

R. BRAYTON, D. JUNE & O. S. FRENCH.  
Spark-Arrester.

No. 167,738.

Patented Sept. 14, 1875.

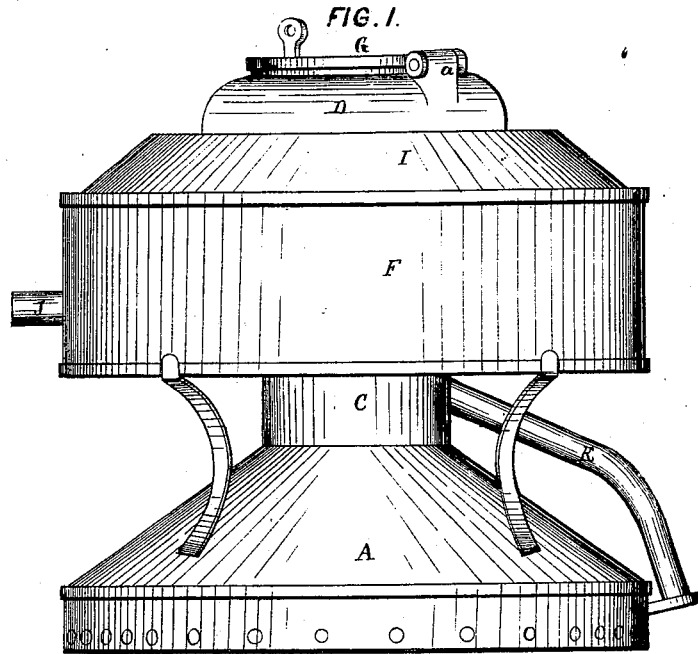
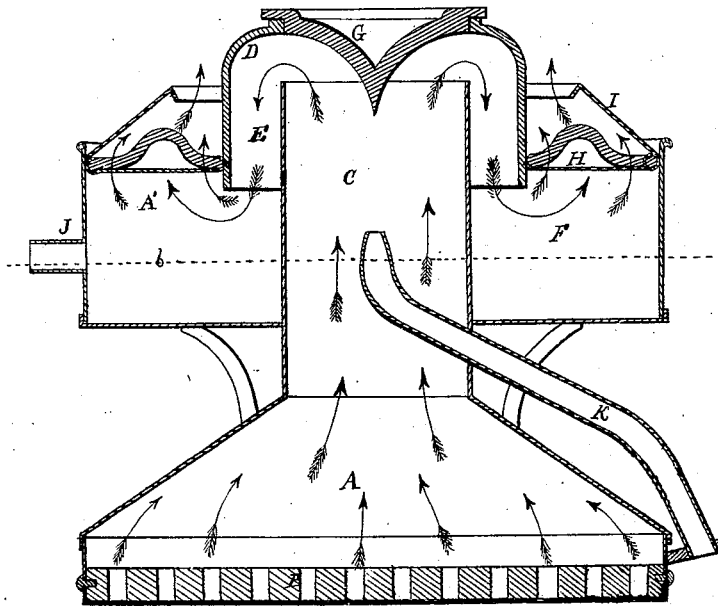


FIG. 2.



WITNESSES.

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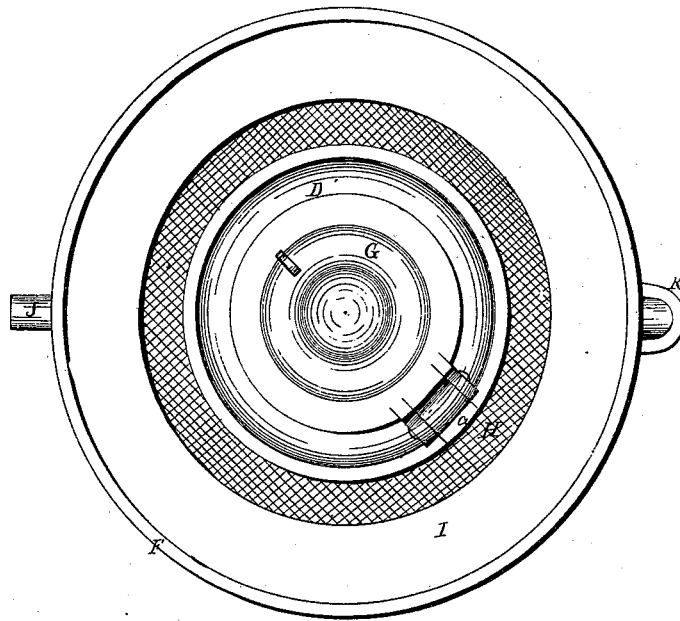
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FIG. 3.



WITNESSES.

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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN SPARK-ARRESTERS.

Specification forming part of Letters Patent No. 167,738, dated September 14, 1875; application filed  
July 13, 1875.

*To all whom it may concern:*

Be it known that we, ROBERT BRAYTON, DAVID JUNE, and ORATUS S. FRENCH, of Fremont, in the county of Sandusky and State of Ohio, have invented a certain new and Improved Spark-Arrester, of which the following is a full, clear, and complete description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a side view of the spark-arrester. Fig. 2 is a transverse vertical section. Fig. 3 is a top view.

Like letters of reference refer to like parts in the several views.

The object of this invention is to arrest sparks in the smoke-stack or chimney of a steam-boiler furnace, and extinguish them in a reservoir of water, whereby is avoided all danger of fire when using the engine for thrashing, or for any purpose where it is necessary to arrest sparks.

The construction and operation of the spark-arrester is substantially as follows:

In the drawing, A represents the base of the spark-arrester, whereby it is attached to the stack of the furnace, of which it may form a part. The under side of the base is covered by a perforated diaphragm, or, in lieu thereof, may be used a piece of wire-cloth. The shape of the base, as will be seen in the drawing, is a truncated cone, terminating in a flue, C. The upper end of the flue is inclosed by a shell, D, Fig. 2, forming between it and the flue an annular space, E, opening at the bottom of the shell into a reservoir, F. It will be observed that the shell extends above the top of the flue C, and arches inwardly, so far as to cover the aforesaid annular space, so that the flue and annular space are in open relation, as will be seen in Fig. 2. In the top of the shell is an opening of the size of the flue, in which is fitted a cover or door, G, hinged to the shell at *a*, Fig. 1. Over the surface of the reservoir is a covering of wire-cloth, H, Fig. 3, above which is a hood or shield, I, the purpose of which will presently be shown. J is an overflow-pipe to prevent the reservoir from being filled with water. K is a pipe, whereby exhaust steam is conducted into the flue C.

The objection urged against using steam-engines for driving thrashing-machines is the danger arising from the sparks from the furnace, they being liable to set fire to the straw about the machine near which the engine must be. To avoid this danger, and to render the use of the engine quite safe, is the purpose of this invention, the practical operation of which is as follows: The spark-arrester is placed on the top of the furnace stack or chimney in the position shown in the drawings. The reservoir is charged with water to the overflow-pipe J. The smoke from the furnace, as it passes up the stack, enters the arrester, passing upward through the flue C, over the end of the same, descending the annular space E into space A' of the reservoir above the water-line *b*, in which water the sparks are deposited, and thereby extinguished, sinking to the bottom of the water, whereas the smoke passes on upward through the wire-cloth H to the outside. The course of the smoke through the arrester is indicated by the arrows.

It will be obvious that, by this means, the sparks cannot escape along with the smoke to the outside of the flue, but are arrested and retained in the reservoir by the wire-cloth, and extinguished by the water, thereby avoiding all danger of using the engine in connection with a thrashing-machine, or other purpose where sparks from the furnace would be dangerous.

The exhaust steam of the engine is conducted into the flue C by the pipe K, the effect of which is to greatly agitate the water in the reservoir, causing it to splash up against and through the wire-cloth, thereby washing it free of sparks, that would otherwise clog up the cloth, and prevent the passage of the smoke.

The use of the hood I is to throw back the spray of the water into the reservoir that may have passed through the cloth.

When the reservoir shall have become so filled with sparks as to leave no room for water, they can be removed therefrom by first taking off the hood and wire-cloth, and thus obtain access to the reservoir for clearing it out.

In the event the engine is used for any purpose or place where the sparks will do no harm,

the hood and wire-cloth may be removed, and the smoke allowed to pass directly through the flue C, in which case the door G must be opened; and, if need be to increase the draft, a length of pipe can be added to the flue C for that purpose.

The height of the hood may be continued above the top of the shell by the addition thereto of a pipe, instead of lengthening out the flue C for the same purpose.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The base A, flue C, shell D, and removable deflecting-cover G, in combination with

the reservoir F, substantially as described, and for the purpose set forth.

2. The herein-described spark-arrester, consisting of the base A, flue C, shell D, door G, wire-cloth H, hood I, exhaust-pipe K, and reservoir F, substantially in the manner as described, and for the purpose set forth.

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Witnesses:

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