J. TAYLOR.

SMOKE-STACK AND SPARK-ARRESTER.

No. 185,145. Patented Dec. 5, 1876.

Fig. 1.

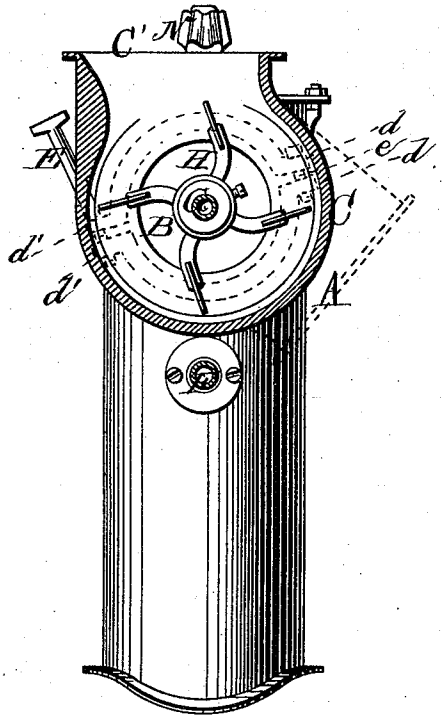
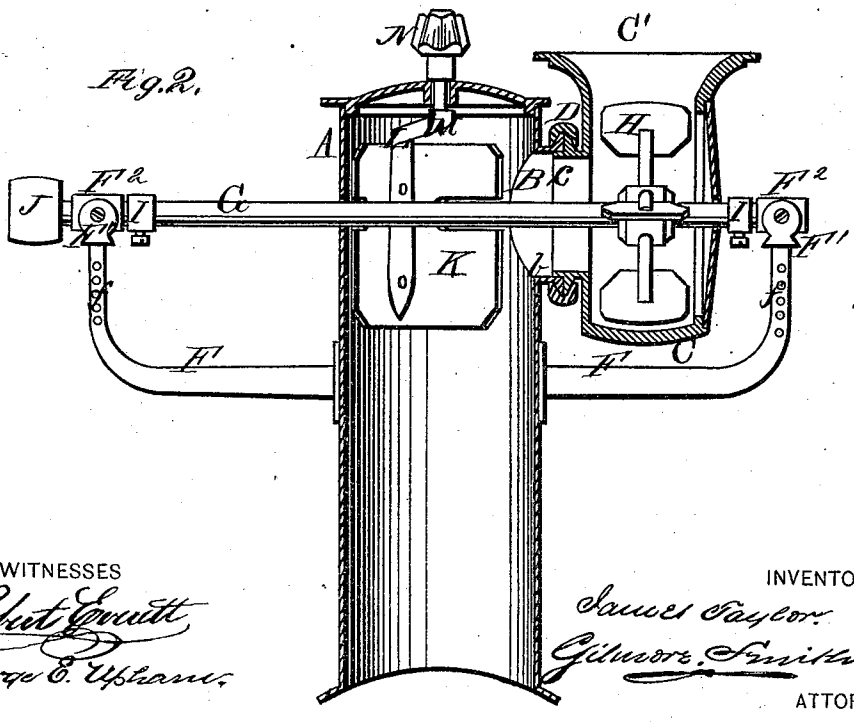


Fig. 2.



WITNESSES

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JAMES TAYLOR, OF NEVADA, OHIO.

IMPROVEMENT IN SMOKE-STACKS AND SPARK-ARRESTERS.

Specification forming part of Letters Patent No. **185,145**, dated December 5, 1876; application filed October 28, 1876.

To all whom it may concern:

Be it known that I, JAMES TAYLOR, of Nevada, in the county of Wyandot and State of Ohio, have invented a new and valuable Improvement in Smoke-Stacks and Spark-Arresters; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a side view, part sectional, of my smoke-stack and spark-arrester. Fig. 2 is a central vertical sectional view of the same.

This invention relates to devices attached to the smoke-stacks of steam-engines for arresting and extinguishing sparks; and it consists, mainly, in the employment of a rotating fan and discharging-receiver, which together operate to extinguish said sparks. It also consists in making the shaft of said fan hollow, so that air may pass through the same and cool it. It also consists in making cross-perforations through the arms which support said shaft, for the same purpose. It also consists in various subsidiary devices, arrangements, and combinations, hereinafter particularly set forth.

In the annexed drawings, A designates the stack-head of a steam-engine. Said stack-head is closed at the top, but has a side outlet, B, near its upper end, through which the products of combustion pass. C designates a cylindrical casing, having a flaring mouth on its circumference, and provided with an annular flange, *c*, whereby it is swiveled upon or within a similar flange, *b*, surrounding outlet B, and forming part of smoke-stack head A. Casing C receives and discharges the sparks, which pass up through the smoke-stack and opening B. As indicated in dotted lines, Fig. 1, it may be turned up or down at any angle desired, and there locked by means of a clamping-collar, D, which surrounds flanges *b* and *c*. Said collar is divided transversely at opposite points, and is provided at these openings with screw-tapped lugs *d d d' d'*. Through lugs *d d*, on opposite sides of one of these openings, passes a short screw, *e*, which merely serves to hold the sections of said collar together. Through the opposite lugs, *d' d'*, passes the screw-threaded end of an adjusting-rod, E, which has a small head or thumb-piece, E'. By turning this rod in one direction, the sections of collar D are drawn closely together, clamping casing or receiver C in the position which it then occupies. By turning it in the other direction, said collar is loosened, so that said casing or discharging-receiver may be turned into any other position desired.

If preferred, a pipe may be attached to the flaring mouth C' of said casing or receiver; but this is not always necessary, as the fan, hereinafter described, in conjunction with said casing, will extinguish all the sparks that pass up through the smoke-stack.

F designates two upwardly-curving metal arms, which are secured by their lower ends to smoke-stack head A, on opposite sides thereof, and are provided at their upper ends with clips or supporting-blocks F^1, which bear sleeves or cylindrical bearings F^2. In said sleeves or cylindrical bearings rotates a hollow shaft, G, which passes through stack-head A and casing or receiver C, and is provided with a rotating fan, H, inside of said casing. Said shaft is also provided with adjustable stop-collars I, which prevent it from passing too far longitudinally in either direction through said cylindrical bearings, and with a fixed belt-wheel or pulley, J, whereby it is rotated. The power may be applied through a belt from the driving-shaft of the engine.

The lower part of each supporting-arm F is preferably made hollow, for the sake of lightness. The upper part of each of said supporting-arms is transversely perforated at *f f*, to allow the passage of air through it, and thus cool it when heated. The hollow construction of shaft G answers the same purpose. The friction between said shaft and its bearings may also be diminished by the use of lubricants or anti-friction metal. The air-admitting construction described is also useful in neutralizing the injurious effects of the great heat communicated to the smoke-stack and its attachments by the continually-ascending currents of the products of combustion.

The sparks, passing into casing or receiving-chamber C, are dashed against the inner face thereof by fan H until they are entirely

extinguished, when they escape in the form of cinders and dust from outlet C′.

Opening B may be closed at will by means of a sliding valve or cut-off plate, K, which conforms to the interior face of stack-head A, and which is operated by a crank, L, on an upright shaft, M, that passes upward through the top of stack-head A. Said shaft is provided, above said stack-head, with a bevel-pinion, N, whereby it receives partial rotary motion through suitable gearing adapted to be operated by the engineer or other attendant.

A crank or belt wheel may be substituted for said bevel-pinion. Also, a gear-wheel or its equivalent may be substituted for the pulley or belt-wheel on fan-shaft G. Various other modifications may be made without departing from the spirit and scope of my invention.

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

1. In a spark arrester and extinguisher, the combination of a rotating fan with a casing or spark-receiver, surrounding the same, and with a smoke-stack head, opening into said casing, the opening being closed at will by a sliding valve or cut-off plate, which conforms to the interior face of the smoke-stack, substantially as set forth.

2. In a spark-arrester, the spark-receiver C, provided with an annular flange, *c*, in combination with the smoke-stack, having flange *b* and clamping-collar D, divided transversely, and provided with screw-tapped lugs *d d′* and screw *e*, whereby the spark-receiver is circumferentially turned and held in any desired position, substantially as described, and for the purpose set forth.

3. In a spark-arrester, the hollow shaft G, provided with stop-collars I I, in combination with the perforated supporting-arms F F, having clips F^1 F^1 and sleeves F^2, substantially as described, and for the purpose set forth.

4. In a spark-arrester, the combination of cut-off or valve K with crank L, shaft M, and stack-head A, having opening B, substantially as and for the purposes set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JAMES TAYLOR.

Witnesses:

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