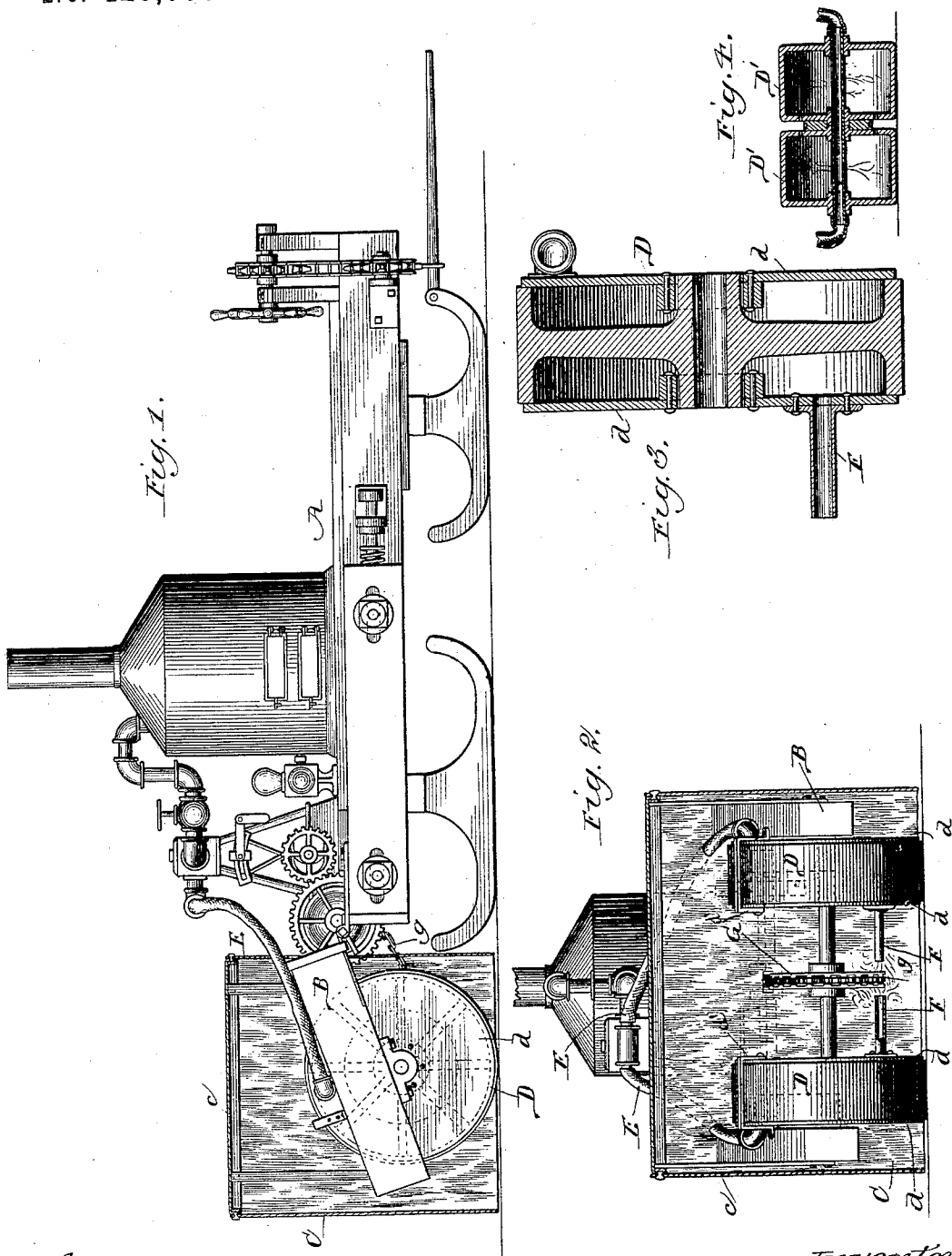


(No Model.)

G. T. GLOVER.
MACHINE FOR MAKING ICE ROADS.

No. 426,006.

Patented Apr. 22, 1890.



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UNITED STATES PATENT OFFICE.

GEORGE T. GLOVER, OF CHICAGO, ILLINOIS.

MACHINE FOR MAKING ICE-ROADS.

SPECIFICATION forming part of Letters Patent No. 426,006, dated April 22, 1890.

Application filed December 17, 1888. Serial No. 293,892. (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 designed for service in the lumber regions and adapted for melting down the snow along a roadway, so as to permit the melted snow in freezing to form an ice-road over which the machine may run and haul a series of loaded log-sledges.

The principal object of my invention is to facilitate and insure the heating of the traction-wheels and to keep them during operation at a temperature which will insure the melting down of the snow and prevent the adherence of snow or ice to the wheels.

Further objects are to provide certain improved details serving to increase the efficiency of traction-engines for making ice-roads.

In carrying out my invention I provide the traction-engine or ice-road-making and log-hauling machine with one or more hollow or chambered wheels and let into the same either exhaust or live steam, but preferably exhaust. For the broader purpose of my invention the wheel or wheels can be made hollow or chambered in any suitable way and steam introduced at any desired point—as, for example, steam could be introduced through a hollow axle having outlets opening into the chamber of the wheel, or in place of such arrangement steam can be let into the wheel from the side thereof. Should steam be admitted through the axle, the end walls of the chamber could be rigid with the rim of the wheel, or the rim could be made hollow and connected by hollow spokes with a hollow axle or journal; but as a preferred mode, constituting a special feature of improvement, I close the space within the usual wheel-rim by stationary end plates, which, while allowing the free rotation of the wheel, constitute the end walls of a chamber within the wheel. By such arrangement a steam-inlet pipe can be connected with one plate, so as to discharge into the wheel-chamber, while the opposite plate may be pro-

vided with an outlet, although, if desired, one end plate can be made rigid with the wheel and the other end plate held stationary by some suitable fixture on the machine, in which latter case the inlet and the outlet pipes can both be connected with the stationary end plate.

In the accompanying drawings, Figure 1 represents in side elevation a traction-engine with my improvement applied thereto. Fig. 2 is a section taken transversely through the hood or casing herein employed to provide an open-bottom chamber in which the driving traction-wheels are arranged, said wheels being shown in elevation. Fig. 3 represents, on a somewhat larger scale, a section taken centrally through one of the traction-wheels on a plane coincident with the axis of the wheel. Fig. 4 represents a section through a couple of hollow traction-wheels.

In said drawings, A indicates the engine-truck, which can be mounted on wheels or runners, but preferably on runners. The engine-truck carries a suitable boiler, a boiler-furnace, and an engine, which latter is preferably of the double type.

B denotes the frame or body of a traction propelling attachment, which is hinged to the rear end of the engine-truck and provided with a couple of traction-wheels. The traction-wheels are arranged within an open-bottom steam-chamber C, formed by a suitably-constructed hood or casing c, which can be supported either from the frame of the traction propelling attachment or from the engine-truck.

The traction propelling attachment herein shown is similar in construction and operation to the traction propelling attachment described in my application, Serial No. 275,400, for Letters Patent of the United States, and the hood or casing herein arranged to provide a steam-chamber which serves to inclose the traction-wheels is similar in principle and use to that embodied in Letters Patent of the United States No. 360,584, heretofore granted me, and hence particular description of said members need not be herein made. In the machine herein shown, however, I provide hollow or steam-chambered traction-wheels, and in place of discharging steam directly into an open-bottom chamber in which the trac-

tion-wheels are preferably arranged I first discharge steam into the hollow wheels, from which latter the steam may escape into the chamber, whereby it will first warm the wheels from the interior thereof and then discharge into a chamber in which the wheels are arranged.

Regardless of the chamber and construction of machine involving the traction-wheels, I propose discharging steam into hollow or chambered traction-wheels employed in any construction of machine suitable for making ice-roads from snow-roads; and in this connection it will be understood that, broadly considered, steam could be let into the wheels in various ways—as, for example, through hollow axles, or in the way herein shown and hereinafter particularly described.

As a special and preferred improvement in the aforesaid direction, each traction-wheel D is chambered substantially as shown in Fig. 3. In said figure the space which is bounded by the rim of the wheel, and which is but partially occupied by the hub and spokes, is closed at the ends of the wheel by the end walls or plates *d*, which are rigid with some suitable fixture on the machine, such as the frame of the traction propelling attachment. The plates *d* are adapted to permit the free operation of the wheel, and hence may be bored centrally to receive the ends of the hub. The plates *d* can also be made sufficiently large to lap or lie in close proximity to the edges of the wheel-rim, whereby a suitably-tight steam-chamber is formed within the wheel. Steam can be let into the hollow wheels through steam-inlet pipes E and discharged from the wheels through ports or discharge pipes or nozzles F, it being with such arrangement desirable to connect the said two pipes, respectively, with one and the other of the two plates *d*. Should, however, it be desired, both pipes could connect with but one of the plates *d*, and in such case the other plate could be made rigid with or formed as a part of the wheel, although the arrangement shown is simpler and more economical, since an ordinary construction of traction-wheel can be employed.

The plates *d* are herein shown supported from the frame of the traction propelling attachment by supports *d'*, arranged to straddle the wheels; but I do not limit myself to such arrangement, since various supporting media can be employed, and where one or more of such hollow wheels is or are allotted to the engine-truck the plates can be supported from the latter.

As a further feature of improvement, I may arrange the discharge or outlet pipes or nozzles F so as to discharge against the chain-wheel G, herein employed for a drive-chain g, that connects the axle of the traction-wheels with a driving mechanism on the engine-

truck, whereby the chain-wheel will be kept quite warm and snow or ice prevented from adhering thereto. In conclusion, it may be noted that by first discharging steam into a chambered wheel not only is the wheel properly warmed, but the steam condensed to a considerable extent within the wheel, whereof its chamber serves, therefore, as a condensing-chamber. In this way loss of steam is prevented and the water of condensation so collected that it can be let onto the road, where it will rapidly freeze.

In Fig. 4 the traction-wheels D' consist of heavy hollow cylinders closed at both ends and provided with hubs for a suitable axle, which can be made hollow and connected at its ends with steam-pipes. In such arrangement the hollow axle can be provided with steam-outlets within the wheels, and the wheels can be provided with outlets formed through their inner opposing ends at points near their peripheries.

What I claim as my invention is—

1. In a tractor for making ice-roads, the combination, with a suitable source of steam-supply, of a traction-wheel adapted and arranged for running upon an ice-road and provided with a steam-chamber, which is closed with the exception of an inlet, which is connected with the source of steam-supply, and an outlet for the escape of water of condensation and waste steam, said steam-chamber being adapted to contain the steam, so as to cause the heating of the wheel to an extent to melt down the snow, and thereby permit the formation of an ice-bed for the wheel to run upon, substantially as set forth.

2. In a machine for making ice-roads, a traction-wheel provided with a steam-chamber having an inlet and an outlet, in combination with a suitable source for supplying steam and a chamber in which the traction-wheel is arranged, the steam-outlet of the chamber in the wheel being arranged to discharge into the chamber in which the wheel is located, substantially as set forth.

3. The combination, with the chain-wheel on the traction-wheel axle, of the traction-wheel having a chamber connected with a source for supplying steam thereto and an outlet-pipe leading from the chamber in the traction-wheel and arranged to discharge against the said chain-wheel, substantially as described.

4. The combination, in a machine for making ice-roads, of a traction-wheel D with plates *d*, supported independently of the wheel and closing the same to provide a steam-chamber, substantially as described.

GEORGE T. GLOVER.

Witnesses:

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