

(No Model.)

2 Sheets—Sheet 1.

H. C. SMITH.
SPARK ARRESTER FOR LOCOMOTIVES.

No. 495,380.

Patented Apr. 11, 1893.

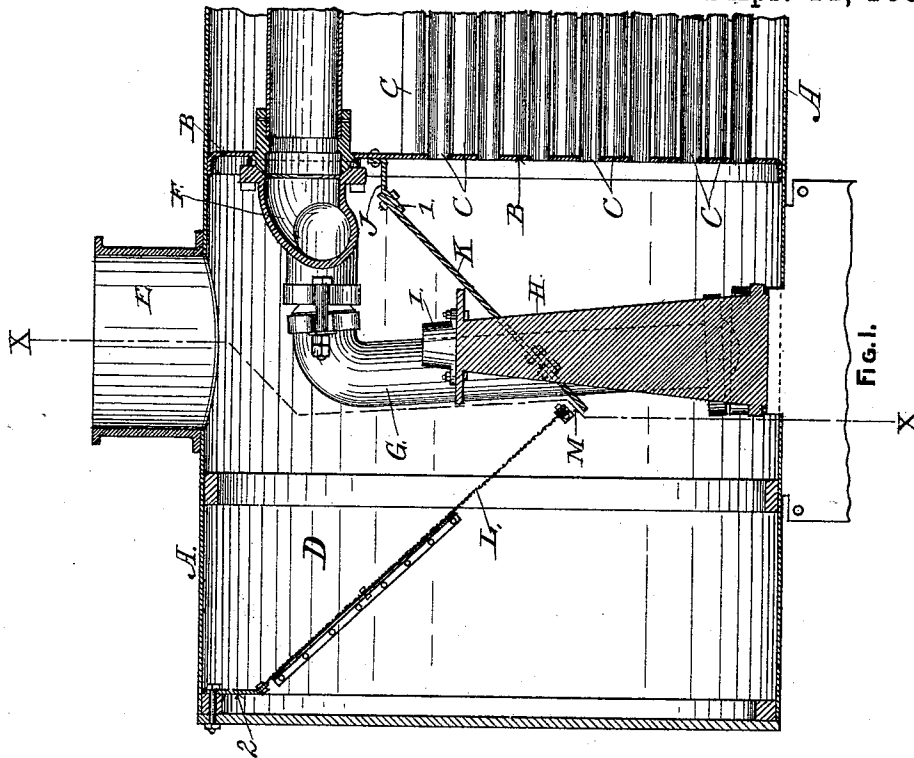


FIG. 1.

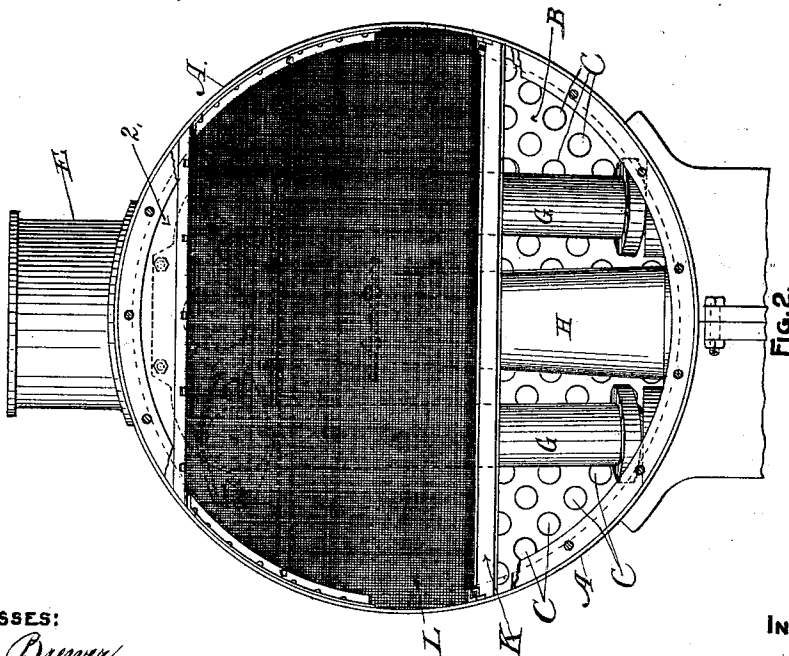


FIG. 2.

WITNESSES:

S. B. Brown,
Edmund Savage

INVENTOR:

Henry C. Smith,
by William H. Low,
Attorney.

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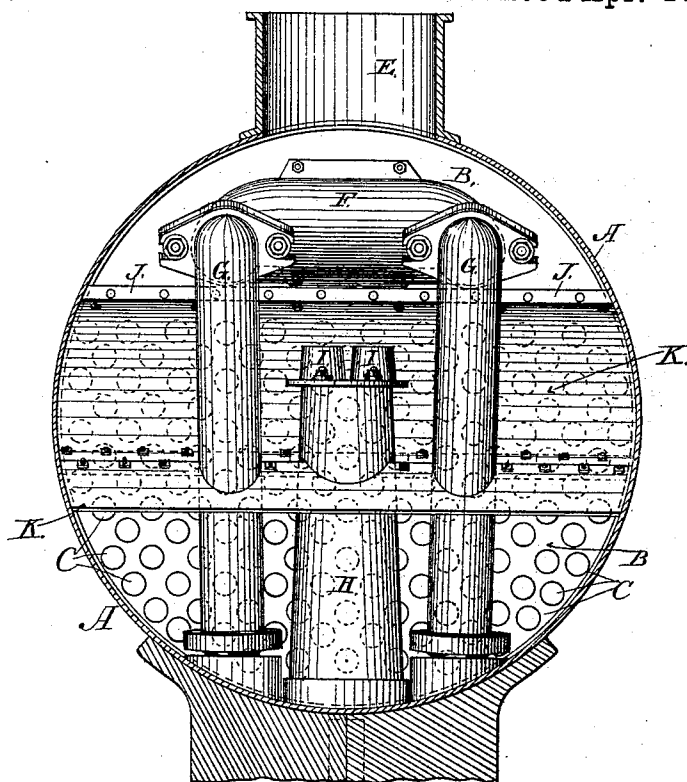


FIG. 3.

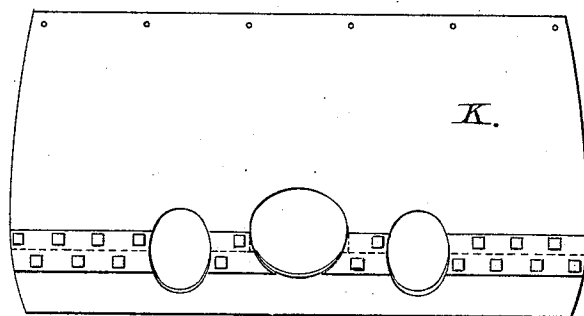


FIG. 4.

WITNESSES:

S. B. Brewer,
Edmund Savage

INVENTOR:

Henry C. Smith,
by *William W. Low,*
Attorney.

UNITED STATES PATENT OFFICE.

HENRY C. SMITH, OF ONEONTA, ASSIGNOR OF FOUR-FIFTHS TO HORACE G. YOUNG, EDWIN YOUNG, AND ROBERT C. BLACKALL, OF ALBANY, AND J. WHITE SPRONG, OF SLINGERLANDS, NEW YORK.

SPARK-ARRESTER FOR LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 495,380, dated April 11, 1893.

Application filed December 27, 1892. Serial No. 456,470. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. SMITH, of Oneonta, in the county of Otsego and State of New York, have invented new and useful Improvements in Spark-Arresters for Locomotives, of which the following is a specification.

My invention relates to improvements in spark-arresters for locomotives and steam-boilers using a stimulated draft, and it consists of the novel construction and combination of parts hereinafter described, shown in the drawings, and pointed out in the claim.

In the accompanying drawings, Figure 1 is a longitudinal section of the front portion of a locomotive boiler provided with my improvements. Fig. 2 is a front elevation of the same with the front-plate removed. Fig. 3 is a vertical section at the line X X on Fig. 1; and Fig. 4 is an inverted plan view of the deflecting-plate.

As represented in the drawings, A designates the shell of the boiler which is made in the usual form and is provided with a front tube-head, B, in which the foremost end of the tubes C are secured in the usual manner.

D designates the "smoke-arch" which is formed in the forward end of the shell A, and is provided with a smoke-stack E. Contained in said "smoke-arch" are the following parts of the locomotive-engine which form no part of my invention: A branch steam-pipe, F, to which are connected the steam-pipes, G, leading to the steam cylinders of the engine, and exhaust-pipes, H, leading from said cylinders and provided with the exhaust-nozzles I, all of which may be of the exact form shown or of such other form as will be suited to the purpose.

J designates a transverse flange-piece that is secured to the tube-head B directly over the upper row of the tubes C and is preferably provided with an inclined portion, 1, at its foremost side; said flange-piece is preferably made to extend from side to side of the smoke-arch, so as to form a chordal line across the tube-head.

K designates an inclined deflecting-plate which extends forward slightly beyond the steam-pipes G and downward to about the

level of the middle row of tubes C, so as to leave a clear segmental opening between the lower edge of said plate and the lower side of the smoke-arch; said deflecting-plate, being imperforate, prevents a direct passage of smoke or sparks, which pass through the tubes that lie above the plane of the lower edge of said deflecting-plate, after entering the smoke-arch; the products of combustion are turned downward by said deflecting-plate and forced to pass through the segmental opening—hereinbefore referred to—and from thence pass toward the forward part of said smoke-arch. The deflecting-plate K may consist of a single piece, or, for the purpose of facilitating the removal and restoration to place of said deflecting-plate without disturbing the steam- and exhaust-pipes, it may be made of several separable pieces secured together, practically like the one shown in Fig. 4.

L designates a screen preferably made of wire-netting and arranged in an inclined position whose angularity is the reverse of that of the deflecting-plate K. The upper edge of said screen is preferably secured to a hanging flange-plate, 2, which is secured to the upper side of the shell A at the foremost end of the smoke-arch; said screen is inclined rearwardly and downwardly and is so arranged that its lower edge will slightly overlap the lower edge of the deflecting-plate. A transverse slot, M, is left between the lower edge of said screen and the upper face of the deflecting-plate K, for the purpose of affording an escape for any cinders that may effect a lodgment on said deflecting-plate, said cinders will pass through said slot into the smoke-arch D.

By the operation of my spark-arrester, the sparks, or particles of unconsumed fuel which pass through the tubes from the boiler-furnace into the smoke-arch, will move toward the forward part of said smoke-arch, wherein they will be kept in a violent state of agitation by the powerful draft created by the exhaust-blast of the engine, and, by the attrition of the particles, produced by said agitation, the sparks will be sufficiently reduced in size to enable them to pass freely through the meshes

of said screen, from whence they will be carried upward by the force of the blast and escape from the top of the smoke-stack in a cooled-down condition, the ignition of said sparks having been perfectly extinguished by the attrition of the particles.

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

In a locomotive-boiler and in combination therewith, a spark-arrester consisting of an imperforate deflecting-plate secured to the front tube-head of said boiler above the upper tier of tubes and inclined forward and downward to about the plane of the middle tier of tubes; said deflecting-plate extending later-

ally across the smoke-arch and arranged to form a segmental opening between its lower edge and the bottom of said smoke-arch, and a perforate screen secured at the top of the forward end of the smoke-arch and inclined downward and rearward so that its lower edge will overlap the forward edge of said deflecting-plate and form a slotted opening between the upper surface of the deflecting-plate and the lower edge of said screen, as and for the purpose herein specified.

HENRY C. SMITH.

Witnesses:

WM. H. LOW,
S. B. BREWER.