

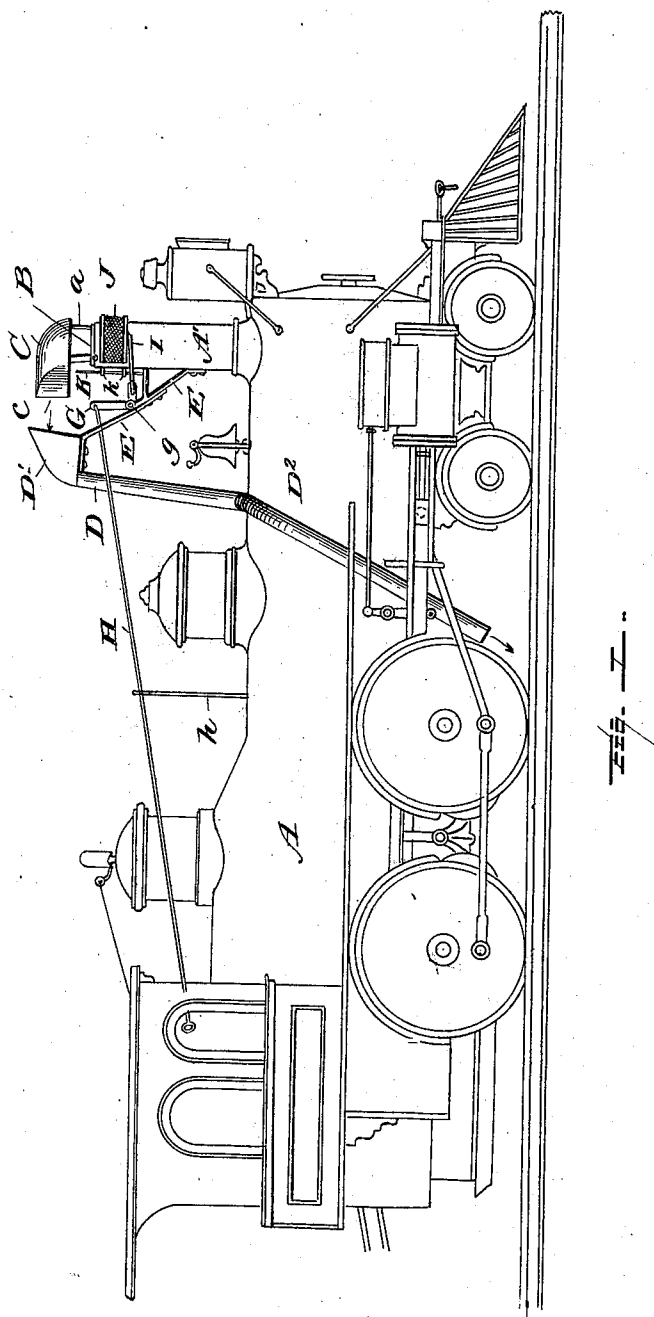
(No Model.)

2 Sheets—Sheet 1.

N. W. SPENCER.
SPARK ARRESTER.

No. 503,174.

Patented Aug. 15, 1893.



Witnesses

L. C. Mills.
E. H. Bond.

Inventor

Nathaniel W. Spencer
by *Wm. Walker*
Attorney

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Fig. 2.

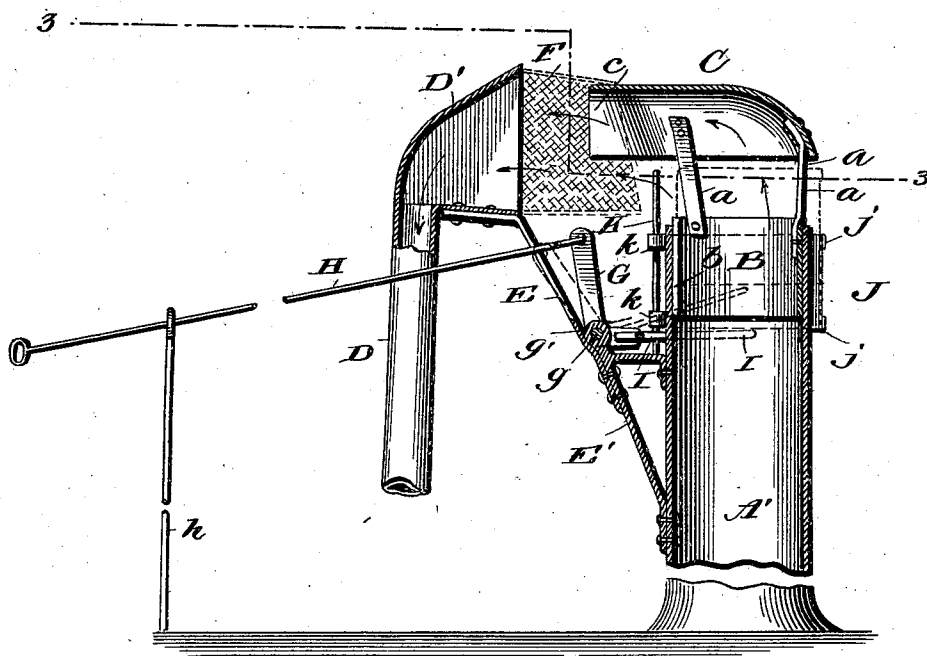


Fig. 3.

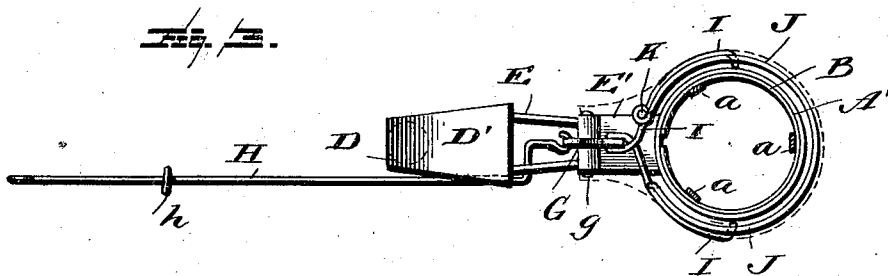
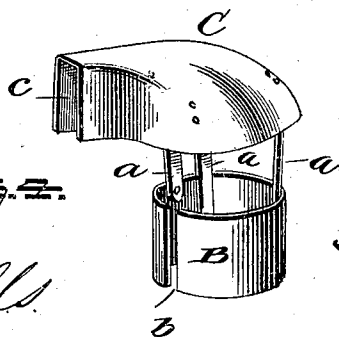


Fig. 4.



Witnesses

L. C. Hills
E. H. Bond

Inventor
Nathaniel W. Spencer
by *Wm. Walker*
Attorney

UNITED STATES PATENT OFFICE.

NATHANIEL W. SPENCER, OF CENTRALIA, ILLINOIS.

SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 503,174, dated August 15, 1893.

Application filed November 29, 1892. Serial No. 453,522. (No model.)

To all whom it may concern:

Be it known that I, NATHANIEL W. SPENCER, a citizen of the United States, residing at Centralia, in the county of Marion and State of Illinois, have invented certain new and useful Improvements in Spark-Arresters; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to certain new and useful improvements in spark arresters for locomotives, and it has for its objects among others to provide an improved attachment to the smoke stack of a locomotive which can be readily applied and which will serve to arrest the sparks and conduct them to the ground and thus prevent loss from fires along the line of railroad.

It has for a further object to provide means under the control of the person in the cab which may be thrown into operative position to more securely guard against danger of fire in extremely dangerous localities or when everything is very dry from a long continued drought.

Other objects and advantages of the invention will hereinafter appear and the novel features thereof will be specifically defined by the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a side elevation of a locomotive equipped with my improvements. Fig. 2 is an enlarged central vertical section through the parts constituting my invention, with portions in side elevation. Fig. 3 is a horizontal section on the plane indicated by the line 3—3 in Fig. 2. Fig. 4 is a perspective view of the hood detached.

Like letters of reference indicate like parts throughout the several views in which they appear.

Referring now to the details of the draw-

ings by letter, A designates a locomotive of known construction except as hereinafter specified, and A' is its smoke-stack.

B is a short tube or pipe fitted within the upper end of the smoke-stack as seen best in Fig. 2 and designed to be held therein in any suitable manner, as for instance by making it a snug fit and depending entirely upon frictional contact of the walls thereof, or by making it slightly tapered as seen in Fig. 2 so as to wedge itself therein sufficiently to hold under all ordinary conditions yet permit of its ready removal for any purpose. To this short tube or pipe is secured and supported in any suitable manner the hood C which is preferably of sheet metal shaped to have a contracted mouth or rather outlet at the rear as seen at c in Fig. 4. This hood is shown as supported by the strips a which are secured thereto and to the pipe or tube B and as arranged at a distance above the upper end of the said tube or pipe so as to provide an air space between the hood and tube as seen best in Figs. 2 and 4 to aid in the upward passage of the sparks from the smoke-stack.

The tube or pipe might be formed as in Fig. 4 with a vertical slit as seen at b so as to make of it a spring pipe which can be contracted to introduce it into the upper end of the smoke-stack and then expand to hold it there. The hangers or strips a may be pivotally attached to the tube or pipe B as seen in Fig. 4 if desired so that the hood may be moved nearer to or farther from the receiving mouth of the spout D.

The spout D is provided with a flaring mouth D' as seen in Figs. 1 and 2 which mouth may be integral with the spout or attached thereto in any suitable manner. The spout and its mouth are supported from the smoke-stack in any suitable manner; in this instance being shown as supported by the arms E which are attached to the bracket E' firmly secured to the rear side of the smoke-stack as seen in Fig. 2, and the spout may be arranged to deliver the sparks and cinders discharged thereinto to any desired place; it may be arranged to be delivered upon either or both sides of the track; in Fig. 1 I have shown it as provided with a continuation D² which is curved

around the boiler and extended to within a short distance of the ground. The mouth of the spout is made considerably larger than the outlet of the hood as seen in Fig. 2 so that it may catch all of the sparks and cinders from the latter.

I may sometimes arrange a wire gauze or other portion F to connect the hood and mouth as seen by dotted lines in Fig. 2 to be used in exceedingly dangerous localities, but generally I leave a space between the outlet of the hood and the mouth of the spout as seen in Fig. 1 as I find that better results are accomplished thereby.

G is a bell-crank lever pivoted at its elbow as at *g* in the ears or lugs *g'* of the bracket E' as seen in Figs. 2 and 3, and the upright arm of this lever has pivotally connected thereto the rod H which extends into the cab where it may be provided with a suitable handle by which it may be manipulated; the lever may be of any suitable length and the rod may be guided as in a guide *h* on the boiler as seen in Figs. 1, 2 and 3. The other arm of the lever carries a yoke I which partially encircles the smoke-stack and its ends engage under a vertically-movable shield J as seen in Figs. 1, 2 and 3 to elevate the same when desired. This shield consists of a wire gauze or other reticulated medium loosely encircling the upper end of the smoke-stack as shown and secured to the rings *j* at top and bottom to give it the necessary rigidity and at one side provided with eyes or analogous devices *k* which are loosely sleeved upon the vertical rod K supported on the bracket E' and which serves to guide the shield in its vertical movements.

The operation will be readily understood; normally the shield is in its lower position as seen by full lines in Fig. 2 and in Fig. 1, and as the sparks and cinders pass upward through the smoke-stack they strike against the under side of the hood and by the force of the steam are forced rearward through the contracted outlet from the hood and into the enlarged mouth and thence down the spout and upon the ground, the course of the cinders and sparks being indicated by the arrows in Fig. 2. When approaching exceedingly dangerous localities, that is, where everything is very dry and more liable to be set afire, the engineer has simply to pull upon the lever or rod H and thus lift the shield into the position in which it is shown by dotted lines in Fig. 1 and thus close the space between the short pipe and the hood and thus guard against any possibility of sparks escaping therebetween. At such places the screen con-

nection F may also be employed if thought necessary.

The advantages of the construction and arrangement of parts above described will be readily appreciated by all railroad men and the fact that it can be readily applied to locomotives now in use will recommend it to such persons.

Modifications in details of construction may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages.

What I claim as new is—

1. An attachment for the smoke-stack of a locomotive, comprising a portion for connection with the smoke-stack, a hood carried thereby and having contracted outlet, a spout, an interposed mouth piece, and a vertically-movable shield below the hood, substantially as specified.

2. An attachment for a smoke-stack of a locomotive comprising a tubular portion to connect with the smoke-stack, a hood carried thereby and having contracted outlet, a spout and interposed mouth, a shield vertically-movable over the upper end of the smoke-stack, and connections extending to the cab whereby said shield is under the control of the person in the cab substantially as specified.

3. The combination with the smoke-stack and the short tube, detachably connected therewith, of the hood carried by said tube and having contracted outlet at the rear, a spout with flaring mouth supported from the smoke-stack, a vertically-movable shield under the control of the engineer, and a reticulated connection between the hood and mouth, as set forth.

4. The combination with the smoke-stack, of a bracket secured thereto, a spout with flaring mouth supported from said bracket, a hood supported above the smoke-stack, a shield vertically-movable around the smoke-stack, a lever pivoted on the bracket and having operating means extending to the cab, and carrying means for actuating said shield, as set forth.

5. A smoke-stack attachment provided with a vertically-movable perforated shield adapted to surround a smoke stack and with operating means under the control of the person in the cab, as set forth.

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

NATHANIEL W. SPENCER.

Witnesses:

JAMES A. JACKSON,
W. D. RICHARDSON.