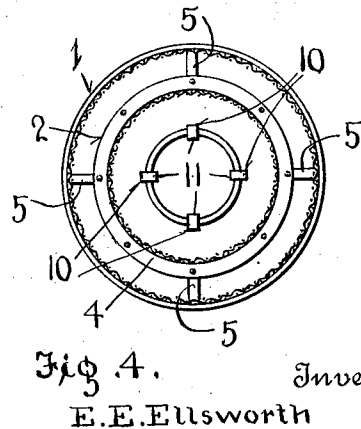
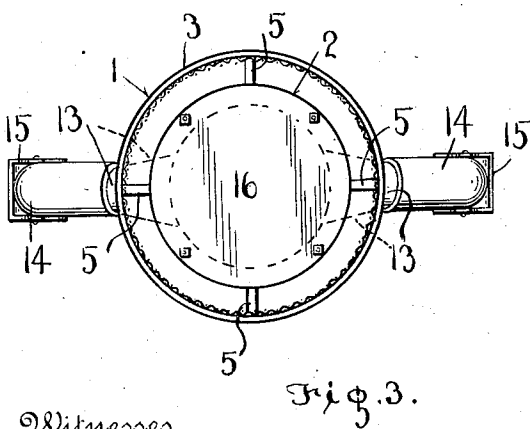
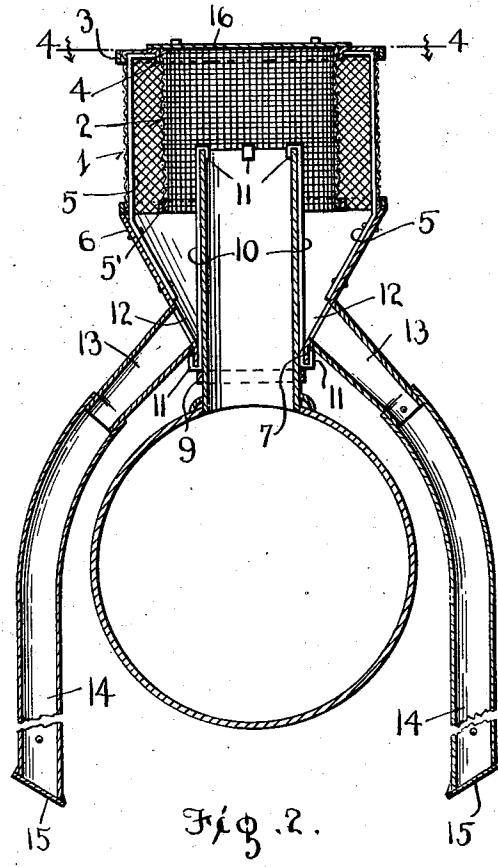
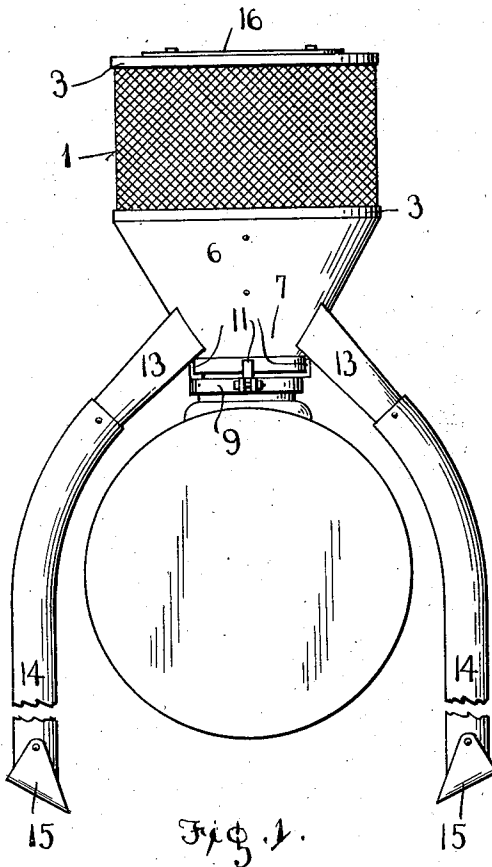


E. E. ELLSWORTH.
SPARK ARRESTER.
APPLICATION FILED JULY 17, 1911.

1,028,450.

Patented June 4, 1912.

2 SHEETS-SHEET 1.



Witnesses

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W. M. Somers

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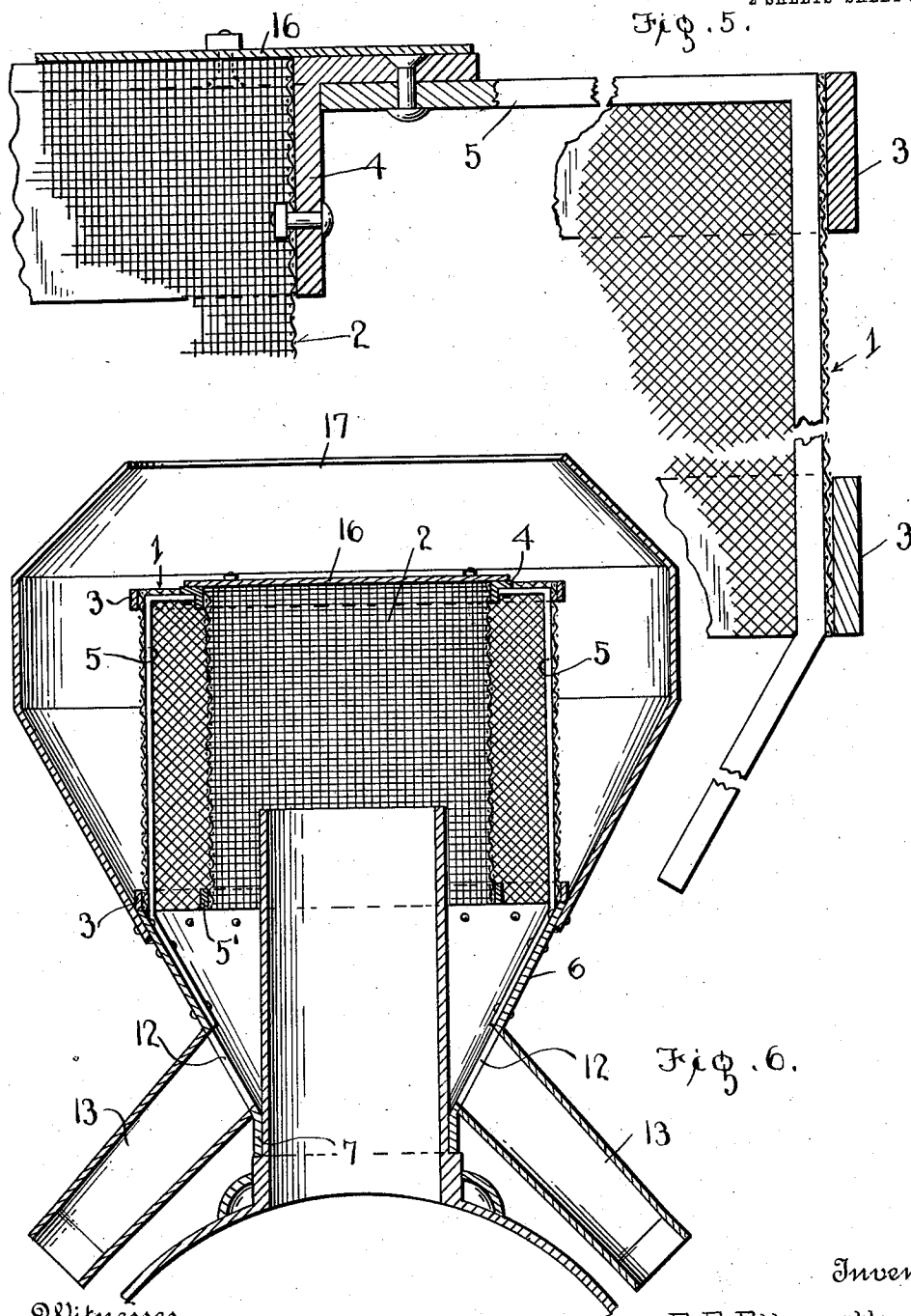
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UNITED STATES PATENT OFFICE.

ELMER E. ELLSWORTH, OF PALMER, OREGON, ASSIGNOR TO ELLSWORTH SPARK ARRESTER COMPANY, A CORPORATION OF OREGON.

SPARK-ARRESTER.

1,028,450.

Specification of Letters Patent.

Patented June 4, 1912.

Application filed July 17, 1911. Serial No. 638,925.

To all whom it may concern:

Be it known that I, ELMER E. ELLSWORTH, a citizen of the United States, residing at Palmer, in the county of Multnomah and State of Oregon, have invented certain new and useful Improvements in Spark-Arresters; and I do 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 improvements in spark arresters for smoke stacks.

One object of the invention is to provide a spark arrester which may be applied to any form of smoke stack and which is particularly adapted for use in connection with straight stacks whereby the sparks and cinders passing from the stack will be caught and retained and may be discharged when desired while the smoke and other products of combustion will be permitted to pass freely through the arrester.

Another object is to provide a hood or casing adapted to be applied to the arrester to direct the smoke upwardly and thus prevent the same from blowing back into the cab of the locomotive.

With these and other objects in view, the invention consists of certain novel features of construction, and the combination and arrangement of parts as will be more fully described and claimed.

In the accompanying drawings; Figure 1 is a side view of my improved spark arrester showing the same applied to a straight smoke stack; Fig. 2 is a central vertical longitudinal section of the same; Fig. 3 is a top plan view thereof; Fig. 4 is a horizontal sectional view on the line 4-4 of Fig. 2; Fig. 5 is an enlarged detail vertical section through the upper portion of one side of the arrester showing more clearly the construction and arrangement of the parts; Fig. 6 is a central vertical sectional view showing the arrester provided with a hood or casing.

My improved spark arrester comprises an outer cylinder 1 and an inner cylinder 2 formed of wire netting having a mesh of sufficient fineness to prevent the passage of cinders or sparks therethrough. The cylinders 1 and 2 are spaced a suitable distance apart as shown. The outer netting cylinder 1 is provided at its upper and

lower ends with annular bands 3 which form a binding for and brace the edges of the cylinder. The upper edge of the inner cylinder 2 is bolted or otherwise secured to an annular angle iron ring 4 which is riveted or otherwise rigidly secured to the inner ends of a series of radially projecting right angular bracing and supporting bars 5, the lower ends of which are bent inwardly at an angle as shown. The outer vertical portions of the supporting bars 5 engage the inner sides of the outer cylinder 1 and are riveted or otherwise secured thereto and to the bands 3 of the cylinder. The lower end of the inner cylinder 2 is provided with an annular binding ring or band 5' which is riveted or otherwise secured thereto as shown.

Secured to the lower end and band 3 of the outer cylinder 1 and the lower angular ends of the supporting bars 5 is a funnel shaped hopper 6 which forms the base portion of the arrester and receives the sparks and cinders which are caught by the wire netting cylinders. The lower end of the hopper or base 6 is provided with an annular collar 7 which is adapted to engage the stack. When the arrester is engaged with a straight stack, I provide a supporting band 9 which is clamped around the stack at a suitable position to receive the collar 7 when engaged with the stack thus supporting the arrester in position. In addition to the supporting band 9, I also preferably provide a series of hangers 10 having their upper and lower ends bent to form oppositely disposed hooks 11 which are engaged with the upper end of the stack and the lower edge of the collar 7 as shown. At diametrically opposite points in the sides of the hopper or base 6 of the arrester are formed spark discharging openings 12 with which are connected tapered or funnel shaped discharge spouts 13 to the outer ends of which are connected the upper ends of spark and cinder receiving tubes 14 which extend downwardly on opposite sides of the smoke box or front end of the locomotive or engine boiler as far as may be desired. The lower ends of the tubes 14 are closed by a suitable valve or gate 15 whereby the cinders may be retained in the tubes and discharged therefrom when desired.

Adapted to be bolted or otherwise removably secured to the angle iron ring 4 of the

inner cylinder 2 is a top or closing plate 16 which may be formed of wire netting or may be constructed in the form of a sheet metal plate as shown. By removably securing the plate in place over the upper end of the inner cylinder 2, said plate may be removed in wet weather or at such seasons when there is no danger of fires being started from the sparks or live cinders discharged from the stack.

In Fig. 6 of the drawings the arrester is shown as being provided with a hood or casing 17, the lower portion of which is adapted to be secured to the upper end of the base or hopper portion 6 of the arrester and forms practically a continuation of said base portion. The upper portion of the hood or casing converges inwardly or is contracted as shown to form a discharge opening corresponding in size to the diameter of the outer wire netting cylinder 1. The hood or casing 17 is employed when the arrester is used on locomotive stacks and is intended to carry the smoke upwardly and to discharge the same above the cab thus preventing the smoke from blowing back into the latter. The hood or casing 17 is herein shown and described as being attached to the hopper or base portion 6 of the arrester. It is obvious, however that if desired the lower portion of the hood or casing may be extended down to form the base portion or hopper of the arrester, said hood or casing in this case practically forming a diamond shaped outer stack.

While I have herein shown and described the arrester as being applied to a straight stack it is obvious that the same may be readily applied to diamond shaped or other forms of stacks and when employed in connection with diamond stacks the latter may form part of the cinder receiving hopper.

From the foregoing description taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the

principle or sacrificing any of the advantages of the invention claimed.

Having thus described my invention, what I claim is:

1. A spark arrester comprising an outer wire netting cylinder, binding bands secured to the upper and lower edges of said cylinder, a wire netting cylinder arranged within and spaced from said outer cylinder, an angle iron ring secured to the upper edge of said inner cylinder, a binding band secured to the lower edge thereof, radially disposed right angular bracing and supporting bars secured to said angle iron ring and to the sides of said outer cylinder, a funnel shaped hopper secured at its upper edges to the lower ends of said supporting bars and to the lower end of said outer cylinder, means to support said arrester on a smoke stack, and means to receive the sparks and cinders caught by said cylinders and hopper of the arrester.

2. A spark arrester comprising an outer wire netting cylinder and a wire netting cylinder arranged within and spaced from said outer cylinder, a cover plate removably secured to the upper end of said inner cylinder, a hopper secured to the lower end of said outer cylinder, a stack engaging collar arranged on the lower end of said hopper, a supporting band adapted to be engaged with the stack to form a support for the arrester, hanger bars adapted to be engaged with the stack and lower end of the arrester to form additional supports for the latter, spark and cinder receiving spouts connected with said hopper, spark and cinder receiving tubes connected with said spouts, and means to close the lower ends of said tubes whereby the sparks and cinders may be retained therein and discharged when desired.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ELMER E. ELLSWORTH.

Witnesses:

C. DARBEE,
HAROLD FARROW.