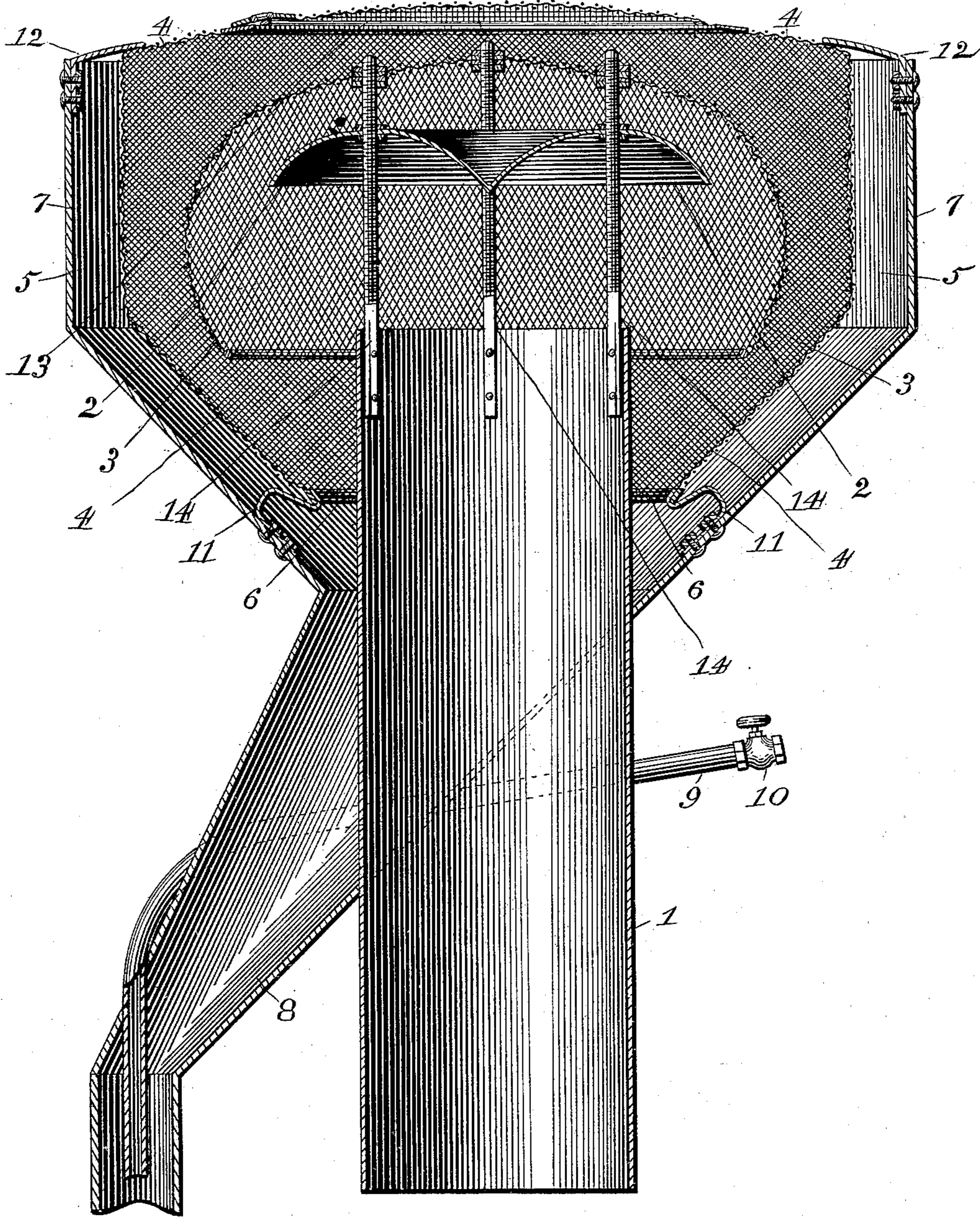


(No Model.)

P. J. BROWN.  
LOCOMOTIVE SMOKE STACK.

No. 378,762.

Patented Feb. 28, 1888.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

PERRY J. BROWN, OF WINSLOW, ARIZONA TERRITORY.

## LOCOMOTIVE SMOKE-STACK.

SPECIFICATION forming part of Letters Patent No. 378,762, dated February 28, 1888.

Application filed October 12, 1886. Serial No. 216,070. (No model.)

*To all whom it may concern:*

Be it known that I, PERRY J. BROWN, a citizen of the United States of America, residing at Winslow, in the county of Yavapai, in the Territory of Arizona, have invented a certain new and useful Smoke-Stack for Locomotive-Engines, of which the following is a specification, and reference is hereby made to the accompanying drawing, which is made part hereof.

My invention relates to an improvement in spark-arresters for locomotive smoke-stacks; and it consists in the peculiar construction and combination of devices, that will be more fully set forth hereinafter, and particularly pointed out in the claims.

The accompanying drawing is a vertical central sectional view of a locomotive smoke-stack provided with a spark-arrester embodying my improvements.

1 represents the smoke-stack, from the upper end of which extend a series of vertical bolt-rods, 14.

2 represents a concavo-convex circular deflecting-cone, which is preferably made of steel, and is provided with openings, through which the upper portions of the bolt-rods extend. Nuts 15 are screwed on the bolt-rods 14 and bear against the upper and lower sides of the cone 2, thereby supporting the said cone and enabling the same to be adjusted vertically, so that it may be readily arranged at the proper height above the top of the stack.

3 represents a screen made of coarse wire-netting. This screen is arranged over the deflecting-cone, and is supported on the upper ends of the bolt-rods 14 by means of nuts 16, which adapt the said screen to be adjusted vertically. An opening, 17, is formed in the lower side of the screen, which opening is much larger than the upper end of the stack, and is concentric thereto.

8 represents an inclined funnel-shaped clearance-pipe having an opening in one side, near its upper end, through which the stack extends. To the upper end of this clearance-pipe is attached a funnel, 5.

4 represents a screen made of fine wire-netting, the said screen inclosing the screen 3 and the upper end of the stack and being arranged in the funnel. The diameter of the screen 4

is less than the diameter of the funnel, and thereby an unobstructed flue, 7, is formed between the opposing sides of the funnel and the screen 4, and entirely surrounding the latter. The screen 4 is supported in position within the funnel by means of brackets 11 and 12, as shown. The lower end of the screen 4 is provided with an opening, 6, the diameter of which is somewhat in excess of the diameter of the stack. In the upper side of the screen 4 is a hinged cover or door, 18, by means of which access may be obtained to the interior of the screen and the funnel.

9 represents a steam and hot-water pipe communicating with one of the engines (not shown) of the locomotive and extending downward in the vertical lower portion of the pipe 8. This pipe 9 is provided with a valve, 10, controlled by the engineer.

The operation of my invention is as follows: As the smoke, sparks, cinders, and other products of combustion pass upward from the stack, they strike against the under side of the cone 2, and are deflected downward by the same into screen 3. The larger cinders and heavier particles, being arrested by the meshes of the screen 3, drop down through the openings 17 and 6 into the inclined pipe 8. The smaller sparks and cinders pass through the meshes of the screen 3 with the smoke into the screen 4, the smaller meshes of which arrest the said smaller sparks and cinders and cause them to drop through the opening 6 into the pipe 8. The flue or space 7 in the funnel surrounding the screen 4 and communicating with the upper end of the pipe 8 causes an upward current of air to circulate around the screen 4 and thereby increase the draft of the stack. The valve 10 is opened to permit a current of steam and hot water to escape from the lower end of the pipe 9 downward through the lower reduced end of the funnel-shaped pipe 8, and as the sparks and cinders in descending in the pipe 8 come in contact with this steam and water they become extinguished and are caused to drop harmlessly to the ground.

Having thus described my invention, I claim—

1. The combination of the stack, the cone arranged above the upper end thereof, the screen 3, having the opening 17 in its lower

side; the screen 4, inclosing the screen 3 and having the opening 6 in its lower side, the funnel inclosing the screen 4, and the clearance-pipe 8, depending from the lower end of the funnel, substantially as described.

2. The combination of the inclined funnel-shaped pipe 8, having the funnel 5 at its upper end, the vertical stack 1, extending upward through an opening in one side of pipe 8, the deflecting-cone above the top of the stack, the screens 3 and 4, arranged one within the other and inclosed in the funnel, an annular flue or space, 7, being formed between the sides of the funnel and the outer screen and communicat-

ing with the upper end of pipe 8, substantially as described.

3. The combination of the stack, the cone arranged above the same, the screen 3, arranged over the cone, the screen 4, arranged over said screen 3, the funnel enveloping said screen 4 and having the depending clearance-pipe, an annular space or flue being left between the opposing sides of the screen 4 and funnel, substantially as described.

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Witnesses:

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