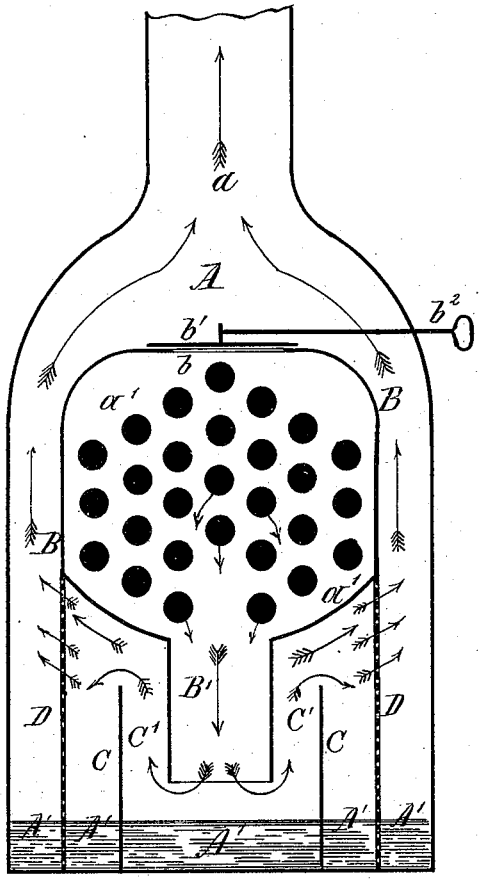
A. DELANEY.

Spark-Arrester.

No. 209,668. Patented Nov. 5, 1878.



Witnesses.
Henri Guillaume
Alf. L. Leonard

Inventor.
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atty

UNITED STATES PATENT OFFICE.

ALEXANDER DELANEY, OF RICHMOND, VIRGINIA.

IMPROVEMENT IN SPARK-ARRESTERS.

Specification forming part of Letters Patent No. **209,668**, dated November 5, 1878; application filed October 14, 1878.

To all whom it may concern:

Be it known that I, ALEXANDER DELANEY, of Richmond, Henrico county, State of Virginia, have invented new and useful Improvements in Spark-Arresters, of which the following is a specification:

My invention relates more particularly to that class of spark-arresters employed for agricultural engines, such as are used for driving cotton-gins, thrashing-machines, and other like machinery. In such motors the greatest defect generally consists in not being provided with proper means to guard against fire being communicated by the escape of sparks to the highly-combustible material with which such motors are surrounded; and the object of my invention is to provide such safeguards against the escape of sparks through the chimney as will effectually prevent fires from originating therefrom; and to that effect my invention consists in the application of a supplemental smoke-box surrounding the boiler-flues, arranged to form a diving-flue, and combining therewith a water-reservoir, in which the sparks are precipitated.

The invention further consists in the arrangement of the supplemental smoke-box, so as not only to form a diving-flue, but also ascending flues on either side of said smoke-box, and in combining therewith vertical deflector-diaphragms, between which the diving-flue is projected to form ascending flues on either side of said diving-flue, and against which the heavier particles of the products of combustion are precipitated, and thence fall into the water-reservoir; and, lastly, the invention consists in the combination, with the additional smoke-box, the water-reservoir, and the deflector-diaphragms, of wire or perforated screens adapted to arrest the lighter sparks on their way to the chimney and cause their precipitation into the water-reservoir, as fully described hereinafter, and shown in the accompanying drawing, in which I have illustrated my invention by a vertical section of a spark-arrester.

A represents the main smoke-box, *a* the chimney, and *a'* the flues, all constructed in any usual or preferred manner, excepting that the lower part or bottom of smoke-box A is made water-tight to form a water-reservoir, A'.

B represents a diaphragm surrounding the flues *a'*, and provided on top with an aperture, *b*, upon which is fitted a damper, b^1, which may be opened and closed by means of the damper-rod, b^2. This damper is opened only when a direct draft is necessary to start the fires, and when this is effected the damper is closed and remains closed.

Below the flues *a'* the diaphragm B is contracted to form a diving-flue, B', which is projected downward toward the water-reservoir A', said flue being open at bottom, as shown. Upon either side, and equidistant from the diving-flue B', are arranged two vertical diaphragms, C, which form two ascending flues, C', on opposite sides of flue B', and thence around the supplemental smoke-box into the chimney, as shown by the arrows, which clearly indicate the path of the products of combustion after issuing from the flues *a'*.

Upon opposite sides of and equidistant from the diaphragms C are arranged two vertical perforated or wire screens, D, extending from the bottom of the smoke-box to the supplemental smoke-box, being on a line with the outer edges of the latter, as shown, said diaphragms or perforated screens being secured at one end to the sides of the supplemental smoke-box and at the other end to the bottom of the water-reservoir.

By means of the construction and arrangement of parts within the smoke-box it will be seen that sparks or cinders are effectually prevented from being carried by the draft into and through the chimney, as all such as are not precipitated by their own gravity into the water-reservoir, or by being thrown against diaphragms C, will be arrested by the wire screens before they can reach the chimney.

Access is had to the flues *a'* and the supplemental smoke-box by the usual door in the front wall of the main smoke-box, and I provide another door below the latter, a little above the water-level of the water-reservoir, in order to enable the attendant to see that said reservoir is constantly supplied with water, and for the purpose of removing ashes, cinders, &c., deposited or precipitated therein.

Having now described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with the smoke-box of a spark-arrester or boiler, of a supplemental smoke-box arranged to form a diving-flue and ascending flues around said supplemental smoke-box, substantially as described, for the purpose specified.

2. The combination, with the smoke-box or diaphragm B, forming a diving-flue, B′, of the perforated screens D, substantially as described, for the purposes specified.

3. The combination, with the smoke-box A and the flues *a′*, of the diaphragm or supplemental smoke-box B, arranged to form a diving-flue, B′, the diaphragms C, perforated screens D, and the water-reservoir A′, all arranged and operating substantially as described, for the purpose specified.

In witness that I claim the foregoing I have hereunto set my hand this 12th day of October, 1878.

ALEXANDER DELANEY.

Witnesses:

C. A. DELANEY,

PORTER SULETEE.