W. W. Horton,

Transporting Oil.

No. 46,906. Patented Mar. 21, 1865.

Fig: 4.

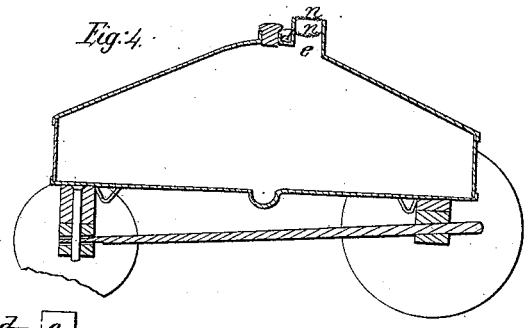

Fig: 1.

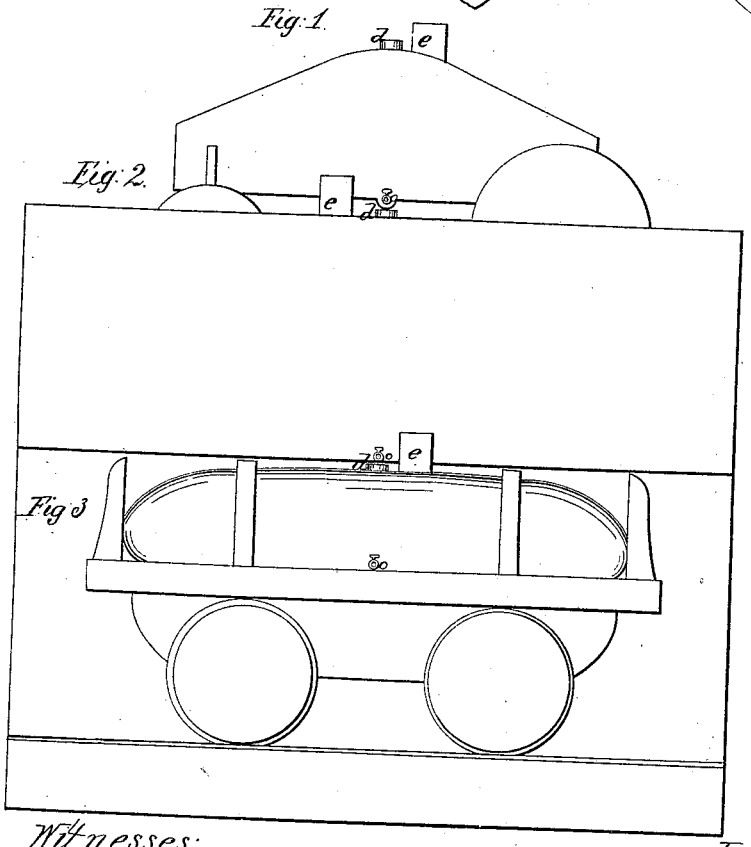

Fig: 2.

Fig 3

Witnesses;

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UNITED STATES PATENT OFFICE.

W. W. HORTON, OF FREEPORT, ILLINOIS.

IMPROVED METHOD OF TRANSPORTING OIL.

Specification forming part of Letters Patent No. **46,906**, dated March 21, 1865.

To all whom it may concern:

Be it known that I, W. W. HORTON, of Freeport, in the county of Stephenson and State of Illinois, have invented a new and Improved Method of Storing and Conveying Oil in Bulk; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, and to the letters of reference marked thereon, which drawings will be hereinafter referred to.

The nature of my invention consists, first, in the use of both movable and stationary iron tanks, of novel construction, for receiving, holding, and conveying the oil; and, second, in a regular organized system for moving the oil in bulk from the well to the refinery or place of shipment.

To enable others skilled in the art to construct and use my invention, I will proceed to describe it more in detail.

It is well known that great difficulty and expense has hitherto attended all efforts made to convey oil from the wells to market. First, it is usually difficult, and oftentimes impossible, to procure a sufficient supply of barrels. Even when they are obtained, there is a great loss of time in filling, handling, and emptying and returning them. There is also a great loss of the oil itself by leakage and evaporation, and the barrels have also to be renewed at short intervals, and when once used for this purpose they cannot be used for any other. The transporting and storing of coal-oil or petroleum in barrels and wooden tanks is also very dangerous, producing a great risk of life and property, and hence necessitating a heavy rate of insurance not only on the oil itself, but also upon the buildings in which it may be stored and the surrounding or adjacent property.

The object of my invention is to obviate these difficulties. This I propose to do by the following plan: First, I construct at the well a stationary receiving-tank, constructed of iron in any suitable manner and of proper form and size, into which the oil flows or is pumped from the well. This tank should be so located that oil will flow from it into a portable tank, A, which is to be mounted on a cart or wagon, as in Fig. 4, To accomplish this, it is only necessary that the receiving-tank should be so placed that its bottom shall be on a level with the top of the portable tank A. In most localities in the oil region advantage may be taken of the inclined surface of the ground for this purpose, and in places where the surface is not sufficiently inclined the tank may be elevated on masonry or frame-work, or the roadway may be cut down, so as to lower the movable tank A to the proper position.

At some near and convenient point on the line of the railroad over which the oil is to be conveyed I locate another stationary receiving-tank, which latter tank should be so elevated above the track that the oil will flow readily by its own gravity from it into movable tanks placed on the cars upon the track. At the terminus of the route, or at the point or points where it is desired to deliver the oil for use or shipment, or for storage or refinement, I locate still larger or more numerous receiving-tanks, these last to be so located that the oil will readily flow from the tanks on the cars into them. These tanks, both the movable and stationary, are to be provided with a short inlet-pipe, to which a hose may be securely attached, and which can be closed tight by any suitable means when the hose is removed or detached. This inlet-pipe may, if thought desirable, as it probably will be on the movable tanks, be made to project into instead of out from the body of the tank, whereby it will be out of the way and less liable to injury; or a simple ring or socket may be used with a screw-thread cut on its interior, into which the hose may be inserted, it being provided with a metallic end piece with a screw cut on it for that purpose. In like manner a metallic plug may be secured to close tightly the inlet-orifice when the hose is removed. In case a projecting tube is used, a metallic cap may be screwed on over the end, and thus close it tightly. Each of the tanks should also be provided with a stop-cock of proper size, located at or near its bottom, for the purpose of drawing off the oil from it. In the portable tanks it may be desirable to insert these cocks in a recessed portion of the tank, so that their outer ends shall not project outward beyond the outer surface of the tank, by which means they will be protected

from being hit or injured in any way, which, should it occur, would be likely to cause the tank to leak, and thus waste the oil. These outlet-cocks should all be provided with suitable devices or means for securely attaching hose by which to convey the oil from them to the other tanks or receptacles of whatever kind. Each tank is also provided with a large tube or chimney, *e*, which projects some distance above the top thereof, and is securely attached thereto. In these tubes *e*, near their upper ends, and at some distance apart, are secured two diaphragms, *n*, composed of fine wire-gauze. By this means the explosive vapors formed by the evaporation of the oil, and the formation of which is greatly increased by agitation of the oil incident to its being transported, are permitted to escape, and at the same time the contents of the tank are protected from danger by fire, as it is well known that flame will not pass through this gauze when made of the requisite fineness. To prevent the gauze from being broken or injured a perforated metallic plate may be secured over it, or it may be otherwise protected, if desired.

As the oils derived from different wells are of different specific gravities, and consequently vary in value, it is necessary that they be kept and stored separately. For this purpose I propose to divide the receiving-tanks at the railway-stations, and also the storing-tanks at the various points, into a series of compartments, so that the oil from the various wells may be kept separate. By this means the proprietors of different wells are enabled to avail themselves of this general means of storing and transporting their oils, and yet keep them distinct and separate from those from other wells or of other qualities.

The movable tank C, I propose to make of proper size to occupy an ordinary platform-car, and prefer to make them in the form shown in Fig. 3. These tanks are made flat on their bottom, so that they can be readily set on an ordinary platform-car, and as readily removed therefrom whenever the car is desired for other uses.

The operation of my plan will be readily understood; but in order to render its advantages more apparent it is proper that I should state them more in detail. As at present arranged, side tracks or branches of railway are built extending laterally from the main road off toward the various localities where the wells are operated. A train passing from the city out into the region of the wells leaves a number of cars, according to the capacity or wants of the wells, at the end of each of these branch roads, where they remain for one or more days, until loaded with the barrels of oil, when the locomotive comes and hauls them away, thus necessitating the use of two sets of cars or of making two trips for each train or load—one to bring and leave the cars and another to take them away. As the rent or use of a car is estimated by their owners at about six dollars per day, and as these cars stand idle on the average about three days for each trip made under the present system, it follows that the loss from this source alone is very great. Then there is much loss of oil and time in barreling it up at the wells, and many hands and much time and labor rendered necessary to get it aboard of the cars. In rolling and handling the barrels the oil is necessarily much agitated, whereby gas is rapidly generated, and as this has no ready means of escape it forces both itself and the oil out through the pores of the wood, and thus causes a continuous loss and waste until it arrives at its journey's end and is emptied out of the barrels; but usually it is not emptied from the barrels, or, if emptied, it is again stored in them after being refined, and thus the loss is continued. The loss from these causes alone is estimated by those familiar with the business at one-eighth of the entire product, this loss being already not less than from six to eight millions of dollars per annum; and it is evident that by the present plan this loss will continue to increase just in proportion to the increase of the supply from the wells. Most, if not all, of this loss will be saved by the adoption of my plan. Again, a large number of men have to be employed to fill, handle, haul, load, unload, and empty the great number of barrels required under the present plan, and these men have to be paid high wages, as the work is both laborious and unpleasant. By the adoption of my invention much the larger portion of this will also be saved, as the filling and emptying of the barrels, together with their handling, will all be dispensed with. One man with each team to haul the oil from the well-tank to the station-tank is all my plan requires. Then as the train arrives a hose is connected at one end to the station-tank and at the other to each of the car-tanks, the cocks turned, and the train is loaded in a few minutes and proceeds at once to its destination, whereby the labor of a large number of men is dispensed with and no cars are kept standing idle. When the train arrives at its destination the oil of all the cars is delivered into the receiving or storing tank simultaneously by a similar process and in a very short time, and thus an immense saving is also effected.

To apply my system or invention in cases when the oil is to be shipped for transportation abroad, I propose to provide the vessels with similar tanks properly located, and by having the storing-tanks located on the wharves at a proper elevation, the oil can be conveyed on shipboard by the means already described in a very brief space of time, whereby several thousand dollars will be saved on each cargo thus put aboard, besides lessening materially the detention of the vessel and securing a corresponding saving in the wages of the crew and officers. Wherever it becomes necessary to have the storing-tanks elevated for such or similar purposes the cars may readily elevated

to a corresponding height by building a short inclined track, the same as is now done at the grain-warehouses along our Western railways. By these means the work is reduced to a perfect system, whereby it is far more rapidly and economically performed and a great saving effected.

Having thus fully described my invention and its mode of operation, what I claim, and desire to secure by Letters Patent, is—

1. Oil-tanks, both stationary and movable, constructed and operating as and for the purposes herein set forth.

2. The method or process herein described for storing and transporting oil in bulk, substantially as set forth.

W. W. HORTON.

Witnesses:
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EDM. F. BROWN.