

(No Model.)

E. W. SMITH & C. SAX.

SPARK ARRESTER.

No. 480,390.

Patented Aug. 9, 1892.

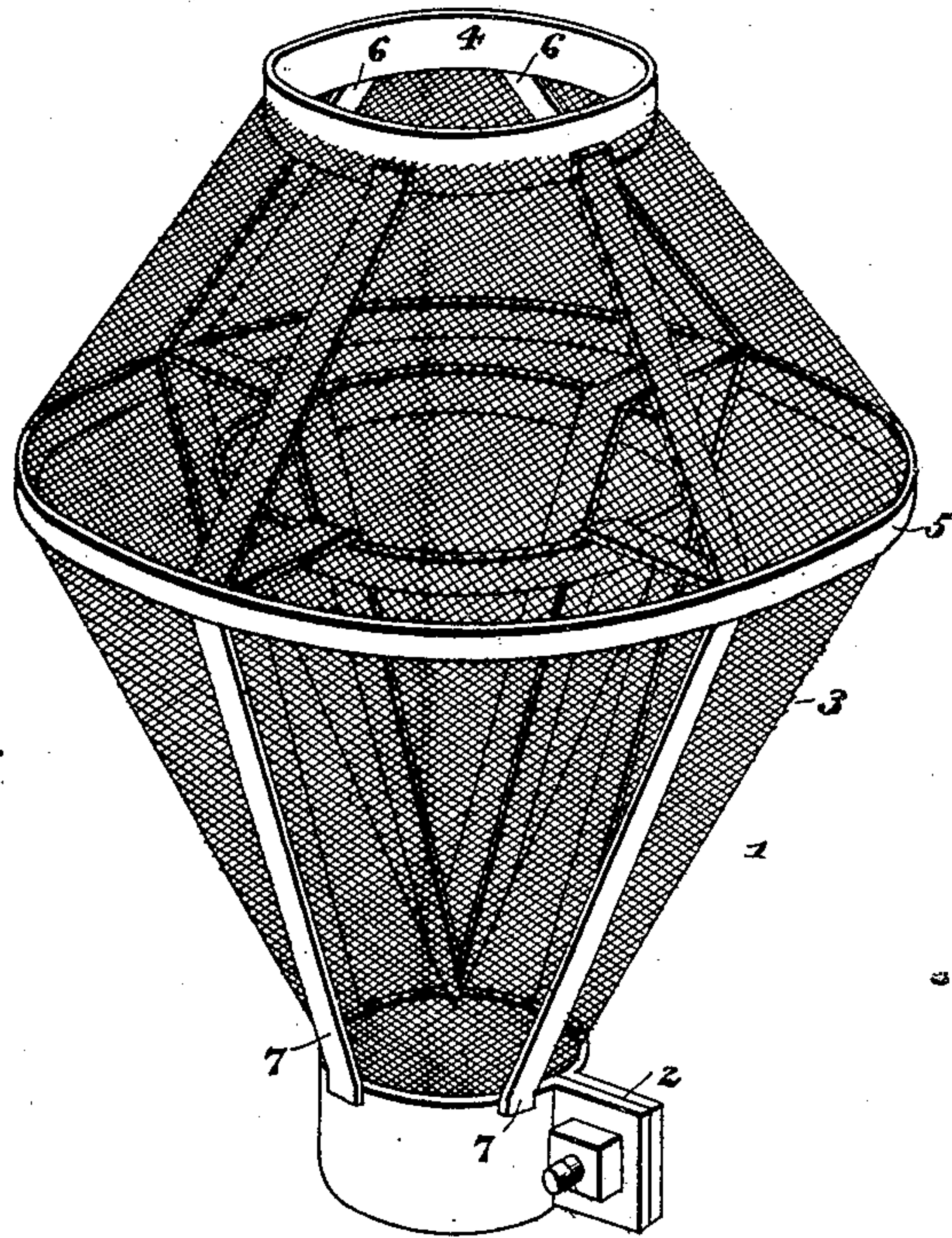


Fig. 1.

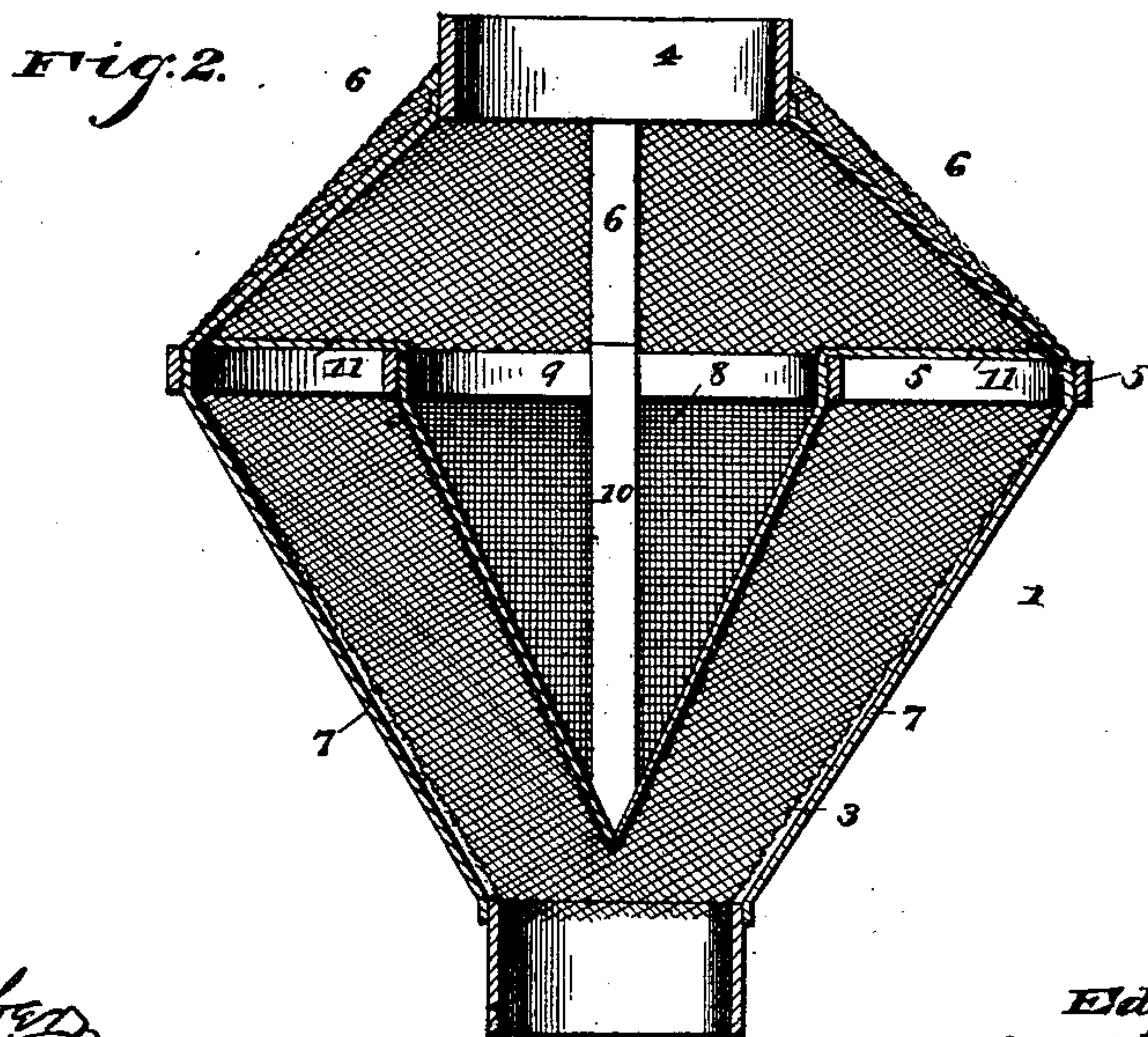


Fig. 2.

Witnesses

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# UNITED STATES PATENT OFFICE.

EDGAR W. SMITH AND CONSTANTINE SAX, OF MORRIS, MINNESOTA.

## SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 480,390, dated August 9, 1892.

Application filed February 3, 1892. Serial No. 420,208. (No model.)

*To all whom it may concern:*

Be it known that we, EDGAR W. SMITH and CONSTANTINE SAX, citizens of the United States, residing at Morris, in the county of Stevens and State of Minnesota, have invented a new and useful Spark-Arrester, of which the following is a specification.

The invention relates to improvements in spark-arresters.

10 The object of the present invention is to simplify and improve the construction of spark-arresters and to provide one which will obstruct and retain sparks sufficiently to extinguish the same, but which will not materially obstruct a straight draft. Heretofore  
15 inverted cones have been arranged within a smoke-stack which deflect the current of exhaust against the walls of the smoke-stack, and it has been found necessary to reduce the  
20 end of the exhaust-pipe to cause the steam to issue with greater force and velocity to overcome the impeded draft caused by a solid cone, and in so doing there will be more or less back-pressure in the cylinder, which will  
25 greatly diminish the strength of the engine. It has also been found that the sparks, after being deflected against the walls of the smoke-stack by the inverted cone, will follow the current upward and pass out the top of the  
30 smoke-stack without it being extinguished, especially with straw-burning engines.

It is also the object of this invention to remedy the above objections, and while the spark-arrester is applicable to all character of  
35 engines it is more particularly designed for that class of engines which use straw as fuel.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated  
40 in the accompanying drawings, and pointed out in the claim hereto appended.

In the drawings, Figure 1 is a perspective view of a spark-arrester constructed in accordance with this invention. Fig. 2 is a central vertical sectional view.

45 Like numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates an outer foraminous casing  
50 having the shape of the enlarged upper or

funnel-shape portion of a smoke-stack and designed to constitute that portion of a smoke-stack and adapted to be attached by a clamp 2 to the cylindrical smoke-stack of an ordinary straw-burning engine. The outer casing, which may form a portion of a smoke-stack or which may be constructed separately and be attached to one, is constructed of wire-gauze 3, which is supported by a frame composed of bands 4 and 5 and ribs 6 and 7, the upper ones 6 connecting the bands and the lower ones 7 extending from the band 5 to the clamp 2.

Arranged within the casing and concentric with the lower portion of the same is an inverted foraminous cone 8, constructed of wire-gauze, which is secured to a conical frame composed of a band 9 and ribs 10, having their lower ends secured together and their upper ends attached to the band 9.

The sparks and exhaust in ascending the smoke-stack will impinge against the inverted foraminous cone, which will retain the sparks, but which will permit the greater portion of the exhaust to pass through it, thereby providing a straight draft. After impinging against the inverted cone the sparks, together with a small portion of the exhaust, will ascend until they strike the casing through which the exhaust passes, thereby holding the sparks against the casing a sufficient time to extinguish them, after which the sparks will gradually drift upward and pass out of the smoke-stack.

The base of the cone is larger than the opening at the top of the casing, so that the sparks in striking the cone will be directed against the casing. The ribs 10 are extended horizontally at their upper ends, and these extensions 11 are secured to the band 5 of the casing, whereby the cone is suspended in proper position.

It will thus be seen that a substantially-straight and unobstructed draft is provided and that the sparks are retained a sufficient length of time to extinguish them, after which they pass out of the smoke-stack.

What we claim is—

A spark-arrester comprising an outer foraminous casing forming the upper portion

of a smoke-stack and consisting of a lower  
conical portion and an upper conical portion  
having a truncated top forming an opening,  
and an inverted foraminous cone supported  
5 within the casing and arranged concentric  
with the lower portion of the same and hav-  
ing its upper end or base of greater diameter  
than the opening of the top of the casing, sub-  
stantially as and for the purpose described.  
10 In testimony that we claim the foregoing as

our own we have hereto affixed our signatures  
in the presence of two witnesses.

EDGAR W. SMITH.  
CONSTANTINE SAX.

Witnesses as to Edgar W. Smith:

R. REES,  
D. HORN.

Witnesses as to Constantine Sax:

GEO. E. DARLING,  
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