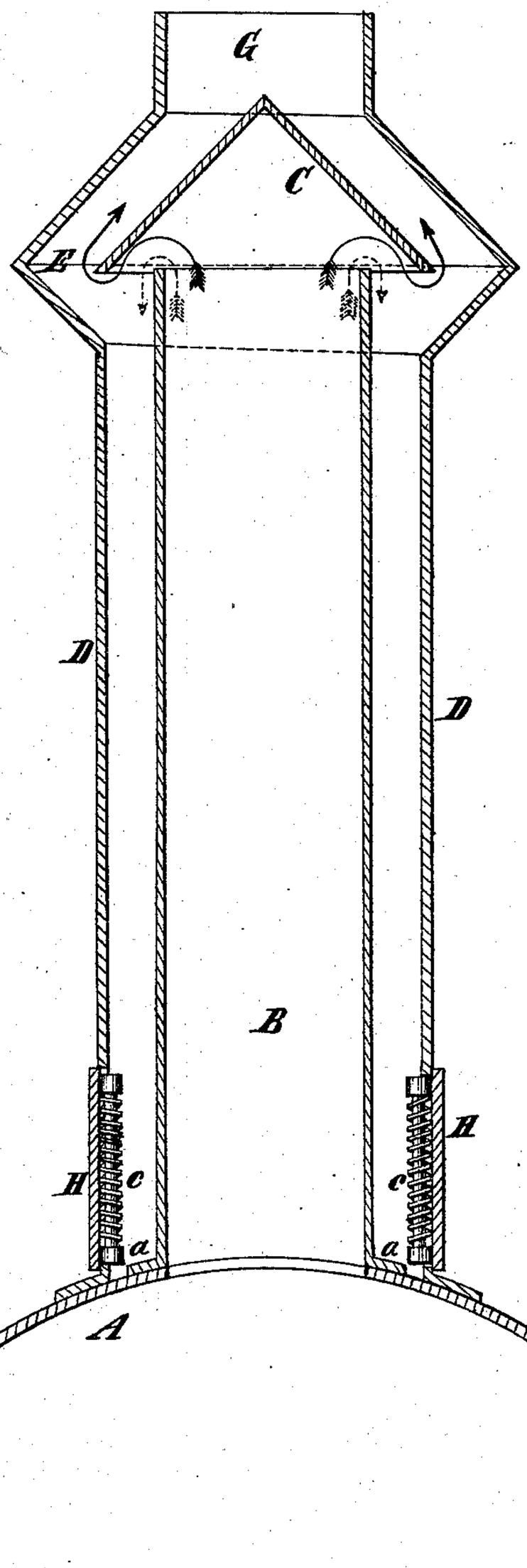
(No Model.)

J. S. OLIVER.

Spark Arrester.

No. 239,831. Patented April 5, 1881.



Witnesses:
Thomas E. Birch.
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UNITED STATES PATENT OFFICE.

JOHN S. OLIVER, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO HAMLINE Q. FRENCH, OF SAME PLACE.

SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 239,831, dated April 5, 1881.

Application filed June 2, 1880. (No model.)

To all whom it may concern:

Be it known that I, JOHN S. OLIVER, of the city, county, and State of New York, have invented a certain new and useful Improvement in Spark-Arresters, of which the following is a specification.

My invention consists in a certain novel combination, with a smoke-stack or chimney, of a surrounding jacket or cylinder, an imperforate deflector for deflecting sparks, ashes, or other solid matter down into said jacket or cylinder, and self-closing doors through which the accumulation of matter in said jacket or cylinder may be withdrawn, and in a novel process of using exhaust-steam or a current of air to clean out the deposit from a smoke-stack or chimney.

The accompanying drawing represents a central longitudinal section of a stack or chimney embodying my invention.

A represents the body of a steam boiler or generator of cylindrical form, such as is used on locomotives.

B designates a smoke-stack or chimney, which communicates through the body A of the boiler with the furnace, whereby the steam is generated. This stack or chimney may be made of sheet-iron, and is preferably of cylindric form. It may be secured to the body A of the boiler by rivets passing through the latter, and through a flange, *a*, at the base of the stack or chimney, or otherwise.

C designates a cap arranged above the open top of the stack or chimney, and supported by arms or standards extending from the stack or chimney, or in any other appropriate manner. It is of a conical or pyramidal form, and its bottom edge laps beyond, and is shown as about on a level with the top of the stack or chimney. This cap forms a deflector, and not a sieve, like the spark-arrester caps of ordinary form, and hence is made of sheet metal or other suitable imperforate material.

D designates a cylinder or jacket, made of sheet metal or other suitable material, surrounding the stack or chimney B, and mounted upon and secured to the body A of the boiler by rivets or otherwise. About opposite the top of the stack or chimney B and the cap C the cylinder or jacket is provided with a chamber, E, consisting of two reversed frusta of cones or pyramids, the upper corresponding and being proximate to the cap C. Above this chamber is a delivery-flue, G, which is preferably of cylindric form and of about the same diametrical measurement as the stack or chimney B.

It will be observed that the lower edge of the conical cap C is coincident, or nearly coincident, with the upper edge of the smoke-stack or chimney B, and that the chamber E has an unobstructed communication with the said stack or chimney. By this construction and arrangement the products of combustion, together with the cinders, sparks, and ashes, are all deflected downward, and all heavier matters, such as sparks or cinders, will fall into the cylinder or jacket D, while the lighter smoke and gases will rise around the cap C and escape through the flue G. The products of combustion, with unconsumed particles of fuel and fine ashes, ascend through the stack or chimney B, and, coming in contact with the cap C, are deflected outward and downward. The smoke thence passes upward between the exterior of the cap C and the chamber E, as represented by the arrows delineated in bold outline, and escapes through the delivery-flue G. The sparks and other unconsumed solid products of combustion and the ashes are, however, by the deflection at the cap C, thrown sufficiently out of the current or draft of the ascending smoke to enable their gravity to act and cause them to fall to the bottom of the cylinder or jacket D, as shown by the arrows delineated in dotted outline. This cylinder or jacket is shown as provided on opposite sides with doors H, which may be opened to facilitate the removal of the matter which collects in the cylinder or jacket. These doors are hinged at one side, and held closed by springs *c*, wound around the pintles of their hinges. They may be connected to devices within the reach of the engineer, so that he can open them from time to time, without leaving the cab, to let the accumulated solid matter escape.

The stack or chimney may be inclined or provided with inclines at the base, so as to

form a chute opposite the doors H, facilitating the ejectment of said matter. If the exhaust-steam is allowed to escape against the imperforate cap or deflector C, when the doors H are open, the cap or deflector will direct it downwardly, so as to cause it to blow through the doors and clear out the solid matter collected in the cylinder or jacket D.

It will be seen that by my invention I produce a spark-arrester which, while simple and cheap in construction, is very effective in operation.

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

The combination of the smoke-stack or chimney B, the imperforate cap C, the jacket or cylinder D, and the doors H, having springs *c*, all constructed and arranged substantially as and for the purpose specified.

JOHN S. OLIVER.

Witnesses:
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