D. R. PROCTOR.
Spark-Arrester.

No. 206,132. Patented July 16, 1878.

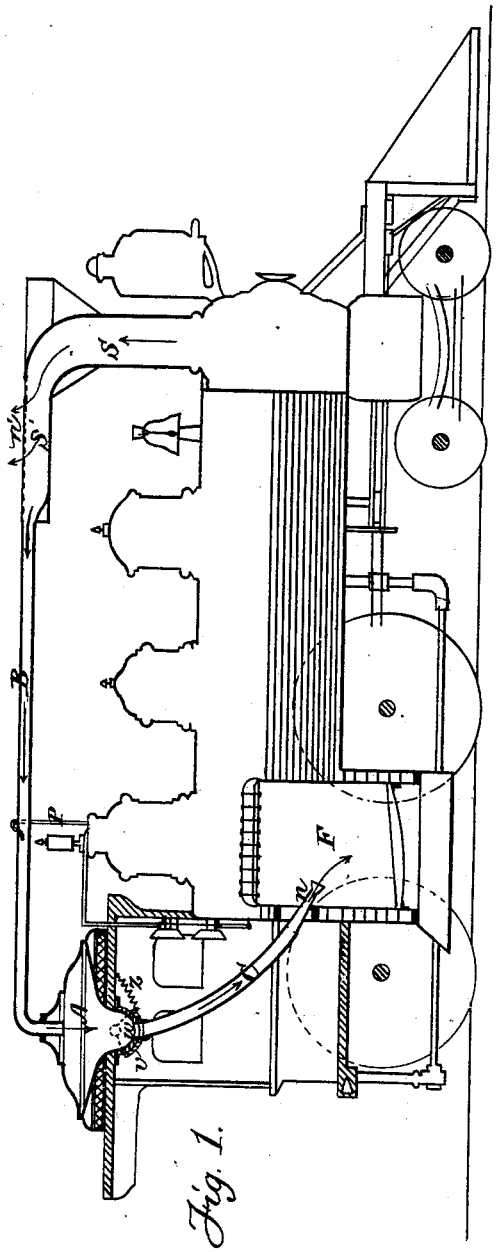

Fig. 1.

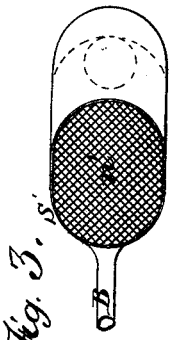

Fig. 3.

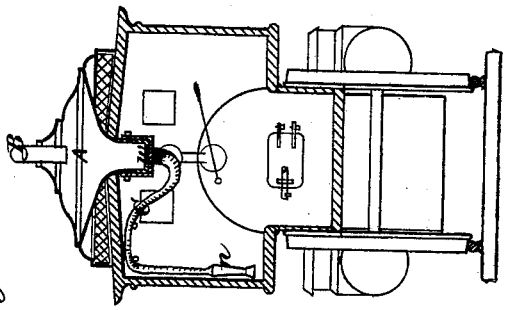

Fig. 2.

Witnesses.
Geo. W. Pierce
E. B. Fairchild

Inventor:
D. R. Proctor
by Wright & Brown
Attys

UNITED STATES PATENT OFFICE.

DAVID R. PROCTOR, OF GLOUCESTER, MASSACHUSETTS.

IMPROVEMENT IN SPARK-ARRESTERS.

Specification forming part of Letters Patent No. **206,132**, dated July 16, 1878; application filed April 22, 1878.

To all whom it may concern:

Be it known that I, DAVID R. PROCTOR, of Gloucester, in the county of Essex and State of Massachusetts, have invented certain Improvements in Spark-Arresters, of which the following is a specification:

This invention relates to that class of spark-arresters for locomotive-engines in which the sparks, cinders, &c., passing up the smoke-stack are conducted to the fire-box to be consumed.

Heretofore, in this class of spark-arresters, the sparks, cinders, &c., have generally been conducted directly from the smoke-stack to the fire-box, a pipe or conduit being provided, which extends directly, without interruption, from the smoke-stack to the fire-box. This arrangement is objectionable, for the reason that more or less waste-steam, partially condensed, continually passes with the sparks, cinders, &c., into the fire-box, and has an injurious effect on the fire.

My invention has for its object to enable the sparks, cinders, &c., to be intercepted in their passage from the smoke-stack to the fire-box until they accumulate in a sufficient quantity, and to be then discharged into the fire-box at the will of the engineer or fireman.

To this end my invention consists in the combination of a receptacle located preferably on the top of a cab of a locomotive, a pipe leading into said receptacle from the smoke-stack, and a pipe leading out of said receptacle to the fire-box, the latter pipe being adapted to be disconnected or shut off from the receptacle at the will of the engineer, all of which I will now proceed to describe.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a longitudinal section of a locomotive provided with my improvements. Fig. 2 represents a transverse section on line *x x*, Fig. 1, showing the pipe connecting the receptacle to the fire-box disconnected or shut off. Fig. 3 represents a top view of the smoke-stack.

Similar letters of reference indicate corresponding parts.

In the drawings, A represents the receptacle, which is in the shape of a hopper, and is preferably located on the top of the cab of a locomotive. B represents the pipe which leads from the smoke-stack S to the receptacle A, and C represents the pipe which leads from the receptacle to the fire-box F, the latter pipe being located in the cab of the locomotive. The pipe B forms a continuous passage from the smoke-stack to the receptacle A, and the pipe C is arranged to be shut off from said receptacle at the will of the fireman or engineer. I prefer to make the pipe C flexible, and attach it at its upper end to a segmental valve, *v*, which is adapted to slide on a seat, *w*, formed on the bottom of the receptacle A. By moving the valve *v* upon its seat the pipe C is connected with or disconnected from the receptacle. I prefer to employ a spring, *z*, to hold the valve *v* in position to shut off the pipe C. The pipe C is of such length that its lower end can be introduced into the fire-box, and is provided with a suitable metallic nozzle, *n*. The upper end of the smoke-stack S is curved backwardly into a chamber, *s'*, which is covered by suitable netting, *n'*. The pipe B extends back from the rear end of this chamber, as shown.

When the locomotive is in motion the smoke, steam, sparks, and cinders passing up the smoke-stack S are deflected backwardly by the curved end of the latter into the chamber *s'*. From this chamber the smoke and steam escape through the netting *n'*, while the sparks and cinders are further deflected by said netting, and caused, by their momentum, to rush through the pipe B into the receptacle A, where they accumulate until it is desirable to discharge them into the fire-box, when the pipe C is connected to the receptacle, and the accumulated sparks and cinders are allowed to descend into the fire-box. After the receptacle A is emptied the pipe C is shut off from the receptacle, and may be suspended, as shown in Fig. 2.

It will be seen that by my improvements little or no steam is allowed to enter the fire-box, and the engineer is enabled to control the passage of the sparks and cinders.

A pipe, P, from the boiler or steam-dome may be introduced into the pipe B to admit steam into the latter, for the purpose of facilitating the passage of the sparks and cinders, or to clear the pipe B if it becomes clogged. The pipe P should be provided with a valve

controlled by the engineer, and is only to be used in exceptional cases.

The bottom of the receptacle is preferably raised from the upper surface of the roof of the cab, to permit the passage of a current of air between the bottom of the receptacle and the top of the roof of the cab, to avoid any inconvenience to the occupants of the cab which may arise from the heat emanating from the accumulated sparks and cinders in the receptacle.

I claim as my invention—

The combination, in a locomotive, of the receptacle A, the pipe B, connecting the smoke-stack with said receptacle, and the pipe C, connecting said receptacle with the fire-box, and adapted to be shut off or disconnected from the receptacle, all as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DAVID R. PROCTOR.

Witnesses:

GEO. W. PIERCE,

C. F. BROWN.