F. K. PLUMBLY.

Storing Tank for Petroleum.

No. 203,557. Patented May 14, 1878.

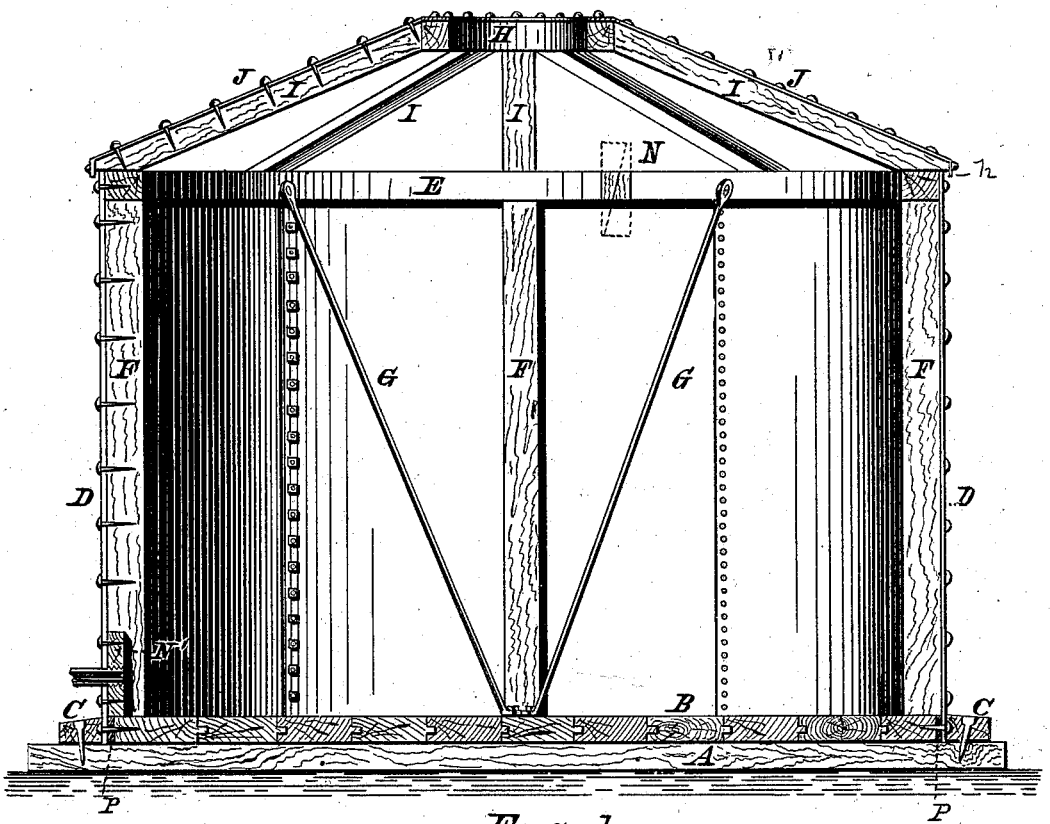

FIG. 1.

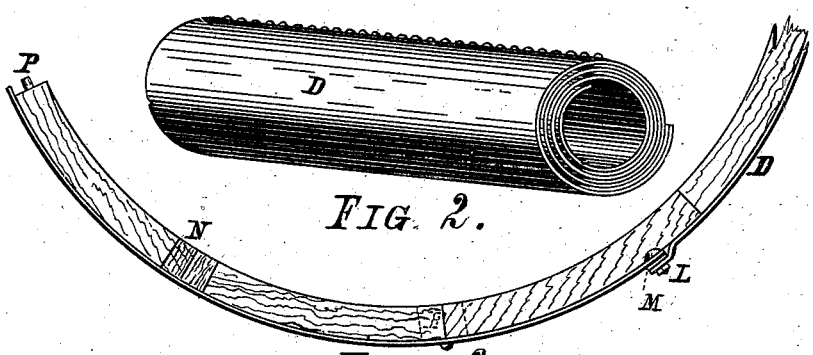

FIG. 2.

FIG. 3.

Witnesses:

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UNITED STATES PATENT OFFICE.

FREDERIC K. PLUMBLY, OF BUFFALO, NEW YORK.

IMPROVEMENT IN STORING-TANKS FOR PETROLEUM.

Specification forming part of Letters Patent No. **203,557**, dated May 14, 1878; application filed February 26, 1878.

To all whom it may concern:

Be it known that I, FREDERIC K. PLUMBLY, of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements on a Storing-Tank for Petroleum, &c.; and I do hereby declare that the following description of my said invention, taken in connection with the accompanying sheet of drawings, forms a full, clear, and exact specification, which will enable others skilled in the art to which it appertains to make and use the same.

This invention has special reference to petroleum and other tanks; and it consists in the peculiar arrangement of parts and details of construction, as hereinafter first fully described, and then pointed out in the claims.

The object of this invention is the production of a storage-tank for petroleum, water, &c., to be used along railroads, in the various oil regions, &c., which tanks shall be cheap and durable, and capable of being manufactured within shops remote from the places where said tanks are to be used, shipped to such places in parts, and there erected in a short space of time and at but little expense.

Heretofore such storage-tanks were mainly made on the spot where the tank was to be used, and in the largest majority of cases remote from any places of habitation and manufacturing facilities. Such tanks were and are now made of a wooden bottom and a metallic shell, composed of a number of sheets riveted together on the spot, which is very expensive and troublesome, owing, as heretofore mentioned, to the absence of any manufacturing facilities. The tanks when thus made are almost invariably of inferior quality, because good workmanship cannot under these difficult circumstances be obtained. To overcome these drawbacks and objections, I construct my tank in the manner hereinafter described, which tank can be manufactured entirely in the shop, then taken to pieces and shipped to its place of destination, and again put together in a very short space of time.

In the drawings hereinbefore mentioned, which serve to illustrate my invention more fully, and form a part of this specification, Figure 1 is a longitudinal sectional elevation of a storage-tank constructed in accordance with my invention. Fig. 2 is a perspective view of a tank-shell rolled up for transportation. Fig. 3 is a plan of a fragment of the upper ring of my tank.

Like letters of reference indicate corresponding parts in all the figures.

A is one part of the bottom of my tank. It consists of planks, which may be tongued and grooved, if desired, to render the joints stronger and tighter, said tonguing and grooving being, however, not an essential part in this bottom. On the top of these planks, and with their joints running at right angles to those of the planks A, I place a series of planks, B, preferably tongued and grooved together. These planks are cut circular on their outer edge to the size of the tank to be constructed, and will be doweled or spiked to the planks A on the place where the tank is to be finally erected. The bottom A is made sufficiently larger than the tank to be produced to enable a segmental rim, C, to be fastened to said bottom on the exterior of the shell D. This shell is constructed of sheets of iron riveted together, with the exception of one seam, and placed upon the bottom part A. In the interior of the shell I construct a frame, consisting of the top rim E and a number of posts, F, securely fastened to the rim E, and brace said top rim to the bottom B by obliquely-arranged rods G. The cover or roof of this tank I construct of the annular rim H and a series of rafters, I, which rafters are secured to the rims H and E by spikes, &c. The roofing proper consists of the sheets J, cut in segments, and nailed or otherwise fastened to the rim H and rafters I, the outer end of said sheets being bent downward, as shown at *h*, to prevent rain-water from entering the tank in cases where such would be objectionable.

In constructing this tank for shipment, I make the shell D of lighter iron than that usually employed in tanks of the kind mentioned, and rivet a sufficient number of sheets together to produce the circumference of the tank, both ends being perforated for the last seam, and the sheet is then formed into a circle of sufficiently smaller size than the actual diameter of the tank to allow its being expanded or unrolled to the actual diameter without permanently setting it to such

actual diameter, the difference being as much as the natural elasticity of the metal will yield, and the ends secured together by screw-bolts passing through the perforations. To render this seam perfectly tight I interpose between the metal a strip of leather, cotton, ticking, or similar textile fabric, coated on both sides with metallic paint. This shell is then placed upon the bottom A and the bottom B placed into the interior of said shell. Now I secure the segmental rim C on the outside of the shell D, and then calk the joint on the lower edge of same with oakum or similar suitable material or substance. The interior frame-work is then placed in proper position, and the tank, being thus completed, is taken apart in a reverse order of operations of that heretofore described. The shell D is now rolled into a bundle, as shown in Fig. 2, for shipment, hoops or other fastenings being employed to preserve the compactness of the bundle during shipment. The diameter of this bundle is as much smaller than that into which the shell D is originally rolled as the elasticity of the metal will allow without permanently setting it to such smaller diameter, so that when reaching its designated place this bundle can be readily unrolled and the shell screwed together by the bolts L without bending or otherwise altering the shape of the sheets of which the shell D is composed, the metal readily assuming its normal curved contour, after which the erection of the tank can be readily undertaken by any one possessing sufficient skill to put the parts together.

By rolling the sheets of the shell D, as described, I am enabled to form the same into a bundle of sufficiently smaller size than that of the tank to be produced to accommodate it to the shipping facilities usually offered for its transportation to its designated place, and I can do so without fear of starting the seams of the sheets, which, if the shell were rolled into a smaller diameter than that described, would invariably take place, and thus require reriveting.

To tighten the rim E in the shell D, and thereby to expand the sheeting, I use double wedges N, which are vertically inserted into the segmental rim, as shown in Fig. 1, and when driven spread the said rim, and thus produce the desired result, the segments of which said rim is composed being otherwise secured by dowels P.

The shell D, being calked on its lower extremity at P, causes the planks B to move toward each other, and thus to tighten the joints. If found necessary, the joints in said bottom B may be further secured by calking in the same manner as the exterior joint P.

It will be observed that the rim E is braced to the bottom B by the rods G, and that the shell D is nailed or otherwise fastened to the posts F and rim E. By this construction I am enabled to use considerably lighter iron for the shell than that now used without affecting the strength and durability of the tank, thus making my tank cheaper than those and enabling me to roll the shell into a bundle for transportation.

It is evident that tap-holes can be placed anywhere in the shell to withdraw the contents of the tank. I prefer, however, to place and fasten short planks N′ on the inner side of said shell, and to screw the faucet into this plank, whereby a securer and firmer means of attachment is obtained than by simply fastening the faucet to the iron shell.

Should the calking of the joint P cause the lower extremity of the shell D to spread outward, I shall draw a band or hoop around the lower extremity to re-enforce said lower end.

It is obvious that a tank constructed as above specified is applicable to many purposes in malt-houses, breweries, &c., where very large tanks are frequently required. In such a case I shall use three or more thicknesses of planking in the bottom to increase the strength of said tanks, and may also use a series of rims, E, placed one above the other a suitable distance apart, to secure the shell D at points intermediate between the top and bottom of the tank.

Having thus fully described my invention, I desire to secure to me by Letters Patent of the United States—

1. In storing-tanks, the combination, with the sheeting D, of the rim E, provided with the wedges N, and the calked joint P between said sheeting and the bottom B, as and for the use and purpose specified.

2. In storing-tanks, the combination, with the sheeting D, of the rim E, having the wedges N arranged to expand said rim E, substantially as and for the purpose specified.

3. In storing-tanks, the combination, with the multiple bottom A B, arranged in relation to each other, as described, of the shell D and the calked joint P, as specified, for the object stated.

4. A storage-tank consisting, essentially, of the multiple bottom A B, arranged in relation to each other as specified, the shell D, placed over the interior bottom B, posts F, rim E, and the segmental rim C, as and for the purpose described.

In testimony that I claim the foregoing as my invention I have hereto set my hand and affixed my seal in the presence of two subscribing witnesses.

FREDERIC K. PLUMBLY. [L. S.]

Witnesses:

MICHAEL J. STARK,

FRANK HIRSCH.