

(No Model.)

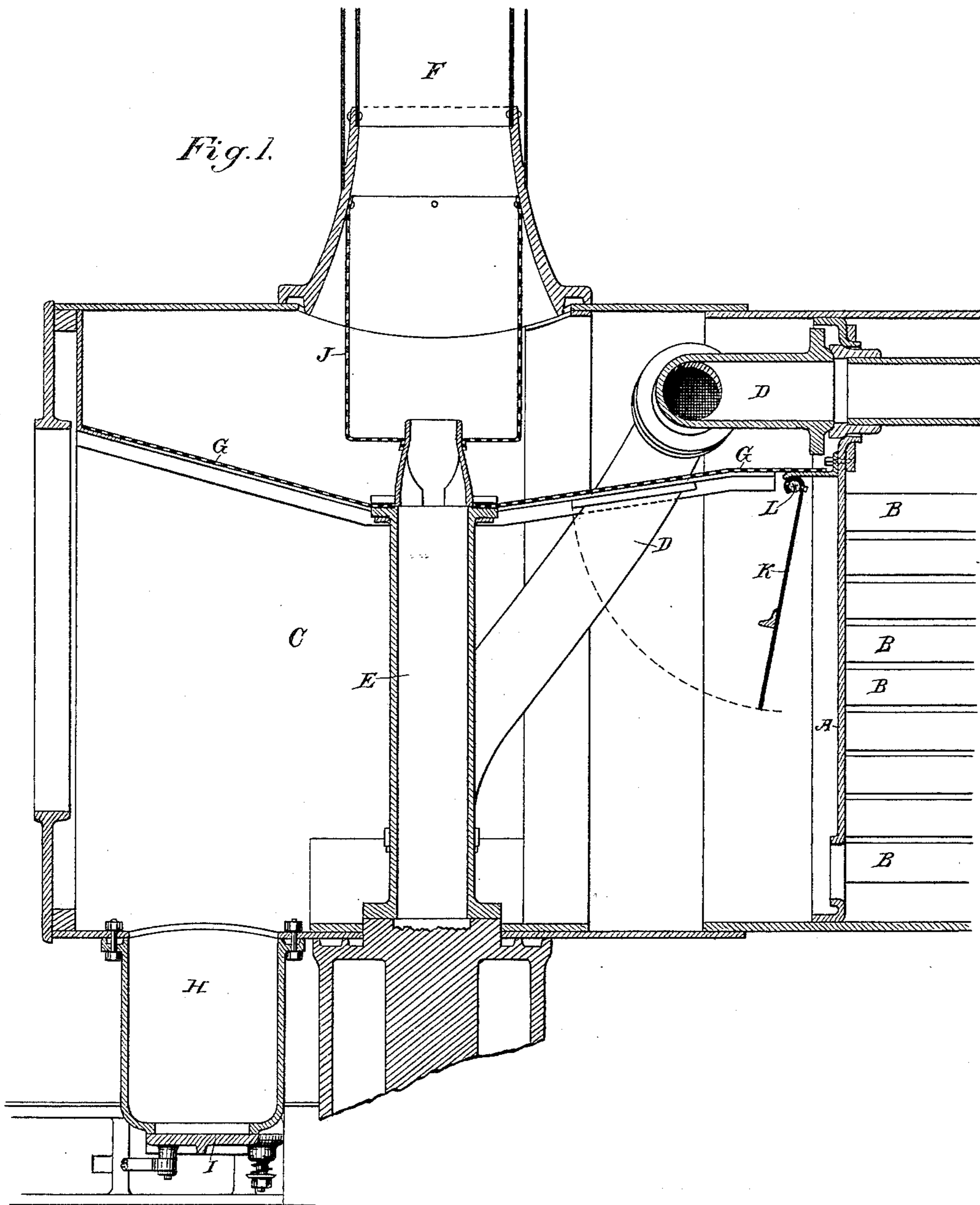
2 Sheets—Sheet 1.

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SPARK ARRESTER.

No. 393,994.

Patented Dec. 4, 1888.



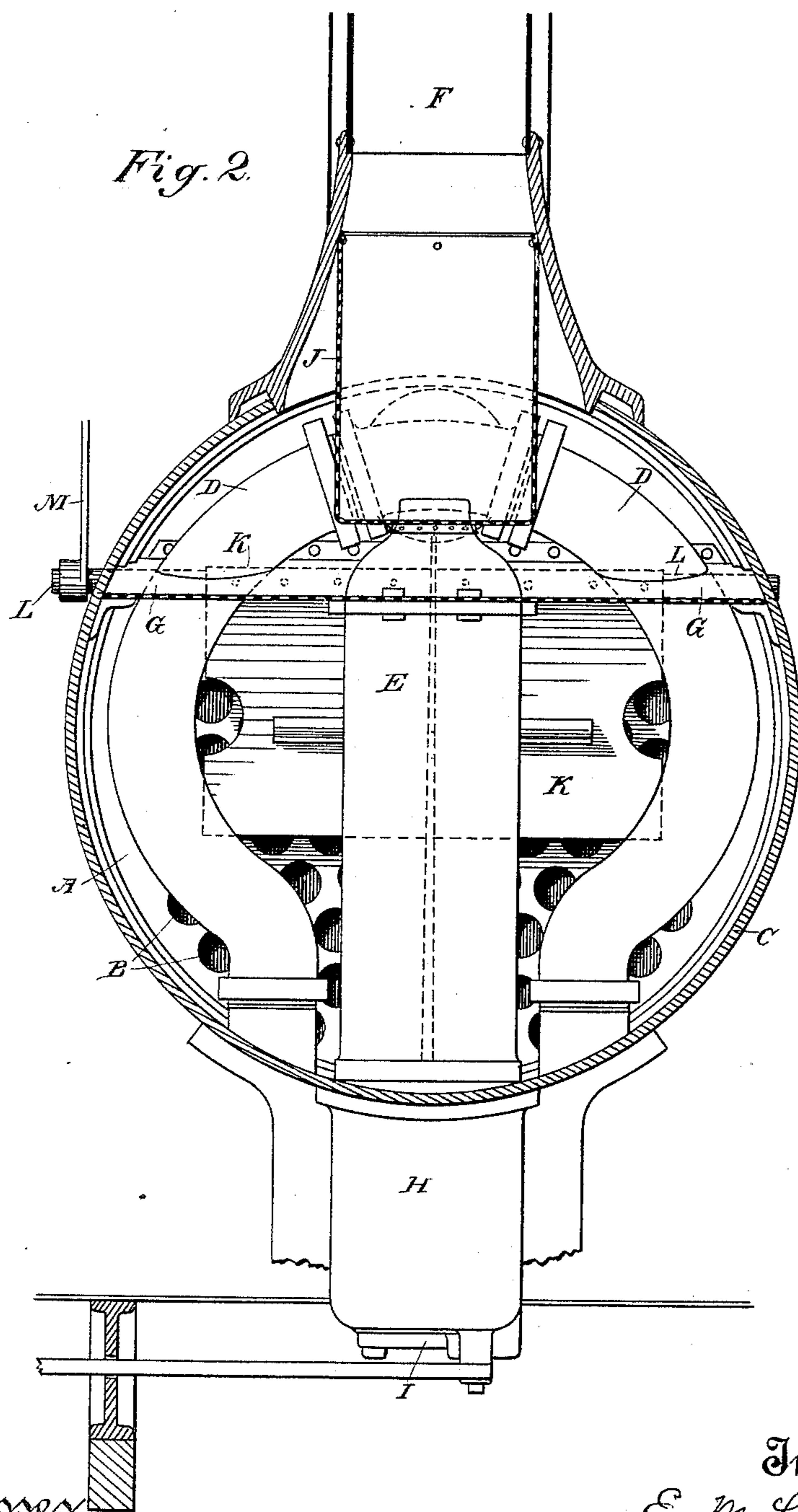
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# UNITED STATES PATENT OFFICE.

EDGAR MELVILLE LUCKETT, OF SACRAMENTO, CALIFORNIA.

## SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 393,994, dated December 4, 1888.

Application filed May 31, 1888. Serial No. 275,628. (No model.)

*To all whom it may concern:*

Be it known that I, EDGAR MELVILLE LUCKETT, of the city of Sacramento, Sacramento county, State of California, have invented an  
5 Improvement in Spark-Arresters; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to an improved means for arresting sparks in locomotive-engines;  
10 and it consists in the application of a hinged adjustable deflecting-plate and a supplemental netting, in conjunction with a horizontal netting within the extension-front or smoke-box of the boiler.

15 Referring to the accompanying drawings, Figure 1 is a side elevation in vertical section, showing the construction of my device. Fig. 2 is a transverse vertical section taken through the extension-front.

20 A is the front tube-sheet of the boiler of the engine, and B are the tubes through which the products of combustion are discharged from the fire-box, which is at the rear end of the boiler, and may be of any  
25 usual or well-known pattern.

C is the extension-front of the boiler, into which the products of combustion are discharged.

30 D are the pipes through which steam passes to the engine-cylinder, (not here shown,) and E is a vertical exhaust-pipe through which the steam is ejected into the chimney or stack F, which stands in line directly above the mouth of the exhaust-pipe. This pipe has a  
35 contracted nozzle, and the violent discharge of steam through this nozzle produces the strong intermittent draft which is necessary to produce the proper combustion for locomotives, this being the usual method.

40 In order to arrest the small cinders and sparks which are liable to be thrown out by this strong draft, various spark-arresting devices have been employed, including netting, deflectors, &c.

45 In my invention I employ the combination of a supplemental cylindrical netting with the ordinary horizontal netting, and also of a hinged adjustable deflector depending in front of the tube-sheet.

50 G is a netting which extends from the front tube-sheet to the front end of the extension

smoke-box, this netting being perforated, so that the exhaust-pipe E passes up through it. This netting is depressed, so that it inclines downward from the tube-sheet to the exhaust-  
55 pipe E, and thence rises again to its point of attachment at the front of the extension. This netting will arrest and throw down to the bottom of the extension a large portion of the cinders and sparks which are drawn  
60 out by the violent exhaust, and these sparks and cinders are deposited in the cinder-box H, which extends below the front end of the extension, and is provided with a gate, I, through which they may be discharged from  
65 time to time.

Above the netting G is a second or supplemental netting, J, which in the present case I have shown as cylindrical, having the lower  
70 end fitting closely around the end of the exhaust-pipe, which is above the horizontal netting. The upper end of the netting J extends up into the lower part of the stack F, to which it is secured. Any sparks or cinders which  
75 may pass through the horizontal netting will have lost so much of their force that they will be almost entirely arrested by this supplemental netting.

K is a deflecting-plate, having its upper edge secured to a hinged or rotary shaft, L,  
80 which extends out through the sides of the extension, and has a lever-arm, M, attached to it, from which a connecting-rod may extend to a point where it will be within easy reach of the engineer. 85

The plate K acts to throw the sparks and the cinders downward to the bottom of the extension, and as they pass to the front they may fall into the cinder-box, so as not to be  
90 thrown up or agitated by the draft.

I am aware that a horizontal netting has been used in conjunction with the cylindrical netting surrounding the upper end of the exhaust-pipe; but in this case the exhaust-  
95 pipe terminated below the horizontal netting, and the cylindrical netting was the only one which served to arrest the sparks at that point. In my invention the horizontal netting acts first, and the exhaust-pipe extending up through it and being surrounded by  
100 the cylindrical netting the latter acts supplementary to the horizontal one, thus pro-

viding two checks for the cinders, where only one is shown in the device alluded to.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

5 1. The extension-front to the boiler, having an approximately-horizontal netting for arresting the sparks, the steam-exhaust pipe passing up through said netting, so that its  
10 discharge-nozzle terminates above the netting, in combination with a supplemental netting situated above the horizontal one and inclosing the exhaust-nozzle, substantially as  
herein described.

15 2. The approximately-horizontal netting fixed in the smoke-box extension above the plane of the boiler-tubes, the steam-exhaust nozzle passing upward through said netting and discharging into the stack, in combina-  
20 tion with the supplemental netting, having its upper end secured within the stack and its lower end surrounding the exhaust-nozzle above the horizontal netting, substantially as herein described.

3. A spark-arrester for locomotives, consist- 25  
ing of the smoke-box extension in front of the boiler, a sub-treasury or cinder-box opening from the front lower portion of said extension, and an adjustable deflecting-plate  
30 suspended within the smoke-box in front of the tube-sheet, a netting extending across the smoke-box above the horizontal plane of the tubes, through which netting the exhaust-  
pipe extends upwardly, and a supplementary  
35 netting surrounding the upper end of the exhaust-pipe, having its lower end inclosing and closely fitting the exhaust-nozzle above the horizontal netting, and its upper end secured  
within the interior of the smoke-stack, sub-  
stantially as herein described. 40

In witness whereof I have hereunto set my hand.

EDGAR MELVILLE LUCKETT.

Witnesses:

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