No. 676,119. Patented June 11, 1901.

J. H. BLACK.

SPARK ARRESTER.

(Application filed Oct. 18, 1900.)

(No Model.)

Fig. 1.

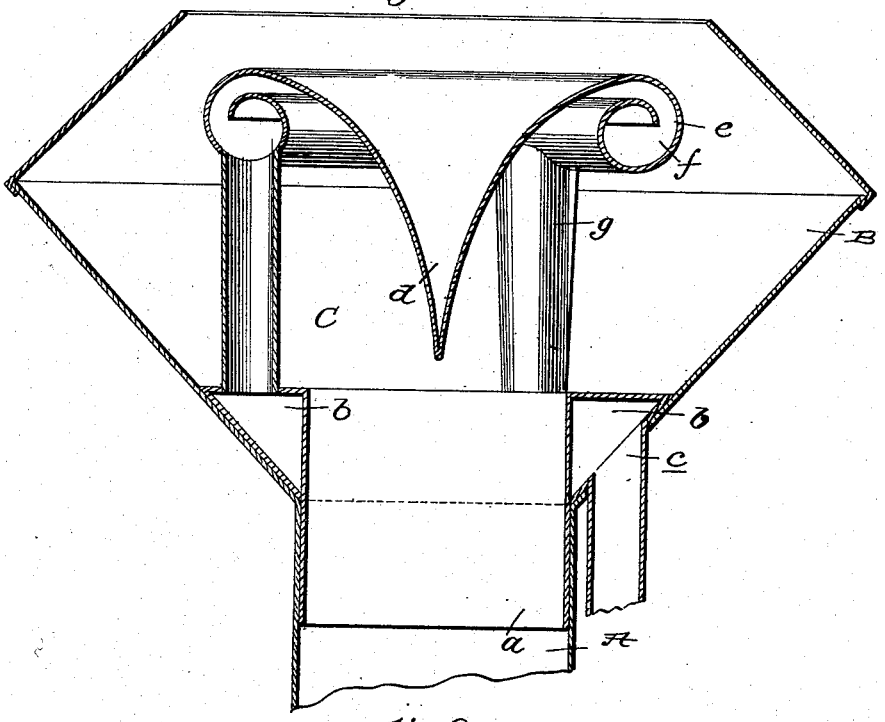
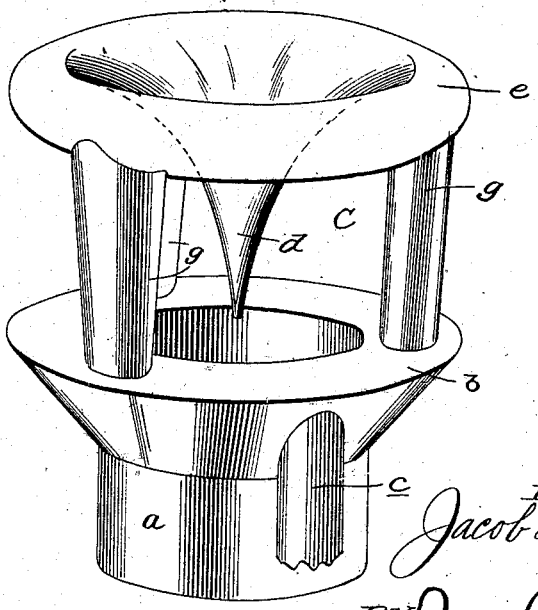


Fig. 2.



Witnesses:
C. H. Raider
T. E. Turpin

Inventor
Jacob H. Black
By James J. Shuby
Attorney

UNITED STATES PATENT OFFICE.

JACOB H. BLACK, OF TRINIDAD, COLORADO.

SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 676,119, dated June 11, 1901.

Application filed October 18, 1900. Serial No. 33,498. (No model.)

To all whom it may concern:

Be it known that I, JACOB H. BLACK, a citizen of the United States, residing at Trinidad, in the county of Las Animas and State of Colorado, have invented new and useful Improvements in Spark-Arresters, of which the following is a specification.

My invention relates to improvements in that class of spark-arresters which are designed to be arranged in the upper portions of the smoke-stacks of locomotives and other engines.

It consists in a certain peculiar construction, the novelty, utility, and advantages of which will be fully understood from the following description and claims when taken in conjunction with the accompanying drawings, in which—

Figure 1 is a vertical diametrical section illustrating my improved spark-arrester in its proper operative position within the upper portion of a smoke-stack, and Fig. 2 is a perspective view of the spark-arrester removed from the stack.

Referring by letter to the said drawings, A is the smoke-stack of a locomotive or other engine, which is provided at its upper end with a head or enlargement B, preferably diamond-shaped, and C is my improved spark-arrester. The said arrester is made of suitable metal, and in the preferred embodiment of the invention comprises a lower tubular portion *a*, designed to rest in the stack; an annular chamber *b*, which surrounds the upper end of the tubular portion *a* and when the arrester is used in conjunction with a stack having a diamond-shaped head has its outer wall inclined in conformity to the lower wall of said head, so as to rest thereon; a tube *c*, which communicates with the chamber *b* and extends downwardly through an aperture in the lower wall of the head B to a suitable point of discharge; an inverted-cone-shaped deflector *d*, which has its apex arranged coincident with the longitudinal center of the tubular portion *a* and merges at its top into a downwardly, inwardly, upwardly, and outwardly and downwardly curved portion or scroll *e*, which forms a circular chamber *f*, and hollow legs *g*, which are interposed between and connect the chambers *b* and *f*, as shown. The said hollow legs *g* also serve as supports for the inverted-cone-shaped deflector and chamber *f*.

The tube *c* may be carried down into the fire-box of a locomotive or down at the side of the boiler thereof, so as to discharge sparks and other products of combustion at a suitable point. It is, as stated, preferably connected to the chamber *b;* but it is obvious that, if desired, it might be connected to the stack-head B and simply made to register with an aperture in the outer wall of the chamber *b*, in which event the spark-arrester would be adapted to be readily lifted out of the stack in order to be cleaned or repaired or for any other purpose.

In the practical operation of my improvement the sparks forced up the stack A will strike against the deflector *d* and be guided thereby into the chamber *f*, from whence they will be forced through the legs *g* into the chamber *b*. The jolting incident to the travel of the engine or locomotive will work the sparks through the chamber *b* to the tube *c*, down which they will be forced by the exhaust and be discharged from the device. From this it follows that my improved arrester is calculated to effectually prevent the escape of sparks through the upper end of the stack and this without retarding the escape of smoke, exhaust-steam, and the like through said upper end of the stack, for it will be seen that such smoke and exhaust-steam will find free egress through the spaces between the hollow legs *g*.

It will be appreciated from the foregoing that while efficient in arresting sparks and preventing the forcing of the same through the upper end of the stack my improved arrester is very simple and inexpensive, is adapted to be used in conjunction with smoke-stacks such as at present in use, and is susceptible of being readily removed from a stack in order to be cleaned or repaired and as readily replaced therein.

I have entered into a specific description of the construction and relative arrangement of the parts embraced in the present embodiment of my invention in order to impart a full, clear, and exact understanding of the same. I do not desire, however, to be understood as confining myself to such specific construction and arrangement of parts, as such

changes or modifications may be made in practice as fairly fall within the scope of my claims.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a spark-arrester, the combination of an inverted conical deflector merging at its upper portion into a curled or rolled portion, forming an annular chamber arranged to receive sparks and the like from the sides of the deflector, a lower, annular chamber, and hollow legs interposed between and connecting the upper and lower chambers at intervals.

2. In a spark-arrester, the combination of an inverted conical deflector merging at its upper portion into a curl or roll, forming a chamber surrounding said upper portion of the deflector, and suitable means for conveying sparks and the like downwardly from said chamber.

3. In a spark-arrester, an inverted conical deflector the upper portion of which is shaped to form a chamber arranged to receive sparks and the like from the depending portion of the deflector, and suitable means for discharging the sparks from said chamber.

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

JACOB H. BLACK.

Witnesses:
JEFF AYERS,
W. S. CROMBIE.