J. A. TWEIT.

SPARK ARRESTER.

APPLICATION FILED AUG. 14, 1920.

1,373,466. Patented Apr. 5, 1921.

Fig. 1

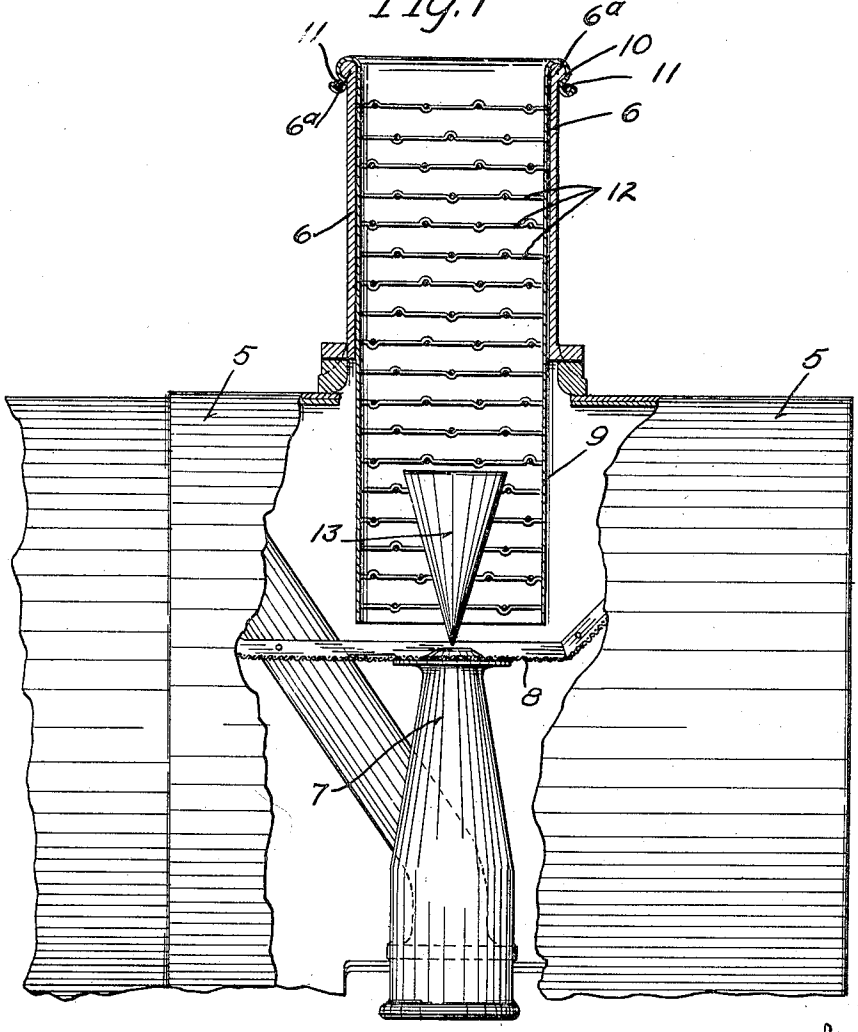


Fig. 3

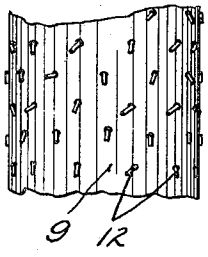


Fig. 2

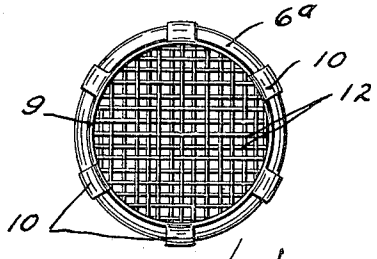
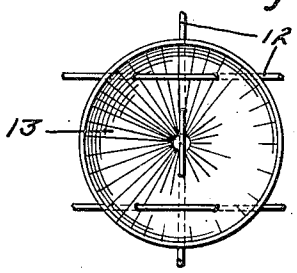


Fig 4



INVENTOR
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BY HIS ATTORNEYS

Williamson & Merchant

UNITED STATES PATENT OFFICE.

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SPARK-ARRESTER.

1,373,466. Specification of Letters Patent. Patented Apr. 5, 1921.

Application filed August 14, 1920. Serial No. 403,597.

To all whom it may concern:

Be it known that I, JOHN A. TWEIT, a citizen of the United States, residing at Appleton, in the county of Swift and State of Minnesota, have invented certain new and useful Improvements in Spark-Arresters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of my invention is to provide an improved spark arrester for locomotives; and to this end my invention consists of the novel devices and combinations of devices hereinafter described and pointed out in the claims.

The invention is illustrated in the accompanying drawings wherein like notations refer to like parts throughout the several views.

Referring to the drawings:

Figure 1 is a side elevation of the smoke box or front end of a locomotive, with some parts broken away, showing my improved spark arrester in working position;

Fig. 2 is a plan view of the stack and the top of the spark arrester;

Fig. 3 is a side elevation of a portion of the shell of my spark arrester; and

Fig. 4 is an enlarged plan view of the deflecting cone detached with its supporting rods.

The numeral 5 represents the front end or smoke box of a locomotive boiler. The locomotive stack 6 has a beaded top 6^a. The numeral 7 indicates the exhaust nozzle of the engine and the numeral 8 is the smoke box netting of a locomotive boiler.

Suspended within the stack 6 is the open ended shell 9 of my arrester. This shell is fastened to the stack by means of out-turned strips 10, integral with the shell 9, said strips engaging the beaded flange 6^a of the stack and bound fast with a wire 11.

Within the shell are inserted a multiplicity of transverse rods 12 crossing each other at right angles. These transverse crossed rods form a series of checkered screens and are so arranged that their meshes are staggered. It is apparent that this staggered arrangement provides more chance of deflection of the escaping sparks.

Suspended within the lower end of the shell directly over the exhaust nozzle 7 with its point concentric and in or near the aperture of said nozzle is an inverted deflecting cone 13, best shown in Fig. 4. Several of the crossed rods pass through said cone and hold it in said position. This cone gives the exhaust steam, as well as the escaping smoke and sparks, a sharp initial deflection, far down in the shell, the importance of which will be explained below.

The said rods 12 extend through staggered perforations in the shell 9 and are secured thereto by turns in their ends as in Fig. 3 or in any other suitable way.

The parts of the spark arrester being of the structure and related as described, the action of my spark arrester is probably obvious. As was said before, the deflecting cone, at the exhaust nozzle deflects the sparks, escaping steam and smoke sharply to the sides of the arrester far down in the shell, and striking the shell, they are again deflected at approximately the same angle. These successive deflections will afford much more frequent contact with the staggered rods, for they considerably lengthen the travel of said sparks within the shell 9. The angular deflection of the escaping steam is a very important one, for its draft, of course, carries all unconsumed sparks with it, in its crooked course, so that before reaching the mouth of the stack, every spark will have hit several rods and also the sides of the shell and so have been impeded until completely consumed.

It will, of course, be understood that details may be varied without departure from the spirit of my invention.

In my considerable experience in railroad work, I have not seen in use any spark arrester which was adequate to prevent the escape of sparks from locomotives in the western part of the United States where lignite or soft coal is employed. On the contrary, serious fires have resulted.

My improved spark arrester here disclosed will prevent the escape of any sparks from locomotives in my judgment.

What I claim is:

1. In a locomotive comprising a smoke box and an exhaust nozzle, a spark arrester having in combination an open-ended shell supported to extend into the smoke box and longitudinally alined with the exhaust nozzle, and an inverted deflecting cone in said shell disposed directly over the exhaust noz-

zle, said shell having a series of transverse cross rods disposed therein in parallel planes throughout the length thereof.

2. In a locomotive comprising a smoke box and an exhaust nozzle therein, a spark arrester having in combination an inverted deflecting cone alined with and disposed directly over the exhaust nozzle supported and surrounded by an open-ended shell having a series of transverse cross rods therein arranged to afford staggered meshes in the path of the exhaust steam and escaping smoke and sparks.

3. In a locomotive comprising a smoke box and an exhaust nozzle therein, a spark arrester, having in combination with an open ended shell supported to extend into the smoke box, an inverted deflecting cone within said shell directly over the exhaust nozzle and a series of transverse crossed rods arranged in parallel planes and disposed to afford staggered meshes in the path of the exhaust steam and escaping sparks and smoke.

4. In a locomotive spark arrester for a locomotive comprising a smoke box and exhaust nozzle therein and a stack in alinement with said exhaust nozzle, the combination with an open ended shell supported to extend into the smoke box from the stack with its lower end near the exhaust nozzle, said shell being supported by said stack; of a series of transverse crossed rods arranged throughout the length thereof with their extremities fastened to the shell and disposed in parallel planes, arranged to afford staggered meshes in the path of the exhaust steam and escaping sparks and smoke, and an inverted deflecting cone supported and secured in position directly over the exhaust nozzle by several of the lower rods which pass through said cone.

5. In a locomotive comprising a smoke box and an exhaust nozzle and a stack in alinement with said exhaust nozzle, a spark arresting device having in combination an open-ended shell supported in said stack and extending downwardly into the smoke box adjacent to the exhaust nozzle, parallel layers of transverse rods extending at right angles to each other carried by said shell, the rods in various layers being arranged to afford a staggered mesh, and an inverted cone supported in the lower end of said shell directly over said exhaust nozzle.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN A. TWEIT.

Witnesses:
FRANK WAN,
A. S. PERSEN.