P. H. Corlett,

Spark Arrester,

No. 39,552. Patented Aug. 18, 1863.

Fig. 2.

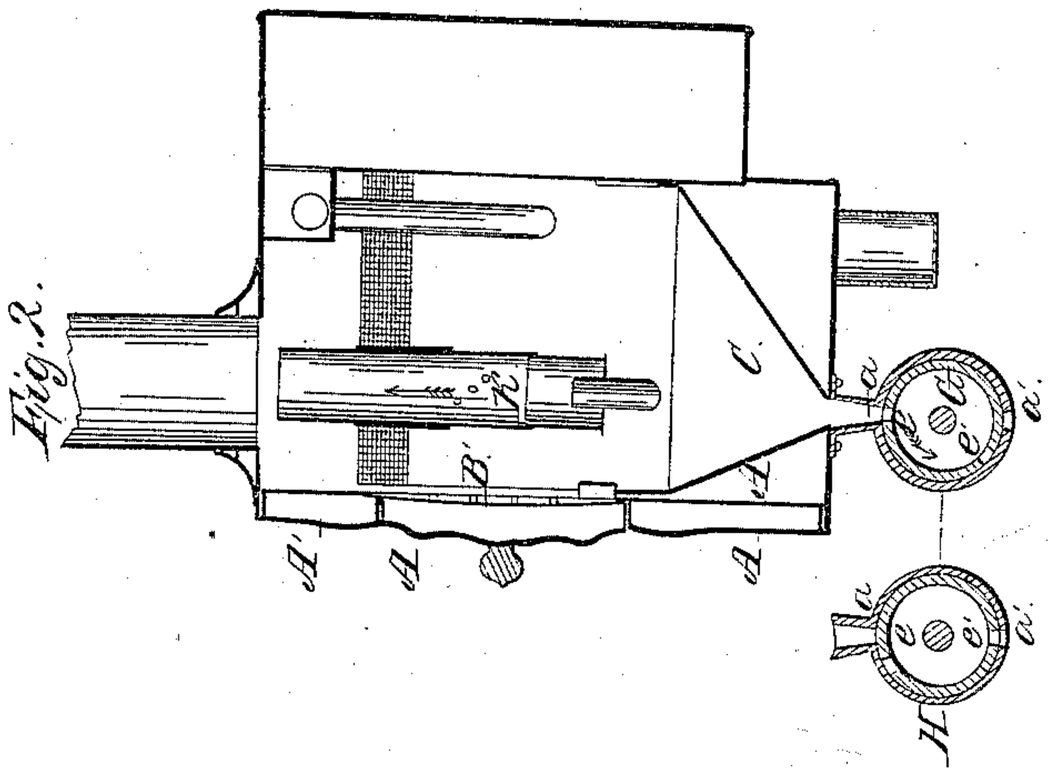


Fig. 4.

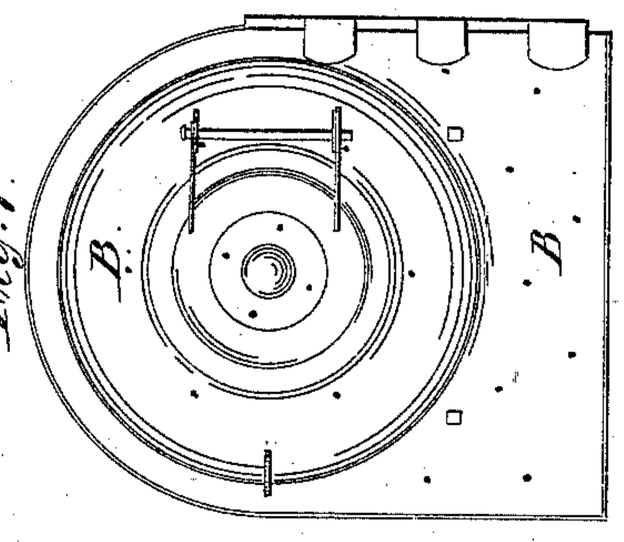


Fig. 1.

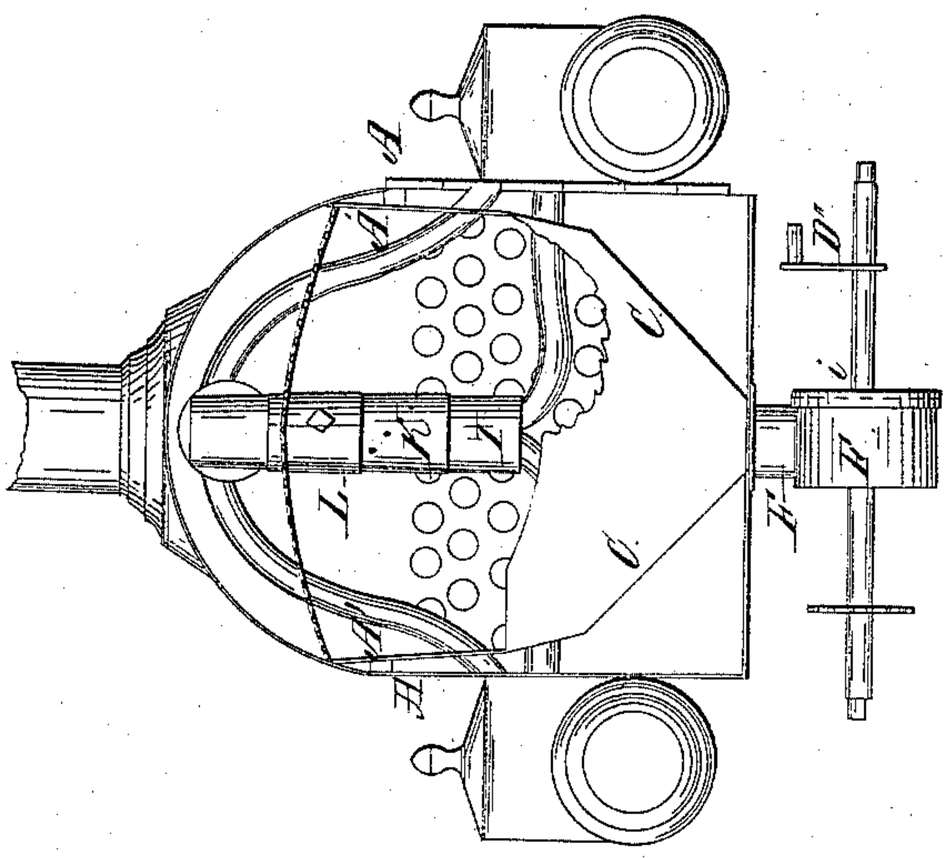
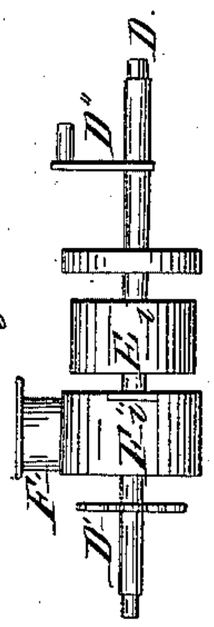


Fig. 3.



Witnesses:
W. A. Burridge

Inventor:
Phillip H. Corlett

AM. PHOTO-LITHO. CO. N.Y. (OSBORNE'S PROCESS.)

UNITED STATES PATENT OFFICE.

PHILLIP H. CORLETT, OF MANCHESTER, PENNSYLVANIA.

IMPROVEMENT IN SPARK-EXTINGUISHERS FOR LOCOMOTIVES.

Specification forming part of Letters Patent No. **39,552**, dated August 18, 1863.

To all whom it may concern:

Be it known that I, PHILLIP H. CORLETT, of Manchester, in the county of Allegheny and State of Pennsylvania, have invented new and useful Improvements in Locomotives; and I do hereby declare that the following is a full and complete description of the construction and operation of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a front view with a portion of the front plate removed, showing the interior of the smoke-box. Fig. 2 is a longitudinal section. Fig. 3 is a detached view of the valve, showing its structure and operation; and Fig. 4 is a front view of the smoke-box.

Like letters refer to like parts in the several views.

The nature of my invention relates to a rotary valve, or to a chambered valve, placed at the bottom of the smoke-box and attached thereto, and so constructed and operated that the sparks and cinders can at any time be discharged therefrom through the valve without admitting air into the smoke-box, and to the working said valve by the running of the engine. The object sought in this structure and arrangement is to guard against the discharge of live coals and live sparks while running, and also to enable me to extinguish the sparks by the action of the chambered valve, and by the further action of which I am enabled to discharge the extinguished sparks at pleasure, as above stated.

The difficulty hitherto experienced has been to discharge the sparks and cinders without admitting a current of air, especially when the locomotive is in rapid motion, for the admission of even the smallest jet of air into the smoke-box fans the sparks into a state of active combustion, producing such an intense heat in the smoke-box as to injure or destroy the plates or derange the working of the pistons. The valve for the discharge of the sparks and cinders without the admission of air consists of a shaft, D, cylinder E, secured to the shaft D, and the drum F. The drum F has a neck, F′, by means of which it is secured to the under side of the smoke-box, so that the hopper C, with which the bottom of the smoke-box is provided, will discharge directly into the neck F′, from which there is a passage into the chamber of the cylinder or chambered valve E, as shown at *a*, Fig. 2. The lower side of the drum F is provided with an opening, *a*′, for the discharge of the cinders that enter at *a*. The cylinder E fits closely into the drum F, and within which it can be rotated by means of the shaft D and gear D′, or it may receive a vibratory or reciprocating motion by means of a rock-shaft connected to the arm D″.

The cylinder or chambered valve E has one or more openings in its outer rim. Two are shown at *e* and *e*′, so located upon the circumference that when one—for example *e*, Fig. 2—is in position to receive the sparks from the neck F through the openings *a* into the chamber of the cylinder E, the opening *a*′ will be closed by the solid walls of the cylinder E, the opening *e*′ being carried around to one side, as shown in the figure. In this position the chamber G of the valve E receives from the hopper C whatever accumulation can pass into the valve through the opening *e*. Now, by a movement of the valve in the direction of the arrow the opening *e* is carried from under the throat *a*, which becomes closed by the solid walls of the cylinder before the opening *e*′ is brought into position with the outlet *a*′, as seen at H, Fig. 2, in which position, before the opening of the outlet *a*′, the contents of the chambered valve are excluded from the action of the atmosphere, and the fire becomes extinguished. As soon as the opening *e*′ is brought into position with the outlet *a*′, the contents of the valve will be discharged without admitting air into the smoke-box. The movement of the valve is slow, and may be reciprocating, or constitute an entire revolution, in which latter case one opening into the chamber G will suffice. The time occupied in the movement may be half an hour or more, and sufficient to extinguish any combustion still remaining when the sparks or cinders enter the closed chamber G.

There are several modifications of this valve which involve the principle above described. The cylinder E may have but one opening, and in its revolution this opening may be brought successively into position with the openings *a* and *a*′, or a rectangular box; or any other convenient form may be used, with a slide-valve both above and below, and so arranged that both cannot be open at one time, that when one is open the other will surely be

closed to prevent the admission of air through the valve into the smoke-box.

The principle involved is a chambered valve with an inlet and outlet, and so constructed and arranged that when one is open the other is closed, so as to exclude the air from the smoke-box. The movement of the valve is so slow that any fire that may pass into the chamber is thoroughly extinguished before the discharge takes place.

When the valve is constructed for a vibratory motion, a stop, *i*, on the end of the cylinder E works in a slot, *i'*, in the drum F to regulate the extent of the movement.

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

1. A chambered valve, E, with one or more openings, *e e'*, so arranged in regard to the throat *a* and discharge-orifice *a'* that when the discharge-orifice is open the receiving-opening is closed, and vice versa, thus preventing the admission of a current of air into the smoke box while the cinders are being discharged, as specified.

2. Working the valve by a crank-motion, rock-shaft, pawl and ratchet, or gears, as and for the purpose specified.

PHILLIP H. CORLETT.

Witnesses:

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