

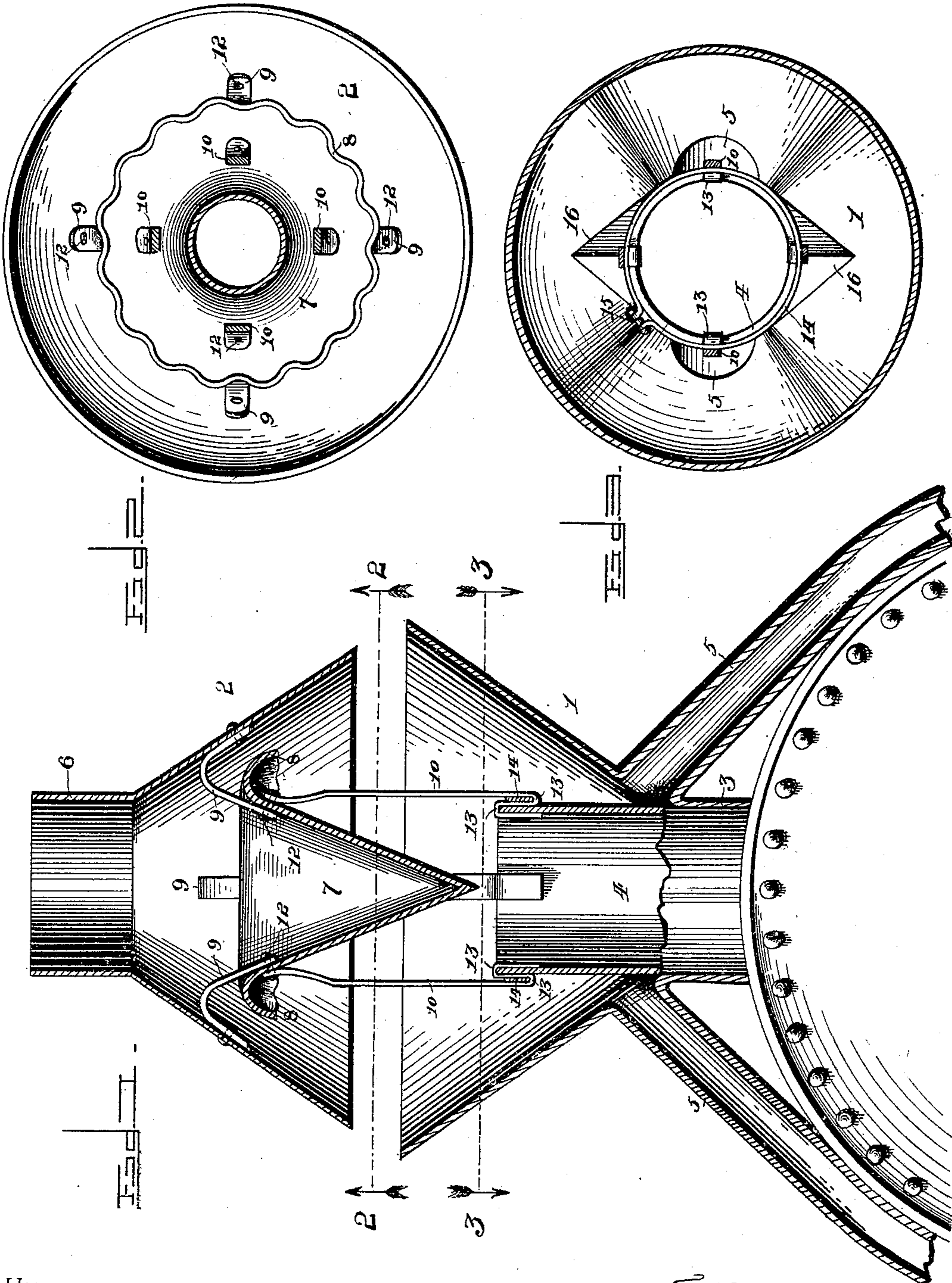
No. 641,593.

Patented Jan. 16, 1900.

J. W. HARRELSON.  
SPARK ARRESTER.

(Application filed Nov. 17, 1899.)

(No Model.)



Witnesses

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# UNITED STATES PATENT OFFICE.

JAMES WEST HARRELSON, OF BELTON, MISSOURI.

## SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 641,593, dated January 16, 1900.

Application filed November 17, 1899. Serial No. 737,363. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES WEST HARRELSON, a citizen of the United States, residing at Belton, in the county of Cass and State of Missouri, 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 improve the construction of spark-arresters and to provide a simple and comparatively inexpensive one adapted to be readily applied to the smoke-stack of a locomotive and capable of effectually preventing the sparks from passing out at the top of the stack and being thrown into the air.

A further object of the invention is to provide a device of this character which will not interfere with the draft of a locomotive and which will discharge the cinders at opposite sides of the same along the road-bed.

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

In the drawings, Figure 1 is a transverse sectional view of a spark-arrester constructed in accordance with this invention and shown applied to the smoke-stack of a locomotive. Fig. 2 is a horizontal sectional view on line 2 2 of Fig. 1. Fig. 3 is a similar view on line 3 3 of Fig. 1.

35 Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates a lower tapering section of a casing, which is also provided with a reversely-arranged tapering upper portion 2, spaced from the upper edges of the lower portion, as clearly illustrated in Fig. 1 of the accompanying drawings. The lower tapering or conical portion 1 is provided with a depending cylindrical extension 3, which fits around a smoke-stack 4, as clearly shown in Fig. 1, and it may be secured to the stack in any suitable manner. The smoke-stack extends upward into the tapering lower portion of the casing, and the sparks and cinders, which are deflected back or downward on the exterior of the smoke-stack, are discharged

at opposite sides of the locomotive by depending tubes or pipes 5, communicating at their upper ends with the annular space between the outer face of the stack and the adjacent portion of the lower section 1. Instead of discharging the cinders at the sides of the locomotive, the pipes 5 may be extended rearward to the fire-box, so that the fuel will be entirely consumed and a large amount thereby saved. The upper section, which tapers toward its top, is provided with a cylindrical extension 6, and it is secured to an inverted conical deflector 7, arranged within the casing centrally of the stack at a point directly above the latter. The top of the conical deflector is curved outward and downward to form an annular deflecting-flange 8, which is corrugated at its periphery. The upper section 2 is secured to the conical deflector by substantially V-shaped braces or bars 9, having their inner portions secured to the inner face of the conical deflector and extending upward therefrom. The outer portions of the bars or braces extend along the inner faces of the upper section of the casing and are rearwardly or otherwise secured thereto.

The conical deflector is supported by approximately vertical rods 10, secured at their upper ends to the exterior of the conical deflector by the fastening devices 12, which secure the bars or braces 9 to the deflector. The lower ends of the rods are provided with double U-shaped bends 13, forming outer hooks and inner loops. The outer hooks engage over the upper edge of the stack and the inner loops receive and support a clamping-ring 14, extending around the exterior of the stack and provided with a suitable adjusting device 15. The adjusting device consists of a bolt provided with a nut and extending through perforations of outwardly-bent ends, of which the clamping-ring is constructed. By this construction the rods are securely fastened to the top of a smoke-stack and may be readily removed therefrom when it is desired.

The smoke and products of combustion discharged from the smoke-stack impinge against the exterior of the conical deflector and the sparks are thereby extinguished and caused to fall into the lower portion of the casing, which directs them into the depending pipes

or tubes. The smoke escapes through the opening between the upper and lower sections of the casing and also from the top of the same.

5 It will be seen that the spark-arrester is exceedingly simple and inexpensive in construction, that it is adapted to be readily applied to the smoke-stack of a locomotive, and that it is capable of extinguishing the sparks  
10 and of discharging the same at opposite sides of a locomotive or conducting them back to the fire-box, so that any unconsumed fuel will be completely utilized, whereby a great saving will be effected. Furthermore, it will be  
15 clear that the smoke is permitted to escape freely from the casing at the top and center thereof, and that the device will not interfere with the draft of a locomotive.

In order to cause the cinders accumulating  
20 in the annular space surrounding the stack to pass downward through the discharge-tubes and to prevent them from remaining within the lower section of the outer casing, the latter is provided with oppositely-inclined plates  
25 16, located centrally between the upper portions of the discharge-tubes and tapered to conform to the configuration of the annular space. These oppositely-tapered plates incline downward toward the upper ends of the  
30 tubes and cause the sparks and cinders to be discharged into the same.

What is claimed is—

1. A spark-arrester comprising a lower tapering section designed to be mounted on a  
35 smoke-stack, an upper section spaced from the adjacent edges of the lower section to form

an opening, and provided at its top with an opening, and a conical deflector located above the smoke-stack, connected therewith and supporting the upper section of the casing, substantially as described. 40

2. A spark-arrester comprising a casing having upper and lower sections spaced apart, the lower section being mounted on a smoke-stack, a conical deflector supporting the upper  
45 section of the casing and located centrally of the stack at a point above the same, rods depending from the conical deflector and provided at their lower ends with double U-shaped bends forming outer hooks and inner  
50 loops, the outer hooks engaging the stack, and a clamping-ring supported in the inner loops, substantially as described.

3. A spark-arrester comprising the lower tapering section of the casing designed to surround a stack and provided with depending  
55 tubes, an upper tapering section spaced from the lower section, a conical deflector provided at its top with a corrugated flange, the substantially V-shaped braces or bars secured to  
60 the upper section of the casing and to the conical deflector, and rods depending from the conical deflector and provided with means for engaging a stack, substantially as described. 65

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JAMES WEST HARRELSON.

Witnesses:

LESLIE M. CROUCH,  
JAS. M. HOUSTON.