M. RUMELY.

Spark-Arrester.

No. 218,643. Patented Aug. 19, 1879.

Fig. 1.

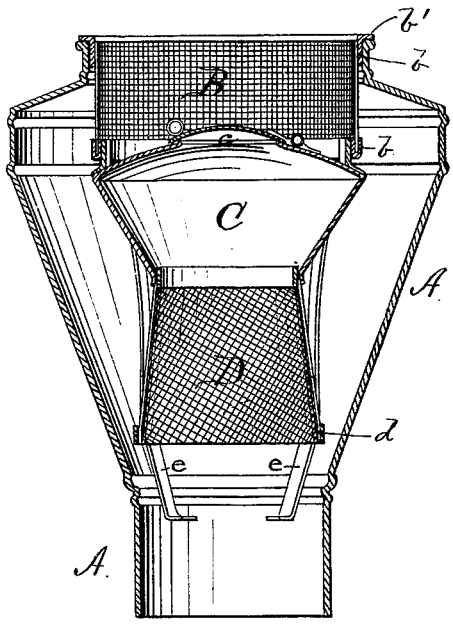
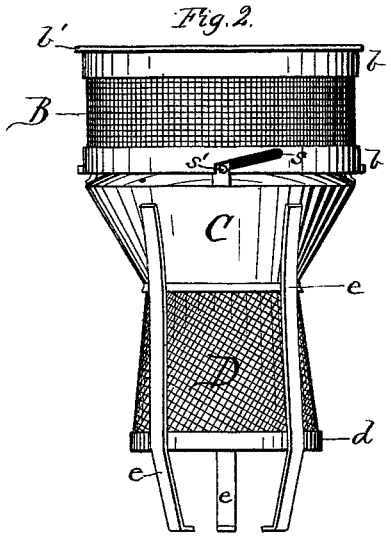


Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

MEINRAD RUMELY, OF LA PORTE, INDIANA.

IMPROVEMENT IN SPARK-ARRESTERS.

Specification forming part of Letters Patent No. **218,643**, dated August 19, 1879; application filed March 17, 1879.

To all whom it may concern:

Be it known that I, MEINRAD RUMELY, of La Porte, in the county of La Porte and State of Indiana, have invented certain Improvements in Spark-Arresters, of which the following is a specification.

The nature of this invention will be fully understood from the following description when considered in connection with the accompanying drawings, forming a part of this specification, and in which drawings—

Figure 1 is a central vertical section of a smoke-stack embodying my improvements, and Fig. 2 is an elevation of the interior parts of the stack, which interior parts I prefer to connect together so they may be lifted out as a unit whenever desired for cleaning or repairs.

In said drawings, A represents the exterior case of a bell-shaped smoke-stack, differing in no essential respect from those in ordinary use, and within which I place the peculiar spark-arresting devices now to be described.

At the top of the stack, and fitting the mouth thereof, is a cylindrical screen, B, strengthened at top and bottom by metal rings *b*. Next below is an inverted imperforate cone-section, C, of the same size at its largest point as the screen above, and with a close rounded cover, or a cover which may be closed when desired.

In practice I provide this cover with a central opening, *c*, and a lid hinged at one side, so that the direct, unobstructed draft may be used when that is expedient, and this cover may be operated by a suitable device from the outside, as is obvious.

The screen B and conic section C may be connected rigidly together with an open space between them, or close and no opening; but I find it desirable to make them adjustable with reference to each other, so that the apparatus may be used with or without the free opening between them. This adjustability I obtain by providing the rim of the screen with helical slots *s*, and the section C with uprights having pins *s'* to work in the slots.

Suspended from the bottom of the conic section is a tapering screen, D, with its largest end at the bottom, and strengthened at that point by a firm metal rim, *d*. The mouth of this screen is in the neighborhood of the smallest diameter of the stack, and hence but a small passage-way is left between it and the stack.

The guards *e e e* fit against the interior of the stack and steady the parts.

This construction avoids the tortuous path generally employed in spark-arresters, and therefore impedes the draft less. At the same time, however, it operates to retard or catch the sparks to such a degree as warrants me in claiming special advantages for it over previous arresters.

If the lid *c* is closed the draft is compelled to seek exit through the screen B or beneath it and above the conic section C. To reach this point of exit the draft must either pass outside the screen D or through it.

The major part naturally enters the screen, and there the sparks are detained or separated from the air and smoke, the latter passing through the screen, while the sparks themselves either find lodgment in the conic section or fall back again into the ascending current and are caught up thereby. In the one case they are caged, and in the other they are so materially retarded that they lose whatever element of danger they first possessed by the time they alight upon the outside.

Such portions of the draft as pass outside the screen D, as well as such as pass through said screen, are deflected by the exterior of the conic section C, so that they are not apt to pass under the screen B, but through it, and here the sparks are again repulsed and disintegrated, many of them shooting off and striking the top of the stack.

The entire structure is suspended within the stack and supported by the turned-over flange *b'* upon the upper screen.

I claim—

1. The spark-arrester consisting of a vertical screen-cylinder at the mouth of the stack, through or under the sides of which the products of combustion must escape, a closed top, hollow deflector of imperforate metal acting as a bottom to said cylinder, and a second screen-cylinder depending from said deflector with its open bottom of such diameter as to catch the greater part of the sparks and direct them to the interior of the deflector, substantially as set forth:

2. The combination, with the screen B, of the

conical imperforate closed top deflector, the top whereof serves as a bottom to said screen and is adjustably connected thereto, substantially as specified.

3. The combination, with a flaring or bell-shaped smoke-stack, of a round screen surmounted by a hollow inverted conic section closed at the top and made of imperforate metal, the screen being substantially coincident in diameter with the smallest part of the stack and with its bottom near such smallest part, whereby the major part of the sparks are caused to enter said screen and cone and be retarded in their exit thereby.

4. The screen B, the imperforate metal conic section C, and the lower screen, D, the part C having a close top with a lid-closed opening therein, all arranged relatively as specified, and combined with a smoke-stack, substantially as set forth.

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Witnesses:

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