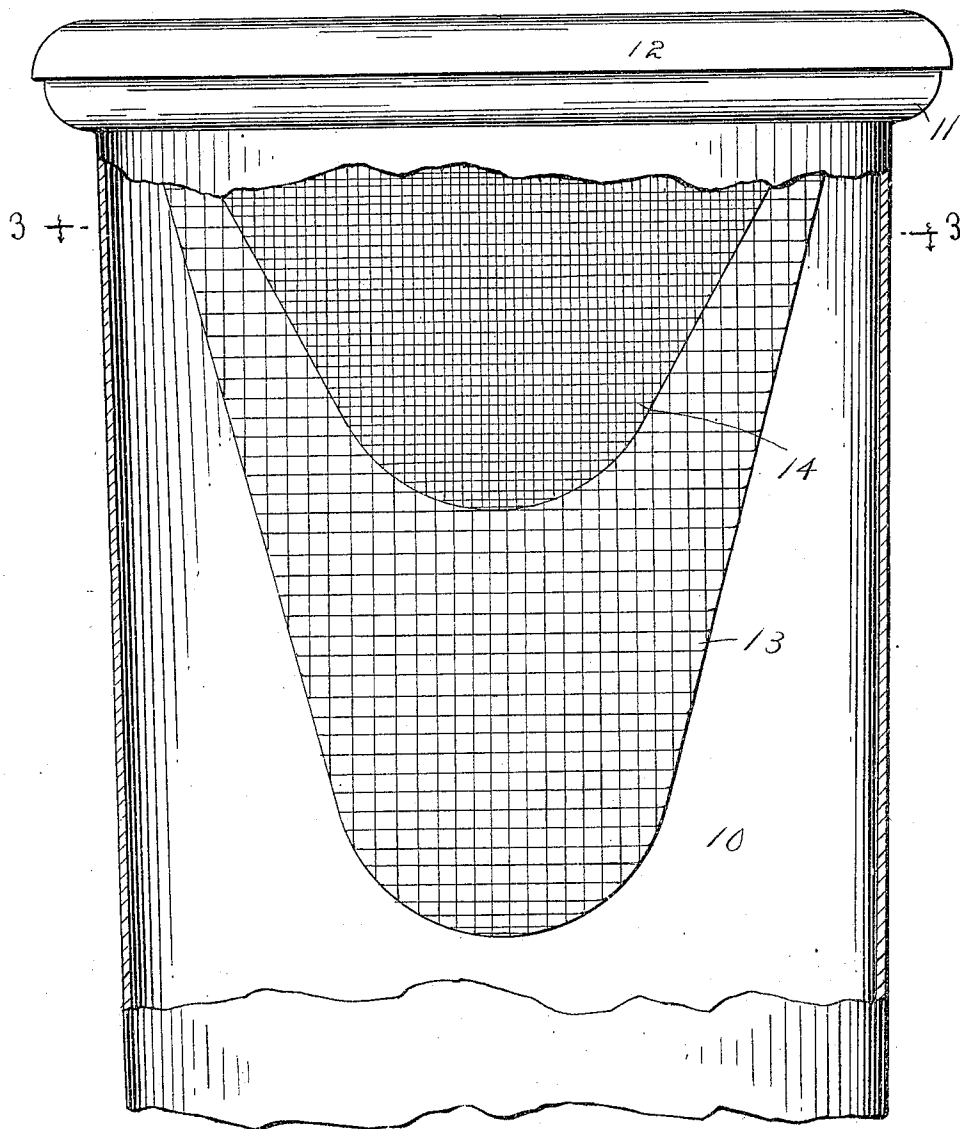


G. G. STOUN.
SPARK ARRESTER.
APPLICATION FILED JULY 16, 1908.

960,430.

Patented June 7, 1910.
2 SHEETS—SHEET 1.

Fig. 1.



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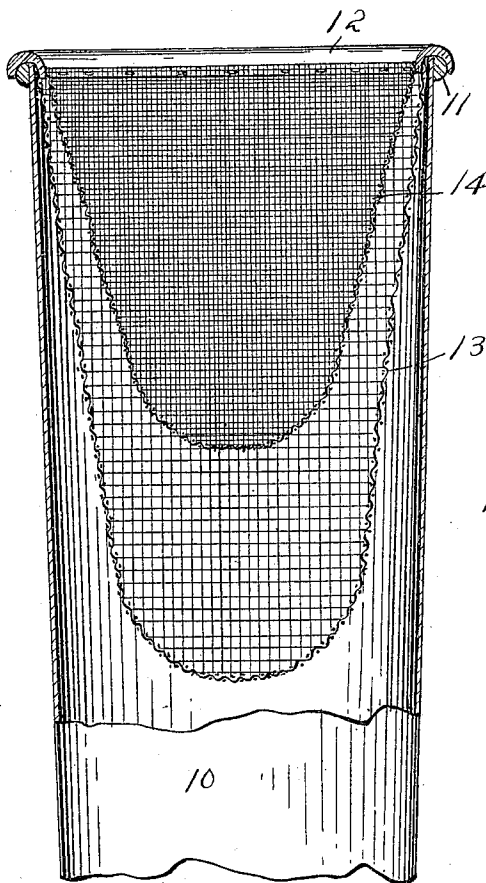


Fig. 2.

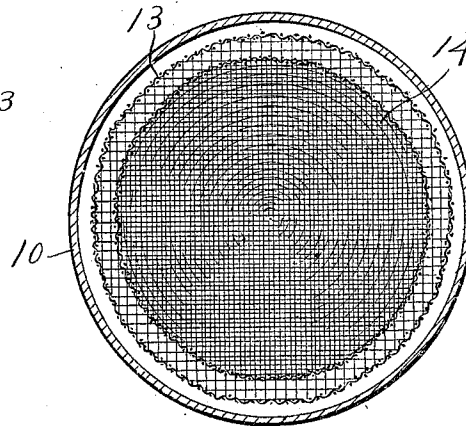


Fig. 3.

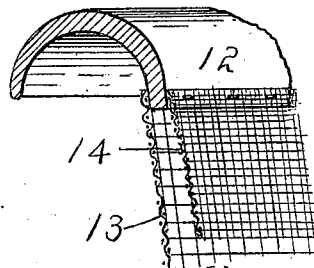


Fig. 4.

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UNITED STATES PATENT OFFICE.

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SPARK-ARRESTER.

960,430.

Specification of Letters Patent.

Patented June 7, 1910.

Application filed July 16, 1908. Serial No. 443,825.

To all whom it may concern:

Be it known that I, GEORGE G. STOUP, a citizen of the United States, residing at Latrobe, in the county of Westmoreland, State of Pennsylvania, 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.

This invention relates to spark arrester attachments for smoke stacks, and has for one of its objects to provide a simply constructed device of this character readily attachable to any size of smoke stack and operating effectually to prevent the escape of sparks, cinders and the like, while at the same time not interfering with the free passage of the smoke, gases and similar products of the combustion.

Another object of the invention is to provide a device of this character which will effect the separation of the larger particles from the smaller particles and thus more effectually produce the desired results without interfering with the ordinary operation of the stack.

Another object of the invention is to provide a simply constructed device of this character which may be readily attached and detached to adapt the device to stacks of various sizes without material structural changes in the device.

With these and other objects in view the invention consists in an annular member adapted to bear upon the upper edge of the stack and provided with two inverted conical shaped screen devices of different sizes of mesh, the screen device having the larger mesh being the lowest and receiving the first impact of the rising products of the combustion and permitting the smaller particles to pass, while the finer screen device is spaced above the coarser screen device and receives the material which passes through the coarser screen device, and thus effects a separation between the finer and the coarser particles and correspondingly increases the efficiency of the operation.

The invention further consists in certain novel features of construction as hereafter shown and described and then specifically pointed out in the claim, and in the drawings illustrating the preferred embodiment of the invention.

Figure 1 is an enlarged side elevation of a smoke stack partly in section with the improved device applied thereto in elevation. Fig. 2 is a vertical sectional elevation of a smoke stack with the improved device applied, the latter being partly in section. Fig. 3 is a section on the line 3—3 of Fig. 1. Fig. 4 is an enlarged sectional detail illustrating the manner of connecting the screen device to the annular supporting member.

The improved device may be applied to any form of smoke stack, but is more particularly designed for use in connection with the smoke stacks of locomotives and for the purpose of illustration is shown thus applied, the upper portion of a conventional locomotive smoke stack being represented at 10 with the usual rounded rim 11 at the other end.

The improved device comprises an annular member 12, preferably of aluminum or other non-corrosive metal and with a concaved under surface to bear over the rim 11 and closely engage the same.

Depending from the inner edge of the annular member 12 are two screen devices represented at 13—14, the screen device 13 being in relatively elongated inverted conical form and the screen device 14 being also of inverted conical form, but of less length than the screen device 13, so that when connected to the annular member the two screen devices are spaced apart as shown. The mesh of the screen device 13 is coarser than that of the screen device 14 and in practice the meshes of the outer screen device are about one-fourth of an inch in diameter and the meshes of the inner screen device are about one-eighth of an inch in diameter, these dimensions having been found by experiment to accomplish the best results when applied to a locomotive smoke stack, but it will be understood that it is not desired to limit the invention to any specific size of the mesh of the screen devices as these may be varied to suit various circumstances. The lower ends of the screen devices are rounded as shown, and the screens will preferably be produced by pressing a sheet of the screen material by suitable dies or other means into the required shape. The screens will preferably be of aluminum which by its non-corrosive qualities and strength meets the required conditions for a device of this kind which is exposed to both heat and dampness as well as tensile strains produced by the

fierce currents of air driven through the smoke stack from the exhaust from the engines which carries with it the particles of the products of combustion.

5 By arranging the screen devices in the conical form shown they are disposed in the best position and arrangement to resist the strains to which they will be subjected.

By connecting the screen devices to the annular rim 12 the whole device may be readily attached to and detached from the stack and removed when required for the purpose of removing the accumulated particles of cinders and soot, and to this end 10 the inner screen device 14 will be attached to the outer face of the annular member while the screen device 13 will be attached to the inner face, so that the screen device 14 may be readily detached when it is required to remove the accumulated cinders which have been gathered between the screens. The inner screen is thus spaced 15 away from the outer screen a distance equal to the thickness of the inner wall of the member 12, thereby effectually preventing the clogging of the screens. By this arrangement it will be noted that the side walls of the outer coarser mesh screen 13 are inclined slightly to the longitudinal 20 plane of the stack, while the inner shorter finer mesh screen 14 is inclined at a greater angle to the longitudinal plane of the stack, so that the space between the screens increases in area downwardly. By this means 35 none of the material passing through the coarser mesh screen will lodge between the two screens, but will fall into the outer screen, as will be obvious. This is an important feature of the invention and adds 40 materially to its utility and efficiency.

Another important advantage of the con-

struction illustrated is found in the fact that the two pockets or receptacles formed by the screens 13—14 receive the material and retain it in convenient shape for removal, and 45 prevent it from falling into the stack.

Any suitable means may be employed for detachably supporting the member 12 upon the stack, but it is not deemed necessary to illustrate these fastening devices, as they 50 do not form a part of the present invention.

The improved device is simple in construction, can be inexpensively manufactured and readily applied to stacks of varying forms and constructions and to stacks of different 55 diameters.

What is claimed, is:—

In combination with a smoke stack, the herein described spark arrester comprising a cross-sectionally concavo-convex annulus 60 disposed with its concave side lowermost and on the upper end of the stack so that the outer wall of the annulus is without and the inner wall thereof is within the stack, a pair of inverted conical screens, concentrically 65 disposed, each open at its upper end and otherwise closed from end to end, the inner screen being smaller both diametrically and longitudinally and being also of smaller mesh than the outer screen and having its 70 open, upper end secured to the inner side of the inner wall of said annulus, the said outer, larger screen having its open upper end secured to the outer side of the inner wall of said annulus and spaced by said 75 inner wall from the inner screen.

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

GEORGE G. STOUP.

Witnesses:

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JOSEPH G. MILLER.