2 Sheets--Sheet 1.

W. HALSTED.
Spark-Arrester.

No. 168,091. Patented Sept. 28, 1875.

Fig. 1.

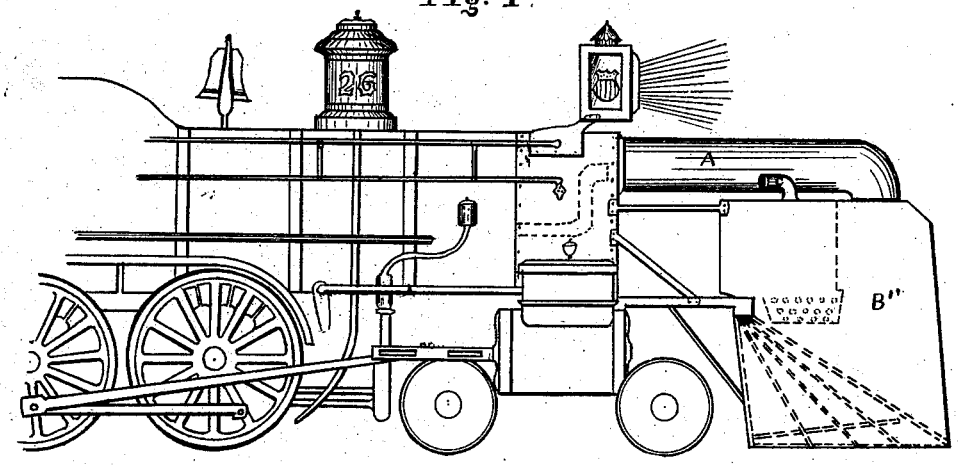
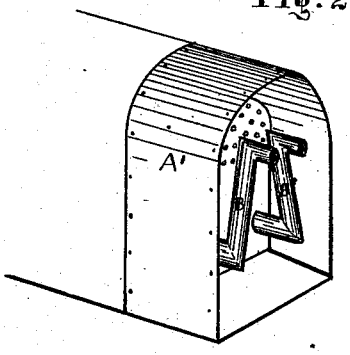


Fig. 2.



Witnesses:
A. S. Millard
C. A. Potts.

Inventor:
W. J. Halsted

2 Sheets--Sheet 2.

W. HALSTED.
Spark-Arrester

No. 168,091. Patented Sept. 28, 1875.

Fig. 3.

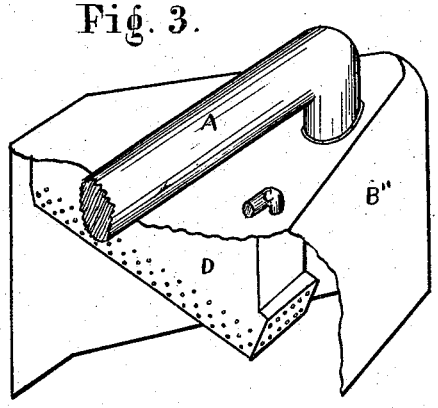
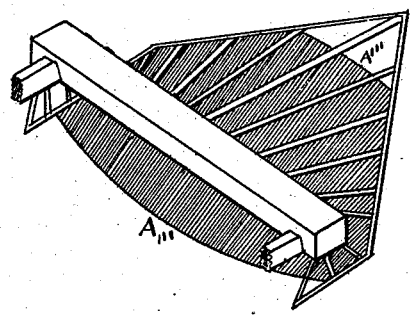


Fig. 4.



Witnesses:
A. S. Mellach
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Inventor:
W. Halsted

UNITED STATES PATENT OFFICE.

WILLIAM HALSTED, OF TRENTON, NEW JERSEY.

IMPROVEMENT IN SPARK-ARRESTERS.

Specification forming part of Letters Patent No. **168,091**, dated September 28, 1875; application filed June 28, 1875.

To all whom it may concern:

Be it known that I, WILLIAM HALSTED, of Trenton, New Jersey, have invented a Spark-Arrester, of which the following is a specification:

The object of my invention is to arrest and extinguish sparks of fire ejected from locomotive-engines, and to prevent fires which might otherwise be communicated to property on or near the railroad on which the locomotive-engine is operated. To do this, instead of placing the smoke-pipe or smoke-stack in upright or vertical position, I place the smoke-pipe or smoke-stack in a horizontal position, projecting it forward over the cow-catcher, covering the flues of the boiler, so that the smoke of the flues may pass in a straight line into the smoke-pipe or smoke-stack, as appears in Figure 3, letter A. The exhaust-pipes for the steam, which are represented in Fig. 2, letters B B′, have their ends turned so as to project the steam in a straight line into the end or opening of the smoke-stack which covers the flues of the boiler. The front end of the smoke-pipe or smoke-stack is turned downward, so as to enter and be fitted closely into a triangular box or covering of the cow-catcher, made of sheet iron or copper, or other metal, and fastened in a proper manner on the outer rim of the cow-catcher, so as to be air-tight on the top and sides, as represented in Fig. 3, letters D B″. The sides of this box are perpendicular and the top of it flat, and it may be from two and a half to four feet or more in height, according to the size of the engine for which it is to be used. The top of it should be made, as it were, double, so that it may form a water-tight compartment or tank of a depth of about four inches or more under the whole surface of the upper covering of the triangular box. The under side of this compartment or tank, for the space of a number of inches, say, six, eight, or more inches around the hole where the forward end of the smoke-pipe or smoke-stack projects into this triangular box, which covers the cow-catcher, is perforated to allow the water to drip through the same, and fall onto the road or cow-catcher, or corrugated plate of sheet-iron attached to the front part of the cow-catcher. The corrugated plate above mentioned is represented in Fig. 4, letters A″ A‴, and the triangular box or covering of the cow-catcher is represented in Fig. 3. The little elbow or pipe on the top of the covering of the triangular box (represented by letter C in Fig. 3) represents the pipe by which water may be conveyed into the tank or water-tight compartment made in the top of the triangular box or covering aforesaid.

The cow-catcher may be made in any ordinary form. The only alteration or addition which I make for the purpose of my invention is the placing of a corrugated plate of sheet-iron or other metal, extending from the front point thereof backward and downward to the distance of two or three feet, as represented in Fig. 4, letters A‴ A⁗, so that the water that drips from the water-tight compartment may fall upon the said plate of sheet-iron and keep it constantly wet, and that the sparks from the front end of the smoke-pipe may also fall thereon and be extinguished by the water thereon, or which may drip upon them while there, and may from thence fall upon the railroad-track.

Another good effect which may be produced by allowing the water to drip down upon the cow-catcher, in the manner aforesaid, will be to cool the smoke, so as to reduce its temperature to a degree not higher than that of the atmosphere, and therefore to prevent its rising so high or so fast as to annoy persons in the car.

What I claim as my invention is—

1. In combination with a locomotive, a smoke-stack or chimney projecting from the engine directly forward horizontally over the cow-catcher, and having its foremost end turned downward, and entering a box which covers the cow-catcher, substantially as and for the purpose set forth.

2. In combination with a smoke-stack or chimney projecting horizontally from the locomotive, a triangular box or covering over the cow-catcher, the combination serving to convey the sparks and igneous matter directly forward from the smoke-stack, and then down upon the track forward of the locomotive.

3. In combination with the box which covers the cow-catcher, a tank or water-compartment located in the top of such box, and provided

with perforations or water-outlets in its bottom, to permit the water to drip through the same, substantially as and for the purpose set forth.

4. In combination with the box that covers the cow-catcher, and with a water-dripping apparatus, the corrugated or grooved plate beneath the cow-catcher, and inclining backward, and serving to receive the falling water and the cinders or sparks, and to extinguish them, all substantially as set forth.

Trenton, June 19, 1875.

WM. HALSTED.

Witnesses:
A. S. MELLACH,
A. M. RYAN.