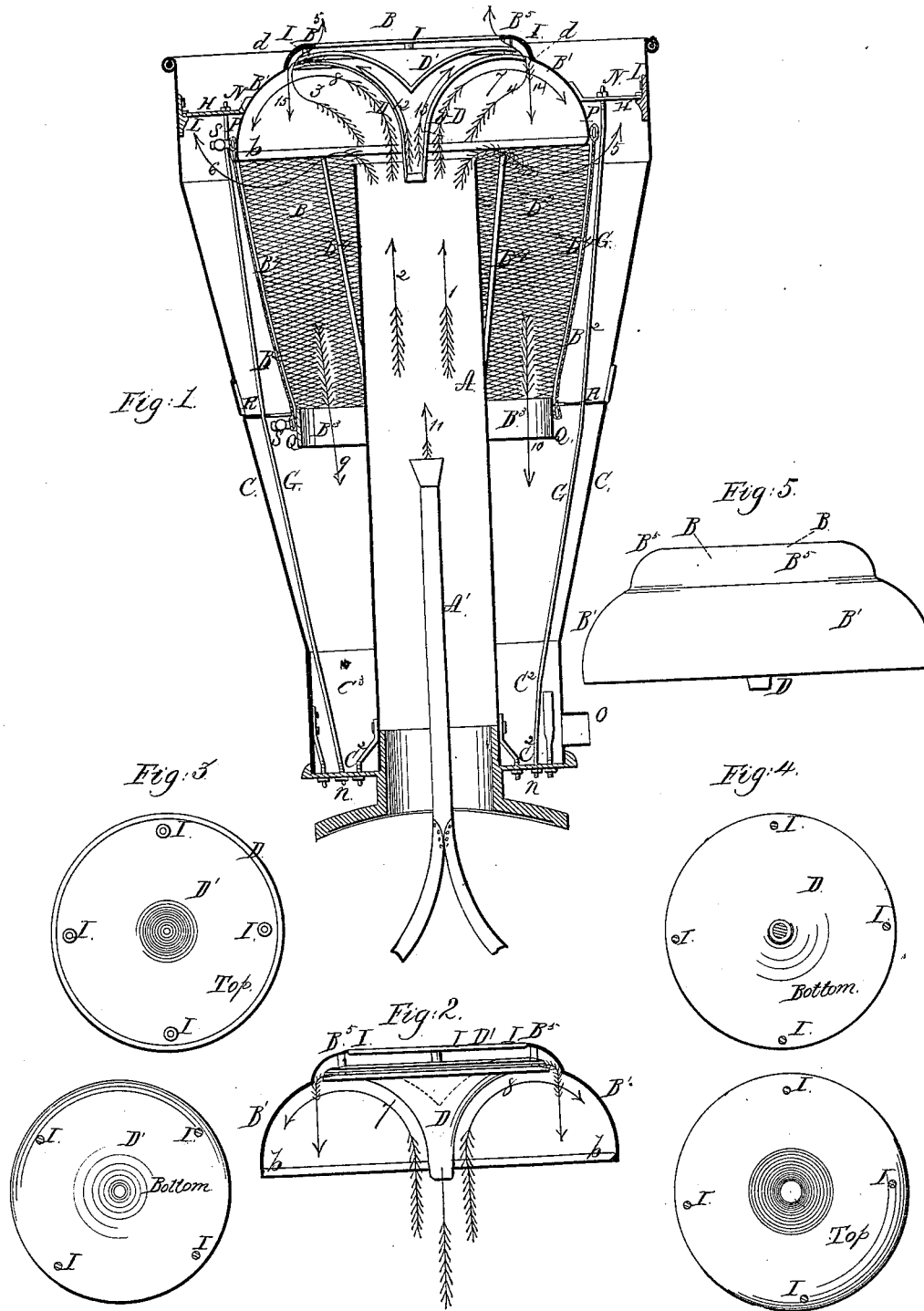


*S. Swett,
Spark Arrester,*

Patented July 24, 1849.

No. 6,600,



UNITED STATES PATENT OFFICE.

SAMUEL SWETT, OF NEW YORK, N. Y.

DEFLECTOR FOR SPARK-ARRESTERS.

Specification of Letters Patent No. 6,600, dated July 24, 1849.

To all whom it may concern:

Be it known that I, SAMUEL SWETT, of the city, county, and State of New York, have invented a new and useful Improvement in Spark-Arresters, for Locomotive and other Steam Engines, which is described as follows, reference being had to the annexed drawings of the same making part of this specification.

- 10 Figure 1, is a vertical section of the spark arrester drawn through the center. Fig. 2, is a side elevation of the hollow button, cap, and section of the dome. Fig. 3, is a top and bottom view of the plate suspended above the hollow button. Fig. 4, is a top and bottom view of the button. Fig. 5, is an elevation of the dome.

Similar letters in the different figures refer to like parts.

- 20 The spark arrester is in its general form and arrangement made like those in use on some of our northern railways.

- The principal improvement that I have made and desire to secure by Letters Patent is placing a hollow trumpet shaped button and curved or inverted conical cap directly over the center of the smoke pipe and under the central opening in the dome, forming a steam way, for the purpose of receiving a portion of the escape steam and causing it to issue in a circular stream at the periphery of the largest end of the said trumpet shaped hollow button by a curved cap plate placed over the large end of the trumpet shaped button, the steam being made to issue downward in a circular sheet and to pass obliquely through the column of smoke and sparks as it passes over the edges of the trumpet shaped button and cap—the steam striking the sparks and driving them against the concave surface of the dome and extinguishing the sparks and turning them downward into the space between the smoke pipe and surrounding jacket, while a portion of the smoke will pass with the draft through the eye of the dome, and a portion will pass through the meshes of the wire gauze.

- The arrows numbered 1, 2, 3, 4, 5, 6, show the direction of the smoke. Those numbered 7, 8, 9, 10 show the direction of the sparks. Those numbered 11 and 12 13, 14 and 15, show the direction of a portion of the steam.

- 55 The smoke pipe A, the cap B composed of the metallic dome B' having a circular

curb B⁵ around the eye thereof wire gauze B², and circular ring, or collar B³, and curved connecting rods B⁴, the jacket C forming the receptacle for the sparks and shield to the cap, are made in the usual manner. The escape steam is introduced to the smoke pipe A by a pipe A' or pipes leading from the steam chest in the usual manner. The sparks and cinders, when extinguished, are removed through a door or opening *d* at the bottom of the jacket, in the usual manner.

The trumpet shaped hollow button D is made of thin metal and is suspended to the dome in the manner represented in the drawings, or in any convenient way, by hanging posts I, or otherwise. The curved cap plate D' that covers the large or open end of the said trumpet shaped button is likewise suspended by said hanging posts in a position to leave sufficient space between it and the trumpet shaped button for the steam to issue downward against the sparks and also between the upper surface and the concave surface of the dome for the smoke to pass out in the direction of arrows 3, 4 Fig. 1. The pendent hollow trumpet shaped button D is stationary and its under or concave surface forms a continuation of the curve line of the dome nearly to the level of the lower and smaller end of the button forming a semi-circle. The opening (*d*) between the central pendent button and dome is for the smoke to pass out when the engine is at rest, when running the engine the escape steam passes into the smoke pipe and hollow trumpet shaped button a portion of the smoke and steam will pass through the netting or wire gauze B² and the sparks will descend to the interior of the jacket. The aperture in the center of the pendent button must be of the requisite capacity to admit sufficient steam to extinguish and drive back the sparks that may be inclined to pass through the eye of the dome. The hollow button being filled with steam it strikes against the pendent top piece D' and spreads around the larger diameter of the button in a circle and saturates, extinguishes, and keeps back the sparks.

The entrance for the steam to the button is generally about 1½ inch diameter and is arranged exactly over the exhaust pipes. The issue for the steam at the periphery of the button is generally about one quarter

of an inch wide. When the engine is at rest the smoke will mostly pass through the opening between the central pendant button and the curb of the dome and thus prevents the
 5 interstices of the wire gauze becoming clogged with soot. In firing up and stopping and coming down an inclined plane no steam will be required to promote draft as the pendant button which serves as a stationary
 10 valve will be always below the eye of the dome allowing a free draft without the use of steam. Therefore, the steam will go on increasing in the generator at these periods, which will cause the engine to increase in
 15 power and give it an advantage over those that have the ordinary smoke pipes attached to them which requires a waste of steam to keep up the draft at those periods.

This arrester has no valve to open or
 20 close, the eye of the dome being always open. This is a very important item of improvement. No fire will escape, all must be turned downward. The lower edge or base of the dome at (b) turns inward toward
 25 the smoke pipe to throw the sparks from the netting and save it from destruction by friction and heat of the burning cinders and to fall below the horizontal collar. The netting is also made to set off from the dome
 30 by the connecting rods B⁴ that connect the dome B¹ to the collar B³ said rods being bent outwardly in order to push the wire gauze outwardly and thus prevent it from being struck by the sparks while being
 35 driven downwardly by the steam.

The wire netting or gauze B² is secured over the connecting rods B⁴ by circular clasp rings, P, and Q, made to embrace the lower
 40 portion of the dome B¹ and circular curb B³, and are provided with clamp screws S, by which the said clasp rings are drawn tight around the base of the dome and circular curb, by which the wire netting or gauze is made to fit properly over the rods B⁴.

45 The dome B, cap D, gauze B², and curb B³, forming the bonnet, are fastened and braced to the inside of the pipe or jacket C,

by upright rods G, extending from the bottom plate C², of the cinder box to which they are attached, up through short brace bars
 50 H, and secured thereto by nuts N, resting upon them. The outer ends of these short brace bars H, rest and are secured in boxes L, bolted to the inside of the jacket, and extend
 55 inward to the dome B¹, upon which they also rest, so that when the bonnet becomes loose by shaking and jarring of the locomotive the rods G, are tightened by screwing down the
 60 nuts N, upon the brace bars H, and thus tightening and holding the bonnet securely in its required position. This result may be
 65 produced by turning the nuts (n) (n) at the lower ends of the rods. R, is a circular plate or ring forming a floor to the space between the upper part of the jacket and the
 70 bonnet, secured to the inside of the jacket and upon which the bonnet rests, the circular curb B³ of the bonnet passing through the circular space in the floor R.

What I claim as my invention and desire
 75 to secure by Letters Patent, is—

The combination of the stationary hollow trumpet shaped pendant button D, and stationary curved cap D', with the dome B',
 80 constructed, arranged and operating in the manner and for the purpose set forth, by which I am enabled to prevent the escape of the sparks with the smoke, the effect of the steam from the exhaust pipes entering the
 85 hollow button being three fold, first, to force the sparks downward by coming in contact with them at the circular passage (d), secondly, to extinguish them, and thirdly to increase their specific gravity and thus cause them to fall immediately to the bottom of
 90 the cinder box C³.

In testimony whereof I have hereunto signed my name before two subscribing witnesses.

SAMUEL SWETT.

Witnesses:

JAMES McKEEN,
 A. B. AMERMAN.