C. S. & E. OSBORN.

Spark-Arrester for Locomotives.

No. 160,614. Patented March 9, 1875.

Fig. 1.

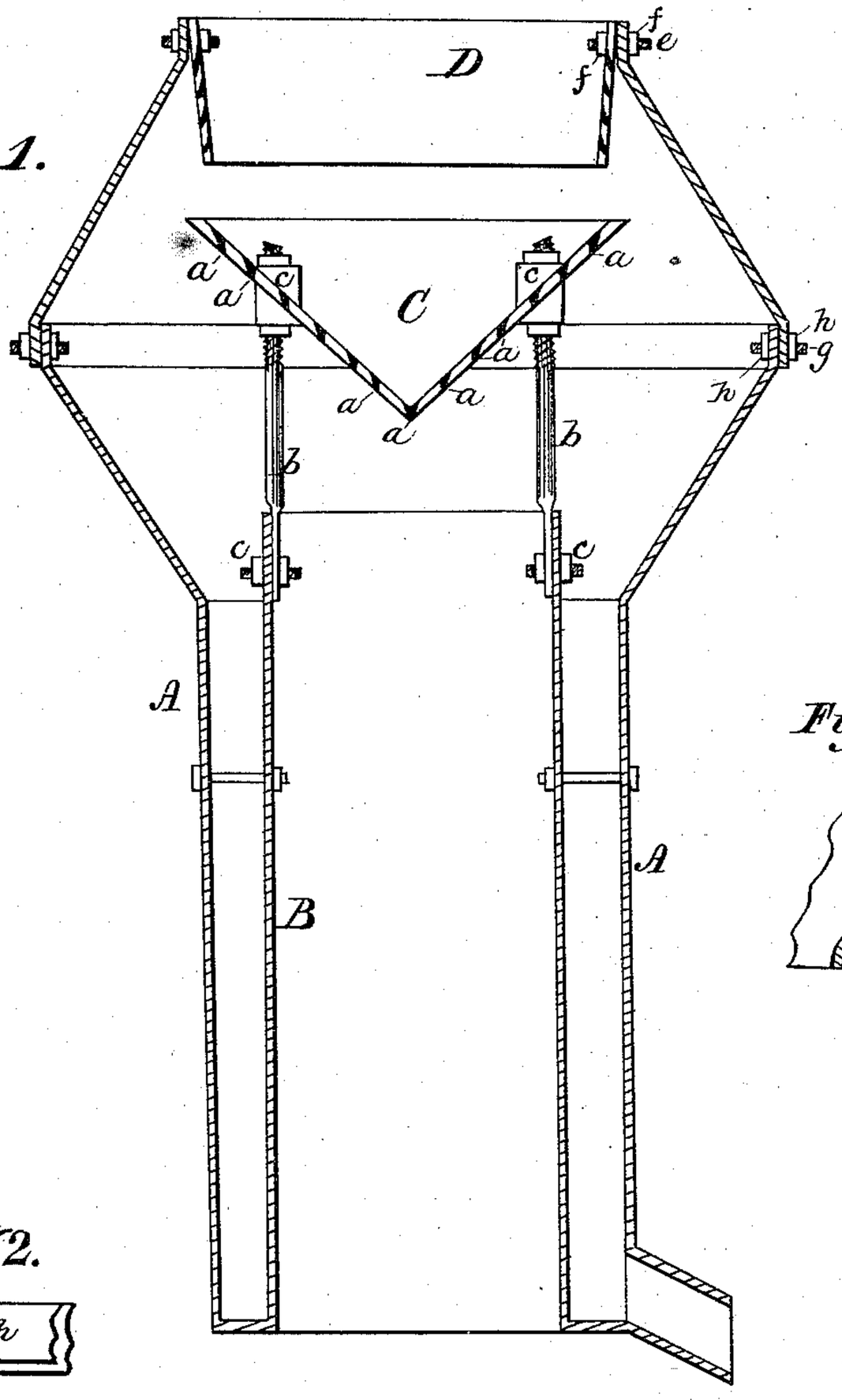


Fig. 5.

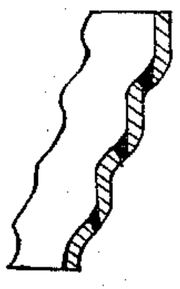


Fig. 2.

Fig. 3.

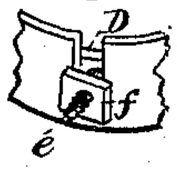
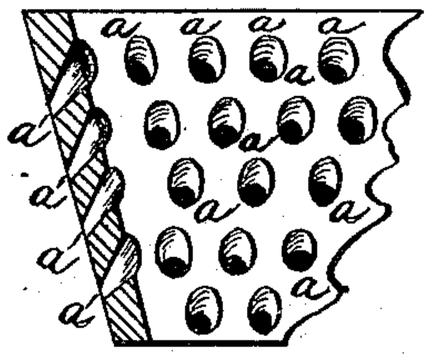


Fig. 4.



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UNITED STATES PATENT OFFICE.

CHARLES S. OSBORN AND EDWARD OSBORN, OF NEWTON, NEW JERSEY.

IMPROVEMENT IN SPARK-ARRESTERS FOR LOCOMOTIVES.

Specification forming part of Letters Patent No. **160,614**, dated March 9, 1875; application filed September 22, 1874.

To all whom it may concern:

Be it known that we, CHARLES S. OSBORN and EDWARD OSBORN, residents of Newton, county of Sussex and State of New Jersey, have invented certain new and useful Improvements in Spark-Arresters for Locomotives; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, and which form a part of this specification, in which—

Figure 1 is a vertical section of our invention. Fig. 2 is a detail view, showing the mode of connecting together the upper casing of the smoke-stack. Fig. 3 is also a detail view, showing means of adjusting the perforated screen at the top of the smoke-stack. Fig. 4 is an enlarged detail view of the perforated screen; and Fig. 5 is a modification of our invention.

Similar letters of reference occurring on the several figures indicate like parts.

Our invention has for its object to furnish a simple and effective spark-arrester for smoke-stacks of locomotives; and it consists in a cast or plate metal cone and tapering adjustable screw, arranged in relation to each other, and provided with peculiar perforations, as will hereinafter be more fully shown and described.

Referring to the drawings, A represents the outer casing, forming the walls of the smoke-stack, and B the inner pipe of the same. C is an inverted cone, of cast or wrought metal, and provided with novel perforations or holes *a*. These perforations are drilled vertically in the metallic cone, on a line parallel with the walls of the smoke-stack, and having their upper openings flared or hollowed out, thus making the openings of the holes larger at the top than at the bottom. We do not confine ourselves, however, to the drilling of these holes, as they can also be formed at the time of casting the cone. The inverted cone C is secured in the proper position over the inner pipe B by means of the rods or stays *b* and nuts *c*, as shown in Fig. 1.

The construction of the cone may be modified, as shown in Fig. 5, by casting the same not unlike in shape to a series of concentric steps, through the under sides of the projecting parts of which the holes may be drilled, or formed at the time of casting.

A cast or plate metal screen, D, is adjustably secured in the upper opening of the smoke-stack, said screen having tapering sides, and provided with vertical perforations, as in the inverted cone. The screen D being tapering in form, that part of the mouth of the smoke-stack which comes immediately around the same must also be slightly tapering, so that when the screen is placed in position it fits snugly in the mouth of the smoke-stack, and is adjustably secured in place by means of the bolts *e* and nuts *f*, said bolts passing through holes bored for that purpose in the rim of the stack, and through vertical slots in the upper rim of the screen D. By this arrangement it will be seen that, by tightening the nuts on the bolts, the screen is held securely in the mouth of the smoke-stack. If it becomes necessary to remove the screen when it is burned out, or rendered inoperative by the action of the heat, and to replace it by a new one, it is only necessary to remove the nuts and bolts, and the transfer is easily and quickly made.

For the purpose of cleaning the several parts of the spark-arrester the enlarged upper part of the smoke-stack is constructed in two sections, the upper section fitting tightly over the lower one when the parts are connected, and secured in place by bolts *g* and nuts *h*, said nuts passing through holes on the upper rim of the lower section, and thence through vertical slots on the lower rim of the upper section, as shown in Fig. 3. The nuts on the outside of the stack are tightened when it is desired to secure the two parts together; but when necessary to remove the upper section the nuts are loosened and the part removed, leaving the nuts and bolts in place on the lower section.

Having thus indicated the several parts of our invention, the practical operation of the same is as follows: In the passage of the products of combustion up the smoke-stack, the peculiar perforations in the inverted cone and screen are such as to secure a perfect draft for the escape of the smoke and steam, while the cinders, following the angle of the cone, are thrown outwardly and into the receptacle pro-

vided for that purpose. The perforations being smaller at their base than at the top, the cone and screen are always kept clean and free from clogging, for the reason that the very fine cinders which fit into the lower mouth of the perforations are carried through by the draft, and the larger cinders, having no outlet, are propelled outwardly on the face of the cone by the action of the draft, and deposited in the ash-receiver.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A spark-arrester formed of a plate or cast metal screen, D, and inverted cone C, when provided with the peculiar perforations *a*, substantially as herein set forth and described.

2. The tapering screen D, provided with the tapering perforations *a* and the bolt *e* and nuts *f f*, operating in slots in the stack and screen as a means of adjustment in the mouth of a smoke-stack, substantially as herein described, and for the purpose set forth.

3. The construction and arrangement of the enlarged upper part of the smoke-stack, when provided with the bolts *g* and nuts *h*, operating in slots, substantially as shown, and for the purpose set forth.

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Witnesses:
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