W. W. Hubbell,

Spark Arrester,

No. 2,142. Patented June 26, 1841

Fig. 2.

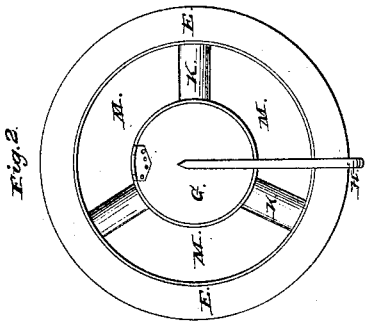
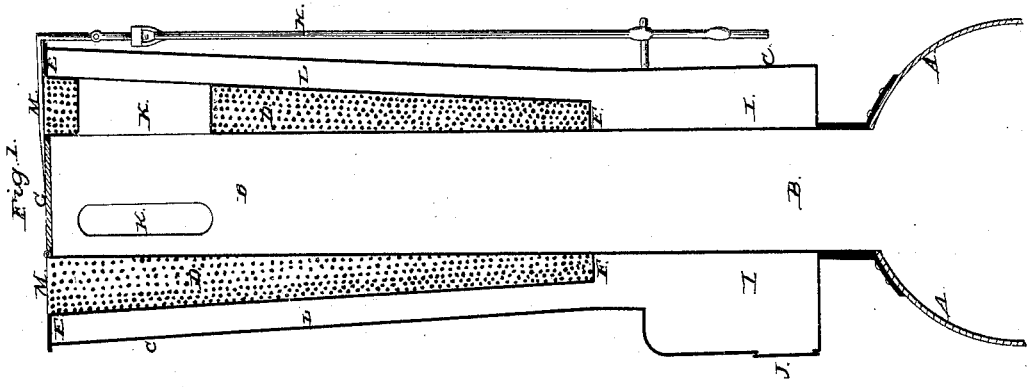


Fig. 1.



UNITED STATES PATENT OFFICE.

WM. W. HUBBELL, OF MOYAMENSING, PENNSYLVANIA, ASSIGNOR TO LEONARD PHLEGER.

MANNER OF CONSTRUCTING APPARATUS FOR ARRESTING SPARKS AND PREVENTING THEIR ESCAPE IN LOCOMOTIVES, &c.

Specification of Letters Patent No. 2,142, dated June 26, 1841.

To all whom it may concern:

Be it known that I, WILLIAM W. HUBBELL, of Moyamensing, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Manner of Constructing Spark-Arresters or Instruments for Preventing the Escape of Sparks from the Chimneys of Locomotive or other Steam-Engines; and I do hereby declare that the following is a full and exact description thereof.

The chimney of my spark arrester, when used on locomotive engines, rises from the smoke box, in the usual way, and it is surrounded by a case, or jacket, of sheet iron extending from its lower end to the same, or nearly the same, height with it. Between the chimney and this outward case, or jacket, there is a cylindrical body, or a conical frustum, of wire gauze, or sheet metal perforated throughout with numerous holes, and of such diameter as to leave a space of several inches between it and the chimney, and between it and the outer case. Said cylinder, or cone, of perforated metal extends up to the same height with the jacket; and the space between them is covered by an annular cap, which serves to unite the two at their upper ends, and to inclose the space between them. The perforated metal, or wire gauze, descends to the distance of two thirds, or three fourths, the length of the chimney, more or less, and at its lower end there is an annular plate which connects it with the chimney, and closes the space between them. Below this point the space between the jacket and the chimney constitutes a receptacle for sparks, cinders and ashes; and this is furnished with a door for their removal. The top of the chimney has a closely fitting cover adapted to it, which is to be kept closed when the engine is in action, but which may be opened when it is desirable to allow the draft to pass directly up the chimney. There is an open, annular space between the top of the chimney and the intermediate cylinder, or cone, of perforated metal, through which opening the draft is to escape when the engine is in action. Between the interior of the chimney, and the space between the jacket and the perforated metal, there are several, say three or four, pipes of communication, which extend across the space between the chimney and the perforated metal; and these allow the draft from the chimney to pass laterally from it into the outer space. These pipes are situated near the upper end of the apparatus, and between them there is a sufficient space left for the free ascent and escape of the draft into the atmosphere. To give to these pipes the required capacity without their obstructing the passage for the final escape of the draft, I flatten them at their sides, making their vertical diameters much greater than their horizontal.

In the accompanying drawing Figure 1, is a sectional view of my spark arrester, standing on the smoke box, and Fig. 2 a top view thereof.

A, A, is the smoke box; B, B, the chimney; C, C, the outer case, or jacket. D, D, the perforated metal, or wire gauze, surrounding the chimney. E, E, the annular, metallic plate covering the space between the jacket and the perforated metal. F, F, the annular plate inclosing the space between the chimney and the perforated metal. G, the hinged cover of the chimney, which may be opened or closed by means of the rod H. I, I, the receptacle for sparks, &c., and J, the door for their removal.

K, K, are the tubes communicating between the chimney and the space L, L.

In Fig. 2, the same letters of reference are used to designate the same parts. M, M, in this figure and in Fig. 1, are the escape openings between the pipes K, K, for the draft.

From the foregoing description, the operation of this apparatus will be readily understood. The exhaust steam is to be discharged into the chimney in the usual way; and the cover G, being closed, the draft will be forced through the tubes K, K, into the space L, L, where the sparks striking against the interior of the jacket, will fall down into the receptacle, or space, I, I; the steam and smoke, with the gaseous products of combustion, will, by their elasticity, be forced to pass through the perforations in D, D, and escape at the openings M, M.

Having thus fully described the manner in which I construct my spark arrester, and arrange and combine the respective parts thereof, I hereby declare that I do not claim to be the first inventor of either of the separate parts thereof, taken individually; but I do claim to have so combined and ar-

ranged these parts as to have produced an instrument substantially new in its character and beneficial in its effects; that is to say—

I claim—

The surrounding of the chimney B, B, by the perforated metallic cylinder, or cone, D, D, and the jacket, or case, C, C, combining these parts together, and inclosing them, in the manner herein set forth; the chimney being furnished with a cover, or shutter, and tubes, or pipes, of communication extending from said chimney into the space L, L; and the other parts concerned in the action of the apparatus being arranged substantially in the manner, and so as to produce the results, herein set forth.

In testimony whereof I hereunto sign my name this twelfth day of April 1841.

WM. W. HUBBELL.

Witnesses:
THOS. P. JONES,
JOHN C. JOHNSTON.