J. W. LEDYARD.

Spark Arrester and Extinguisher.

No. 201,803. Patented March 26, 1878.

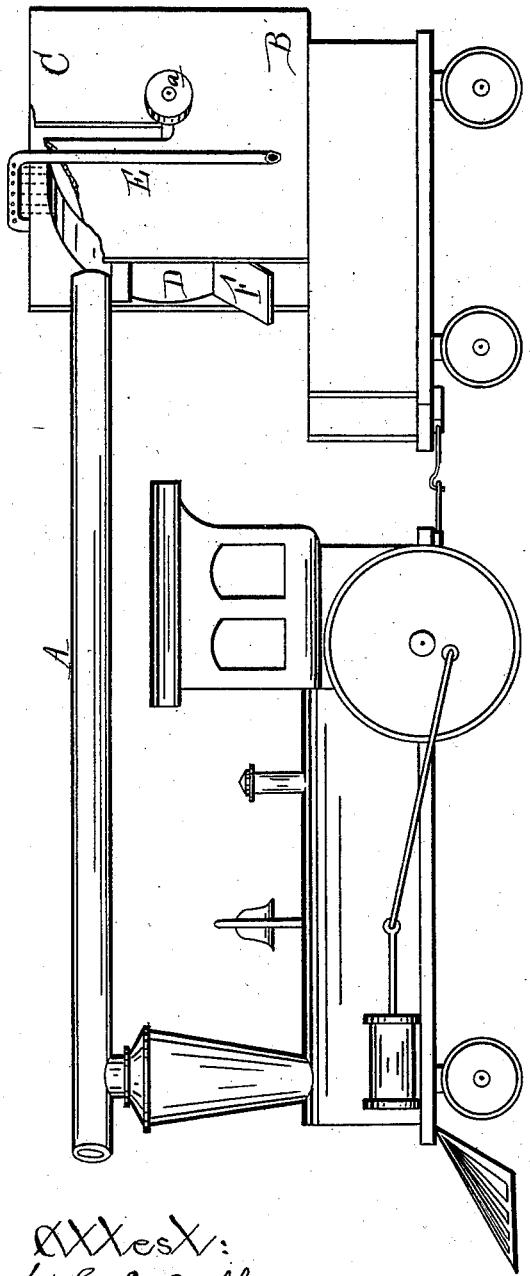

Fig. 1.

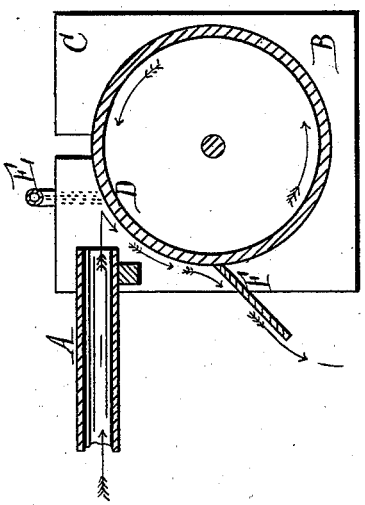

Fig. 2.

Witnesses:
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By Atty
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UNITED STATES PATENT OFFICE.

JOHN W. LEDYARD, OF DETROIT, MICHIGAN.

IMPROVEMENT IN SPARK ARRESTERS AND EXTINGUISHERS.

Specification forming part of Letters Patent No. **201,803**, dated March 26, 1878; application filed January 24, 1878.

To all whom it may concern:

Be it known that I, JOHN W. LEDYARD, of Detroit, in the county of Wayne and State of Michigan, have invented an Improvement in Spark Arresters and Extinguishers, of which the following is a specification:

The nature of my invention relates to certain new and useful improvements in devices for arresting, extinguishing, saving, and utilizing sparks, cinders, and other products of combustion that may be thrown out of furnace-stacks; and the invention consists in the peculiar construction and arrangement of devices that will accomplish the object sought to be attained, as more fully hereinafter set forth.

Although my invention is applicable to all furnace-stacks, in the accompanying drawings it is shown as attached to a locomotive, and such attachment described in this specification. Ordinary mechanical skill will readily dictate the necessary details for its attachment to stationary smoke-stacks.

Figure 1 is an elevation of a locomotive-engine, with its tender, provided with my improvement. Fig. 2 is a vertical section of my wheel and tank, taken through the longitudinal center thereof.

Like letters indicate like parts in each figure.

In the drawings, A represents a horizontal smoke-pipe, communicating with the smoke-stack of the locomotive in such manner that all the products of combustion passing through the latter will be discharged. B is a wheel-tank, provided with upwardly-projecting wing-standards C, between which the wheel D rotates in suitable bearings in the wing-standards, as shown. A motion is given to this wheel by means of a suitable belt from the axle of the tender to the pulley *a* on the wheel-shaft, or by any suitable gearing where it is not desirable to use belts. The lower portion of the wheel, in its rotation, is constantly immersed in the water with which the tank B should be filled. In the drawings this wheel-tank is shown as placed upon the top of the tender, at such point that the discharge of the products of combustion from the pipe A will be near the upper part or top of the rotating wheel or drum D. A pipe, E, communicating with a force-pump, (not shown, but situated at any convenient point to obtain a water-supply and power to drive it,) terminates in a rose or perforated pipe, by means of which a spray or shower of water is thrown upon the face of the wheel or drum, near the discharge end of the pipe A. This spray or shower of water performs the double office of keeping the surface of the wheel wet and of dampening the products of combustion as they pass from the pipe. These products of combustion are discharged in this moist condition upon the wheel, and in its forward rotation they are mostly removed therefrom by the scraper-chute F, and discharged upon the fuel in the tender, whence they are returned with the fuel to the furnace, thereby, as much of said products of combustion consists of unconsumed portions of fuel, enabling so much of them to be saved, while all annoyance of escaping soot, cinders, smoke, &c., to passengers is prevented.

It is essential that the drum or wheel, when in operation, should be constantly wet, as the moisture will compel the products of combustion discharged from the pipe to adhere to the face of the wheel.

What I claim as my invention, and desire to secure by Letters Patent, is—

In combination with a smoke-stack or furnace-pipe constructed to discharge the products of combustion thereon, a rotating drum or wheel revolving in a water-tank, and provided with devices for spraying or showering water upon its upper surface, substantially as and for the purposes set forth.

JNO. W. LEDYARD.

Witnesses:
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