

(No Model.)

2 Sheets—Sheet 1.

J. T. KING.

SPARK CONDUCTOR FOR STEAM ENGINES.

No. 520,115.

Patented May 22, 1894.

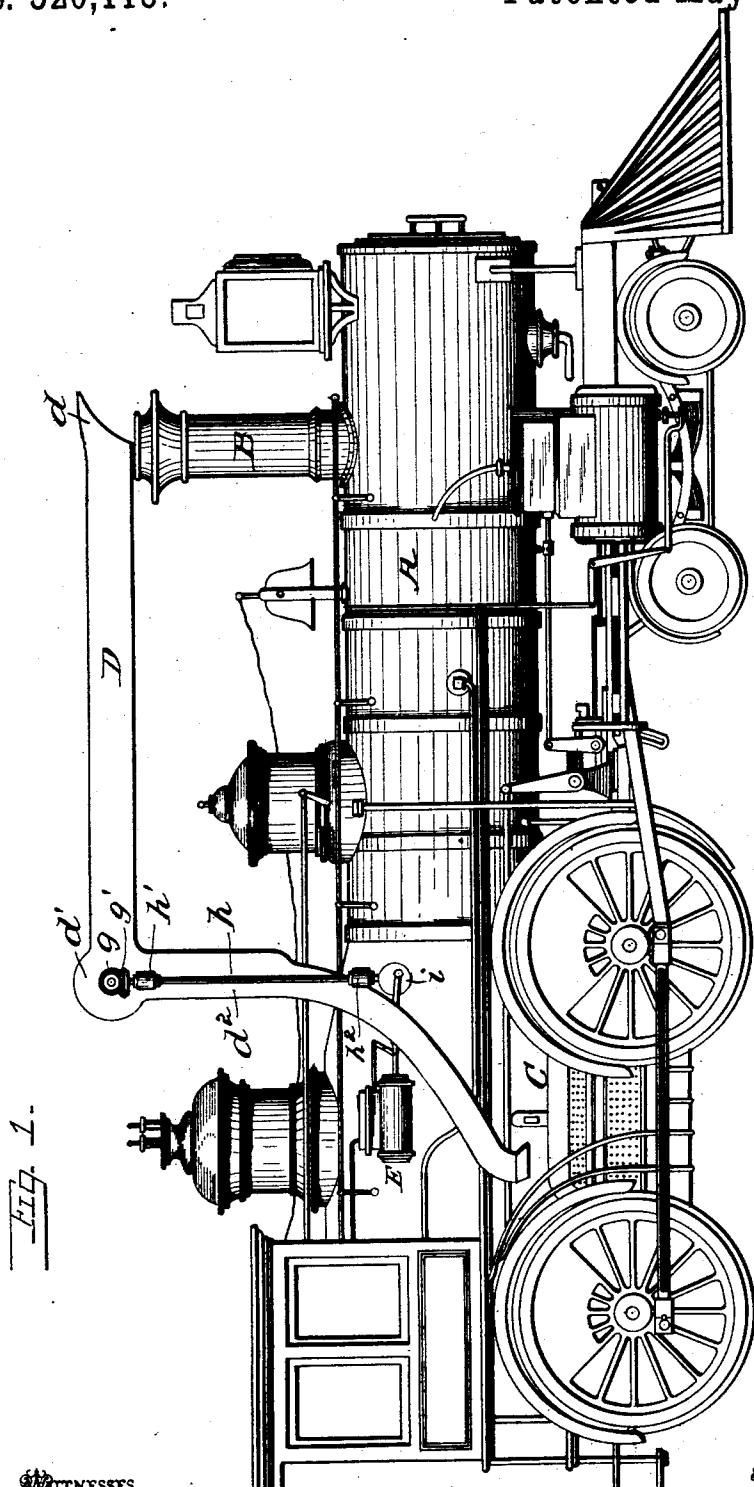


Fig. 1.

WITNESSES,

Walter Hamarins
Rose E. Rabbit.

INVENTOR.

J. T. King
By John S. Duffie ATTORNEY.

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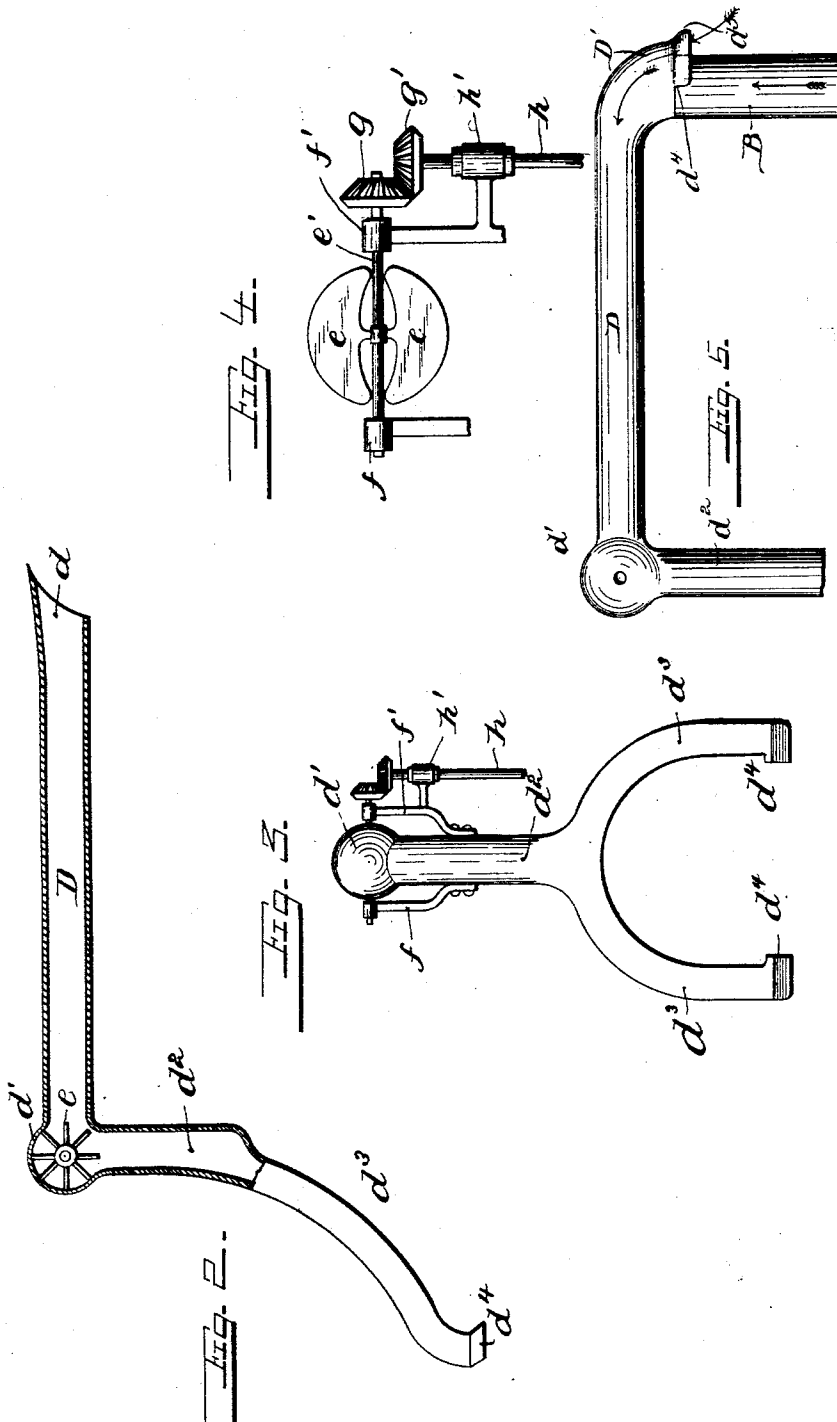
2 Sheets—Sheet 2.

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WITNESSES,
Walter Panamian
Rose E. Cobbitt

INVENTOR,
J. T. King
By John S. Duggie ATTORNEY.

UNITED STATES PATENT OFFICE.

JOHN T. KING, OF LITTLE ROCK, ARKANSAS.

SPARK-CONDUCTOR FOR STEAM-ENGINES.

SPECIFICATION forming part of Letters Patent No. 520,115, dated May 22, 1894.

Application filed May 20, 1893. Serial No. 474,912. (No model.)

To all whom it may concern:

Be it known that I, JOHN T. KING, a citizen of the United States, residing at Little Rock, in the county of Pulaski and State of Arkansas, have invented certain new and useful Improvements in Spark-Conductors for Steam-Engines; 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.

My invention has relation to an improved "smoke stack," and consists in the novel construction and arrangement of its parts. I claim for it, first, that by reason of atmospheric pressure when the train is moving forward, the smoke, sparks, and cinders will be forced backward through the extension stack. To further insure this I have added the suction fan. By means of atmospheric pressure and the fan, the smoke, sparks, and cinders are carried back and discharged into the furnace or fire-box of the engine, at any given point or angle as may be necessary to meet the demands for strong draft or according to the size or construction of the furnace or fire-box. By means of this current of air forced through the fire-box or furnace a more perfect combustion is secured and the gas, cinders, and other unconsumed portions of the fuel are reduced to a state of perfect combustion. Second. It will insure a great saving of fuel by reason of claims above set forth, as well as adding greatly to the comfort of travelers. Third. It will result in a great saving to the rail road and others who may use it, by lessening the danger of fire by reason of discharge of sparks from the engine, and is applicable to freight as well as passenger engines, and because of the rotary fan it is also applicable to stationary engines. Much has been lost to the South and in the western prairies by fires from engine sparks.

One of the important points to be considered will be the saving of fuel by the passing back of unconsumed gases, cinders, &c., into the fire-box. This can only be done by direct suction or action of the fan.

In the accompanying drawings: Figure 1 is

a side elevation of a locomotive engine with my invention attached. Figs. 2, 3, 4, and 5 are detail views.

My invention is described as follows:

A, represents a locomotive steam engine, B, the smoke stack, and C, the fire-box.

My invention consists of the horizontal smoke pipe D, having a funnel-shaped mouth d , resting on and attached to the upper part of the smoke-stack B, said pipe running backward and having an enlarged globular part d' , to receive a rotary fan e , then a pipe d^2 , attached to the lower side of said globular part extends downwardly some distance. Said pipe d^2 , then divides into two parts d^3 , one extending downward on each side of the steam engine, their lower ends d^4 , turning into the fire-box C, one in each side thereof. In the globular part d' , is a rotary fan e , rigidly secured on an axle e' , the ends of which extend outwardly and are journaled in bearings f' , which are properly secured to the sides of the pipe d^2 . On one end of the axle e' , is rigidly secured a beveled gear-wheel g , which meshes with a similar gear-wheel g' , on the upper end of the shaft h , the upper end of which is journaled in a bearing h' , on an arm extending from the lower end of the arm of the bearing f' ; the lower end of said shaft h , is borne in a bearing h^2 , secured to the casing of the boiler. The lower end of said shaft is also provided with a beveled gear-wheel which is run by a gear-wheel i , borne in suitable bearings, said gear-wheel i , being run by a small steam engine E, attached to the steam boiler and fed by steam from the boiler. The flow of steam in the said boiler E, is regulated by a valve in the engineer's cab within easy reach of the engineer.

In locomotive engines, when the engine is moving rapidly forward or when it is running even slowly in the face of the wind, it is not necessary that the rotary fan e , should be kept in motion, and during such occasions steam may be turned off from the engine E. When slowing up or when necessary from any cause, the speed of the fan can be lessened by the engineer controlling the steam feed. The description of the mechanism to operate the fan may be varied to suit each particular locomotive or stationary engine to which my invention is applied, and the se-

curing and fastening of the various parts for proper working will depend, to some extent, upon the construction of the engine or boiler.

As the open funnel-shaped mouth of the upper smoke stack D, might to some extent cause a loss of speed to the engine on account of atmospheric pressure, I have invented for use on engines, where great speed is sought to be obtained, an upper smoke stack having its front end coming down over the top of the main stack in the form of a hood D', the hood to stand in front from a line d^4 , down through the main stack a little back of its center. This hood comes sufficiently forward to allow sufficient space for the admission of air to pass up under the hood and through the smoke-stack D. The projection d^5 , of the hood is to be bell-shaped at its lower extremity, and the space between the stack proper and the projection of the hood is governed by the size of the stack and use of the engine.

Should it at any time become necessary to reverse the fan e , it may be done by the engineer reversing the action of the small engine E.

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

1. In combination with a steam engine the horizontal pipe D, its front end secured to and resting on the upper end of the smoke stack, enlarged globular part d' , part d^2 , extending downward and dividing into two parts d^3 , said parts each running on one side of the boiler, their lower ends entering each side of the fire-box; rotary fan e , journaled in said enlarged part d' , and operated by suitable mechanism, run by small steam engine E, secured to the main boiler, fed therefrom and controlled by the engineer, substantially as

shown and described and for the purposes set forth.

2. The horizontal pipe D, its front end secured to and resting on the rear part of the upper end of the stack B, its front part D', and bell-shaped projection d^5 , extending forward and coming down over the top of the main stack, in the form of a hood; enlarged globular part d' ; part d^2 , extending downward and dividing into two parts d^3 ; said parts d^3 , one running on each side of the boiler, their lower ends entering each side of the fire-box; rotary fan e , journaled in said enlarged part d' , and operated by suitable mechanism run by a small steam engine E, secured to the main boiler, fed therefrom and controlled by the engineer, substantially as shown and described and for the purposes set forth.

3. In combination with a steam engine the horizontal pipe D, its front end secured to and resting on the rear part of the upper end of the stack B, its front part D', extending forward in the shape of a hood, and having attached to it a bell-shaped projection d^5 ; enlarged globular part d' , part d^2 , extending downward and dividing into two parts d^3 , said parts each running on one side of the boiler, their lower ends entering each side of the fire-box; rotary fan e , journaled in said enlarged part d' , and operated by suitable mechanism, substantially as shown and described and for the purposes set forth.

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

JOHN T. KING.

Witnesses:

R. CARL,

A. A. RUTLAND.