

No. 625,913.

Patented May 30, 1899.

J. WHITTLE.

EXHAUST BLAST APPARATUS FOR LOCOMOTIVE FURNACES.

(Application filed Feb. 8, 1899.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

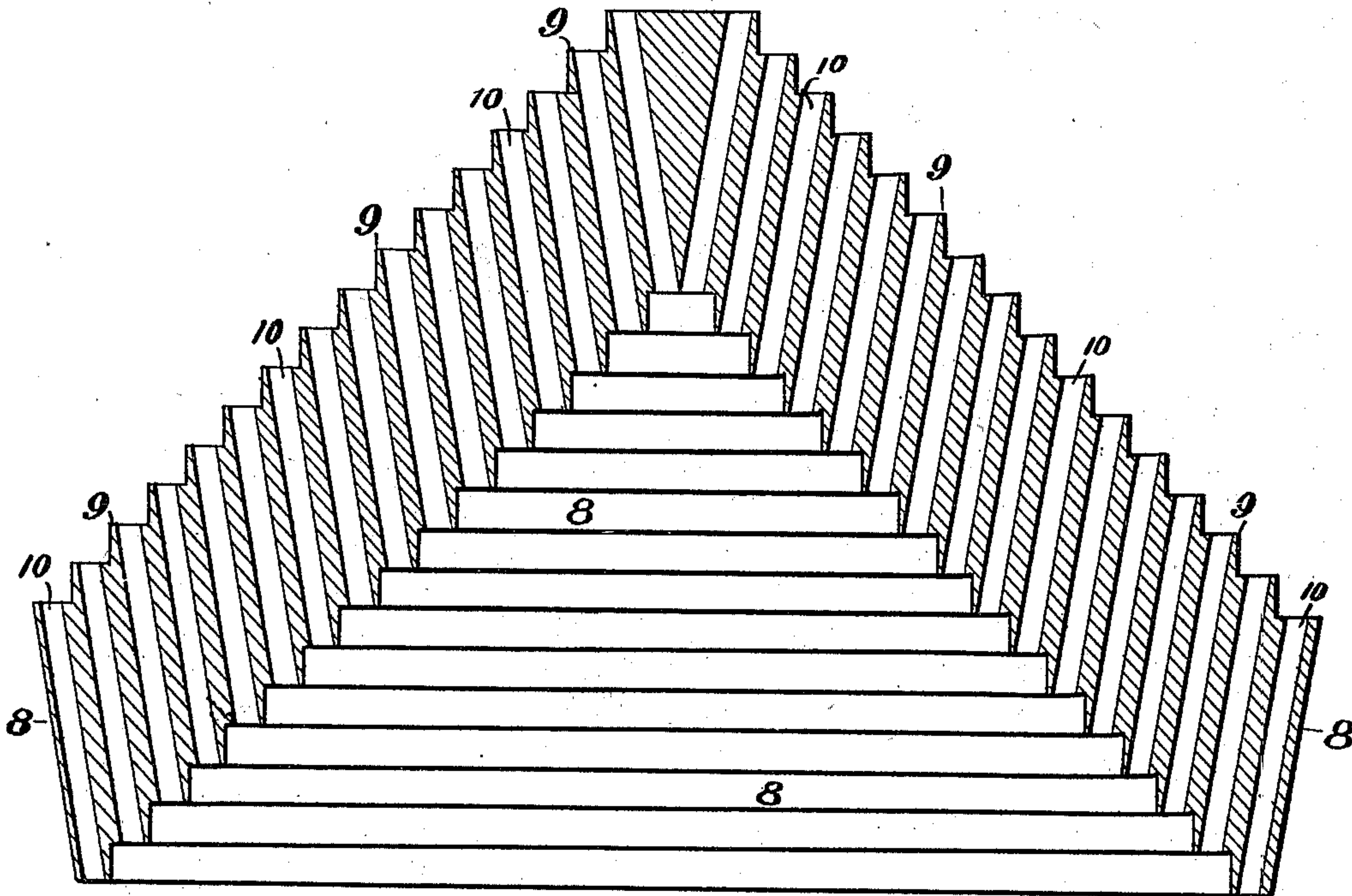
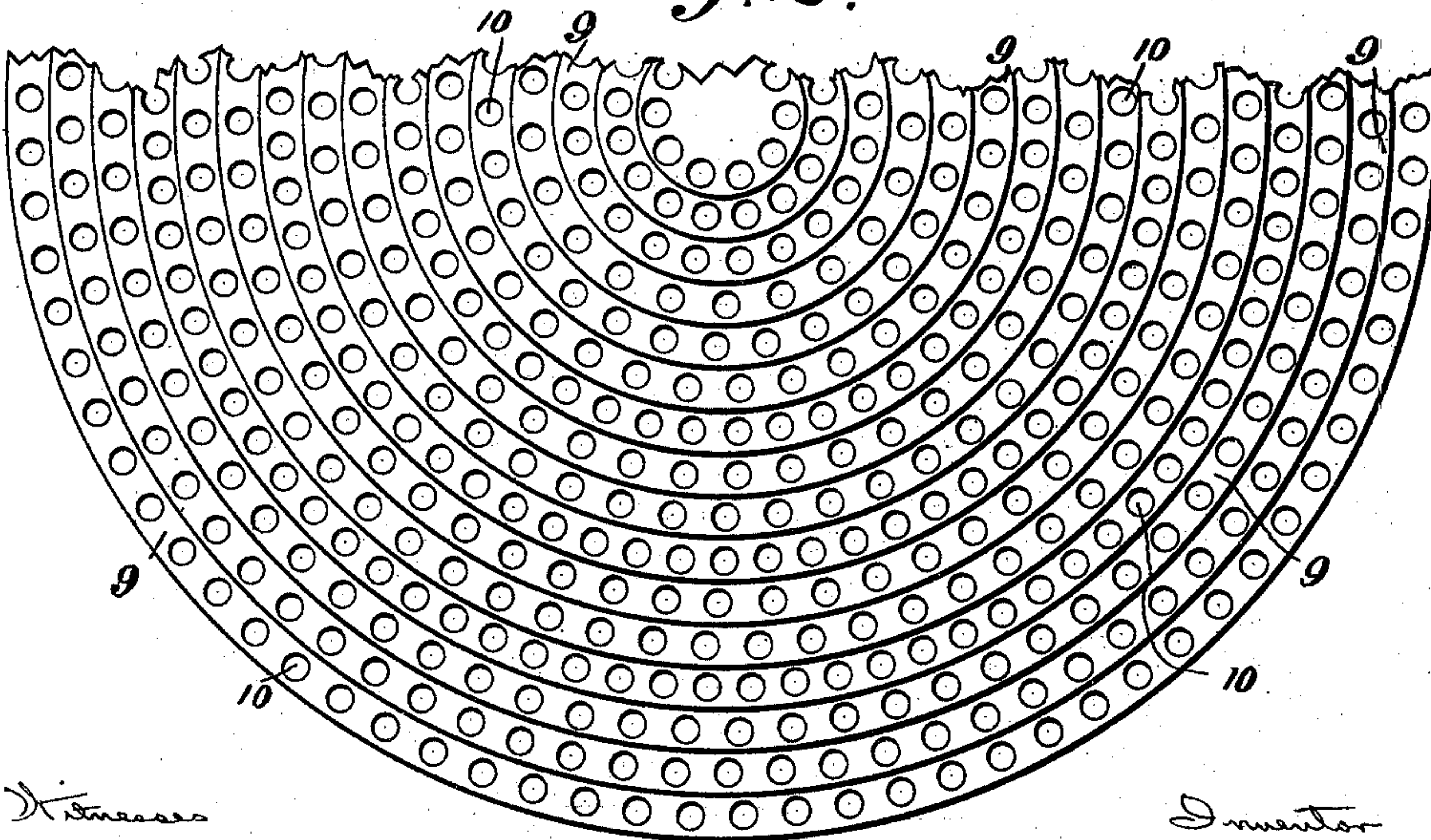


Fig. 2.



Witnesses
J. B. Keefe

Amos S. Elliott

Inventor

John Whittle

By *James L. Norris*

Attorney

No. 625,913.

Patented May 30, 1899.

J. WHITTLE.

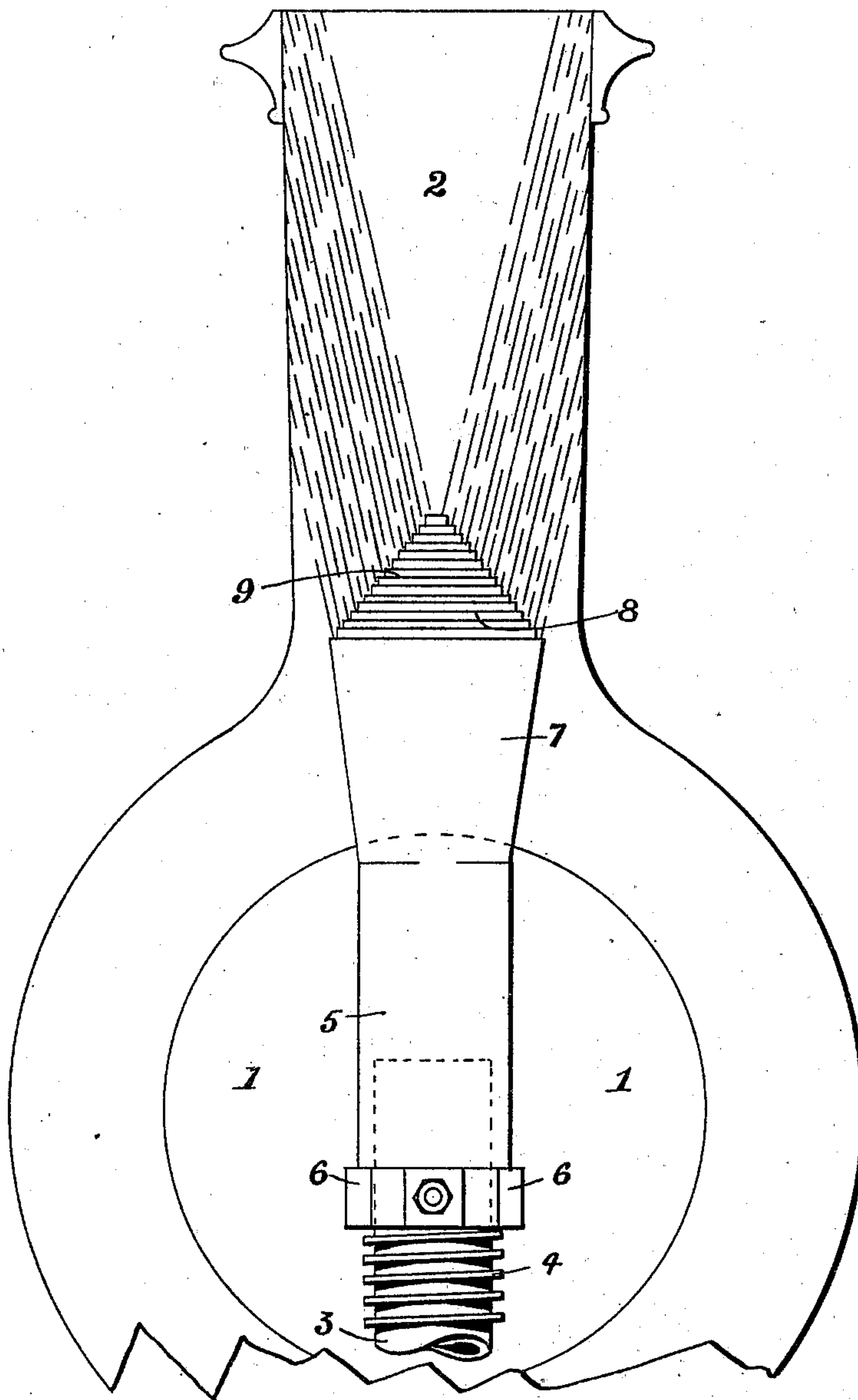
EXHAUST BLAST APPARATUS FOR LOCOMOTIVE FURNACES.

(Application filed Feb. 8, 1899.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 3.



Witness

H. B. Keeler

Amos S. Elliott

Inventor

John Whittle

By James L. Norris

Att'y

UNITED STATES PATENT OFFICE.

JOHN WHITTLE, OF BOSTON, ENGLAND.

EXHAUST BLAST APPARATUS FOR LOCOMOTIVE-FURNACES.

SPECIFICATION forming part of Letters Patent No. 625,913, dated May 30, 1899.

Original application filed June 28, 1897, Serial No. 642,745. Divided and this application filed February 8, 1899. Serial No. 704,959. (No model.)

To all whom it may concern:

Be it known that I, JOHN WHITTLE, a subject of the Queen of Great Britain, residing at Boston, Lincoln county, England, have invented certain new and useful Improvements in Exhaust Blast Apparatus for Locomotive-Furnaces, of which the following is a specification, and which is a division of my application filed June 28, 1897, Serial No. 642,745.

10 This invention relates to exhaust blast apparatus for locomotive-furnaces, and has for its object to provide an improved blast-nozzle for suppressing or deadening the sound and for extinguishing any sparks that may
15 be drawn through the fire-tubes into the smoke-box by the force of the blast or while the fire is being trimmed.

To these ends my invention consists in the features and in the construction, arrangement, and combination of parts hereinafter described, and particularly pointed out in the claims following the description, reference being had to the accompanying drawings, forming a part of this specification, wherein—

25 Figure 1 is a vertical central sectional view of my improved blast-nozzle. Fig. 2 is a partial top plan view thereof, and Fig. 3 is a view showing the nozzle and blast-pipe arranged in the smoke box and stack of a locomotive-boiler.

Referring to the drawings, the numeral 1 indicates the smoke-box of a locomotive-boiler, and 2 the stack thereof. Arranged in the smoke-box is a blast-pipe 3, which at its
35 lower end is connected with the usual exhaust-pipes (not shown) and at its upper end is externally threaded, as at 4. Mounted on the upper end of the blast-pipe 3 is a thimble 5, provided at its lower end with a threaded
40 ferrule 6, engaging the thread on the upper end of the blast-pipe, whereby the thimble may be adjusted vertically. The upper end of the thimble 5 terminates in a socket 7 of the shape of an inverted frustum of a cone, and fitted in the socket 7 is the blast-nozzle
45 8. The nozzle, as most clearly shown in Fig. 1, is cone-shaped both internally and externally and is formed in a series of concentric steps 9, which are of a gradually-decreasing
50 size from the bottom upward, as shown. Each of the steps is provided with an annular se-

ries of independent jet-openings 10, said openings being inclined upward and outward and extending entirely through the nozzle from the inner to the outer steps, as shown. 55 The exhaust-steam as it rushes through the jet-openings is directed in fine spreading streams over the entire internal surface of the smoke-stack and suppresses or deadens the sound of the escaping steam and effectually extinguishes any sparks that may be drawn through the fire-tubes into the smoke-box by the exhaust-blast or while the fire is being trimmed. By means of the threaded
60 ferrule 6 the blast-nozzle may be adjusted vertically in the smoke-stack. The conical shape of the socket 7 permits the escaping steam to spread over the inner surface of the nozzle for equal distribution to and through the jets. 70

Having described my invention, what I claim is—

1. A blast-nozzle for steam-boiler furnaces, consisting of a cone-shaped shell closed at its top or apex having a series of concentric
75 steps of a gradually-decreasing size from the bottom upward, each step being provided with an annular series of jet-openings inclined upward and outward and extending entirely through the shell from the inner to the outer steps, substantially as described. 80

2. A blast-nozzle for steam-boiler furnaces, consisting of a cone-shaped shell having a series of concentric steps of a gradually-decreasing size from the lowermost to the uppermost, each step being provided with an annular series of jet-openings inclined upward and outward and extending entirely through the shell from the inner to the outer steps, in combination with a blast-pipe, and a socket connected with the blast-pipe and the lower end of the nozzle, said socket being of the shape of an inverted frustum of a cone, substantially as described and for the purpose specified. 95

3. A blast-nozzle for steam-boiler furnaces, consisting of a cone-shaped shell having a series of concentric steps of a gradually-decreasing size from the lowermost to the uppermost, each step being provided with an annular series of jet-openings inclined upward and outward and extending entirely through 100

the shell, in combination with a threaded
blast-pipe, a threaded ferrule arranged on the
threaded blast-pipe, a thimble connected at
its lower end with the ferrule and provided
5 at its upper end with a socket in which the
nozzle is fitted, substantially as described.

In testimony whereof I have hereunto set

my hand in presence of two subscribing wit-
nesses.

JOHN WHITTLE.

Witnesses:

RICHARD CORE GARDNER,
JAMES GEORGE NEWMAN.