(No Model.) 2 Sheets—Sheet 1.

J. H. SMITH.

SPARK ARRESTER.

No. 391,658. Patented Oct. 23, 1888.

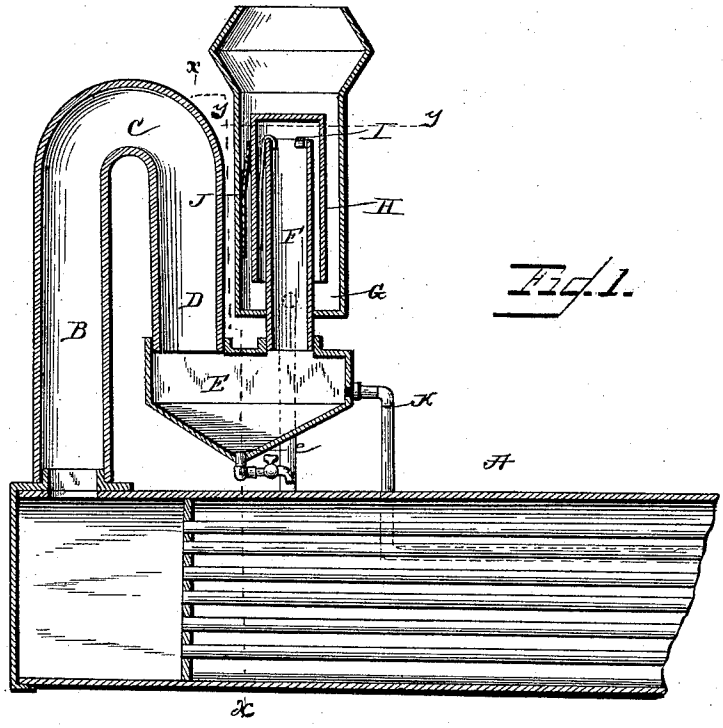


Fig. 1.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

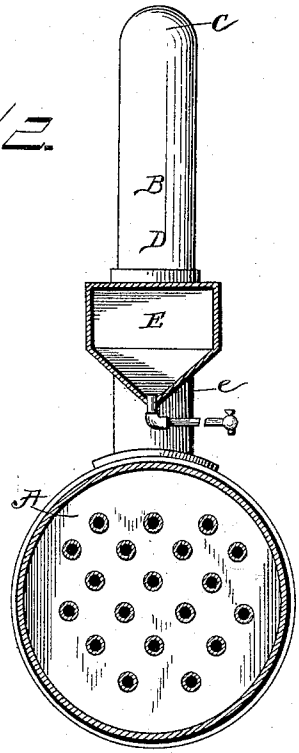


Fig. 3.

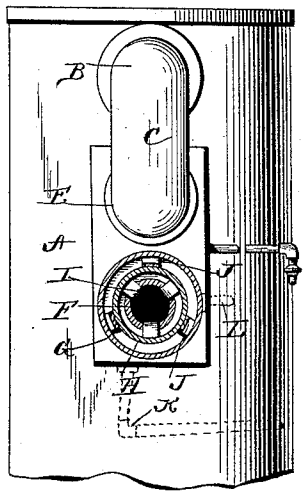
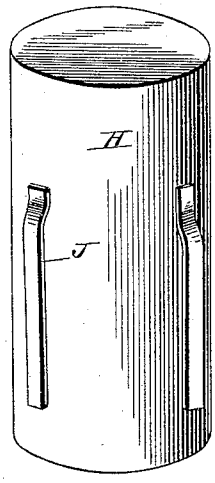


Fig. 4.



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UNITED STATES PATENT OFFICE.

JAMES HENRY SMITH, OF SULPHUR BLUFF, TEXAS.

SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 391,658, dated October 23, 1888.

Application filed March 24, 1888. Serial No. 268,418. (No model.)

To all whom it may concern:

Be it known that I, JAMES HENRY SMITH, a citizen of the United States, and a resident of Sulphur Bluff, in the county of Hopkins and State of Texas, have invented certain new and useful Improvements in Spark-Arresters; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a sectional view on a longitudinal vertical plane of my improved spark-arrester. Fig. 2 is a cross-section on line *x x*, Fig. 1. Fig. 3 is a transverse section on line *y y*, Fig. 1; and Fig. 4 is a perspective detail view of the inner removable cap.

Like letters of reference denote corresponding parts in all the figures.

My invention has relation to spark-arresters of that type in which the sparks are extinguished by water contained in a suitable receptacle forming part of the apparatus; and my improvement consists in the detailed construction and combination of parts of the spark-arrester, which will be hereinafter more fully described.

Reference being had to the accompanying drawings, the letter A designates the boiler, which may be stationary or portable, or be the boiler of a locomotive. B is the smoke-stack, which receives the products of combustion from the fire-box. The upper end of the smoke-stack is bent and doubled upon itself, as shown at C, the lower end of the bent portion (denoted by the letter D,) being inserted into a trough or receiver, E, the bottom of which is in the form of an inverted pyramid, having an aperture, *e*, at its lower point or apex, which may be closed by a slide, or preferably by a short section of pipe provided with a stop-cock, as shown in the drawings. Where this construction is used the pipe leading from the bottom of the tank or receiver E should, when the device is located inside of a building or other structure, be carried out into the open air.

Inserted into the flat top or cover of the receiver E is the vertical outlet-pipe F, which is surrounded by another larger pipe or jacket, G, so as to leave an annular chamber between the two. This outside pipe, G, extends up above the mouth of the inner pipe, and is provided with a cap, H, which is suspended removably upon pipe F by means of hooks I, arranged on the inside of the cylindrical cap and overlapping the mouth of the inner pipe. This construction enables the cap to be readily removed for cleaning or for other purposes; and in order to prevent lateral play or oscillation of the cylindrical cap H within the annular chamber between the pipes F and G, I provide the outside of the cylinder with a series of three or more springs, J, the outwardly-projecting lower ends of which bear against the inner walls of the jacket G with a certain amount of pressure, so as to hold the cylindrical cap in its proper position.

The tank or receiver E is connected with the boiler or steam-generator below the water-line by a pipe, K, (indicated in dotted lines in Fig. 1,) which is provided with a suitably-located valve. By opening this valve water will be forced by the steam-pressure in the boiler into the receiver, and after this has been filled or partly filled the water is again cut off. The sparks, which pass with the gaseous products of combustion up through the bent smoke-stack B C D, are projected down into this body of water, where they are effectually extinguished, while the gaseous products pass off. If at any time the receiver should be filled with the solid products of combustion, these may be removed through the aperture and pipe in the lower pointed end of the receiver.

The lower part of the annular chamber between the inner and outer pipes may, if desired, be partly filled with water through a pipe, L, connecting the lower part of this chamber with the boiler or steam-generator below the water-line. Any of the lighter sparks which should be carried by the draft across the water tank or receiver E without becoming immersed in the water will be intercepted by the cylindrical cap or deflector H, by which they are projected down into the water in the bottom of the annular compartment, where they are effectually extinguished.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

The combination of the boiler A, bent smoke-stack B C D, water tank or receiver E, outlet-pipe F, jacket G, and cylindrical cap or deflector H, provided with the inside hooks I and exterior springs, J, substantially as and for the purpose herein shown and set forth.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

JAMES HENRY SMITH.

Witnesses:
ANDREW PIKE LAURENS,
JOHN ROBERT FERGUSON.