(No Model.)

W. BURT.

SPARK ARRESTER AND CONSUMER.

No. 457,071. Patented Aug. 4, 1891.

Fig 1

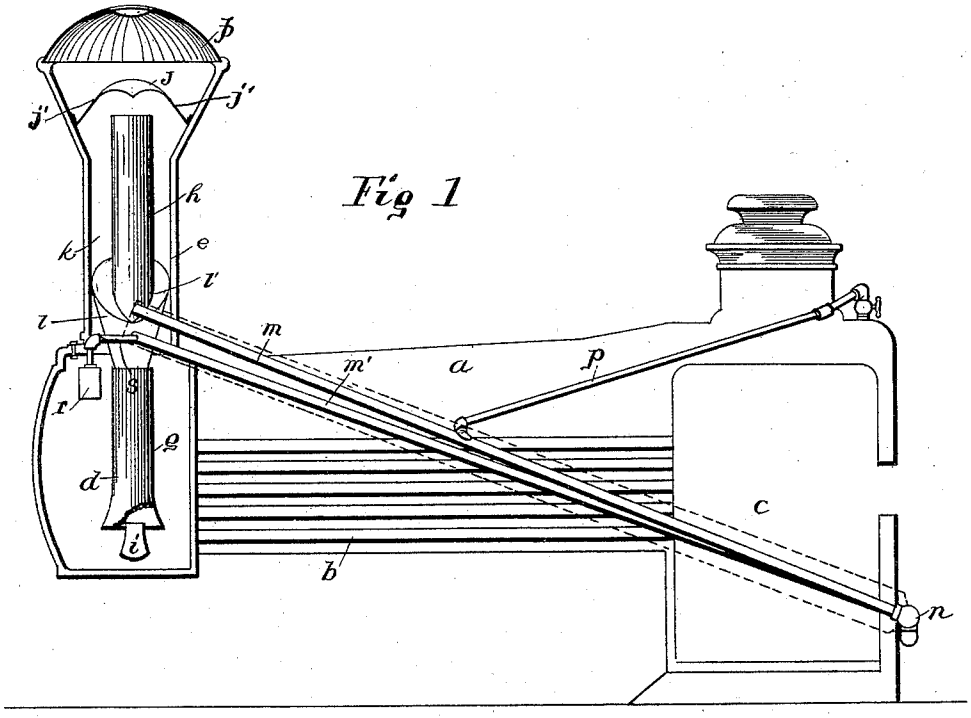


Fig 2

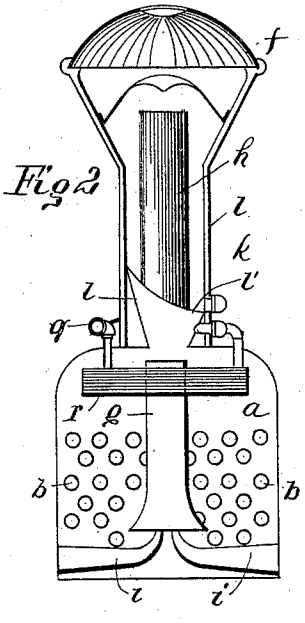


Fig 3

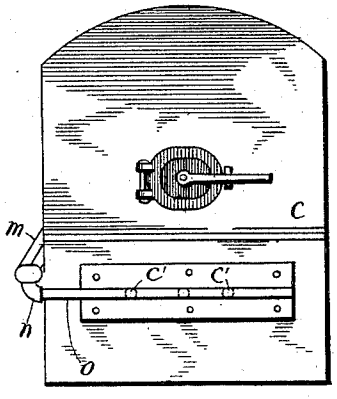


Fig 4

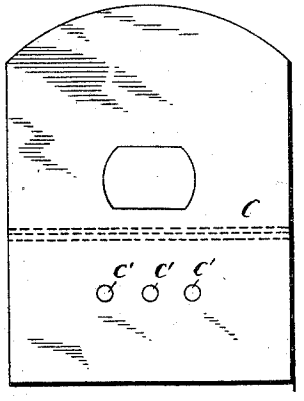
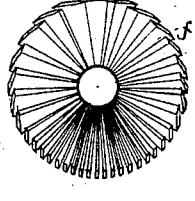


Fig 5



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SPARK ARRESTER AND CONSUMER.

SPECIFICATION forming part of Letters Patent No. 457,071, dated August 4, 1891.

Application filed February 4, 1891. Serial No. 380,153. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM BURT, a citizen of the United States, residing at Portsmouth, in the county of Scioto and State of Ohio, have invented certain new and useful Improvements in Spark Arresters and Consumers; and I do hereby 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.

My invention relates to a spark arrester and consumer for locomotives, its objects being to produce a device which will promote combustion and in which the air will pass directly over the fire and into the boiler-flues, it being thoroughly heated before reaching the fire.

To these ends my invention consists in certain novel features of construction to be hereinafter described, and then particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical longitudinal section showing my improvements, parts being in elevation. Fig. 2 is a section on line *x x*, Fig. 1, partly in elevation. Fig. 3 is a rear view. Fig. 4 is a rear view with part removed. Fig. 5 is a detail view of the slatted cover.

The boiler *a* of the locomotive (only those parts being shown which are necessary to illustrate my invention) is provided with the usual flues *b*, that permit the passage of the smoke from the fire-box *c* at the rear to the smoke-box *d* at the front.

e is the smoke-stack on top of the smoke-box, and it is provided at its upper end with a slatted cover *f*, made of steel plates, with the slats arranged like those of a window-shutter.

In the smoke-box *d* is a short vertical flue *g*, and above it in the smoke-stack is a pipe *h*, the flue being in communication at its lower end with exhaust-pipes *i*, leading from each side of the smoke-box, the function of which is to induce a current of air through the flue *g* to carry the smoke up through pipe *h*. Above the pipe *h* is the deflector *j*, secured to the smoke-stack by bolts or arms *j'*, its function being to deflect the sparks down into the space *k* between the pipe and the smoke-stack.

l is a funnel-shaped lining between the pipe *h* and the smoke-stack onto the inclined top *l'* of which the sparks and dirt will fall and from which they will be conveyed by pipe *m*, one of a pair of downwardly-inclined pipes which lead from the same backward to an elbow-casting *n*, at one end of a pipe *o*, extending across the front of the fire-box, the latter being provided with perforations *c'*, with which register perforations *o'* in the pipe, so that the sparks will be permitted to pass into the fire-box and be consumed. Communicating with the pipe *m* is a steam-jet pipe *p*, controlled by valve *p'*, and it is for the purpose of admitting steam into pipe *m* under pressure so as to force the cinders, soot, &c., in the latter into the furnace.

q is an air-inlet pipe, at the front and to one side of the top of the smoke-box, and which projects from one end of a hot-air chest *r* within the smoke-box, in which the air is heated through the influence of the heat in the smoke-box. From the other end of the hot-air chest *r* projects a branch pipe *s*, which communicates with the other downwardly-inclined pipe *m'* of the pair of pipes which enters the elbow-casting *n* with pipe *m*, its tendency being to draw the sparks through the pipe *m* and force them onto the fire. The preheating of the air in the smoke-box before it reaches the fire is a great advantage, as will be evident.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In a spark arrester and consumer for locomotives, the combination, with the fire-box, boiler, smoke-box, and smoke-stack, of a pipe within the smoke-stack through which the smoke passes, a funnel-shaped lining between said pipe and the smoke-stack and having a top inclined from one side of the smoke-stack to the other, and a downwardly-inclined pipe leading from the top of said funnel to the front of and into the fire-box for conveying the sparks thereto for consuming, substantially as shown and described.

2. In a spark arrester and consumer for lo-

comotives, the combination, with the fire-box, boiler, smoke-stack, and smoke-box, of a pipe at the front of the fire-box, a pair of inclined pipes, one of which enters the smoke-stack and leads to the front pipe and from thence into the fire-box for conveying the sparks or cinders thereto, and the other of which conveys hot air into the fire-box through the front pipe, and a steam-jet pipe for injecting steam into the spark or cinder conveying pipe near its upper end, substantially as set forth.

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

WILLIAM BURT.

Witnesses:
W. S. FOSTER,
GEORGE H. MAY.