No. 707,063. Patented Aug. 12, 1902.

L. C. LAURENT.

SPARK AND CINDER ARRESTER FOR LOCOMOTIVE SMOKE STACKS.

(Application filed Oct. 3, 1901.)

(No Model.)

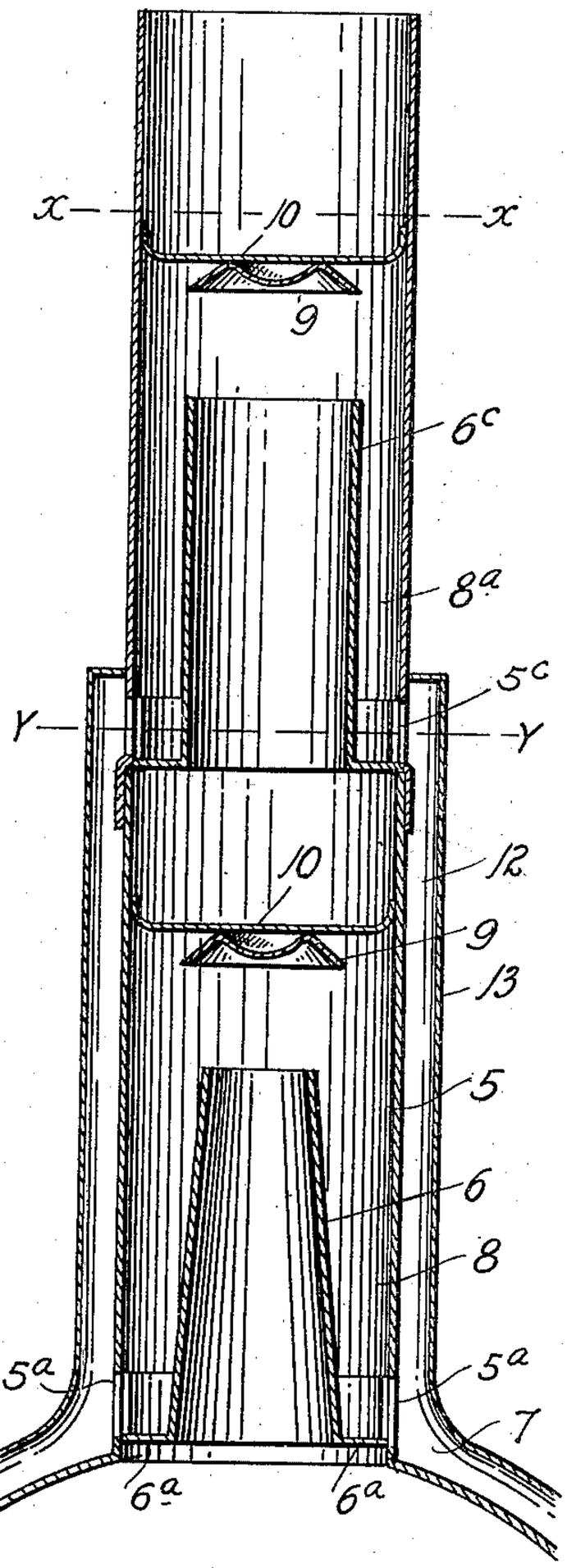

FIG. 1.

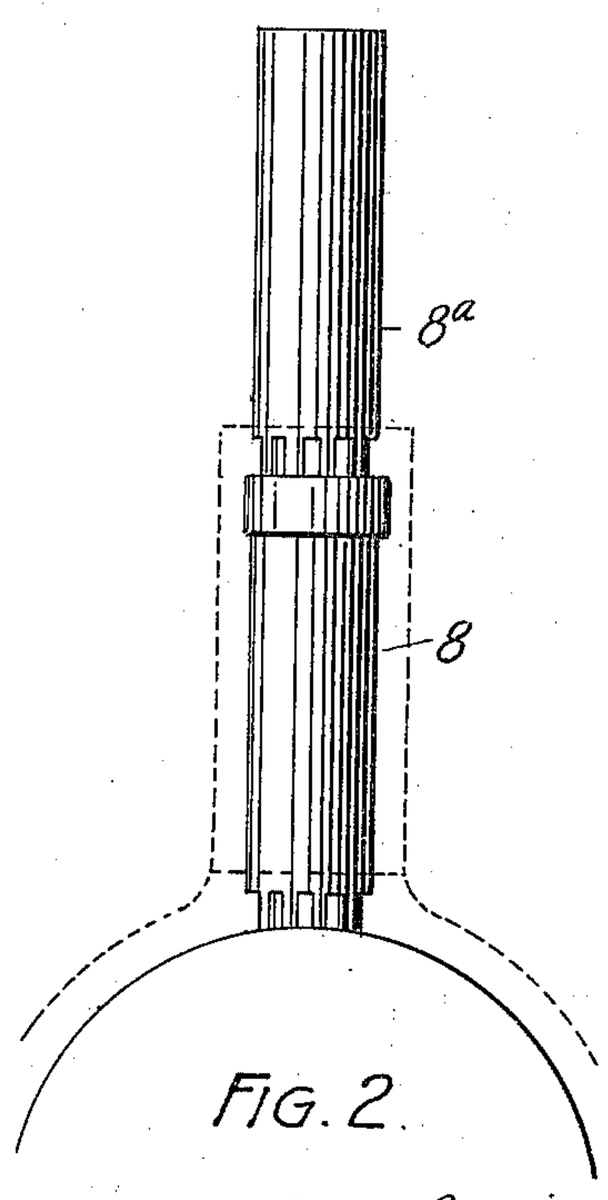

FIG. 2.

FIG. 3.

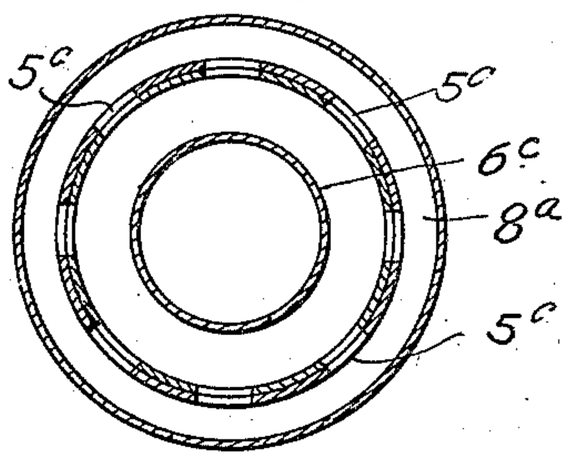

FIG. 4

WITNESSES:

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SPARK AND CINDER ARRESTER FOR LOCOMOTIVE SMOKE-STACKS.

SPECIFICATION forming part of Letters Patent No. 707,063, dated August 12, 1902.

Application filed October 3, 1901. Serial No. 77,493. (No model.)

To all whom it may concern:

Be it known that I, LOUIS C. LAURENT, a citizen of the United States of America, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Spark and Cinder Arresters for Locomotive Smoke-Stacks; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in spark and cinder arresters for smoke-stacks, being especially applicable to locomotive-stacks, my object being to provide a device of this class which shall be simple in construction, economical in cost, reliable, durable, and efficient in use; and to these ends my improvement consists of the features, arrangements, and combinations hereinafter described and claimed, all of which will be fully understood by reference to the accompanying drawings, in which is illustrated an embodiment thereof.

In the drawings, Figure 1 is a vertical longitudinal section taken through a stack equipped with my improvements. Fig. 2 is an elevation of the same, shown on a smaller scale. Figs. 3 and 4 are sections taken on the lines $x\,x$ and $y\,y$, respectively, of Fig. 1. The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate the smoke-stack proper, which is provided with cinder-escape openings 5^a at the bottom communicating with a conduit 7, leading downwardly on each side of the locomotive for the purpose of discharging the arrested cinders so near the ground or track that they will settle or lodge thereon, thus preventing the annoyance ordinarily incident to cinders on railways.

Within the stack 5 is located a tube 6, which extends upwardly from the bottom of the stack, preferably tapering from the bottom toward the top to increase the draft, the said tube being smallest at its upper extremity. The lower extremity or base of the tube 6 extends outwardly to the inner wall of the stack, as shown at 6^a, forming the bottom of a chamber 8 between the tube 6 and the stack proper, into which chamber the arrested cinders will drop previous to their escape at the bottom through the openings 5^a into the downwardly-extending conduit 7.

Located in the stack at a suitable distance above the top of the tube 6 is the cinder-arrester proper, consisting, preferably, of an inverted-saucer-shaped device 9, having a central downwardly-projecting convex surface. This device is of somewhat greater diameter than the top of the tube 6 to insure the dropping of the cinders into the chamber 8 below. This arrester or deflector may be mounted on the stack in any suitable manner. As shown in the drawings, this device is attached to a narrows trip of metal 10, whose extremities are screwed to the inner wall of the stack. The area of the part 9 is such as to permit ample room for draft therearound and to perform at the same time the spark and cinder arresting function, as aforesaid.

If desired, an additional arrester and cinder-chamber may be provided above the one already described, though it is believed that the greater portion, if not all, of the cinders will be caught in the lower chamber.

In the drawings I have shown an additional tube (designated 6^c) inserted in the stack and attached thereto above the arrester 9. This tube is similar to the tube 6; but it is preferably of uniform diameter. A chamber 8^a is formed between the tube 6^c and the upper portion of the stack. A cinder and spark arrester composed of parts 9 and 10 is located in the stack above the tube 6^c and is of the same construction as the lower arrester, already described. The cinders which engage the upper arrester are deflected downwardly into the bottom of the chamber 8^a and escape through openings 5^c into an annular compartment 12, formed around the stack by a housing 13. This compartment 12 is closed at the top and communicates at the bottom with the upper extremity of the downwardly-extending conduit 7, already described. When the tube 6^c and the arrester above it are not employed, the conduit 7 will be closed immediately above the opening 5^a. The housing 13 is merely an extension of the conduit 7 for

the purpose of allowing the cinders from the upper chamber 8^a to escape.

From the foregoing description the use of my improved device will be readily understood. The cinders and sparks which enter the stack from the locomotive-furnace pass upwardly through the tube 6 and engaging the arrester above are directed downwardly into the chamber 8, where the cinders escape at the bottom through the openings 5^a. If any cinders escape the first arrester, they will be caught by the second or that above the tube 6^c and carried downwardly into the chamber 8^a and thence through openings 5^c into the compartment 12 and thence by way of the conduit 7 to the ground.

Having thus described my invention, what I claim is—

1. The combination of a locomotive smoke-stack provided with cinder-escape openings at the bottom, a conduit leading downwardly therefrom on each side of the locomotive, a tube extending upwardly into the stack, the bottom of the tube having a flange extending outwardly forming the bottom for a chamber between the tube and the stack proper, and an arrester device located in the stack a suitable distance above the top of the tube, substantially as described.

2. The combination of a locomotive smoke-stack provided with cinder-escape openings at the bottom, a conduit leading downwardly therefrom on each side of the locomotive, a tube extending upwardly within the stack, the bottom of the tube having a flange extending outwardly forming the bottom of a chamber between the tube and the stack, an arrester device located in the stack a suitable distance above the top of the tube, an additional tube inserted in the stack above the arrester, and having an offset at its bottom partly closing a portion of the stack below and forming the bottom of a chamber between the last-named tube and the upper part of the stack, openings being formed around the lower portion of the upper part of the stack, a housing surrounding the stack and communicating at its lower extremity with the aforesaid downwardly-leading conduits, the top of the housing being closed around the stack above the openings in the bottom of the upper chamber, and a spark-arrester located in the stack above the upper tube.

3. The combination of a locomotive smoke-stack provided with cinder-escape openings at the bottom, a tube extending upwardly within the stack, the bottom of the tube having a flange extending outwardly forming the bottom of a chamber between the tube and the lower part of the stack, and an arrester device located in the stack a suitable distance above the top of the tube.

4. The combination of a locomotive smoke-stack provided with cinder-escape openings around its bottom, a tube extending upwardly within the stack, the bottom of the tube having a flange extending outwardly forming the bottom of a chamber between the tube and the lower part of the stack, the said tube receiving at the bottom the products of combustion from the furnace or fire-box, an arrester device located in the stack a suitable distance above the top of the tube, an additional tube inserted in the stack above the arrester and having an offset at its bottom partly closing a portion of the stack below, and forming the bottom of a chamber between the last-named tube and the upper part of the stack, openings around the lower portion of the upper part of the stack, a housing surrounding the stack and communicating with its outlet at the bottom, the top of the housing being closed around the stack above the outlet-openings of the upper chamber, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

LOUIS C. LAURENT.

Witnesses:
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A. J. O'BRIEN.