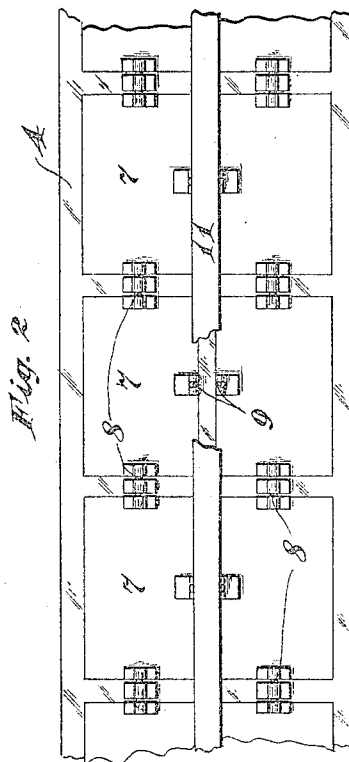
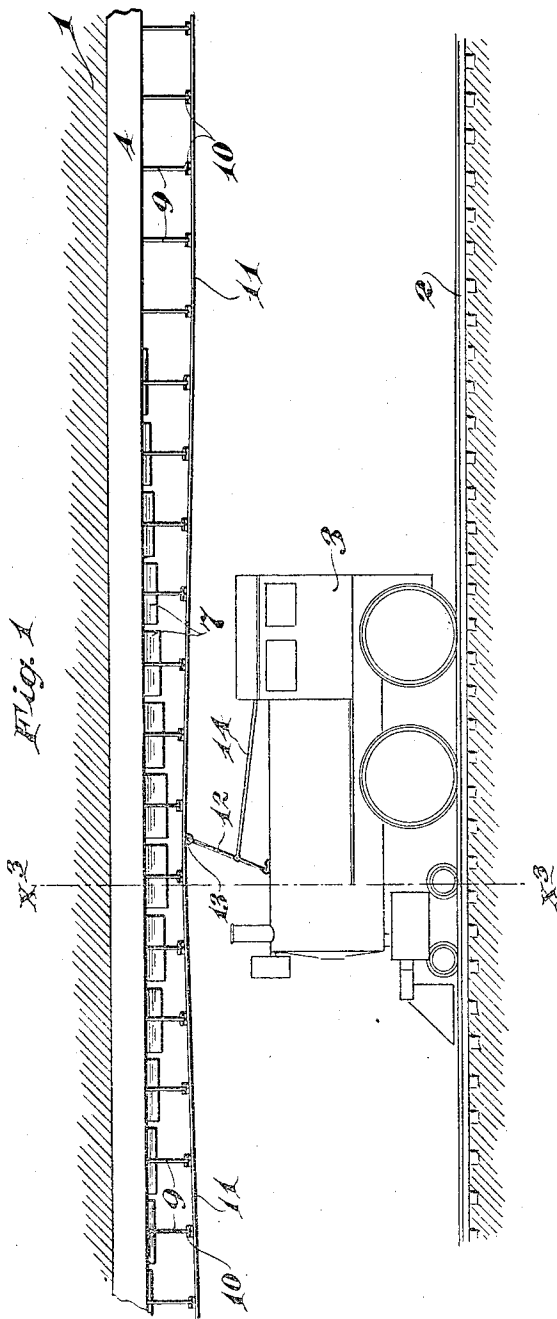


P. H. WEDMARK.
 SMOKE EXHAUSTING DEVICE FOR TUNNELS.
 APPLICATION FILED MAY 7, 1909.

957,396.

Patented May 10, 1910.

2 SHEETS—SHEET 1.



Witnesses:

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2 SHEETS—SHEET 2.

Fig. 3

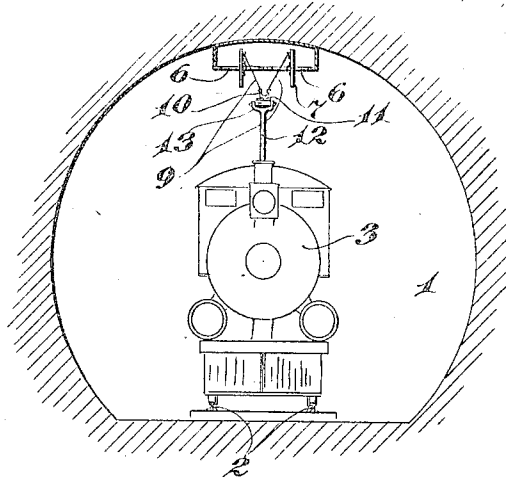


Fig. 4

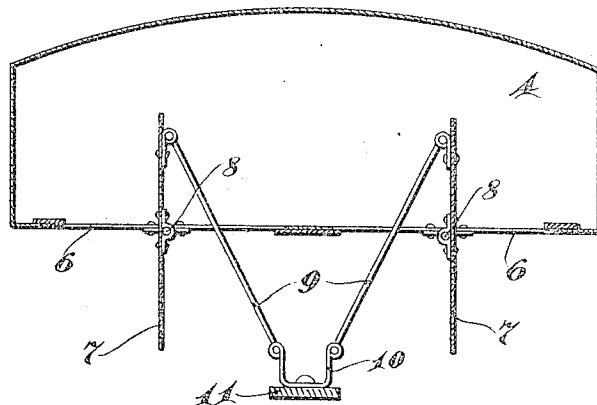
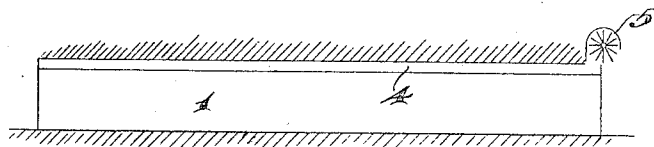


Fig. 5



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UNITED STATES PATENT OFFICE.

PAUL H. WEDMARK, OF LINDSTROM, MINNESOTA.

SMOKE-EXHAUSTING DEVICE FOR TUNNELS.

957,396.

Specification of Letters Patent.

Patented May 10, 1910.

Application filed May 7, 1909. Serial No. 494,709.

To all whom it may concern:

Be it known that I, PAUL H. WEDMARK, a citizen of the United States, residing at Lindstrom, in the county of Chisago and State of Minnesota, have invented certain new and useful Improvements in Smoke-Exhausting Devices for Tunnels; 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 has for its object to provide an improved means for discharging smoke from tunnels and other inclosed passages, through which fuel burning locomotives must pass.

To the above ends, the invention consists of the novel devices and combinations of devices hereinafter described and defined in the claims.

In accordance with my invention, an exhaust flue is extended longitudinally of the upper portion of the inclosed passage way or tunnel, and means is provided for automatically opening up that portion of the exhaust flue which is under and in the vicinity of the smoke stack of the locomotive.

In the accompanying drawings which illustrate the invention, like characters indicate like parts throughout the several views.

Referring to the drawings: Figure 1 is a view partly in vertical section and partly in side elevation, showing the improved smoke exhausting mechanism applied in a tunnel and subject to a locomotive passing through the tunnel; Fig. 2 is a bottom plan view of a portion of the exhaust flue; Fig. 3 is a transverse vertical section taken on the line $x^3 x^3$ of Fig. 1; Fig. 4 is an enlarged transverse section taken through the exhaust flue on the same line as Fig. 3; and Fig. 5 is a diagrammatic longitudinal section taken vertically through the tunnel and exhaust flue.

The numeral 1 indicates the tunnel, and the numeral 2 track rails laid therein.

In Figs. 1 and 3, a locomotive is shown diagrammatically, and is indicated as an entirety by the numeral 3.

The exhaust flue 4 is preferably in the form of a flattened approximately rectangular shell or casing that extends longitudinally of the tunnel 1, and is secured to the

roof thereof. At one end of the tunnel, this exhaust flue 4 is connected to the casing of a fan 5 by means of which air may be drawn through and exhausted from the flue 4.

In its bottom, the exhaust flue 4 is formed with two rows of closely positioned air ports 6, that are normally closed by valve plates 7, which latter are shown as intermediately pivoted to the bottom of said flue by suitable hinges or pivotal connections 8. The so-called valve plates 7 are thus arranged in two rows, with the transversely opposite members of the rows connected by links 9 to yoke-like brackets 10, secured to a flexible so-called trolley bar 11.

The weight of the flexible bar 11 normally holds all of the valve plates 7 in closed positions.

As is evident, if any particular portion of the flexible trolley bar 11 be pressed upward, the immediately overlying valve plate 7 will be opened wide, and valve plates in front and rear thereof will be opened up to extents decreasing with the distance from the said wide opened pair of valve plates. This maximum opening of the valve plates should always be approximately over or slightly to the rear of the smoke stack of the locomotive, and this open relation of the valve plates in respect to the smoke stack should be maintained automatically by the movement of the locomotive itself, through the tunnel or inclosed passage. This is preferably accomplished by means of a trolley pole 12 shown as pivotally mounted on top of the locomotive boiler, and provided with a trolley wheel 13 at its upper end, that is adapted to be pressed into engagement with the flexible trolley bar 11 by means of an operating rod 14, shown as extended from the trolley pole into the engineer's cab of the locomotive.

As is evident, when the exhaust fan 5 is in action, and the locomotive in passing through the tunnel or inclosed passage way opens up the exhaust flue above the smoke stack, the smoke emitted from the smoke stack of the locomotive will be drawn directly upward into the said exhaust flue, and by the fan will be discharged from the tunnel.

This device, will therefore, keep tunnels and other inclosed locomotive passage ways clear of smoke. Not only is smoke in a tun-

nel or inclosed passage-way very offensive, but it has been the cause of many serious accidents due to darkening of the tunnel.

It is important to note that the fan 5 operates to produce a suction draft as distinguished from a blast. This suction draft serves to draw out the smoke from the tunnel, regardless of leakage in the flue 4.

The term flexible trolley bar is herein 10 used in a broad sense to cover such devices, whether the same be a flat bar, a round rod, a flexible tube or similar device.

The so-called valve plates may also take various forms, all within the scope of this 15 invention.

It is important that the valve plates should be centrally or intermediately pivoted for the following reasons, to-wit: They are thus approximately counterbalanced and 20 there will be little or no tendency to opening the same by the action of suction produced in the exhaust tube; and furthermore, being counterbalanced, they may be easily opened and closed and, when opened, will dump any 25 cinders which may have accumulated thereon back into the passage way.

What I claim is:

1. The combination with an inclosed locomotive passage way, of an exhaust flue extending along the upper portion thereof, 30 and provided at its bottom with closely positioned air ports, pivoted valve plates normally closing said air ports, a flexible trolley bar extending below said exhaust flue in position to be engaged by a part carried by the

locomotive, and connections between said flexible trolley bar and said valve plates, substantially as described.

2. The combination with an inclosed locomotive passage way, of an exhaust flue extending along the upper portion thereof, a 40 fan connected to said exhaust flue for producing a forced circulation of air there-through, said flue having two rows of air ports in its bottom, pivoted valve plates normally closing said air ports, a flexible trolley 45 bar extending under said exhaust flue, links connecting said valve plates to said trolley bar in pairs, and a trolley pole carried by the locomotive and operative on said flexible 50 trolley bar to progressively move said valve plates into open and closed positions under movement of the locomotive, substantially as described.

3. The combination with an inclosed locomotive passage way, of an exhaust flue extending along the upper portion thereof, and provided at its bottom with closely positioned air ports, centrally pivoted valve 55 plates normally closing said air ports, and means under the control of a moving locomotive for automatically opening and closing said valves, substantially as described. 60

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

PAUL H. WEDMARK.

Witnesses:

P. M. QVIST,
P. J. SMITH.