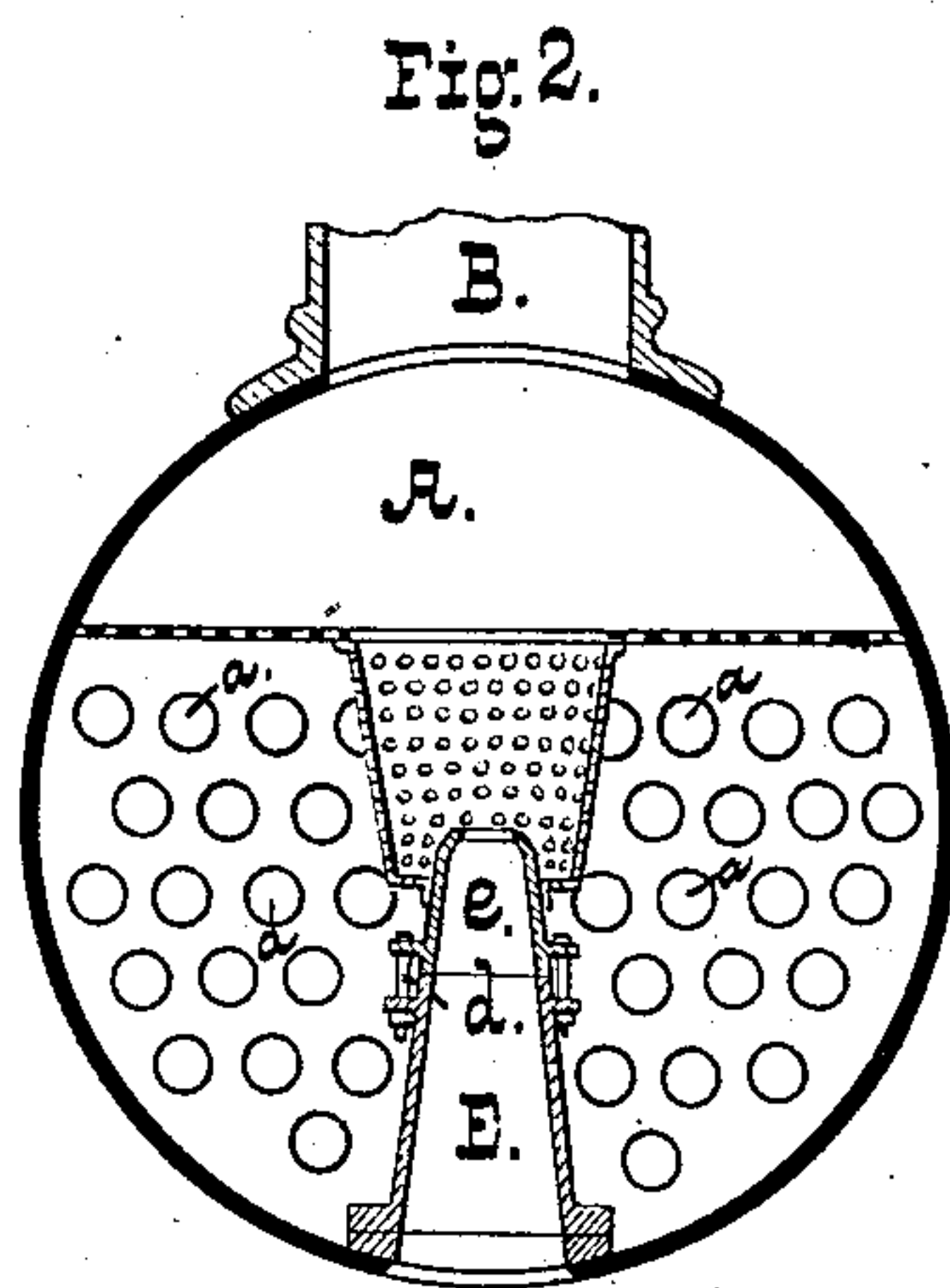
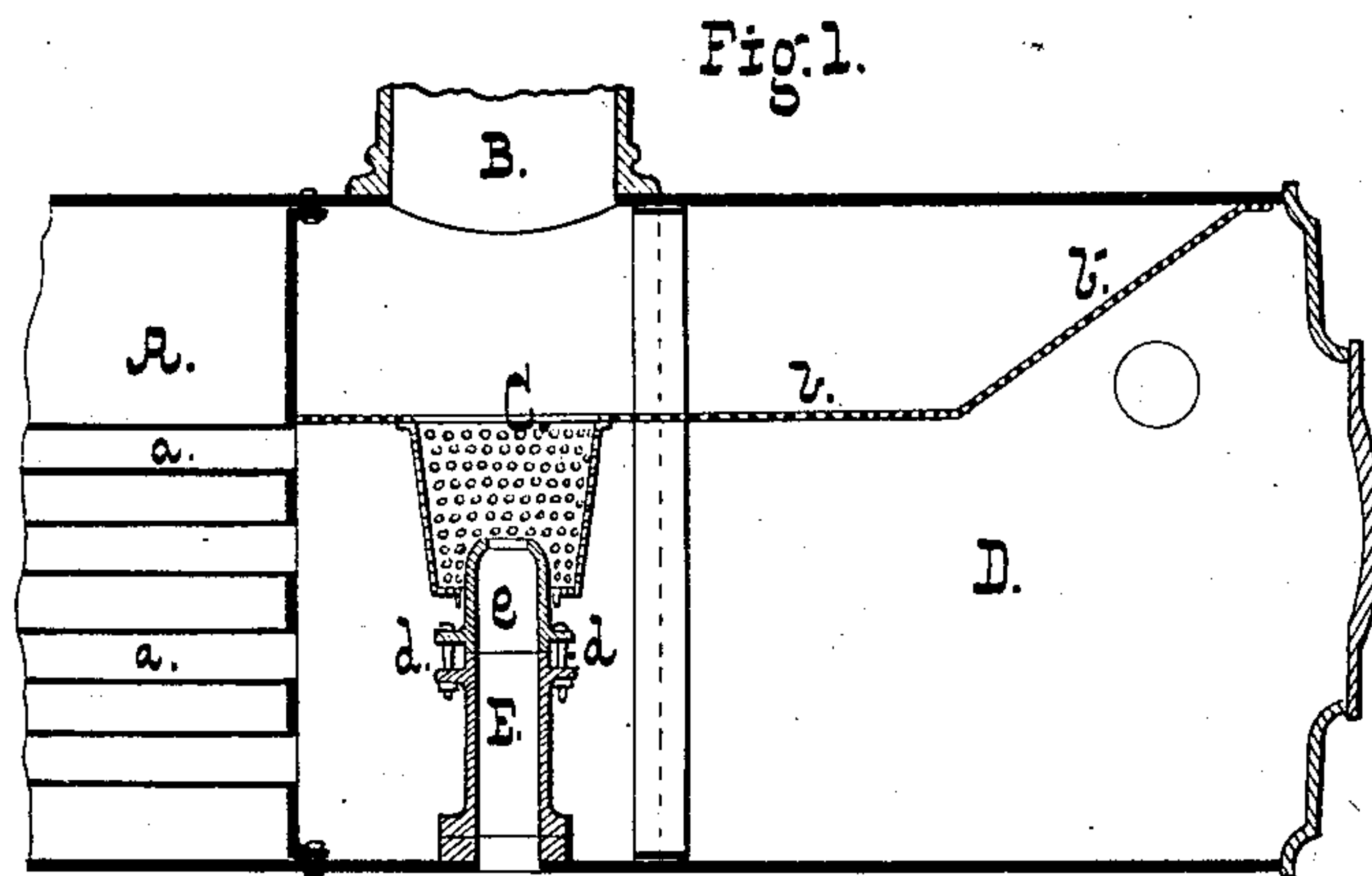


(No Model.)

A. J. CROMWELL.
Smoke Boxes for Locomotives.

No. 243,111.

Patented June 21, 1881.



WITNESSES.

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SMOKE-BOX FOR LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 243,111, dated June 21, 1881.

Application filed April 25, 1881. (No model.)

To all whom it may concern :

Be it known that I, ANDREW J. CROMWELL, of Baltimore city, State of Maryland, have invented certain new and useful Improvements in Smoke-Boxes for Locomotives; and I hereby declare the same to be fully, clearly, and exactly described as follows, reference being had to the accompanying drawings, in which—

Figure 1 is a view of the device in central longitudinal vertical section, and Fig. 2 is a cross-sectional view through the centers of the exhaust-nozzle and smoke-stack.

My invention relates to what are known as "smoke-boxes" or "extension-fronts" for locomotive-boilers, designed to arrest the larger cinders and sparks and prevent their escape through the smoke-stack. An obstacle has, however, been met with in the use of devices of this class, arising from the fact that they either were comparatively inefficient as spark-arresters, or else that while arresting the sparks they were apt to throttle the draft.

The object of my invention is to produce an abundant and uniform draft, and to arrest all except the smaller sparks and cinders. To filter the smoke from a locomotive so as to remove these small particles of solid matter is an absolute impossibility without obstructing the draft to a degree that would render the whole device inoperative; but a much nearer approximation to a complete separation of the cinders than has heretofore been reached is possible, and that result is attained by the device about to be described. A further important result is reached by my invention, in that the draft through the flues is rendered more uniform, as is also the combustion of fuel in the fire-box.

In the drawings, A is the boiler, having flues *a* and smoke-stack B of the usual construction.

D is the extension-front or smoke-box, having the usual netting, *b*, extending horizontally from about the level of the upper tier of flues to a point near the front of the box, where it is bent upward, as shown at *b'*.

E is the exhaust-nozzle, having a removable tip, *e*, secured to the nozzle by bolts *d*.

C is a perforated basket secured to the netting and inclosing the exhaust-nozzle, as shown.

This basket operates, in connection with the

nozzle, somewhat on the principle of an injector, and produces a strong draft inward through the perforations from all sides, and the flames and products of combustion are drawn through the flues, and are practically unobstructed in their passage to the front of the box. The currents are then forced to turn sharply upward and backward, momentarily, as it were, coming to rest, when the cinders fall and remain upon the bottom of the box. The vertical baffle-plate, which in the well-known form of smoke-box depended in front of the flues, in great measure defeated this end, as it directed the draft horizontally over the bottom of the box, agitating and lifting the fallen cinders. It, moreover, choked the draft of all except the lower flues.

The tip of the exhaust-nozzle is made removable, so that one of any desired length may be placed on the nozzle, it being only necessary to take out the bolts *d* to release the tip and remove it to apply a new one.

The device is readily applicable to engines already in use, either provided or not with the extension-front and netting, and in practical use it has fully established its efficiency and superiority.

What I claim is—

1. In a locomotive smoke-box, a netting extending substantially horizontally from a point above the level of the upper tier of flues, and provided with a depending basket inclosing the exhaust-nozzle, the parts being arranged and operating as set forth.

2. In a locomotive smoke-box, and in combination with the horizontal netting, an exhaust-nozzle having a removable tip inclosed by a depending basket, the parts being arranged and operating as set forth.

3. In combination with the netting *b*, having inclined portion *b'*, the perforated basket secured to the netting and depending in front of the flues, and the exhaust-nozzle having its tip located within the basket, whereby an injector draft is caused through basket and netting, as set forth.

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Witnesses:

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