

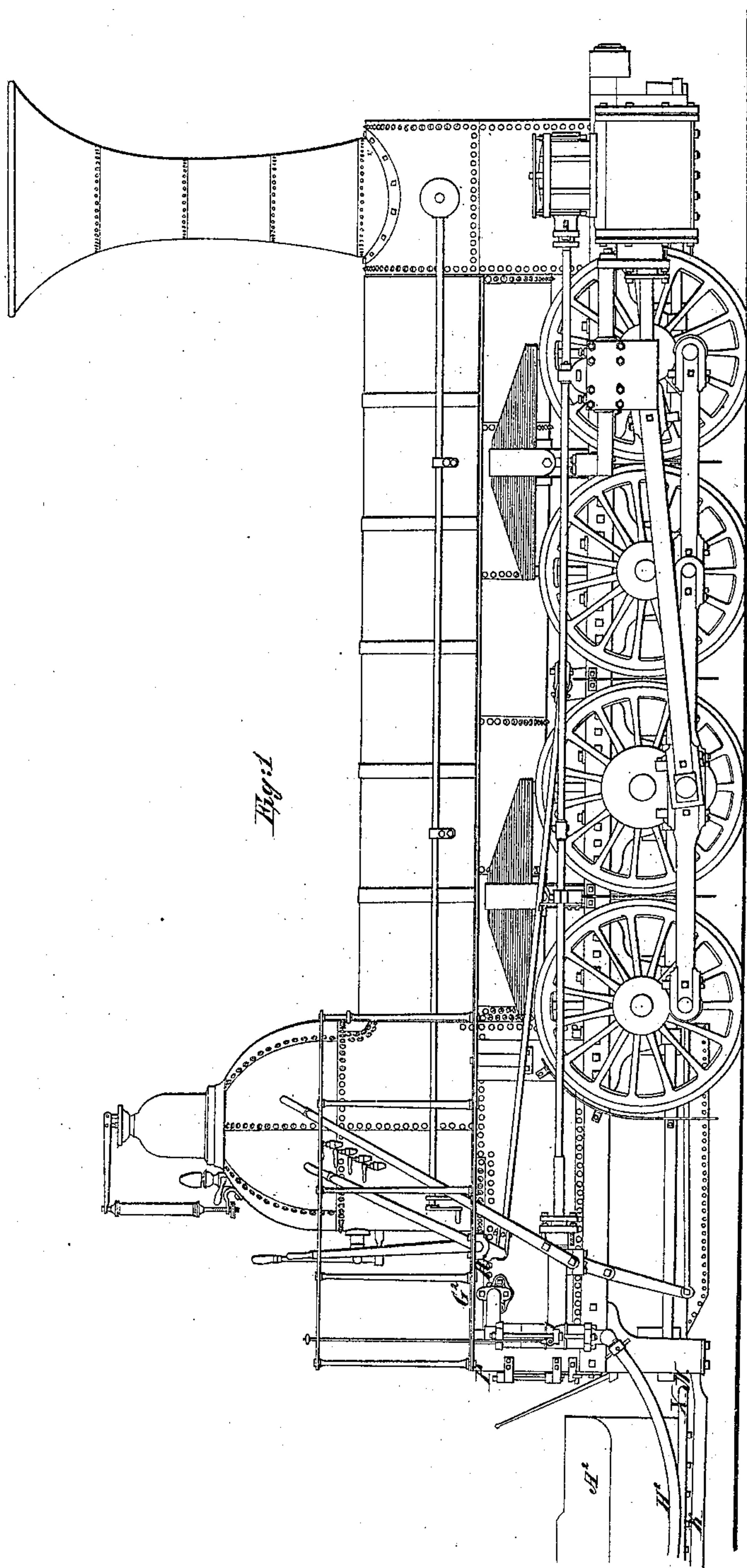
5 Sheets-Sheet 1.

R. Winans,

Locomotive.

No 19,889.

Patented Apr. 6, 1858.



5 Sheets-Sheet 2.

R. Ninans,
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Fig. 2.

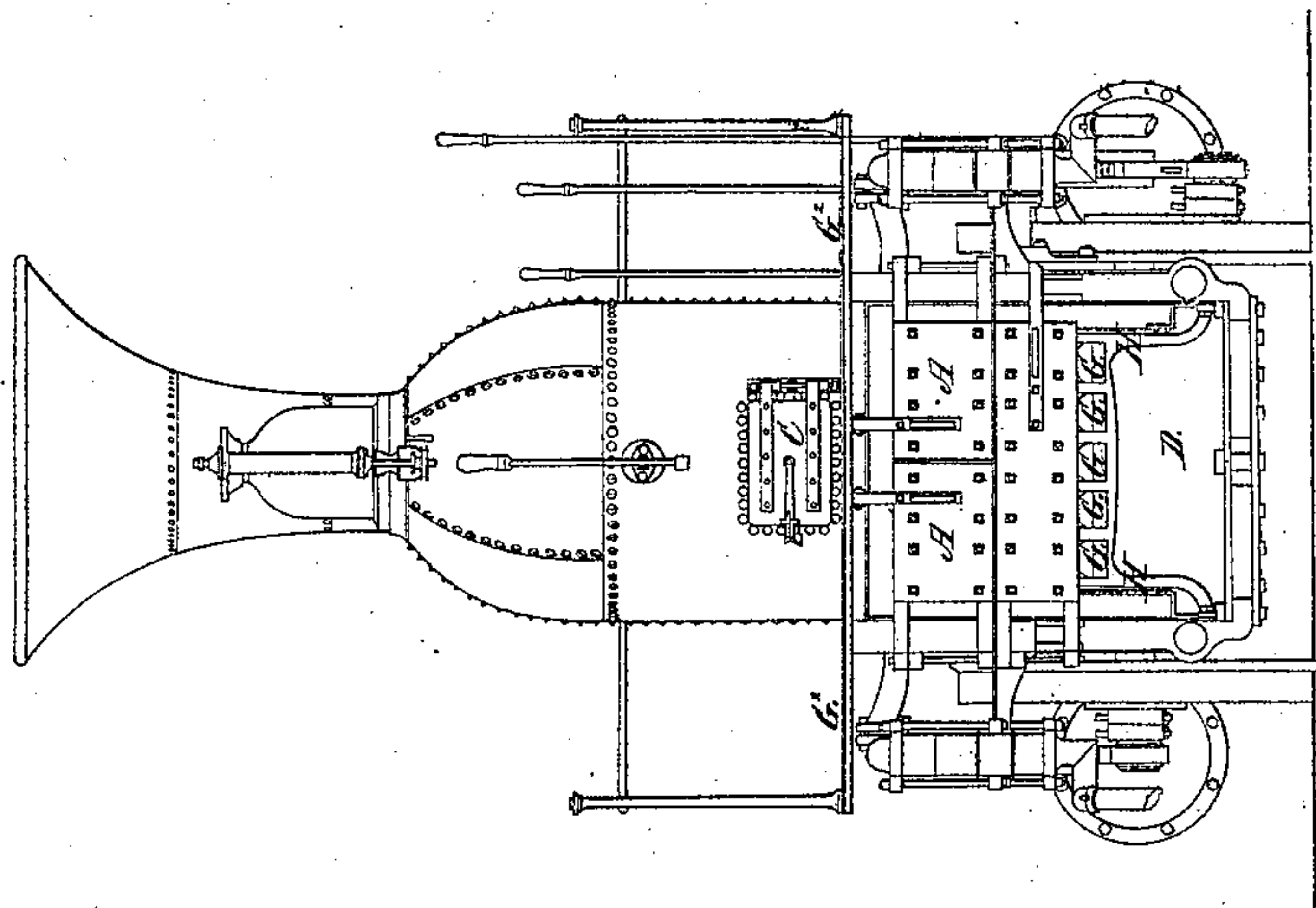
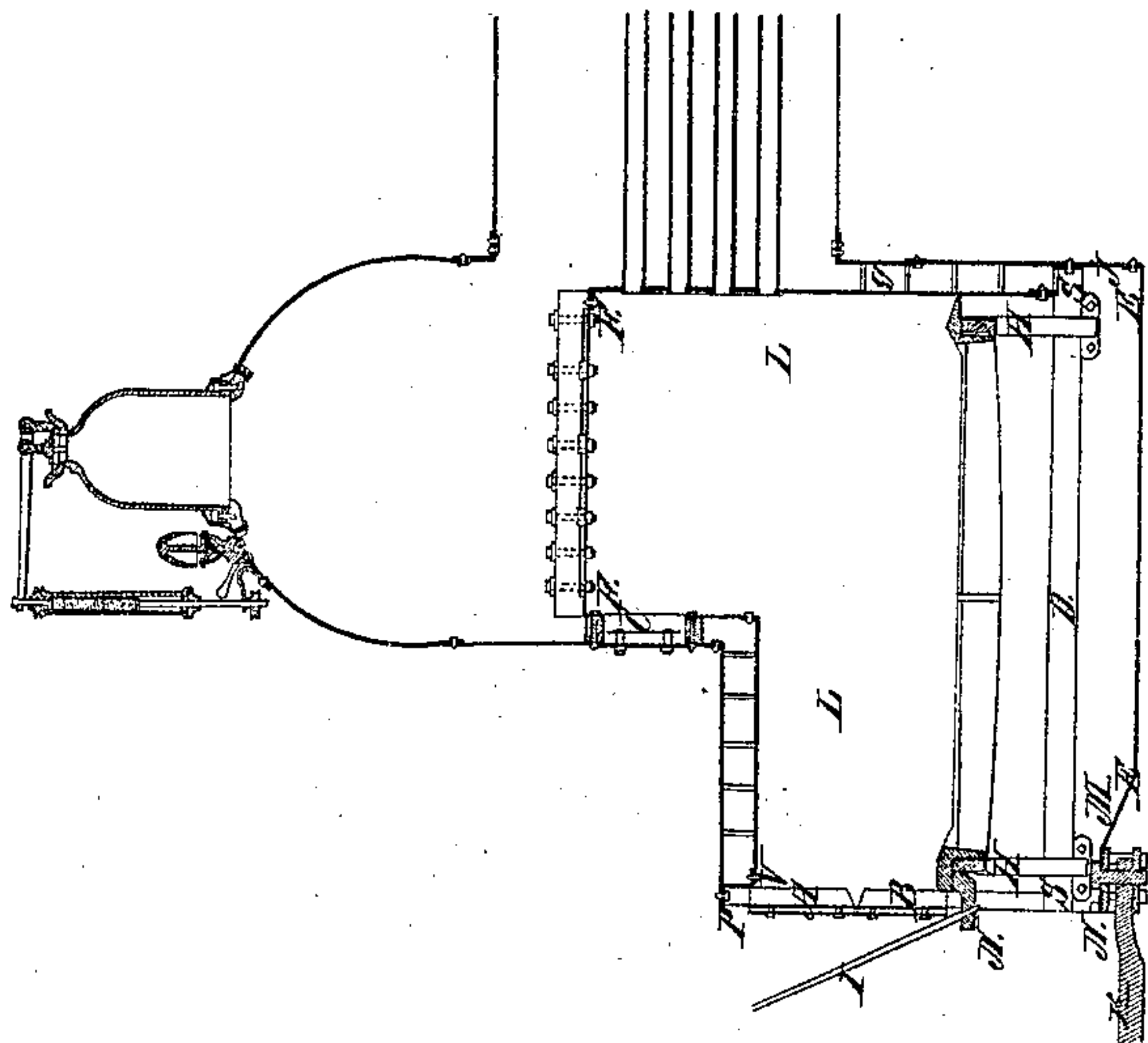


Fig. 3.

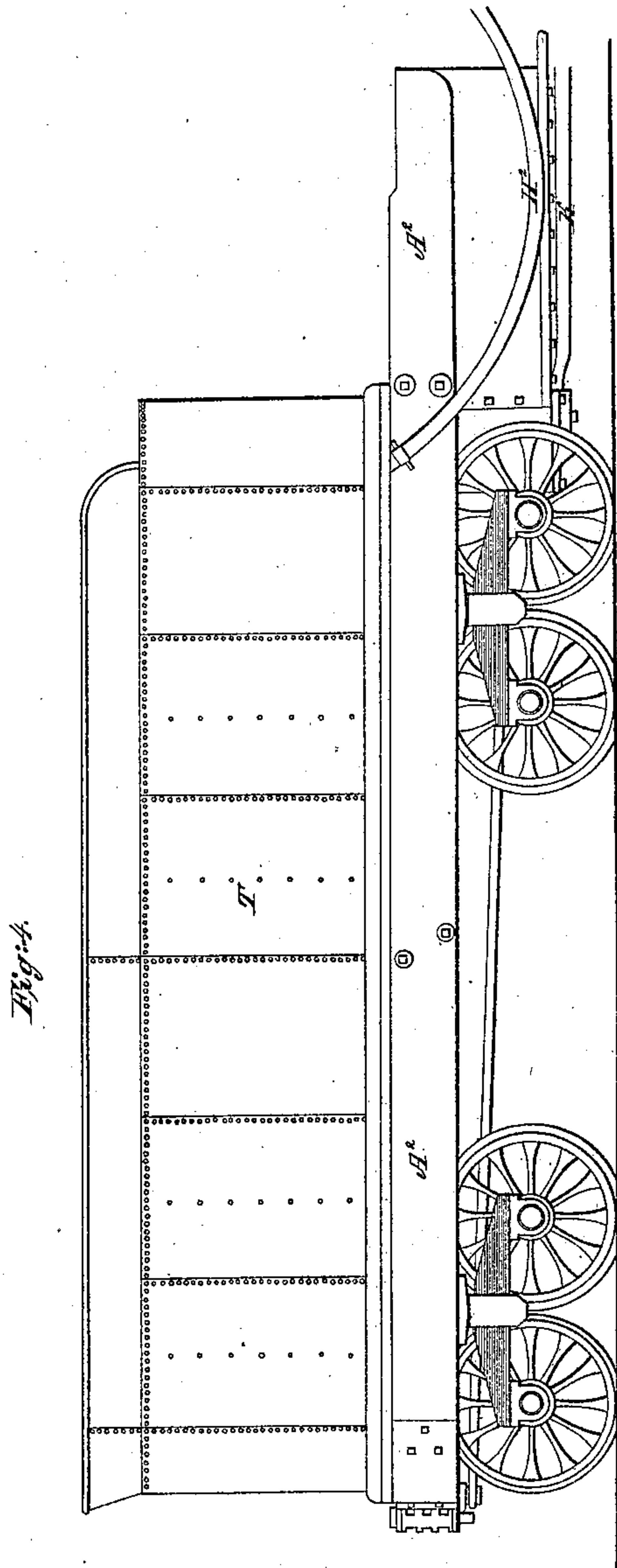


5 Sheets-Sheet 3.

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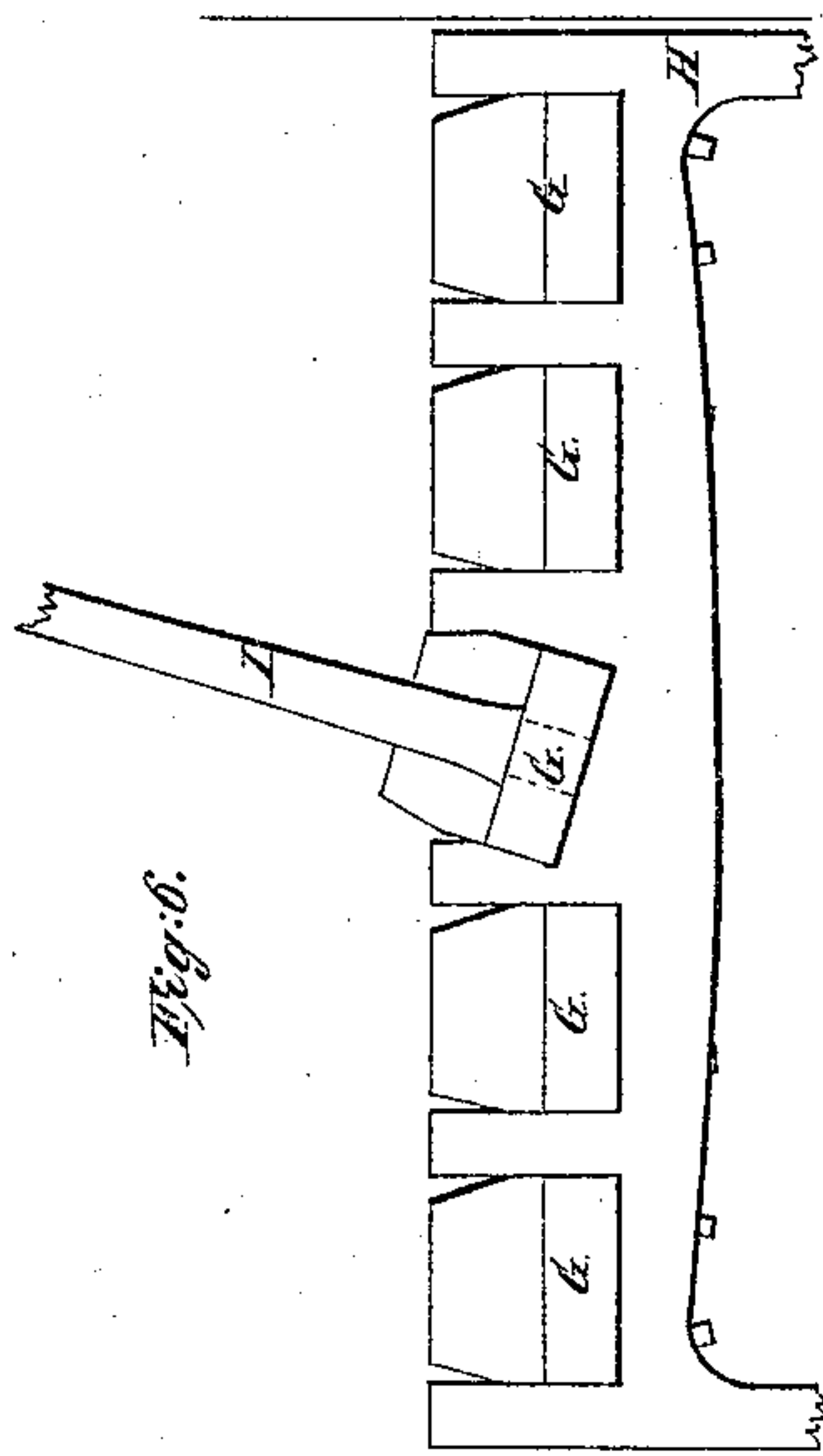
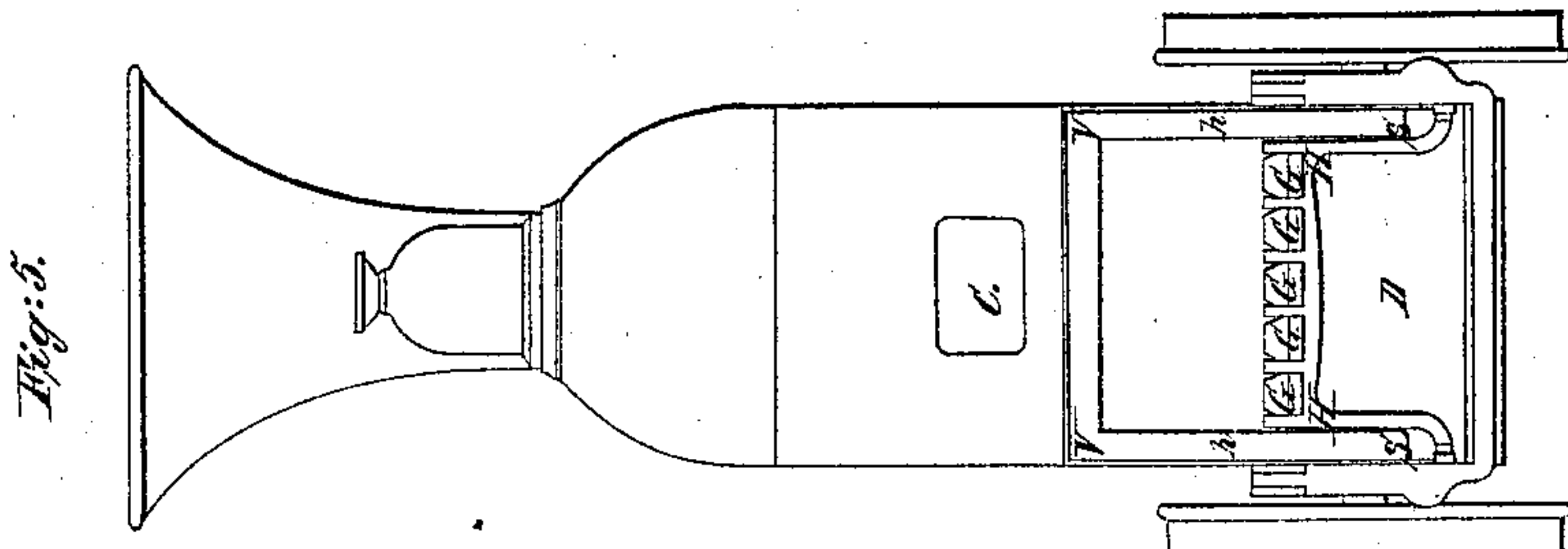
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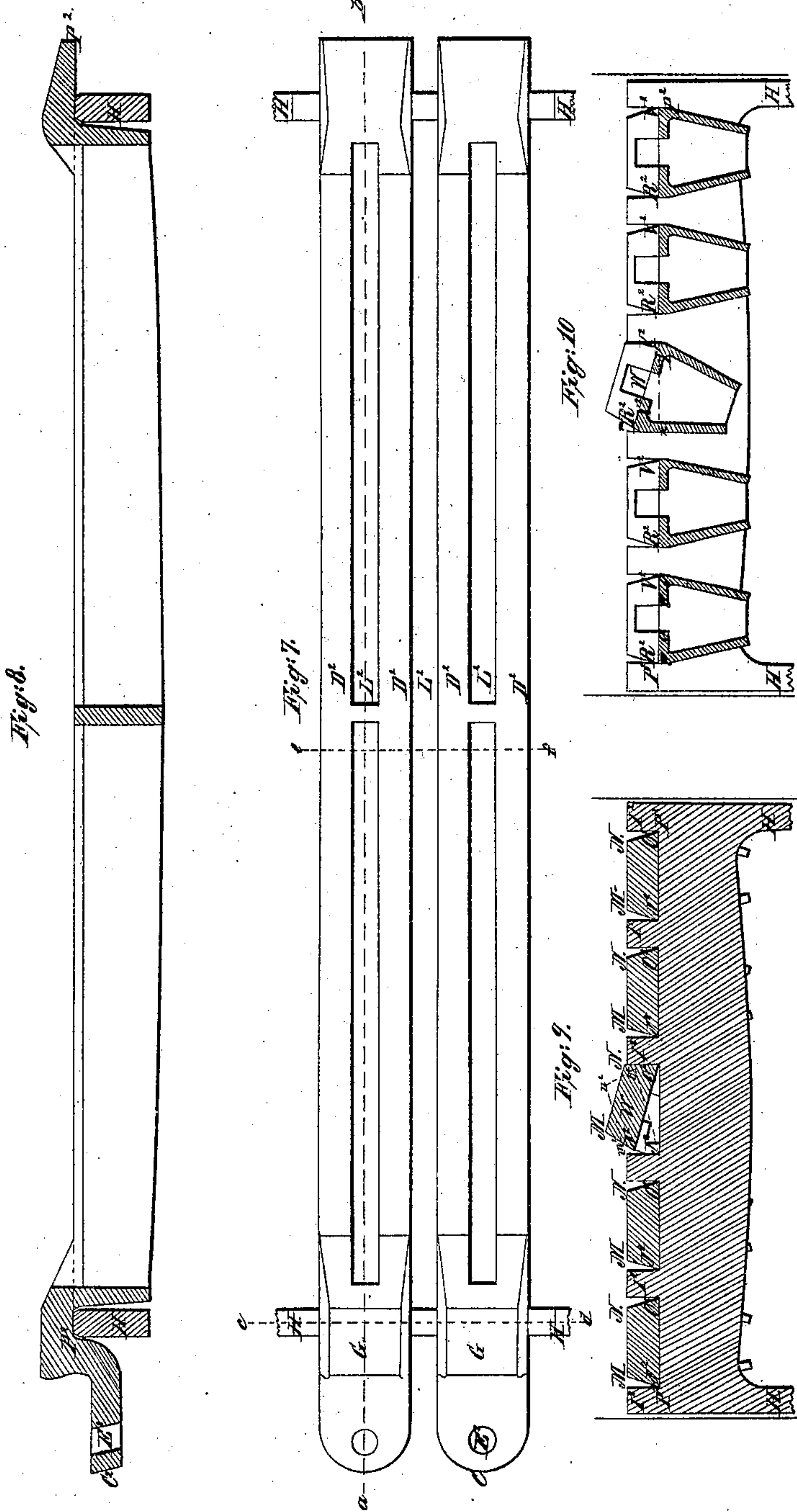
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UNITED STATES PATENT OFFICE.

ROSS WINANS, OF BALTIMORE, MARYLAND.

LOCOMOTIVE-ENGINE.

Specification of Letters Patent No. 19,889, dated April 6, 1858.

To all whom it may concern:

Be it known that I, ROSS WINANS, of the city of Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Locomotive-Engines for Railroads, of which the following is a full, clear, and exact description, reference being had to the drawings, which are hereto annexed, and in which—

Figure 1 represents a side elevation of a locomotive engine with my improvements applied thereto. Fig. 2 represents an elevation of the hinder end of the same. Fig. 3, a vertical longitudinal section of the fire-box of the same, and of the parts connected therewith. Fig. 4, a side elevation of the tender of such a locomotive. Fig. 5, an end view of the fire-box of the locomotive, with the furnace doors removed, and Figs. 6, 7, 8, 9 and 10 represent detached views, upon a large scale, of the grate-bars, and of the means by which they are supported and rocked.

My improvements have reference to locomotive engines in which coal is used as a fuel; and particularly to the fire-box, or that portion of the locomotive in which the fuel is burned. The difficulties which obstruct the successful employment of coal as fuel for locomotives arise principally from two causes, viz: the slowness with which it burns when compared with wood, and the large amount of earthy matter it contains. This earthy matter being melted, in whole or in part, by the excessive heat, forms what is commonly called "clinker" which clogs the grate-bars, obstructs the free passage of air, and, if permitted to accumulate, prevents the fuel from burning. Hence, it becomes necessary to provide some means by which this earthy matter can be readily removed, in order that the fire may be maintained and the supply of steam kept up. My improvements are directed to this; and they consist of means by which the lower surface of the grate-bars can be inspected, so as to observe those points upon which clinker may lodge; and of means to facilitate the dislodgment of such clinker from both the upper and under side of the grate.

In order that the lower side of the grate may be inspected by the fireman, to observe those parts upon which the fire does not burn on account of an accumulation of clinker, I construct the ash pan open at its hinder end instead of at its front end as has

been, hitherto, customary; and, in connection with this mode of construction, I change the arrangement and location of the foot-board upon which the fireman stands. In locomotives heretofore constructed it has been customary to locate the foot-board above the grate and on a level with the platform of the tender, or thereabout; such an arrangement, and location, it is obvious, would not enable the fireman to see beneath the grate-bars, although the ash-pan might be adapted to this purpose; hence, in connection with the improved ash-pan, I have located the foot-board below the level of the grate-bars, and these two elements must be used in combination, in order to obtain the useful result sought after. The low position of the foot-board is also necessary to enable the fireman more easily to work out the clinker at the upper surface of the grate-bars; hence, if the inspection of the lower side of the grate-bars be dispensed with, it is advantageous, in a coal burning locomotive, to use a foot-board lower than the upper surface of the grate, instead of the high foot-board heretofore employed.

My improvements are shown in the accompanying drawings, as applied to a locomotive having eight connected driving wheels. The fire-box L, L, is inclosed at its front end (g) and at its two sides (h h) by a water-space of the usual construction. At its hinder end there is no water-space, this part of the fire-box being fitted with doors (A, A, B) which, when open, expose the whole upper surface of the grate. Beneath the fire-box is the ash-pan D, which in this instance, is formed in part by the prolongation of the water-space of the fire-box beneath the grate, and in part by an iron pan (E E); and it is opened at its hinder end so as to permit a free view of the lower side of the grate. The hinder end of the iron pan has a low ledge raised on the bottom, so that the pan forms a tight but shallow receptacle in which water may be placed to extinguish the cinders, or to furnish vapor to prevent the grate bars from burning. Immediately behind the fire-box is the foot-board K, upon which the fireman stands. In this example it forms part of the tender, being suspended from the side pieces A² thereof, which are prolonged for this purpose. This foot-board is located sufficiently below the level of the grate to enable the fireman upon it, by stooping, to look under

the grate while the engine is running. The low position of the foot-board likewise enables the fireman to rock the grate-bars, conveniently, while he is observing through the fire-doors, the effect he is producing by the operation. The grate is composed, in this instance, of five sections (G) each comprising two grate-bars $D^2 D^2$, separated by an intermediate space (L^2). These sections are supported by two grate bearers (H H).

What I claim as my invention in locomotive engines and desire to secure by Letters Patent is—

1. The combination of a foot-board, located below the usual level of the platform of the tender and the surface of the grate, with a fire-box and grate adapted to the burning of coal as fuel, whereby the interior

of such a fire-box and the grate thereof, can be more readily reached by the fireman, and his duties be performed with greater expedition, convenience, and effect.

2. I also claim the combination of an ash-pan, open at its hinder end, with a foot-board located below the grate and the usual level of the platform of the tender whereby the lower side of the grate, and the space beneath, can be inspected and reached by the fireman while the engine is in motion.

In testimony whereof, I have hereunto subscribed my name.

ROSS WINANS.

In presence of—

F. F. IJAMS,

P. H. WATSON.