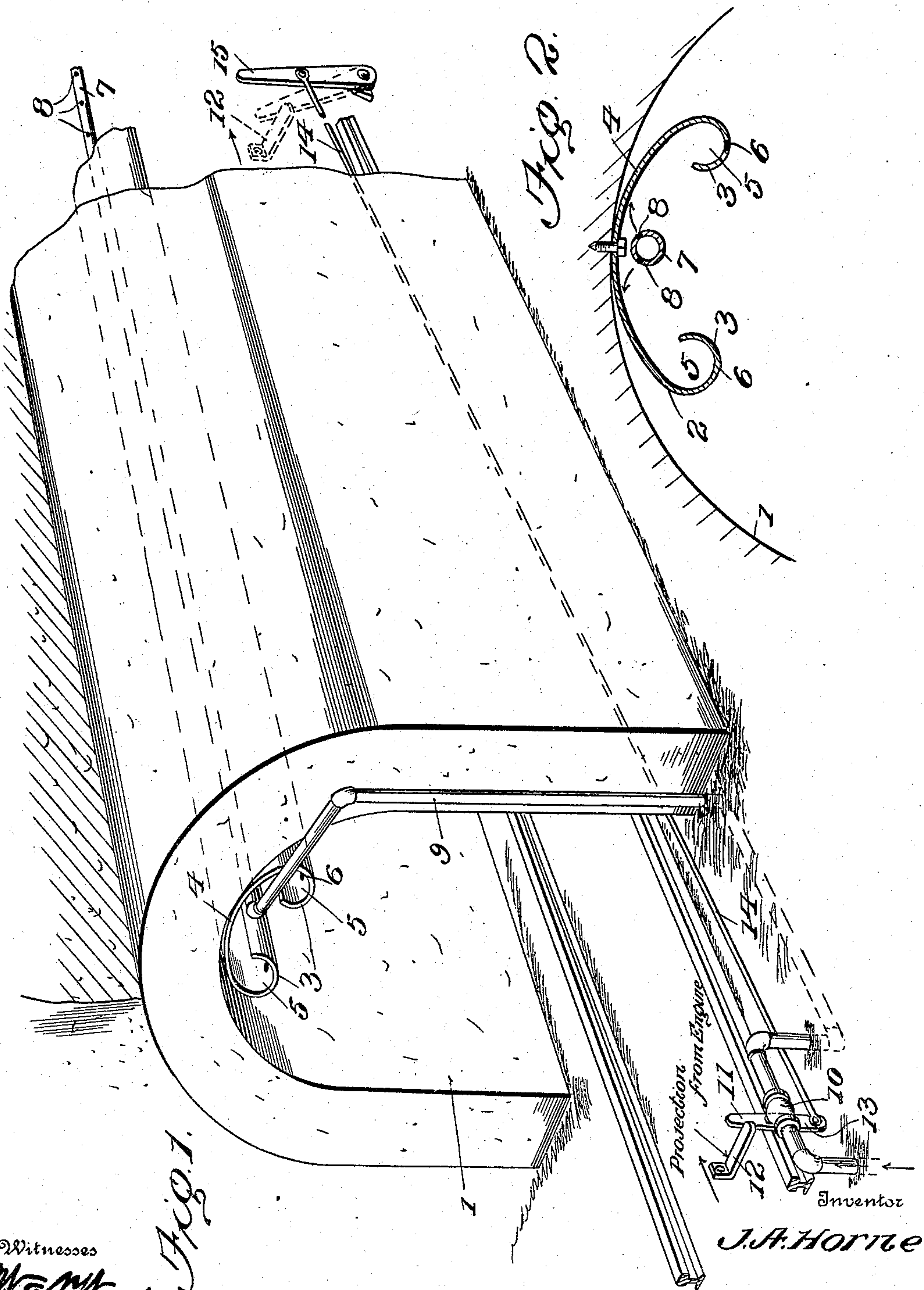


J. A. HORNE.  
TUNNEL ATTACHMENT.  
APPLICATION FILED MAR. 2, 1909.

936,629.

Patented Oct. 12, 1909.



Witnesses  
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# UNITED STATES PATENT OFFICE.

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## TUNNEL ATTACHMENT.

936,629.

Specification of Letters Patent.

Patented Oct. 12, 1909.

Application filed March 2, 1909. Serial No. 480,893.

*To all whom it may concern:*

Be it known that I, JAMES A. HORNE, a citizen of the United States, residing at Oregon City, in the county of Clackamas and State of Oregon, have invented certain new and useful Improvements in Tunnel Attachments, of which the following is a specification.

This invention comprehends certain new and useful improvements in attachments for tunnels and is designed to effectively dispose of the smoke and gases which issue from the stack of a locomotive passing through the tunnel and which are, as is well known, a common source of annoyance to passengers, and the invention relates particularly to improvements in that type of tunnel attachment which is disclosed in my pending application for Letters Patent of the United States, Serial No. 472,110, filed January 13, 1909.

The attachment disclosed in my pending application above mentioned embodies one or more smoke collecting pockets secured in an elevated position in a tunnel, together with a deflector leading to the pocket or pockets and arranged to extend over the locomotive stacks so that the smoke and gases issuing therefrom will be caused to pass into the pocket or pockets with a swirling motion and be retained in the attachment until finally allowed to escape at one end of the tunnel.

The present invention contemplates means for condensing smoke and gases, so as to assist in disposing of the same as well as to protect the walls of the tunnel and the attachment itself from the injurious effects of the smoke and gases, it being well known that these unconsumed products of combustion have a destructive effect upon the masonry or the like of which the tunnel walls are composed, necessitating almost constant repair and rendering imminent accidents arising from the fall of the walls.

The invention consists in means herein-after described for automatically controlling the water supply so that the jets of water issuing from the pipe will be in action only at the time a train is passing through the tunnel and, if desired, for a predetermined time after the train has issued from the tunnel. And the invention also consists in certain constructions, arrangements and combinations of the parts that I shall herein-after fully describe and claim.

For a full understanding of the invention, reference is to be had to the following description and accompanying drawing in which:

Figure 1 is a perspective view of a portion of a tunnel equipped with my improved smoke and gas disposing attachments, and Fig. 2 is a transverse sectional view through the attachment.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

Referring to the drawing, the numeral 1 designates a tunnel and 2 one embodiment of my improved attachment secured in any desired way to the roof or wall of the tunnel and embodying transversely curved side portions 3 connected by a deflector web 4, the side portions 3 producing two transversely spaced and upwardly facing pockets 5. The space between the pockets 5 is aligned with the path of movement of the locomotive smoke stack, so that as the smoke and gases issue therefrom they will be directed against the deflector web portion 4 and be deflected thereby in a sidewise direction into the curved pockets 5, a swirling motion being thereby set up which will cause the smoke and gases to be retained in the pockets until they gradually issue out of one end of the tunnel or the other. Preferably, the attachment 2 is formed with perforations 6 so as to prevent any accumulation of cinders in the pockets. All of these parts above mentioned are disclosed in my pending application No. 472,110.

In connection with the pockets 3 and the related parts, my present invention embodies a water pipe 7 which is disposed within the attachment 2, extending horizontally and longitudinally therein and maintained or supported in any desired way. The pipe 7 is formed with jet orifices 8 arranged at any desired intervals and preferably upwardly disposed so that the jets of water issuing therefrom will be directed against the inner surface of the attachment 2 and flow downwardly in opposite directions into the pockets 5 thereby effectually condensing the smoke and gases, and preventing them from attacking the attachment, thereby materially assisting in the preservation of the attachment as well as the walls of the tunnel.



In order to automatically open the supply of water to the pipe 7, and to close the same after the desired interval has elapsed, I preferably provide means whereby the on-coming locomotive itself, before it enters the tunnel, will open the water supply, and, after passing out of the tunnel and continuing to a predetermined point or distance will again automatically close the water supply. In the present instance, I have shown for this purpose a water supply pipe 9 which is connected to the pipe 7, the pipe 9 having incorporated therein at any desired distance from the mouth of the tunnel, a valve 10 which is operated by an upwardly projecting arm 11 secured thereto. This arm 11 is designed to be struck by a projection 12 carried by the locomotive or any other desired portion of a train so as to swing the arm 11 forwardly and downwardly to open the valve. The valve 10 is also provided with a downwardly projecting actuating arm 13 which is connected by a link rod 14 to a lever 15 which is fulcrumed along the track at any desired distance from the exit end of the tunnel, so that as the locomotive passes through the tunnel, the projection 12 carried thereby or by the train will engage the lever 15 and swing the same to move the valve 10 back to the closed position. Preferably, the lever 15 is situated at the more remote point from the tunnel to the arm 11 of the valve 10, so that the water may be maintained flowing through the pipe 7, after the train has issued from the tunnel mouth, long enough to dispose effectually of all the unconsumed products of combustion that have issued from the locomotive stack and been caught by the pockets 5 of the attachment.

Having thus described my invention, what is claimed as new is:

1. The combination with a tunnel attachment of the character described, of a spray pipe arranged in juxtaposition thereto, and means arranged to be operated by a train

for opening and closing the supply of water for said spray pipe.

2. The combination with a tunnel attachment of the character described, of means for spraying the inner surface of said attachment, a supply pipe connected to said spraying means, a valve in said supply pipe, and means arranged to be automatically actuated by a train for opening and closing said valve.

3. The combination with a tunnel attachment embodying upwardly facing pockets and a deflecting connecting web extending from one pocket to another and secured in an elevated position in a tunnel, of a spray pipe extending longitudinal of the tunnel attachment at about the middle of said web and formed with oppositely facing series of apertures adapted to spray water in opposite directions upwardly against the adjacent wall of the web, a supply pipe connected to said spray pipe and arranged to extend along the track, a turning valve in said supply pipe, upwardly and downwardly projected arms secured to said valve, a link rod connected to the downwardly projecting arm, said valve and arm being located at one end of the tunnel and the link rod extending through the tunnel to and beyond the opposite ends thereof, and a lever connected to said link rod at such last named end of the tunnel, whereby a projection from the engine by engaging the upwardly projecting arm of the valve as the engine approaches the tunnel, will turn the valve in one direction to open the same, and whereby after the train has passed through the tunnel the projection from the engine will engage the lever and turn the valve in the opposite direction to shut off the water supply.

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

JAMES A. HORNE. [L. S.]

Witnesses:

W. N. WOODSON,  
FREDERICK S. STITT.