2 Sheets--Sheet 1.

GEORGE H. GRIGGS.

Spark Arrester and Consumer.

No. 120,638. Patented Nov. 7, 1871.

Fig. 1.

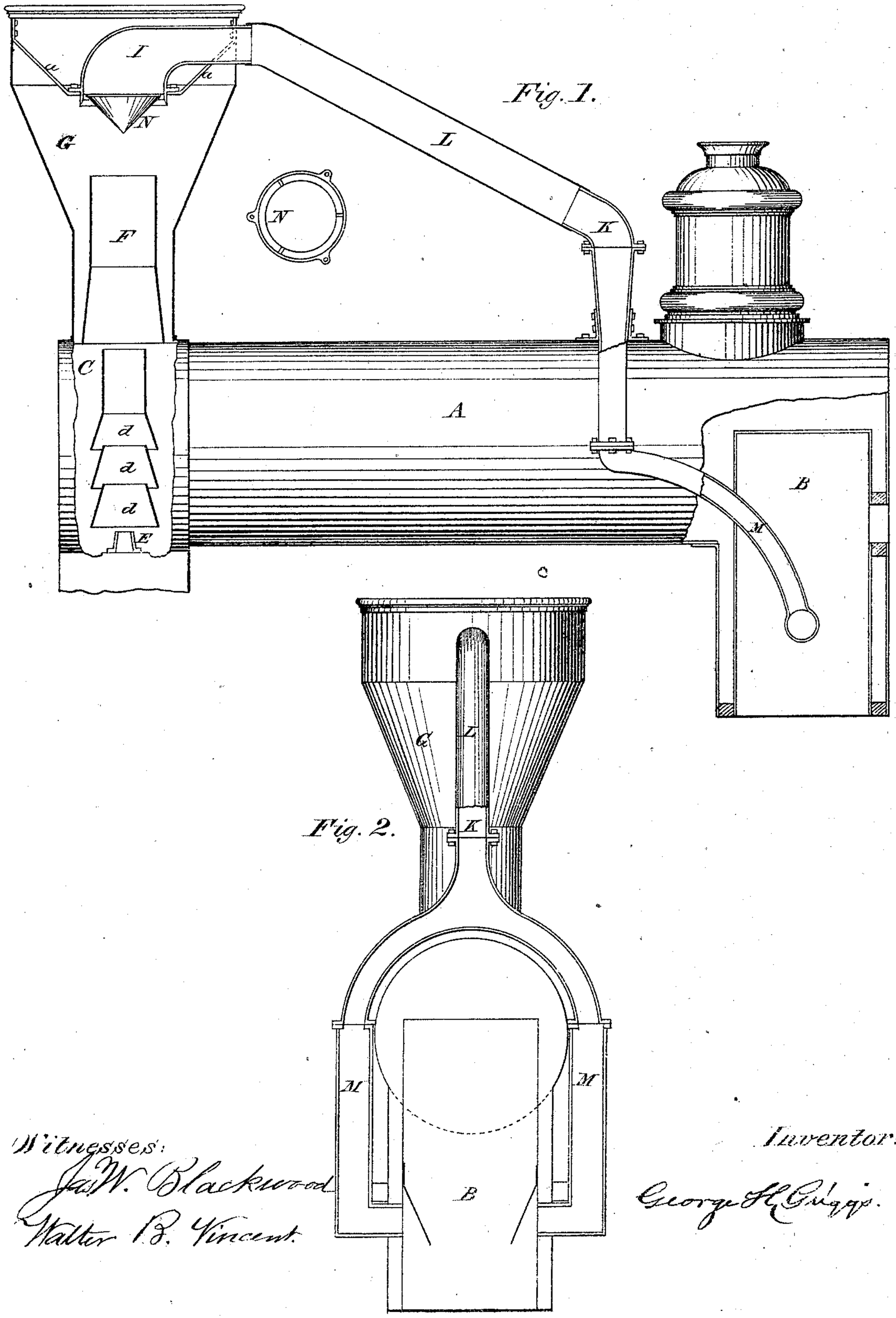

Fig. 2.

Witnesses:
Jas. W. Blackwood
Walter B. Vincent.

Inventor:
George H. Griggs.

2 Sheets--Sheet 2.

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Fig. 1.

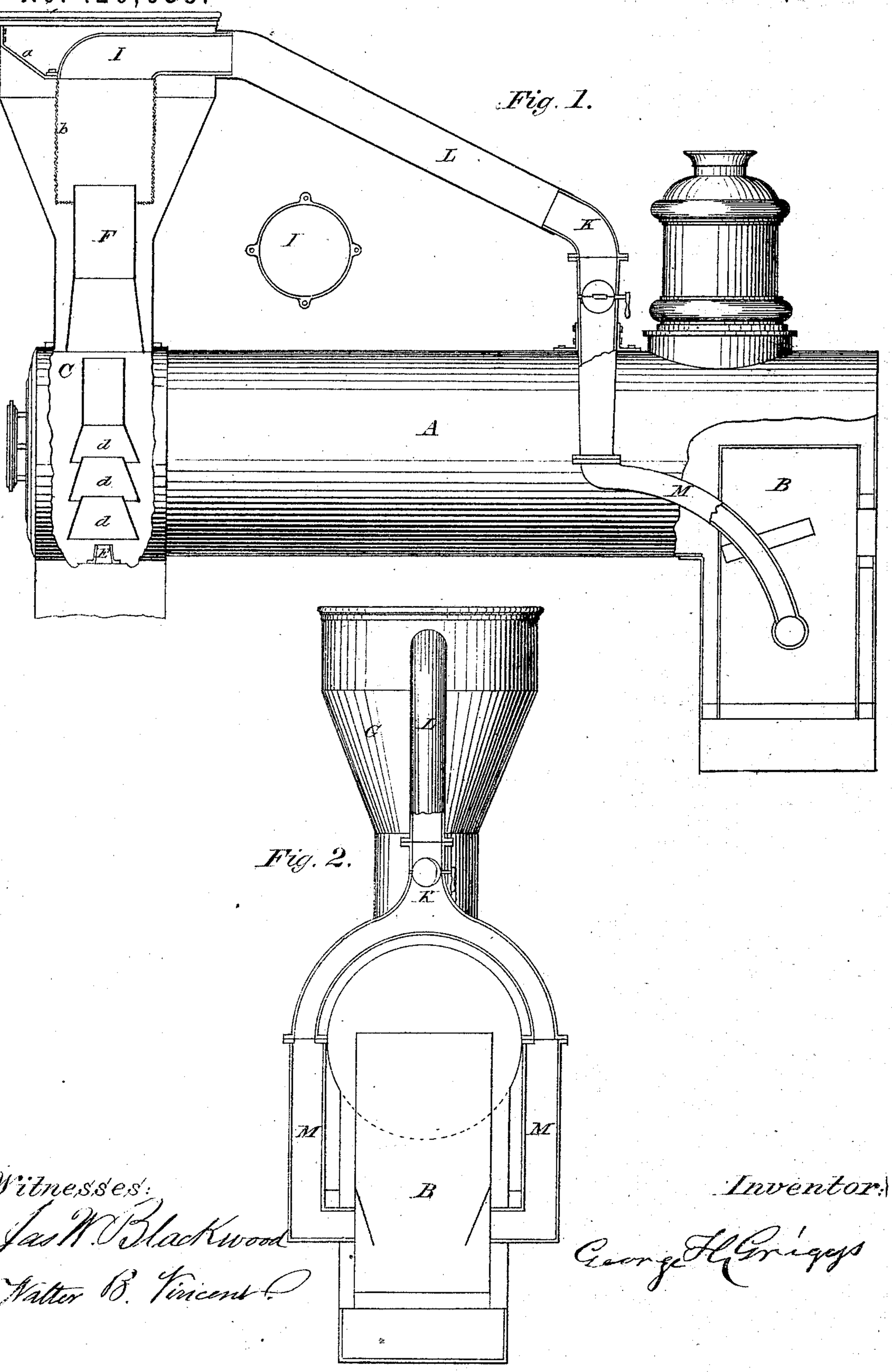

Fig. 2.

Witnesses:

Jas W. Blackwood

Walter B. Vincent

Inventor:

George H. Griggs

Reissued Sept. 10th 1872.
In Two Divisions.

120,638

UNITED STATES PATENT OFFICE.

GEORGE H. GRIGGS, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO CHARLES F. PIKE, OF PROVIDENCE, RHODE ISLAND.

IMPROVEMENT IN SPARK-ARRESTERS AND CONSUMERS FOR LOCOMOTIVES.

Specification forming part of Letters Patent No. 120,638, dated November 7, 1871.

To all whom it may concern:

Be it known that I, GEORGE H. GRIGGS, of the city and county of Worcester, in the Commonwealth of Massachusetts, have invented a new and useful Improvement in Locomotive and other Engines; and I do hereby declare that the following specification, taken in connection with the drawing making a part of the same, is a full, clear, and exact description thereof.

Figure 1, Sheet 1, is a side elevation of a locomotive-boiler and a portion of the engine. Fig. 2, Sheet 1, is an end elevation of the same. Figs. 1 and 2, Sheet 2, are similar views to Sheet 1, showing some variations in construction.

The object of my invention is to arrest and convey back to the fire-box the sparks, cinders, smoke, and gases which are now discharged from the smoke-stack of the engine, and thus not only relieve the passengers from great annoyance and inconvenience arising from their escape, but, at the same time, materially reduce the amount of fuel consumed, as well as to avoid the damage so often resulting from the flying sparks; and consists in the devices for such purposes hereinafter described.

In the drawings, A is the boiler; B, the fire-box; C, the smoke-arch, containing the petticoat-pipes *d d d* and exhaust-pipe E. F is the inside smoke-pipe, and G the outside smoke-pipe.

It is well understood that in the engines now in use the smoke, sparks, and cinders after leaving the fire-box B pass through the tubes of the boiler to the smoke-arch C, when the exhaust steam from the pipe E creates a draught that forces them into and through the petticoat *d* and the inner smoke-pipe F, from which they pass into the outer smoke-pipe G and escape.

In my invention I attach to the inside of the pipe G, near the top, by means of rods *a a*, a bell-shaped pipe, I, having its mouth directly over the inner smoke-pipe F, while its smaller end projects through and is connected to the pipe K by the pipe L. The pipe K partially surrounds the boiler and is connected with the fire-box B by the pipes M, and a communication from the smoke-pipe to the fire-box thus established. Within the larger end of the bell-shaped pipe I may be placed an inverted cone, N, having the diameter of its base smaller than the inside diameter of the pipe, as shown in Fig. 1, Sheet 1, which tends to increase the force of the draught in the space around it. Instead of the cone N a barrel-netting, *b*, Fig. 1, Sheet 2, may be used, which is attached to the bell-shaped pipe I and extends down over the end of the pipe F, which prevents the divergence of the cinders and sparks. The cone and netting may, however, be used together in combination if desired, and the pipe F dispensed with.

The operation of my invention is as follows: The cinders, sparks, smoke, and gases having passed through the tubes in the boiler are forced through the petticoat-pipes *d* and the pipe F, as already described, by the exhaust steam, when, instead of escaping from the smoke-stack, they are received within the bell-shaped pipe I and carried on by the draught through the pipes L, K, and M to the fire-box B, having been rendered combustible in their passage by the action upon them of the exhaust steam.

The opening in the outer smoke-pipe G, through which extends the small end of the bell-shaped pipe I, may be larger than the diameter of said pipe I, as shown in Fig. 1, Sheet 2, and the pipe L, which connects it with the pipe K, may also exceed it in diameter, so that, in case there should be any loose cinders or sparks, the downward draught will convey them into the fire-box B.

I provide the pipe K with a damper, O, as shown in Fig. 2, Sheet 1, which may be closed when the engine is at rest, or at such other times as it may be necessary to stop the draught.

I am aware that a patent for a spark-arrester was granted to one David Mathew, February 20, 1849, and reissued February 26, 1856; but I do not claim as my invention anything covered by said patents, but consider there is a clear patentable difference between such invention and my own; but

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

1. The inverted bell-mouth pipe I, either separately or with a cone, N, or netting *b*, in com-

bination with pipe E and furnace B, all arranged substantially in the manner and for the purpose set forth.

2. The inverted bell-mouth pipe I, either separately or with a cone, N, or a netting, *b*, in combination with the pipes G and F, so arranged with reference to said pipe F that it will receive the cinders, sparks, &c., discharged from said pipe F, in the manner and for the purposes specified

GEORGE H. GRIGGS.

Witnesses:

JAMES W. BLACKWOOD,

WALTER B. VINCENT.

(94)