

(No Model.)

J. H. SWARTZBAUGH.
SPARK ARRESTER.

No. 588,096.

Patented Aug. 10, 1897.

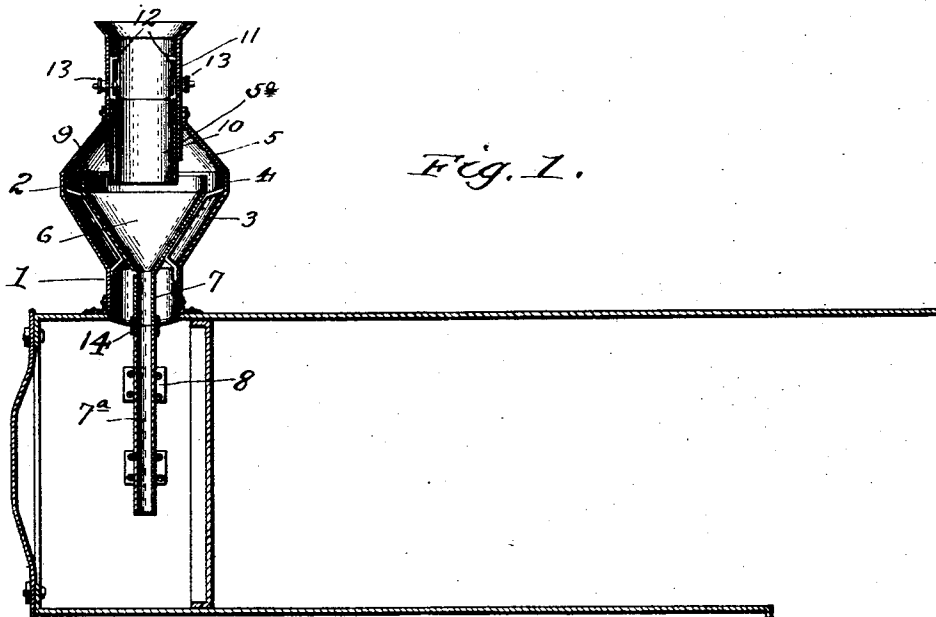


Fig. 1.

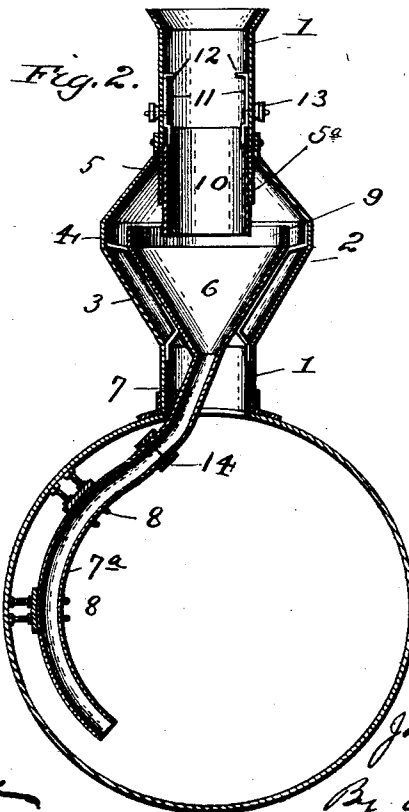


Fig. 2.

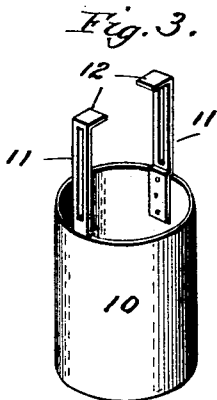


Fig. 3.

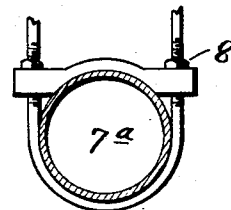


Fig. 4.

Witnesses
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SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 588,096, dated August 10, 1897.

Application filed January 14, 1897. Serial No. 619,238. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. SWARTZBAUGH, a citizen of the United States, residing at Tiffin, in the county of Seneca and State of Ohio, have invented certain new and useful Improvements in Spark-Arresters, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to that class of spark-arresters in which the sparks are caused to be suddenly deflected and thrown into a hopper-like receptacle supported within the smoke-stack. It is particularly adapted for use on locomotives, traction-engines, agricultural and cotton-gin engines.

The invention has for its object to provide means whereby the draft through the stack may be regulated to insure the proper deposit of the sparks and cinders; and it consists in the combination and arrangement of parts hereinafter described, and particularly pointed out in the claims appended.

In the drawings, Figure 1 is a longitudinal sectional view of the stack and a portion of the locomotive, showing the device in position. Fig. 2 is a transverse sectional view thereof. Fig. 3 is a detail of the adjusted section of the arrester. Fig. 4 is a detail of the spark-pipe clamp.

Referring to the various parts by numerals, 1 designates the smoke-stack of the locomotive, which is formed with the enlargement 2. This enlargement consists of a lower upwardly and outwardly extending portion 3, a vertical portion 4, and the upwardly and inwardly extending portion 5, the stack extending upward a suitable distance from the upper end of this enlargement. A portion 5^a of the stack of equal diameter with that portion projecting above the enlargement extends down within the enlargement a suitable distance. Supported in the lower portion of this enlargement is a hopper 6, whose sides are substantially parallel with the sides of the enlargement of the stack, and from the lower end of this hopper a pipe 7 extends down within the stack and into the smoke-box of the locomotive. After entering the smoke-box the pipe 7 follows the contour of the boiler and is secured to the sides thereof by screw-clamps 8. The lower end of this pipe is open and is designed to discharge the

sparks and cinders at the bottom of the smoke-box. From the upper edge of the hopper 6 a vertical flange 9 extends upward, said flange being substantially parallel with the portion 4 of the stack. Depending from the portion 5^a of the stack and extending into the enlargement 2 is an adjustable pipe 10, whose lower end extends into the hopper 6 a short distance. This pipe has secured to its upper edge at diametrically opposite points two vertically-slotted bars 11, which extend into the upper portion of the stack, their upper ends being bent inwardly to form handles 12. Thumb-screws or other fasteners 13 are mounted in the side of the stack above the enlargement, their inner ends extending through the slots in bars 11, and by means of which the pipe 10 may be adjusted within the enlargement to regulate the draft of the stack.

The spark-pipe is formed of two sections 7 and 7^a, and at the point where it enters the smoke-box these sections are detachably connected together by a coupling 14. The lower section 7^a is removably mounted in clamps or hangers 8.

The operation of the device is obvious. The smoke and sparks pass up between the outer side of the hopper and the portion 3 of the enlargement and then up into the angle formed by the portion 5^a of the stack and the pipe 10 and the upper portion of the enlargement. The current is then directed downward and the sparks and the heavy material pass down into the hopper and through the spark-pipe 7, while the smoke passes up through pipe 10. By lowering or raising pipe 10 the draft may be regulated to suit the draft of the different engines or boilers, and if at any time it is desired to have a stronger draft it may be raised above the lower edge of the portion 5^a of the stack in order to permit the smoke to pass more directly out through pipe 10.

By forming the spark-pipe in two sections and detachably securing them together and removably securing the lower section in the smoke-box it may be readily cleaned should it become choked with cinders. By means of the handles 12 the pipe 10 may be readily raised or lowered. The advantage of mounting the spark-pipe wholly within the smoke

box and stack is that it will be protected from cold air, and there will therefore be no tendency to interfere with the draft in the stack. This manner of arranging the spark-pipe obviates the necessity of cutting a hole in the smoke-stack or in the smoke-box, thereby making it more convenient. It also permits the pipe to be more inclined, thereby insuring a more perfect discharge of the cinders and sparks and discharging them at the bottom of the smoke-box.

It will be observed that the essential feature of this invention lies in the manner of supporting and adjusting the draft-regulating tube 10, depending into the mouth of the funnel-shaped hopper. In my former patent, No. 374,562, dated December 6, 1887, this tube was so arranged that it could only be reached for adjustment, &c., while the fire was out, and only then with a great deal of difficulty, whereas in the present improvements the attendant may regulate the draft-tube with the greatest of ease and while the fire is burning. This is accomplished by extending the tube up a considerable distance into the upper part of the stack and providing it with slotted bars that rest against the interior of the stack and employing in combination therewith suitable clamp-screws extending out through the stack, so as to be operated from the exterior, these clamp-screws being arranged above the enlarged portion of the stack. The slotted bars are provided with lateral lugs to enable the attendant to adjust the tube from the top of the stack, employing suitable hooks if the fire be too hot to permit him to insert his hand into the stack. The upper ends of the slotted bars terminate near the upper end of the stack, so as to be convenient of access. Slotted bars are employed in order to avoid slotting the stack itself. The advantage in thus providing for a ready adjustment of the draft-tube will be understood when it is known

that in the practical use of this apparatus it is found to be necessary to frequently shift the tube according to the nature of the fuel obtainable.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a spark-arrester, the combination of a smoke-stack a hopper mounted therein and provided with a spark-pipe depending therefrom, a tube 10 depending from a portion of the stack above the hopper and open at both ends and fitting within said upper portion of the stack, and means for adjusting said tube from the exterior of the stack, said means consisting essentially of a pair of bars attached to the upper end of the tube and extending upward therefrom to near the upper end of the stack, and clamp-screws passing through the stack and engaging the bars, substantially as described.

2. In a spark-arrester, the combination of a smoke-stack annularly enlarged at a point between its ends, a funnel-shaped hopper provided with a dependent spark-pipe, a tube 10 open at its ends and fitted in the portion of the stack above the enlargement and depending into the mouth of the hopper, and means for adjusting this tube vertically, said means consisting of a pair of vertically-slotted bars attached to the upper end of the tube and extending upward to near the upper end of the stack and there provided with lateral ears, and a clamp-screw for each of said bars, each clamp-screw passing through the stack from the exterior and engaging the slotted bars.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN H. SWARTZBAUGH.

Witnesses:

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