J. S. Lafitte,

Spark Arrester,

No. 5422. Patented Feb. 1, 1848.

Fig: 1.

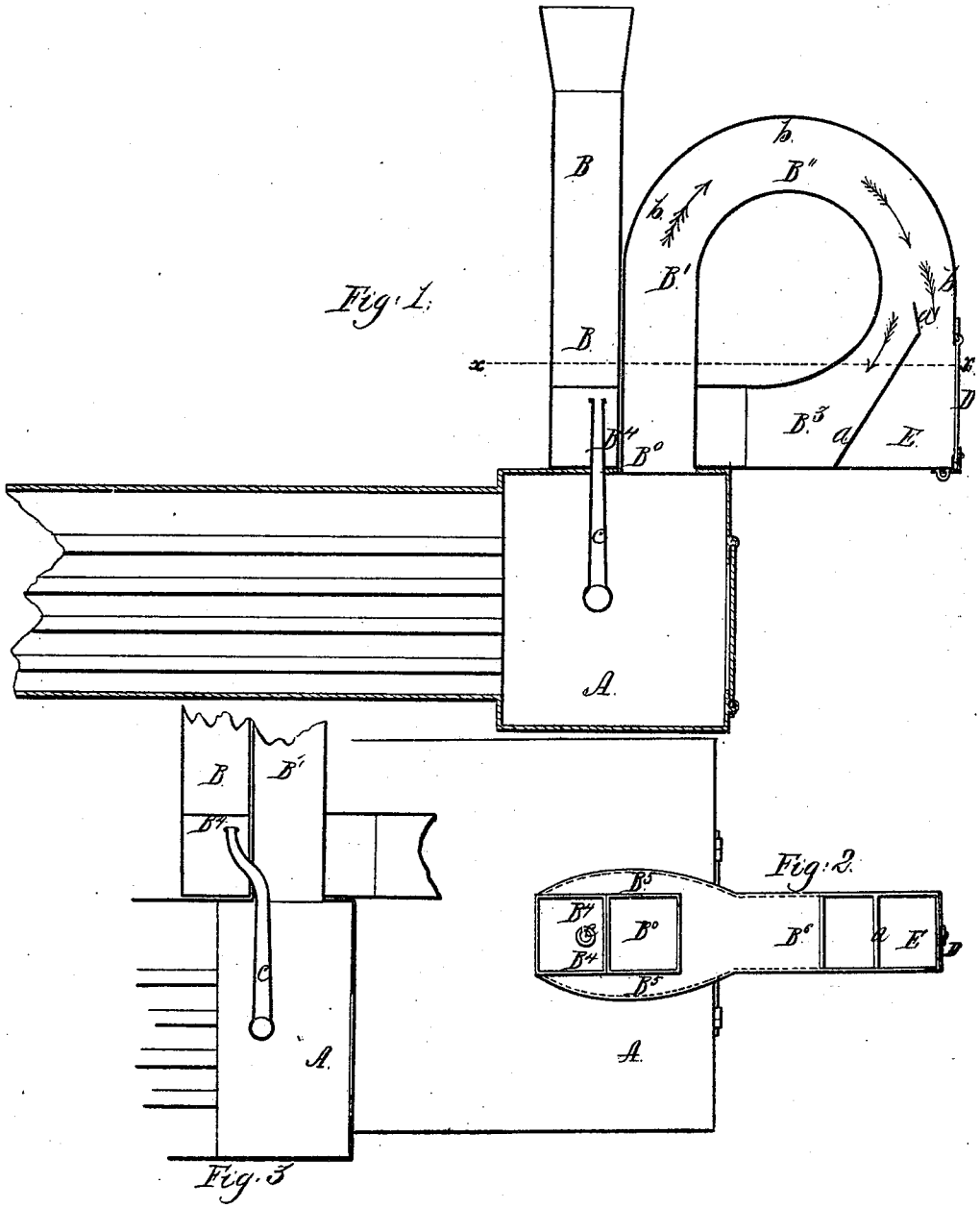


Fig: 2.

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JNO. S. LAFITTE, OF BALTIMORE, MARYLAND.

SPARK-ARRESTER.

Specification of Letters Patent No. 5,422, dated February 1, 1848.

To all whom it may concern:

Be it known that I, JOHN S. LAFITTE, of the city of Baltimore, in the State of Maryland, have made a new and useful improvement in the manner of constructing spark-arresters for the purpose of preventing the escape of sparks from the chimneys of locomotive and other steam engines; and I do hereby declare that the following is a full and exact description thereof.

In the spark arresters as generally constructed, the exhaust steam for increasing the draft, and the smoke and sparks from the smoke box, are both allowed to pass directly into the same vertical chimney, and the upward motion of the sparks is consequently accelerated in the same degree with that of the general draft, and the tendency of the sparks to escape is necessarily increased; a tendency which operates as an antagonistic power to the means which have been adopted for causing them to be deposited in the receptacle provided for that purpose, and unavoidably forces a large portion of them to escape from the chimney with the ordinary draft.

In my manner of forming and arranging the chimney, the escape steam tubes and the receptacle for sparks and cinders, I cause the sparks and cinders to be deposited within a proper receptacle before they reach that part of the chimney into which the escape steam is discharged, and cause the acceleration of the draft to insure their being deposited instead of its operating to augment their escape.

In the accompanying drawing Figure 1, is a vertical section through the chimney, the spark arrester, and the smoke box of a locomotive engine; and Fig. 2, a horizontal section through the chimney and arrester, in the line *x x*, of Fig. 1, showing a plan, or top view, of said section.

A, is the smoke box, and B, B, B, the chimney. The chimney opens into the smoke box at B°, to admit the passage of the heated air smoke, &c., from the fire, and is curved round as represented at B′, B″, B³, and from this the draft enters its vertical part at B⁴. To enable it to do so the chimney is enlarged laterally as shown at B⁵, Fig. 2, passing around the part B°, and entering the lower end of the vertical part at each side thereof, as at B⁴, B⁴, Fig. 2. C, is the waste or escape steam pipe, which enters the vertical part of the chimney from the fire box, in the usual way. The vertical part of the chimney does not open into the fire box at its lower end, its only communication with it being through the curved, and enlarged part of the chimney, as above described.

The receptacle for sparks and cinders E, is formed by means of a partition *a*, *a*, crossing the lower portion of the curved part of the chimney from side to side. This receptacle, it will be manifest may be enlarged at pleasure.

The effect of the arrangement above described will be to cause the sparks which enter the chimney at B, to come into contact with the outer part *b*, *b*, *b*, of the curved portion of the chimney, the centrifugal force given to them in their ascent, rendering their so doing inevitable.

D, is a door through which the sparks and ashes may be discharged when it becomes necessary; this door, if preferred, may be at the bottom of the receptacle.

I have, in the accompanying drawing, represented the escape steam pipe as passing directly up from the smoke box into the vertical part of the chimney, but in adapting the apparatus herein desscribed to locomotive engines already built it may be found necessary, or most convenient, to allow said pipe to pass up into the opening B°, and to curve it over, so as to enter the lower part of the vertical chimney as shown in Fig. 3; this however does not in any way alter the principle on which the action of my apparatus is dependent. To allow of the free escape of the air, or smoke, which may enter the receptacle along with the sparks and cinders, the partition *a*, *a*, may be perforated with fine holes, but so far as experience has been had, this has not been found necessary.

Having thus fully described the manner in which I construct my spark arrester I will here state in connection with what I claim as new therein, what I consider as constituting its peculiar construction.

I am aware that machines somewhat similar to my own have been made the subject of Letters Patent, presenting separately, or in part, some of the features of mine; such, for example as a circular stack which may be seen in some machines, and an exhaust pipe in others, separated in part from the main flue; but this resemblance or similarity does not constitute identity, as each of such spark arresters produces separately re-

sults very different from mine, from the very different principles involved and combined in their respective construction and formations. In this one, and it is believed the only one except mine having a circular flue, its diminutive length, to say nothing of its complicated interior arrangement, renders it impossible to obtain for the draft the advantages presented by the much increased length, and the particular formation of mine, owing to the general principle that the longer the flue the better is the draft. In those machines where the exhaust is separated in part from the smoke stack, the current of air resulting from the vacuum which it creates has to travel through perpendicular tubes, and to overcome right angles which necessarily impairs the draft, while in mine it circulates freely in a circular tube, and in this constant and circular course gets rid of the sparks by the simple and unerring action of the centrifugal force which drives them to the circumference where they become entirely sheltered from the current by the interior partition, or screen. The increased length of the exhaust pipes in some of these machines experience teaches is fatal to the draft, while in mine the exhaust is but a few inches more than usual. It is in view of these defects in former attempts that I have given to my machine the form described in this specification as embracing a combination of principles, or modes of action, under the form in which they are made to act in mine, secures their harmonious operation in arresting the sparks and increasing the draft.

What I claim therefore as constituting my invention, is—

The combining with an open stack or chimney into which an exhaust pipe projects in the manner described, the circular flue and its partition forming the receptacle into which the sparks are driven by centrifugal action; the arrangement and construction of the parts being made in the manner and upon the principle herein set forth.

JNO. S. LAFITTE.

Witnesses:
THOS. P. JONES,
L. WILLIAMS.