

W. H. JORDAN.
SPARK-ARRESTER.

No. 176,865.

Patented May 2, 1876.

Fig. 1

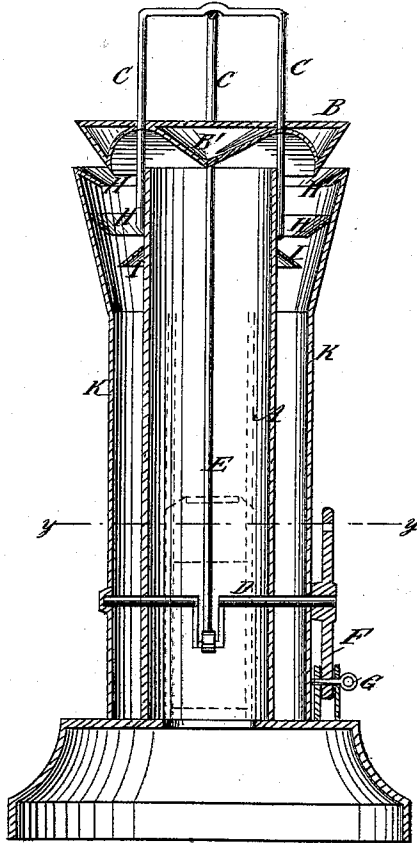
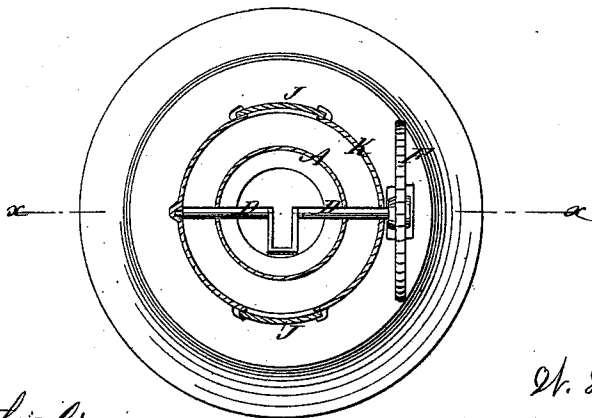


Fig. 2



WITNESSES:

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IMPROVEMENT IN SPARK-ARRESTERS.

Specification forming part of Letters Patent No. **176,865**, dated May 2, 1876; application filed February 5, 1876.

To all whom it may concern:

Be it known that I, WALDO H. JORDAN, of the city, county, and State of New York, have invented a new and useful Improvement in Spark-Arresters; and I do hereby declare that the following is a full and exact specification thereof, which will enable any person skilled in the art to make and use the same.

This invention is intended to effect the arrest of sparks, cinders, unburned fuel, and other solids that rise from chimneys with the gaseous products of combustion. The invention is especially applicable to the chimneys of locomotives, but it may be used in connection with chimneys of every description.

My invention consists of an uninclosed annular cap or shell deflector, of conical exterior form, having a diameter sufficient to cover both the mouth of the chimney and the mouth of the cinder-receptacle which is made around the chimney, the said deflector having its interior provided with a parabolic deflecting surface that begins at the center of the shell, curves upward and outward, then downward to the outer edge of the shell. This shell or cap is uninclosed, and is placed above the mouth of the chimney, with the center of said deflecting surface over the center of the chimney, so that when the products of combustion rise they impinge upon said deflecting-surface, which serves to turn and reverse the solid particles or cinders, sending them down into an annular receptacle which surrounds the chimney, while the smoke and gases pass laterally from the interior of the shell to the atmosphere. The cap is made vertically adjustable in its position in respect to the chimney.

Reference is made to the drawing, which forms a part of this specification, in which—

Figure 1 is a side sectional elevation of my improvement through the line *x x*. Fig. 2 is a plan view in section through the line *y y*.

Similar letters of reference indicate corresponding parts.

A, the chimney; K, external casing surrounding the chimney. The space between chimney A and shell K forms the receptacle for the cinders or other solids that rise from the chimney. The cinders are removed from the receptacle through side doors J, made in

casing K. B, a hollow annular conical deflecting cap or shell, placed directly over the center of the chimney. The top of the shell B is flat; its exterior sides are sloping; its interior is hollow, but provided with parabolic deflecting-surfaces B' that start from a common center, rise and curve in parabolic form upward, outward, and downward, as shown, to the lower edge of the shell. The central and upward sloping surfaces of the shell stand over the chimney, receive the impact of the products of combustion, and direct them outward. The downward-curved surfaces of the shell stand over the mouth of the annular receptacle between the chimney A and exterior casing K, and direct the solid matter down into said receptacle. The upper portion of the casing K is enlarged or made flaring, so that its interior diameter is equal to the largest diameter of the shell A. The inner edge of the mouth of the casing K is provided with one or more thin annular inclined flanges, H, that project outward from the inner wall of the casing K into the space between the chimney and the casing. One or more similar flanges, I, project in like manner from the exterior wall of the chimney. These flanges H I serve to retain the cinders and prevent the rise after they have fallen below the flanges within the receptacle. The deflecting cap or shell B is made vertically adjustable by means of any suitable height-regulating device, which, in this example, consists of the attachment to shell B at its center of a rod, E, the lower end of which connects with a crank on the rotary cross-rod D, which passes through both chimney and casing, and is provided with a hand-wheel, F, locked in any desired position by pin G outside of the casing. CCC are guide-rods attached to chimney A, upon which rods the cap B slides up or down, according to the direction in which the wheel F is turned. The height of the deflector B may be thus easily regulated to suit the character of the fuel and the nature of the cinders produced, and the draft of the chimney may be also varied.

In starting the fire the deflector may need, in some cases, to be raised to increase the chimney-draft.

The cinders arising from various kinds of fuel may be fine or coarse, requiring a special

regulation of the height of the deflector, according to the fineness or coarseness of the cinders, to insure their arrest. The combination of a suitable height-regulating device with the deflector facilitates this regulation, and promotes the more effective operation of my improvement.

Heretofore, in the construction of spark-arresters, it has been common to inclose the deflector within the chimney-top or casing—an arrangement which greatly impedes the escape of the gases of combustion, and imparts so high a velocity to the upward-escaping gases that they carry with them a large portion of the finer cinders. This construction also necessitates the making of the deflector so small in diameter that it does not fully cover the mouth of the cinder-receptacle, and leaves space for the escape of cinders therefrom; resort is therefore commonly had to a wire-gauze covering placed over the casing, to assist in catching the cinders; but this gauze is expensive, and only serves to catch the larger cinders, while the finer cinders in part escape directly through the gauze into the atmosphere, and are in part deflected downward into the receptacle, from whence they readily rise again along the exterior sides of the deflector into the atmosphere.

In my improvement it will be observed that

the top of the chimney A and the top of the casing K are on the same level; that the deflector B covers both the chimney and the casing; and that the deflector is not inclosed, nor is any wire-gauze required. The result is that in the use of my invention the gases of combustion have a free lateral escape from the chimney, at a velocity so low that even the finest cinders are readily and effectually separated from the gases by the deflector, and thrown down into the receptacle, while the extension of the deflector over the mouth of the cinder-receptacle serves to catch and return back any cinders that may chance to rise from within the receptacle.

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

1. The combination, with the chimney and the cinder-receptacle, of the uninclosed deflector B, made with inverted conical flanges, and operating substantially in the manner described.

2. The combination, with the said uninclosed deflector, chimney, and casing K, of the annular flanges H H I, as set forth.

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Witnesses:

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