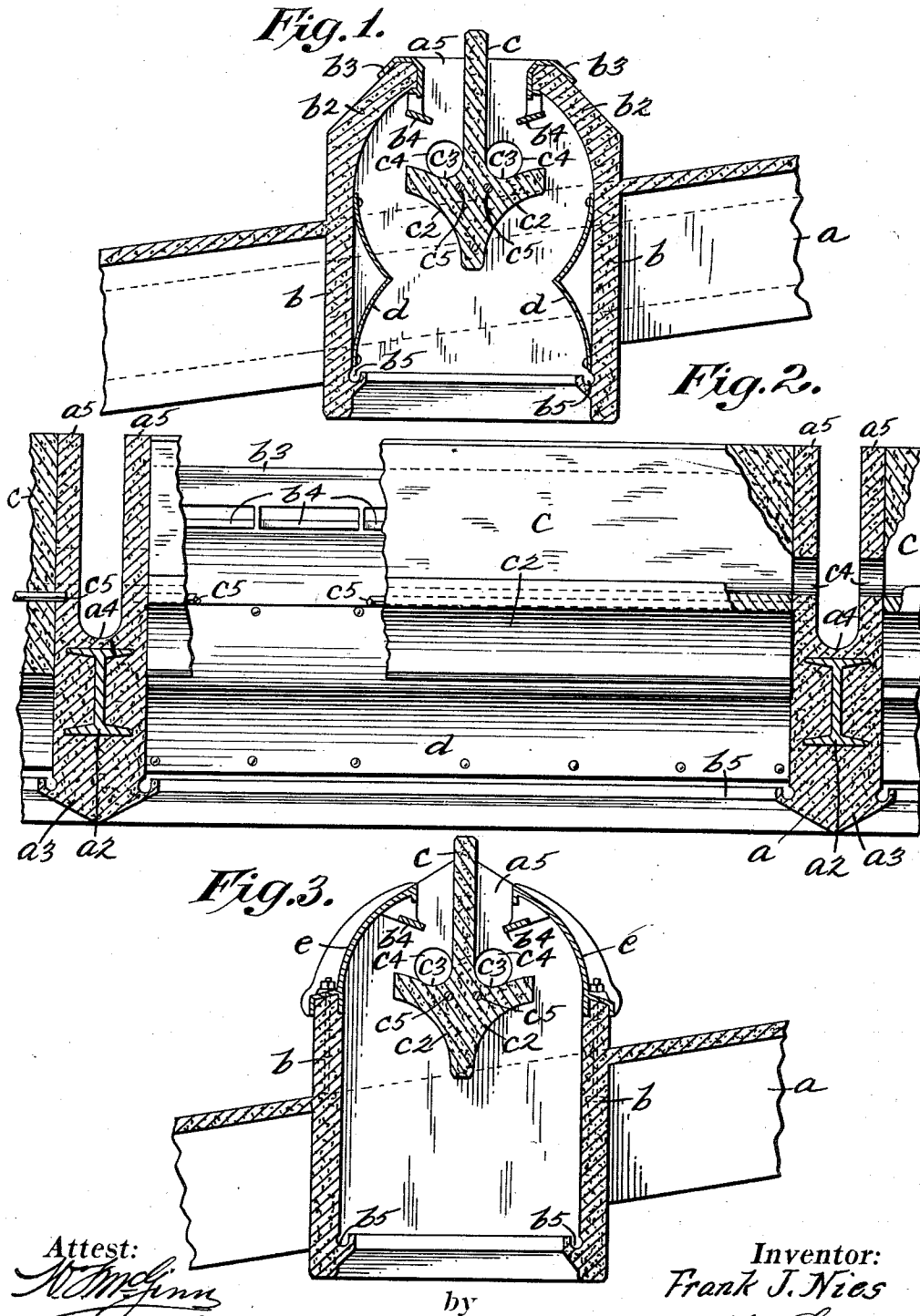


F. J. NIES.
VENTILATING DEVICE.
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1,006,119.

Patented Oct. 17, 1911.



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UNITED STATES PATENT OFFICE.

FRANK J. NIES, OF EAST ORANGE, NEW JERSEY.

VENTILATING DEVICE.

1,006,119.

Specification of Letters Patent.

Patented Oct. 17, 1911.

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To all whom it may concern:

Be it known that I, FRANK J. NIES, a citizen of the United States of America, and residing at East Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Ventilating Devices, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to the construction of train sheds, for railway stations and terminals, wherein provision is made for the escape of gases, vitiated air, and products of combustion, into the outer air, and the object thereof is to provide means for preventing the passage of rain or snow through the said train shed.

A further object is to provide a longitudinally arranged air-duct centrally over each of the tracks beneath the said shed, said air-ducts being formed by vertical aprons spaced a suitable distance apart.

A further object is to incline the tops of the said aprons inwardly to reduce the area open to the outer atmosphere, but insuring an area capable of carrying off the noxious air and gases.

A further object is to provide a centrally arranged member projecting above the said aprons and extending the length of the air-duct, said member being also provided with means at the bottom thereof for deflecting the gases against the aprons and from which they are again deflected to pass outwardly and upwardly.

A further object is to provide gutters on each side of the said vertical member to carry off any water which might be caught thereby.

A further object is to provide contributing deflectors at the tops of the said aprons and which project sufficiently far into the duct to intercept rain, sleet, or snow driven at any angle.

A further object is to provide supplemental gas deflectors on either side of the said ducts, beneath the deflectors connected with the said vertical member.

A further object is to provide condensation gutters at the bottom of the said duct.

A further object is to provide means for permitting water to pass downwardly along the roof, between the ends of the separate ducts, the gutters of said central member communicating with said water-

carrying roof means; and still further objects are to provide such ventilating devices which are relatively simple in construction and installation, which are highly efficient in results, and which are comparatively inexpensive.

My invention is fully described in the following specification, of which the accompanying drawings form a part, in which the same reference characters are used to indicate the separate parts in each of the views, and in which:—

Figure 1 is a transverse, fragmentary, section taken through the roof of a train shed, and showing one of my ventilating devices in position; Fig. 2 is a longitudinal section taken therethrough, on different planes, to more clearly show the construction; and Fig. 3 is a view similar to Fig. 1, but showing a modification thereof.

This invention is an improvement over that shown and described in my Letters Patent of United States, No. 901,120, bearing date of Oct. 13, 1908, wherein is shown the relative positions of the ventilating devices, the present application differing from the construction shown in the said patent in that I seek to simplify the construction and lower the cost thereof.

In the drawings forming a part of this application I have shown a portion of the roof *a* of a train shed having the usual girders *a*² preferably inclosed in concrete as shown at *a*³, these girders being suitably spaced according to the positions of the supporting columns and, in my present form of construction, I provide gutters *a*⁴ above the said girders to permit the passage of water from one side to the other of the ventilating devices, said gutters being preferably continued upwardly to form uprights *a*⁵, on either side thereof.

Extending longitudinally of the train shed, and secured to the uprights *a*⁵, are two vertical aprons *b* which extend a predetermined distance above the roof *a* and into the train shed interior, as clearly shown in the drawings, the said aprons, in the form shown in Fig. 1, being inwardly inclined as shown at *b*² and being provided with metal plates *b*³ at the tops thereof, said metal plates being in turn provided with inclined deflectors *b*⁴ within the air-duct formed by the said aprons and, in practice, I may also provide condensation gutters *b*⁵ at the bottom of each of the said aprons, thus pre-

venting the dripping of moisture and water upon the locomotives and cars thereunder.

Arranged centrally of the air-duct, and projecting a predetermined distance above the same, is a longitudinally arranged vertical partition *c*, the lower end of which is made of considerably greater width to provide outwardly flared deflectors *c*² for the outwardly passing gases, gutters *c*³ being formed above the said deflectors and on either side of the partition *c* to carry off any water which might lodge thereon and, as clearly shown in Fig. 2, the gutters *c*³ communicate with the gutters *a*⁴ by means of suitable openings *c*⁴.

In the outward passage of the gases there is a possibility of a proportion thereof being returned to the train shed interior due to the swirling movement imparted thereto by the deflectors *c*² and, in order to obviate such possibility, I may provide supplemental deflector plates *d* on the sides of the air-duct, of a size and shape determined by the requirements, but it will be understood that the relationship existing between the partition *c*, deflectors *c*², deflectors *d*, and aprons *b*, is such as to insure an area at least equal to that of the exit at the top of the duct.

In Fig. 3 I have shown a slight modification over that just described, in that I do not incline the tops of the aprons *b*, to lessen the cost and reduce the weight thereof, but provide instead metallic substitutes *e* which have the same interior configuration as the aprons shown in Fig. 1, these metal substitutes being preferably provided in short lengths for ease of manufacture and in handling, being of approximately three feet in length, whereas the aprons and the partition *c* are of approximately twenty-five feet in length or the distance between the girders *a*², and I prefer to form the aprons, as well as the partition *c*, of concrete and which may be suitably reinforced is desired, reinforcing rods *c*⁵ being shown for the partition *c*, these rods serving also to position the said parts, as clearly shown at the left of Fig. 2, and to hold the same in place, but the precise method of reinforcement, if employed, forms no part of this invention, as will be readily understood.

The escaping gases and products of combustion from the locomotive are driven upwardly through the air-ducts formed by the aprons *b*, being deflected outwardly at *c*², and rebounding from the aprons *b* outwardly into the open air on either side of the partition *c*, and the deflectors *d* are so formed and located as to prevent the return of any of the said gases to the train shed interior, and the free escape thereof, as well as of any vitiated or noxious air is permitted. The deflectors *b*⁴ are so arranged as to intercept a straight line drawn from the top of the partition *c* to the ends of the

deflectors *c*², thus intercepting any rain, sleet, or snow, which might be driven at any angle by the wind, the deflectors *c*² being extended sufficiently far to catch any rain which might rebound from the partition *c* when wind-driven, and the entrance thereof into the train shed is positively prevented and without interfering in the slightest degree with the escape of air and gas through the ducts.

My present invention is very simple in construction and, as compared with devices of this character now employed, is very inexpensive, both as to material employed and in the amount of labor necessary for installing the same, and my improved ventilating device is more efficient than any similar device heretofore employed, both as to the ability of the gases to escape and the prevention of the entrance of rain, sleet, or snow.

While I have shown certain preferred means for accomplishing the desired results, it will be manifest that modifications thereover may be made, within the scope of the following claims, to adapt the same to varying conditions and, reserving the right of all such modifications of and changes in the forms shown and described to myself,

What I claim as new, and desire to secure by Letters Patent, is:—

1. In a shed, provided with a roof, aprons extending through said roof and forming an air-duct, said aprons being inwardly inclined at their tops, and means for preventing the inward passage of rain and the like.

2. In a shed, provided with a roof, aprons extending through said roof and forming an air-duct, said aprons being inwardly inclined at their tops, and means for preventing the inward passage of rain and the like, said means comprising outwardly flared deflectors arranged within said air-duct, centrally thereof.

3. In a shed, provided with a roof, aprons extending through said roof and forming an air-duct, said aprons being inwardly inclined at their tops, and means for preventing the inward passage of rain and the like, said means comprising a central partition and outwardly flared deflectors within said air-duct.

4. In a shed, provided with a roof, aprons extending through said roof and forming an air-duct, said aprons being inwardly inclined at their tops, and means for preventing the inward passage of rain and the like, said means comprising a central partition extending above said aprons, and outwardly flared deflectors at the bottom thereof, within said air-duct.

5. In a shed, provided with a roof, aprons extending through said roof and forming an air-duct, said aprons being inwardly inclined at their tops, and means for prevent-

ing the inward passage of rain and the like, said means comprising outwardly flared deflectors within said air-duct, and provided with a gutter at the top thereof.

5 6. In a shed, provided with a roof, aprons extending through said roof and forming an air-duct, said aprons being inwardly inclined at their tops, and means for preventing the inward passage of rain and the like,
10 said means comprising a central partition and outwardly flared deflectors at the bottom thereof, within said air-duct, said deflectors forming also a gutter on each side of said partition.

15 7. In a shed, provided with a roof, aprons extending through said roof and forming an air-duct, said aprons being inwardly inclined at their tops, and means for preventing the inward passage of rain and the like,
20 said means comprising outwardly flared deflectors within said air-duct, and supplemental inwardly flared deflectors thereunder and on the sides of said air-duct.

25 8. In a shed, provided with a roof, aprons extending through said roof and forming an air-duct, said aprons being inwardly inclined at their tops, and means for preventing the inward passage of rain and the like,
30 said means comprising centrally arranged, outwardly flared, deflectors, and supplemental deflectors at the tops of said aprons.

35 9. In a shed, provided with a roof, aprons extending through said roof and forming an air-duct, said aprons being inwardly inclined at their tops, and means for prevent-

ing the inward passage of rain and the like, said means comprising a central partition, outwardly flared deflectors at the bottom thereof, and inwardly directed deflectors at the tops of said aprons, said last named deflectors intercepting a line from the top of said partition to the outer extremity of each of said first named deflectors. 40

10. A shed provided with a roof and having an opening therethrough formed by vertical, parallel, aprons; a vertical partition plate arranged centrally and longitudinally of said opening, and the lower end of which is provided with oppositely arranged, outwardly flared, deflectors, of much greater diameter than said partition. 45 50

11. A shed provided with a roof and having an opening therethrough formed by vertical, parallel, aprons; a vertical partition plate arranged centrally and longitudinally of said opening, and the lower end of which is provided with oppositely arranged, outwardly flared, deflectors, of much greater diameter than said partition, and said deflectors having gutters arranged in the upper surfaces thereof, on the sides of said partition. 55 60

In testimony that I claim the foregoing as my invention I have signed my name in presence of the subscribing witnesses this 23rd day of February 1911. 65

FRANK J. NIES.

Witnesses:

ROBT. B. ABBOTT,
J. C. LARSEN.