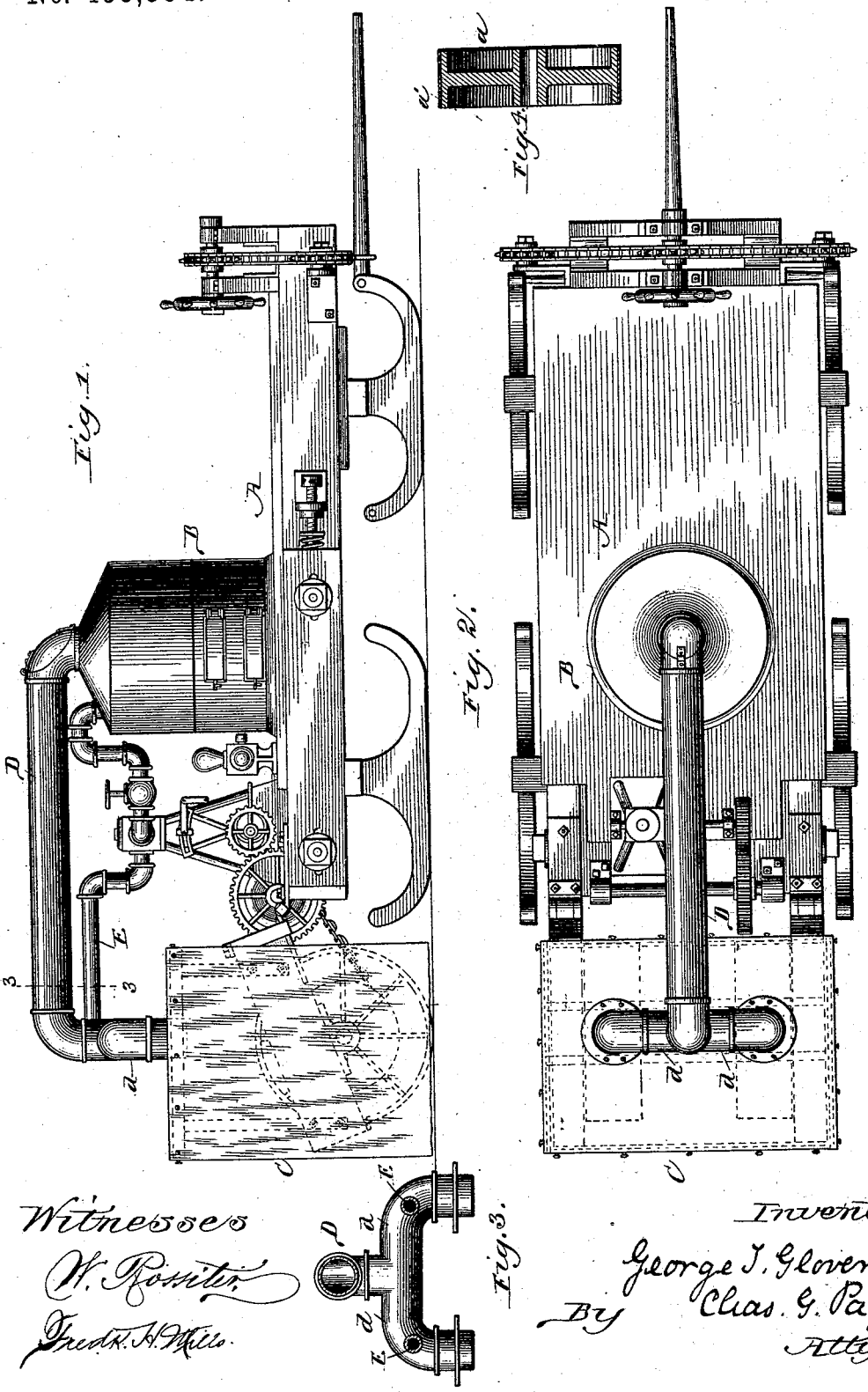
(No Model.) 2 Sheets—Sheet 1.

G. T. GLOVER.

TRACTION ENGINE FOR MAKING ICE ROADS AND HAULING LOGS.

No. 455,394. Patented July 7, 1891.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 5.

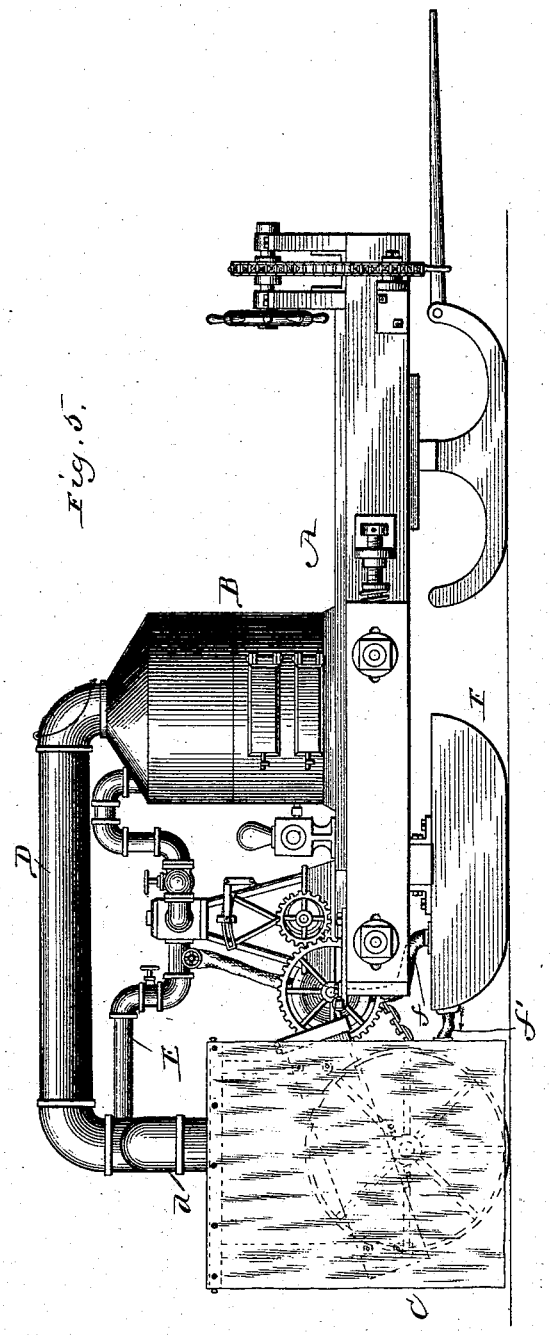
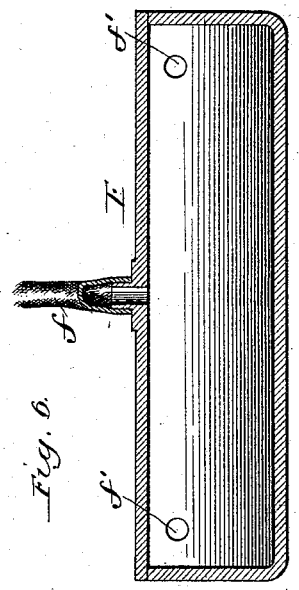


Fig. 6.



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UNITED STATES PATENT OFFICE.

GEORGE T. GLOVER, OF CHICAGO, ILLINOIS.

TRACTION-ENGINE FOR MAKING ICE ROADS AND HAULING LOGS.

SPECIFICATION forming part of Letters Patent No. 455,394, dated July 7, 1891.

Application filed October 31, 1888. Serial No. 289,675. (No model.)

To all whom it may concern:

Be it known that I, GEORGE T. GLOVER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Traction-Engines for Making Ice Roads and Hauling Logs, of which the following is a specification.

My invention relates to an improvement in traction-engines adapted for making ice roads in the lumber regions and hauling over the said roads a train of sledges loaded with logs, and is particularly designed as a further improvement upon the engines for such purposes embodied in Patents Nos. 342,596, 360,548, 394,851, and 426,006, heretofore granted me.

The more prominent objects of my present invention are to facilitate and otherwise promote the conversion of snow roads into ice roads suitable for traction-engines of the aforesaid character, and to economically utilize not only the exhaust-steam, but also heated products of combustion from the boiler-furnace of the engine.

In a traction-engine embodying the several features of my improvement I utilize the heated products from the boiler-furnace both as a means for heating or assisting in heating the wheels of a traction-propelling attachment, and, further, as a means auxiliary to steam for providing over the road a body of heated atmosphere suitable for melting down the snow and leveling the ice road. To the attainment of said ends I provide any suitably-arranged flue or passage for conducting the smoke and heated products from the boiler-furnace of the engine to a chamber wherein the traction-wheels can be arranged, whereby while either exhaust or live steam can be discharged into said chamber, the heated products which would otherwise escape from the smoke-stack of the engine into the open air can be discharged into said chamber and hence utilized as a means for heating the wheels. The said chamber can be formed by a suitable hood or casing carried in any convenient way with the machine, and as a means for utilizing the heated products from the boiler-furnace to maintain a body of heated atmosphere over the road the said chamber is desirably formed with an open bottom, which is in close proximity to the road, as in my said patent, No. 426,006, in which way, while either live or exhaust steam can be discharged into the open-bottom chamber, the heated products from the boiler-furnace can, regardless of such use of steam, be likewise introduced into said chamber as a means for keeping up the temperature therein. As a further feature of improvement in this direction I utilize either the exhaust or live steam or both, but preferably the exhaust, as a means for keeping up the draft from the furnace in addition to its service as a source for supplying heat for warming the wheels, melting down the snow, and leveling the ice road. I also propose providing in connection with the engine-truck a broad hollow runner desirably of a width corresponding to the width of the proposed road, and by any suitably-arranged pipe or passage let steam, either live or exhaust, into such hollow runner, so as to heat the same, in which connection it will be apparent that heated products from the boiler-furnace could likewise be utilized. The runner thus provided will when heated serve as a means for or as an auxiliary to means for melting down the snow and leveling the road.

Certain details constituting further matters of improvements will be hereinafter specified.

In the drawings, Figure 1 represents in side elevation a traction-engine embodying certain principles of my invention. Fig. 2 is a top plan view of the same. Fig. 3 is a detail representing a section on line 3 3, Fig. 1, but showing two steam-pipes, respectively, entering branches of the flue, so as to adapt the same for service in connection with a double engine. Fig. 4 represents a section taken through one of the traction-wheels. Fig. 5 is a similar view to Fig. 1, but shows the engine-truck provided with a broad hollow runner. Fig. 6 represents, on a slightly larger scale, a section taken transversely through the hollow runner.

In said drawings, A denotes the engine-truck, whereon a boiler and boiler-furnace (indicated as a whole by B) are arranged. The traction-propelling attachment, which is attached to the engine-truck and driven from the engine thereon, may comprise one or more, but is preferably provided with a couple of, traction-wheels. (Indicated in dotted lines.)

The traction-wheels are inclosed by a hood or casing C, which is adapted to form an open-bottom chamber having its open bottom in close proximity to the road, whereby heated air and steam within said chamber may, in addition to warming the traction-wheels, also serve as a means for melting down the snow and leveling the ice road. Said hood or casing can be supported in any suitable way—as, for example, by the body of the traction-propelling attachment, or, if preferred, from the engine-truck.

The flue D from the smoke-stack or draft-flue of the boiler-furnace leads therefrom and discharges into the chamber wherein the traction-wheels are arranged. As an effective arrangement the flue D has two branches *d*, respectively arranged to discharge over one and the other of the traction-wheels, it being understood that where the traction-propelling attachment carries a feed-water heater, as in said Patent No. 394,851, the flue branches *d* can be extended down through or at the sides of the same.

There being more or less greasy matter in the products from the boiler-furnace, the same, while supplying heat to the chamber and warming the wheels, will to some extent assist in greasing the rims, whereby snow will be more effectively prevented from sticking thereto, it being also noted that more or less greasy matter also passes into the chamber with the exhaust-steam.

In order to promote the draft from the boiler-furnace, the exhaust-steam pipe can discharge into the flue D as an injector, and hence while increasing the draft the exhaust-steam may be discharged into the chamber and over the wheels.

In Fig. 1 the single exhaust steam-pipe E discharges into the flue at a point back of the flue arms or branches *d*, it being observed that such arrangement is more particularly applicable where a single engine is employed. In practice, however, I have found it desirable for very heavy work to provide a double engine, and in such case the exhaust-steam pipes, respectively, from one and the other of two engines can be advantageously connected with the branches *d d* of the flue D, as indicated in Fig. 3, wherein said branches are shown adapted for introduction into the chamber. By the foregoing arrangement exhaust-steam can be introduced into the chamber, while at the same time it can be utilized for keeping up the furnace-draft.

In first starting up a fire in the furnace a valve or door *d'* in the flue can be opened, so as to permit a direct updraft into the open air, it being obvious that said valve or door can be variously constructed, so as to subserve its allotted purpose.

In Fig. 5 the rear portion of the engine-truck is supported by a wide hollow runner F, which is preferably of a width corresponding to the width of the road. This hollow runner could by an obvious arrangement of pipes be supplied with heated products from the flue D; but as a preferred arrangement it is supplied with exhaust-steam—as, for example, by a pipe *f*—which can be provided with a suitable cock and also duplicated where two engines are employed. One or more pipes, as at *f' f'*, can also be arranged to lead from the hollow runner to the chamber within the hood or casing C, in which way steam (either live or exhaust, but preferably exhaust) admitted into the hollow runner for the purpose of warming the same can from thence be conducted back into the open-bottom chamber and there utilized, not only for its warmth but also for the resulting water of condensation, which is serviceable in ice road making. The broad runner F prevents ridging along the middle of the road and assists in providing a way for the traction-wheels, it being observed that the extreme cold in the lumber regions during the winter season causes the melted ice or snow to freeze hard the instant a heated body is removed therefrom. It will also be observed that by suitable cocks for the pipes E and *f* the flow of exhaust can be controlled to suit the work.

While the traction-wheels will to some extent be greased by matters in the smoke and exhaust-steam whereby snow is prevented from sticking thereto, I propose to further assist in preventing snow from adhering to the wheels by either coating the same with some greasy metal, such as zinc or lead, or by forming the wheels of some suitable metal, known as or found to be of a practically greasy nature, as set forth.

In Fig. 4 the traction-wheel *a* is shown provided with a coating *a'* for its rim, which coating can be of some greasy metal or greasy metallic composition, as set forth. The whole wheel could, however, be coated, or, as aforesaid, the wheel itself could be made of some greasy metal or greasy metallic composition, the result in either of the several foregoing-mentioned cases being a wheel having a greasy metal or greasy metallic surface.

What I claim as my invention is—

1. In a traction-engine for making ice roads and hauling logs over the same, a flue leading from the boiler-furnace and arranged to discharge the heated products of combustion onto the traction wheel or wheels, substantially as and for the purpose set forth.

2. In a traction-engine for making ice roads and hauling logs over the same, the combination, with a flue leading from the boiler-furnace and arranged to discharge into a chamber having an open bottom and adjacent to the road-bed, of a traction wheel or wheels in said chamber, substantially as and for the purpose described.

3. In a traction-engine for making ice roads and hauling logs over the same, the combination, with an open-bottom chamber wherein the traction-wheels are arranged, of a flue

leading from the smoke-stack of the boiler-furnace and opening into said chamber, substantially as and for the purpose set forth.

4. In a traction-engine for making ice roads and hauling logs over the same, a flue leading from the smoke-stack of the boiler-furnace and arranged to discharge onto the traction wheel or wheels, in combination with a steam-conducting passage arranged to discharge into said flue and thereby promote the draft and permit the steam along with the heated products of combustion to discharge onto the wheels, substantially as set forth.

5. In a traction-engine for making ice roads and hauling logs over the same, a flue leading from the boiler-furnace and arranged to discharge the heated products into an open-bottom chamber, for the purpose set forth, in combination with a steam-pipe arranged to discharge into the said flue, whereby both the heated products of combustion and the steam can discharge into said chamber, and a traction wheel or wheels in said chamber, substantially as and for the purpose set forth.

6. The engine-truck provided with a hollow runner substantially the width of the road, and means, as set forth, for heating the same, substantially as set forth.

7. The combination, with the engine-truck, of a hollow runner therefor, and an exhaust-steam pipe leading from the engine to the hollow runner, substantially as set forth.

8. The combination, with the engine-truck and traction-propelling attachment, of a hollow runner arranged in advance of the traction-wheels of the traction-propelling attachment and means for heating the hollow runner, substantially as set forth.

9. The combination of the engine-truck provided with a hollow runner, the open-bottom chamber, and pipe connection leading from the hollow runner to said open-bottom chamber.

10. A traction-engine for the purpose set forth, having one or more traction-wheels, each having a greasy metal or greasy metallic composition surface, substantially as described.

11. In a traction-engine for making ice roads and hauling logs over the same, a traction wheel or wheels, a hollow runner and means for heating the same, and pipes or passages leading from said runner and arranged to discharge the heated products onto the said traction wheel or wheels, substantially as and for the purpose set forth.

12. In a traction-engine for making ice roads and hauling logs over the same, a traction wheel or wheels inclosed within a chamber having an open bottom located adjacent to the road-bed, and a hollow runner and means for heating the same, said hollow runner communicating with said chamber, substantially as and for the purpose set forth.

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