G. W. BENDER.

AIR INTAKE DEVICE.

APPLICATION FILED AUG. 10, 1920.

1,437,709. Patented Dec. 5, 1922.

2 SHEETS—SHEET 1.

Fig. 1.

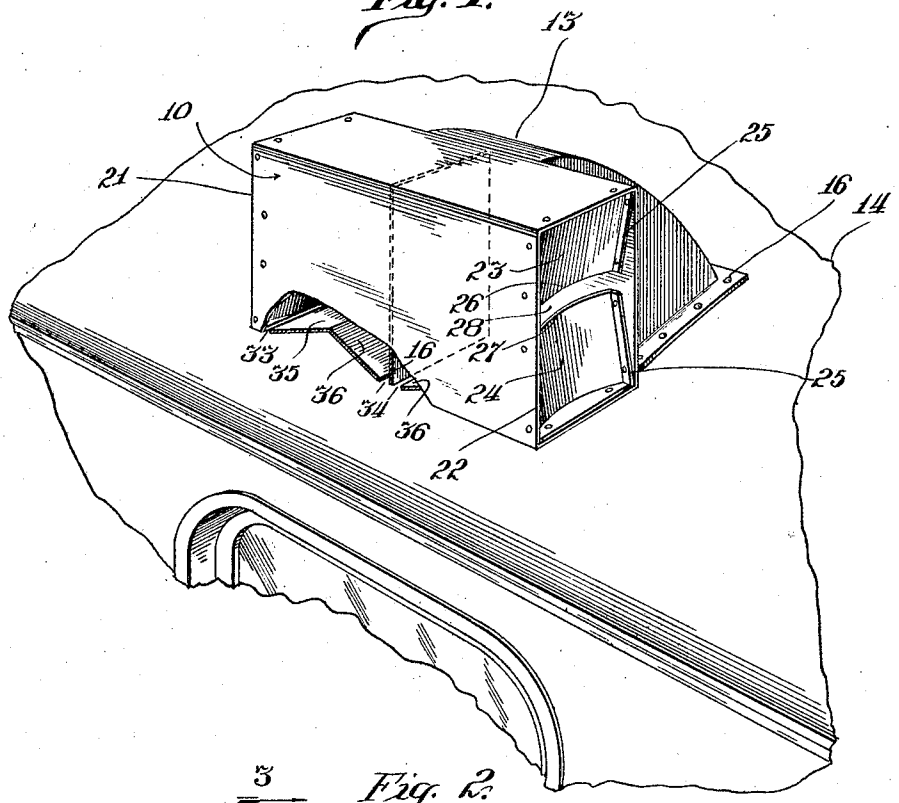
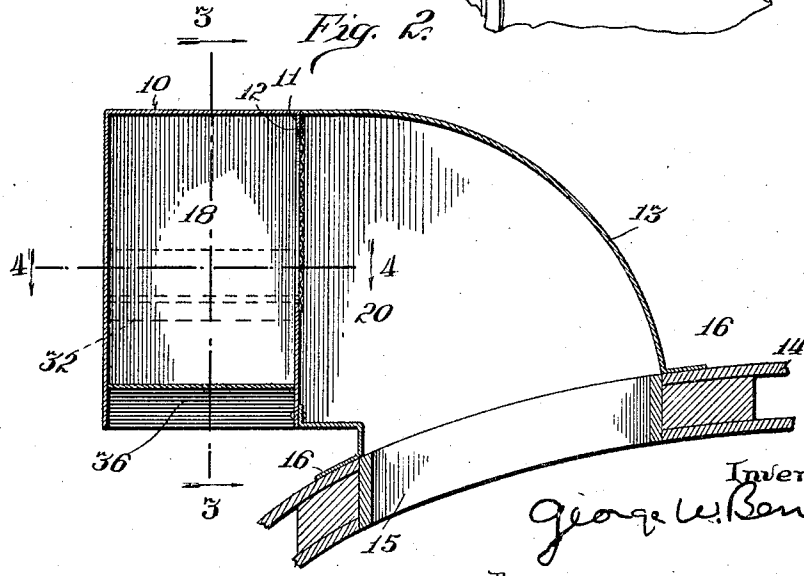


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

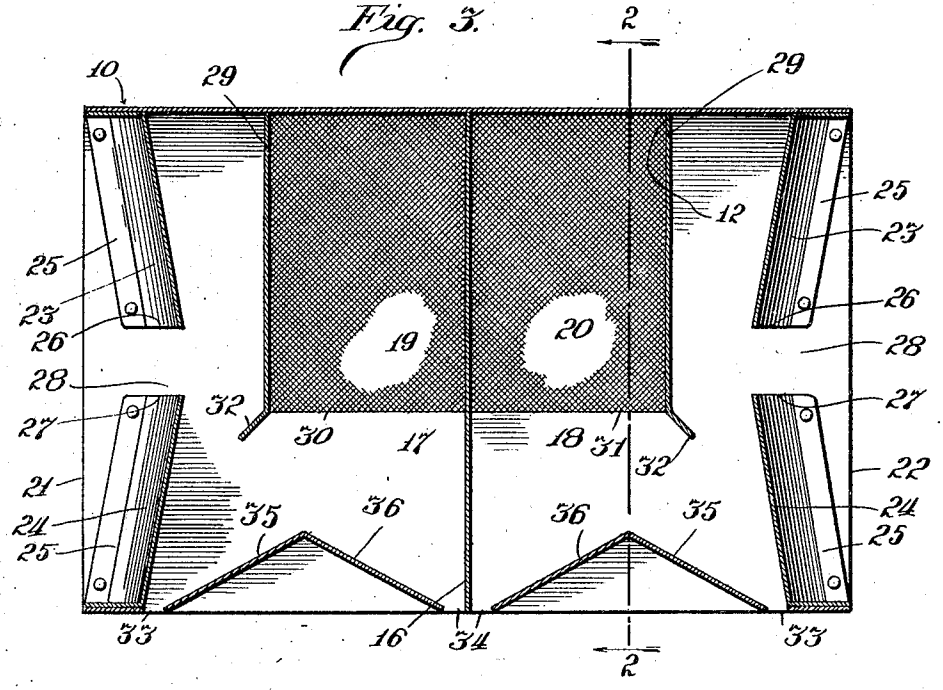
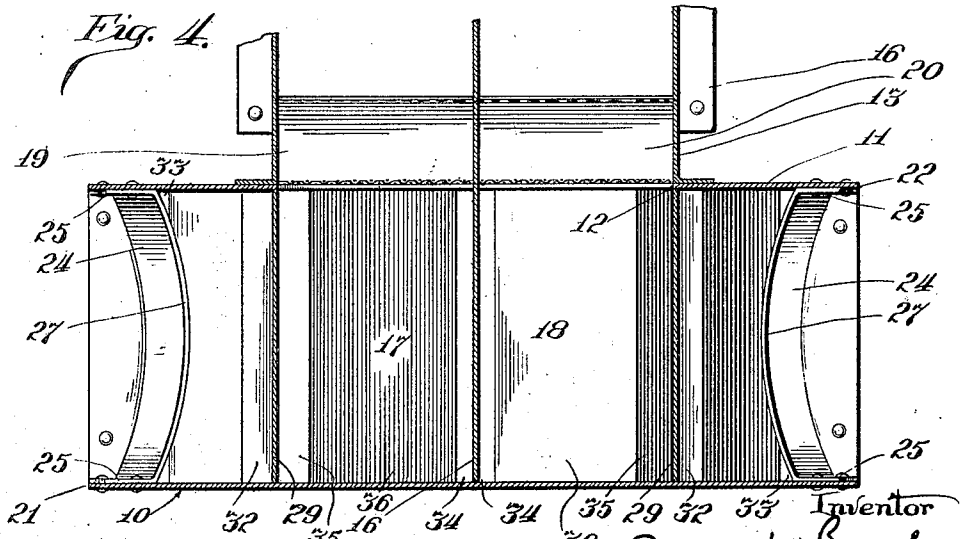


Fig. 4.



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UNITED STATES PATENT OFFICE.

GEORGE W. BENDER, OF CHICAGO, ILLINOIS, ASSIGNOR TO MUDGE & COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

AIR-INTAKE DEVICE.

Application filed August 10, 1920. Serial No. 402,604.

To all whom it may concern:

Be it known that I, GEORGE W. BENDER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Air-Intake Devices, of which the following is a specification.

This invention relates to ventilator-deflectors, and particularly to the type of ventilator-deflectors for deflecting air into a railway car or other vehicle under the impulse of the motion of the car.

It has for an object to provide an improved device of this character, which may be easily and cheaply manufactured.

A further object is to provide a device of this character which will permit the entry of air into the car, but at the same time will exclude cinders, rain and other heavier than air substances.

The invention consists in the novel constructions, arrangements and combinations, to be hereinafter described and claimed, for carrying out the above stated objects, and such other objects as will appear from the following description.

The invention is illustrated in a preferred embodiment in the accompanying drawings, in which—

Fig. 1 is a perspective of the intake device applied to a railway car;

Fig. 2 is a transverse section of the device taken on the lines 2—2 of Fig. 3;

Fig. 3 is a longitudinal section taken on the line 3—3 of Fig. 2; and

Fig. 4 is a plan section taken on the line 4—4 of Fig. 2.

Like characters of reference designate like parts in the several figures of the drawings.

Referring to the drawings, the intake device 10 is of hollow construction, preferably rectangular in cross-section, although the invention is applicable to a hollow structure of any convenient cross-section. The side wall 11 of the box-like structure 10 is provided with an opening 12 in the upper portion thereof. The hollow structure 10 is adapted to be secured to a railway car, or other vehicle, by suitable conduit 13 secured to the side wall 11 in any suitable manner. For the purpose of illustration, I have shown the air intake applied to a car having an arch roof 14, provided with an opening 15. The air duct 13 is suitably flanged, as shown at 16, and secured thereby to the roof of the car. It is evident that the air intake device may be applied to the clear story of a monitor type roof car by an air duct of suitable shape.

Arranged transversely in the hollow structure 10 is a partition 16 which divides the same midway into two compartments 17 and 18. The partition 16 preferably extends through the side opening 12, and into the air duct 13 to the edge of the opening on the interior of the car, so as to divide the air duct into two air passages 19 and 20, communicating respectively with the compartments 17 and 18.

The opposite ends 21 and 22 of the hollow structure 10 are disposed at right angles to the direction of movement of the car, and are each provided with a pair of inwardly inclined plates 23 and 24, preferably of concaved or curved cylindrical shape, as shown more clearly in Fig. 4. The plates 23 and 24 are suitably flanged, as shown at 25, for the purpose of attachment to the walls of the hollow structure 10. The plates 23 and 24 terminate at 26 and 27, as more clearly shown in Fig. 3, so as to provide air intake openings 28, adapted to permit the entry of air into the interior of the car.

The area of the openings 28 is of sufficient size to admit the required amount of air to the car. The openings 19 and 20 are of sufficient size to conduct the admitted air into the car without excessive velocity.

Baffle plates 29 are disposed across the upper portion of the hollow structure 10 opposite the openings 28, respectively, and extend to the lower edges 30 and 31 of the openings 19 and 20. The lower edges of the baffle plates 29 are provided with outwardly extending deflecting flanges 32.

The bottoms of the compartments 17 and 18 are provided with forward and rear discharge openings, the combined area of such discharge openings being less than (about 60% of) the intake openings 28. The bottoms of the compartments 17 and 18 are also preferably provided with oppositely inclined surfaces 35 and 36, for assisting in the discharge of heavier than air particles through the discharge openings 33 and 34, respectively.

Operation: Under the impulse of the motion of the car, air is taken into the leading opening 28 and strikes against the baffle 29, being deflected downwardly towards the

bottom of the compartment. The heavier than air particles, such as dust, cinders, and rain, are thrown to the bottom of the compartment and are discharged through the openings 33 and 34. The air, encountering resistance in passing through the discharge openings 33 and 34, because of their size, passes around the lower edge of the deflecting flange 32 and through the relatively large opening 19, or 20, as the case may be. The partition 16 which divides the air intake device and the duct 13 into two air passages, prevents the short-circuiting of the incoming air through the opposite or trailing opening 28, and requires it to pass into the interior of the car through the opening 15.

I claim:

1. An air intake device for railway cars or the like, consisting of a hollow structure comprising a side having an opening therein adapted to communicate with the interior of the car, oppositely disposed air-collecting faces having spaced inwardly inclined plates disposed therein and adapted to admit air to the interior of said car through the space between said plates, baffles in said structure opposite the openings between said plates, and outlets in the bottom of said structure for discharging heavier than air particles.

2. An air intake device for railway cars or the like, consisting of a hollow structure comprising a side having an opening therein adapted to communicate with the interior of the car, oppositely disposed air-collecting faces having spaced inwardly inclined plates disposed therein and adapted to admit air to the interior of said car through the space between said plates, and baffles in said structure opposite the openings between said plates for preventing the direct entry of the incoming air into said car.

3. An air intake device for railway cars or the like, consisting of a hollow structure comprising a side having an opening therein adapted to communicate with the interior of the car, oppositely disposed concaved air-collecting faces adapted to be disposed transversely to the direction of movement of the car and having openings therein adapted to permit the entry of air to the interior of the car, baffle plates opposite said openings, the bottom of said structure being provided with inclined surfaces, and discharge openings for discharging heavier than air particles.

4. An air intake device for railway cars, or the like, consisting of a hollow box-like structure having an opening therein adapted to communicate with the interior of a car, a pair of inwardly inclined plates in each of the opposite ends thereof, spaced apart to provide openings for the entry of air into said car, a partition between the ends of said structure, and baffle plates opposite said openings for preventing the direct entry of air into said car.

5. An air intake device for railway cars, comprising a hollow structure, the opposite ends of which are adapted to be disposed at right angles to the direction of movement of the car, a transverse partition in said structure for dividing the same into two compartments, each compartment having openings therein adapted to communicate with the interior of the car, the ends of said structure having intake openings therein for admitting air into the interior of the car, and baffle plates extending across the upper portion of said structure opposite said intake openings, and adapted to permit the passage of air below the same, said baffles having outwardly inclined deflecting flanges at the lower edges of the same.

6. An air intake device for railway cars, comprising a hollow structure, the opposite ends of which are adapted to be disposed at right angles to the direction of movement of the car, a transverse partition in said structure for dividing the same into two compartments, each compartment having openings therein adapted to communicate with the interior of the car, the ends of said structure having intake openings therein for admitting air into the interior of the car, and baffle plates extending across the upper portion of said structure opposite said intake openings, and adapted to permit the passage of air below the same, said baffles having outwardly inclined deflecting flanges at the lower edges the same, and the bottom of each compartment being provided with discharge outlets for discharging heavier than air particles.

7. An air intake device for railway cars, comprising a hollow structure, the opposite ends of which are adapted to be disposed at right angles to the direction of movement of the car, a transverse partition in said structure for dividing the same into two compartments, each compartment having openings therein adapted to communicate with the interior of the car, the ends of said structure having intake openings therein for admitting air into the interior of the car, baffle plates extending across the upper portion of said structure opposite said intake openings, and adapted to permit the passage of air below the same, said baffles have outwardly inclined deflecting flanges at the lower edges of the same, and the bottom of each compartment being provided with discharge outlets, and inclined surfaces for discharging heavier than air particles.

8. An air intake device for railway cars, comprising a hollow structure, the opposite ends of which are adapted to be disposed at right angles to the direction of movement of

the car, a transverse partition in said structure for dividing the same into two compartments, each compartment having openings therein adapted to communicate with the interior of the car, the ends of said structure having intake openings therein for admitting air into the interior of the car, and baffle plates extending across the upper portion of said structure opposite said intake openings, and adapted to permit the passage of air below the same, said baffles having outwardly inclined deflecting flanges at the lower edges of the same, and the bottom of each compartment being provided with discharge outlets, the total area of which is smaller than the air intake openings.

9. An air intake device for railway cars, comprising a hollow structure, the opposite ends of which are adapted to be disposed at right angles to the direction of movement of the car, a transverse partition in said structure for dividing the same into two compartments, each compartment having openings therein adapted to communicate with the interior of the car, the ends of said structure having intake openings therein for admitting air into the interior of the car, baffle plates extending across the upper portion of said structure opposite said intake openings, and adapted to permit the passage of air below the same, said baffles having outwardly inclined deflecting flanges at the lower edges of the same, and the bottom of each compartment being provided with discharge outlets, and oppositely inclined surfaces for directing the heavier than air particles towards such discharge outlets.

10. The combination with a railway car or the like, of an air intake device extending from the exterior of the car, and comprising a hollow structure having an opening in the side wall thereof communicating with the interior of the car and having the ends of said structure disposed at right angles to the direction of movement of the car, a transverse partition in said structure extending into the opening in the car for dividing said intake device into two compartments, a pair of inwardly inclined plates in the ends of said structure and separated at their inner ends so as to provide air intake openings for admitting air to the interior of the car, baffle plates across the upper part of said structure, and opposite each of said intake openings for preventing the direct entry of the air into the opening into said car, said baffle plates having forwardly inclined deflecting flanges at the lower edges thereof, and the bottom of said compartments being provided with discharge outlets at the forward and rear ends thereof, and oppositely inclined surfaces for directing heavier than air particles toward said discharge outlet.

11. The combination with a railway car or the like, of an air intake device extending from the exterior of the car, comprising a hollow structure of rectangular cross-section having an opening in the side wall thereof communicating with the interior of the car through a conduit, and having the ends of said structure disposed at right angles to the direction of movement of the car, a transverse partition in said structure extending into the opening in the car for dividing said intake device and said conduit into two compartments, a pair of concave inwardly inclined plates in each of the ends of said structure and terminating at their inner ends so as to provide air intake openings for admitting air into the interior of the car, baffle plates across the upper part of said structure and opposite each of said intake openings for preventing the direct entry of the air into the opening into said car, said baffle plates having forwardly inclined deflecting flanges at the lower edges thereof, and the bottom of said compartments being provided with discharge outlets at the forward and rear ends thereof, and oppositely inclined surfaces for directing the heavier than air particles toward said discharge outlets.

GEORGE W. BENDER.