing an auxiliary jet connected with the primary jet for insuring against lodgment of the matter drawn from the flue.

1 designates the body of the cleaner, comprising a nozzle 2 for insertion into the flue 3 and a vertical discharge portion 4. Formed integral with the body portion is a jet-nozzle 5, extending from the inner periphery of the discharge portion 4 centrally thereof and preferably horizontally from the shell of the body portion 4 to the center of the diameter of the same and then drawn at right angles with a flaring mouth 6. The advantage of this con-

struction is that the steam is carried to a point immediately central of the discharge body portion 4, and is then projected into the same through the flaring mouth 6, with an expansion to impinge upon the inner periphery of the discharge portion 4, with a result of a uniform pull (caused by the vacuum) upon the nozzle 2 and tube 3. Another advantage resides in the fact that by extending the nozzle 6 (or mouth thereof) to the center of the discharge body portion 4, and also extending the jet-pipe practically horizontally, the possibility of lodgment of scale, soot, &c., drawn through the nozzle 2 upon the lower portion of the jet-nozzle is avoided. In order, however, to more fully guard against the possibility of lodgment at this point, I have provided an auxiliary jet 7, comprising a return-bend pipe tapped into the jet-nozzle 5 and returning at a point to discharge the jet of steam upon the lower side of the jet-nozzle 5, thereby providing for auxiliary assistance to the vacuum pull by reason of the discharge through the mouth of the jet-nozzle 6. The body portion 4 of the cleaner is provided with a boss 8, preferably formed integral and coincident with the jet 5, having an integral screw-thread into which is screwed a nipple 9, upon which is screwed a union 10, having a depending auxiliary corrugated pipe 11, upon which is fastened a hose 12, leading to the steam supply. The opposite end of the union 10 is closed by a screw-threaded end 13 of a handle 14, by which to manipulate the cleaner in the insertion of the nozzle in the different flues of the boiler.

It will be seen that in the manufacture of the entire cleaner I have reduced the price to a minimum number, and consequent slight expense, and that in the construction of the essential parts I have overcome the objections heretofore existing by providing for a flue-cleaner and uninterrupted travel of the matter removed from the flue in its exit through the body portion 4.

What I claim is—

In a flue-cleaner, a body comprising a vertical cylindrical portion and a tapered nozzle at right angles thereto with a steam-jet pipe arranged diametrically opposite the nozzle



and extending horizontally thereof to the center of the body portion and having a flaring discharge end with an auxiliary jet-nozzle tapped into the pipe and discharging below the same with means for introducing live steam to the jet-nozzle.

In testimony that I claim the foregoing as

my own I hereby affix my signature in presence of two witnesses.

WILLIAM H. HOWE.

Witnesses:

WILLIAM WEBSTER,

CARL H. KELLER.