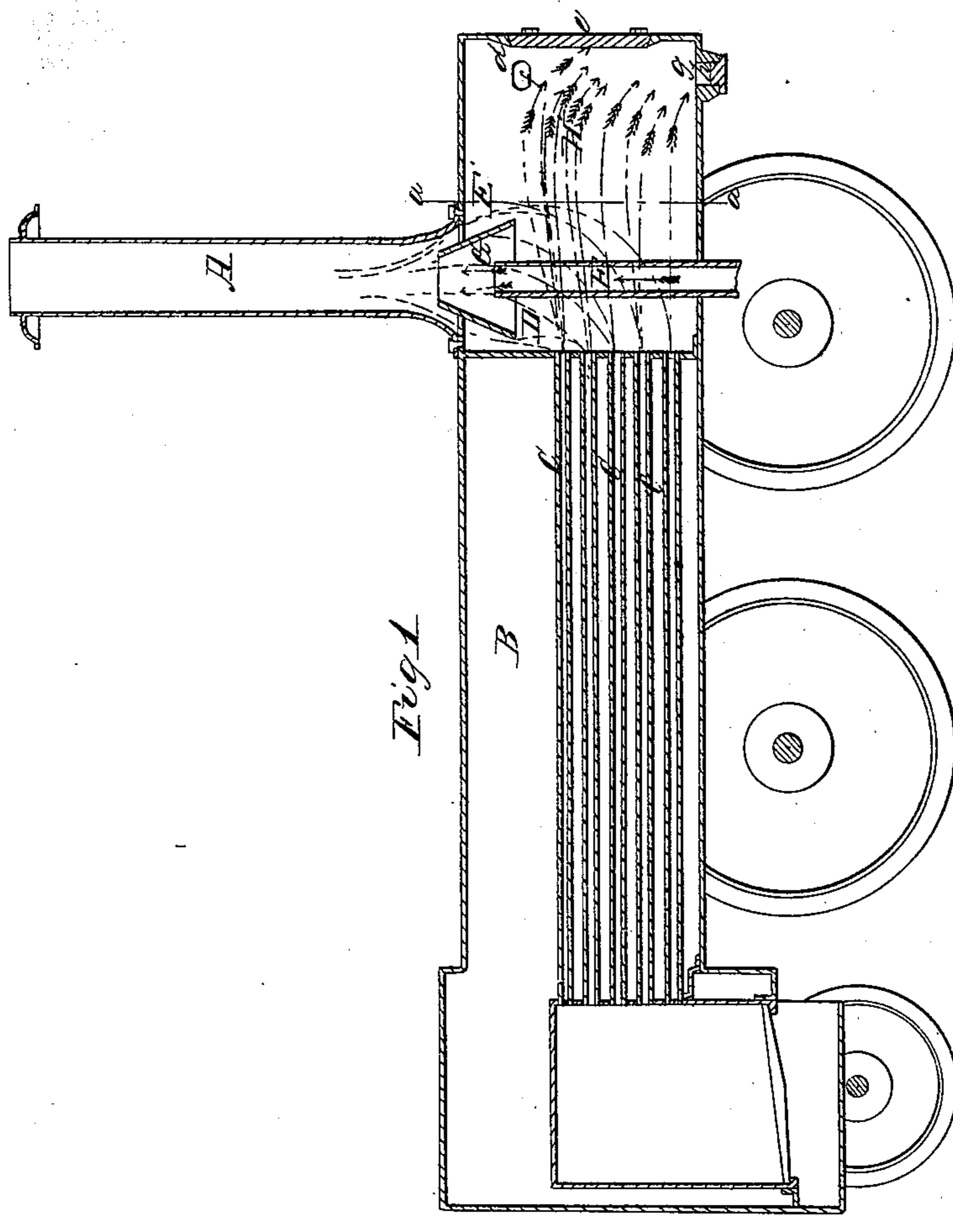
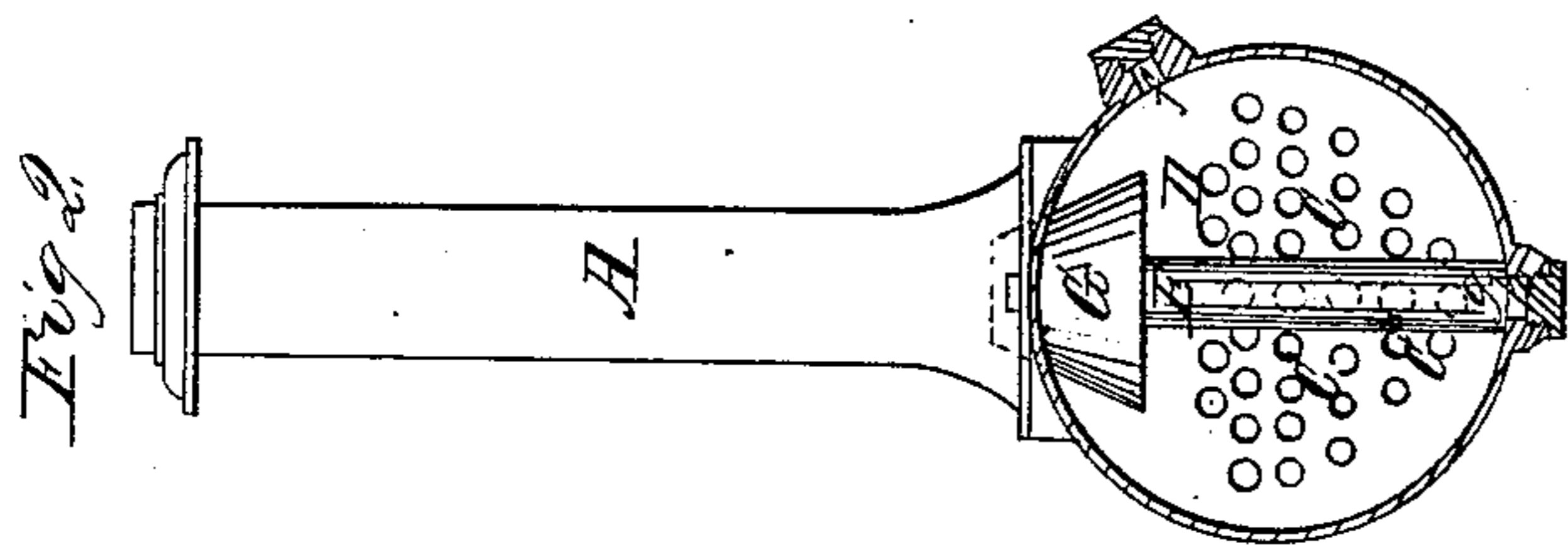


*J. Thompson,*  
*Exhaust Mechanism for Locomotives.*  
*N<sup>o</sup> 28,520. Patented May 29, 1860.*



# UNITED STATES PATENT OFFICE.

JOHN THOMPSON, OF EAST BOSTON, MASSACHUSETTS.

## LOCOMOTIVE-BOILER.

Specification of Letters Patent No. 28,520, dated May 29, 1860.

*To all whom it may concern:*

Be it known that I, JOHN THOMPSON, of East Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Railway-Locomotive Steam-Engines; and I do hereby declare the same to be fully described and represented in the following specification and the accompanying drawings, of which—  
Figure 1 is a longitudinal section of the smoke arch or box and the chimney of a locomotive engine provided with my invention. Fig. 2 is a transverse section of the smoke arch taken through the raking and discharging ports thereof.

The nature of my invention consists in extending the smoke arch or smoke box in manner hereinafter described so far beyond the chimney and the blast pipe that the sparks and cinders ejected from the stack of pipes connecting the smoke arch with the furnace may be thrown so far forward beyond the draft or current of smoke passing from the stack to the chimney as to fall down and settle or be retained within the smoke box.

In the said drawings, A, denotes the chimney; B, the boiler; C, C, C, the stack of smoke tubes; D, the smoke arch or box, and E the blast pipe of a locomotive engine, the blue line *a, a*, exhibiting the position of the front boundary plate of the smoke box as ordinarily made and applied. In this case it has been customary to arrange the vertical axis of the chimney immediately in a vertical line with the central vertical axis of the smoke box, the blast pipe being also in such line. The extension of the smoke box in front of the chimney has been very little, the front end of the box being so near to the adjacent ends of the pipe stack that the current of smoke proceeding out of the latter and toward the chimney would impinge against the said front end of the smoke box. This has caused the current of smoke or draft to take up into and through the chimney the cinders or sparks that might be ejected through the horizontal smoke pipes as the cinders had no opportunity of passing beyond the current, but were thrown against the front end of the box and deflected into the current so as to be carried off with and by it.

I have found that by extending the smoke box some considerable distance that is about

eighteen inches or more in manner as described and represented beyond the course of the draft, most if not all the sparks and cinders will pass beyond the current of smoke and be deposited in the smoke box.

In the drawings, D', exhibits the extension of the smoke box, while E' exhibits the outer boundary of the current of smoke and gases discharged from the pipes C, C. The said extended part, D', I make with a pipe clearing door opening, *d*, and door, *e*, at its end and also with a raking port, *f*, and a discharging port, *g*, the said raking port being placed in the side or top of the smoke box and provided with a suitable door or cover. The discharging port I place at the bottom of the smoke box, and over a pipe or spout, *h*, extending down therefrom. The object of these ports is to enable a fireman to discharge from the smoke box the accumulated mass of cinders without the necessity of opening the pipe stack door and thereby allowing the dust and cinders to accumulate on the machinery of the locomotive. He can accomplish this by introducing a rake or other proper implement through the raking port, and by means of such rake forcing the cinders toward and into the opened discharging port. The discharging or upper end of the blast pipe I arrange so as to open above the pipe stack, C, C, C, and near to the receiving mouth of the chimney, A. This arrangement operates to prevent the blast of steam from acting on the currents of cinders driven out of the said pipes, C, C, C, into the smoke box.

G denotes a hollow conical deflector placed around the discharging mouth of the blast pipe, and with respect to the mouth of the chimney as shown in Fig. 1. This deflector has been found not only to affect the action of the blast to excellent advantage, but to receive upon its external surface the condensed water that may fall back from the blast in the chimney and to scatter such water into the mass of cinders so as to extinguish combustion when any of them may be on fire and also compact the mass and aid in its retention within the smoke box while the engine is in operation.

My invention has been thoroughly tested on seven locomotives and found to be of great practical utility and advantage. It differs materially from the "subtreasury box" or receptacle usually connected with

a spark arrester attached to the chimney of the engine and having a partition between it and the smoke arch or box.

I claim—

- 5 The improved smoke box as so extended beyond the smoke current leading from the pipe stack to the chimney that the sparks or cinders discharged through the pipe stack

may pass out of and beyond the current of smoke so as to be deposited in the box by the action of gravity and not be carried up the chimney.

JOHN THOMPSON.

Witnesses:

R. H. EDDY,  
F. R. HALE, Jr.