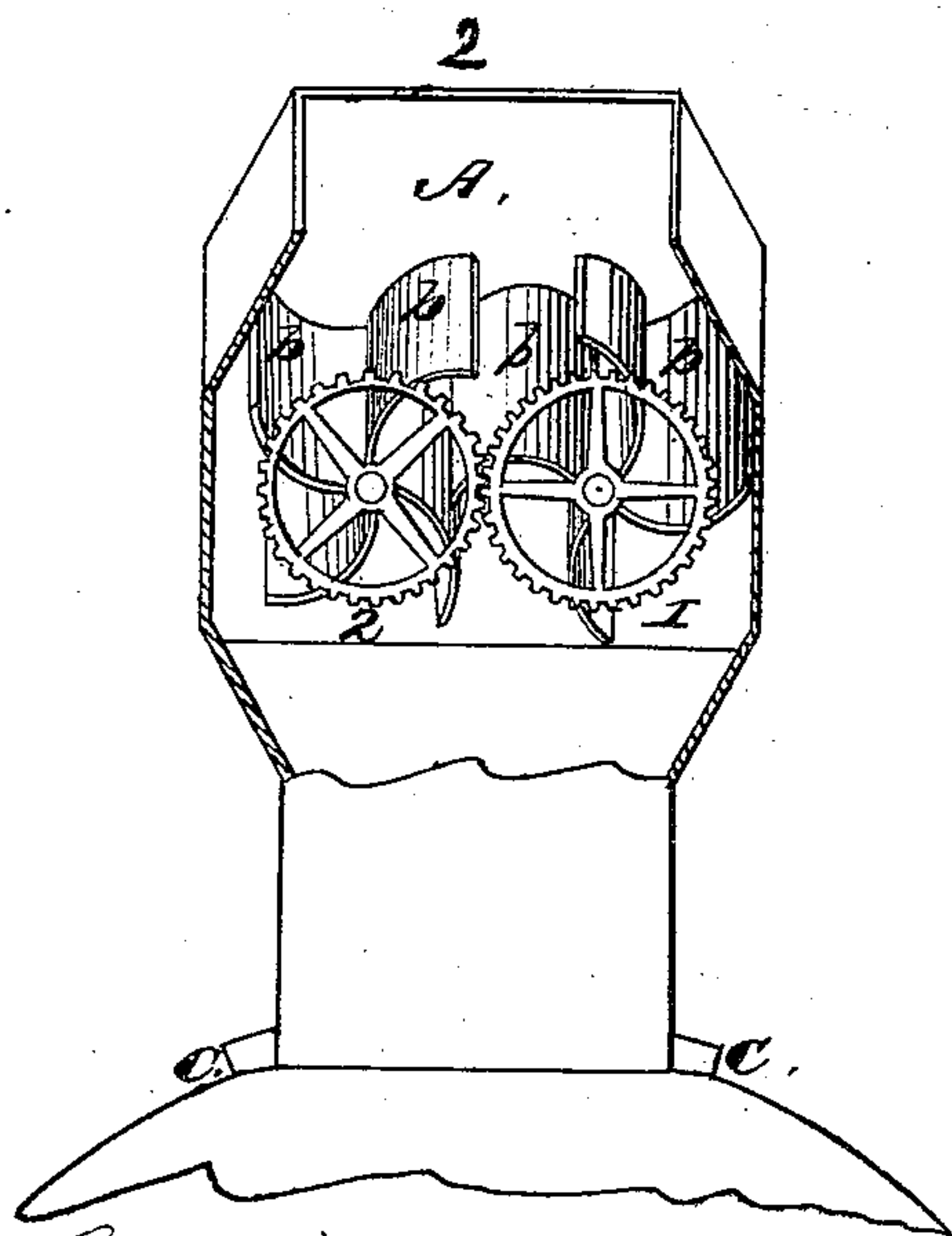
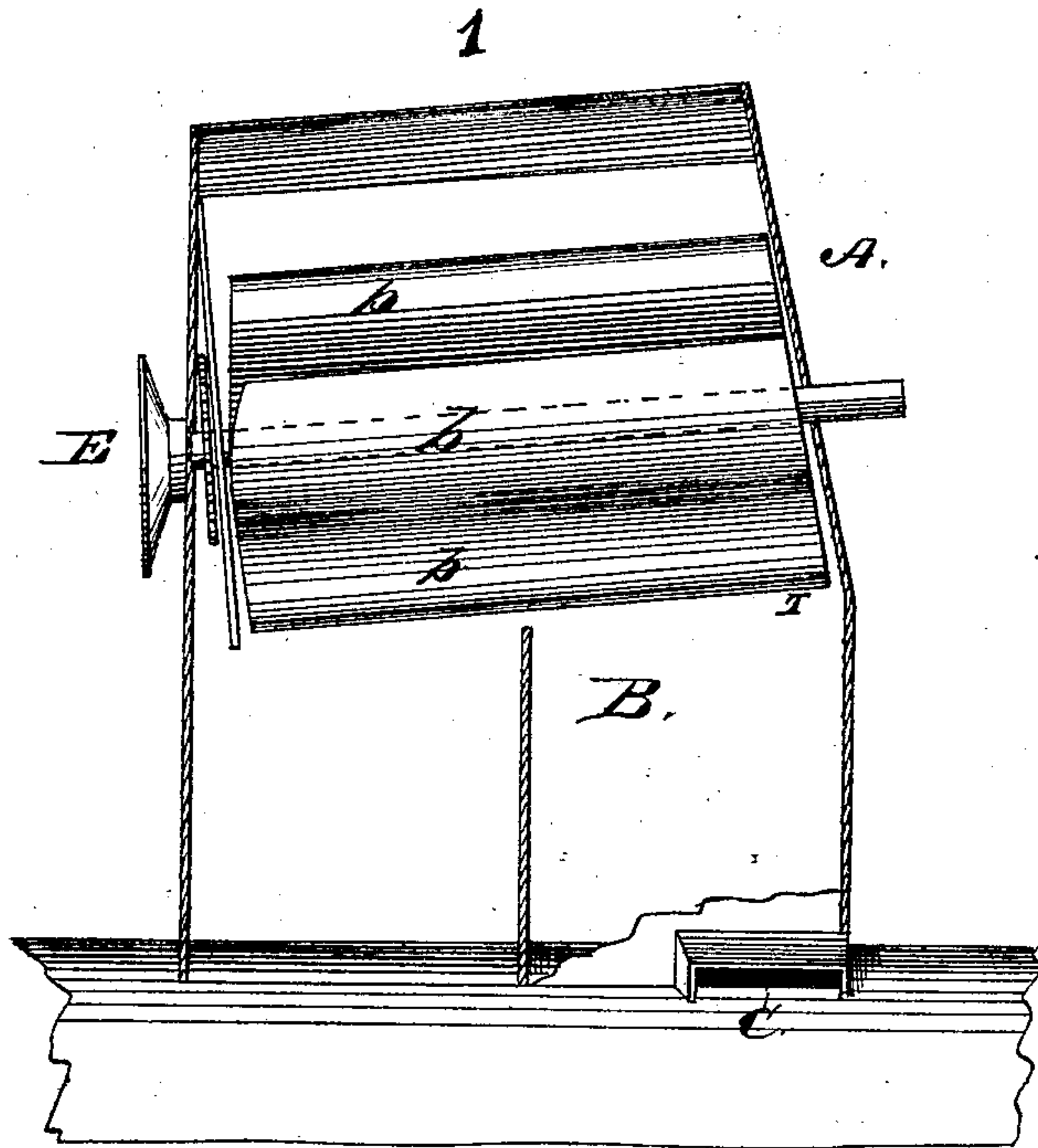


R. ASH.  
Spark-Arresters.

No. 141,195.

Patented July 29, 1873.



Witnesses.

Andrew H. Lucas  
Jas. C. Hamilton

Inventor.

R. Ash

# UNITED STATES PATENT OFFICE.

ROBERT ASH, OF ST. LOUIS, MISSOURI.

## IMPROVEMENT IN SPARK-ARRESTERS.

Specification forming part of Letters Patent No. **141,195**, dated July 29, 1873; application filed March 31, 1873.

*To all whom it may concern:*

Be it known that I, ROBERT ASH, of the city and county of St. Louis and State of Missouri, have invented a new and useful Improvement in Smoke-Stacks for Locomotive-Engines; and declare the following to be a full, perfect, and complete description of the same, referring by letters to the accompanying drawings for illustration.

Figure 1 represents the apparatus embodying my invention.

The object of my invention is to collect the cinders, embers, and ashes from the furnace of locomotive-engines in a chamber for that purpose, and convey them around the boiler to the track under the train.

To accomplish this object, I first construct a smoke-stack of the ordinary material, of an oval or square shape, having a square or oblong top, A, and placing in the top of this stack two parallel rollers or deflecting screw-fans, *b b*, at an angle of fifteen degrees, more or less. These rollers or fans are made of boiler or cast iron, of a size convenient to the stack, and have each four fans, and are placed parallel with each other, the screw turning to the right hand on roller No. 1, and to the left hand on roller No. 2, so that, when placed close together, the fans on roller No. 1 occupy a position between the two fans opposite on roller No. 2. At the front end of these rollers or fans are placed two cog-wheels, one on each fan, to govern their action—to keep them from striking each other while turning, and, when they are not turning, to afford an opening for the escape of smoke. I give the rollers or fans a screw shape and place them at the above angle, so that when the cinders, embers, and ashes from the furnace are thrown upward they strike the fans or rollers, and are thrown, by the position, the manner of their construction, and the rotary motion of the fans, backward into the chamber B, from where they are conveyed by the conducting-flues *c c* around the boiler to the track beneath. The escaping steam from the exhaust-pipe and the heat from the furnace will produce the rotary motion of the rollers or fans *b b*. I also construct an opening at the front end of the

stack, at the center of the rollers or fans described, for a draft or air passage, E, through the flues. This air-chamber is under the control of the engineer by means of a rod or rope for that purpose—to open and close the same—and, when opened while the train is in motion, causes an amount of air to pass along the line of the fans, at the junction of the same, and down through the chamber B and flues *c c*. The object of this is to keep the chambers and flues open and clean, as well as to assist the fans in forcing all the cinders into the chamber B.

In this way I am able to construct a smoke-stack for locomotive-engines at about the same cost as the ordinary stack, and, by means of the screw-fans above described, to collect all the cinders, embers, and ashes in the chamber B, and convey them to the track; and, by placing these fans in a position over the escape-pipe constructed as described, I get the rotary motion of the rollers or fans. The steam striking at the center on the fans produces this motion, and thereby increasing the draft through the furnace, at the same time, by means of this stack, saving the damage on cars and furniture by sparks from the engine, and preventing damage by fire along railroads—fences and bridges and other property—and increasing the comfort of passengers, as the sparks are all extinguished before they reach the track, and are all collected in the chamber B instead of falling back upon the cars.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The horizontal rotary screw-shaped fans *b b*, connected by the wheels 1 and 2, in combination with the smoke-stack of a locomotive-engine, substantially as and for the purposes hereinbefore set forth.

2. In combination, the rotary fans *b b*, chamber B, conducting-flues *c c*, and opening E, substantially as and for the purposes hereinbefore set forth.

Witnesses:

J. E. DUNNEGAN,  
WM. F. SMITH.

R. ASH.