

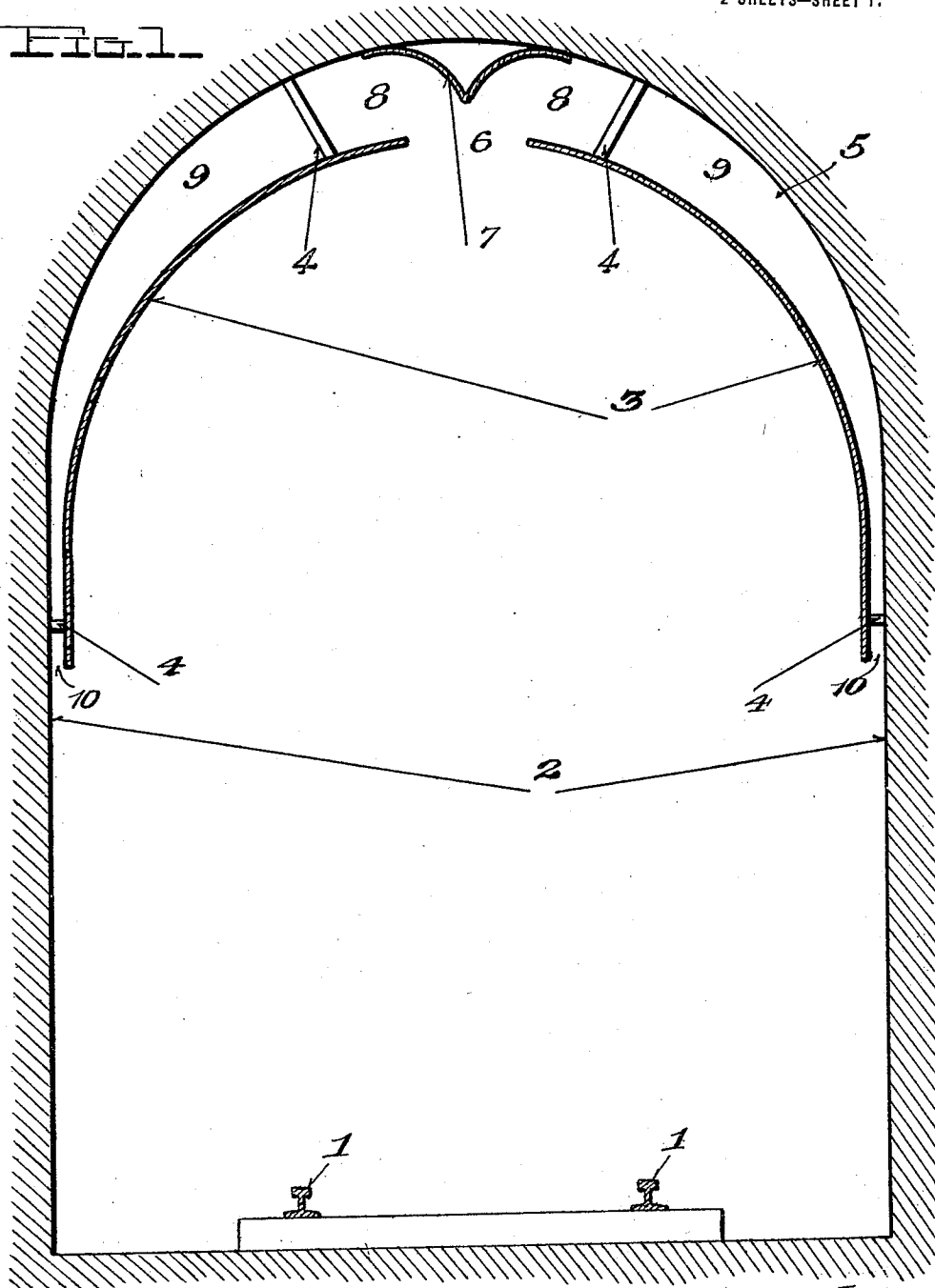
I. H. HARRIS.
TUNNEL VENTILATOR.
APPLICATION FILED DEC. 23, 1919.

1,409,545.

Patented Mar. 14, 1922.

2 SHEETS—SHEET 1.

Fig. 1.



INVENTOR
Irvin H. Harris,
Bacon & Thomas

ATTORNEYS

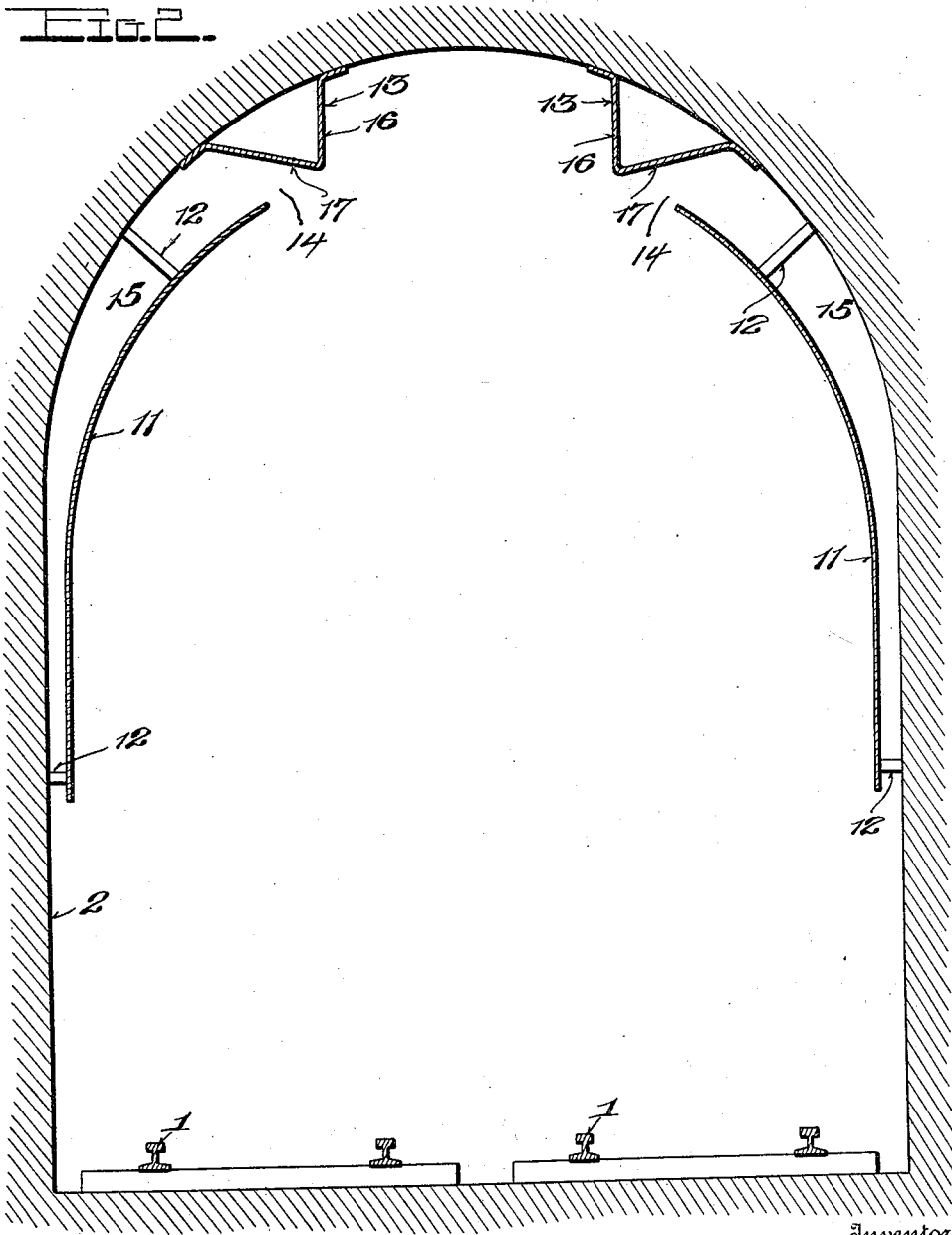
I. H. HARRIS.
TUNNEL VENTILATOR.
APPLICATION FILED DEC. 23, 1919.

1,409,545.

Patented Mar. 14, 1922.

2 SHEETS—SHEET 2.

Fig. 2.



Inventor

Irvin H. Harris,

Witness

Chas. L. Griesbauer

By *Bacon & Thomas*

Attorneys

UNITED STATES PATENT OFFICE.

IRVIN H. HARRIS, OF EVANSTON, WYOMING.

TUNNEL VENTILATOR.

1,409,545.

Specification of Letters Patent. Patented Mar. 14, 1922.

Application filed December 23, 1919. Serial No. 347,000.

To all whom it may concern:

Be it known that IRVIN H. HARRIS, citizen of the United States, residing at Evanston, in the county of Uinta and State of Wyoming, has invented certain new and useful Improvements in Tunnel Ventilators, of which the following is a specification.

The invention relates to means of ventilating railroad tunnels.

In railroad tunnels it is now generally the custom of the railroads to employ no ventilating means for trapping or carrying the engine smoke and gases from the tunnel, the result being that the engine crew are often overcome and injured by these gases, which also annoy to a material extent, occupants of a passenger train. Likewise the accumulating gases and smoke in a tunnel attack and material injure the locomotives and coaches, necessitating the employment of a staff of laborers to thoroughly clean engines and cars in trains that pass through tunnels. In the prior art smoke ventilating apparatus has been proposed for tunnels, but as far as I am aware all of these proposed structures are objectionable primarily because of the necessity of laborers entering the tunnel from time to time to remove cinders, ashes and the like from the ventilating devices. This work is manifestly very dangerous and can not be successfully and safely carried on without a serious interruption of traffic.

It is an object of the present invention to provide a ventilating appliance for tunnels that will effectively trap the smoke and gases issuing from a locomotive passing there-through to prevent an accumulation of the smoke and gases in the interior of the tunnel. The trapped gases and smoke, of course, carry cinders therein, which cinders in following the present invention are allowed to deposit, due to their specific gravity, upon the road bed, while the trapped smoke and gases are carried from the tunnel very rapidly.

With the foregoing conception in mind, the invention contemplates the provision of an appliance of this character, wherein the cinders, ashes and the like carried in the smoke and gases are rapidly discharged from the appliance without the use of manual labor, such as has heretofore been employed to clean the ventilating devices.

In a more specific aspect, the invention comprises a ventilating device for tunnels consisting of a member positioned within a

tunnel and spaced from the walls thereof to form a false top having a smoke inlet and a smoke receiving chamber to receive the issuing gases and smoke from a locomotive the instant of the discharge thereof. The false top is spaced from the tunnel wall throughout its length to provide the smoke receiving chamber and is substantially coextensive with the tunnel. Said top is spaced throughout its length and width from the tunnel wall, having an open lower portion through which the cinders carried in the smoke drop upon the road bed, close to the side of the tunnel. The distance the false top is spaced from the wall of the tunnel progressively decreases from its upper end toward the bottom providing a smoke receiving chamber of a tapering diameter, the reduced portion of the chamber enabling the cinders to drop from the same, but preventing escape of smoke through this confined space, yet at the same time allowing air currents created by the passage of a train to enter the smoke chamber and assist in removing the trapped gases.

In the accompanying drawings I have disclosed the preferred embodiments of my invention, but manifestly the invention is subject to many changes in construction and arrangement of parts without departing from the spirit thereof.

In the drawings Figure 1 represents a view of a single track railroad with the appliance attached to a tunnel.

Figure 2 represents a slightly modified form with the appliance disclosed within the tunnel of a double track railroad.

Referring now more particularly to the drawings wherein like reference characters indicate corresponding parts the numeral 1 designates a railroad track adapted to pass through the tunnel 2, as disclosed in Figure 1, the tunnel merely being for a single track road. Positioned within the tunnel and co-extensive therewith throughout its length are a pair of curved members 3 secured to the walls of the tunnel by stay devices 4 or like means that will permit the members 3 to be held in a spaced position relative to the roof of the tunnel. The members 3 at their upper ends are separated to provide a space 6, over which space is positioned a smoke and gas deflector 7 which likewise extends throughout the length of the tunnel and directs the issuing smoke and gases from a passing locomotive into the mouth portion

8 of the smoke receiving chambers 9 formed by the spacing of the members 3.

It will be noted that the members 3 are spaced from the walls of the tunnel at their lower end only a slight distance the diameter of the smoke receiving space gradually increasing in width toward the mouth 8. This is a highly important feature of the invention, inasmuch as smoke and gases directed into the smoke receiving chambers 9 are trapped therein while the open lower ends of these chambers permit the cinders and ashes to drop upon the tunnel floor. It will also be understood that the smoke and gases from a locomotive the instant of their discharge are trapped in the smoke chambers by the installation of the members 3 and the deflector 7, and these gases due to a draft through the chambers are carried from the tunnel without being admitted to the interior thereof. The passage of a train through the tunnel also creates air currents therein, and these currents pass into the chambers 9 through the relative small open ends 10 as well as into the mouth portions 8, serving to assist in a rapid and effective discharge of the gases.

In Figure 2 of the drawings I have disclosed a form of the invention as applied to a double track tunnel. In this disclosure along the sides of the tunnel are the members 11 which are supported by the stay bolts 12 and are spaced from the walls of the tunnel the same as the spacing of the members 3 in Figure 1. However, when applied to a double track tunnel there must be a pair of the members 11 that are widely separated and arranged between said members are the smoke and gas deflectors or turning devices 13 which extend lengthwise of the tunnel throughout its length near the mouths 14 of the smoke receiving chambers 15. These deflecting members preferably have straight side portions 16 and angular parts 17 for directing the smoke and gases into the smoke chambers although this is not essential.

In the accompanying drawings I have disclosed the preferred embodiment of the invention, but of course it will be understood that the same is subject to many changes in the construction and arrangement of parts, and I wish it to be understood that I am not limited to the exact construction herein disclosed.

Having thus described the invention, what I claim is:

1. A ventilating attachment for railroad tunnels comprising a supplemental roof consisting of separated members spaced from the walls of the tunnel throughout their length and width to provide smoke and gas discharge passages extending longitudinally of the tunnel, in combination with angular deflecting plates disposed between said separated members for deflecting the smoke and

gases of a locomotive passing through the tunnel into said chambers, the chambers being of a progressively decreasing diameter toward the floor of the tunnel to provide a wide inlet adjacent the deflectors and a relatively narrow discharge opening at the lower end of each deflector for permitting solid particles carried in the smoke and gases to drop upon the road bed but preventing an escape of appreciable quantities of smoke and gases.

2. A ventilating attachment for railroad tunnels comprising a supplemental roof consisting of separated members spaced from the walls of the tunnels throughout their length and width to provide longitudinally disposed smoke and gas discharging chambers, said roof members being spaced progressively decreasing distances from the walls of the tunnel from their upper ends to their lower ends to provide relatively narrow discharge openings along the lower edges of the members to permit solid particles entrained in the smokes and gases entering the chambers to be deposited upon the roadbed.

3. A ventilating attachment for railroad tunnels comprising a supplemental roof for the tunnel composed of spaced roof sections of a curved formation fashioned to conform to the configuration of the tunnel walls, said roof sections being spaced a greater distance at their upper ends from the walls of the tunnel than at the lower ends thereof and having a relatively narrow continuous opening along the lower ends thereof to permit the discharge of solid particles entrained in smoke and gases entering the chambers formed by said roof members, in combination with deflectors adjacent the inlet to each chamber, said deflectors each having a vertically disposed portion and a right angular extension for directing the gases and smoke into said chambers.

4. A ventilating attachment for railroad tunnels, comprising a pair of supplemental roof sections of a curved formation, fashioned to conform to the configuration of the tunnel walls, said roof sections being spaced a greater distance from the upper ends of the walls of the tunnels than the lower ends thereof and having relatively narrow continuous openings along said lower ends, and providing between said sections and the tunnel walls chambers of progressively increasing diameter, in combination with deflectors extending longitudinally of the tunnel for directing smoke and gases into the chambers at the point of their largest diameter, said deflectors each having a substantially vertical wall and a continuation thereof extending from said wall and overlying the entrance to its smoke receiving chamber.

In testimony whereof I affix my signature.
IRVIN H. HARRIS.