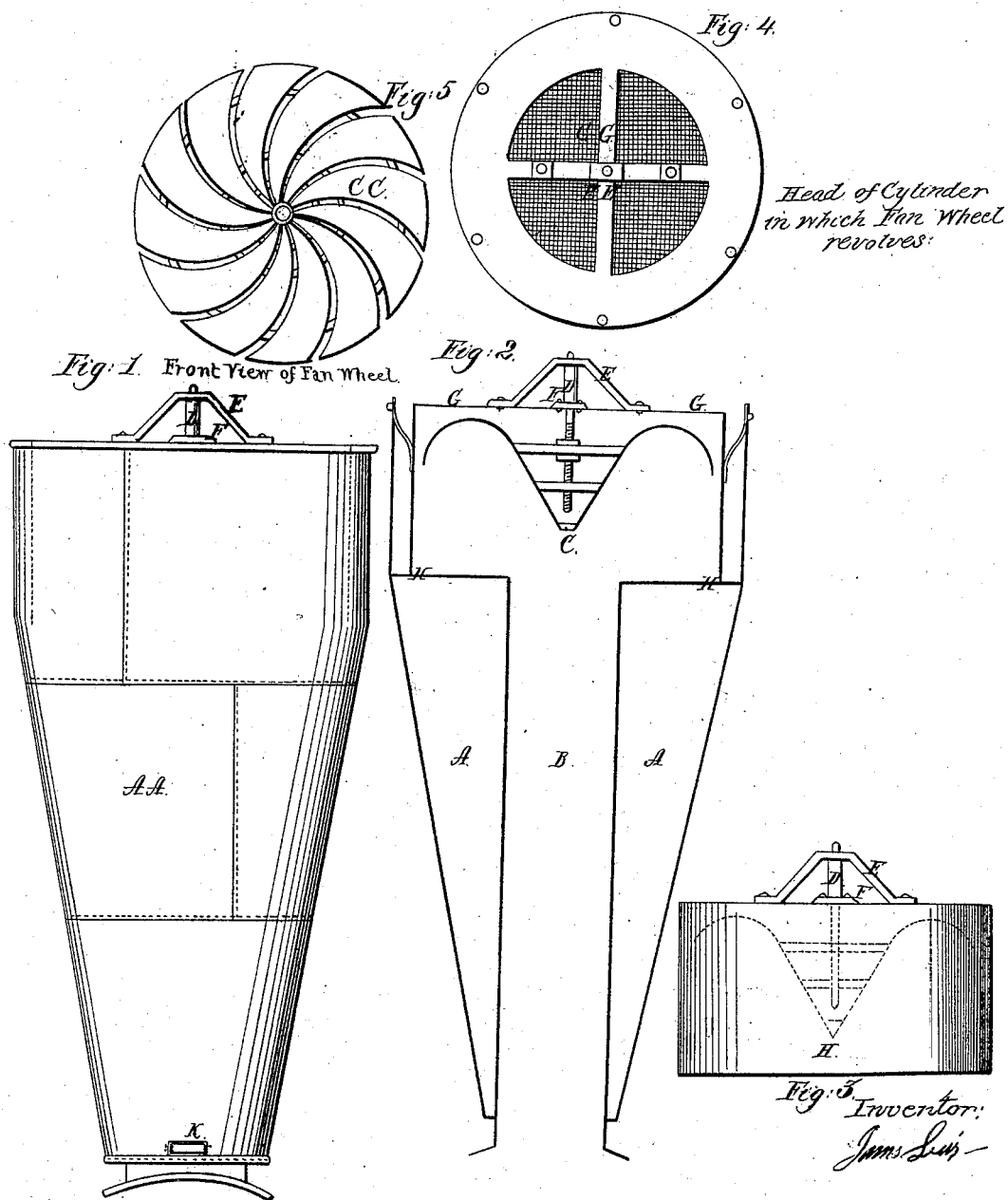


*J. Lewis,*  
*Spark Arrester,*  
*No 2,463,*  
*Patented Feb. 21, 1842.*



# UNITED STATES PATENT OFFICE.

JAMES LEWIS, OF SARATOGA SPRINGS, NEW YORK.

## SPARK-ARRESTER.

Specification of Letters Patent No. 2,463, dated February 21, 1842.

*To all whom it may concern:*

Be it known that I, JAMES LEWIS, of Saratoga Springs, in the county of Saratoga and State of New York, have invented a new and useful Improvement in the machine for arresting the sparks and cinders emitted by locomotive or other engines and at the same time improving the draft of the smoke-pipe, called "Lewis's spark-catcher," which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1, elevation of the smoke pipe; Fig. 2, section of smoke pipe, cylinder, and fan wheel; Fig. 3, elevation of the cylinder; Fig. 4, top view of the cylinder; Fig. 5, view of the under side of the fan wheel.

Similar letters refer to corresponding parts.

The smoke pipe B and receiver A for receiving the sparks are made in the usual manner. The receiver is divided by partitions.

The improvement consists in arranging a peculiarly constructed horizontal revolving fan wheel contained in a stationary cylinder, open at one end and covered by gage at the other end, arranged at the top of the smoke pipe—said wheel being turned by the power of the exhaust steam or other suitable means—the exhaust steam in ascending striking the wheel—turning it and driving the sparks and cinders down into the receiver in the manner hereafter more particularly described.

The cylinder H is composed of sheet iron of less diameter than the upper end of the receiver A in which it is placed being open at the lower end and the upper end covered with wire gauze as before stated—the fan wheel *c* turning in this detached cylinder.

The fan wheel C is constructed of iron or other metal. The fans are secured and kept in their relative position by means of hoops firmly connected to them. The fans of the wheel are so shaped that the center of the wheel is flat from which flat part they rise in the manner of a funnel and then curve over and downward in the manner of an inverted bell forming a concavo-convex surface for diverging the sparks and turning them downward into the receiver A. The fan wheel, when finished, resembles an inverted bell slit around its circumference and bent or curved so as to form

separate wings or fans. The wheel is fixed to a mandrel or vertical axle D, having a shoulder which turns on a horizontal cross bar E at the head of the cylinder and kept steady by a stirrup E bolted to the top of the cylinder and in which the upper end of the aforesaid axle D turns.

The fan wheel *c* may be composed of one flat circular piece of metal slit around its circumference into 10 or more equal parts and these cut or parted in toward the center about one fourth or one-third of the diameter of the plate and these divisions bent or curved and brought to the required shape and the wheel thus formed screwed upon the mandrel. The wheel and cylinder are separate from the pipe and receiver. The cylinder rests upon the upper edges of the partitions of the receiver outside the smoke pipe B and is sustained in a vertical position by springs or cleats fastened to the inside of the receiver which receiver is of greater diameter than the pipe and projects above it and between which and the cylinder the smoke ascends and passes out also through the wire gauze over the top of the cylinder.

The operation is as follows:—The smoke and exhaust steam ascending from the smoke pipe B strike the revolving wheel *c* in the center then being diverged upward and as they approach the periphery put the wheel in motion, which motion near the periphery is greater than the velocity of the smoke and thus forms a partial vacuum into which the sparks and smoke are drawn and from thence driven down into the reservoir A for the sparks the smoke escaping through the circular aperture outside the cylinder and through the cylinder and gauze cap over the fan wheel. The sparks are removed through the door K at the bottom of the receiver A in the usual manner.

The invention claimed is—

The inverted bell shaped revolving fan wheel combined with the detached stationary cylinder placed in the top of the pipe and spark receiver as before described for arresting the sparks and cinders emitted by locomotive or other steam engines.

JAMES LEWIS.

Witnesses:

CLEMONS GIBBS,  
CHESTER GROESBECK.