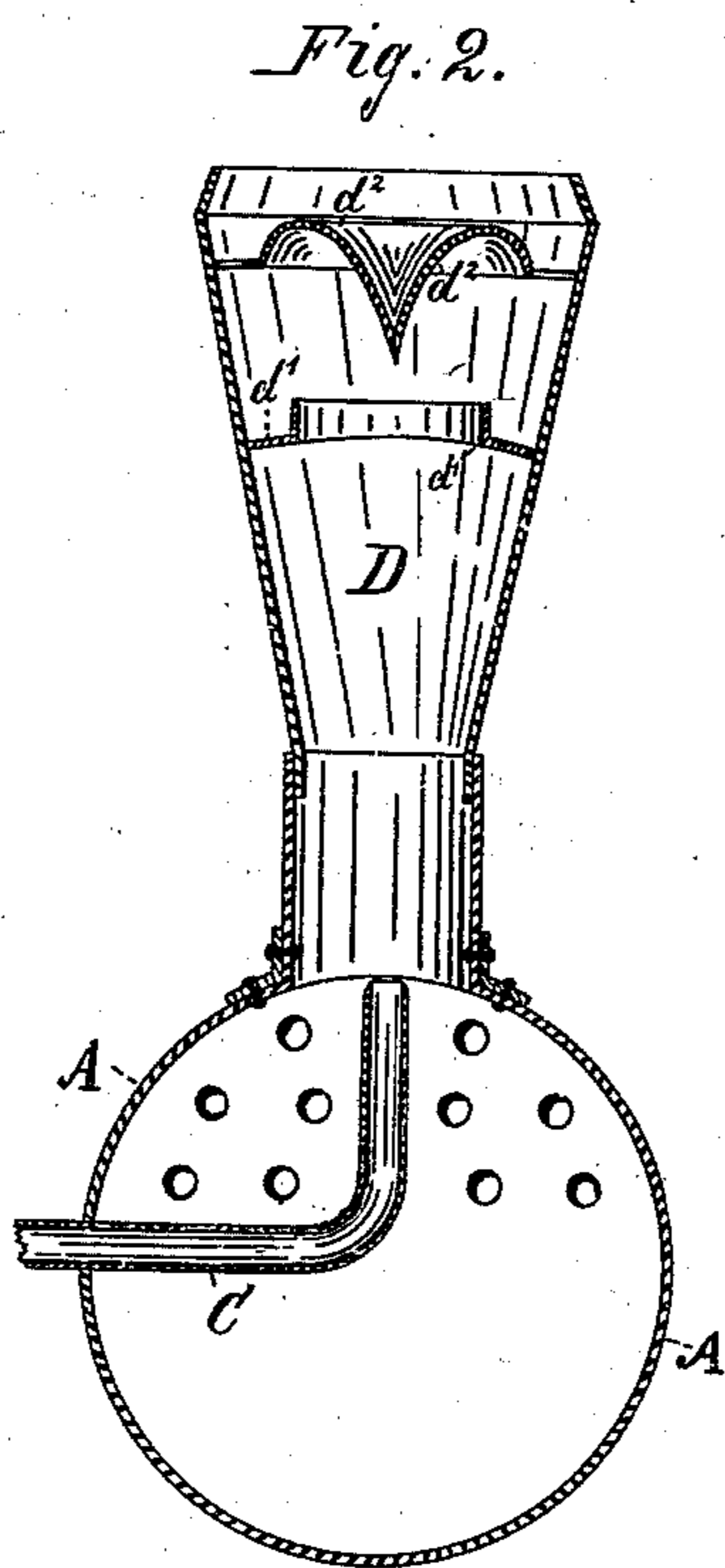
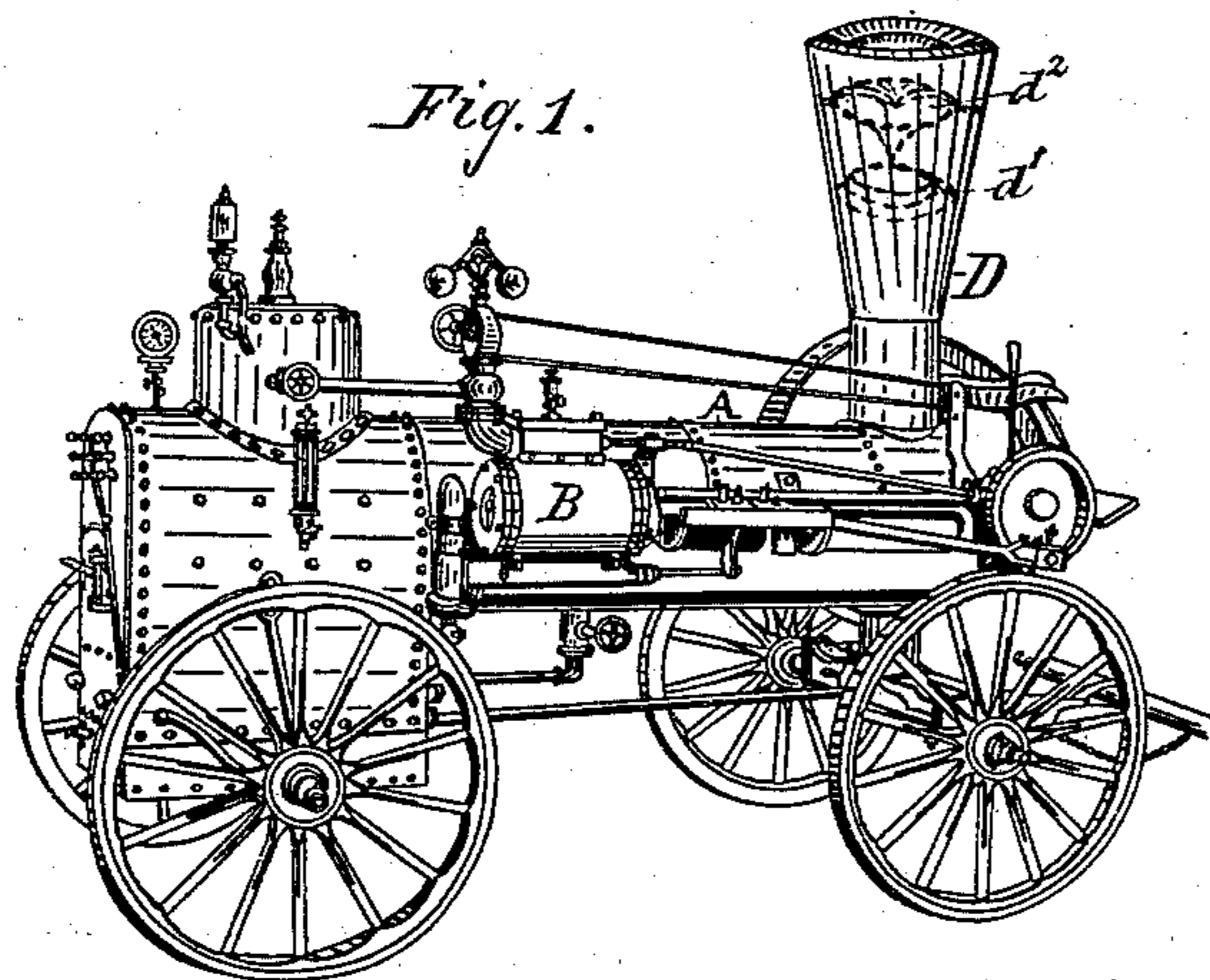


J. B. SUITT.  
Spark-Arrester.

No. 224,802.

Patented Feb. 24, 1880.



WITNESSES.

James B. Liguus.  
R. P. Daggett.

INVENTOR.

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PER  
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# UNITED STATES PATENT OFFICE.

JAMES B. SUITT, OF INDIANAPOLIS, INDIANA.

## SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 224,802, dated February 24, 1880.

Application filed July 29, 1879.

*To all whom it may concern:*

Be it known that I, JAMES B. SUITT, of the city of Indianapolis, county of Marion, and State of Indiana, have invented certain new and useful Improvements in Spark-Arresting Smoke-Stacks, of which the following is a specification, reference being had to the accompanying drawings, which are made a part hereof, and on which similar letters of reference indicate similar parts.

Figure 1 is a perspective view of a portable steam-engine having a smoke-stack in which are my improvements. Fig. 2 is a transverse vertical section of the smoke-stack and adjacent parts.

In said drawings, the portions marked A represent the boiler, B the steam-chest and cylinder, C the exhaust-pipe, and D the smoke-stack, of an ordinary portable, locomotive, or other engine with which an artificial draft is employed. The other principal parts of the engine, having no especial significance in this invention, are not lettered.

In the smoke-stack D (which should be of the flaring or inverted-frustum-of-a-cone pattern) is placed the ring or disk  $d'$ , and above it the deflector  $d^2$ , preferably having downwardly-curved edges, as shown.

The object of my invention is to so construct the smoke-stack to engines which use an artificial draft that no sparks will escape therefrom, at the same time dispensing with the screen ordinarily placed over the top of such stacks.

To accomplish this object I make the stack of a flaring form, as before specified, and at the proper distance from the top I insert an inwardly-projecting ring or circular disk,  $d'$ , having a central opening. When the engine is in operation the sparks are forced outwardly from the center by the force of the steam from the exhaust or other steam pipe C, and, striking the under side of this disk, are checked in their ascent and slide down the inner surface of the smoke-stack and fall into the open space at the end of the boiler, whence they can be readily removed. The smoke and exhaust-steam pass out through the opening in the center of the disk, which opening I prefer to make of a little larger diameter than the lower end of the smoke-stack. To insure that

no sparks can possibly escape, even where the lightest fuel is used, I insert the deflector  $d^2$ , which will catch and throw back upon the top of the disk  $d'$  any sparks that may escape through the opening in said disk. In order to provide a receptacle for this purpose I usually turn up the edge of the disk around the opening therein, as shown.

That the successful construction of these stacks may be more easily accomplished by those unacquainted with them, I will give the various dimensions of one size that has proved successful in my experiments, though, as the proportions should be varied to correspond with the amount of draft required, I do not wish to confine myself to the dimensions given or to any other, but only to the general construction.

In a stack four feet in height, the first ten or twelve inches may be made of straight pipe, which should be about ten inches in diameter. It should then taper outwardly until the upper end reaches a diameter of about two feet. At about the center of the flaring portion the disk  $d'$  should be inserted, which should have an orifice of about ten or twelve inches, and the deflector  $d^2$  should be so placed that the distance between it and the smoke-stack would be about four inches, and the distance between its downwardly-curved edge and the edge of the orifice in the disk  $d'$  about ten inches.

My invention is both more effectual and of greater durability than the ordinary screen which it is intended to replace.

The upper deflector,  $d^2$ , is intended to be so constructed as to be removed and replaced at pleasure, and both the deflector  $d^2$  and the disk  $d'$  may be pivoted on rods running through the smoke-stack, so as to be turned to allow freer draft, temporarily, in firing up the engine, or in damp or rainy weather, and also to discharge any accumulations of sparks that may have gathered thereon.

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

1. The combination, with a plain flaring smoke-stack having no central pipe, of the exhaust-steam pipe C, the mouth of which is located centrally at or near the lower end of

the stack, the disk  $d'$ , having a central orifice, as shown, and located at or near the middle of the flaring portion of the stack, and the deflector  $d^2$ , located above said disk, all substantially as shown and described, and for the purpose specified.

2. In a plain flaring smoke-stack having no other devices therein which are intended to arrest the sparks or affect their course, a disk,  $d'$ , having a central orifice therein, and a de-

flector,  $d^2$ , located above said disk, substantially as shown and described, and for the purpose specified.

In witness whereof I have hereunto set my hand and seal at Indianapolis, Indiana, this 15 25th day of July, A. D. 1879.

JAMES B. SUITT. [L. S.]

In presence of—

C. BRADFORD,  
D. B. ROSS.