Z. Wilbar,

Spark Arrester.

No. 2,901. Patented Jan. 10, 1843.

Fig. 1.

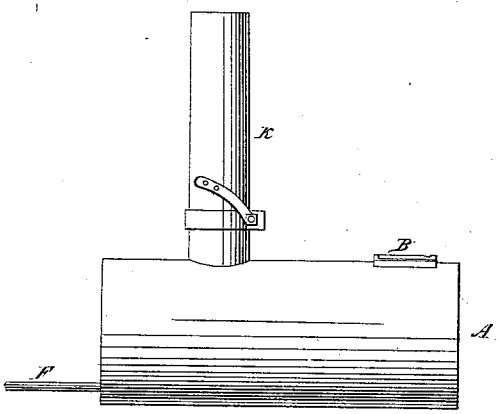


Fig. 2.

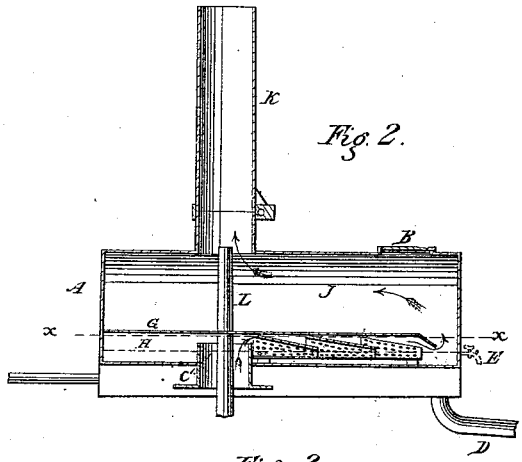
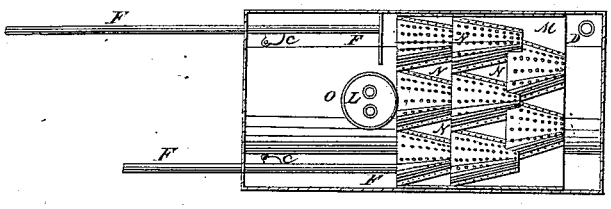


Fig. 3.



UNITED STATES PATENT OFFICE.

ZIBEON WILBAR, OF ALLEGHENY TOWNSHIP, HUNTINGDON COUNTY, PENNSYLVANIA.

SPARK-ARRESTER.

Specification of Letters Patent No. 2,901, dated January 10, 1843.

To all whom it may concern:

Be it known that I, ZIBEON WILBAR, of Allegheny township, Huntingdon county, State of Pennsylvania, have invented a new and useful apparatus to be attached to a locomotive or other engine for arresting the sparks usually escaping therefrom, which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1 is a side elevation of the apparatus. Fig. 2 is a vertical section through the center of the same. Fig. 3 is a horizontal section at the line *x x* of Fig. 2.

A is the chamber containing the apparatus and placed upon and secured to the top of the ordinary boiler. This chamber is made air and water tight, except where the smoke and sparks enter and discharge, and where a valve B is inserted for admitting water and two other valves C for discharging the water with the extinguished sparks and ashes and an aperture for a supply pipe D connected with the tender of the engine for supplying water to the aforesaid chamber while the engine is in motion to keep the water always at the required level ascertained by a stop cock E inserted into the side or end of the chamber—and apertures for the handles or stems of scrapers F. The chamber may be semicircular, semioval, rectangular or of any convenient form with its bottom shaped to correspond with the top of the boiler to which it is secured. It is divided in the inside by a horizontal partition G into two apartments, an upper and a lower apartment, the lower apartment H containing the water for extinguishing the sparks which stands at a level a few inches below the aforesaid partition G leaving a space between said partition and the surface of the water for the draft to the chimney hereafter described. This partition extends entirely across the chamber and from the front end nearly to the rear end where a space I is left for the draft to pass around said end into the upper space J and thence into the chimney K as indicated by the arrow in Fig. 2; this end of said horizontal partition is inclined downward at an angle of about 45 degrees or at any suitable angle for the purpose of deflecting or directing the sparks downward to the surface of the water; and which inclined end of the partition is also perforated for the free passage of the smoke and for arresting the sparks—its lower edge being within one, two or three inches of the surface of the water so that the draft shall pass under it as indicated by the arrows. This end of the partition may be made separate and to slide for increasing or diminishing the distance between its lower edge and the surface of the fluid in the chamber for regulating the draft as required.

The partition G is perforated near the middle with apertures for tubes L leading upward into the chimney above the spark arresting apparatus into which the escape steam pipes are inserted below the horizontal partition G for discharging the escape steam into the chimney above the spark arresting apparatus. These pipes are thus carried up into the chimney to this unusual height for the purpose of discharging the escape steam into the chimney to increase the draft above the spark arrester instead of below it, which greatly increases the draft of the chimney and through the apparatus for arresting the sparks.

M is a short horizontal partition containing a number of hollow semiconical or semifunnel shaped perforated spark arresters N. This partition is about half the length of the partition G and extends like it across the chamber between the aperture for the entrance of the sparks to the chamber and the space at the rear end, and is placed in the space between the said horizontal partition and the bottom of the chamber. It may rest on the convex part of the bottom of the chamber. The perforated semifunnel shaped spark arresters are secured to the upper surface of said partition with their mouths or larger ends toward the entrance for the smoke and sparks and their smaller ends toward the rear end of the chamber.

The water in the chamber should not be suffered to rise above the middle of the small ends of the said spark arresters, but should cover the plate to which they are secured.

The opening for the admission of the sparks to the chamber is surrounded with a collar *o* rising a little above the level of the water in the chamber to prevent the water running into the furnace. Said collar being in fact the upper end of the ordinary chimney of the furnace the aforesaid spark arresting apparatus coming between the upper end of said ordinary chimney and the lower end of an additional chimney placed on the

top of said chamber. This additional chimney may be hinged in the usual manner for the purposes of passing bridges.

The chamber may be provided with scrapers for drawing the accumulated cinders and ashes toward the discharge apertures.

The operation of this machine will be evident to any one the least acquainted with machines for arresting sparks by merely refering to Fig. 2 and examining the direction of the arrows where it will be seen that the smoke and sparks enter the aforesaid chamber at (*o*) and strike against the bottom of the horizontal partition G; many of the larger sparks descending to the surface of the water where they are extinguished while the smoke and the remaining sparks pass into the perforated semifunnel shaped spark arresters, N, and against the perforated end of the horizontal partition G through which the smoke passes to the space I at the rear of the chamber and into the space above the horizontal partition and from thence into the chimney, the sparks being arrested and directed downward into the water by the inclined surface of the funnel shaped arrester and the inclined end of the partition, the sparks being extinguished by the water while the smoke passes off to the atmosphere entirely free from sparks, the draft of the chimney being also at the same time increased by carrying the exhaust steam pipes into the chimney above the spark arresting apparatus. Occasionally the accumulated spark cinders and ashes are drawn by the scrapers toward the discharging apertures, and these being opened the whole are carried off with the water.

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

1. The construction of the aforesaid apparatus for arresting sparks of a locomotive or other engine whether constructed precisely in the manner before described, or in any other mode substantially the same; that is to say the arrangement of the semiconical perforated spark arresters N and the inclined perforated end of the partition G for directing the sparks downward into the water, while the smoke passes through the perforations to the chimney as described.

2. I likewise claim the combination of the chamber A constructed as described with the lengthened exhaust steam pipes carried through the chamber A into the chimney above the spark arresters in the manner and for the purpose set forth.

ZIBEON WILBAR.

Witnesses:
E. MAHER,
A. E. JOHNSON.