

M. RUMELY.
Spark-Arresters.

No. 155,465.

Patented Sept. 29, 1874.

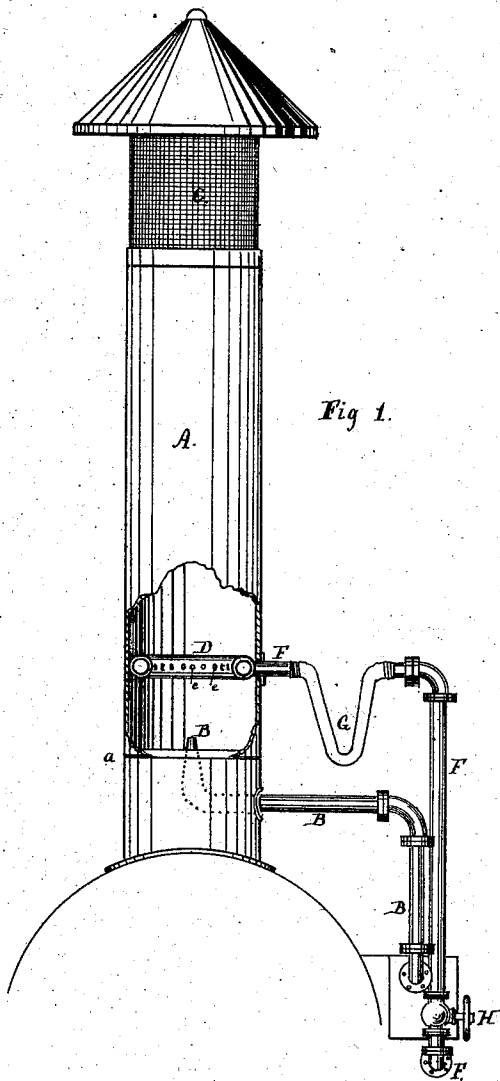


Fig 1.

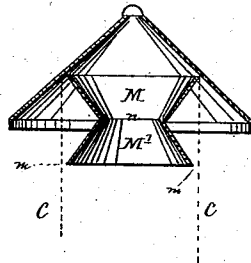


Fig 2.

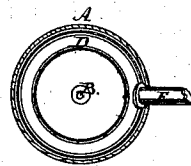


Fig 3.

Witnesses:

Henry S. Smith
Billings

Inventor:

Minrad Rumely
by Munday & Everts
his Attorneys.

UNITED STATES PATENT OFFICE.

MAINRAD RUMELY, OF LA PORTE, INDIANA, ASSIGNOR TO M. & J. RUMELY,
OF SAME PLACE.

IMPROVEMENT IN SPARK-ARRESTERS.

Specification forming part of Letters Patent No. **155,465**, dated September 29, 1874; application filed August 3, 1874.

To all whom it may concern:

Be it known that I, MAINRAD RUMELY, of La Porte, in the county of La Porte and State of Indiana, have invented certain Improvements in Spark-Arresters, of which the following is a specification:

This invention relates to a means for preventing the escape of sparks from the smoke-stack of a steam-engine.

The employment of steam as a motive power for thrashing-machines, which is becoming more general every year, is attended with great danger, owing to the nature of the fuel used, and the amount of sparks generated and escaping from the smoke-stack, which fall among the straw and other combustible material surrounding, and are the cause of a great many destructive fires.

The present invention, although it may be used upon any kind of a furnace or engine, is especially adapted for portable thrashing-engines.

I apply within the smoke-stack, and near the bottom thereof, a device consisting substantially of an annular steam-pipe pierced with numerous jet-holes for the escape of exhaust steam, or steam and water mingled, from all sides across and toward the center of the smoke-stack, forming a curtain of jets, through which all of the smoke and sparks must pass in their course of exit. This extinguishes most of the sparks, especially the larger ones, and arrests many, causing them to fall back; and, as a further safeguard to arrest such sparks as may pass said curtain unextinguished, I place within the wire-gauze cap or hood at the top of the stack two hollow frustums of cones, united at their apexes, and open below and above. The upper one comes out at its widest portion to the sides of the stack, while the lower one comes out nearly to the gauze, but leaves an annular open space between it and the gauze at every side, so that the gauze is not blocked up, but is left open for the draft. The draft, of course, will be largely through the opening between the lower outer rim of the lower cone and the gauze, and thence outward through the gauze at the sides. It will be found, however, that most of the sparks will be led by the momentum they

have acquired to strike within the bounds of the lower cone, and, being deflected by the incline of its under surface, they will be guided or directed by it to the opening into the chamber formed by the upper cone and the hood. Here they naturally fall on the upper surface of the upper cone, and being very light, and, to some extent, moist from contact with the steam issuing from the jet-ring below, and the chamber not being agitated to any great extent by any draft or current of air, it will be found that most of them will remain there. Such of them as may fall back into the stack will be retarded in their course of exit, and, of course, be proportionably nearer extinguishment.

It must be remembered that, in thrashing-machine engines, to which this invention more particularly applies, wood or other light fuel is used, and that the sparks arising from such fuel are usually light, and especially so if the combustion is nearly completed.

In the accompanying drawing, which forms a part of this specification, Figure 1 represents an elevation of a smoke-stack fitted with my invention, a portion of the stack being broken away to show the steam-ring or jet contrivance. Fig. 2 is a vertical section of the double-cone apparatus in the top of the stack; and Fig. 3 is a horizontal section of the stack just above the steam-ring, showing said ring in plan view.

Like letters of reference made use of in the several figures indicate like parts.

In the said drawing, A represents the smoke-stack, which is parted at the joint *a*, so that it may be hinged and allowed to fold back upon the boiler for convenience in carrying it from point to point. B is the ordinary exhaust-pipe for producing a draft. C is the wire-gauze hood at the top of the stack. D is an annular pipe or tube, pierced at the inner side with a row of jet-holes, *e*, pointing toward the center of the stack. A pipe, F, connects this jet-ring with the exhaust of the engine, as shown. In the line of this pipe F is a section of rubber hose, G, to allow of the smoke-stack being folded back upon its hinge without disconnecting the pipe F. A valve, H, serves to close or open said pipe F to ad-

mit or cut off the steam. The wet exhaust steam by this means is forced in a curtain of jets across the path of the sparks. At the top of the stack, and within the gauze netting C, are placed the two cones M M', the upper one, M, being secured at all sides at its upper edge to the upper edge of the gauze, while the lower one, M', is enough smaller in the diameter of its base to leave a space, *m*, at all sides between it and said gauze. The two cones are secured together at the apex, and open into each other by the opening *n*. The sparks which by mischance may escape extinguishment below are received by the lower cone, M', and directed through the aperture *n* into the upper cone, M, falling upon its upper surface.

With these combined devices applied to the stack, I find there is not the slightest danger to be apprehended from fire. The most combustible and spark-producing fuel, such as shavings, is consumed without the escape of any considerable amount of sparks.

Instead of connecting the jet-ring to the ex-

haust, I may, if preferred, connect it with the boiler at such point as to take wet steam direct.

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

1. The steam-jet ring, supplied with exhaust or wet steam, constructed to fit the inner periphery of the stack, and provided with jet-holes upon its inner side to direct the jets of steam toward the center of the stack, in combination with the smoke-stack.

2. The combination of the smoke-stack, parted at the joint, in order that it may be hinged, as specified, with the steam-jet ring, located above the joint, the pipe F, and rubber-hose section G, substantially as specified.

3. The combination of the cones M M' and gauze hood I, constructed and operating as specified.

MAINRAD RUMELY.

Witnesses:

JOHN W. MUNDAY,
EDW. S. EVARTS.