

(No Model.)

C. COOPER.
SPARK ARRESTER FOR LOCOMOTIVES.

No. 468,169.

Patented Feb. 2, 1892.

Fig. 1.

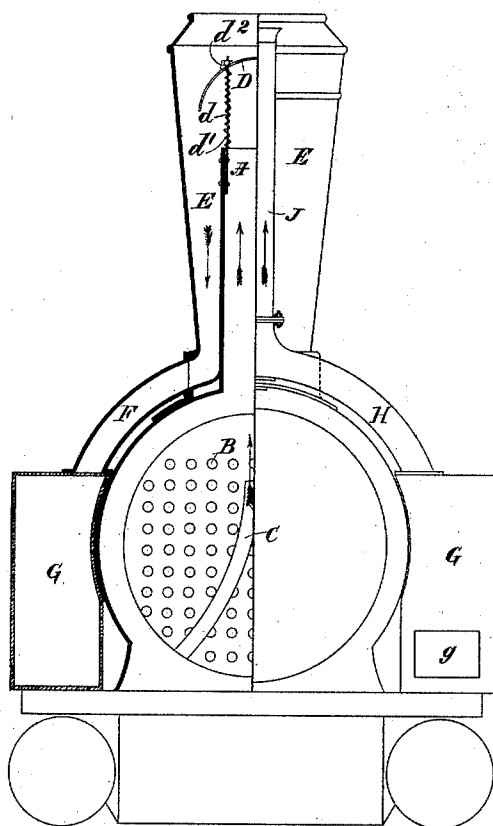
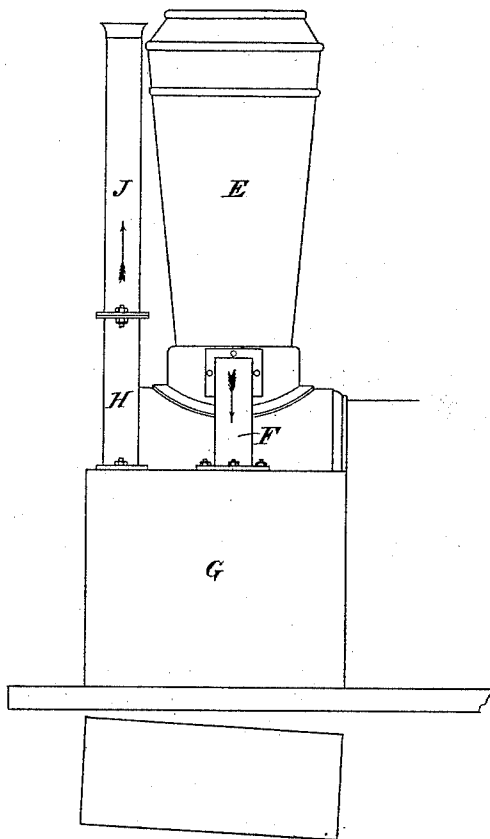


Fig. 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

CHARLES COOPER, OF GUILDFORD, WESTERN AUSTRALIA.

SPARK-ARRESTER FOR LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 468,169, dated February 2, 1892.

Application filed January 19, 1891. Serial No. 378,292. (No model.) Patented in South Australia October 2, 1890, No. 1,735; in Victoria October 3, 1890, No. 8,129; in New South Wales October 7, 1890, No. 2,527; in England October 29, 1890, No. 17,296; in New Zealand December 15, 1890, No. 4,753, and in Queensland March 26, 1891, No. 1,198.

To all whom it may concern:

Be it known that I, CHARLES COOPER, civil engineer, a subject of the Queen of Great Britain, residing at Guildford, in the colony of Western Australia, have invented certain new and useful Improvements in Spark-Arresters for Locomotives and other Engines, (for which I have received Letters Patent in England, No. 17,296, dated October 29, 1890; in South Australia, No. 1,735, dated October 2, 1890; in New South Wales, No. 2,527, dated October 7, 1890; in Victoria, No. 8,129, dated October 3, 1890; in Queensland, No. 1,198, dated March 26, 1891, and in New Zealand No. 4,753, dated December 15, 1890,) of which the following is a specification.

This invention relates to spark-arresters, its object being to construct a device of this description which, while not interfering with the ordinary draft of the smoke-stack, will effectually prevent the escape of sparks, cinders, or other lighted particles from the smoke-stack of a locomotive or other engine or boiler.

Although the invention will be hereinafter described with reference to the smoke-stack of a locomotive, it must be distinctly understood that it is equally applicable to the smoke-stacks of all descriptions of traction, portable, or other engines or boilers where such a contrivance is necessary or desirable from the proximity of crops, hay-stacks, or other inflammable substances.

In the drawings, Figure 1 is a front elevation, partly in section, of a locomotive fitted with the invention. Fig. 2 is a side elevation of the parts shown in Fig. 1.

A is the smoke-stack, B the boiler-tubes, and C the steam-exhaust pipe discharging into the stack A.

D is a dome or cone-shaped plate or deflector mounted above the stack upon suitable uprights *d*. The deflector may be adjustable vertically, and to this end it may be supported upon springs *d'*, surrounding the uprights, and the extremities of the latter may be provided above the deflector with screw-nuts *d*².

E is an annular outer casing surrounding the smoke-stack and projecting upward above the level of the deflector. The lower end of the casing communicates with a pipe or pipes F, discharging into one or more spark-tanks G, placed conveniently at either side of the front end of the boiler. In order that the draft may not be interfered with, each of the spark-tanks is provided with an outlet or relief pipe H, connected with a waste-steam pipe or supplementary stack J, which is by preference placed in front of the smoke-stack A and casing E. Each of the spark-tanks may be provided with a door *g*, through which the contents may be removed when necessary.

The action of the device is as follows: The sparks or other lighted particles carried up the smoke-stack from the boiler-tubes by the draft are projected against the deflector D, whereby they are caused to enter the annular space between the smoke-stack A and casing E. Thence they pass by the discharge-pipes F into the tanks G. Here they are effectually quenched by the small percentage of steam which has accompanied them, and which afterward escapes without interruption of the draft through the relief-pipes H into the supplementary stack J.

It will be evident that certain modifications may be made in the apparatus, so far at least as the spark-tanks are concerned. These may be placed in any suitable positions with respect to the boiler and smoke-stack, the positions depending greatly upon the particular type of boiler to which they are to be applied; but it is generally preferable to locate the tanks below the level of the lower end of the casing.

I am aware that separately considered various features of the present invention are old; but I believe that the combination disclosed herein possesses material practical advantages over any construction heretofore devised of which I am aware.

I declare that what I claim is—

In a spark-arrester, the combination, with a smoke-stack A, having a deflector D, of a

casing E, surrounding and set away from the sides of the stack, a tank G on each side of the casing, pipes F, connecting the space between the shell or casing and the stack with the tanks, and a relief-pipe J, common to both tanks.

In testimony whereof I have signed my

name to this specification in the presence of two subscribing witnesses.

CHARLES COOPER.

Witnesses:

E. H. W. SMITH,

EDWARD G. S. HARE.