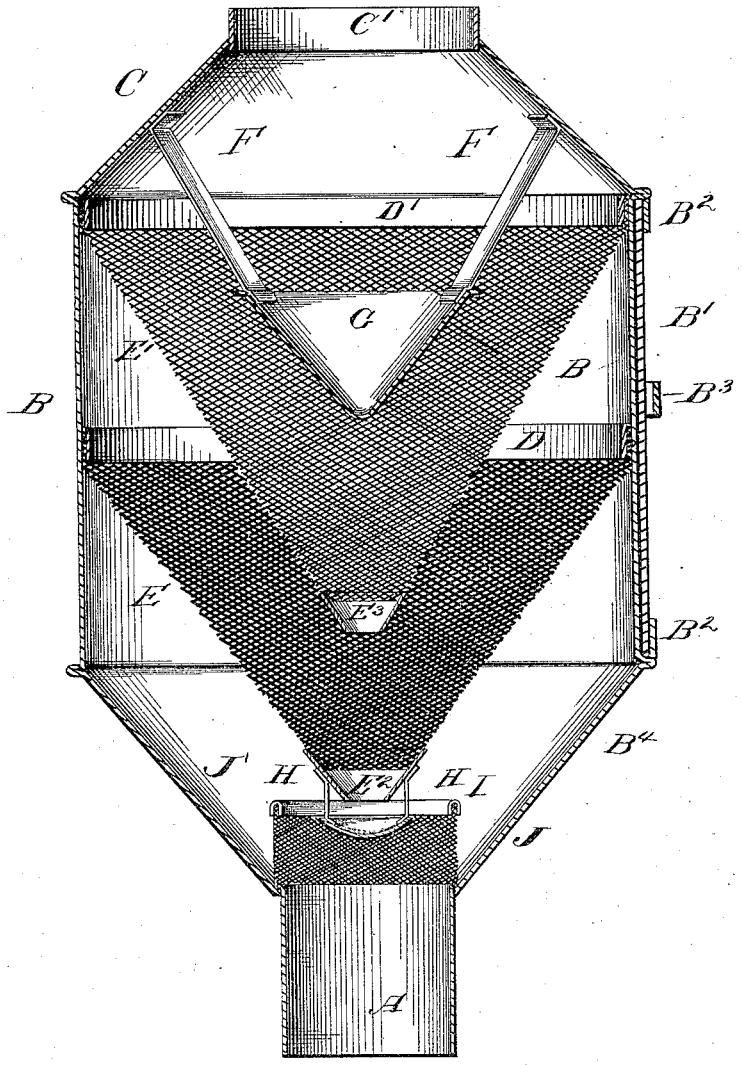
(No Model.)

G. M. McKISSICK.

SPARK ARRESTER.

No. 306,415. Patented Oct. 14, 1884.



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UNITED STATES PATENT OFFICE.

GEORGE M. McKISSICK, OF BUTLER, MISSOURI.

SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 306,415, dated October 14, 1884.

Application filed May 19, 1884. (No model.)

To all whom it may concern:

Be it known that I, GEORGE M. McKISSICK, a citizen of the United States, residing at Butler, in the county of Bates and State of Missouri, have invented certain new and useful Improvements in Spark-Arresters, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to that class of spark-arresters which comprise as elements of their construction reticulated screens placed in the path of the products of combustion, so as to impede or prevent the progress of sparks through the smoke-stack of locomotives or other engine-boilers; and the invention consists in certain features of construction hereinafter described, and specifically set forth in the claims.

Referring to the drawing, which is a central vertical section of a portion of a smoke-stack provided with my invention, A represents the upper portion of an uptake; B, a chamber or enlargement thereof, having a contracted top, C, and an outlet, C'. A portion of the wall of the chamber B is removed, and a sliding door, B', is provided, which runs in grooves formed by vertical flanges B^2 and the wall of the chamber at the upper and lower portion thereof.

B^3 represents a handle secured to the door for the purpose of operating the same.

A hinged door may be substituted for the sliding door, if desired, the object being to provide access to the interior of the chamber for cleaning or repairing the same when necessary.

At or about the center of the chamber, and also at or near its top, are secured hoops D and D', respectively, by brazing, bolting, or riveting, as desired, which hoops serve as the binding of or the means of securing inverted cones E and E', respectively, the apices E^2 E^3 of which consist of non-reticulated material—such as sheet metal—the extreme points of which are removed so as to provide communication from one cone to the other, for a purpose hereinafter described. By means of straps F, secured to the top, an inverted non-perforated metallic cone, G, is supported concentrically within the reticulated cone E', and below the outlet E^2 of the lower reticulated cone, E', is supported by means of strap H a downwardly-convexed pan, I. From the top of the uptake there rises an annular reticulated collar, J, which may be bound by a metallic binding, J', for the purpose of giving it additional strength and a finished appearance.

It will be noticed that the inverted reticulated cones E' E^2 extend completely across the compartment, leaving no passage for the products of combustion except through the meshes of the screens, or, possibly, to an exceedingly limited extent, the passage of accidental indirect currents through the openings in their apices.

The operation of the invention is as follows: The products of combustion are first obstructed in a measure by the downwardly-convexed pan I, which acts to deflect the coarser cinders or sparks against the reticulated collar J, from which they fall down the uptake, or may be again carried by the draft upwardly over the collar J, passing at the side of the pan I, when they (the cinders and sparks) again come in contact with the outwardly-inclined surface of the lower cone, E, and are diverted against the walls and conical bottom B^4 of the enlargement or chamber B, when they fall and rest upon said bottom and against the reticulated collar. This being the disposition of the coarser sparks, the cinders and finer portions pass through the meshes of the lower cone, and are gathered in the apices thereof, either before or after coming in contact with the inclined surface of the upper cone, and so in regard to the still finer particles of the products of combustion, which pass into the upper cone and are collected, and then fall through the opening of said cone into the lower, a portion being carried upwardly and deflected so as to fall within the non-reticulated cone G. As the products of combustion which are free from sparks and cinders pass unobstructed through the outlet C', the heat thereof serves to further consume and reduce to ashes the cinders collected in the pan I outside of the collar J, and within the apices of the two cones, and within the suspended cone G, so that there is a continual process of reduction by heat of all the cinders gathered to a fineness which permits of their passage through the cones and ultimate es-

cape after having been consumed, so that practically no live sparks can escape from the stack.

In constructing the cones they may be made of any suitable wire-cloth, or woven rods of suitable size and mesh, each being like the other in fineness or not, as I do not wish to confine my invention to cones of any particular mesh, but consider the close connection of the base of a series of cones with the walls of the uptake and the combination of such cones with the accessories hereinbefore described as being comprehended by my invention, and I may alter or vary the construction herein shown to any extent and in any degree within the skill of persons conversant in the construction of spark-arresters.

Having described my invention and its operation, what I claim is—

1. The combination, with a series of inverted cones extending from wall to wall of the uptake, of a reticulate collar and a downwardly-convexed centrally-suspended pan, substantially as specified.

2. The combination of a series of inverted cones extending from wall to wall, as described, and having non-reticulated open apices, with an upper concentric non-reticulated cone and a lower concentrically-suspended downwardly-convexed pan, substantially as specified.

3. The combination of the uptake A, having the enlarged compartment B, provided with the flanged bottom B^4, and the door B′, with the inverted cones E E′, extended and secured to the walls of the compartment B, and provided with the non-reticulated open apices E^2 E^3, the depending convexed pan I, and reticulated collar J, substantially as shown and described.

4. The combination of the uptake A, having the enlarged compartment B, with inclined top and bottom, the inverted reticulated cones secured to the wall, as described, the suspended non-reticulated cone G, straps F, the pan I, straps H, and collar J, substantially as shown and described.

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

GEORGE M. McKISSICK.

Witnesses:

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T. W. SILVERS.