(No Model.)

P. M. LOW.

SPARK ARRESTER.

No. 459,179. Patented Sept. 8, 1891.

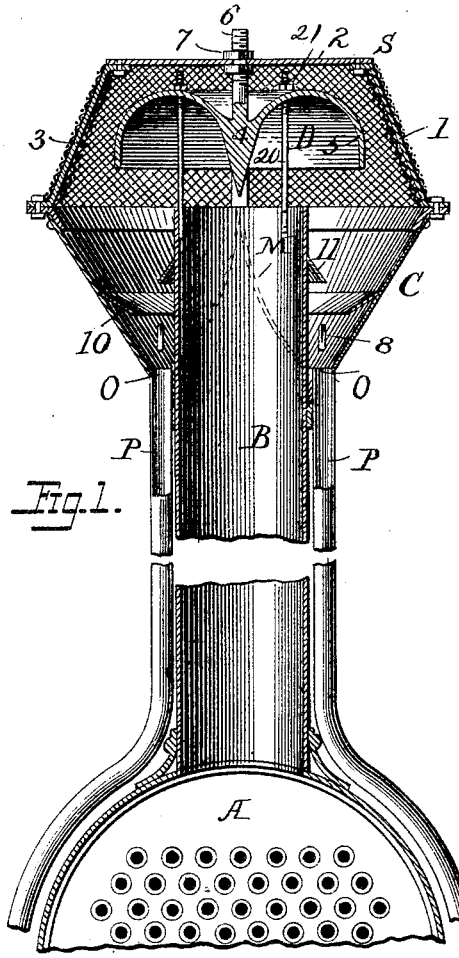

Fig. 1.

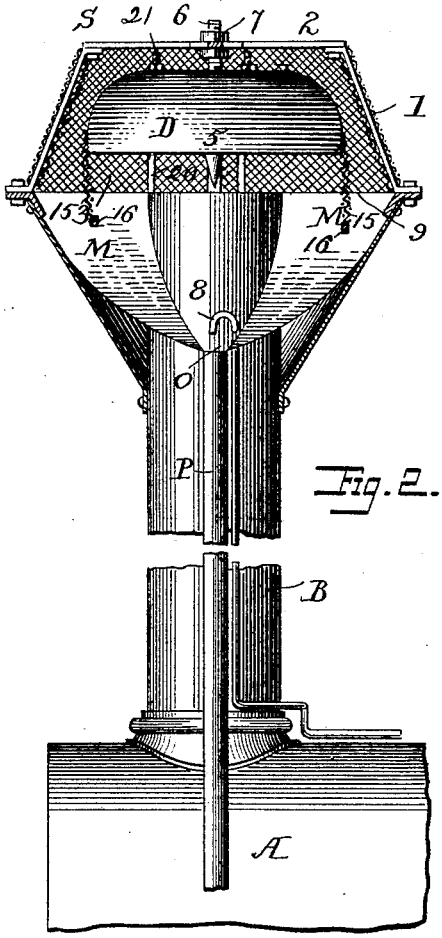

Fig. 2.

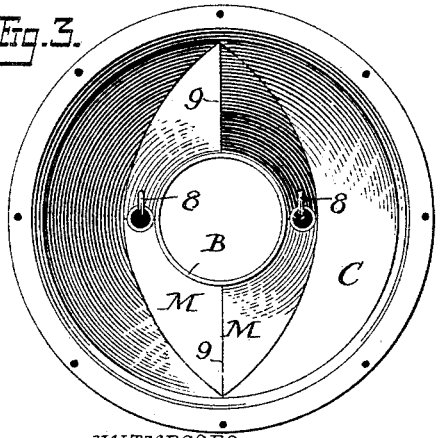

Fig. 3.

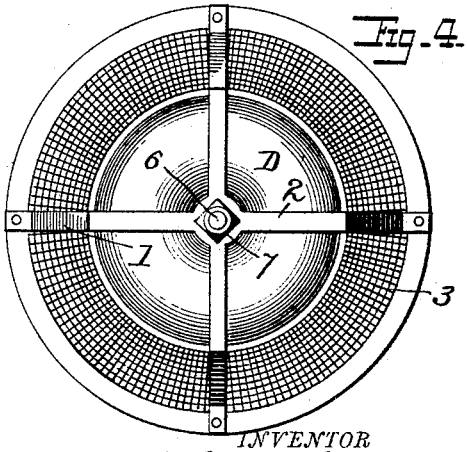

Fig. 4.

WITNESSES

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PHILIP MARTIN LOW, OF EAST PORTLAND, OREGON, ASSIGNOR OF ONE-HALF TO FRANK DEKUM, TRUSTEE, AND GEORGE H. DURHAM, OF SAME PLACE.

SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 459,179, dated September 8, 1891.

Application filed February 18, 1891. Serial No. 381,940. (No model.)

To all whom it may concern:

Be it known that I, PHILIP MARTIN LOW, a citizen of the United States, residing at East Portland, in the county of Multnomah and State of Oregon, have invented certain new and useful Improvements in Smoke-Stacks and Spark-Arresters, of which the following is a specification.

My invention relates to improvements in spark-arresters; and it consists in the novel construction and arrangement of parts of which the following is a specification.

In the accompanying drawings, in which like reference-signs refer to like parts throughout the several views, Figure 1 is a central sectional view of a smoke-stack attached to a boiler. Fig. 2 is a side view at right angles to Fig. 1, the parts being broken away to show the interior of the stack. Fig. 3 is a plan view of the stack, the screen and deflector being removed; and Fig. 4 is a plan view.

In the drawings, A represents a boiler of the type usually found in locomotives; but my invention may be used with any other class of boilers or furnaces.

B is a smoke-stack, which may be of any section, but is here shown as circular.

Surrounding the upper portion of the stack is a conical casing C, which extends from a plane at about the elevation of the top of the stack downward a considerable distance and inclines toward the stack, so as to fit closely thereto at its lower end.

Upon the upper edge of the casing is supported a spider-frame S, composed of inclined bars 1 and an upper horizontal portion 2. Upon the bars 1 is fixed a suitable netting 3 to prevent the direct escape of sparks which may be thrown out sidewise from the deflector. As an additional means of preventing the escape of sparks I in some instances provide a cylindrical netting 15, in the form of a skirt attached at its upper edge to the deflector and at its lower edge to a metal ring 16, as shown in Fig. 2, said ring being below the top of the stack.

A conical deflector D, having a central cone 4 and a circular web 5 of somewhat greater diameter than the stack, is located centrally and at a short distance above the top of the stack. This deflector is provided with a shank 6, which is screw-threaded, and it is adjustably supported upon the spider-frame by means of the nuts 7, as shown in Figs. 1 and 2. The function of this deflector is to throw the sparks downward into the conical casing and it is made adjustable, so that it may be accommodated to different amounts of draft from the stack and different kinds of fuel. As an additional support for the deflector, screw-threaded rods 20 may be used to connect it with the stack, as shown in Figs. 1 and 2.

At the bottom of the casing is provided openings O for the discharge of the cinders, and from these openings pipes P convey the cinders to the ground or to any suitable receptacle. Where there is a forced draft, as is common in locomotives, the pressure within the casing will tend to carry the cinders through the opening and pipes; but in order to insure the discharge of the cinders and also to put out any which may be still burning I introduce a jet of steam at the openings O, thus forming ejectors. This steam is supplied through pipes 8 from the boiler.

Between the stack and the casing plates M are arranged so as to guide the cinders toward the openings in the bottom of the casing. These plates are preferably four in number, and they extend upward spirally around the stack, one either side of each opening O, the upper edges of the plates meeting at 9 and forming wedges which do not interfere with the downward course of the sparks. These plates, together with the casing and the sides of the stack, form funnels which collect the sparks at the openings O, through which they are discharged. I will hereinafter designate the plates M as "collecting-plates."

To prevent counter-currents from carrying any of the sparks upward and to preclude the possibility of their escape, I sometimes introduce baffle-plates 10 11 within the casing and upon the stack. These plates are a few inches in width and inclined downward, as shown.

In operation the hot gases, smoke, and cinders which are ejected from the stack are deflected downward into the casing by the cone

deflector D. The sparks by their superior weight and momentum are carried down into the funnels formed within the casing, while the smoke and gases escape through the netting or through the open top above the deflector. The steam-ejectors keep the openings in the bottoms of the funnels always clear, the sparks being rapidly discharged through the pipes P and at the same time quenched.

Without limiting myself to the precise construction and arrangement shown, I claim—

The spark-arrester consisting, in combination with the stack, of the conical casing surrounding the upper end of the stack and having openings in its lower end, collecting-plates converging toward the openings, pipes for conducting the cinders therefrom, a spider-frame supported upon the conical casing, said frame being open at the top and surrounded by a netting, and a cone deflector adjustably supported upon the spider-frame, substantially as described.

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

PHILIP MARTIN LOW.

Witnesses:

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