

(No Model.)

2 Sheets—Sheet 1.

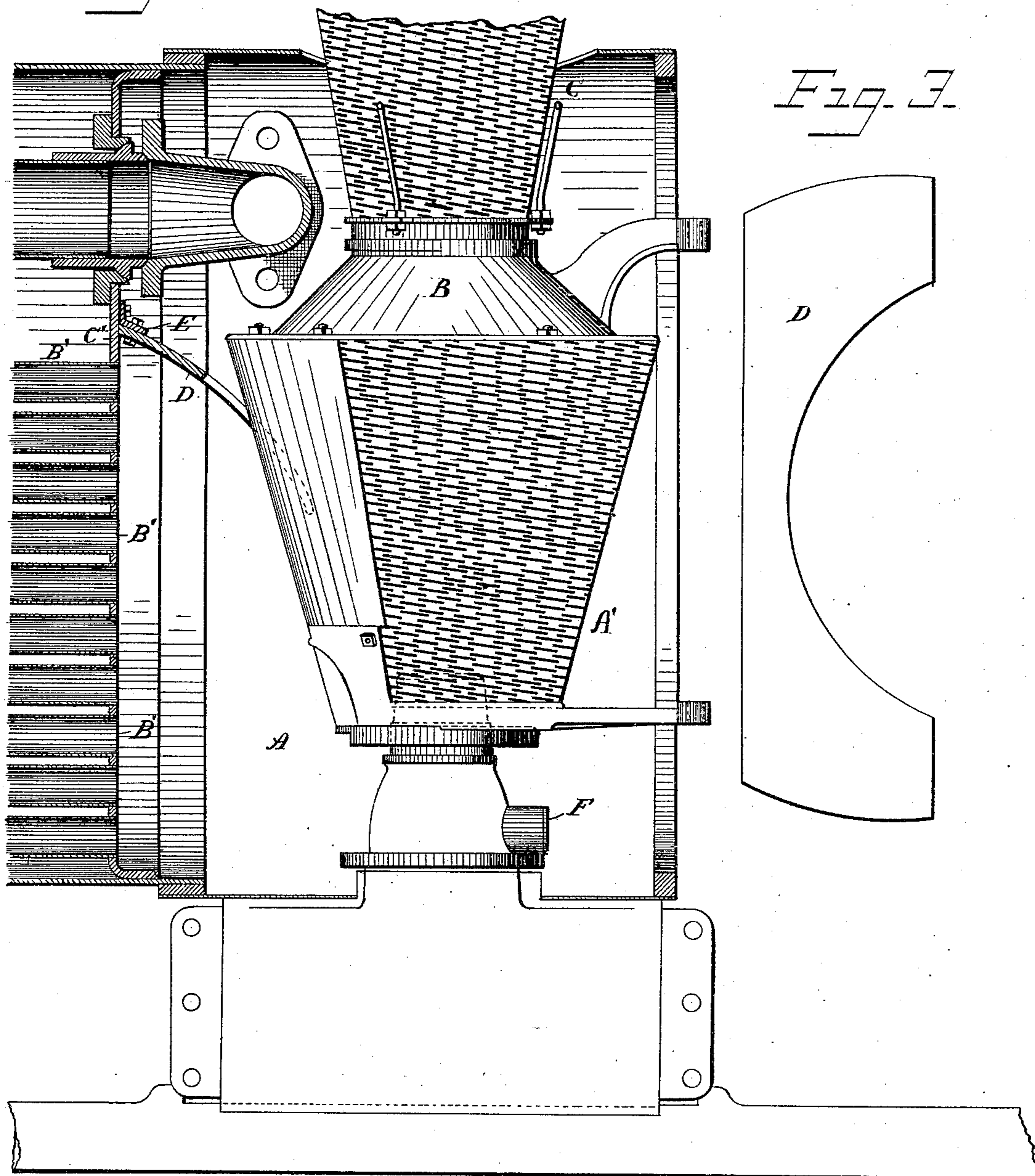
G. D. HUNTER.

SPARK ARRESTER.

No. 312,722.

Patented Feb. 24, 1885.

Fig. 1



WITNESSES

Edwin L. Bradford
Thomas Durant

INVENTOR
George D. Hunter
By Paulmin & Femmes
his Attorneys.

(No Model.)

2 Sheets—Sheet 2.

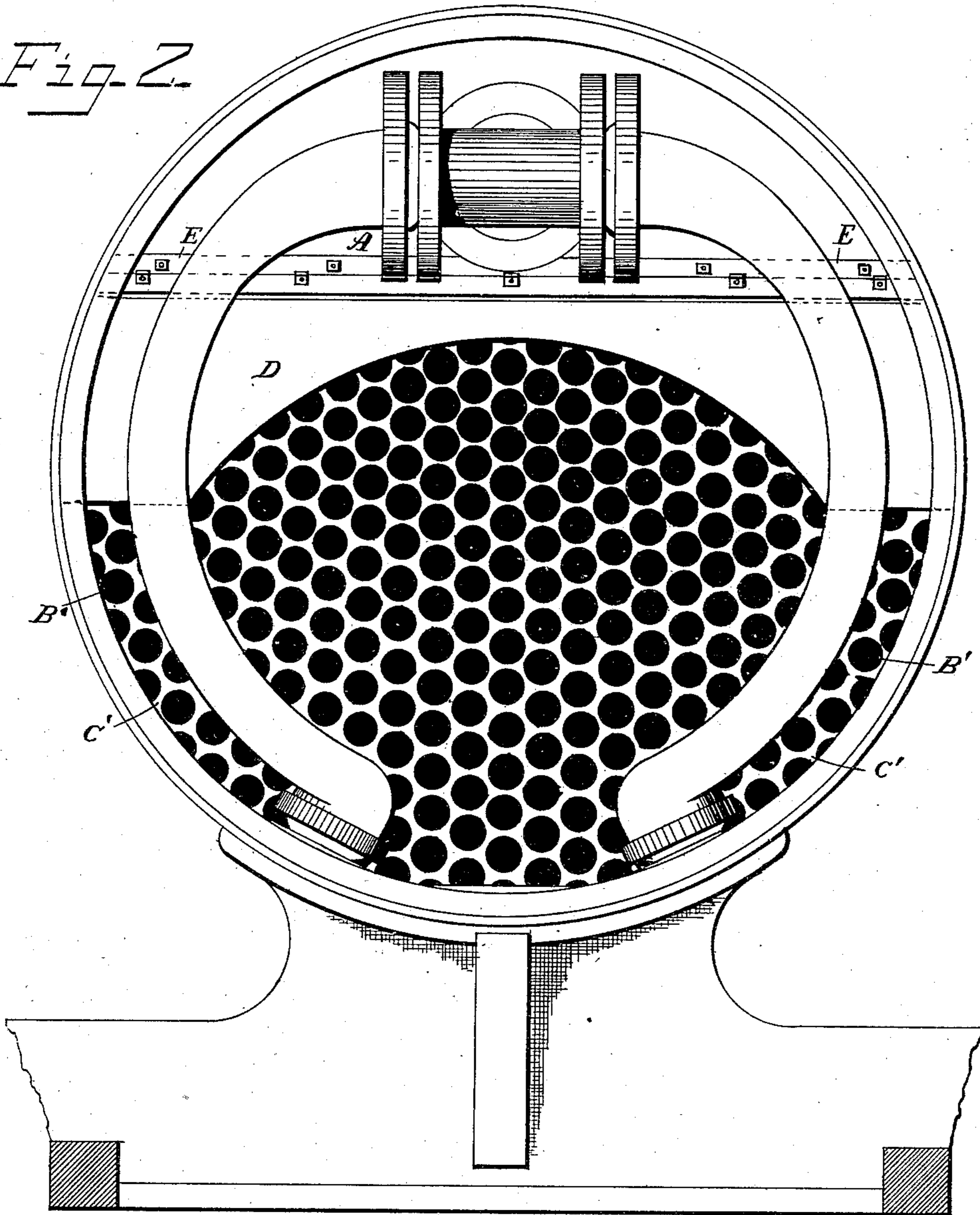
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Fig 2



WITNESSES

Edwin L. Bradford
Thomas Duant.

INVENTOR

George D. Hunter,
By Toulmin & Femmes,
his Attorneys.

UNITED STATES PATENT OFFICE.

GEORGE D. HUNTER, OF TERRE HAUTE, ASSIGNOR OF TWO-THIRDS TO
THOMAS C. VAN NUYS AND MORTON C. HUNTER, BOTH OF BLOOM-
INGTON, INDIANA.

SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 312,722, dated February 24, 1885.

Application filed October 6, 1884. (No model.)

To all whom it may concern:

Be it known that I, GEORGE D. HUNTER, a citizen of the United States, residing at Terre Haute, in the county of Vigo and State of Indiana, have invented certain new and useful Improvements in Spark-Arresters, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in spark-arresters, having special reference to that class essentially designed for use in connection with locomotives; and this my present invention is constructed to be used in connection with that on which Letters Patent of the United States issued to me October 2, 1883, numbered 285,899, as also in connection with that for which an application was filed on or about May 31, 1884. In the patent a conical drum is shown and described having the rear portion imperforated, while the remaining and forward portion is provided with a series of slots. An exhaust-nozzle is also employed, and so arranged with relation to the slotted portion of the drum that a partial vacuum is formed in the forward end of the smoke-box by the violent upward escape of the exhaust-steam, the vacuum having the effect of inducing the more solid products of combustion to pass around the drum to that portion of the smoke-box.

My present invention has for its objects, first, to provide means for inducing the smoke, the gases, and the more solid particles of combustion, cinders, sparks, &c., escaping from the boiler-flues to take a more downward course in the smoke-box, whereby the more solid products are directly projected into the vacuum formed, as above mentioned, in the lower forward part of the smoke-box, and yet allowing of the unobstructed and even draft of the flues and permitting of the final escape of the smoke and gases to and out of the stack; and, second, to so construct such means as to readily allow of access to the boiler-flues without removing the said means.

With these ends in view my invention consists, essentially, of a deflector secured to the boiler-head and disposed within the smoke-box in a forward and downward extended position, having a space between the imperforated portion of the drum and its interior

edge, so as not to necessitate the descent of all the smoke and gases, as more minutely hereinafter appearing.

In the accompanying drawings, forming a part of this specification, and on which like letters of reference indicate the same or corresponding features, Figure 1 represents a vertical longitudinal sectional view taken through a smoke-box, showing a part of a locomotive and my improved spark-arrester and deflector applied; Fig. 2, an elevation of the front of a locomotive, looking into the smoke-box, within which is applied the deflector, and Fig. 3, a detached plan view of the deflector.

The letter A designates the smoke-box of a locomotive, the same being of the ordinary or any approved construction, and within which is placed my improved spark-arrester, consisting, essentially, of a conical drum, A', having the rear portion imperforated and the forward portion provided with a series of slots, and mounted and constructed in accordance with the patent above mentioned. This drum is provided with a crown-sheet, B, to which is attached a screen, C, the reticulations of which consist, preferably, of obliquely-disposed slots, all as more fully set forth in the Letters Patent already alluded to.

The letter B' refers to the boiler-flues, the forward ends thereof being secured, as usual, to the boiler-head C'. To this boiler-head is attached the deflector D, in any convenient manner, in the present instance by means of the angle-iron plate E, bolted or riveted to the head and to the deflector. This deflector is constructed of metal, and extends, preferably in the arc of a circle, in a forward and downward direction, embracing in a vertical line from three to five (or more) of the flues. At either side or edge the deflector is so sized and configured as to fit or substantially fit the inner adjacent walls of the smoke-box, as seen in Fig. 2. The deflector is cut away, or formed so as to constitute the arc of a circle at its lower edge, forming a sort of interior line, which, when the deflector is in position embraces or partly embraces the rear imperforated portion of the conical drum, a space or clearance of from three to five inches (more or less) between such edge and that part of the drum. This space, however, may be allowed

to exist only at the rear portion of the imperforated part, the remainder of the interior edge of the deflector being in this instance in contact, or virtually so, with the drum. The body of this deflector serves the function of directing the smoke, gases, and the more solid particles of combustion escaping from the fire-box through the flues into the smoke-box downwardly and toward the lower or bottom part of the smoke-box, whereby the more solid particles or products are more effectually brought forward and under the influence of the side discharge issuing from the branch F of the exhaust-nozzle, as fully explained in the Letters Patent before herein referred to. The space before alluded to serves to allow the smoke and gases, or some portions thereof at least, to play round the drum, whence they are more readily taken up through the perforations in the same and conducted to and out the stack by the action of the draft. This space also serves the important purpose of allowing access to the flues without removing the deflector, should occasion require, the drum being first swung out the smoke-box, as provided in the patent to which reference has several times been made. A space may, if desired, be left between the outer edges of the deflector and the inner wall of the smoke-box, to aid in the more direct escape of the smoke and gases.

By means of this invention it is found that the accumulations of sparks, cinders, &c., about the exhaust-nozzle and the joints of the steam-pipes within the smoke-box are effectually avoided.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a spark-arrester, the combination, with

a smoke-box, a drum therein, and an exhaust-nozzle having a side discharge, of a deflector arranged with such relation to the drum as to direct the products of combustion downwardly in the smoke-box.

2. In a spark-arrester, the combination, with the smoke-box and a drum therein having a perforated and an imperforated portion, of a deflector arranged in a downward and forward position, and with such relation to the drum as to direct the products of combustion downwardly in the smoke-box.

3. In a spark-arrester, the combination, with the smoke-box and drum having a rear imperforated portion, of a deflector secured to the boiler-head, extended in a downward and forward direction, and having a space between its inner edge and the drum, and arranged to downwardly direct the products of combustion in the smoke-box.

4. In a spark-arrester, the combination, with the smoke-box and the drum therein, of the deflector extending in a downward and forward direction, having a space between it and the rear portion of the drum, the remainder of the inner edge being in contact with the drum.

5. In a spark-arrester, the combination, with the smoke-box and the drum having an imperforated and a perforated portion, of the deflector secured to the boiler-head, extended in a downward and forward direction, having a space between it and the rear portion of the drum.

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

GEO. D. HUNTER.

Witnesses:

L. B. BRAY,

C. T. ROBERTSON.