

(No Model.)

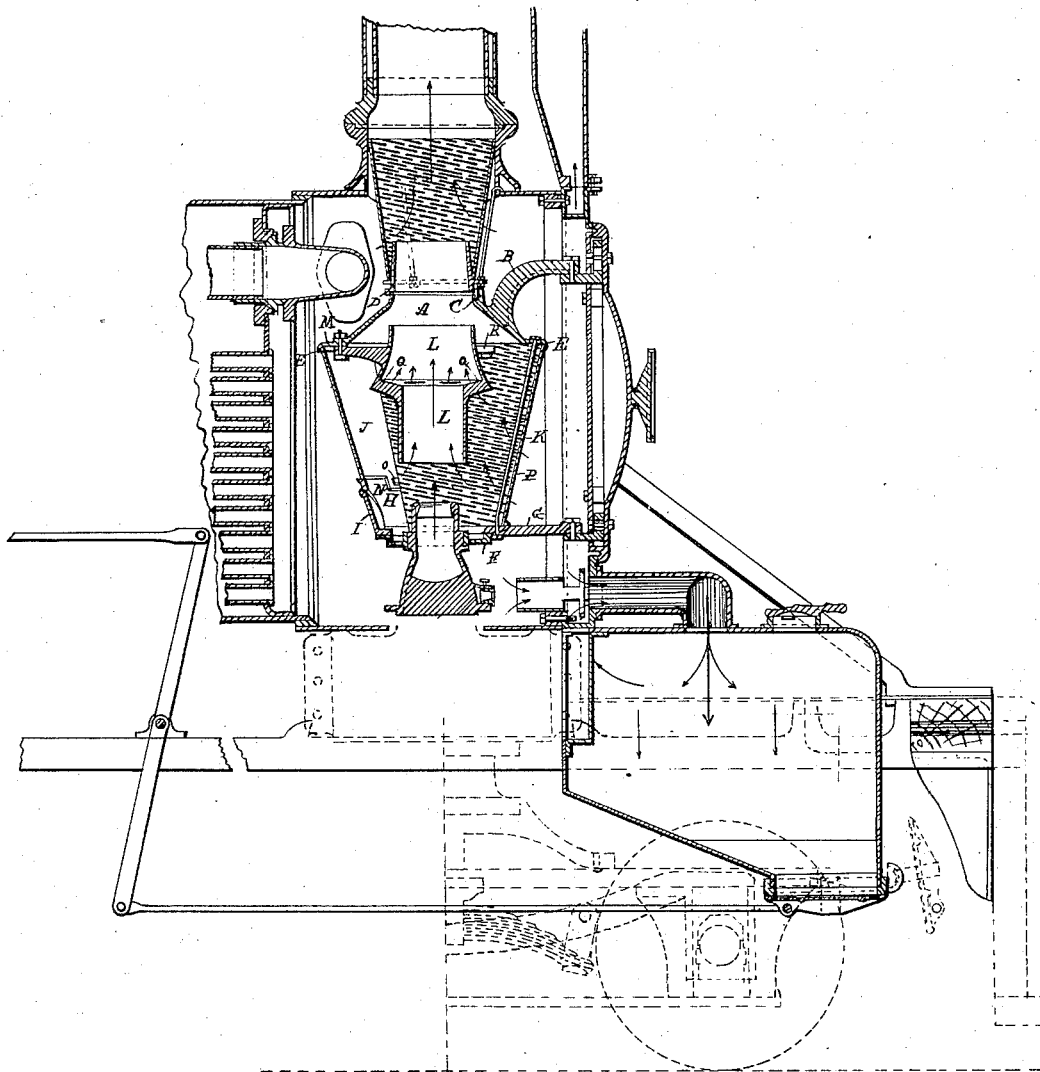
2 Sheets—Sheet 1.

G. D. HUNTER.
SPARK ARRESTER.

No. 307,465.

Patented Nov. 4, 1884.

Fig 1



WITNESSES
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INVENTOR
George D. Hunter
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(No Model.)

2 Sheets—Sheet 2.

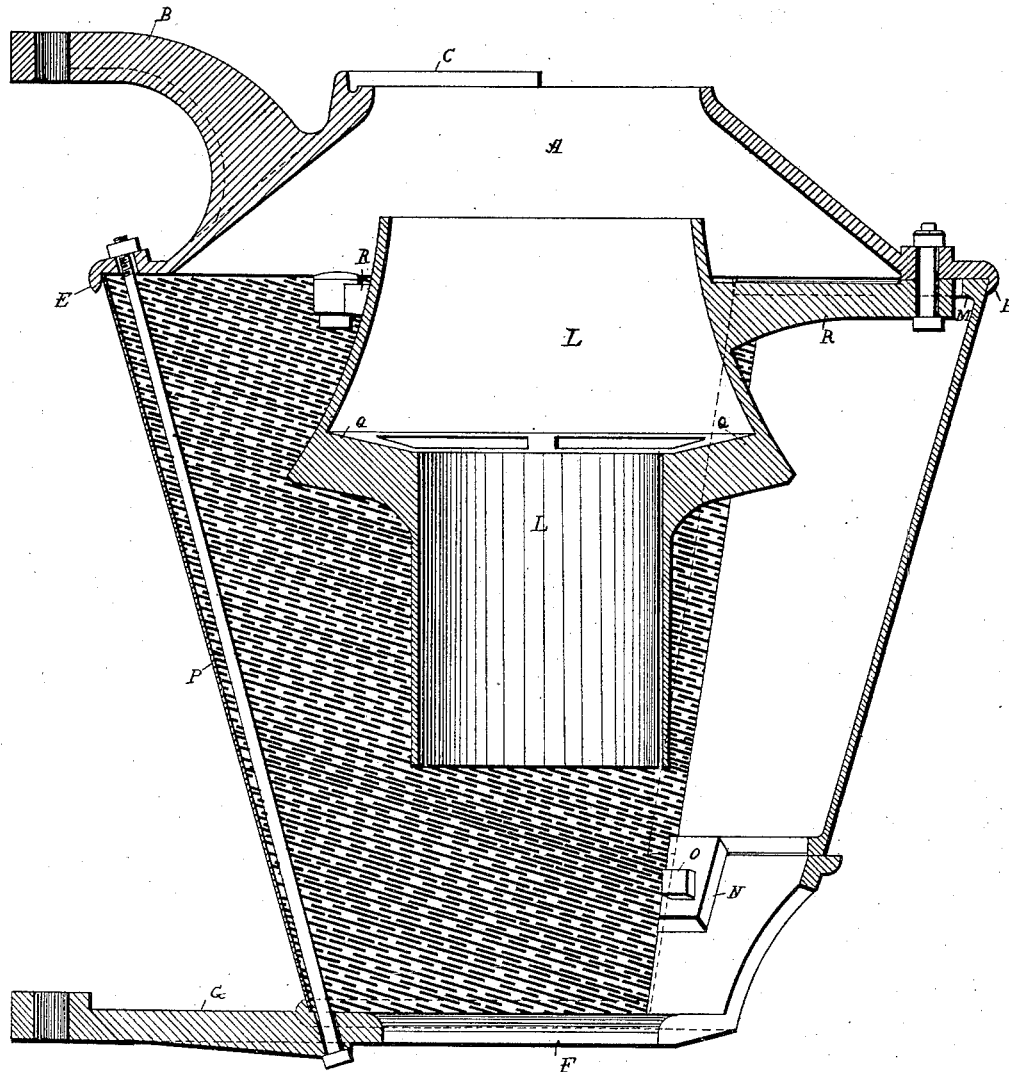
G. D. HUNTER.

SPARK ARRESTER.

No. 307,465.

Patented Nov. 4, 1884.

Fig. 2.



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UNITED STATES PATENT OFFICE.

GEORGE D. HUNTER, OF TERRE HAUTE, ASSIGNOR OF TWO-THIRDS TO
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INGTON, INDIANA.

SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 307,465, dated November 4, 1884.

Application filed May 31, 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, and it has for its object to improve the construction of several of the features or devices shown in Letters Patent granted to me October 2, 1883, and numbered 285,899, to wit: first, in forming a flaring or conical circular shell on the lower side of the upper frame, which supports the exhaust-confining tubes and the devices for separating the smoke from the more solid particles of combustion, whereby the imperforated conical crown-sheet shown in the above-mentioned patent is dispensed with; second, in casting the respective sections of the exhaust-confining tube in one piece; and, third, in constructing the back or rear portion of the conical drum of an imperforated cast-iron portion.

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 through a locomotive smoke-box and a portion of the boiler and the smoke-stack, showing the relative arrangement of the several parts of my improved spark-arrester; and Fig. 2, a detached enlarged diametrical sectional view of the supporting-frames and the exhaust-confining tube connected thereto.

The letter A refers to the upper supporting-frame, which is constructed of cast-iron, and is in the form of a hollow conical or flaring circular body, from one side of which extends an arm, B, which is connected with a bracket or lug secured to and extending from the door of the smoke-box. The upper end of this body is provided with a semicircular flange, C, whereby a seat is formed for the upper section of the exhaust-confining tube, which in turn is provided with a corresponding or depending flange, D, which embraces the rear half of the said upper end of the body A. The lower end

of said body is provided with a depending flange, E, within which fits the upper end of the conical drum, to be presently mentioned.

The letter F refers to the lower supporting-frame, the arm G of which is also connected to the door of the smoke-box by means of a lug or bracket secured to and extending therefrom. This frame is circular in form, having a large central opening, which fits around the upper end of the exhaust-nozzle, the rear portion of the frame extending upwardly, as at H, and having an arch formed therein sufficiently high and broad to clear the exhaust-nozzle when the frame is swung forward or outwardly. The neck of the exhaust-nozzle is provided with a flange, upon which is fitted a ring having an upwardly-extending sheet, I, which occupies the entire area of the arch formed in the upwardly-extending portion H of the frame F, the sheet being flanged so as to form a lap-joint against the edge of the arch F. This sheet may, however, be constructed of a separate piece, and be bolted or otherwise secured to the ring.

The conical drum is constructed of two parts—the rear part, J, and the forward part, K. The said rear part is formed of cast-iron, and in cross-section agrees in configuration with the arc of a circle.

It is found in practice that reticulated sheet-iron, when exposed to the violent abrasive and pelting action of the solid particles of combustion escaping from the boiler-flues, will retain its integrity but a short while, and therefore I have adopted cast-iron as a cheap yet durable substance, and one which in actual trial serves my purpose. Furthermore, cast-iron is harder than the wrought sheet-iron, and, when not perforated, is found to be still more durable. It is provided at its upper end with an inwardly-projecting flange, M, as also with a depending lug, N, the latter fitting within and against the rear portion of the lower supporting-frame, F, to which it is connected by a bolt, O. The forward portion, K, of the said drum is constructed of sheet metal, and is provided with a series of apertures obliquely disposed to a horizontal line. The upper end of said portion fits within the depending flange from the body of the upper frame, as does also the upper end of the portion J. These re-

spective portions lap each other slightly, so as to form a close joint. The lower end of the portion K fits within the flange extending from the lower supporting-frame, and the structure is held together and given rigidity by means of the rod P, which passes through the upper and lower frames, and is provided with a nut whereby they are firmly drawn together against the drum.

The drum, when thus constructed, is strong and requires but little work in putting it together. It will also be observed that the different sizes of drums are made by simply lengthening the respective portions, the upper and lower supporting-frames remaining the same size; and it is the design of the invention to make the drums as large as the size of the smoke-box will admit of.

The letter L refers to the lower sections of the exhaust-confining tube, the same being cast in one piece, the union of the two being effected by means of the radial arms Q, the spaces intermediate the arms allowing of the upward passage of a part of the smoke and gaseous products of combustion which ascend through the drum. Cast integral with the upper of these sections are radial arms R, having apertures formed in their ends, by which they are connected, through the medium of bolts and nuts, to the lower portion of the body A of the upper supporting-frame. The upper screen, (seen near the base of the smoke-stack,) the means of its attachment, and the devices which are connected to it being shown and described in my Letters Patent above referred to, and in another patent, which is dated February 19, 1884, it is unnecessary to enter into a description thereof. The same may be said with reference to the exhaust-nozzle, the pipe which conducts the cinders which collect in the lower part of the smoke-box, and the cinder-receptacle, located in the present instance over the forward axle of the locomotive-truck, as these devices, too, are fully shown and described in my patent of October 2, 1883.

The operation of this invention being also fully set forth in my patent last above mentioned, it is deemed unnecessary to repeat it in this place.

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 upper supporting-frame, constructed in the form of a conical tubular body, and provided with an arm by which it is attached to a suitable support.

2. In a spark-arrester, the upper supporting-frame, constructed in the form of a conical tubular body, and provided with an arm by which it is attached to a suitable support, and with flanges extending from its upper and lower ends.

3. In a spark-arrester, the combination, with the supporting-frame having a conical tubular body, and the lower supporting-frame, of the drum fitting within flanges formed on said frames, and means for clamping the frames against the drum.

4. In a spark-arrester, the combination, with the upper supporting-frame having a conical tubular body, and the lower supporting-frame having an arched upwardly-extending portion, of the drum and the rod whereby the frames are clamped against the drum.

5. In a spark-arrester, the combination, with the upper supporting-frame having a conical tubular body, of the sections of the exhaust-confining tube, cast in one piece, and with radial arms, the said arms and the said body being connected together.

6. In a spark-arrester, the combination, with the upper supporting-frame having a conical tubular body, the lower supporting-frame having an arched upwardly-extending portion, the drum fitting within flanges formed on said frames, and the rod for binding them against the drum, of the exhaust-confining tube provided with integral radial arms connected to said body.

7. In a spark-arrester, the exhaust-confining tube, consisting of a plurality of sections cast integrally, with spaces between the points of connection.

8. In a spark-arrester, the combination, with the exhaust-confining tube, consisting of a plurality of sections cast integrally, with spaces between the points of connection, and radial arms extending from one of said sections.

9. In a spark-arrester, a drum for separating the smoke and gaseous products from the more solid particles of combustion, constructed of distinct perforated and imperforated portions.

10. In a spark-arrester, a drum for separating the smoke and gaseous products from the more solid particles of combustion, consisting of an imperforated cast-iron portion and a perforated sheet-iron portion adapted to fit together.

11. In a spark-arrester, the drum for separating the smoke and gaseous products from the more solid particles of combustion, consisting of a rear imperforated cast-iron portion and a forward sheet-iron portion provided with obliquely-disposed perforations, the upper and lower supporting-frames, the latter being bolted to one of said portions, and a rod for binding the parts together.

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

GEO. D. HUNTER.

Witnesses:

SAMUEL R. HAMILL,
GEORGE W. FARIS.