No. 737,800. PATENTED SEPT. 1, 1903.

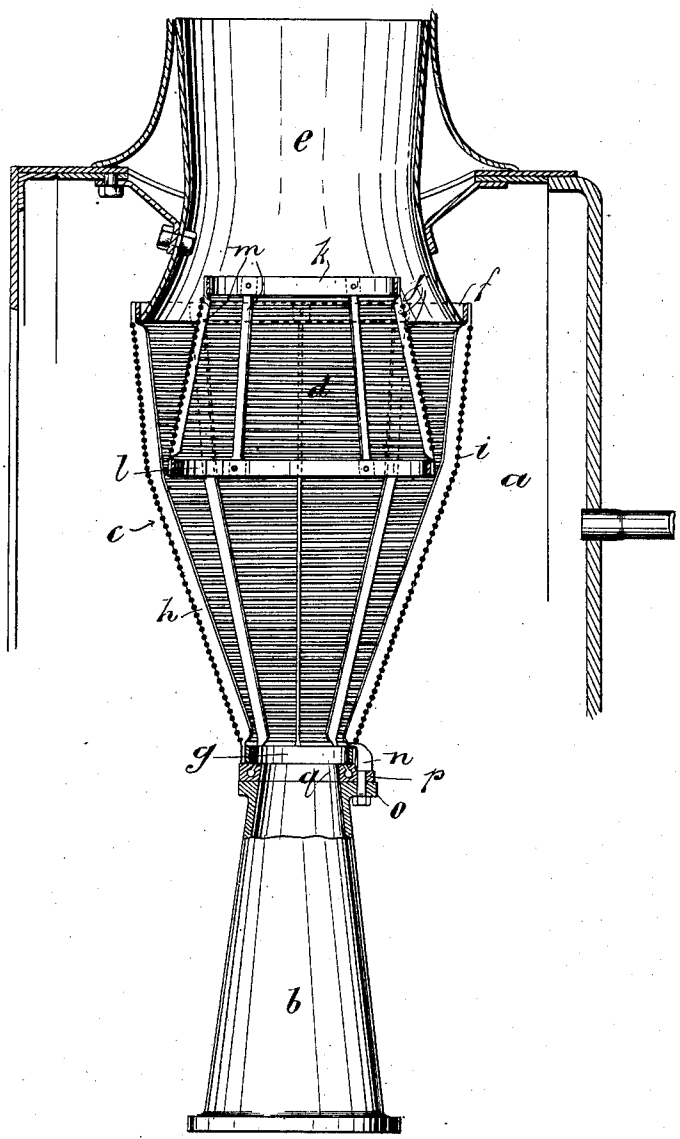
H. S. WAINWRIGHT.

SPARK ARRESTER.

APPLICATION FILED MAY 19, 1902.

NO MODEL. 3 SHEETS—SHEET 1.

Fig. 1.



Witnesses
Geo. E. Frech
C. R. Wright Jr.

Inventor
H. S. Wainwright
By A. S. Pattison, Atty

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 737,800. PATENTED SEPT. 1, 1903.

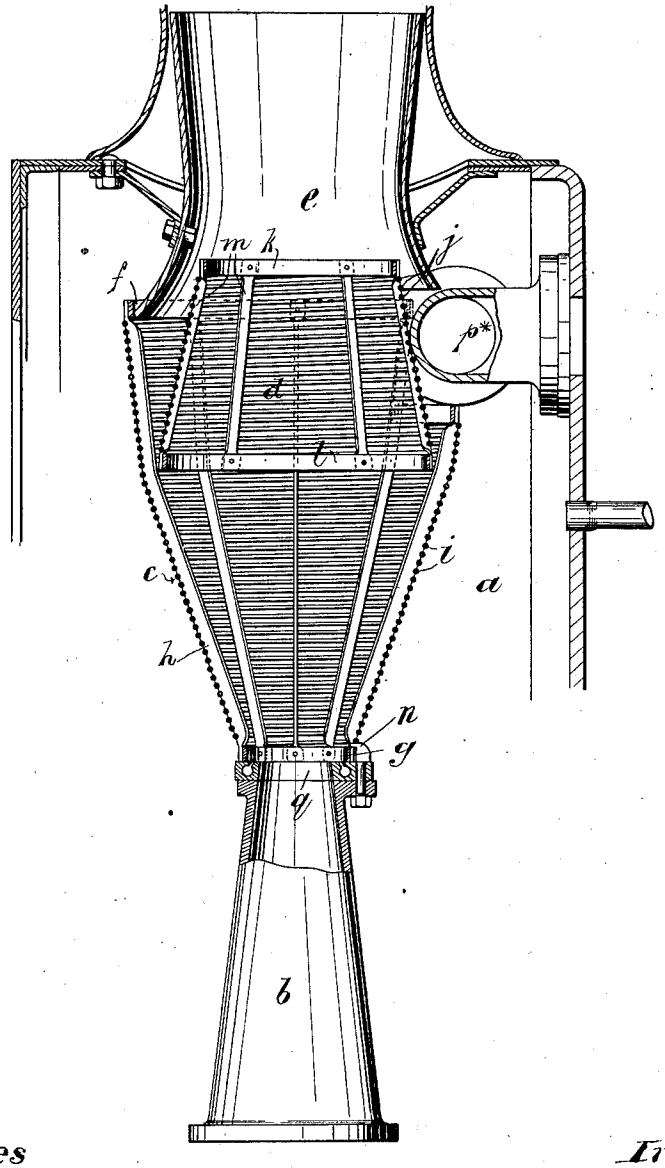
H. S. WAINWRIGHT.

SPARK ARRESTER.

APPLICATION FILED MAY 19, 1902.

NO MODEL. 3 SHEETS—SHEET 2.

Fig. 2.



Witnesses
Geo. E. Frech.
C. R. Wright Jr.

Inventor
H. S. Wainwright.
By A. S. Pattison, Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 737,800. PATENTED SEPT. 1, 1903.

H. S. WAINWRIGHT.

SPARK ARRESTER.

APPLICATION FILED MAY 19, 1902.

NO MODEL. 3 SHEETS—SHEET 3.

Fig. 3.

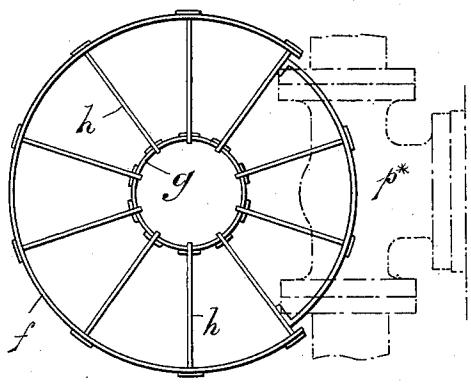
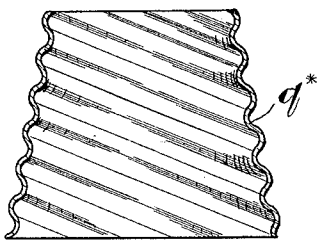


Fig. 4.



Witnesses.
Geo. E. Frech.
C. R. Wright Jr.

Inventor
H. S. Wainwright.
By A. A. Pattison,
atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 737,800. Patented September 1, 1903.

UNITED STATES PATENT OFFICE.

HARRY SMITH WAINWRIGHT, OF ASHFORD, ENGLAND.

SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 737,800, dated September 1, 1903.

Application filed May 19, 1902. Serial No. 108,081. (No model.)

To all whom it may concern:

Be it known that I, HARRY SMITH WAINWRIGHT, a subject of the King of Great Britain and Ireland, residing at Ashford, in the county of Kent, England, have invented Improvements in Spark-Arresters, of which the following is a specification.

According to this invention I provide in the smoke-box of a locomotive-engine a spark-arrester of truncated conical or other tube-like form which may be constructed by winding a wire or rod or wires or rods spirally around a notched or recessed framework, as described in the specification of my application for Letters Patent, Serial No. 80,703, dated October 31, 1901, this spark-arrester being mounted with its smaller end upon a suitable support provided around the upper part of the blast-pipe, while the upper part of the spark-arrester extends to and is entered by the base of the chimney in such manner as to inclose or surround the petticoat or chimney-cone, which is located partly within the spark-arrester and partly within the chimney-base. For the purpose of further breaking up small cinders I may provide the chimney-cone with external surfaces that are radially and outwardly slightly upwardly inclined. Such surfaces may be formed by making the cone of one or more round rods or wires wound spirally either on a plain core or on a framework, as hereinafter described, or of corrugated metal.

Figure 1 of the accompanying drawings shows in vertical central section so much of the smoke-box of a locomotive-engine, with accessories, as is needful to illustrate my invention by way of example; and Fig. 2 is a similar view of another example. Fig. 3 is a plan corresponding to Fig. 2, and Fig. 4 is a vertical section of a chimney-cone.

a is the smoke-box; *b*, the blast-pipe; *c*, the spark-arrester, which is of upwardly-increasing diameter; *d*, the chimney-cone, which is of upwardly-decreasing diameter, and *e* the chimney-base.

In each of the examples illustrated the spark-arrester is constructed as described in my aforesaid specification and comprises upper and lower rings *f* and *g*, notched or recessed bars *h*, connecting the rings *f* and *g* together, and round thick wires or rods *i*, connected to the rings *f* and *g* and engaging in the notches or recesses of the bars *h*. The rings *f* and *g*, the notched or recessed bars *h*, and the outwardly and upwardly inclined under surfaces of the round wires or rods *i* tend to arrest and throw down sparks and glowing particles. Unlike the spark-arresters described in the aforesaid specification, the arrester *c* extends upward to the chimney-base *e* and is entered by and so incloses the said chimney-base, in the example shown in Fig. 1, by completely surrounding it. The chimney-cone *d* (shown in Fig. 1) is formed of round thick wires or rods *j*, wound spirally upon a framework composed of two rings *k* and *l* and notched or recessed bars *m*, in the notches or recesses of which the wires or rods *j* engage. The slightly radially and upwardly inclined outer portions of the under surfaces of the round wires or rods *j* tend to arrest and break up cinders coming into contact with them. The wires or rods of the spark-arrester and the chimney-cone are wound spirally in the same direction. Each of the spark-arresters shown is secured in position on the blast-pipe *b* by hook or wing bolts *n*, which are capable when slackened of angular movement about their axes and which when in use hold the spark-arrester in position by overlapping parts of the framework of the spark-arrester, whereas release of the spark-arrester for removal can be readily effected by slackening the bolts *n* and turning them about their axes sufficiently to disengage them from the said framework. The bolts are shown extending through flanges *o* and *p* of the blast-pipe *b* and of a blower-ring *q*, mounted thereon. There may be one or more of such bolts.

Where necessary, portions of the spark-arrester may be omitted to accommodate fittings, such as steam-pipe connections—as, for example, when applying my invention to existing engines—and in such cases also the general formation, so long as the arrester remains tube-like, may be varied as may be necessary to accommodate the spark-arrester to the circumstances of the particular case, there being instances in which by reason of the relative dimensions the truncated conical form, if adhered to throughout, would

make the internal diameter insufficient to accommodate the base of the petticoat or chimney-cone.

By the term "tube-like" as applied to a spark-arrester I mean a spark-arrester whose general form is that of a tube, whether conical or not and whether it be composed of framework and rod or wire or otherwise constituted, so as, on the one hand, to allow gases to flow from the smoke-box through its wall toward the chimney and, on the other hand, to obstruct the flow of sparks or glowing particles toward the chimney.

Figs. 2 and 3 show an example of apparatus according to this invention in which to accommodate a steam-pipe p^* some of the notched or recessed bars h of the spark-arrester are made shorter than others, and in the upper portion of the arrester the spiral wires or rods are wound only partially around, so that, although inclosed, the chimney-base is only partially surrounded by the spark-arrester, which it enters.

Fig. 4 shows a chimney-cone made of corrugated metal. The lower surfaces of the corrugations q^* serve to break up cinders.

It will be evident that the constructions described may be variously modified without departing from the essentials of the invention and that parts of the invention can be used without other parts thereof.

What I claim is—

1. In a locomotive-engine, the combination of a blast-pipe, a chimney-base, a tube-like spark-arrester which is located above said blast-pipe and into whose upper end said chimney-base enters, and a chimney-cone located partly within said spark-arrester and partly within said chimney-base.

2. In a locomotive-engine, the combination of a blast-pipe, a chimney-base, a tube-like spark-arrester of upwardly-increasing diameter which is located above said blast-pipe and into whose upper end said chimney-base enters, and a chimney-cone of upwardly-decreasing diameter and located partly within said spark-arrester and partly within said chimney-base.

3. In a locomotive-engine, the combination of a blast-pipe, a chimney-base, a tube-like spark-arrester of upwardly-increasing diameter which is located above said blast-pipe and is entered by said chimney-base, and a chimney-cone of upwardly-decreasing diameter and having one or more external radially and outwardly slightly upwardly inclined surfaces adapted to break up cinders.

4. In a locomotive-engine, the combination of a blast-pipe, a chimney-base, a tube-like spark-arrester of upwardly-increasing diameter which is located above said blast-pipe and is entered by said chimney-base, and a chimney-cone which is of upwardly-decreasing diameter and is located partly within said spark-arrester and partly within said chimney-base and has external surfaces that are slightly inclined radially and outwardly and are adapted to break up cinders.

5. In a locomotive-engine, the combination of a blast-pipe, a chimney-base, a tube-like spark-arrester of upwardly-increasing diameter which is located above said blast-pipe and is entered by said chimney-base, and a chimney-cone located partly within said chimney-base and partly within said spark-arrester and comprising spirally-arranged rod or wire having one or more slightly upwardly and outwardly inclined under surfaces adapted to break up cinders.

6. In a locomotive-engine, the combination of a blast-pipe, a chimney-base, a tube-like spark-arrester of upwardly-increasing diameter which is located above said blast-pipe and is entered by said chimney-base, and a chimney-cone of upwardly-decreasing diameter, located partly within said spark-arrester and partly within said chimney-base, and composed of a framework comprising notched or recessed bars and wire or rod wound spirally thereon and within the notches or recesses thereof.

7. In a locomotive-engine, the combination of a blast-pipe, a chimney-base, a tube-like spark-arrester of upwardly-increasing diameter which is located above said blast-pipe and is entered by said chimney-base, and a chimney-cone of upwardly-decreasing diameter and located partly within said spark-arrester and partly within said chimney-base, said spark-arrester and said chimney-base both having their peripheries formed by wire or rod spirally wound in the same direction.

8. In a locomotive-engine, the combination of a blast-pipe, a chimney-base, a tube-like spark-arrester which is of upwardly-increasing diameter, is located above said blast-pipe, and is entered by said chimney-base and which is composed of upper and lower rings, notched or recessed bars connecting said rings together, wire or rod wound spirally around and within the said notches or recesses of the said bars, and a chimney-cone which is of upwardly-decreasing diameter, is located partly within said spark-arrester and partly within said chimney-base, and is composed of a framework comprising notched or recessed bars and wire or rod wound spirally around its said notched or recessed bars and within the notches or recesses thereof.

9. In a locomotive-engine, the combination of a blast-pipe, a chimney-base, a tube-like spark-arrester of upwardly-increasing diameter which is located above said blast-pipe and is entered by said chimney-base, and a chimney-cone of upwardly-decreasing diameter, located partly within said spark-arrester and partly within said chimney-base, said arrester and said chimney-cone both having radially and outwardly slightly upwardly inclined external surfaces and intervening openings or passages.

10. In a locomotive-engine, a chimney-cone

composed of a framework comprising notched or recessed bars and wire or rod wound spirally thereon and within the notches or recesses thereof.

11. In a locomotive-engine, a chimney-cone composed of a framework comprising an upper ring, a lower ring, notched or recessed bars connecting said rings together, and wire or rod wound spirally around said bars and within the notches or recesses thereof.

12. In a locomotive-engine, the combination of a blast-pipe, a blower-ring supported by said blast-pipe, a spark-arrester supported by said blower-ring, and one or more hook or wing bolts adapted to secure said arrester to said blast-pipe by overlapping one or more parts of said arrester and to liberate said arrester on being turned about its or their axis or axes.

13. In a locomotive-engine, the combination of a blast-pipe, a chimney-base, a tube-like spark-arrester which is located above said blast-pipe and is entered by said chimney-base, a chimney-cone located partly within said spark-arrester and partly within said chimney-base, and one or more hook or wing bolts adapted to secure said arrester to said blast-pipe by overlapping one or more parts of said arrester and to liberate said arrester on being turned about its or their axis or axes.

14. In a locomotive-engine, the combination of a blast-pipe, a chimney-base, a tube-like spark-arrester which is located above said blast-pipe and is entered by said chimney-base, and one or more hook or wing bolts adapted to secure said arrester to said blast-pipe by overlapping one or more parts of said arrester and to liberate said arrester on being turned about its or their axis or axes.

15. In a locomotive-engine, the combination of a blast-pipe, a chimney-base, a tube-like spark-arrester which is located above said blast-pipe and is entered by said chimney-base, and a blower-ring supported by said blast-pipe and supporting said spark-arrester.

16. In a locomotive-engine, the combination of a blast-pipe, a chimney-base, a tube-like spark-arrester which is located above said blast-pipe and is entered by said chimney-base, a blower-ring supported by said blast-pipe and supporting said spark-arrester, and one or more hook or wing bolts adapted to secure said arrester to said blast-pipe by overlapping one or more parts of said arrester and to liberate said arrester on being turned about its or their axis or axes.

17. In a locomotive-engine, the combination of a blast-pipe, a chimney-base, a tube-like spark-arrester which is located above said blast-pipe and is entered by said chimney-base, a chimney-cone located partly within said spark-arrester and partly within said chimney-base, a blower-ring supported by said blast-pipe and supporting said spark-arrester, and one or more hook or wing bolts adapted to secure said arrester to said blast-pipe by overlapping one or more parts of said arrester and to liberate said arrester on being turned about its or their axis or axes.

18. In a locomotive-engine, the combination of a blast-pipe, a chimney-base, a tube-like spark-arrester which is located above said blast-pipe and is entered by said chimney-base, a blower-ring supported by said blast-pipe and supporting said spark-arrester, a chimney-cone located partly within said spark-arrester and partly within said chimney-base, flanges projecting from said blast-pipe and blower-ring, and one or more hook or wing bolts extending through said flanges and adapted to secure said arrester to said blower-ring and said blast-pipe by overlapping one or more parts of said arrester and to liberate said arrester on being turned about its or their axis or axes.

19. In a locomotive-engine, the combination of a blast-pipe, a chimney-base, a tube-like spark-arrester which is located above said blast-pipe and is entered by said chimney-base, a blower-ring supported by said blast-pipe and supporting said spark-arrester, flanges projecting from said blast-pipe and blower-ring, and one or more hook or wing bolts extending through said flanges and adapted to secure said arrester to said blower-ring and said blast-pipe by overlapping one or more parts of said arrester and to liberate said arrester on being turned about its or their axis or axes.

20. In a locomotive-engine, the combination of a blast-pipe, a chimney-base, a tube-like spark-arrester which is of upwardly-increasing diameter, is located above said blast-pipe, and is entered by said chimney-base and which is composed of upper and lower rings, notched or recessed bars connecting said rings together, wire or rod wound spirally around and within the notches or recesses of said bars, a blower-ring supported by said blast-pipe and supporting said spark-arrester, flanges projecting from said blast-pipe and from said blower-ring, a chimney-cone which is of upwardly-decreasing diameter, is located partly within said spark-arrester and partly within said chimney-base, and is composed of a framework comprising notched or recessed bars and wire or rod wound spirally around its said notched or recessed bars and within the notches or recesses thereof, and one or more hook or wing bolts extending through said flanges and adapted to secure said arrester to said blower-ring and said blast-pipe by overlapping one or more parts of said arrester and to liberate said arrester on being turned about its or their axis or axes.

21. In a locomotive-engine, the combination of a blast-pipe, a chimney-base, a tube-like spark-arrester which is of upwardly-increasing diameter, is located above said blast-pipe, and is entered by said chimney-base and which is composed of upper and lower rings,

notched or recessed bars connecting said rings together, wire or rod wound spirally around and within the notches or recesses of the bars, a blower-ring supported by said blast-pipe and supporting said spark-arrester, flanges projecting from said blast-pipe and from said blower-ring, and one or more hook or wing bolts extending through said flanges and adapted to secure said arrester to said blower-ring and said blast-pipe by overlapping one or more parts of said arrester and to liberate said arrester on being turned about its or their axis or axes.

22. In a locomotive-engine, the combination of a blast-pipe, a chimney-base, a tube-like spark-arrester having its upper end entered by the lower end of the chimney-base, a blast-pipe having an outwardly-projecting flange at its upper end, a blower-ring resting upon said flange, and bolts passing through the flange of the blast-pipe and through the blower-ring, said bolts having laterally-extending members adapted to engage said arrester, substantially as described.

Signed at Charing Cross Hotel, London, W. C., this 28th day of April, 1902.

HARRY SMITH WAINWRIGHT.

Witnesses:

JOHN E. RAWORTH,

ALEX. RIDGWAY.