No. 737,801. PATENTED SEPT. 1, 1903.

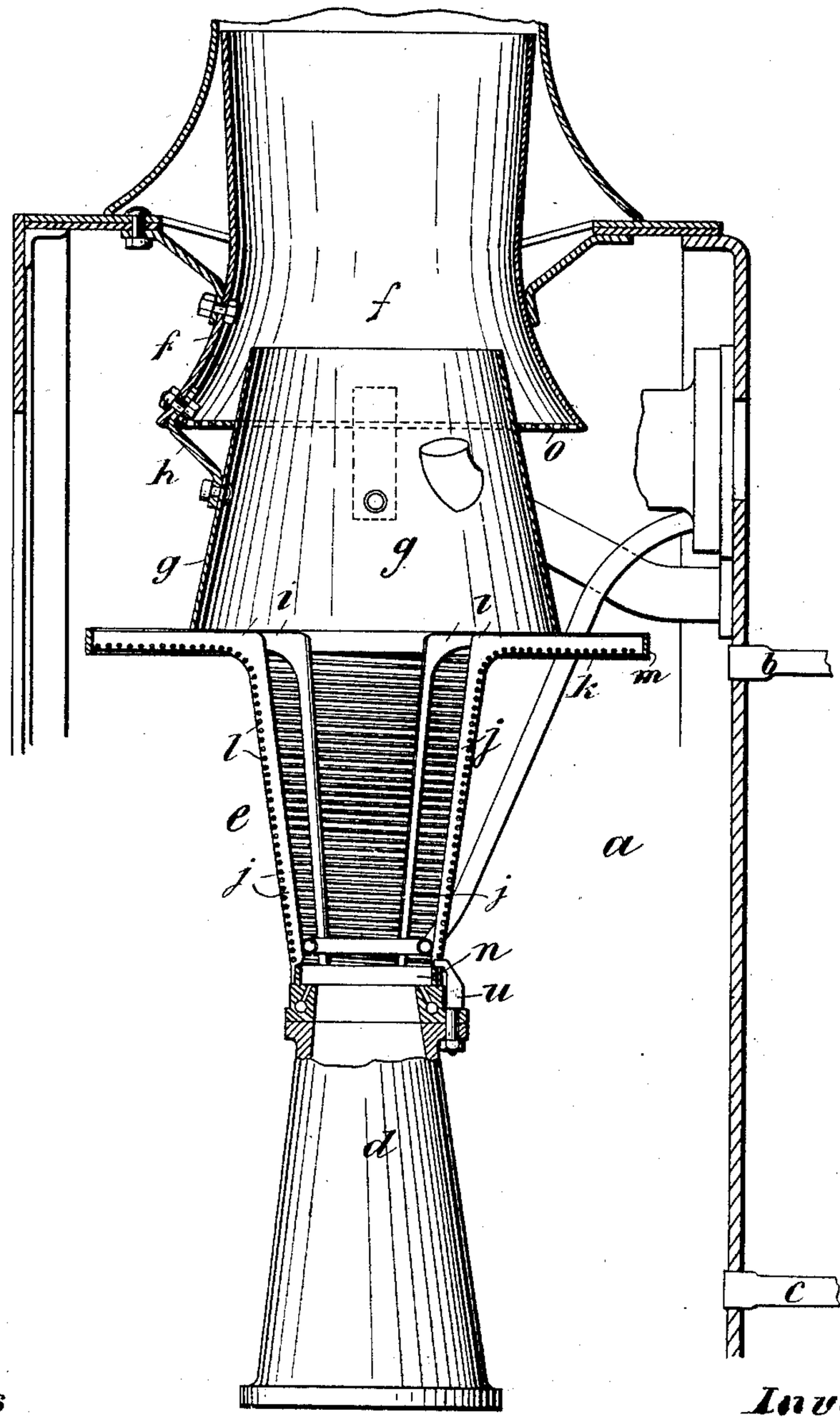
H. S. WAINWRIGHT.

SPARK ARRESTER.

APPLICATION FILED MAY 19, 1902.

NO MODEL. 5 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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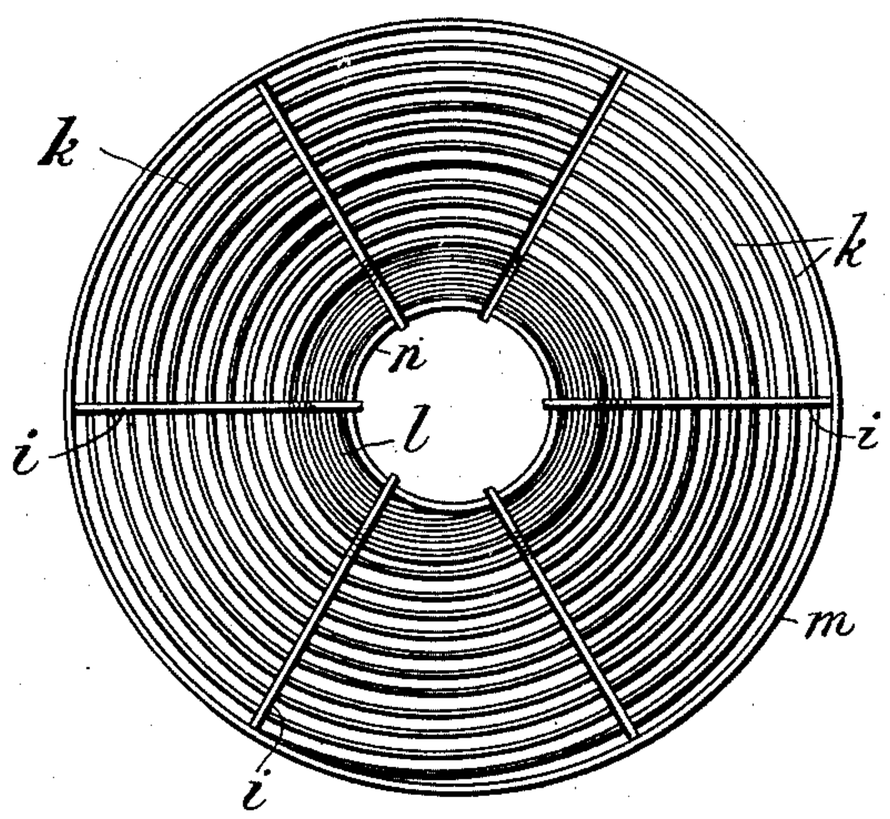
NO MODEL. 5 SHEETS—SHEET 2.

Fig. 2.



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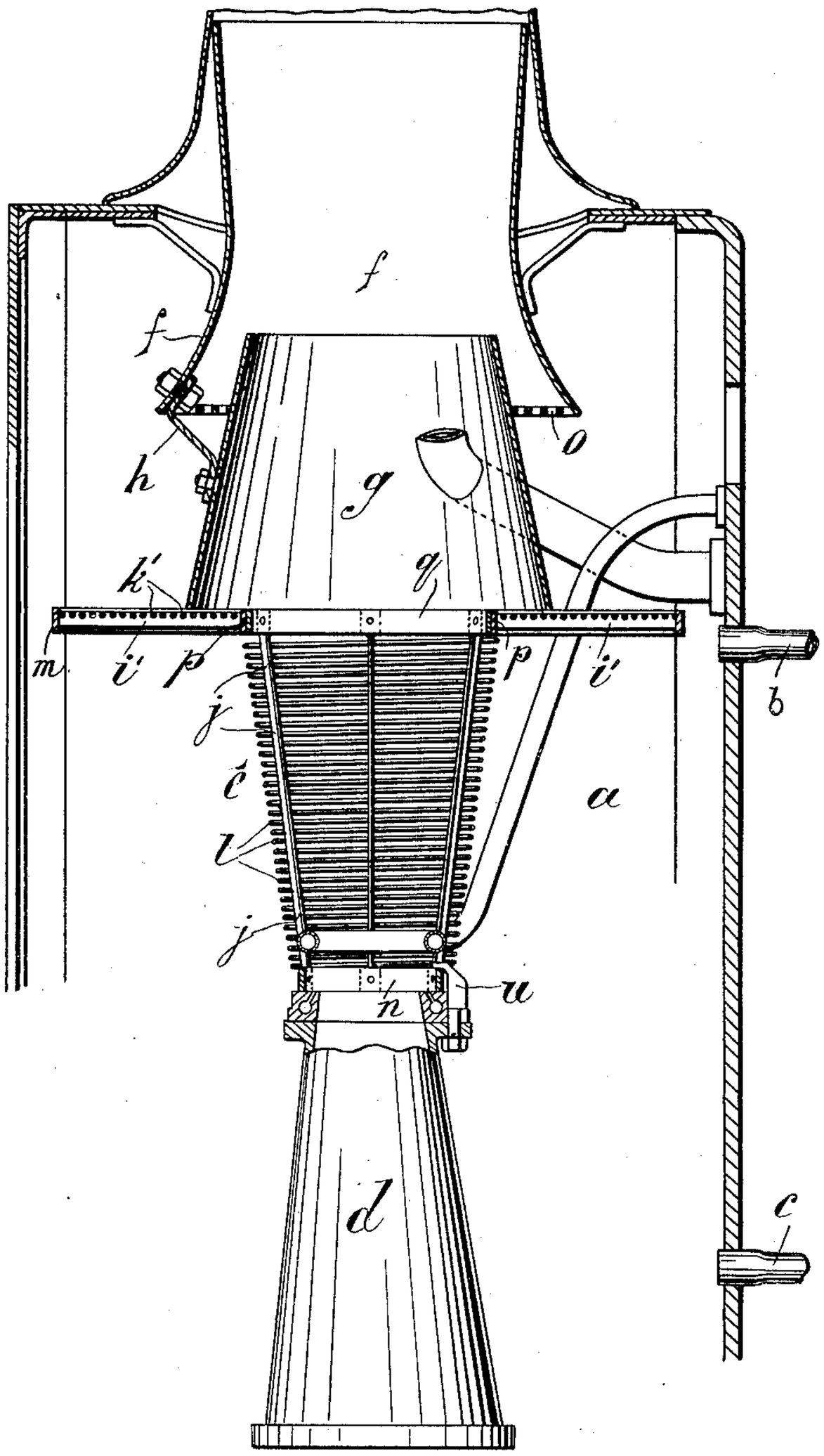
NO MODEL. 5 SHEETS—SHEET 3

Fig. 3.



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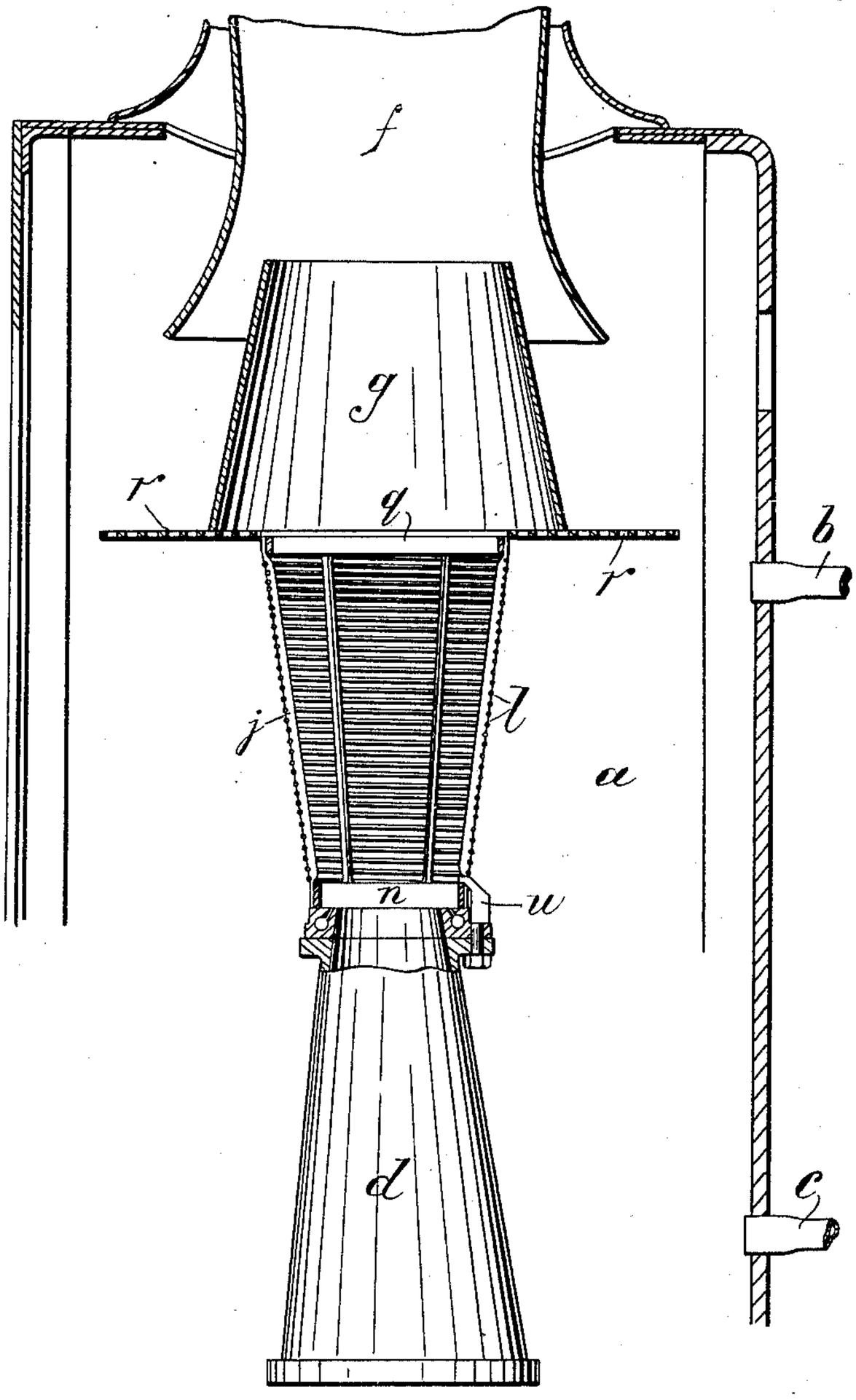
NO MODEL. 5 SHEETS—SHEET 4.

Fig. A.



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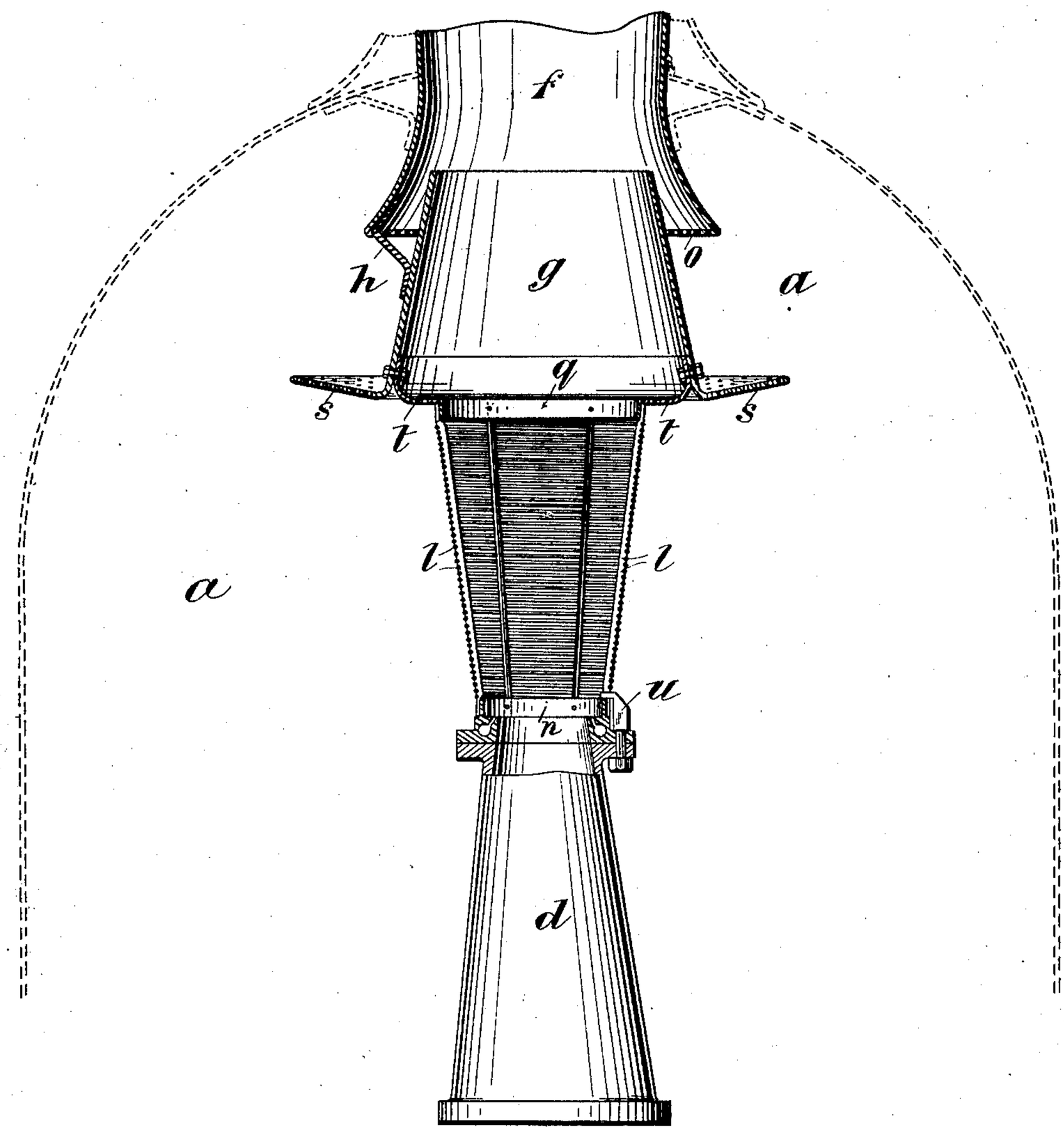
APPLICATION FILED MAY 19, 1902.

NO MODEL. 5 SHEETS—SHEET 5.

Fig. 5.



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By A. S. Pattison, Atty.

No. 737,801. Patented September 1, 1903.

UNITED STATES PATENT OFFICE.

HARRY SMITH WAINWRIGHT, OF ASHFORD, ENGLAND.

SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 737,801, dated September 1, 1903.

Application filed May 19, 1902. Serial No. 108,082. (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 a spark-arrester of truncated, conical, or other tube-like form, which may be constructed by winding wire or rod 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, and which is adapted to be supported by the blast-pipe—preferably a short one—has combined with it at the upper and larger end an annular guard, which is constructed with openings through it, and extends laterally or laterally and upwardly, and which may be composed of a framework comprising radial notched or recessed bars and wire or rod arranged helically or spirally, or approximately so, the said guard being of a diameter at least equal to that of the base of the chimney, between which and the guard, which is located above the level of the upmost smoke-tubes, there is or may be arranged a suitable petticoat or chimney-cone. By the term "tube-like" as applied to a spark-arrester I mean one whose general form is that of a tube, whether conical or not and whether it be composed of framework and wire or rod or be 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. The radial members of the framework of the guard are or may be integral with the longitudinal members of the framework of the spark-arrester and the wire or rod of the guard may be integral with that of said arrester. In some cases, however, the guard may be a separate structure, and it may then, instead of being formed as described, be made of sheet metal, suitably perforated. Instead of being fastened to the spark-arrester the guard may be fastened to or formed by perforated flanges extending from the base of the petticoat, which in turn may be secured, as usual, to the base of the chimney by brackets. The chimney-cone may have an external perforated flange extending to the chimney-base and adapted to prevent sparks, cinders, &c., from going up the chimney without materially impeding the flow of gases.

Of the accompanying illustrative drawings, Figure 1 is a vertical section of one example of a smoke-box provided with accessories according to this invention. Fig. 2 is a top plan of the combined spark-arrester and guard shown in Fig. 1, and Figs. 3, 4, and 5 are views similar to Fig. 1 of modifications.

In the various figures the same reference-letters are used to indicate like parts.

a is the smoke-box; *b*, the top row of fire-tubes; *c*, the bottom row of fire-tubes; *d*, the blast-pipe; *e*, the spark-arrester; *f*, the chimney-base, and *g* the chimney-cone.

Fig. 1 shows an example of a guard formed integrally with a spark-arrester. The guard comprises radial notched or recessed members *i*, integral with the longitudinal members *j* of the arrester *e*, and thick wire or rod *k*, integral with that *l* of the arrester *e* and wound spirally on the members *i* and within the notches or recesses thereof. The outer portion of the wire or rod *k* is fixed to a ring *m*. The entire structure is thus composed of two rings *m* and *n*, notched or recessed bent bars *i j*, connecting the rings *m* and *n*, and wire or rod *k l*, wound spirally on the bars *i j* and located in the notches or recesses thereof. The chimney-cone *g*, which is secured to the chimney-base by brackets *h*, is provided with a perforated flange *o*, extending to the chimney-base *f* and adapted to prevent sparks, cinders, &c., from going up the chimney without materially impeding the flow of gases.

Fig. 3 shows an example in which the guard is made as a structure separate from the spark-arrester, it being composed of two rings *m* and *p*, radial members *i'*, connecting the said rings *m* and *p*, and wire or rod *k'*, wound spirally on the bars *i'* and located in the notches

thereof. The ring *p* fits around and is suitably secured to the top ring *q* of the spark-arrester, which, as described in the aforesaid specification, comprises top and bottom rings *n* and *q*, notched or recessed connecting-bars *j*, and wire or rod *l*, wound spirally around the bars *j* and located in the notches thereof.

Fig. 4 illustrates the use of a guard *r*, made of perforated sheet metal and secured to the chimney-cone *g*.

Fig. 5 shows a guard composed of perforated flanges *s* and *t*, projecting from the chimney-cone *g*.

The arresters shown are supported by the blast-pipe and are secured thereto by means of hook-bolts *u*, which on being turned through a suitable angle about their respective axes will allow the arresters to be removed when necessary.

It will be obvious that the details of construction hereinbefore described can be varied without departing from the essential features of the invention.

What I claim is—

1. In a locomotive-engine, the combination with a blast-pipe, of a tube-like spark-arrester, and an annular guard which projects laterally from said spark-arrester and is composed of a framework and wire or rod arranged spirally on said framework, substantially as described.

2. In a locomotive-engine, the combination, with a blast-pipe, of a tube-like spark-arrester, and an annular guard which projects laterally from said spark-arrester and is composed of a framework comprising laterally-extending notched or recessed bars and wire or rod arranged spirally on said bars and in the notches or recesses thereof.

3. In a locomotive-engine, the combination, with a blast-pipe and a chimney-base, of a tube-like spark-arrester, and an annular guard projecting laterally from the upper end of said spark-arrester and of a diameter not less than that of said chimney-base, said spark-arrester and said guard being each composed of a framework comprising notched or recessed bars and wire or rod arranged spirally on said bars and in the notches or recesses thereof.

4. In a locomotive-engine, the combination, with a blast-pipe, of a tube-like spark-arrester and an annular guard which is made with openings therethrough and projects laterally from the upper end of said spark-arrester, said spark-arrester and said guard being each composed of a framework comprising notched or recessed bars and wire or rod arranged spirally on said bars and in the notches or recesses thereof and the wire or rod of said guard being integral with that of said spark-arrester.

5. In a locomotive-engine, the combination, with a blast-pipe and a chimney-base, of a tube-like spark-arrester, an annular guard which is made with openings therethrough and projects laterally from the upper end of said spark-arrester and which is of a diameter not less than that of said chimney-base, and a chimney-cone between said chimney-base and said guard.

6. In a locomotive-engine, the combination, with a blast-pipe and a chimney-base, of a tube-like spark-arrester, an annular guard which projects laterally from the upper end of said spark-arrester and is of a diameter not less than that of said chimney-base, and which is composed of a framework comprising laterally-extending notched or recessed bars and wire or rod arranged spirally on said bars and in the notches or recesses thereof, and a chimney-cone between said chimney-base and said guard.

7. In a locomotive-engine, the combination, with a blast-pipe and a chimney-base, of a tube-like spark-arrester, an annular guard projecting laterally from the upper end of said spark-arrester and of a diameter not less than that of said chimney-base, and a chimney-cone between said chimney-base and said guard, said spark-arrester and said guard being each composed of a framework comprising notched or recessed bars and wire or rod arranged spirally on said bars and in the recesses or notches thereof and the notched or recessed bars and the wire or rod of said guard being integral with those of said arrester.

8. In a locomotive-engine, the combination of a chimney-base, a chimney-cone, a flange made with openings therethrough and extending laterally from said chimney-cone to said chimney-base, and a spark-arrester adjacent to said cone, substantially as described.

9. In a locomotive-engine, the combination of a chimney-base, a tube-like spark-arrester, an annular guard made with openings therethrough and projecting laterally from the upper end of said spark-arrester, a chimney-cone located between said chimney-base and said guard, and a flange made with openings therethrough and extending from said chimney-cone to said chimney-base, substantially as described.

10. In a locomotive-engine, the combination of a chimney-base, a chimney-cone, a flange made with openings therethrough and extending from said chimney-cone to said chimney-base, a tube-like spark-arrester, and an annular guard which projects laterally from the upper end of said spark-arrester and is of a diameter not less than that of said chimney-base, and which is composed of a framework comprising radial notched or recessed bars and wire or rod arranged spirally on said bars and in the notches or recesses thereof.

11. In a locomotive-engine, the combination with a blast-pipe and a chimney-base, of a tube-like spark-arrester, composed of a framework having a laterally-extending upper portion forming a guard, and a wire or rod wound around said framework, including the said laterally-extending upper portion, substantially as described.

12. In a locomotive-engine, the combination with a blast-pipe and a chimney-base, of a tube-like spark-arrester, composed of a framework comprising notched bars having longitudinally-arranged main portions and laterally-extending upper notched ends, and a wire or rod wound around the portions of the framework formed by said main portions and said ends of said bars, and resting in the notches thereof, substantially as described.

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

HARRY SMITH WAINWRIGHT.

Witnesses:

HORACE A. TILLINGHAST,

ALEX. RIDGWAY.