No. 855,160. PATENTED MAY 28, 1907.

A. L. BUSH.

RAILROAD TRAIN SHED.

APPLICATION FILED DEC. 27, 1906.

3 SHEETS—SHEET 1.

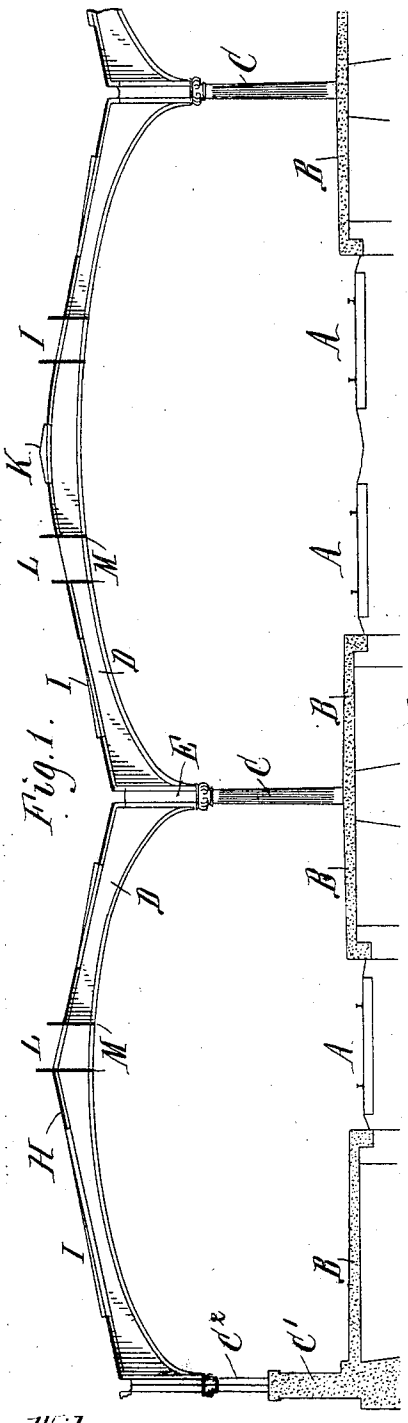


Fig. 1.

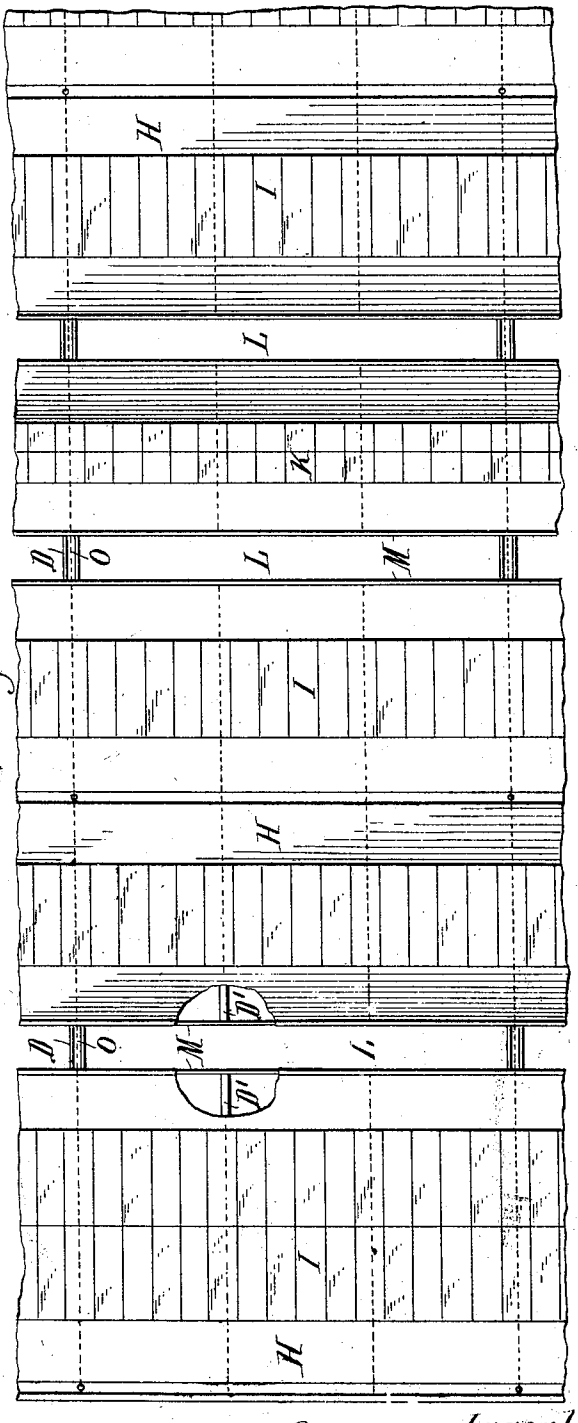


Fig. 2.

Witnesses:
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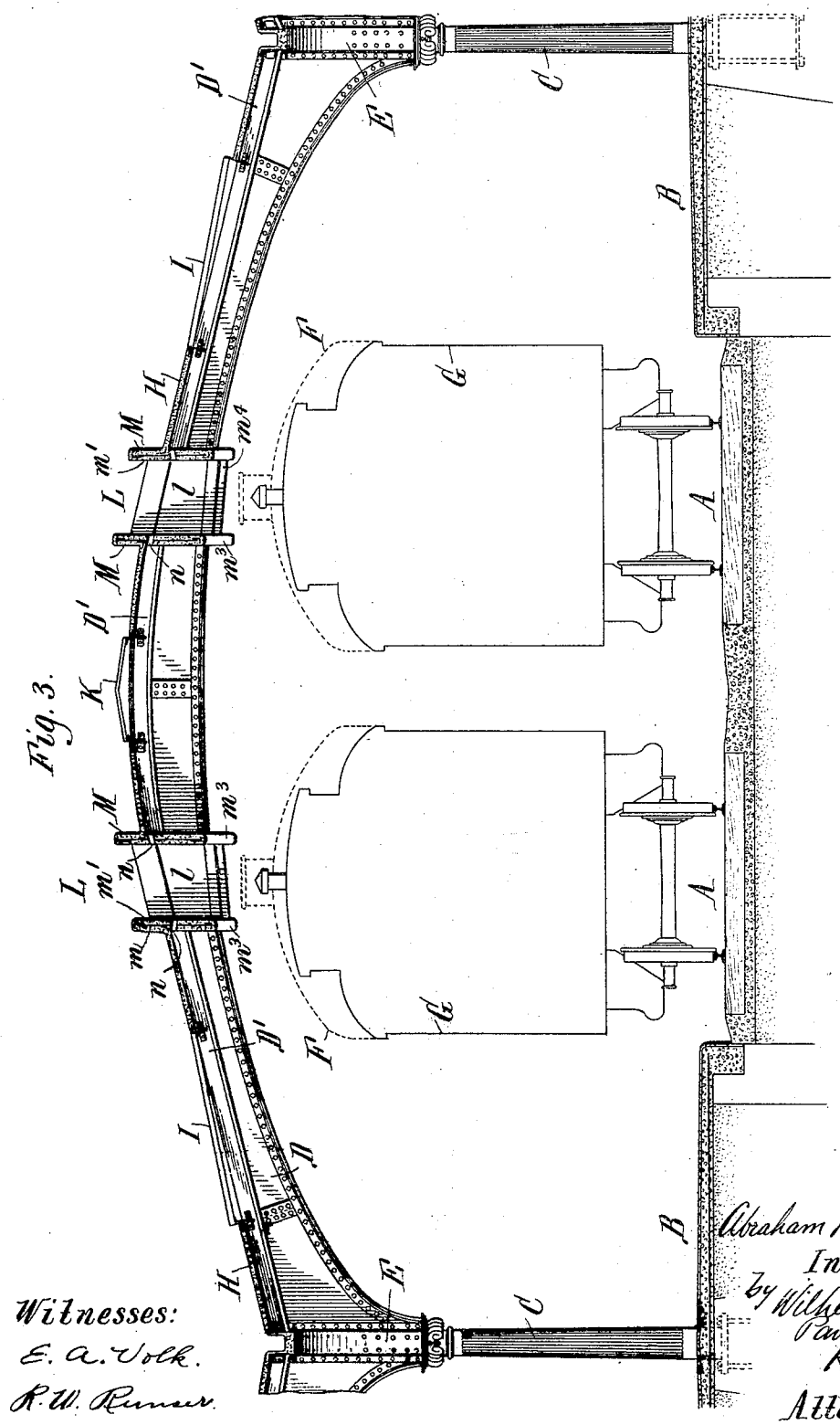


Fig. 3.

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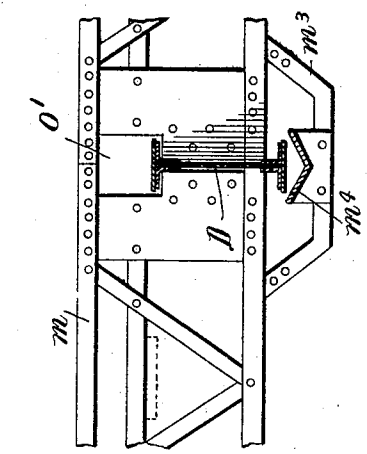
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3 SHEETS—SHEET 3.



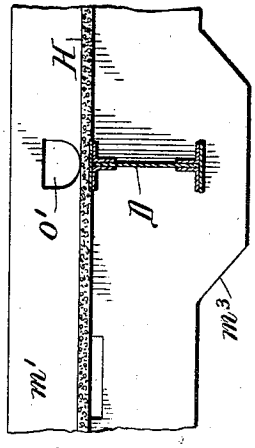


Fig. 7.

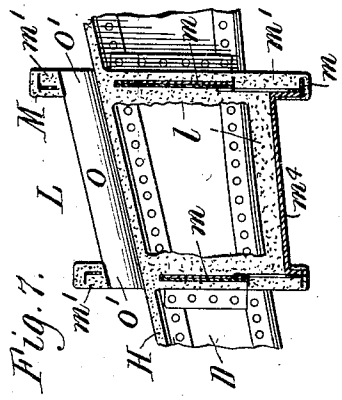


Fig. 4.

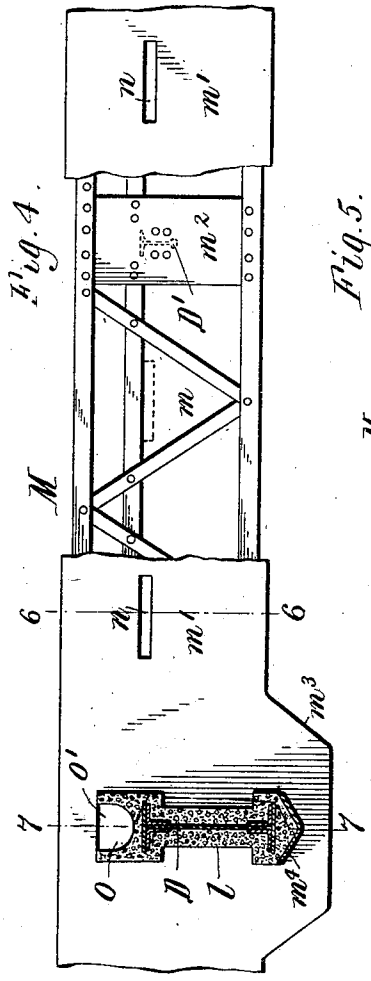


Fig. 5.

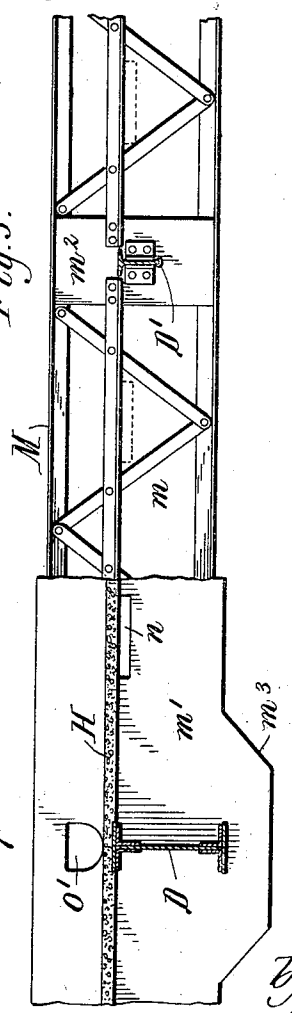
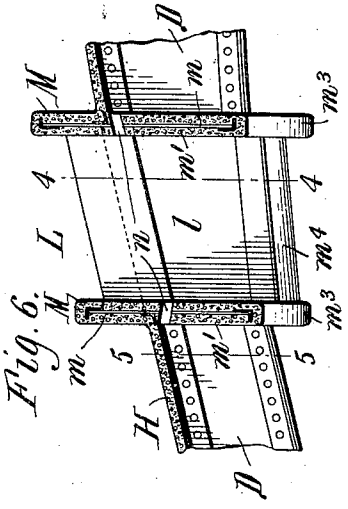


Fig. 6.



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R. W. Rumer } Witnesses:

UNITED STATES PATENT OFFICE.

ABRAHAM L. BUSH, OF EAST ORANGE, NEW JERSEY.

RAILROAD TRAIN-SHED.

No. 855,160. Specification of Letters Patent. Patented May 28, 1907.

Application filed December 27, 1905. Serial No. 293,537.

To all whom it may concern:

Be it known that I, ABRAHAM L. BUSH, a citizen of the United States, residing at East Orange, in the county of Essex and State of New Jersey, have invented a new and useful Improvement in Railroad Train-Sheds, of which the following is a specification.

This invention relates to the train sheds which cover the tracks of railroad stations or terminals. Sheds of this kind which cover a considerable number of tracks are usually constructed in the form of a high vault or arch having covered ventilators at the crown or highest point. Such sheds form an efficient housing for the passenger platforms, the tracks, and the trains on the same but have many undesirable features. The first cost of such structures is very large because they require to be made very high in order to place the steel work as far as practicable above the smoke stacks of the locomotives to reduce the destructive effect of the steam and gases as much as possible. Such a high vaulted and long-span shed does not only require a large amount of material for its construction but is also very expensive to erect. The cost of maintenance is also very high because the shed holds the steam and gases for a considerable length of time and the steel work requires to be protected against the destructive action of the same by frequent painting, and the life of such structures is comparatively short. These high, vaulted sheds further cause objectionable echoes and noises from the exhaust of locomotives and escaping steam and darken the station platforms and cars considerably because the sky lights are located at a great height above the same.

The object of this invention is to provide a train shed from which the steam and gases escape directly into the outer air, whereby the roof or ceiling of the shed can be arranged at a short distance above the engine smoke stacks, and the many objectionable features of high, vaulted sheds are avoided.

In the accompanying drawings, consisting of three sheets: Figure 1 is a vertical section of a portion of my improved train shed at right angles to the tracks. Fig. 2 is a fragmentary top plan view of the same. Fig. 3 is a fragmentary vertical cross section of the shed, on an enlarged scale. Fig. 4 is a fragmentary longitudinal view of one of the smoke ducts, on an enlarged scale, the view being partly in section in line 4—4, Fig. 6. Fig. 5 is a similar view in line 5—5, Fig. 6. Fig. 6 is a vertical cross section of one of the smoke ducts in line 6—6, Fig. 4. Fig. 7 is a similar cross section in line 7—7, Fig. 4.

Like letters of reference refer to like parts in the several figures.

A represents the tracks and B the passenger platforms which may be arranged in any suitable or convenient way, the arrangement represented in Figs. 1 and 2 showing a single track in the outer part of the shed and two tracks in the next adjoining part.

The upright supports for the roof of the shed may be of any suitable construction, for instance, columns C, or a wall C′ carrying columns C^2.

D represents the main rafters which are arranged transversely to the tracks and supported at their ends upon the upright supports in any suitable way and connected lengthwise of the tracks over the columns or supports by longitudinal arched girders E, or other suitable means. The main rafters are preferably built-up arched steel girders and are arranged at a sufficient height to clear the highest locomotive and car in use on the road, as indicated by the dotted lines F, Fig. 3, which represent the highest locomotive, and the full lines G, Fig. 3, which represent the highest car.

The roof or ceiling H of the shed, which is supported by the rafters and girders, may be of any suitable construction and is provided with sky lights I and K in convenient places to properly light the platforms and cars.

L represents a duct for the escape of the steam, smoke and gases from the shed, arranged in the roof of the shed lengthwise over each track, so that an engine standing with its smokestack directly underneath this duct will discharge the steam, smoke and gases directly through the duct into the outer air. This duct extends practically throughout the entire length of the shed and is formed between two longitudinal upright purlins, plates or walls M which are supported on the main rafters and arranged at such a distance apart, transversely to the tracks, that the duct is of the proper width for discharging the steam, smoke and gases without, however, allowing rain and snow entering the duct to reach the platforms. The purlins M are extended above the roof to break the force of driving storms.

The longitudinal duct purlins, walls or plates M are preferably composed of built-up steel beams m and a covering m' of concrete, as represented in Figs. 4–7. The main rafters D extend across the smoke ducts, while the intermediate rafters D', Figs. 2, 3 and 5, which are much lighter or shallower than the main rafters, do not extend across the ducts but terminate at the outer sides of the same and are secured to plates m^2, Figs. 4 and 5, forming part of the built-up steel beams m. The main rafters D are protected by a coating of concrete l where they cross the ducts. The duct purlins are preferably extended across the under side of each main rafter L, as shown at m^3, to protect the under side of the rafter and prevent steam, smoke and gases which strike the under side of the rafter within the duct from being deflected laterally beyond the duct and into the space outside of the same and underneath the roof. The under side of the concrete covering of the rafter within the duct is beveled upwardly to deflect the steam, smoke and gases and is protected by a facing m^4 of cast iron or other suitable metal.

Each purlin or longtiudinal wall of the duct is preferably provided with openings n, Figs. 3–6, which are arranged beneath the ceiling H in order to permit the escape of any steam or gases which may reach the confined space between the outer side of the duct and the ceiling. These openings slope preferably toward the interior of the duct, as shown in Fig. 6, to direct any water which may reach these openings into the duct.

When the duct is arranged on the sloping side of the roof, with one purlin higher than the other, each main rafter is provided in the top of its concrete covering with a gutter O, Figs. 4–7, arranged lengthwise of the rafter and extending through openings O' in the duct purlins for draining the water from the high portion of the roof to the low portion.

My improved construction of a train shed provides for the immediate discharge of the steam, smoke and gases into the outer air and so avoids to a large extent the destructive effect of the same upon the steel structure, thereby increasing its life and reducing the cost of maintenance; it also greatly reduces the first cost because the shed is very low, has short spans, requires correspondingly less material and is readily erected without false work or staging; it also reduces the noise arising from escaping steam; and it locates the sky lights at no great height above the platforms and car windows, whereby day light is more copiously admitted to the same.

While the longitudinal ducts provide for the immediate and free escape of the steam, smoke and gases from the shed, they admit snow and rain, but as they are comparatively narrow the snow and rain cannot reach the passenger platforms but fall on the tracks or the car roofs, where snow and rain are not objectionable.

I claim as my invention:

1. In a railroad train shed, the combination of a roof having transverse members which extend across the track and longitudinal walls carried by said members and forming between them a ventilating duct which extends lengthwise and centrally over the track and opens through the roof directly into the outer air, whereby the steam, smoke and gases issuing from a locomotive in any position on the track are discharged directly into the outer air and prevented from becoming disseminated in the shed and remaining therein, substantially as set forth.

2. A railroad train shed provided in its roof above the track with purlins or longitudinal walls, forming between them a ventilating duct which extends lengthwise and centrally over the track and opens through the roof directly into the outer air, and with transverse rafters to which said purlins or longitudinal walls are secured and which extend across said duct, substantially as set forth.

3. In a railroad train shed, the combination of transverse rafters, purlins or longitudinal walls which are intersected by and secured to the rafters and form between them a ventilating duct which is arranged lengthwise over the track and opens directly into the outer air, and a roof which is fitted against the outer sides of the purlins or longitudinal walls, with the upper portions of the latter projecting above the roof, substantially as set forth.

4. In a railroad train shed, the combination of transverse rafters and purlins or longitudinal walls which are intersected by and secured to the rafters and form between them a ventilating duct which is arranged lengthwise over the track and opens upwardly directly into the outer air, said rafters extending across said duct and said purlins or longitudinal walls extending below the rafters and across the under sides of the same, substantially as set forth.

5. In a railroad train shed, the combination of transverse rafters and purlins or longitudinal walls secured to the same and forming between them a longitudinal duct which opens upwardly into the outer air, said rafters being provided with water conduits which extend lengthwise of the rafters and through said purlins or longitudinal walls, substantially as set forth.

6. In a railroad train shed, the combination of transverse rafters and purlins or longitudinal walls secured to the same and forming between them a longitudinal duct which opens upwardly into the outer air, said rafters extending across said duct and said rafters being provided within said duct with a concrete covering having in its top a gutter

which opens through the purlins or longitudinal walls, substantially as set forth.

7. A railroad train shed provided in its roof above the track with purlins or longitudinal walls, forming between them a longitudinal duct which opens through the roof upwardly into the outer air, said purlins or longitudinal walls extending below the roof and being provided below the roof with openings for the escape of steam and gases from the space underneath the roof into said duct, substantially as set forth.

Witness my hand, this sixth day of December, 1905.

ABRAHAM L. BUSH.

Witnesses:
R. M. WHITE,
EDWARD C. HARD.