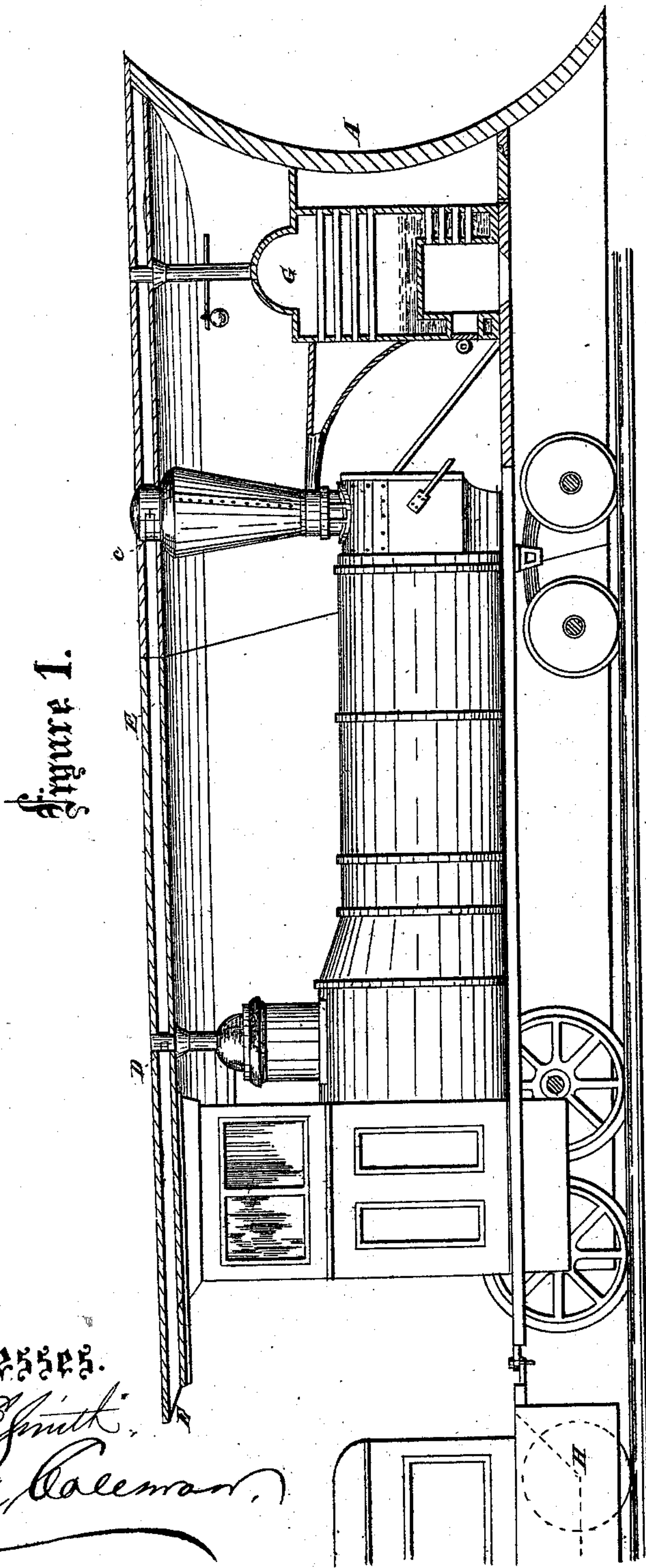


R. A. SHINN.  
Snow-Plows.

No. 146,785.

Patented Jan. 27, 1874.



Witnesses.  
*Sydney Smith*  
*Harry Coleman*

Inventor.  
*Riley A Shinn*  
by Attorney  
*W. Morris Smith*



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Figure 2.

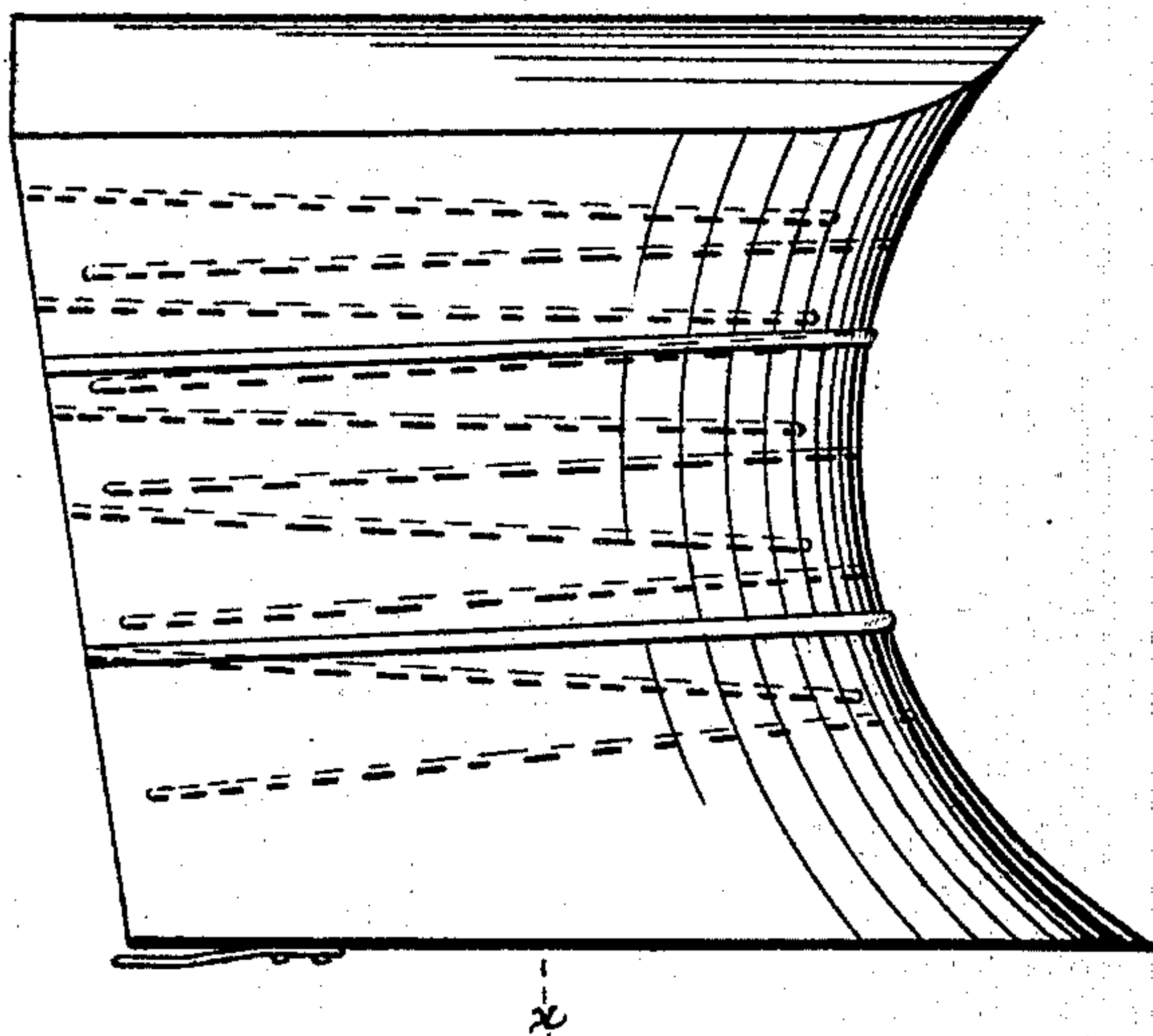
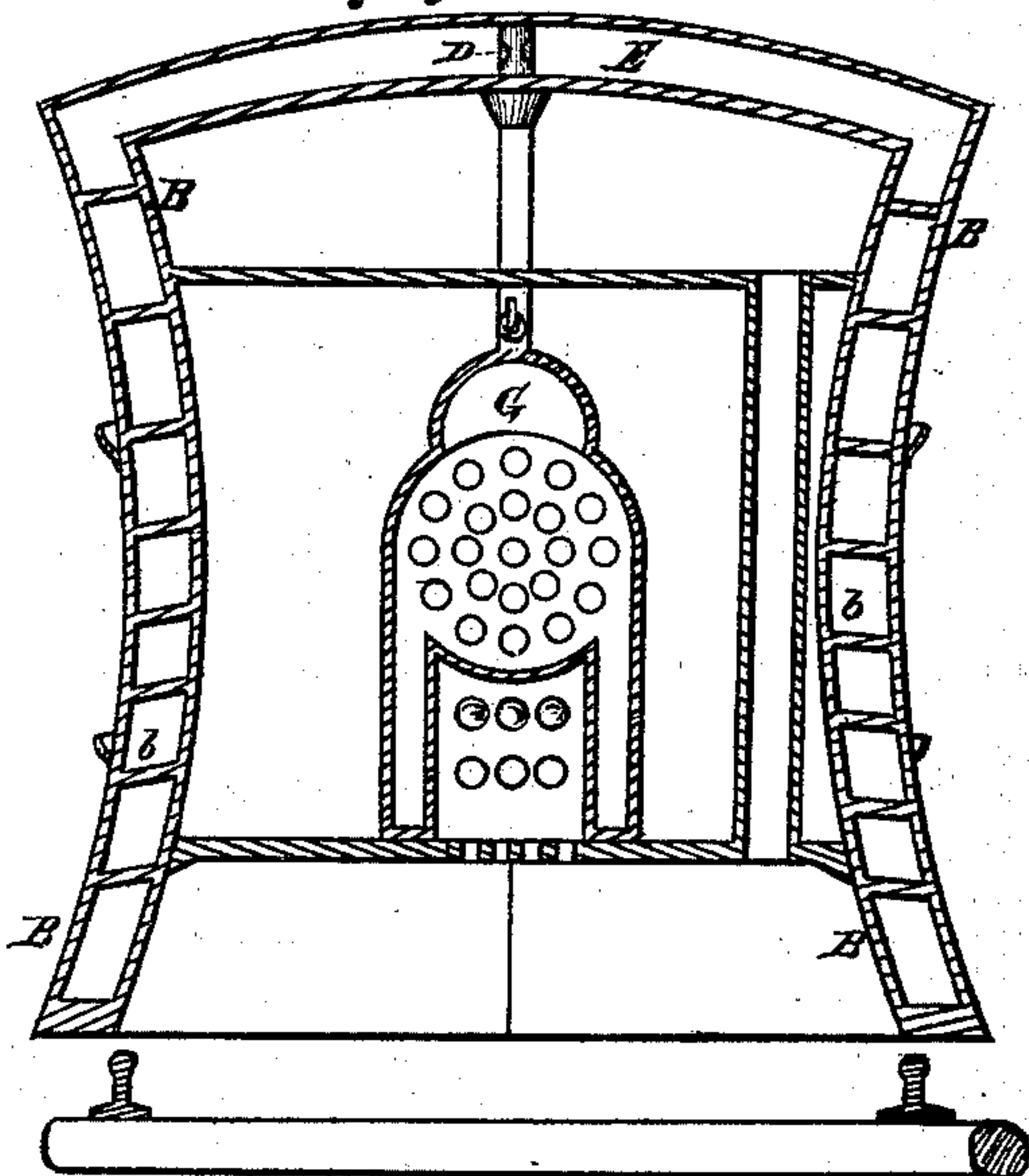


Figure 3.



Witnesses:

*Jedney C. Smith.*  
*Wm. B. Anderson*

Inventor.

*Riley A. Shinn*  
*by Attorney*  
*W. Morris Smith.*



# UNITED STATES PATENT OFFICE.

RILEY A. SHINN, OF GEORGETOWN, DISTRICT OF COLUMBIA.

## IMPROVEMENT IN SNOW-PLOWS.

Specification forming part of Letters Patent No. **146,785**, dated January 27, 1874; application filed February 17, 1873.

*To all whom it may concern:*

Be it known that I, RILEY A. SHINN, of Georgetown, in the county of Washington and District of Columbia, have invented a new and useful Improvement in Removing Snow-Drifts on Railways, of which the following is a specification:

This invention consists of a ram for application to a locomotive, so constructed as to utilize the exhaust steam from the engines and escaping caloric from the furnace, for the purpose of tunneling snow-drifts, in such manner that should the drift be even deeper than the height of the locomotive, the passage formed by it would freely admit any other part of the train.

I will now describe its construction and operation by reference to the drawings, in which—

Figure 1 represents a side elevation of a locomotive-engine with my snow-ram attached. Fig. 2 is a side elevation of the snow-ram, showing the reversely-inclined passages for the delivery of the water of condensation. Fig. 3 is a transverse vertical section taken on the line *xx* on Fig. 2.

Similar letters of reference indicate like parts in the several figures.

The pilot or tunneling attachment A is formed to serve as a fender or cow-catcher under ordinary circumstances, and is so constructed that the exhaust steam from the engines may be caused to circulate within a double casing, B B, forming its outer contour. The caloric from the furnace may also be turned into this attachment, or a separate furnace, and, if need be, a steam-generator may be arranged inside of this pilot; and the steam so applied may be discharged, either in heated vapor or water of condensation, on the line of the tracks, to remove any snow that may not have been displaced, or that may have fallen back thereon. This heated surface, entering a snow-drift, may not only cleave its way, but convert the inner surface of the bore from snow to water, which, from its surroundings and in severe climates, may be immediately congealed and form an icy lining or wall to the tunnel thus formed. The ribs on the outer surface of the plow, being in the form of gutters, serve to conduct a portion of the water resulting from the melting of the snow rearwardly into a suitable receiver, whence it

may be pumped, by any suitable apparatus, into the tender for the supply of the boiler, to at least compensate for the extra amount of evaporation required for melting the snow, when the water-stations on the road are far apart. The apparatus I have devised to accomplish this result consists of the attachment A to a locomotive-engine, constructed, somewhat in the form of a snow-plow, of boiler-iron, having a steam or heating space, *b*, between its inner and outer plates B B. This plow may, if necessary, contain an independent furnace, C, by which the exhaust steam may be superheated, or a steam-generator, D, may be inserted inside of said attachment A; but it is believed that the exhaust steam from the engines of the locomotive and caloric from the furnace, if properly directed and economized, will be all-sufficient. This pilot or tunneling plow I propose to construct of dimensions equal in height to that of the smoke-stack of the locomotive, and in its greatest breadth to that of any car that has to follow in its wake. This attachment extending to the level of the top of the smoke-stack, the draft of the furnace in tunneling deep drifts would be stopped by the snow-arch above the stack. To obviate this difficulty I construct a flue, E, extending the whole length of the locomotive and discharging at its rear, the smoke-stack being provided with a vent, *c*, in its rear side, opening into said flue E, so that when the top of the stack might be closed by snow above the smoke will pass off through said flue; and in order to increase the draft, I provide for injecting steam into the flue E, as at D. Within the center portion of the plow may be also arranged a heater, G, by which the exhaust steam from the engines may be superheated before entering the space *b* in the double jacket. This space *b* is constructed with a series of inclined planes, as represented in Fig. 2, down which the water of condensation passes, and is finally discharged with the uncondensed steam onto the rails immediately in front of the wheels of the locomotive. In order to protect the running-gear of the train against the possibility of snow falling back on the track, I furnish each car with a fender, H, extending from end to end, and nearly down to the roadway outside of the wheels.

I am aware that heated noses, in the form of



a cow-catcher or fender, have been heretofore used. These, therefore, I do not claim; but

What is here claimed, and desired to be secured by Letters Patent, is—

1. A heated ram, arranged to envelop the entire front end of the locomotive, including the smoke-stack, and constructed for operation substantially as shown and described.

2. The combination of the horizontal flue E with the smoke-stack, steam-escape D, and ram

A, all arranged substantially as and for the purpose specified.

3. The exterior ribs or gutters on the snow-plow, arranged to conduct the water of the melted snow into a suitable receiver for the supply of the tender, substantially as specified.

RILEY A. SHINN.

Witnesses:

SYDNEY E. SMITH,  
W. MORRIS SMITH.