

(No Model.)

K. RINGHEIM.
SPARK ARRESTER.

No. 519,026.

Patented May 1, 1894.

Fig. 1.

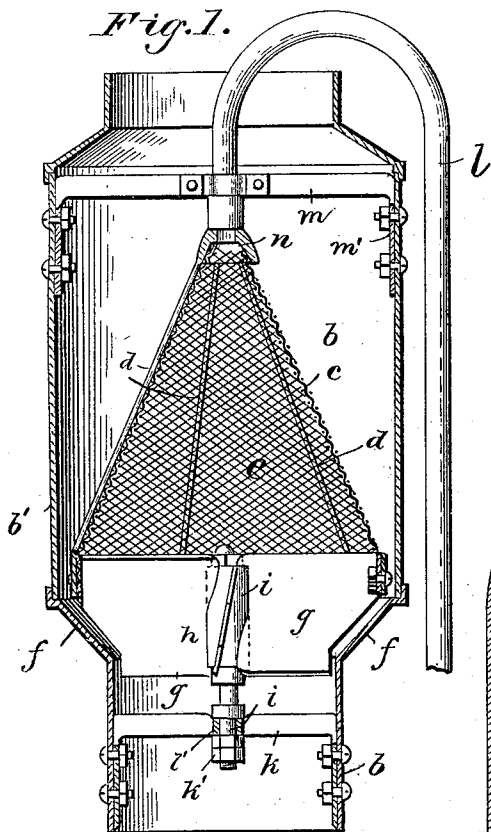


Fig. 2.

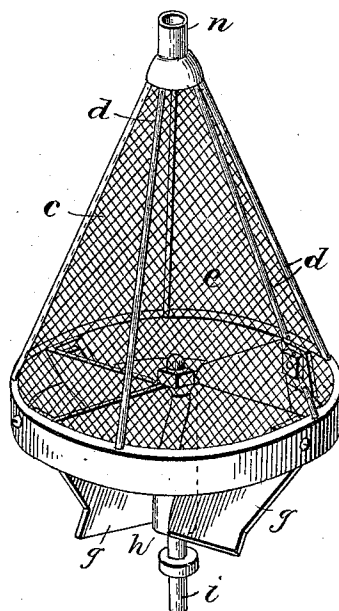


Fig. 3.

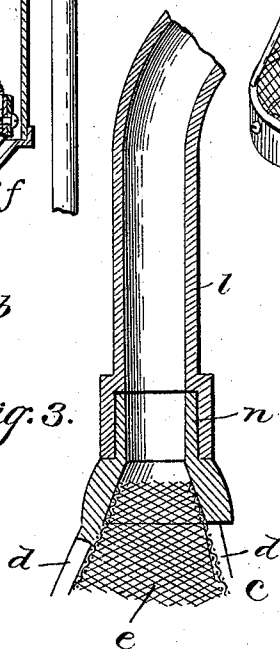
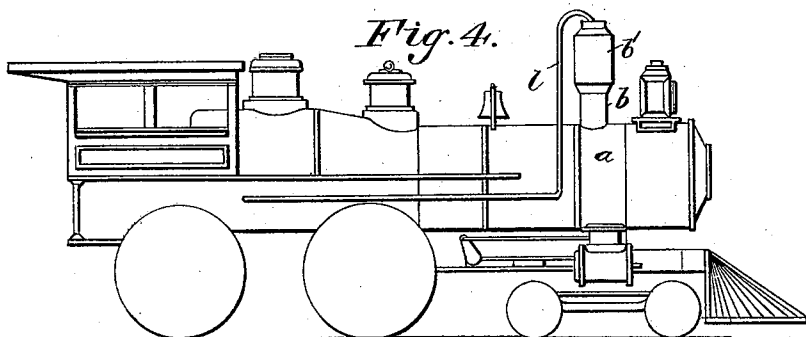


Fig. 4.



Inventor

Witnesses

Julius Ulke, Jr.
J. P. Owens

By his Attorneys.

Knut Ringheim

C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

KNUT RINGHEIM, OF NEVADA, IOWA.

SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 519,026, dated May 1, 1894.

Application filed February 28, 1894. Serial No. 501,846. (No model.)

To all whom it may concern:

Be it known that I, KNUT RINGHEIM, a citizen of the United States, residing at Nevada, in the county of Story and State of Iowa, have invented a new and useful Spark-Arrester for Smoke-Stacks, of which the following is a specification.

My invention relates to those smoke stacks which are provided with means for arresting the passage of sparks and depositing them where they will be unable to do harm; and it consists in certain improved features of construction and combination of parts whereby the sparks are more effectually gathered and when so gathered disposed of in a more desirable and effective way than ordinarily.

Heretofore it has been generally the custom to so construct these devices that the sparks will be made to lodge in the stack or in a receptacle provided for them adjacent to the stack, but in my invention means are provided for conducting them out the mouth of the stack and thence to any desired place of safety, all of which will be more fully described hereinafter.

In the accompanying drawings:—Figure 1 represents a longitudinal section of a smoke stack having my improvements applied; Fig. 2 a perspective view of the spark gathering cone having its propeller wheel attached; Fig. 3 an enlarged sectional view of the connection between the spark cone and the pipe for conducting the sparks; Fig. 4 a view of a locomotive having my improvements applied and showing the spark conducting pipe extending to the fire box of the engine.

The reference letter *a* indicates the smoke chest of the locomotive, and *b* the stack, which latter device is provided at its upper end with the enlarged chamber *b'* in which my improvements are arranged. *c* indicates the spark gathering sieve, which consists of the conical metallic framework *d*, having the heavy sieve *e* arranged thereon. This device is arranged with its base downwardly and open, and with its lower edges just above the shoulder *f* of the enlarged portion or chamber *b'*. Owing to this arrangement of chamber *b'* and sieve *c*, the sparks, and indeed all that passes up the stack, are forced to enter the sieve.

Rigidly secured to the lower edges of the spark sieve *c* and projecting downwardly

therefrom are the four blades or vanes *g* of the propeller wheel *h*. These blades or vanes, *g*, are so inclined that, when subjected to the action of the outgoing blast of smoke and steam, they will cause the wheel to revolve on its spindle *i*, which is revolubly mounted in the box *j'* of the rod *k*, and held therein by the nut *k'*. The rod *k* extends across the stack and serves to support the wheel *h*, and consequently the sieve *c*, so as to be capable of rotary movement. The construction of the wheel *h* is not necessarily of any particular character, since this does not enter into my invention. Of course, it is essential that the wheel, indeed all the parts, be of metal. The upper end or apex of sieve *c* is supported capable of rotary movement by means of the lower end of the spark conducting pipe *l*, which is in turn secured rigidly in the center of the stack by the cross bar *m*. This bar *m* is secured in its turn to the sides of the stack as at *m'*, and the connection between it and pipe *l* may be of any preferred construction. The apex of the sieve *c* is provided with the short tube or nozzle *n*, which is of a size that will admit it to be snugly fitted within the lower end of pipe *l*, as before stated. By this means the cone is revolubly mounted and at the same time provided with means for affording a communication between it and the spark conducting pipe *l*. This latter device, pipe *l*, proceeds upwardly from the bar *m*, and out the mouth of the stack. From thence it curves rearwardly and downwardly to the fire box of the engine. It is preferred to conduct the sparks to this point, fire box, but if so desired they may be conducted elsewhere, as alongside the track or into the coal bunker.

In operation the sparks, smoke and all products of combustion in the furnace pass up the smoke stack *b* and when the wheel *h* is reached it is started to revolving with a degree of speed equal to the force of the draft. As may be well understood, this will result in a very rapid revolution of the wheel and consequently the sieve *c*. After entering the sieve *c*, the smoke and other vapor passes on, unobstructed, out the mouth of the stack, and into the atmosphere, while the sparks, upon being prevented from escaping similarly by the sieve *e*, are forced up to the apex of the cone and thence out the nozzle *n* and into

conductor-pipe *l*. By means of pipe *l* the sparks will be carried safely off, and to any place where it may be preferred to deposit them. It will be understood that not only the sparks are so treated, but that only the vapor (smoke and steam) is allowed to escape, while all other matter is gathered by sieve *c* and conducted to a place of safety by pipe *l*.

It will be understood that, while I prefer to use my appliance in connection with locomotive engines, it may be used to an equal advantage on any other, stationary or marine.

The purpose of the rotary movement which I impart to sieve *c*, is to assist in forcing the sparks out the nozzle *n*, for by its means the current of gas within the sieve is given a spiral or twisted disposition, thereby hurrying its exit.

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

A spark arrester for furnaces and comprising the combination of a smoke stack, a con-

cal sieve mounted therein and revoluble on a vertical axis, said sieve having its lower or large end opening downwardly so as to receive the products of combustion, and provided at its upper or small end with an emitting nozzle, a conductor pipe arranged in the stack and having the said nozzle revolubly seated therein, the conductor pipe being extended outside the stack so as to conduct the sparks therefrom, and a series of diagonally disposed blades mounted radially upon the lower end of the sieve, and adapted to be engaged by the products of combustion in the stack, whereby the sieve is given a continuous rotary movement, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

KNUT RINGHEIM.

Witnesses:

EDW. KLOVE,
D. J. VINJE.