Cutting & Butterfield,

Spark Arrester.

No. 5,163. Patented June 19, 1847.

Fig. 1.

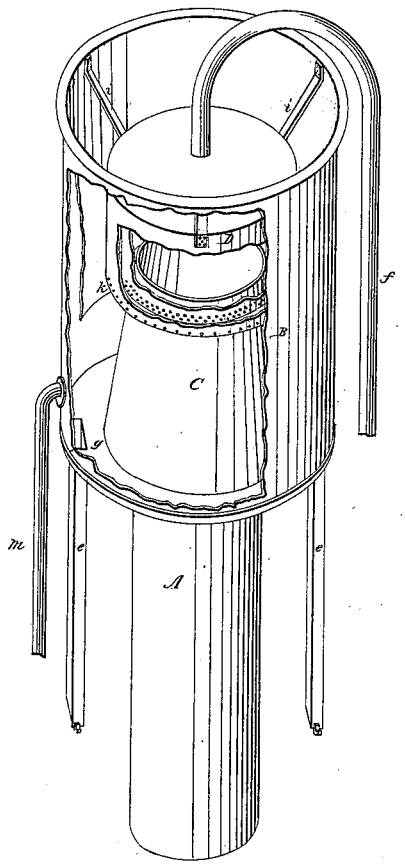
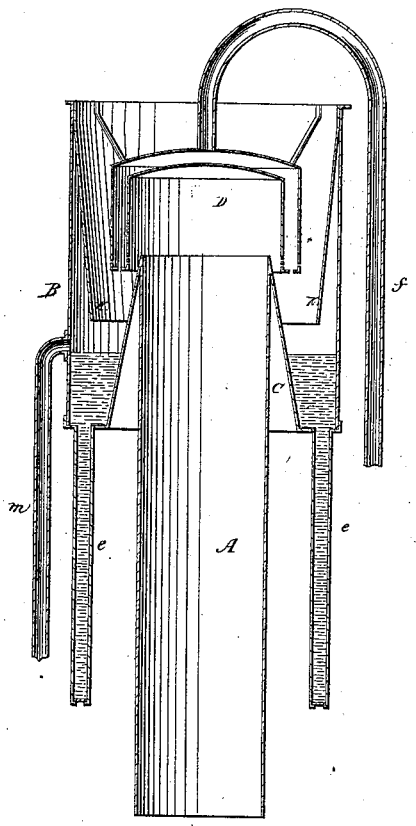


Fig. 2.



UNITED STATES PATENT OFFICE.

GEO. BUTTERFIELD AND JAS. A. CUTTING, OF BOSTON, MASSACHUSETTS.

SPARK-ARRESTER.

Specification of Letters Patent No. 5,163, dated June 19, 1847.

To all whom it may concern:

Be it known that we, GEORGE BUTTERFIELD and JAMES A. CUTTING, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and Improved Spark Extinguisher and Arrester; and we do hereby declare the following to be a full and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, Figure 1 being a perspective view and Fig. 2 a vertical section.

The same letters refer to corresponding parts in both figures.

A is the main shaft of the chimney.

C is a conical thimble having its smallest end made fast to the top of the chimney A, its largest end descending and surrounding the chimney, forming an annular air chamber between them.

B is a hollow cylinder about double the diameter of the chimney, connected to the lower end of the conical thimble C, through the medium of the base ring *g*. The upper end of the cylinder B, ascends about the same distance above the top of the chimney A, that its lower end descends below the top of the same.

k is an inner casing or lining secured to the top of the cylinder B, descending in the same a short distance below the top of the chimney in the form of an inverted cone, forming an annular air chamber between the same and the sides of the cylinder.

D, is an extinguishing cap placed over the top of the chimney A, secured in the cylinder B by the arms *i*, *i*,—the chimney ascending a short distance within the same. The cap D, has two casings, one within the other, with a space between the two; the ring *j* connecting the casings of the cap D, is perforated with small apertures, as are also the side casings of the cap near their junction with the ring *j*.

f, is a pipe attached to the center of the oval top of the cap D, communicating with the space between the casings of the same; the pipe *f*, descends by the side of the chimney and is connected to a force pump constructed in the usual manner.

The space between the cylinder B, and the conical thimble C, is a reservoir for water in which the sparks are caught. The pipe *m*, communicates with the reservoir and regulates the height of the water in the same.

The smoke and sparks are discharged from the chimney into the cap D, and descending pass out of its mouth between the sides of the same and the sides of the conical thimble C. The force pump connected to the pipe *f*, is driven by the locomotive engines, and when these are started, the force pump forces jets of water vertically and laterally through the apertures surrounding the mouth of the cap D, which extinguishes the sparks as they emerge from the cap D, and forces them into the water reservoir—the smoke and gaseous products of combustion escaping around the cap D, through the space between the same and the lining K, of the cylinder B, into the atmosphere. The open mouth of the air chamber between the cylinder B, and lining K, retards the upward course of the sparks, should any escape being extinguished by the jets of water discharged from the cap D.

The pipe *m*, conveys the water from the reservoir into a vessel below, with which the pipe *f*, *is* connected by a force pump in any well known or usual manner, by which a constant circulation is kept up between the two; a strainer constructed in the usual manner, may be placed over the mouth of the pipe *m*, for purifying the water.

e, *e*, are wells descending from the base of the reservoir for removing the sparks from the same. Sliding gates are placed at the bottoms of the wells through which the sparks are withdrawn from them. The air space between the conical thimble C, and the chimney, prevents the water in the reservoir from being heated and evaporated.

Having thus fully described the construction and operation of our spark extinguisher and arrester, what we claim therein as new and desire to secure by Letters Patent, is—

The double extinguishing cap D, placed over the chimney A, combined and operating with the cylinder B, conical thimble C, lining K, wells *e*, *e*, and pipes *f*, and *m*, substantially in the manner and for the purpose herein set forth.

GEORGE BUTTERFIELD.
JAMES A. CUTTING.

Witnesses to the signature of Geo. Butterfield:

STEPHEN G. NASH,
BENJ. DODGE.

Witnesses to the signature of Jas. A. Cutting:

Z. C. ROBBINS,
I. H. GODDARD.