

No. 713,955.

Patented Nov. 18, 1902.

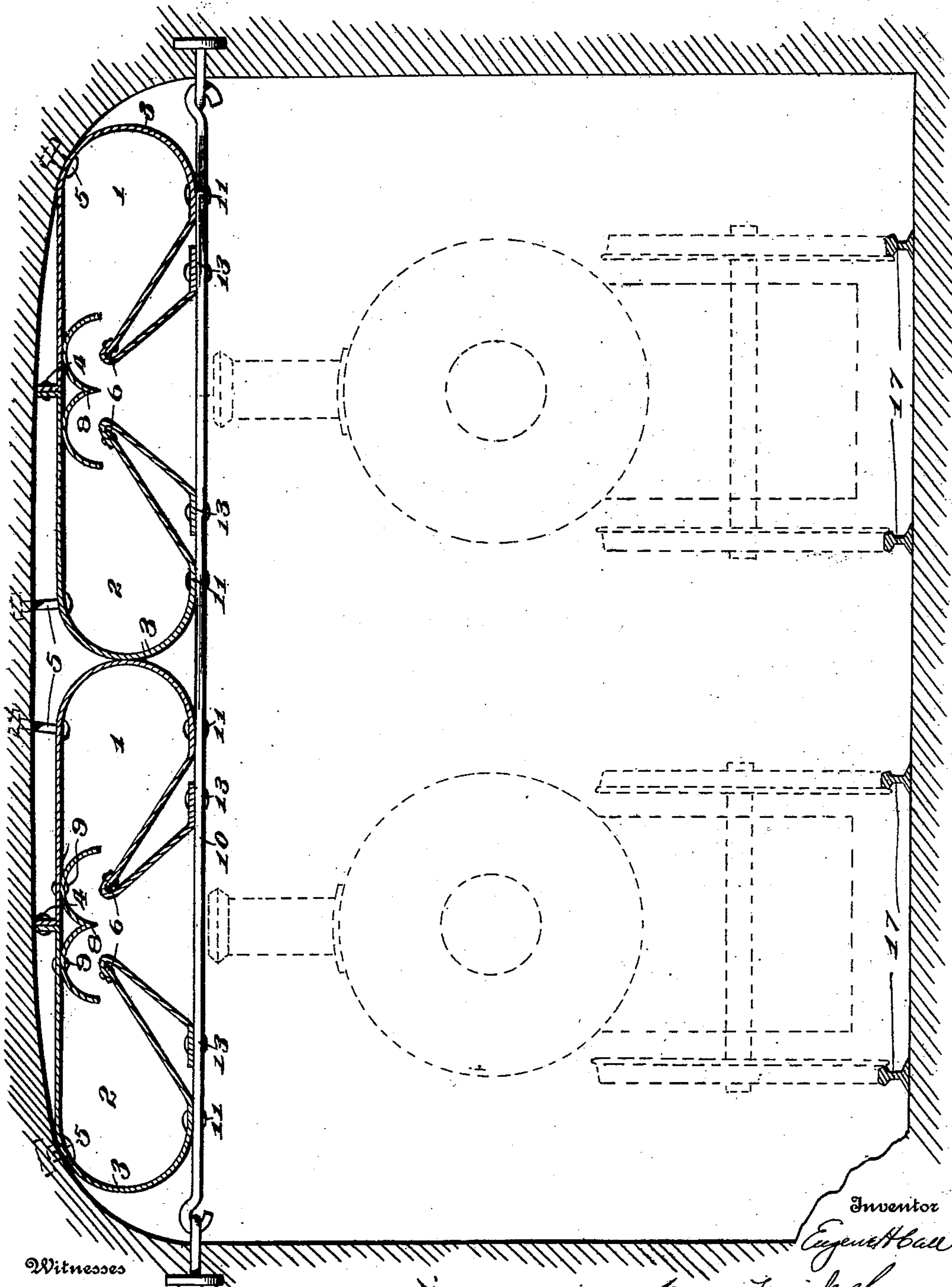
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SECTIONAL VENTILATING TUNNEL ROOF.

(Application filed Jan. 30, 1902.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses

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Fig. 1.

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Fig. 2

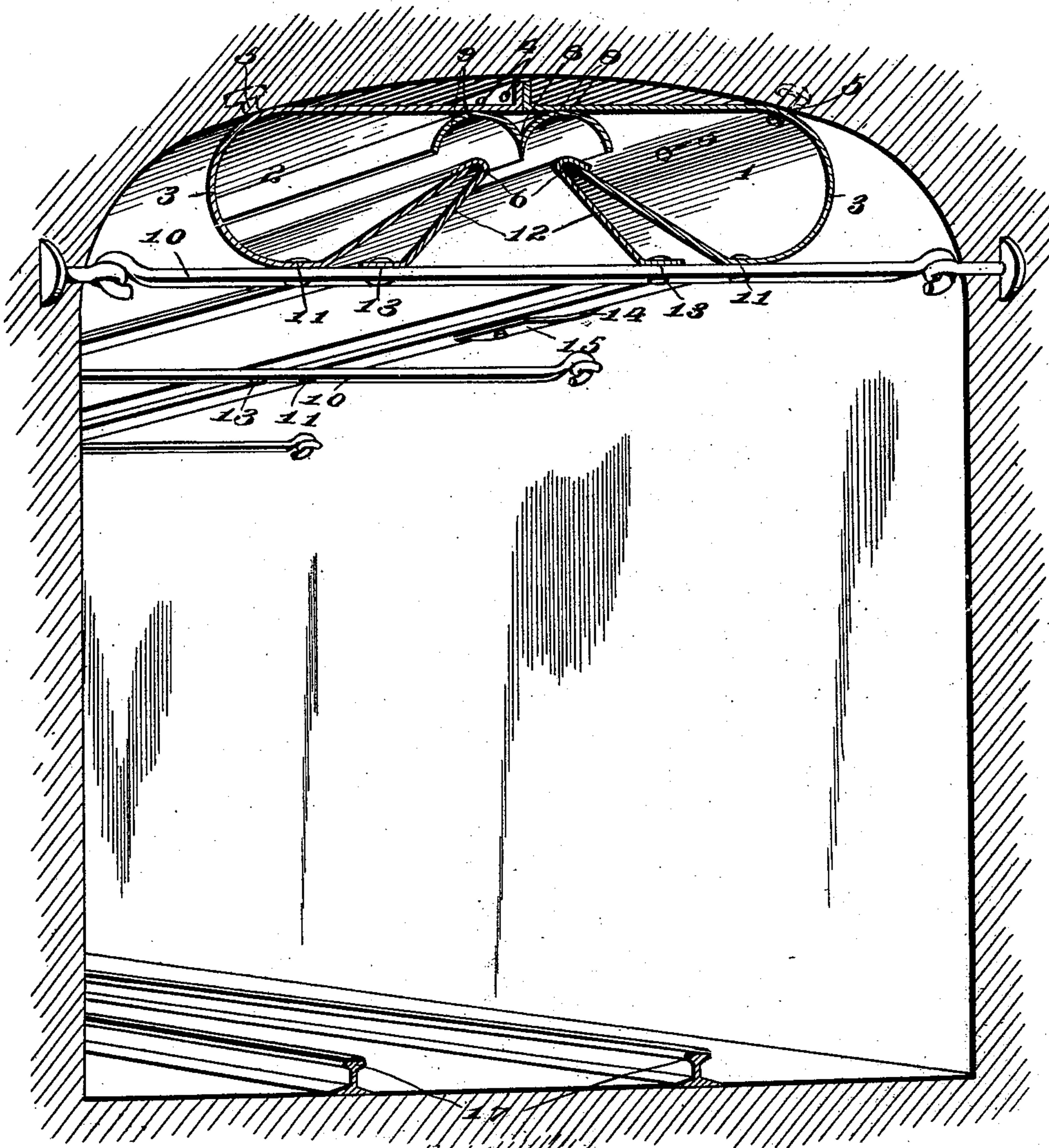
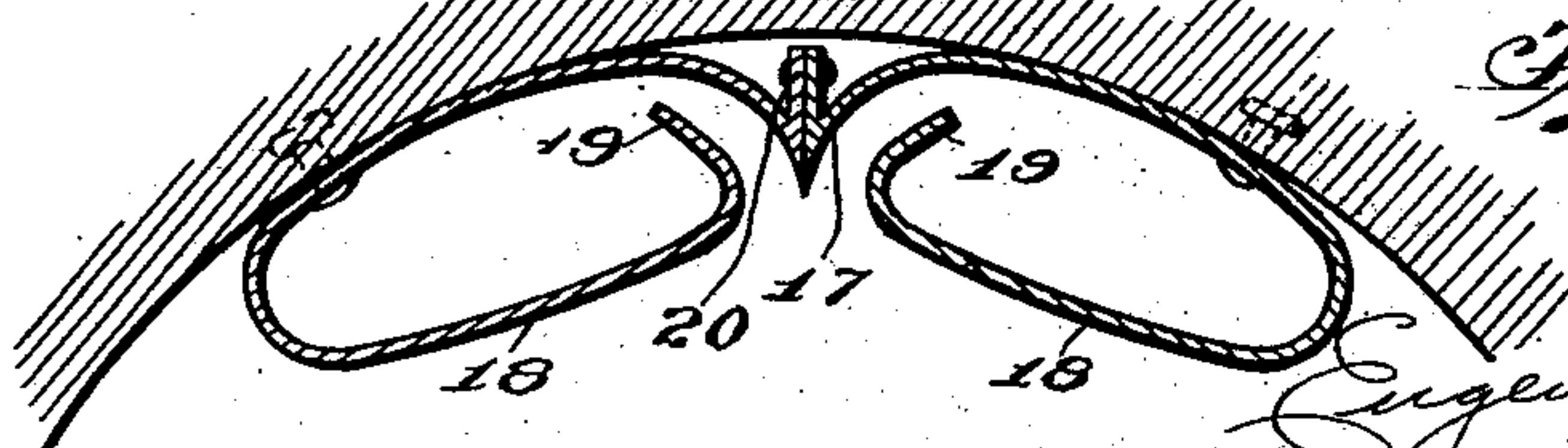


Fig. 3



Witnesses

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TO JOHN H. LADWIG, OF SCRANTON, PENNSYLVANIA.

SECTIONAL VENTILATING TUNNEL-ROOF.

SPECIFICATION forming part of Letters Patent No. 713,955, dated November 18, 1902.

Application filed January 30, 1902. Serial No. 91,899. (No model.)

To all whom it may concern:

Be it known that I, EUGENE H. CALL, a citizen of the United States, residing at Scranton, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Sectional Ventilating Tunnel-Roofs; 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.

This invention relates to improvements in ventilating apparatus, and more particularly to such as is designed for use in connection with tunnels.

The object in view is the removal from a railway-tunnel of all smoke and gases as rapidly as the same are thrown off from a passing engine.

With this and other objects in view the invention consists of a plurality of funnels arranged contiguous the roof of a tunnel, deflecting means carried thereby and designed to guide smoke and gases of an engine thereinto, and means for directing said smoke and gases to said deflector.

It also consists in certain other novel constructions, combinations, and arrangements of parts, as will be hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 represents a transverse vertical section through a tunnel provided with ventilating apparatus embodying the features of the present invention and showing the same applied to a double-track tunnel. Fig. 2 represents a perspective view of the same as applied to a single-track tunnel. Fig. 3 is a detail sectional view showing a different way of forming the ventilator mechanism.

In the art to which the present invention relates it has heretofore been common to construct a tunnel-ventilating apparatus in the form of a false roof supported beneath the main roof of the tunnel, spaced therefrom and provided with a longitudinal central slot designed to register with the smoke-stack of an engine passing through said tunnel, whereby the smoke and gases therefrom would pass above said false roof and be prevented from permeating the main space of the tunnel. It is also common to provide in

connection with such ventilating apparatus exhaust-fans for rarefying the atmosphere above the said false roof for removing the smoke and gases from that portion of tunnel above the false roof; but a number of serious objections has arisen to this structure, a pertinent one of which lies in the fact that a maximum of exhaust is required, owing to the fact that the smoke and gases are not closely confined. To overcome this and other objections and to produce a cheap, simple, and effective apparatus for the purpose mentioned, I employ, as will be apparent from the accompanying drawings, suitable funnels, as 1 and 2, each formed from a sheet of suitable material, as 3, the said sheets being bolted, riveted, or otherwise suitably secured together, as at 4, and extend laterally in either direction from the point of their attachment, preferably on a horizontal plane, for a suitable distance, then curving downwardly, inwardly, and upwardly again, whereby an inclosed longitudinal space is provided, the said plates 3 being designed to be secured, as at 5, to the roof of the tunnel for being supported in position. The points of attachment 5 are such relative to the tunnel that the inner longitudinal edges 6 of plates 3, which are spaced a suitable distance apart, lie in vertical planes registering with the edges of the smoke-stack of an engine moving upon track 7 within the tunnel. It will be apparent that as an engine moves upon said track 7 the smoke and gases from its stack will be naturally directed by the inwardly and upwardly extending portions of the plates 3 toward the longitudinal central space between their edges 6. Arranged centrally above this longitudinal space I preferably provide a deflector, as 8, secured, as at 9, to the plates 3 and having a central longitudinal ridge depending above said longitudinal space, and semicircular or concave plates formed integral with said ridge and each lying centrally above the respective longitudinal edge 6, whereby the smoke and gas guided into the space between said edges will strike against said centrally-arranged ridge, be divided, and pass laterally through the funnels 1 and 2. I may, if preferred, arrange a suitable exhaust-fan for removing the gases from the funnels 1 and 2, and usually do employ such fans in connection with

the longer tunnels, but find that the movement of the atmosphere will naturally remove the greater portion of such gases without the assistance of the exhaust-fan from the shorter tunnels.

As an additional support for the plates 3 I may provide at suitable points along the tunnel transversely - arranged supporting-rods, as 10, preferably having their ends supported by eyebolts or otherwise attached to the walls of the tunnel. The rods 10 are of course arranged in a horizontal plane, contacting with the lower edge of each of the plates 3, whereby said plates may be secured to said rods, as at 11.

I have found it desirable to provide deflector-plates, as 12 12, secured to the edges of plates 3, extending downwardly and outwardly and also attached, as at 13 13, to rods 10, whereby the smoke and gases may more effectually be directed against the deflector 8. It will of course be apparent that the plates 12 may be omitted; but they serve to strengthen the structure and aid somewhat in the directing of the smoke and gases.

Of course I may employ the present form of ventilator to tunnels having more than one track, and in so doing I simply duplicate the parts employed in connection with the single track, as will be readily seen by reference to Fig. 1 of the drawings.

It has been found necessary, despite the fact that the gases and smoke are forced out of funnels 1 and 2, to provide means of access into said funnels for removing cinders and heavier foreign matter. In order to facilitate such access, I preferably provide man-holes, as at 14, in any suitable number at intervals longitudinally of each of the said funnels, each of the said holes being closed by a suitable door 15 in a common and well-known manner.

Although I have specifically set forth one particular embodiment of the present invention, yet I do not desire to be understood as limiting myself to the minor details of structure, but shall feel at liberty to deviate therefrom to a degree within the spirit and scope of the present invention.

As showing one form a little different from that illustrated in Figs. 1 and 2 of the drawings, I have shown in Fig. 3 a modified structure. In this structure the ventilator is preferably formed of two pieces of material which are joined at the center, as at 20, the parts being bent downwardly at this point, however, instead of upwardly, as shown in Figs. 1 and 2. By forming the parts of the ventilator in this manner the bent-downwardly

meeting edges of the side plates composing the ventilator are also used to form the smoke-deflector 17 instead of employing a separate piece, as heretofore described and shown. In this view it will also be seen that the outer edges of the piece comprising the ventilator are bent inwardly and upwardly, as at 18, and are finally bent outwardly again to a slight degree, as at 19. It will thus be seen that practically the same ventilator is produced, but it is formed with a fewer number of parts and may, therefore, be produced with a less expense than that already described. This ventilator is secured to the roof of the tunnel in the same manner as the other forms of the mechanism described and shown.

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

1. A tunnel-ventilating apparatus, comprising a plurality of funnels secured contiguous the roof of the tunnel, a deflector inclosed thereby secured to the inner surface thereof and arranged centrally thereof for directing smoke and gases thereinto, a suitable space being left between said funnels centrally beneath said deflector, and means for directing the smoke and gases to said deflector, substantially as described.

2. A tunnel-ventilating apparatus, comprising plates secured together and forming longitudinally-inclosed spaces, the lower inner edges of said plates being spaced apart for permitting admission of smoke and gases into said inclosed spaces, and a deflector arranged centrally above the space between said edges for permitting such smoke and gases into the inclosed spaces, said deflector being secured to the inner surface of said plates and extending in both directions beyond said lower inner edges of the plates, substantially as described.

3. A tunnel-ventilating apparatus comprising longitudinally-arranged funnels, having the inner lower edges thereof spaced apart, deflector-plates secured to said inner longitudinal edges and extending downwardly and outwardly in diverging planes, and a deflector secured above the space between said longitudinal edges and inclosed by said funnels, whereby the smoke of an engine passing beneath said funnels is designed to be directed into the same, substantially as described.

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

EUGENE H. CALL.

Witnesses:

W. W. WATSON,
JOHN H. LADWIG.