

(No Model.)

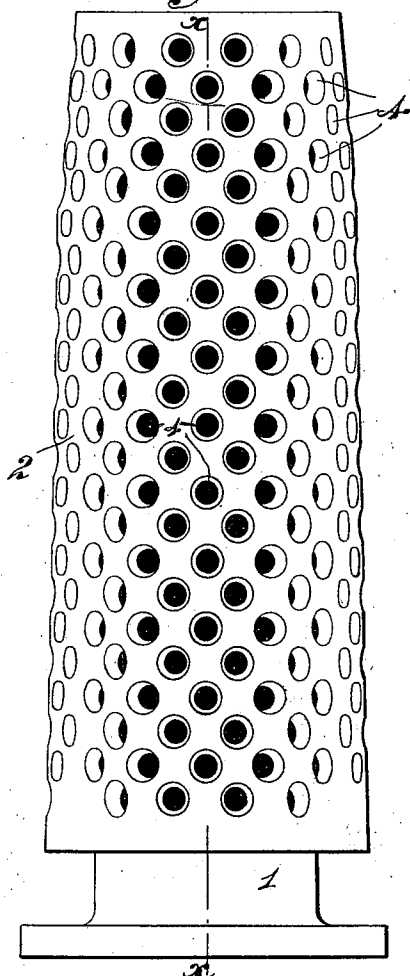
2 Sheets—Sheet 1.

J. JONES.  
LOCOMOTIVE BLAST PIPE.

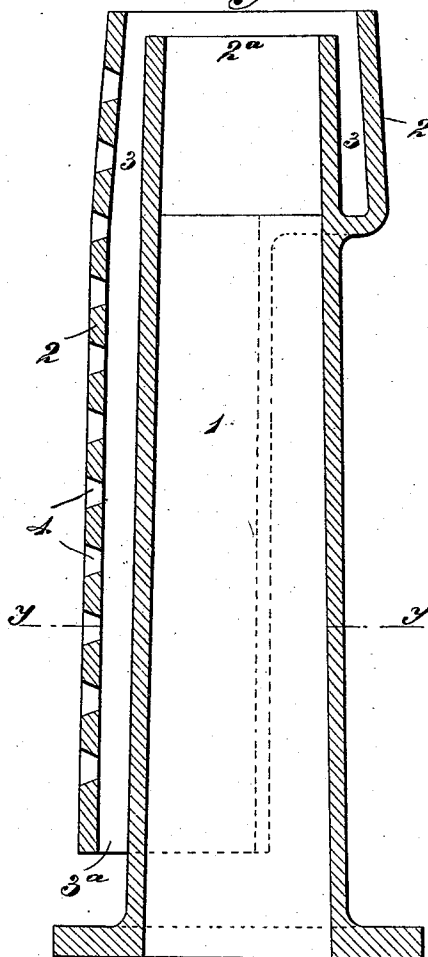
No. 560,504.

Patented May 19, 1896.

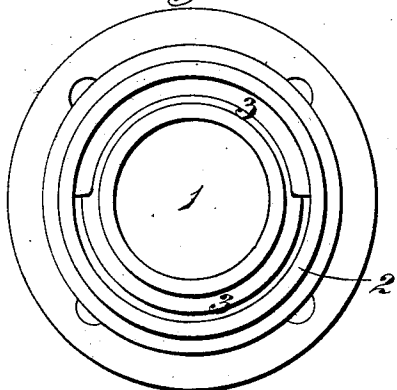
*Fig. 1.*



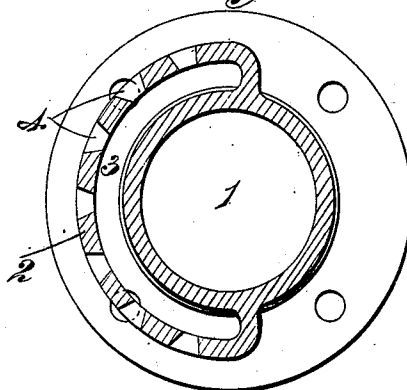
*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



Witnesses.

C. M. Werle  
Hubert & Peck

Inventor:

John Jones  
per O. E. Duffatt

(No Model.)

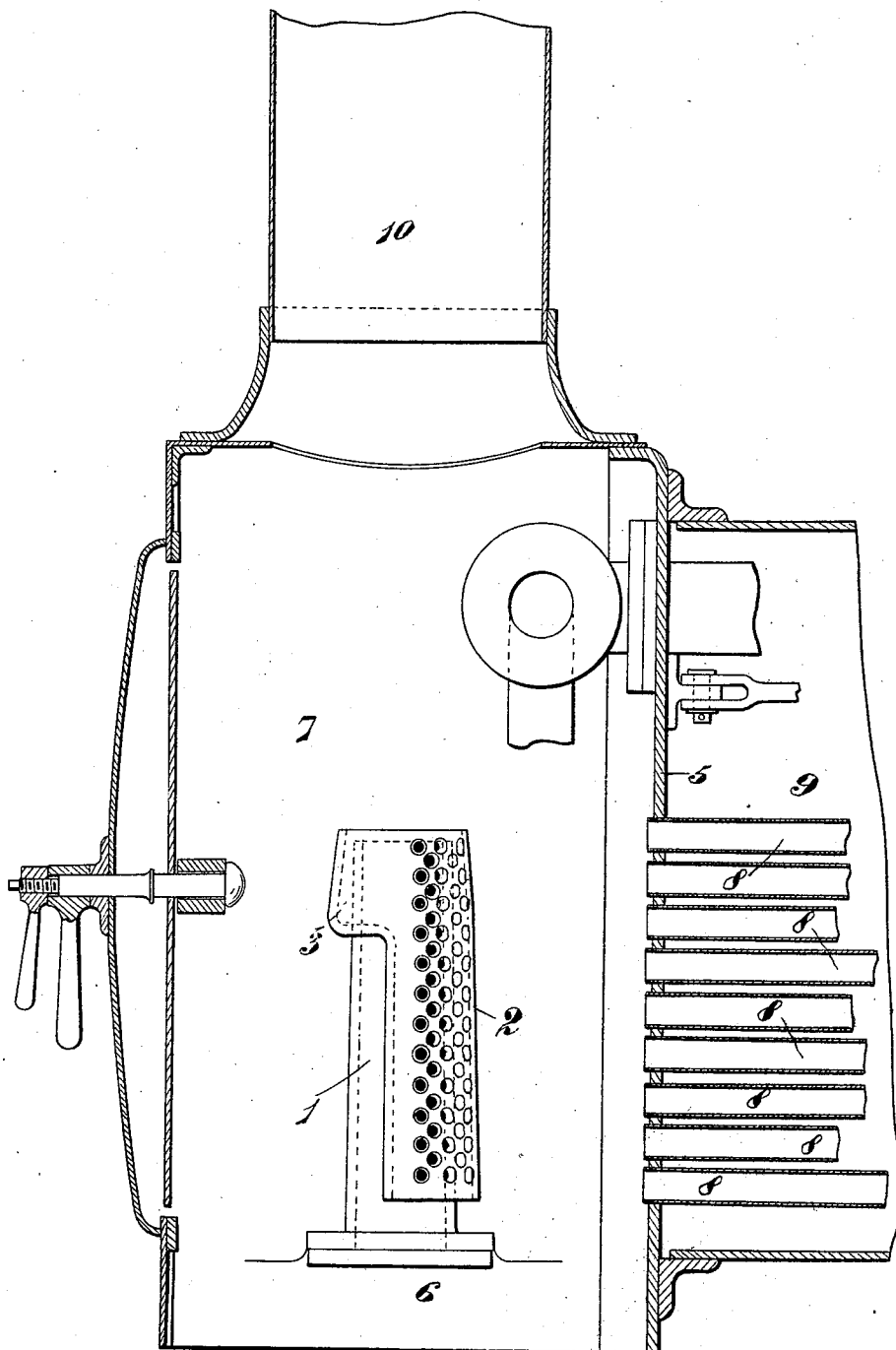
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*Fig. 5.*



Witnesses.

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Hunt & Peck

Inventor

Jno. Jones  
per O. C. Duffett

# UNITED STATES PATENT OFFICE.

JOHN JONES, OF MERTHYR-TYDVIL, ENGLAND.

## LOCOMOTIVE BLAST-PIPE.

SPECIFICATION forming part of Letters Patent No. 560,504, dated May 19, 1896.

Application filed September 3, 1895. Serial No. 561,335. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN JONES, a subject of the Queen of Great Britain and Ireland, residing at Upper Lodge, Cyvartha Castle, Merthyr-Tydvil, in the county of Glamorgan, England, (Wales,) have invented Improvements in Locomotive Blast-Pipes, of which the following is a specification.

My invention has reference to an improved construction of blast-pipe or draft-inducing apparatus of the kind through which exhaust-steam from the cylinders of a locomotive, portable, traction, or other such engine is caused to pass and whence it is so projected into the chimney as to induce a powerful draft through the flue-tubes of the engine-boiler.

In the accompanying drawings, Figure 1 is an elevation; Fig. 2, a vertical section on the line  $x x$  of Fig. 1; Fig. 3, a plan; and Fig. 4, a horizontal section on the line  $y y$  of Fig. 2, showing a blast-pipe or draft-inducing apparatus constructed according to this invention. Fig. 5 is a sectional elevation showing my apparatus in position in the smoke-box of an engine of the kind referred to, a part only of which is illustrated.

My improved apparatus, which may be constructed in one piece, as shown, or in parts secured together, of cast-iron or other suitable metal or metals, (it may be made partly of wrought-iron,) comprises a pipe 1, whose bore tapers slightly from the bottom toward the top, more or less, according to the draft required, and outside of this pipe a jacket extending partly around the pipe 1 for the greater portion of its length and entirely around the pipe at its upper part 2<sup>a</sup>, the wall 2 of the jacket forming an annular space 3 around the upper part of the pipe and extending somewhat above it.

The wall of the jacket at the deeper side is pierced or formed with a number of holes 4, preferably of conical form, and the blast-pipe is arranged with these holes toward the boiler-tube plate 5, Fig. 5. The bottom of the jacket is open at 3<sup>a</sup>. With such an apparatus steam issuing from the engine-cylinders 6 through the blast-pipe 1 will cause an upward draft in the annular space 3 surrounding the upper part of that pipe, thereby exhausting air from the smoke-box through the holes 4 in the wall of the jacket 2 and producing, as

nearly as may be, a uniform partial vacuum practically throughout the smoke-box 7, thus tending to keep the bottom tubes 8 of the boiler 9 free from dust as well as the top tubes while the engine is working, thus obviating the necessity of scraping and brushing out the tubes to increase the effective heating-surface of the boiler and thereby to economize fuel. Furthermore, the use of my invention will tend to reduce wear and tear of the boiler-tubes and fire-box plates and render such wear and tear more uniform, to promote better distribution of heat in the boiler, and in consequence of the more uniform draft produced in the tubes 8 enlargement of the upper end of the blast-pipe permits of the use of a blast-pipe of larger diameter than usual for a given size of engine, whereby the terminal pressure of the exhaust-steam escaping from such blast-pipe will be softened or reduced, so that the back pressure on the engine-pistons will be diminished and a large saving of fuel be effected. The reduction of the draft caused by the softening of the exhaust-steam passing through the exhaust-pipe also has the effect of lessening the tendency of the draft to throw sparks out of the chimney 10, thereby reducing the risk of fire from this cause to surrounding property.

What I claim is—

1. A draft-inducing apparatus comprising an inner blast-pipe and an outer perforated air-pipe, both open at the top, and the outer one open at the bottom and extending above the inner pipe and entirely around it for a portion of its length forming a chamber, whereby the induced current is softened in its exit by the enlargement of the said chamber, substantially as described.

2. A draft-inducing apparatus for the boiler of a locomotive or like engine, comprising a blast-pipe having a jacket extending partly around the pipe for the greater portion of its length and entirely around the pipe at its upper part, the wall of said jacket at the deeper side being formed with a number of holes, substantially as herein described for the purpose specified.

3. A draft-inducing apparatus for a locomotive and like engine, comprising a blast-pipe surrounded at its upper part by a wall that forms therewith a surrounding space and

is provided with a perforated downward extension that passes partly around said steam-pipe and forms therewith a space that is in communication with the space surrounding  
5 the top of the steam-pipe, substantially as herein described for the purposes specified.

4. A draft-inducing apparatus for a locomotive and like engine, comprising a blast-pipe having its bore of slightly-diminishing  
10 diameter from bottom to top, and a jacket the wall of which extends entirely around and partly above the upper end of said blast-pipe, and partly around the lower part of said  
15 blast-pipe where it is perforated, substantially as herein described for the purpose specified.

5. A draft-inducing apparatus for a locomotive or like engine, comprising a blast-pipe 1 having integral therewith the outer

wall 2 of a jacket, the upper part of said wall 20 being arranged to surround and extend above the upper part of said blast-pipe with which it forms an annular space 3, and the lower part of said wall being provided with holes 4  
25 and arranged to extend partly around the lower part of said blast-pipe with which it forms a part annular space that is in free communication with the annular space 3 at the top, substantially as described for the purpose specified.

In testimony whereof I have signed my  
30 name to this specification in the presence of two subscribing witnesses.

JOHN JONES.

Witnesses:

EDWARD WORLEY,  
LEWIS G. HARDING.