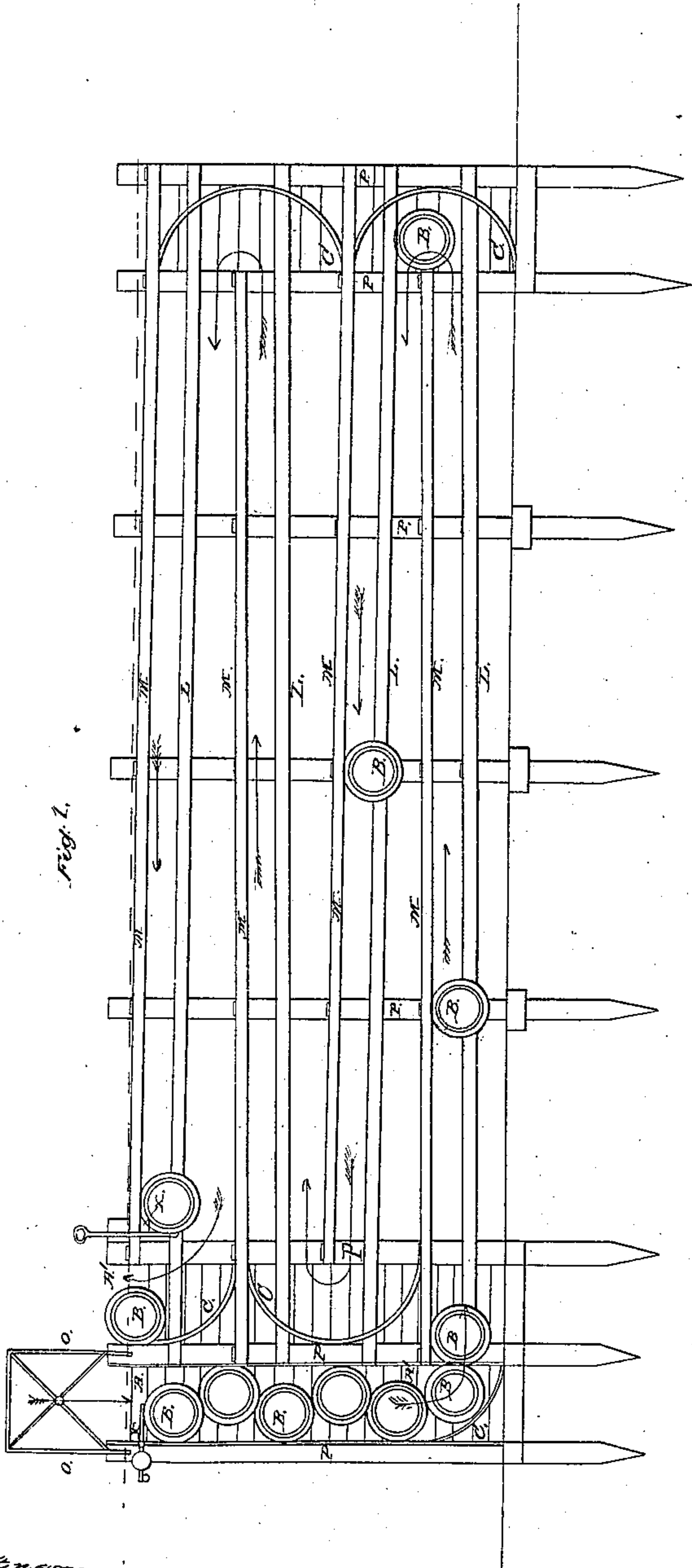


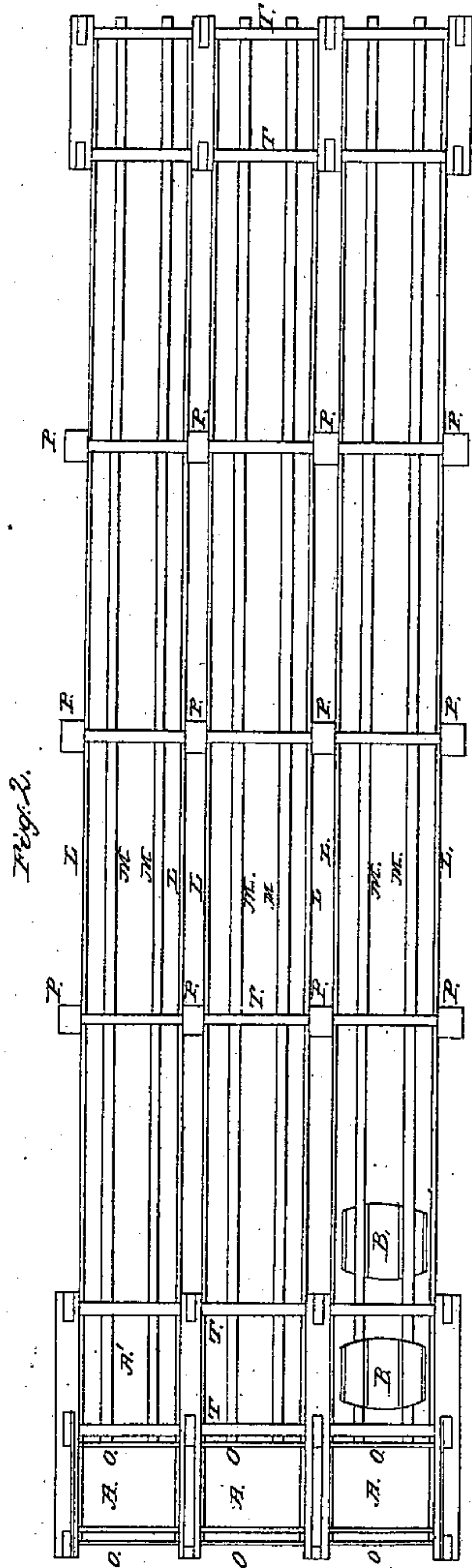
I. Mathei,
Packing Petroleum.

N^o 83,192.

Patented Oct. 20, 1868.



Witnesses.
J. Bailey
Smith



Inventor:
Ignace Mathei
by his atty
Abraham

United States Patent Office.

IGNACE MATHEI, OF ANTWERP, BELGIUM.

Letters Patent No. 83,192, dated October 20, 1868.

IMPROVED APPARATUS FOR STORING PETROLEUM.

The Schedule referred to in these Letters Patent and making part of the same.

To whom it may concern:

Be it known that I, IGNACE MATHEI, of Antwerp, in the Kingdom of Belgium, have invented certain new and useful Improvements in Apparatus for Warehousing Petroleum, mineral oils, and other liquids; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation, and

Figure 2 a plan view of an apparatus made in accordance with my invention.

My invention relates to the method of warehousing petroleum and like liquids by immersion in water.

The advantages of this method are recognized by all, as the liquids cannot, under such circumstances, take fire, while the water causes the wood, of which the barrels holding the liquid are made, to swell, thus rendering the barrels tight, and preventing all leakage. There are, however, practical difficulties attending this method of storing liquids, which have prevented its extended use.

The manipulation of the barrels, and their arrangement in proper order, involve much labor, and cannot be effected without great trouble; and then, again, it is a matter of extreme difficulty to hold them under water, owing to the difference in the specific gravity of the liquids to be warehoused and the water in which they are immersed, the upward pressure of a barrel of petroleum thus stored being about forty-five kilogrammes, and that of a barrel of the lighter products, fifty-five kilogrammes.

The object of my invention is to overcome these difficulties, to store the barrels in water, to place them there easily and without shock or jar, to arrange them in regular order, and to keep them in such condition, and at the same time to take them out, whenever desired, and in such quantity as required, without trouble or excessive labor.

All these results I have attained by the employment of the hereinafter-described apparatus, which requires the least possible depth of water, and is so constructed as to utilize the difference in the density or specific gravity of the water and stored liquids, to effect the entrance, arrangement, and discharge of the casks or barrels with but little manipulation.

These and other features of my invention will, however, best be understood by reference to the accompanying drawings.

In a basin or reservoir, whose depth and extent may vary according to the nature of the ground where it is located, and the number of barrels to be warehoused, I arrange two rows of posts, P P, sufficiently embedded in the earth, or of a sufficient weight to be firmly and immovably held down in place against any upward pressure.

The distance between these rows is such as to permit the barrels B to pass between them, and the space

between the posts of each row is governed by the resistance to be overcome, and the nature of the materials employed.

At one end is formed a well or passage-way, A, through which the barrels to be stored are introduced.

To these posts P are attached, by means of wood or metal cross-ties or beams, T, thick boards, M, which form a series of consecutive and superposed inclined planes, each plane being inclined in an opposite direction from those immediately above and below it. The degree of inclination of these planes will vary in accordance with the density of the liquid to be warehoused, and the distance between them will be governed, of course, by the size of the barrels.

Side-strips L, of metal or wood, attached to the posts P, prevent the lateral displacement of the barrels.

In order to facilitate the passage of the barrels from one inclined plane to the next, I arrange, at the two ends of the warehouse, half circles, C, of metal or wood, in the manner shown in fig. 1.

The opening or well A, through which the barrels are introduced, should be provided with a stop, X, for holding the barrels under water.

The opening A', through which the barrels are discharged or taken out, should be provided with a suitable device, X', for holding down the barrels, and regulating their discharge.

Metal or wooden doors, O, close the entrance and discharge-openings, and are arranged in such manner that by raising or sliding them upwards, they will elongate the well A.

The apparatus is operated in the following manner:

The two doors O are opened in such manner as to form an elongation of the well A, and a small flying bridge may be used to bring the barrels to this height.

The barrels are placed in the well A, one after the other, in such a manner that those underneath will be forced down by the weight of those not yet immersed, until they reach the bottom of the well. There the barrels will inevitably pass under the lowest inclined plane, and, by reason of the difference of density, as above explained, they will be held up against the plane, and rise, following the consecutive planes until they reach the discharge-opening, where they will be arrested by the device X'.

As the dimensions of the apparatus do not admit of the barrels passing one another, or deviating to the right or left, they are consequently arranged one after the other in order under the planes, until the apparatus has received as many barrels as its capacity admits of. Those barrels which still remain in the well A, under the water, are held down in place by the stop X, and after removing the surplus barrels, which have served to furnish the weight necessary to depress the others, the doors or gates O are lowered, and the operation is completed.

The same principle which determines the ascent of

the barrels along the inclined planes, will also force them out through the discharge-opening or port A', when the latter is opened and the stop X' is withdrawn. After passing out from this opening, they can of course be easily guided or directed to any desired point.

The means employed for maintaining the water in the reservoir at a constant or fixed level, naturally depends upon the location and situation of the reservoir.

It will be understood that the inclined planes may be made movable or adjustable, so as to have a greater or less inclination, according to circumstances, and instead of the posts P, walls or other suitable supports for the planes may be substituted.

Having now described my invention, and the manner in which the same is or may be carried into effect, I would state that I do not claim storing barrels of hydrocarbon-oils under water, as the same has been

patented; nor do I claim a frame for containing the barrels; but

What I claim, and desire to secure by Letters Patent, is—

1. The herein-described method of storing or warehousing petroleum, mineral oils, and other liquids, by the employment of a series of inclined planes, arranged in a reservoir or basin of water, substantially in the manner shown and set forth.

2. An apparatus for warehousing petroleum and other like liquids, constructed substantially in the manner herein specified.

In testimony whereof, I have signed my name to this specification before two subscribing witnesses.

IGNACE MATHEL.

Witnesses:

J. F. REINEMUNT,
A. MACLOT.