J. M. RUSSELL & D. BURGESS.

Spark Arrester.

No. 229,642. Patented July 6, 1880.

Fig. 1.

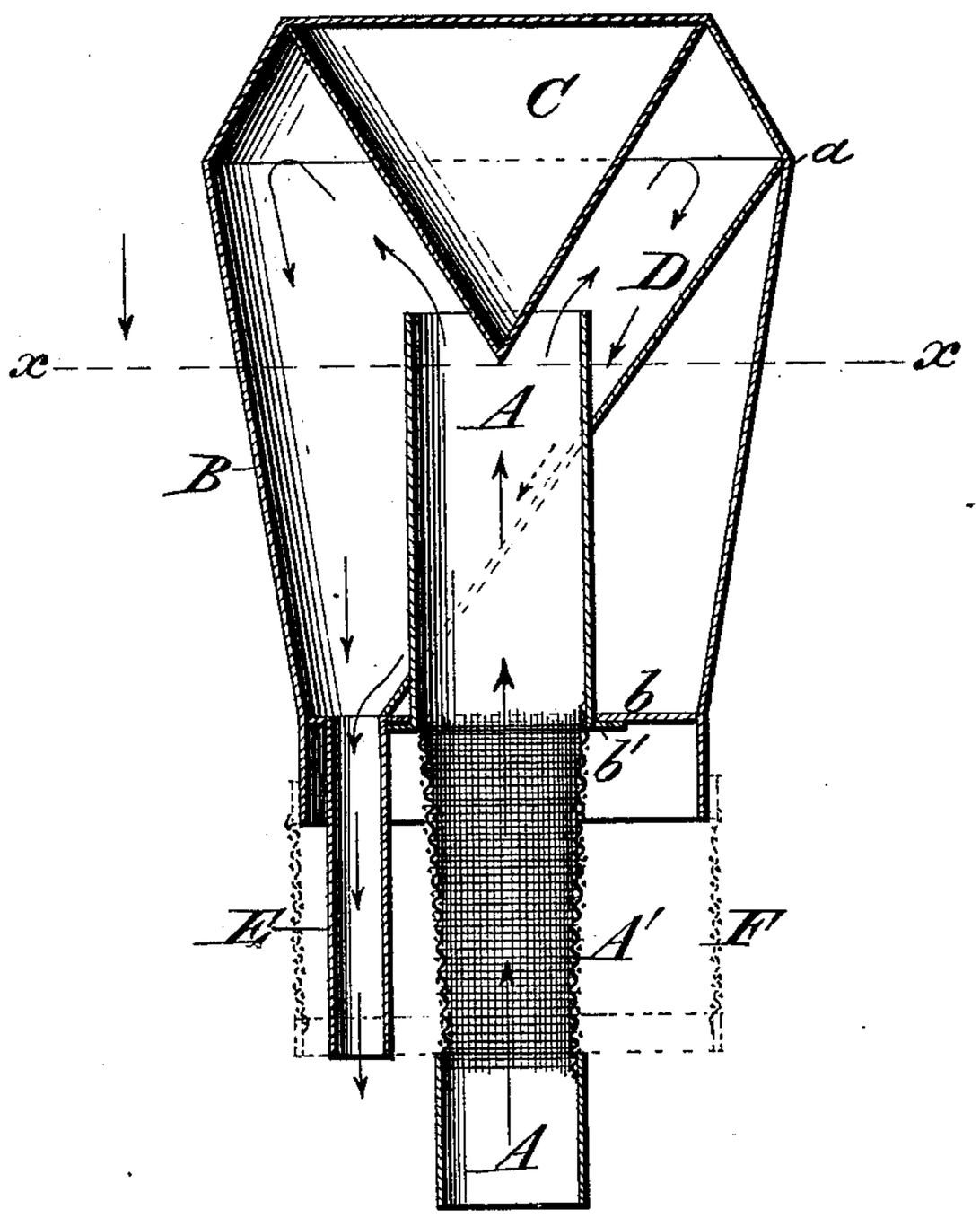
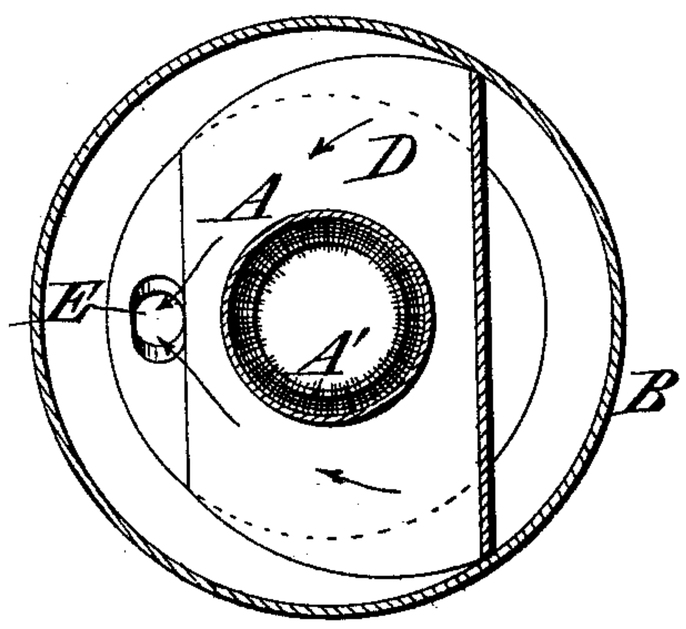


Fig. 2.



Attest:

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UNITED STATES PATENT OFFICE.

JAMES M. RUSSELL, OF ARCADIA, AND DANIEL BURGESS, OF NOBLESVILLE, ASSIGNORS OF ONE-THIRD OF THEIR RIGHT TO THOMAS A. RAMBO, OF NOBLESVILLE, INDIANA.

SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 229,642, dated July 6, 1880.

Application filed January 19, 1880.

To all whom it may concern:

Be it known that we, JAMES M. RUSSELL and DANIEL BURGESS, citizens of the United States, residing, respectively, at Arcadia and Noblesville, in the county of Hamilton and State of Indiana, have invented certain new and useful Improvements in Spark-Arresters; and we do hereby 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 letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to that class of devices designed to prevent the issue of live sparks and coals from the smoke-stacks of locomotives, traction-engines, and all others in which the draft of air through the fire is produced by the exhaust-steam entering the stack. It will also be available and of great use in connection with the chimney of a furnace where the draft is so strong as to carry incandescent particles of fuel out of its top; and the invention, as a whole, may be said to consist in furnishing the top of the stack with a cap or bonnet provided with a downwardly-projecting cone or deflector, which enters the stack to a short distance and throws the cinders outward, which as they fall are caught upon an inclined diaphragm, from which they pass into a tube and are conducted to a water-tank or other receptacle, suitable screens being connected with the stack and cap so as to form longitudinal sections thereof, through which the smoke and gases escape, all as will be hereinafter fully described, and then pointed out specifically in the claim.

In the drawings, Figure 1 is a vertical section through both stack and cap, showing the relative arrangement of the diaphragm and screens to those parts. Fig. 2 is a horizontal section on the line *x x* of Fig. 1.

A represents the smoke-stack proper, through which all the products of combustion ascend. Surrounding the top of this is the cap B, preferably of greater diameter at the point *a* than elsewhere, so that its outward contour is that of the frustum of a cone small end downward. At or near its lower end it is provided with an internal flange, *b*, which rests upon the outwardly-projecting flange *b'*, surrounding the stack A and forming the vertical support of the cap.

A conical deflector, C, forms a portion of the top of the cap, its point entering the top of the stack for a short distance, so as to throw the cinders outward, which follow the course indicated by the arrows, falling upon the inclined diaphragm D, by which they are carried downward and delivered into the tube E, placed at one side of the stack, the lower end of said tube, as before stated, terminating in a water-tank or other receptacle that shall prevent the cinders from being scattered so as to cause the ignition of any surrounding combustible materials.

A portion, A', of the stack A, below the flange *b'*, is formed of a wire or other screen, the openings through which are too small for cinders to pass through, although affording a free exit for smoke.

If desired, an extension, F, of the cap may be added to its lower end, formed of like material as the screen A', and may be connected below the latter to the stack A, thus adding strength to that part of the stack used as a screen, while it yet affords a free passage for the smoke and gases.

These devices will be found to furnish a certain preventive from the danger of setting fire to surrounding objects by sparks from smoke-stacks and chimneys of all kinds, and therefore cannot fail to receive the support of the public.

We are aware that inclined diaphragms and conical deflectors have been heretofore used in smoke-stacks for arresting sparks; also, that reticulated screens and outlet-pipes have been employed in the same connection. These, however, we do not broadly claim; but

What we claim as our invention is—

The smoke-stack A, provided with screen-section A' and flange *b'*, in combination with the conical deflector C, cap B, having flange *b*, diaphragm D, and outlet-pipe E, all constructed and arranged as and for the purpose described.

In testimony whereof we affix our signatures in presence of two witnesses.

JAMES M. RUSSELL.
DANIEL BURGESS.

Witnesses:
J. BARTHOLOMEW,
JACOB KREAG.