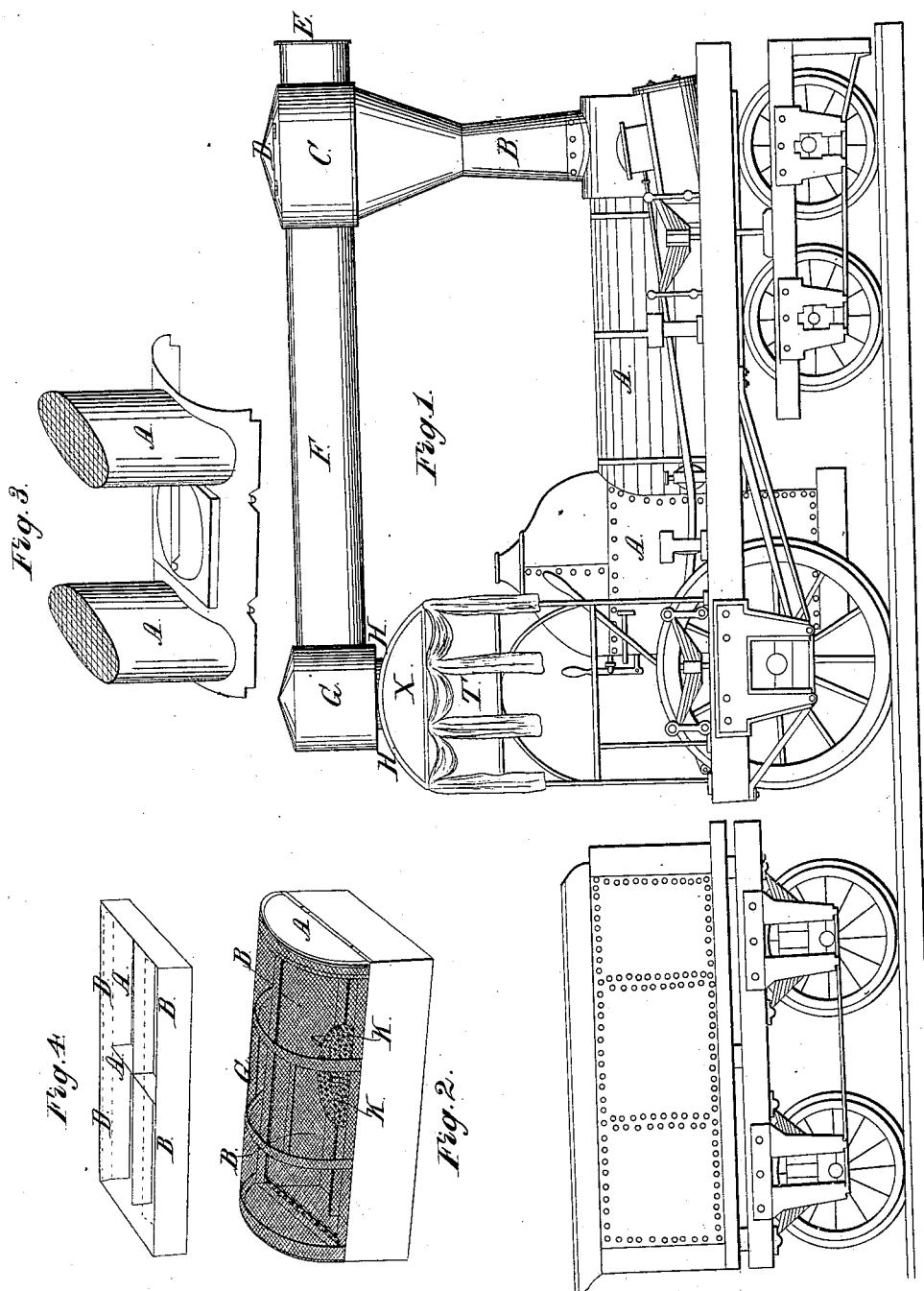


D. Ritter,
Spark Arrester,
Patented Nov. 26. 1840.



UNITED STATES PATENT OFFICE.

DAVID RITTER, OF NEW HAVEN, CONNECTICUT.

SPARK-EXTINGUISHER.

Specification of Letters Patent No. 1,861, dated November 26, 1840.

To all whom it may concern:

Be it known that I, DAVID RITTER, of New Haven, in the county of New Haven and State of Connecticut, have invented a new and useful method of extinguishing the sparks and absorbing the dust arising from the furnace of locomotive and other steam-engines by machinery applied to the chimney of such engines, called Ritter's spark-extinguisher.

The nature and principle of my invention consists in conducting the sparks and dust from the top of the chimney, horizontally or otherwise and depositing them in a cistern or reservoir, with or without water, whereby the sparks will be extinguished and the dust absorbed, while the fumes or smoke alone escapes.

To enable others skilled in the art to make and use my invention I do hereby declare the following to be a full and clear and exact description of the construction and operation of a machine invented by me for that purpose, reference being had to the annexed drawings making part of this specification in which—

Figure 1 is a perspective view of a locomotive engine with my spark-extinguisher attached; Fig. 2, a like view of the receiving cistern or reservoir; Fig. 3, a perspective view of a form for the top or cover of the cistern.

In Fig. 1, A, A, represents the furnace and B, the chimney of a locomotive engine in common form. On the top of the chimney or smoke pipe, I place my machinery, to wit, a close cap, to fit and set tight to, the top of the chimney as seen at C, and so constructed as to be slipped on and off at pleasure. On the top of this cap is an orifice 8 or 10 inches in diameter more or less to aid the draft in firing up, and then to be closed by a door, attached by hinges as seen at D, and another opening for the same purpose on the side of the cap as seen at E, armed with a cover to open and shut as may be required. From the side of the cap opposite the last mentioned orifice, I extend a conducting pipe from 18 to 24 inches in diameter more or less, according to the size of the engine, and 10 or 12 feet long, running horizontally over the engine as seen Fig. 1, F and entering the perpendicular pipe G, which is from 2 to 3 feet in height and from 24 to 30 inches in diameter,

closed at the top and opening at the bottom into the crowning top of the receiving cistern or reservoir I, as seen at H, H. This cistern or reservoir may be placed on the arch over the head of the fireman, and is in shape somewhat like a highly arched trunk as seen Fig. 2 6 or 7 feet long by 3 or 4 wide and from 18 to 30 inches deep, arched over the top with a frame, and covered with wire netting, as seen at B, B, except the opening for the pipe G, in Fig. 1. At each end under the arch is a door opening on hinges, as seen Fig. 1 and Fig. 2, A, the object of which is to clear out, or to supply water to, the reservoir. The reservoir is divided into 4 or more apartments by partitions, as seen Fig. 4 A A, about 8 inches high with scupper holes to enable the water when used, to pass freely from one division to the other. On the inside of the reservoir, all around it and just below the arch I attach dust boards from 6 to 10 inches high, at an angle of 45 degrees, to arrest the dashing of water, as seen Fig. 4, D, D. They are furnished with scupper holes to return any water that may chance to wash over; and further to prevent the disturbance of the water I interpose directly under the mouth of the discharging pipe G, the convex surface of a plate 2 or 3 feet in diameter, slightly conical, and perforated with holes, to resist the force of the fumes upon the water, as seen Fig. 2 at K K.

Another form for covering the top of the reservoir may be used as seen in Fig. 3, by which instead of the wire net covering of the arch as in Fig. 2, the short chimneys A, A, covered with wire netting and raising as high as the top of the smoke chimney, are erected on each side of the conducting pipe, to carry off the smoke.

This apparatus or machinery may be made of substantial sheet iron, copper, zinc, tin or any other suitable metal. It may extend the whole length of the locomotive, or if convenience requires it, may be confined to narrower limits, and may vary in shape and size provided they are based on my principle and are adapted to produce the results intended, that is to extinguish the sparks and absorb the dust, by discharging them perpendicularly into a reservoir with or without water. The same method of extinguishing sparks and absorbing the dust, may be applied to the chimneys or smoke

pipes of all steam engines, or other furnaces annoyed thereby.

The operation of this apparatus or machinery is as follows: On firing up or kindling the fire, in the furnace of the engine, the covers on the openings in the cap, C, may be removed to give a direct draft till the fuel is well ignited. They are then closed and the fumes and sparks from the fire, will then be forced through the conducting pipe, and discharged through the perpendicular pipe G, into the reservoir T, the bottom of which may be kept supplied with water and the sparks and dust will of course be forced into the water, extinguished and absorbed, while the smoke rises and goes off through the netting. Although sparks thus conducted into such a reservoir without water, will, being thus diverted and confined, be thereby more generally extinguished than by any method now in use, yet the application of water makes it more per-

fect in extinguishing the sparks and in absorbing the dust.

I do not claim as my invention, the conductor for carrying off the sparks from the chimney of the locomotive nor the openings for the draft on the top or in front of it, which openings may be used or not as occasion may require; but I do claim as my invention—

The combination of the cistern or reservoir of water with the conductor for carrying the sparks and dust from the chimney and depositing them perpendicularly downward in the reservoir, and thereby extinguishing the sparks and absorbing the dust, permitting the smoke only to escape from the reservoir, all in the manner set forth in the above specification.

DAVID RITTER.

Witnesses:

SIMEON BALDWIN,
ROSSE S. BALDWIN.