

W. F. GRASSLER.

Spark-Extinguishers for Locomotives.

No. 155,372.

Patented Sept. 29, 1874.

Fig. 1.

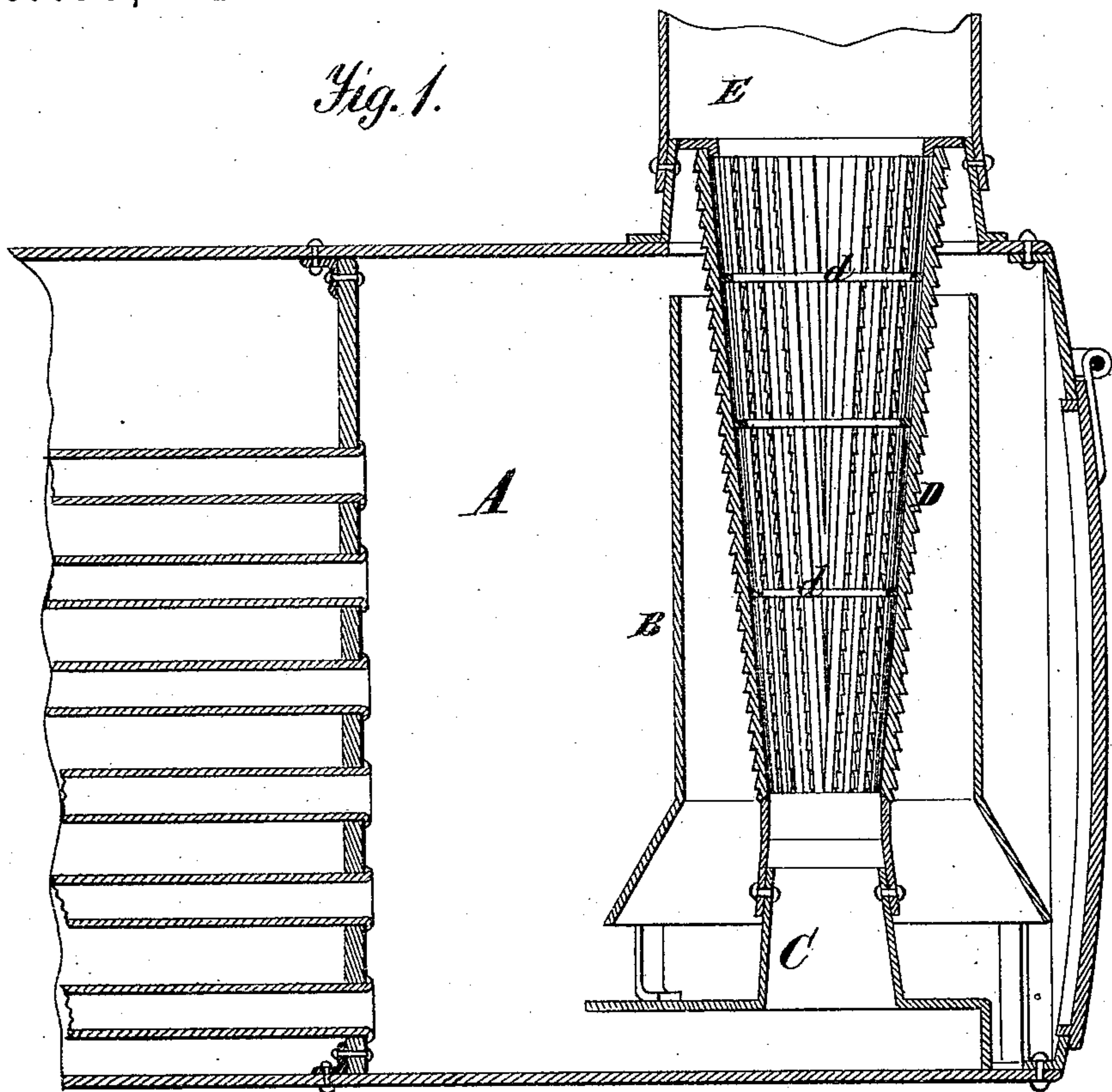


Fig. 3.

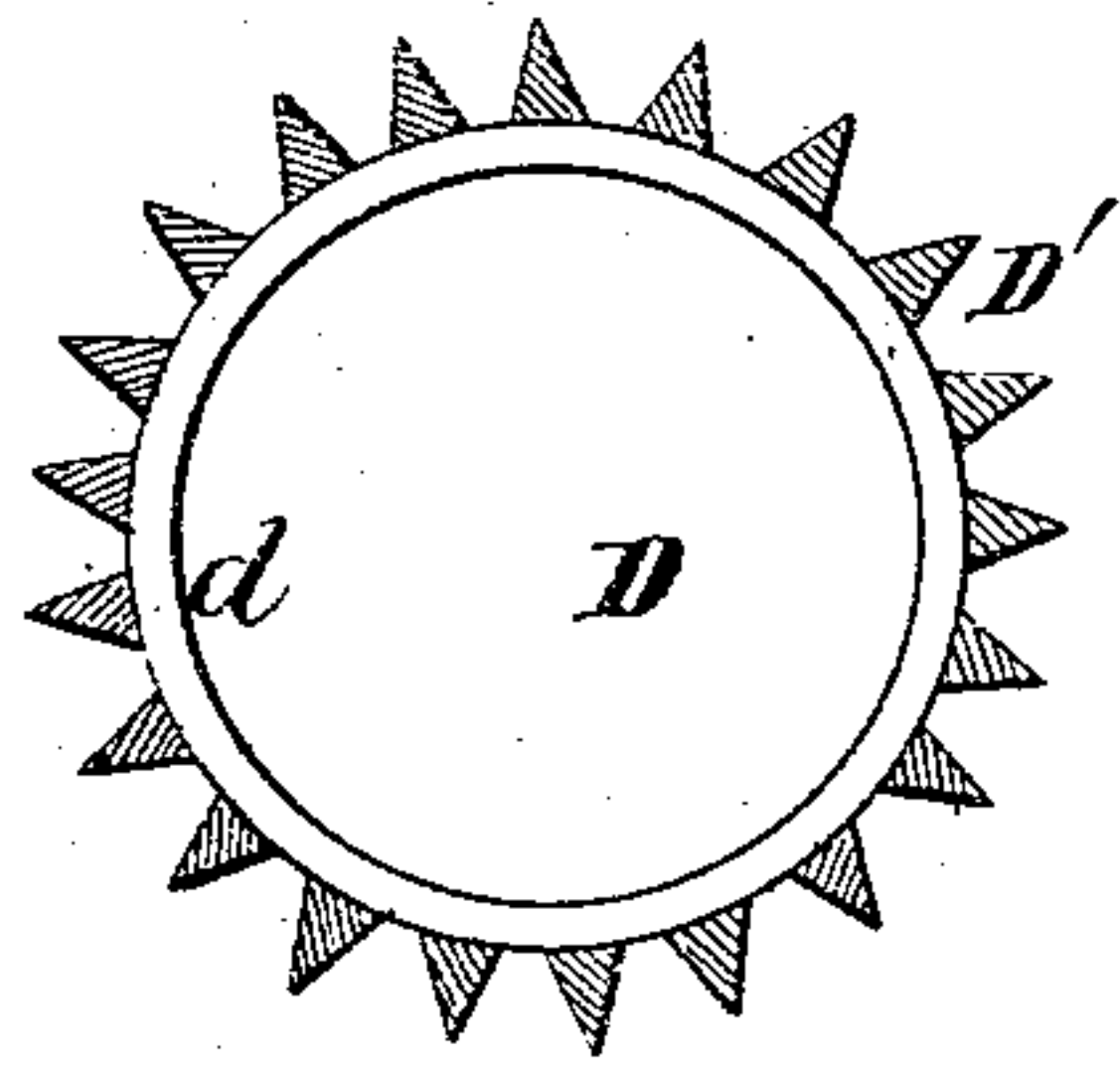
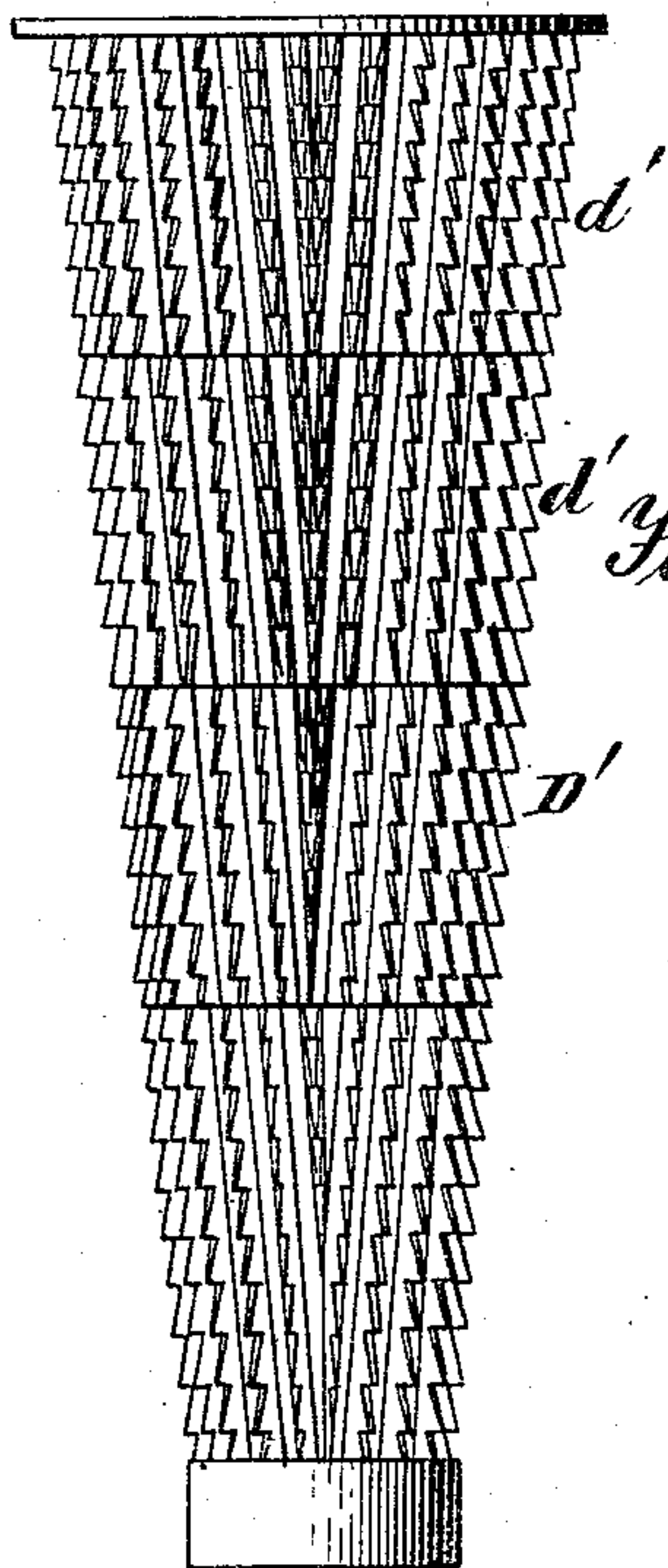


Fig. 2.



Witnesses.

A. Ryckert.  
D. C. J. C. Bils

W. F. Grassler  
Inventor.

D. F. Holloway & Co.  
Attys



# UNITED STATES PATENT OFFICE.

WILLIAM F. GRASSLER, OF MUNCY, PENNSYLVANIA, ASSIGNOR TO THE  
GRASSLER SMOKE-STACK COMPANY.

## IMPROVEMENT IN SPARK-EXTINGUISHERS FOR LOCOMOTIVES.

Specification forming part of Letters Patent No. **155,372**, dated September 29, 1874; application filed  
July 27, 1874.

*To all whom it may concern:*

Be it known that I, WILLIAM F. GRASSLER, of Muncy, in the county of Lycoming and State of Pennsylvania, have invented a certain Improvement in Spark-Extinguishers for Locomotives, of which the following is a specification:

The object of my invention is to provide means for so comminuting the fragments of incandescent coal carried by the draft to the smoke-stack, before issuing therefrom, that they will be readily extinguished by the wet exhaust steam.

My invention consists of a grated pipe inserted in the lift-pipe of the smoke-box, and constructed with serrations on the exterior sides of the grate-bars, in striking which the particles of coal will be broken into such small particles that when they finally pass through between the grate-bars, the steam will at once extinguish them before they issue from the stack, the spaces between the serrated bars of the grated pipe being so proportioned as to allow only very small solid particles to pass.

In the annexed drawings, Figure 1 is a vertical section of the rear end of a locomotive-boiler embodying my improvement. Fig. 2 is an elevation of my grated pipe or comminuter. Fig. 3 is a transverse section thereof.

The same letters of reference are used in all the figures in the designation of identical parts.

The smoke-box A is provided with the usual lift-pipe B, which the exhaust steam enters at the lower end through the nozzle C, the smoke-stack E (only part of which is shown) being arranged directly over the lift-pipe in the usual manner.

The grated pipe or comminuter D consists of a number of annularly-arranged bars, D', firmly secured to, or cast on, a series of circular rings, d, preferably in such a manner as to give to the comminuter the form of either a cone or a frustum of a cone. In either case it is placed with the smaller end downward, its lower end being slipped on the nozzle C, if it be the frustum of a cone, or supported by

a suitable bridge-piece of the lift-pipe, if a cone, while its upper end is provided with a circumferential flange closely fitting the interior of the smoke-stack, to which it may be secured in any preferred manner.

The bars D' are set very closely together, so that only very fine particles of solid matter can pass through between them, and their exterior sides or edges are serrated from end to end, the teeth d' pointing downward to present an almost continuous surface of sharp points to the matters dashed against them. Large fragments of coal striking this rough surface with a force due to the draft, will be broken, and if the first shattering does not make the particles fine enough to enable them to escape through between the serrated bars, they will fall back into the smoke-box, and, when again taken up by the draft, will be a second time subjected to the action of the comminuter, and so on until they are sufficiently reduced to pass through it. Thus pulverized they are at once extinguished by the steam, with which and the gaseous unconsumed products of combustion they then finally issue from the stack.

In some cases I may arrange the bars D' so as to break joints at each of the rings d.

In furnaces having no lift-pipe or smoke-box the comminuter is placed entirely within the up-take.

The comminuter may be simply a perforated pipe roughened by sharp points on the exterior surface.

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

The serrated or roughened grated comminuter D, in combination with the up-take of a locomotive or other furnace, substantially as and for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WM. F. GRASSLER.

Witnesses:

D. P. HOLLOWAY,  
B. EDW. J. EILS.