(No Model.)

# J. McMURRIN.

## SPARK ARRESTER.

No. 525,229. Patented Aug. 28, 1894.

Fig: 1.

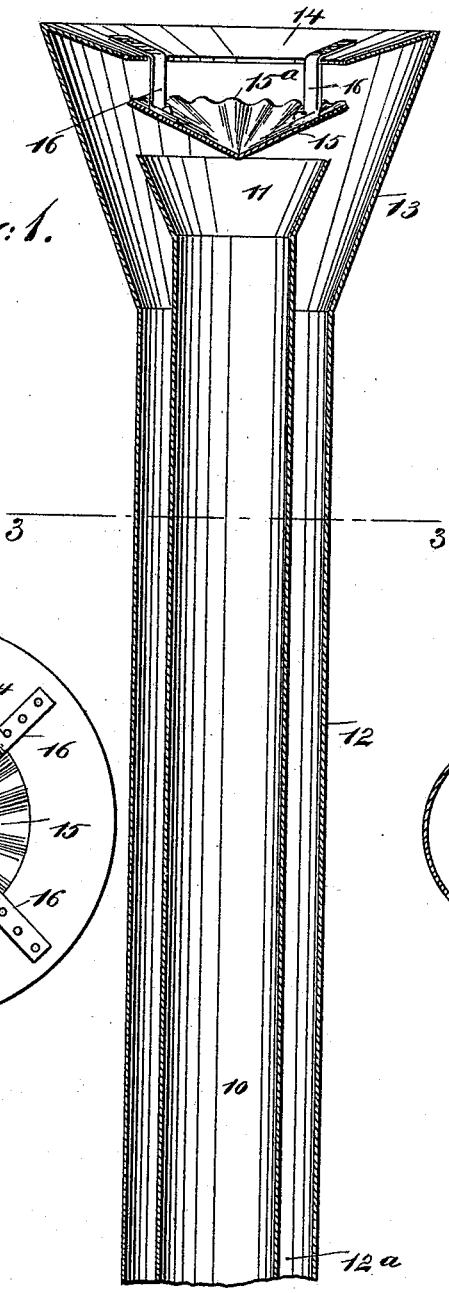



Fig: 2.

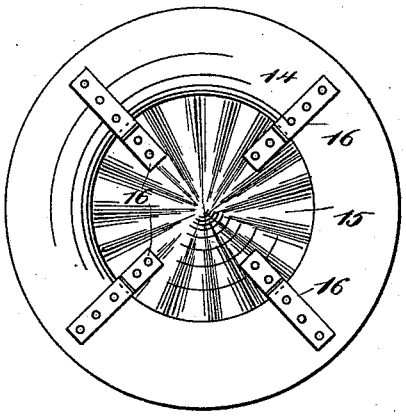
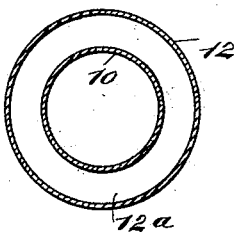



Fig: 3.




WITNESSES:

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# UNITED STATES PATENT OFFICE.

JOSEPH McMURRIN, OF SHOSHONE, IDAHO.

## SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 525,229, dated August 28, 1894.

Application filed December 2, 1893. Serial No. 492,586. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH McMURRIN, of Shoshone, in the county of Logan and State of Idaho, have invented a new and Improved Spark-Arrester, of which the following is a full, clear, and exact description.

My invention relates to improvements in that class of spark arresters which are particularly adapted for use in connection with locomotive smoke stacks to prevent sparks from being thrown from the stack.

The object of my invention is to produce a spark arrester of the greatest possible simplicity and cheapness, consistent with efficient work, and also to construct the device in such a manner that the draft of the stack will not be interfered with, while the sparks will be prevented from being thrown out on surrounding objects and will be caught in a suitable receptacle from which they may be removed as often as necessary.

To these ends my invention consists of a spark arrester, the construction and arrangement of which will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a central vertical section of a stack provided my improved spark arrester. Fig. 2 is a plan view of the same; and Fig. 3 is a sectional plan on the line 3—3 of Fig. 1.

The stack 10 is of substantially the usual kind, and is adapted to connect with the smoke box in the customary manner, and has also a flaring upper end 11. The smoke stack is encircled by a jacket 12, and a spark chamber $12^a$ is thus formed between the stack and the jacket, in which chamber the sparks deflected in the top of the stack are caught. The jacket has a flaring top 13, which projects above the top of the stack and which terminates in an in-turned and downwardly inclined flange 14, the flaring top and flange forming a sort of bonnet which covers the top of the stack.

Above the smoke stack is a conoidal deflector 15, which is hung point downward, and the transverse diameter of the deflector should be a little more than the diameter of the stack at its largest point. The walls of the deflector are preferably arranged at a greater inclination relatively to the axis of the smoke stack than the flaring portion 11 of the latter, for a purpose to be stated hereinafter. The deflector is hung point downward by means of strips 16, which are secured to it and to the flange 14 of the spark arrester bonnet, and the deflector is preferably made of a single sheet of metal, crimped to the desired shape, so that radial channels $15^a$, are formed which strengthen the deflector, and which also act as guides for the sparks and cause them to slide readily outward against the flaring top 13 and beneath the flange 14 of the arrester.

It will be observed that as the smoke and sparks issue from the stack 10, both will be deflected outward by the flaring portion 11 of the stack and the conoidal deflector 15, and the smoke will pass freely outward through the central orifice in the flange 14, while the sparks are caught beneath the flange 14 and dropped back into the chamber $12^a$, from which they may be removed when necessary. By giving the deflector 15 a greater inclination relative to the axis of the stack than the flaring portion 11, a very strong lateral deviation of the sparks is obtained without reducing the width of the annular space between the flaring portions 11 and 13 of the stack and the jacket respectively, so that the sparks will readily fall into the chamber $12^a$.

The apparatus is intended to work in connection with the exhaust on the engine cylinders, so that at every exhaust the smoke and sparks will be thrown violently out of the stack, the sparks being caught by the flange 14 and the smoke passing freely outward.

It will be seen that there will be sufficient time between each exhaust to permit the sparks to settle, so that the outgoing current of sparks and smoke will not meet the dropping sparks thrown out by a previous exhaust, and thus the apparatus operates perfectly and no sparks are permitted to escape.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with the smoke stack having a flaring top, of a conoidal deflector arranged point downward above the top of the stack, the walls of the deflector having a smaller inclination relatively to a horizontal plane than the flaring portion of the stack, so

that the sparks while traveling outward and upward in the flaring top of the stack, will be farther deflected outwardly and radially, and at the same time checked in their upward movement, and a jacket surrounding the stack and provided with a flaring top surrounding the top of the stack, the jacket being further provided at the top with an inwardly-extending overhanging flange to completely arrest the sparks and cause them to fall into the annular chamber between the stack and the jacket, substantially as described.

2. The combination, with the smoke stack, the jacket encircling it, and the in-turned flange on the jacket, of the conoidal deflector arranged point downward above the top of the stack and below the flange of the jacket, the deflector having radial grooves, substantially as described.

JOSEPH McMURRIN.

Witnesses:
J. E. BURKE,
P. WOODMANSEE.