

R. BRAYTON, D. JUNE, & O. S. FRENCH.
 SPARK ARRESTER.

No. 190,275.

Patented May 1, 1877.

Fig. 1.

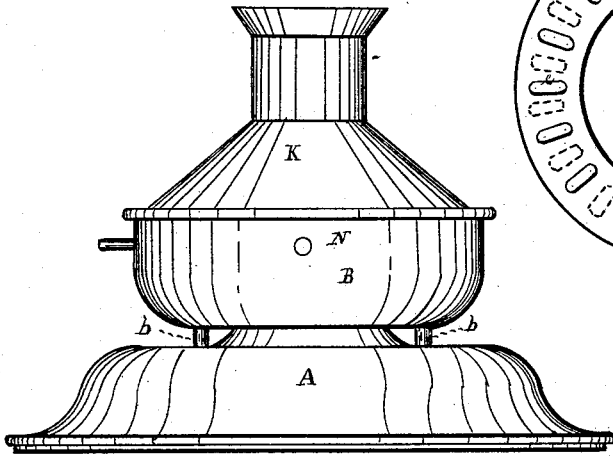


Fig. 2.

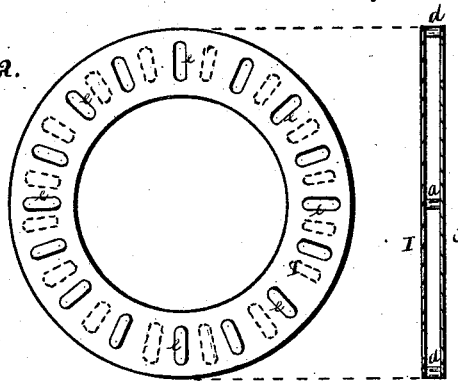


Fig. 3.

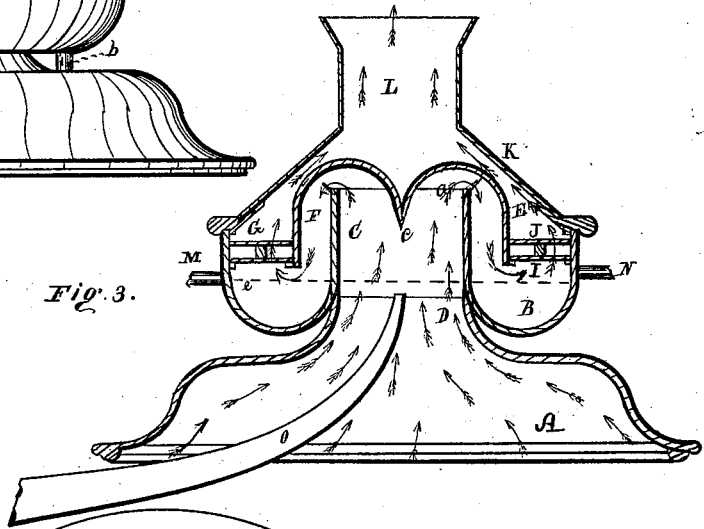
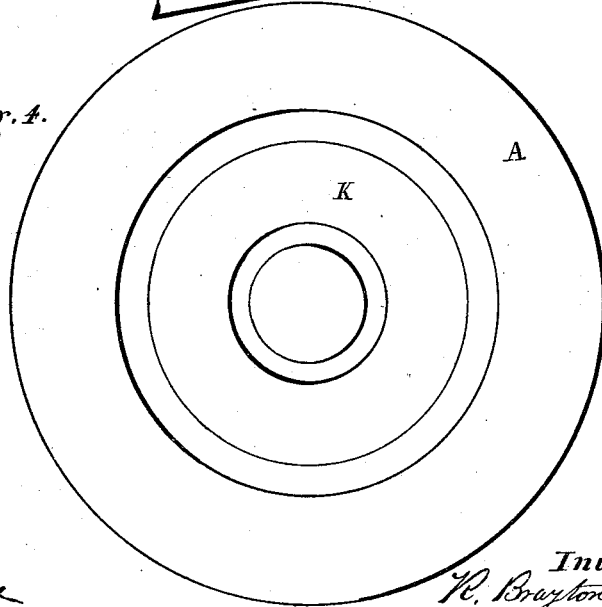


Fig. 4.



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UNITED STATES PATENT OFFICE.

ROBERT BRAYTON, DAVID JUNE, AND ORATUS S. FRENCH, OF FREMONT, OHIO.

IMPROVEMENT IN SPARK-ARRESTERS.

Specification forming part of Letters Patent No. **190,275**, dated May 1, 1876; application filed March 3, 1877.

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; and we do hereby declare that the following is a full, clear, and complete description thereof, reference being had to the accompanying drawings, making a part of the same.

Figure 1 is a side elevation of the spark-arrester. Fig. 2 is a detached section. Fig. 3 is a vertical transverse section. Fig. 4 is a plan view of Fig. 1.

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

This invention is a device to arrest and extinguish sparks in the smoke-stack or chimney of a steam-boiler furnace, and thereby avoid all danger of fire when using a steam-engine for threshing, or for any purpose where live sparks from the stack would be dangerous if allowed to escape therefrom. A full and complete description of the invention is the following:

The spark-arrester referred to consists of a base, A, Fig. 1, whereby it is secured to the top of the smoke-stack of a boiler, and of which it may form a part or cap. The peculiar shape of said base will be seen in Fig. 3. To the top of said base is attached a basin or reservoir, B, surrounding a flue, C, forming a continuation of the opening or passage D of the base, whereby said passage D is carried upward above the rim of the basin terminating at the point *a*, as shown in said Fig. 3. The upper part of the flue is inclosed by a deflector, E, between which and the flue is formed an annular space, F, and above the flue is also a space; hence the end of the flue is not closed, as will be seen in Fig. 3. It will be observed that the basin and the flue C are cast in one piece, and secured to the base by bolts *b*, as shown in Fig. 1. The top of the shell is an inwardly-projecting crown terminating in a point, *c*. Between the deflector E and the sides of the basin is a wide annular space. Said space is covered by a perforated diaphragm, G, consisting of two circular plates, I and J, Fig. 2, arranged in rela-

tion to each other, as shown in said figure, and secured to each other by bolts or rivets *d*, and which are prevented from closing upon each other by collars on the bolts. The perforations in the plates are elongated holes or slots *e*, and the plates are so adjusted that the openings in the one are opposite the blank space between the openings in the other. To the rim of the basin is secured a hood, K, having a central opening, L, corresponding to the capacity of the flue C, and which is the outlet of the spark-arrester—that is to say, it is the end of the smoke-stack. M is an overflow-pipe, and N the induction-pipe used in connection with the basin or reservoir B.

The above-described invention is, as aforesaid, to arrest and extinguish sparks in the stack of a furnace, so that no live sparks can issue therefrom, and set fire to the straw, or other combustable material, in the event the engine is used for thrashing, in which case it must, of necessity, be placed near to such material. Hence, to avoid this possible danger of fire, is the purpose of using the spark-arrester, and which is as follows:

The basin or reservoir B is filled with water up to the line *e'*, Fig. 3, through the induction-pipe N. The smoke, as it passes up through the smoke-stack or smoke-box, on the top of which the spark-arrester is placed, passes upward through the base A, thence into the flue C, the annular space F, and the basin. The sparks commingled with the smoke are deposited in the water, and thereby extinguished, while the smoke continues on through the perforations of the diaphragm or perforated rings I and J, thence upward into the hood K, and escapes therefrom to the outside through the flue L. The course of the smoke, &c., is indicated by the arrows in Fig. 3.

To make the extinguishing of the sparks wholly certain, a jet of steam is conducted into the flue C by a pipe, O, the result of which is to partially extinguish the sparks, and force them with violence into the water, splashing it up into and through the plates I and J; and, furthermore, to facilitate the escape of the smoke by an increase of draft by the impelling force of the inducted steam.

Arranging the perforated plates I and J so that the openings in the one are opposite the blank spaces in the other prevents the sparks from passing with the smoke out of the extinguisher, as such sparks, on passing through the openings of the first plate, will be opposite, and thrown back by, the blank spaces in the plate above.

The above-described spark-arrester is an improvement on a similar invention for which a patent was granted September 14, 1875, to Robert Brayton, David June, and Oratus S. French.

In said patented spark-arrester, the reservoir is not curved at the bottom, whereas the bottom in this new one is. This curvature of the bottom prevents its cracking in casting, and in heating and cooling. The water is more freely agitated by force of exhaust steam in the curved bottom reservoir than in that of the patent, and it is also less expensive to make.

The reservoir in the patented spark-arrester consists of some five or six pieces, which are bolted or riveted together, and the base A and flue are of two pieces, whereas in this new

one all these are made of two pieces only of cast-iron, the reservoir and flue being but one piece, and so also is the base A attached thereto.

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

1. The basin or reservoir B, constructed as shown, and flue C made or cast in one piece, in combination with the base A, substantially as and for the purpose set forth.

2. The base A, consisting of one piece of metal, in combination with the reservoir or basin B, constructed as shown, flue C, and shell E, as herein described, and for the purpose specified.

3. The perforated plates I and J, constructed and arranged in relation to each other, and in combination with the reservoir B, substantially as described, and for the purpose set forth.

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