

F. A. PERRY.  
Cone for Smoke-Stack of Locomotives, &c.  
No. 221,185.                      Patented Nov. 4, 1879.

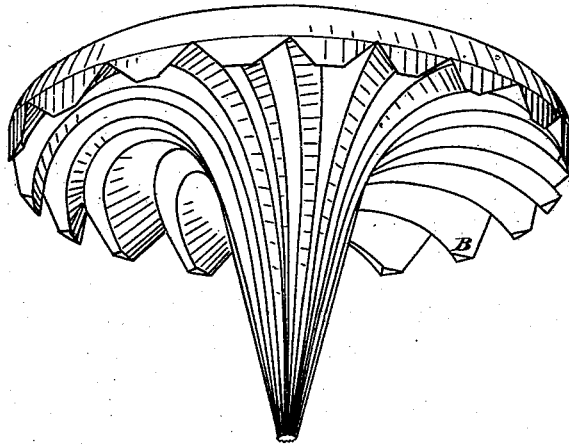


Fig. 1.

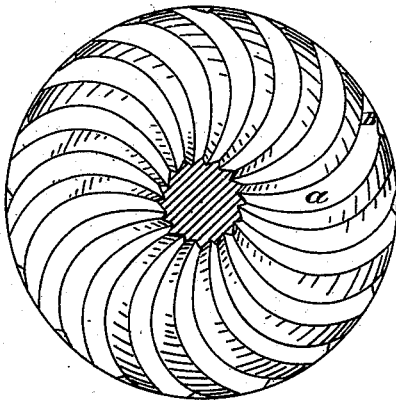


Fig. 2.

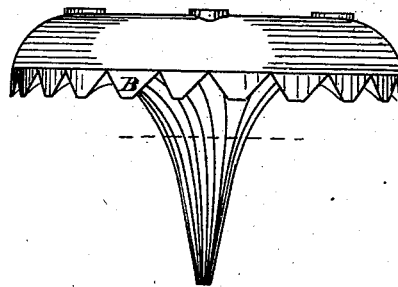


Fig. 3.

WITNESSES.

*S. H. Bernier*  
*J. C. Dutton*

INVENTOR.

*Francis A. Perry*  
*per Alfred Barney*  
*attorney*

# UNITED STATES PATENT OFFICE.

FRANCIS A. PERRY, OF KEENE, NEW HAMPSHIRE.

## IMPROVEMENT IN CONES FOR SMOKE-STACKS OF LOCOMOTIVES, &c.

Specification forming part of Letters Patent No. **221,185**, dated November 4, 1879; application filed October 7, 1879.

*To all whom it may concern:*

Be it known that I, FRANCIS A. PERRY, of the city of Keene, county of Cheshire, and State of New Hampshire, have invented a new and useful Improvement in Cones for Smoke-Stacks for Locomotives or for Portable Engines, of which the following is a specification, reference being had to the accompanying drawings, making part thereof.

The invention relates to cones for smoke-stacks, which are used for preventing the sparks, when the exhaust-blast projects them with great force up the chimney or stack, from wearing out the netting, or for breaking them up so that they cannot be sent out so large as to set fires, and to direct them, when desired, into spark-chambers.

Heretofore cones have been made smooth or with rings or wings or projections, or other corrugations, to break up the sparks. The objections to these are that while they do that they also retard the draft, and neither of them direct the sparks just where desired perfectly.

From long practice with this improved rifle-cone I am satisfied that while it will break up the sparks it will also release the steam and gases from the back pressure that is the effect of all other cones.

The grooves being formed upon the principle of the rifle-guns gives the currents of steam, gas, and sparks a spiral motion, which assists them in their departure from the stack.

The peculiarity of this improvement over any other cone is in the form of the outer edge or upper circle, which is so formed that it allows the products of combustion to pass through the grooves easily. The results are that the engine's steam freely and steadily, the sparks are broken up, and the wire mesh or netting preserved.

It is well known to engineers that steam on a clear day will at times be sent from the stack in a ring form, and always with a spiral motion, thus showing that with any cone there is that tendency in the stack, caused by the exhaust-blast. This invention assists this action.

The object of my invention is to provide a rifle-cone with grooves formed of any style, spiral shape, that will break up the sparks and assist the escape of the products of combustion from the stack.

The invention consists of a cone of the usual size, the under part being grooved out in V-style spiral grooves. These are so formed as to be open on the outer edge, while all others stop at the edge in a plain circle, and by so doing lose much of their power or effectiveness. These cones are cast in the usual manner, and therefore cost no more to make.

In the drawings, Figure 1 is a perspective view of a device embodying my invention. Fig. 2 is a plan and section of the same. Fig. 3 is an elevation of the cone.

The spiral grooves *a* are cast so as to wind around the outer surface from the point to the edge B, while the edge of this circle is curved to deflect the sparks into a spark-chamber. They can be made so as to stand at the curve formed by the enlargement of the top, or curved upward, so as to allow the blast to leave the cone without any back pressure.

The operation of my cone when placed in the stack is as follows: The smoke and sparks strike the cone, and the sparks, by the spiral motion, are ground up and forced in a broken mass out of the stack. The smoke and the sparks are given a spiral motion and forced through the grooves by the velocity given them by the exhaust-steam, when they escape from the stack in a harmless condition.

What I claim is—

A solid cone with its under surface cast or formed in spiral-shaped grooves or spaces, open at the outer edge, constructed and arranged substantially as described, and for the purposes set forth.

FRANCIS A. PERRY.

Witnesses:

SILAS HARDY,  
CLARK F. ROWELL.