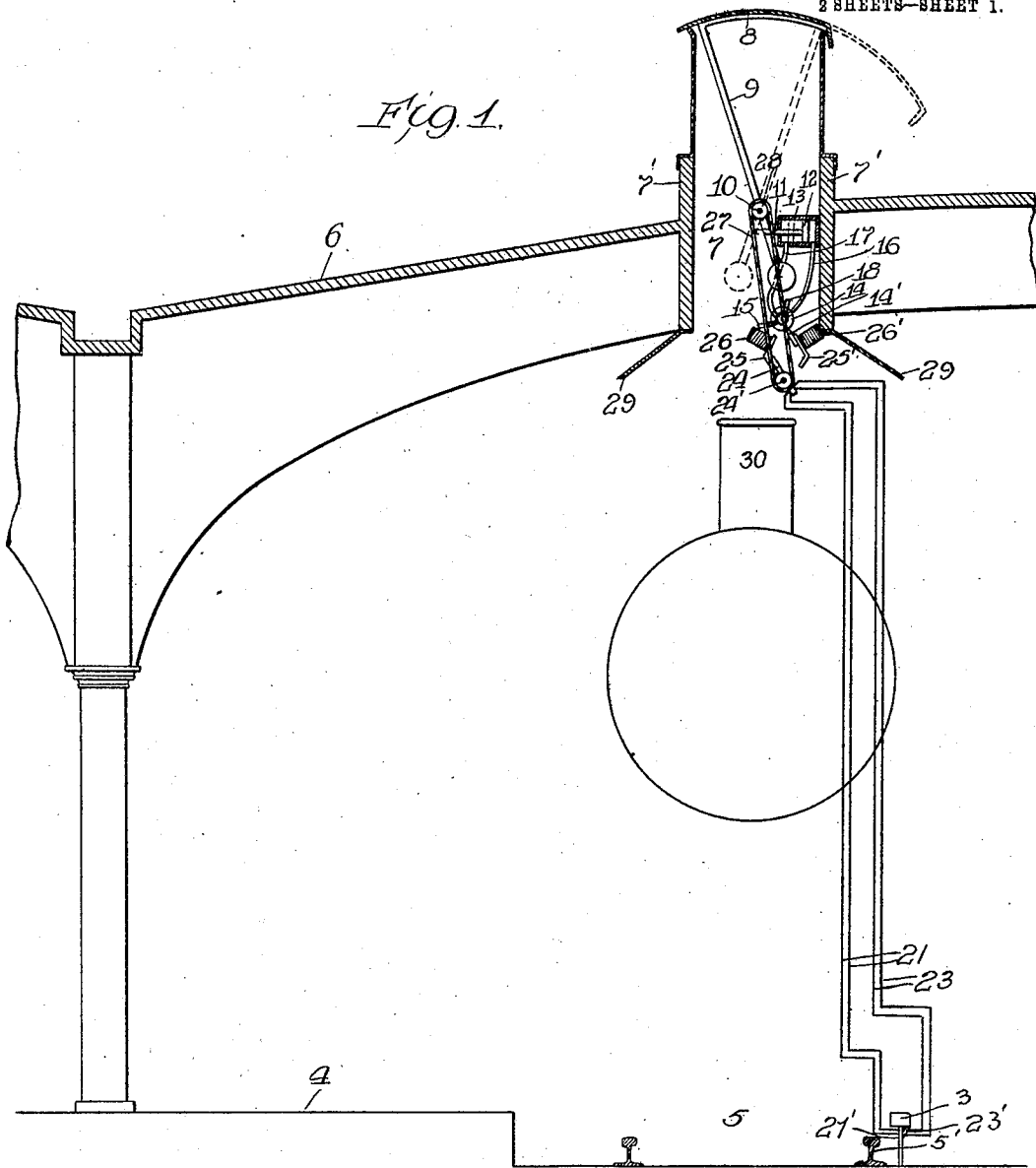


H. J. SCHLACKS.
 ROOF FOR TRAIN SHEDS AND OTHER BUILDINGS.
 APPLICATION FILED NOV. 16, 1908.

929,115.

Patented July 27, 1909.

2 SHEETS—SHEET 1.



Witnesses:
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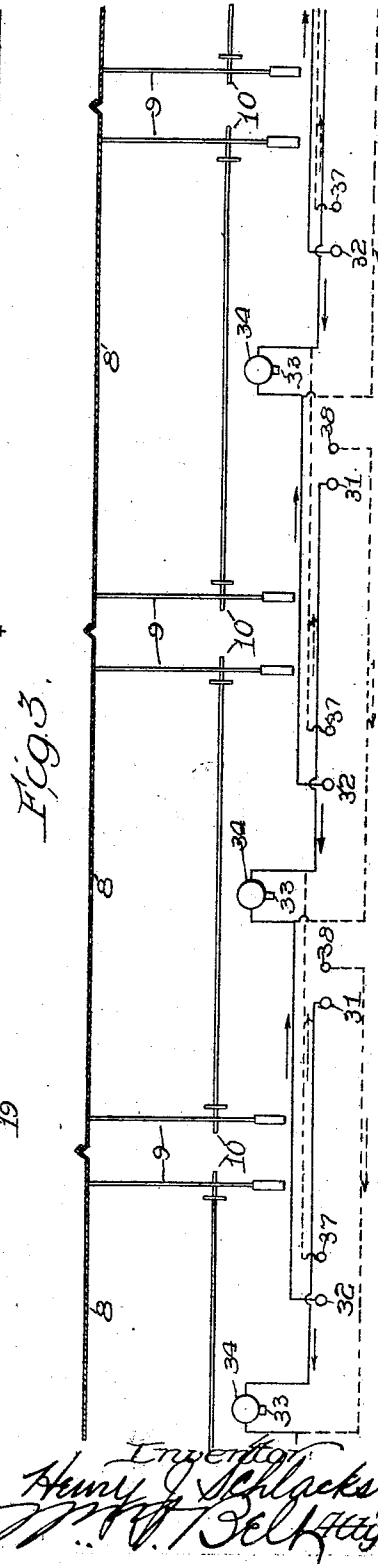
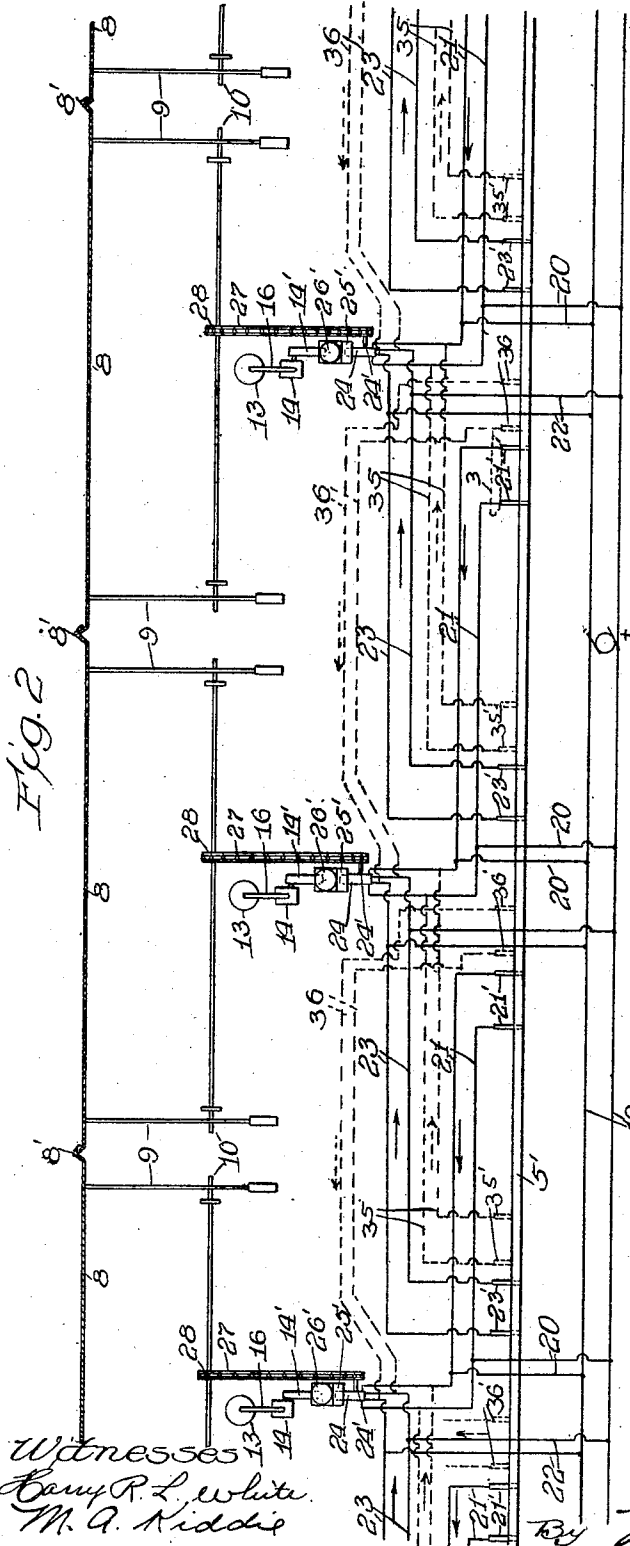
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2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

HENRY J. SCHLACKS, OF CHICAGO, ILLINOIS.

ROOF FOR TRAIN-SHEDS AND OTHER BUILDINGS.

No. 929,115.

Specification of Letters Patent.

Patented July 27, 1909.

Application filed November 16, 1908. Serial No. 462,787.

To all whom it may concern:

Be it known that I, HENRY J. SCHLACKS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Roofs for Train-Sheds and other Buildings, of which the following is a specification.

This invention relates generally to improvements in roofs of buildings and while it is more particularly useful in the roofs of train sheds and depots, it can be used in the roofs of any other buildings, such as round houses, shops, etc., where the conditions make it desirable to provide automatically for the intermittent escape of smoke and gases. In view of the fact that the invention is especially adapted for use in connection with train sheds, I have selected this embodiment for description and illustration.

Heretofore train sheds have been made with roofs of more or less height and provided with skylights or some device of similar character to permit the escape of smoke and gases. These train sheds are objectionable not only because of the great cost to build and maintain them but also because the air therein becomes foul and mixed with smoke and gases to the great discomfort of passengers and trainmen. This is due largely to the generally insufficient provision for the escape of the smoke and gases discharged from the locomotives and because the air will naturally become laden to a more or less extent with the smoke and gases even when there is ample provision for a reasonable circulation of air. It is to be noted that the smoke and gases are discharged at very irregular intervals and likewise in very irregular quantities so that difficulty is found in making successful provision for the immediate escape of air and gases as they are discharged without at the same time providing openings of such area as will admit rain and snow to an objectionable degree.

Train sheds are now being built which depart from the old style huge arch and comprise a low roof designed to cover the platforms between the tracks and to project somewhat over the tracks so as to leave an opening centrally located over each track through which the smoke and gases escape. But these openings which extend lengthwise of the shed, and generally throughout its length, are objectionable for the reason that

they admit snow and rain which may be blown upon the platforms or which will fall down upon the roof of cars and drain off upon the platforms.

The object of my invention is to provide the roof of a train shed with an opening above the track for the escape of smoke and gases and which is automatically opened and closed in sections as the locomotive passes thereunder.

A further object of the invention is to provide the escape opening in the roof above the track with a plurality of shutters which are automatically operated by the locomotive as it passes thereunder.

In the accompanying drawings illustrating my invention Figure 1 is a transverse sectional view of a portion of a train shed; Fig. 2 is a longitudinal view and Fig. 3 illustrates another embodiment of the invention.

It will be understood, at the outset, that my invention is not limited to embodiment in a roof of a particular style and it is for this reason I have not attempted in the drawings to show the detail construction of a roof except as it should be provided with an opening above the track for the escape of smoke and gases from the locomotives.

Referring to the drawings, 4 designates the platform, 5 the track and 6 the roof of a train shed over the platform and track and provided with an opening 7 therein extending lengthwise above the track. This opening is preferably continuous but it may be made in sections separated by partitions. The walls 7' of the opening 7 are preferably extended above the roof and a plurality of shutters 8 is arranged above said walls to close said opening. These shutters may be made in any suitable length, say, about ten feet, and they are preferably arranged to be automatically opened and closed independently of each other. I prefer to make the shutters of magnesia board or other suitable material which will not be affected by heat, gases or weather and to overlap them at their ends 8'.

In the construction illustrated the shutters are curved and mounted on counter-balanced frames 9 which are pivoted on one or more shafts 10 extending longitudinally of the opening 7. These frames are swung by any suitable means to move the shutters into and out of position to close the opening 7. For the purpose of this application I have

shown a plunger rod 11 connected to the frame 9 and carrying a piston 12 within an air cylinder 13 mounted in any suitable manner and position on the shed. A four-way valve 14, which may be of commercial form, is connected by pipe 15 to a source of air supply under pressure and by pipes 16 and 17 to the air cylinder 13. The valve also has an exhaust 18 which may communicate with the pipe 16 or the pipe 17. When the valve is turned to admit air through the pipe 16 to the cylinder in front of the piston 12 the latter is forced to the left, in Fig. 1, to swing the frame 9 and open the shutter 8, and at the same time the air behind the piston 12 is permitted to exhaust through the pipe 17, the valve 14 and its exhaust 18. When the valve is turned to admit air to the cylinder through pipe 17 behind the piston 12 the latter is forced to the right in Fig. 1 to close the shutter, and at the same time the air in front of said piston is permitted to exhaust through pipe 16, valve 14 and its exhaust 18. It is not necessary to enter into a detailed description of the valve 14 because it may be of any familiar construction.

Each shutter is preferably provided with operating means so that it can be opened and closed independently of the other shutters and it is my object to actuate the said operating means by the locomotive. Thus, as a locomotive enters a train shed the shutters will be automatically and successively opened and closed as the locomotive travels beneath the shed, each shutter remaining open while the stack of the locomotive remains thereunder and automatically closing thereafter, so that only a sufficient length of the opening 7 will be uncovered to allow the escape of all the smoke and gases discharged from the locomotive. The arrangement may be such that one shutter will close as the next adjoining shutter opens, so that only one shutter will be opened at a time, or, the first shutter may be allowed to remain open for a given length of time after the second shutter is opened, and various other arrangements may be made for the opening of the shutters by properly locating and constructing the operating means to meet various conditions and requirements.

Various means may be applied for operating the air valve 14 to produce the results heretofore mentioned but I prefer to operate this valve, as before stated, by the locomotive and this can be done electrically in the manner shown in Fig. 2. Referring to this figure, 19 are the dynamo or battery line wires which are connected by wires 20 to the shutter opening circuit wires 21 and by wires 22 to the shutter closing circuit wires 23. The wires 21 are connected to contacts 21' and the wires 23 are connected to contacts 23', these contacts being located adjacent to

the rail 5 to be operated by a shoe or other circuit closing device 3 on the locomotive. The contacts may be otherwise located to be operated by a circuit closing device carried in any suitable position by the locomotive. The shutter opening and closing circuit wires for each shutter are connected to a circuit shifter which, in the form shown, is in the nature of a plate 24 mounted to swing on a shaft 24' alternately against the contact plates 25, 25' (Fig. 1). Magnets 26, 26' are mounted on said contact plates and a crank arm 14' which operates the valve is arranged to swing between said magnets. A chain 27 travels on sprocket wheels 28 on the shafts 10 and 24' to swing the shifter as the shutter is swung to open or closed position. I preferably provide a hood 29 at the bottom of the opening 7 to better insure the discharge of the smoke and gases into the channel from a locomotive stack 30.

When the circuit closer on a locomotive makes contact with both contact points 21' the shutter opening circuit will be closed and thereupon, as shifter 24 is in engagement with contact plate 25, the magnet 26 will be energized and will attract the crank arm 14', thereby turning valve 14 to admit air through pipe 16 to the cylinder in front of the piston 12, at the same time opening communication between the pipe 17 and the exhaust 18. The piston will be moved to the left in Fig. 1 to swing the counter-balanced frames 9 and open the shutter 8. As the shaft 10 turns the chain 27 will turn shaft 24' and swing shifter 24 into engagement with contact plate 25'. The locomotive continues its travel, discharging its smoke through the opening 7 where it is uncovered by the open shutter 8 until the shutter opening circuit of the next shutter is closed to open said shutter in a similar manner. The first shutter will remain open until the circuit closer engages both of the contacts 23' of its shutter closing circuit and then, the shifter 24 being in engagement with the contact plate 25', the magnet 26' will be energized to attract the crank arm 14' and turn the valve to admit air through the pipe 17 to the cylinder behind the piston and at the same time open communication between the pipe 16 and the exhaust 18. The piston is then forced to the right in Fig. 1 to close the shutter and at the same time the shifter is swung into contact with the plate 25. Thus, each shutter is opened by the time the stack arrives thereunder and the preceding shutter is closed immediately or within a suitable time after the stack passes from under it. This provides for uncovering the escape opening in the shed only to the extent required and for the period of time necessary to allow for the escape of all the smoke and gases discharged by the locomotive, and of course the period of time during

which the shutter remains open, in this embodiment of the invention, will depend upon the speed of travel of the locomotive. Instead of providing separate sets of opening and closing contacts for each shutter it will obviously appear that the opening circuit wires of one shutter and the closing circuit wires of the next adjacent shutter or another shutter may be connected to a single pair of contacts.

In Fig. 3 I have shown the invention embodied in a construction which comprises a plurality of thermostats of suitable character located in or beneath the opening 7 to be acted upon by the hot gases discharged from the locomotive stack. The shutter opening thermostats 31 and the shutter closing thermostats 32 may be connected in any suitable manner to a valve 33 for admitting and exhausting air from an air cylinder 34 (like or substantially like the cylinder 13) to operate the shutters in the manner heretofore described. When the stack of a locomotive passes under the thermostat 31 the shutter connected with said thermostat will be opened and later on this shutter will be closed when the stack passes under the thermostat 32 connected to said shutter.

My invention provides for the immediate escape of smoke and gases discharged from a locomotive through an escape opening which is automatically uncovered one section at a time as required throughout the travel of the locomotive and the shutter operating means is controlled by the locomotive. The invention is simple in character and forms a complete and effectual barrier to the admission of snow and rain except as each shutter is opened. This uncovering of the opening is of relatively little importance as regards the admission of snow and rain. My invention also prevents the wind from blowing smoke and dirt into the train shed through the smoke and gas escape opening in the roof and in other respects makes the train shed more comfortable to passengers and trainmen.

In the two embodiments of the invention herein described I have provided for the closing of one shutter when the next adjacent shutter is opened but it will be apparent that by simply changing the connections provision may be made for keeping one shutter open until the second or a subsequent shutter in front of it is opened. While the invention is preferably embodied in a plurality of shutters covering an opening extending throughout the length of the train shed above the track it may be embodied in a single shutter, especially where it is only desired to provide for such an escape of smoke and gas from a locomotive while the latter is stationary.

I have heretofore described the invention as embodied in a simple form wherein the shutters open and close successively as the

locomotive travels in one direction only, and it is desirable to provide for operating the shutters when the locomotive is traveling in either direction. This may be accomplished by simply providing additional opening and closing circuits, as illustrated in Fig. 2, and by also providing additional thermostats as illustrated in Fig. 3. In these two figures the solid lines and arrows indicate the operative circuits when the locomotive is traveling in one direction and the broken lines and arrows indicate the operative circuits when the locomotive is traveling in the other direction.

Referring to Fig. 2, 35 designates the wires of an opening circuit for one shutter which are connected to contacts 35' and to the wires 21 of the other opening circuit for that shutter, and 36 designates the wires of a closing circuit for one shutter which are connected to contacts 36' and to the wires 23 of the other closing circuit for that shutter. It will be readily understood that when the locomotive is traveling in one direction, (from right to left Fig. 2) the circuits 21 and 23 will be successively closed to open and close the shutters and that when the locomotive is traveling in the opposite direction (from left to right Fig. 2) the opening and closing circuits 35 and 36 will be successively closed to open and close the shutters.

In Fig. 3 I have shown additional shutter opening thermostats 37 and shutter closing thermostats 38 which will be operated in the same manner as the opening and closing thermostats 31 and 32 are operated.

What I claim and desire to secure by Letters Patent is:

1. The combination with a roof having an opening therein to permit the escape of smoke and gases discharged from a locomotive thereunder, of a shutter covering said opening, and means automatically actuated by the locomotive for opening said shutter.

2. The combination with a roof having an opening therein to permit the escape of smoke and gases discharged from a locomotive thereunder, of a shutter covering said opening, and means automatically actuated by the locomotive for opening and closing said shutter.

3. The combination with a roof having an opening therein to permit the escape of smoke and gases discharged from a locomotive traveling thereunder, of a plurality of shutters covering said opening, and means automatically actuated by the locomotive for opening said shutters as the locomotive travels.

4. The combination with a roof having an opening therein to permit the escape of smoke and gases discharged from a locomotive traveling thereunder, of a plurality of shutters covering said opening, and means

automatically actuated by the locomotive for opening and closing said shutters as the locomotive travels.

5 5. The combination with a roof having an opening therein to permit the escape of smoke and gases discharged from a locomotive traveling thereunder, of a plurality of shutters covering said opening, and means controlled by the locomotive for opening
10 said shutters automatically and successively as the locomotive travels.

6. The combination with a roof having an opening therein to permit the escape of smoke and gases discharged from a locomotive traveling thereunder, of a plurality of shutters covering said opening, and means controlled by the locomotive for opening
15 and closing said shutters automatically and successively as the locomotive travels.

20 7. The combination with a roof having an opening therein to permit the escape of smoke and gases discharged from a locomotive thereunder, of a shutter covering said opening, fluid pressure means connected to
25 said shutter, and means controlled by the locomotive for operating said fluid pressure means to open and close said shutter.

8. The combination with a roof having an opening therein to permit the escape of smoke and gases discharged from a locomotive thereunder, of a shutter covering said opening, fluid pressure means connected to
30 said shutter, electrical means comprising opening and closing circuits for operating said fluid pressure means, contacts in said circuits, and a circuit closer carried by the
35 locomotive.

9. The combination with a roof having an opening therein to permit the escape of smoke and gases discharged from a locomotive thereunder, of a shutter, fluid pressure means for operating said shutter, electrical means and comprising a shifter, and means
40 for operating said shifter synchronously with the operation of the shutter.

10. The combination with a roof having an opening therein to permit the escape of smoke and gases discharged from a locomotive thereunder, of a shutter, fluid pressure means connected to said shutter and comprising a valve, an arm for operating said valve, magnets for operating said arm, a shifter to carry the current to one or the
50 other of said magnets, electric opening and closing circuits connected to said shifter, means for closing said circuits, and means for operating said shifter.

11. The combination with a roof having
60 an opening therein to permit the escape of smoke and gases discharged from a locomotive

traveling thereunder, of a plurality of shutters arranged end to end and covering said opening, frames pivotally mounted on the roof and carrying said shutters, and
65 means for swinging said frames to open and close said shutters automatically and successively as the locomotive travels.

12. The combination with a roof having an opening therein to permit the escape of smoke and gases discharged from a locomotive traveling thereunder, of a plurality of shutters covering said opening, and means automatically actuated by the locomotive traveling in either direction for opening said
70 shutters as the locomotive travels.

13. The combination with a roof having an opening therein to permit the escape of smoke and gases discharged from a locomotive traveling thereunder, of a plurality of shutters covering said opening, and means automatically actuated by the locomotive traveling in either direction for opening and closing said shutters as the locomotive travels.
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14. The combination with a roof having an opening therein to permit the escape of smoke and gases discharged from a locomotive thereunder, of a shutter covering said opening, and means automatically actuated
90 by the locomotive as it approaches from either direction a position beneath said shutter for opening the shutter.

15. The combination with a roof having an opening therein to permit the escape of smoke and gases discharged from a locomotive traveling thereunder, of a plurality of shutters covering said opening, and means successively for opening and closing said shutters, said means comprising two opening and two closing electric circuits for each shutter arranged in pairs and oppositely disposed.
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16. The combination with a roof having an opening therein to permit the escape of smoke and gases discharged from a locomotive traveling thereunder, of a plurality of shutters covering said opening, and means for automatically and successively opening said shutters as the locomotive travels.
105

17. The combination with a roof having an opening therein to permit the escape of smoke and gases discharged from a locomotive traveling thereunder, of a plurality of shutters covering said opening, and means
110 for automatically and successively opening and closing said shutters as the locomotive travels.

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