

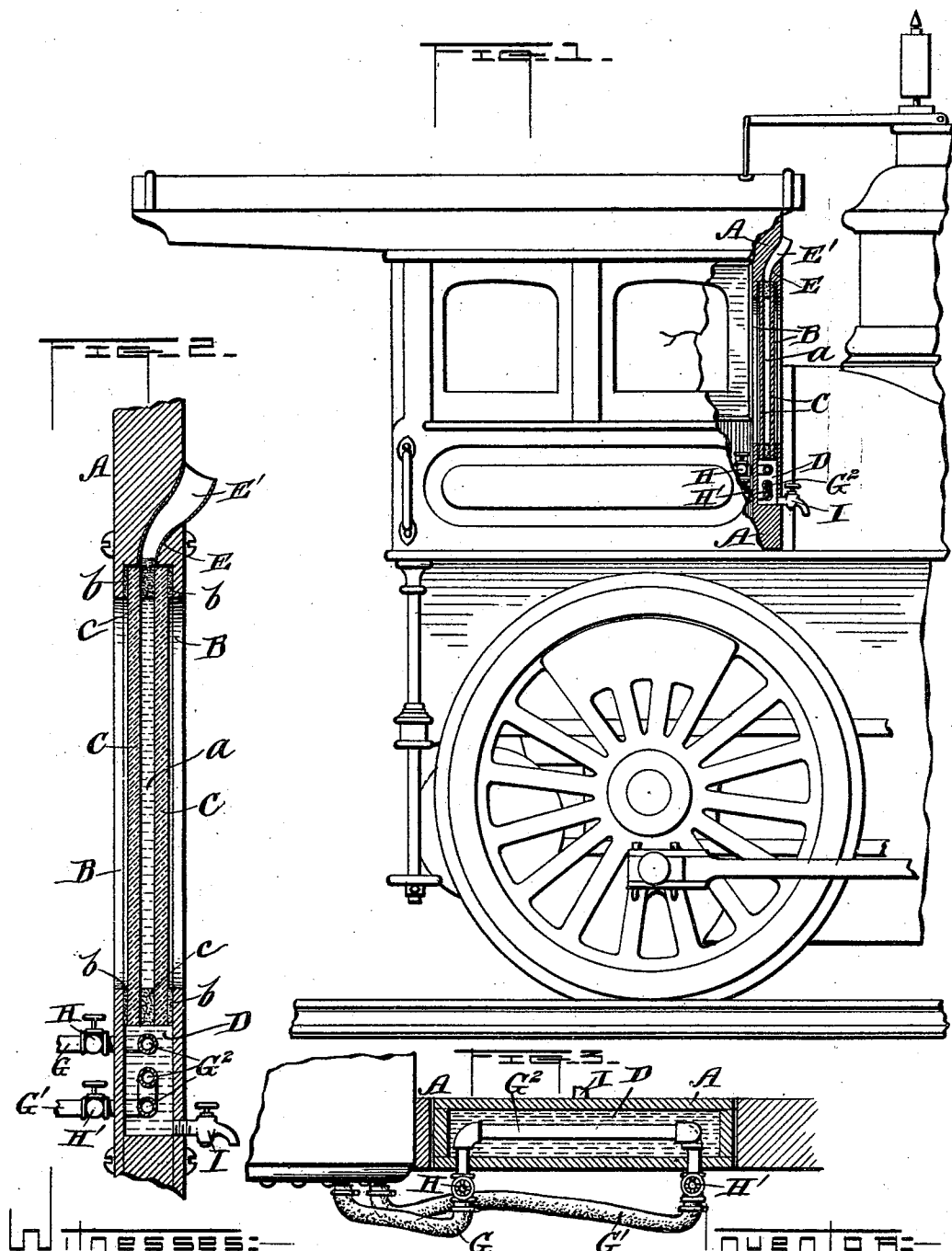
(No Model.)

2 Sheets—Sheet 1.

H. W. TINKER.
LOCOMOTIVE CAB WINDOW OR DOOR.

No. 516,244.

Patented Mar. 13, 1894.



Witness:
J. C. Calvert
J. C. Calvert

Witness:
H. W. Tinker
by his Attorneys
Mason, Fenwick & Lawrence

(No Model.)

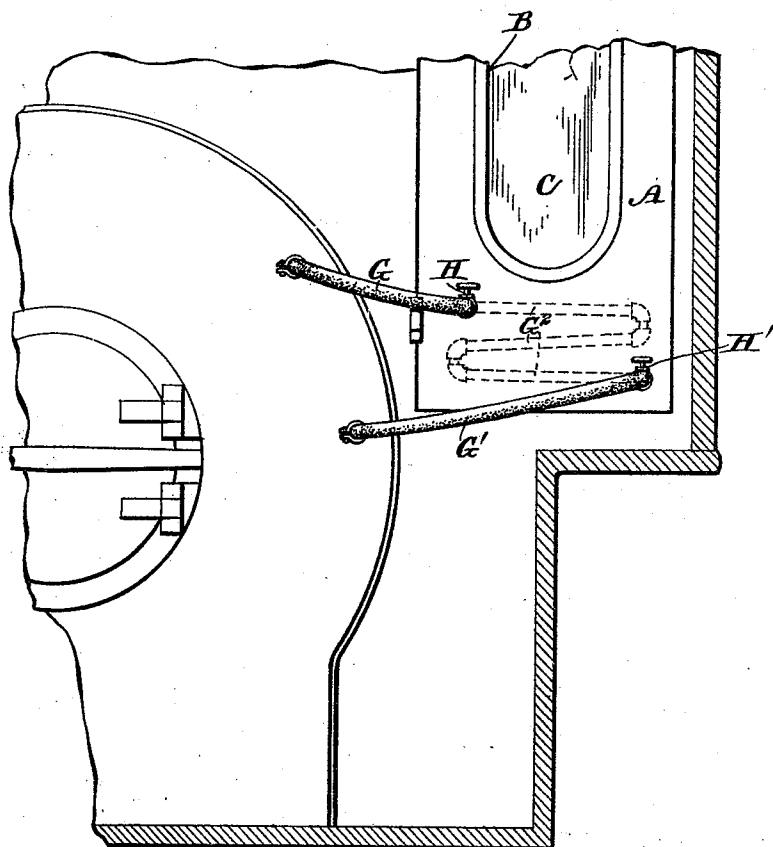
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Fig. 4.



Witnesses
Everance
Joseph W. Buell

Inventor
Hollis W. Tinker
by his Attys
Wm. F. Lawrence
Attorney

UNITED STATES PATENT OFFICE.

HOLLIS W. TINKER, OF NASHUA, NEW HAMPSHIRE, ASSIGNOR OF ONE-HALF
TO FRED W. TINKER, OF SPRINGFIELD, MASSACHUSETTS.

LOCOMOTIVE-CAB WINDOW OR DOOR.

SPECIFICATION forming part of Letters Patent No. 516,244, dated March 13, 1894.

Application filed October 3, 1892. Serial No. 447,717. (No model.)

To all whom it may concern:

Be it known that I, HOLLIS W. TINKER, a citizen of the United States, residing at Nashua, in the county of Hillsborough and State of New Hampshire, have invented certain new and useful Improvements in Locomotive-Cab Windows or Doors; 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.

My invention relates to lookout windows or doors of locomotive cabs and other structures, and its object is, by the application, in a novel manner, of a circulating heating fluid or vapor, to a fluid or vapor within a fluid tight chamber between and below the panes or plates of glass of such windows or doors, to keep the panes or plates free from snow, ice or sleet, by melting away the same in a more effective and desirable manner than heretofore has been accomplished; and by so doing avoid all inconvenience and danger from the engineer's view being shut off or intercepted by a clouding mass on the glass panes.

My invention consists in a double glazed window or door for a locomotive cab, pilot house or other analogous structure, provided with a tightly packed chamber or space between and below the glass panes, the upper and lower portions of said chamber being in communication, and said chamber or space being heated by circulating either hot water or hot air through a pipe or coil arranged in the space or chamber below the panes and connected by its ends with a source of supply, on the same principle that similar heating agents are circulated and used in buildings and other places for various purposes; or said chamber or space being heated by water or other fluid placed in it and brought to the proper temperature by a gasoline burner or other analogous device.

My invention also consists in certain novel features of construction whereby a double glazed window with a water tight chamber or space between its panes and below the same, is secured; also whereby water to be heated may be introduced into the chamber and passed down between the panes of glass into

the lower portion of the chamber or space, and also whereby soiled water may be drawn off.

In the accompanying drawings, Figure 1 is a side elevation and partial section of a locomotive having its lookout window constructed in accordance with my invention. Fig. 2 is a vertical central section of the lookout window and a portion of the cab on an enlarged scale. Fig. 3 is a horizontal section of the improved window or door illustrating the connection of the same with the boiler. Fig. 4, is an end view of the boiler and water heating and circulation pipes, and a vertical section of the cab, looking toward the door or window.

A in the drawings represents the framework of the window or door, and a portion of the cab; and B the opening in which the panes of glass are fitted. Below the panes of glass C, a perfectly fluid tight chamber or space D is constructed, and above the panes a passage E is extended diagonally to the outside of the cab. The panes of glass are set opposite to each other with a space *a* between them, and they are so packed as to be fluid or perfectly vapor tight, and they are held apart and kept from cracking under changes of temperature by rubber or other suitable packing strips *b* and *c*. The space between the panes of glass is in communication vertically with the chamber or space below them, and also with the passage E. Leading from a boiler or other source of supply of hot fluid as water or of vapor are circulating pipes G, G' which preferably, terminate in a heating coil G², which occupies a place in the space or chamber D. These pipes are provided with cocks H H', while at the bottom of the chamber or space D, a soiled water draw off cock I is provided, and in the passage B a funnel-shaped mouth piece E' is inserted, and through the same water is supplied. The pipes G G' of the coil G² are shown connected with a steam boiler, but they may be connected with a hot air supplying apparatus, or with a hot water supplying reservoir in a proper manner to insure circulation from and back to the same. When the window or door is arranged to swing open on hinges, the connecting pipes between the boiler and the chamber, or space D, may be flexible; but when the window is

fixed, or not arranged to swing on hinges, these connecting pipes may be stiff. Hot water may be taken directly from the boiler below the water line; or water to directly heat the panes of glass may be introduced at the funnel mouth E' into the space *a*, and therefrom into the chamber D; or the water supplied at E E' may be heated by radiation from either hot air, or steam heated coils in said chamber; or by a gasoline burner arranged beneath the metal bottom of the chamber or space D. If a gasoline burner or similar heater is adopted for heating the fluid in the chamber D, the pipes G G' and coil G² will of course be omitted, and the said burner or heater will be applied beneath and in proper relation to the said chamber or space D. There may be more than one thickness of glass on each side of the space *a* if desired, but in all cases the steam, hot water, or other fluid, or hot air, will not be under objectionable pressure; and, preferably, not under any pressure; and the pipes will be arranged to insure circulation of the heating agent through the coils, and thus constantly have a highly heated fluid giving off its heat through the metal of the coil to the water or other fluid or vapors surrounding it. The invention herein described differs from that type of heater which simply flows steam through a heating pipe in an air space between glass panes which are not packed air or fluid tight, and which pipe wastes the steam in the atmosphere or discharges water of condensation in a waste tank.

My invention is applicable to other structures than locomotive cabs where it is desired to keep the glass transparent, or free from snow and ice, or sleet, by melting such substances and having the same flow away in the form of water. The greatest utility of my invention, however, lies in its application to locomotive cabs and pilot houses, as it, in times of driving storms, is of great importance, the engineer or pilot, through its agency, always having a clear view through the window or door, and can see obstructions on the track or water and govern his engine or boat so as to avoid accidents and destruction to life and property.

The invention herein described is not confined to having a large chamber below the space *a*, as the heating coil of the pipes arranged in a space similar to space *a*, below the panes, could be carried directly up and down in the said space *a*, and effect the heating of the panes of glass; under such construction it has been found that a very small

diameter of pipe for the coil, say one-eighth of an inch, may be placed on the bottom of the said similar sized space below the panes—or which is but an extension of said space; the coil space and the space in which the hot water, vapor thereof, or other similar heated agent for dissolving the snow, ice or sleet on the panes circulates, being of equal width throughout.

What I claim as my invention is—

1. A locomotive cab or other analogous structure having windows or doors provided with glass panes in duplicate and set apart, an upper and lower hermetically sealed chamber, a heating coil in one of the chambers, and circulating pipes connecting the coil with a boiler or other structure which supplies the heating agent to the coil, substantially as described.

2. The combination of the double glazed locomotive window or door, the fluid or vapor tight heating chamber D, circulation space *a*, coil G², having pipes G, G' whose ends connect with a boiler, substantially as described.

3. The combination of the double glazed window or door, heating chamber D, space *a*, passage E, and draw-off water cock I, and means for heating water within the chamber, substantially as described.

4. The combination with a window or door frame, of the spaced panes of glass, suitable packing strips *b* and *c*, applied so as to prevent the escape of fluid or other analogous agent, and the heating space or chamber D connecting with space *a*, substantially as described.

5. A locomotive cab having its windows or doors provided with glass panes in duplicate and set apart, with a space between the panes for a circulating heating medium, a coil connecting with a source of fluid or vapor supply as for instance a boiler, for heating said medium, and a heating chamber, substantially as described.

6. The combination of the double glazed window or door having a fluid tight chamber or space between and below the glass panes, for containing a fluid or other analogous agent to be heated, means for heating said fluid or vapor in the chamber or space D, a passage E, and a draw-off cock I, substantially as described.

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

HOLLIS W. TINKER.

Witnesses:

R. T. SMITH,
S. J. M. SMITH.