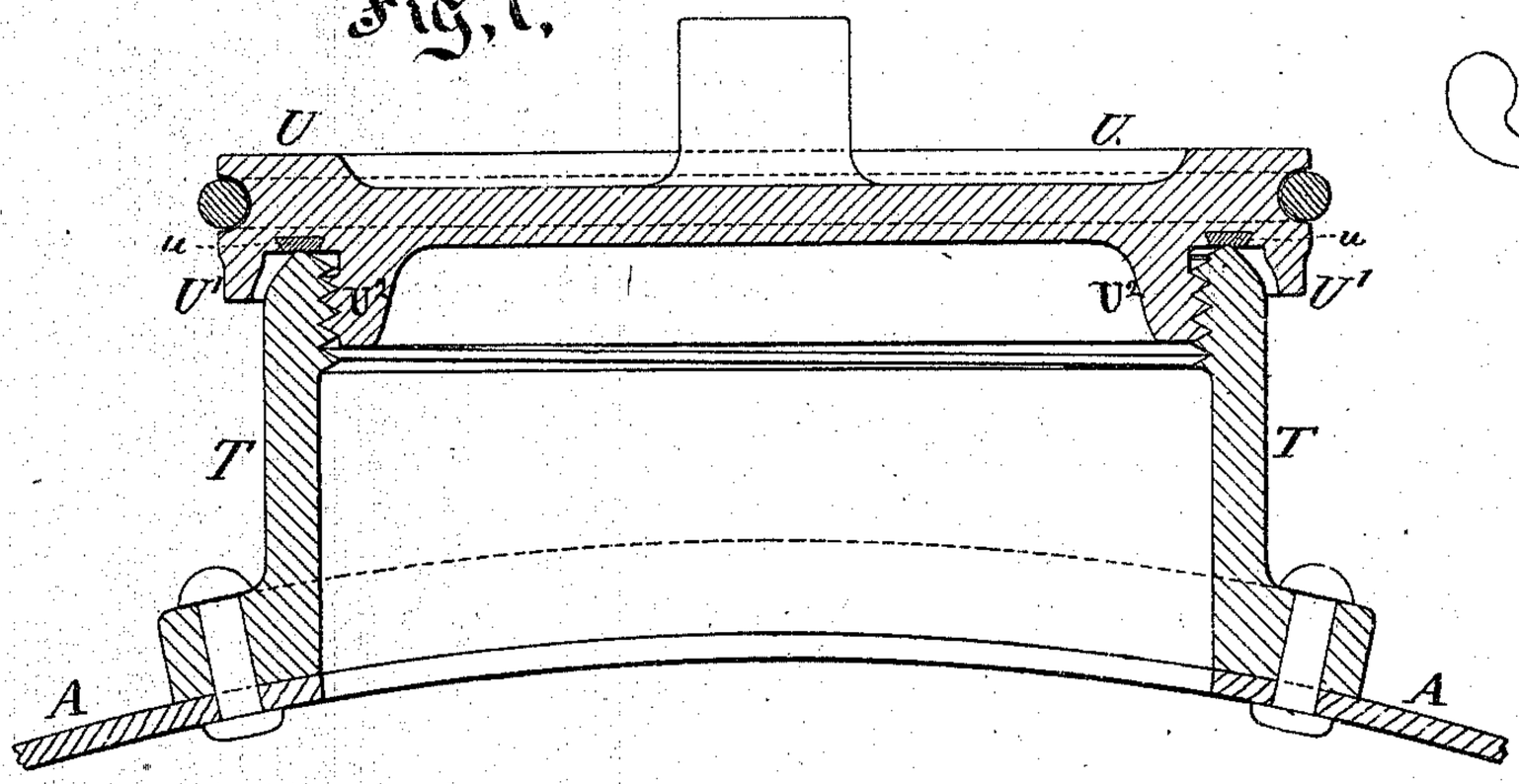
H. F. SNYDER, G. S. SNYDER, & A. SNYDER.

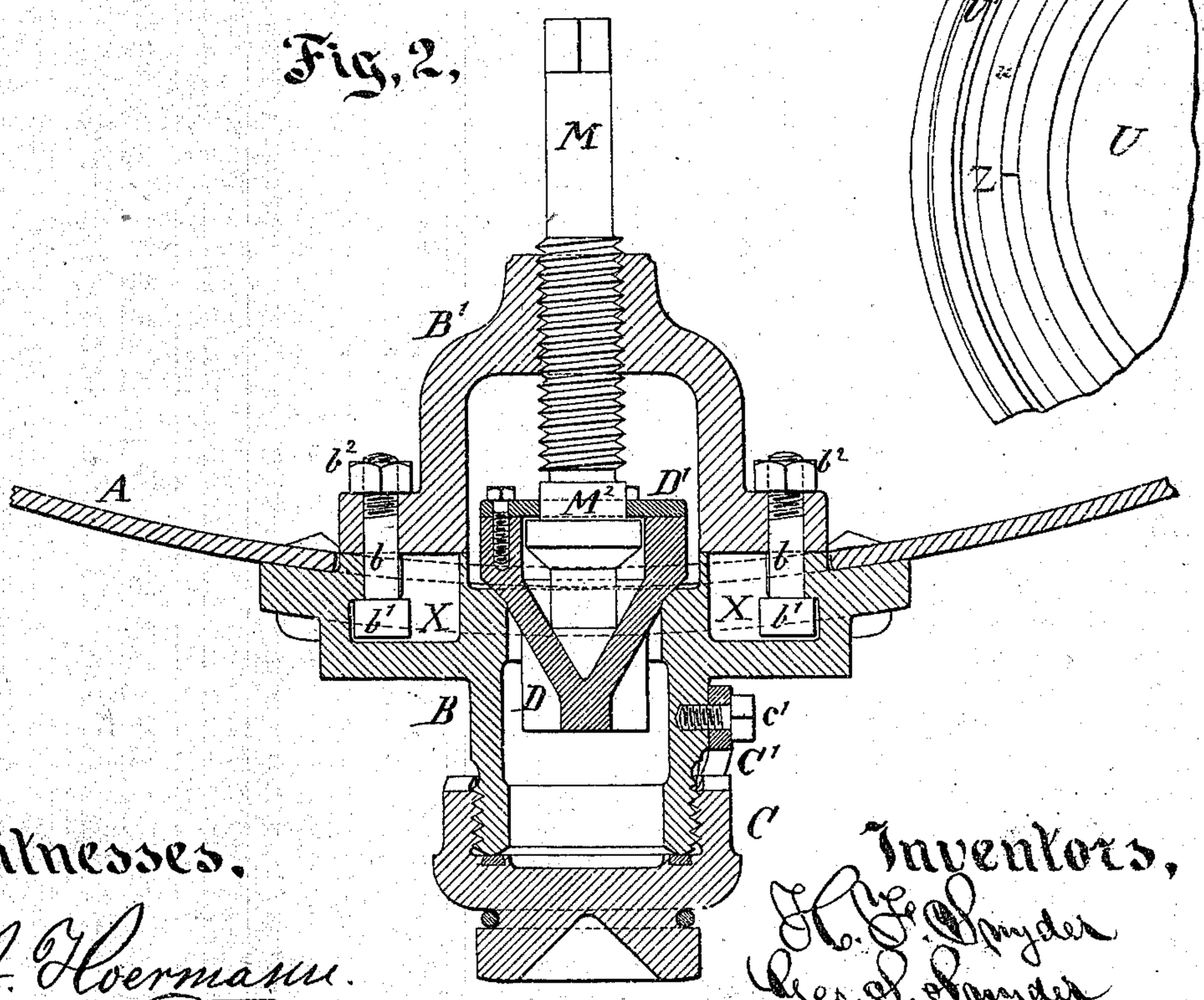
Improvement in Oil-Tanks.

No. 115,127. Patented May 23, 1871.

Fig, 1.



Fig, 2,



Fig, 3,

Witnesses.

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115,127

UNITED STATES PATENT OFFICE.

HENRY F. SNYDER AND GEORGE S. SNYDER, OF WILLIAMSPORT, AND AUTES SNYDER, OF FREEPORT, PENNSYLVANIA.

IMPROVEMENT IN OIL-TANKS.

Specification forming part of Letters Patent No. 115,127, dated May 23, 1871.

To all whom it may concern:

Be it known that we, HENRY F. SNYDER and GEORGE S. SNYDER, of Williamsport, Lycoming county, State of Pennsylvania, and AUTES SNYDER, of Freeport, Armstrong county, in the same State, have invented certain new and useful improvements relating to Oil-Tanks and their Appurtenances; and we do hereby declare that the following is a full and exact description thereof.

The tanks are usually made in the form of a cylinder lying horizontally. They may be made of boiler-iron riveted or otherwise tightly and strongly secured together. They are intended more particularly for transporting oil on railroads, but may be used on shipboard or for storing oil in any situation. They may be used for storing other fluids than oil; but they are peculiarly adapted to overcoming the difficulties experienced with the very penetrating and highly-volatile fluid known as petroleum, either in its raw state or in any stage or condition of refinement.

The improvements relate to the means for securing the apertures through which the oil is introduced and withdrawn, and through which access is obtained to the operating means and to the interior of the tank generally.

The following is a description of what we consider the best means of carrying out the invention.

The accompanying drawing forms part of this specification. Figure 1 is a central vertical section through the man-hole at the top of the tank, which is centrally over the discharging-valve below, and serves both to admit the hose in receiving oil and to allow access with a proper wrench or the like to operate the valve. Fig. 2 is a corresponding section at the base of the tank, showing the valve in section and the operating-stem with its large collar in elevation. Fig. 3 is a view of a portion from below. It is on a larger scale and shows very plainly a peculiarity in the termination of the screw-thread, to which we attach much importance.

Similar letters of reference indicate like parts in all the figures.

A A is the body of the tank. B is the main casting at the bottom, and B′ is the yoke bolted thereon to receive the threaded part of the operating-shaft which works the valve. C is the cap which covers and stops the lower end of the casting B. It forms a stop additional to that formed by the valve D, to prevent leakage either of the fluid petroleum or of the vapor thereof at the bottom. It is threaded upon the lower end of the casting B, and is prevented from becoming unscrewed by a pawl, C′, turning on a pivot-screw, *c′*.

It is important that the yoke B′ be very firmly secured to the casting B; also, that it be susceptible of removal to obtain access freely to the valve D and its operating means. We believe it also highly important to secure it without a necessity for extending any bolt, rivet, or other fastening through the entire casting B. Our means for connecting these parts are very efficient and simple, and attain all these ends. We produce, by coring or otherwise, deep undercut cavities, X, in the casting B, which open only on the upper side and are adapted to receive the heads b^1 of the bolts *b*. We insert these bolts by dropping them bodily, head downward, into the cavities X, and moving them bodily apart so that their heads b^1 shall be passed into the undercut portion and allow the bolts to be very efficiently strained in holding the yokes B′, as represented. When the bolts *b* b^1 are thus placed their positions coincide with the proper holes in the yoke B′ and allow the latter to be readily dropped down into place, with the bolts in the proper holes. Now, on applying the nuts b^2 and turning them down tightly, the yokes B′ are secured. There is no hole through the the casting, and the method of securing involves no peculiar difficulty.

Turning now to the work at the top of the tank, the casting T, which is there secured, and its cap U, are of sufficient size to allow a man to enter when the cap is removed to inspect or effect any repairs in the interior. We term this work a man-hole; but it serves also another function by admitting the entrance of a long-necked wrench to apply upon the head of the operating-shaft M to turn it for opening or closing the valve D. The cover or cap U, as also the cap C at the base, are held loosely within rings, which are fastened by loose chains, not represented, through the body of the tank, to prevent their being dropped or

lost in any emergency. Loose rings around caps of this character have been long known, and do not require particular description. The same may be said of the means of taking hold of the caps. Our cap C may be operated by a large wrench. Our cap U, at the top, may be operated by a similar wrench or any suitable bar taking hold properly of two projections, only one of which is represented. On properly applying a crow-bar or any suitable lever or stick crosswise between these and overhanging the man-hole cover T on either or both sides, and applying force to such lever, the cap may be easily screwed on or off.

In order to prevent any leakage of vapor through the joint there is provided a ring of soft metal, *u*, dovetailed or otherwise firmly secured, which receives a sharp edge, which forms the top or rim of the casting T. Each time the cover U is applied the screw-threads U^2 guide it down gradually so that the edge strikes in the same place and matches into the same slight circular cut previously formed in the soft metal *u*, and thus forms a very tight fit.

Means of forming a tight joint in this and analogous situations have been known before; but we have improved the arrangement by inverting the position and placing the soft metal above the sharp edge, whereas heretofore the flat soft-metal surface has been below, and dirt, grit, &c., were liable to fall into the circular crease and obstruct the operation. With our arrangement the edge below will not receive and retain any dirt, and the crease above is not, from its position, liable to receive any. Our arrangement is of equal effect in other respects, and is less liable to be obstructed by sand or loose dirt.

We attach considerable importance to the above arrangement, and also to a provision which we have introduced for guarding the soft metal against injury when the cover is removed or is in the act of being removed or applied. We form the cover U with a deep and strong hanging lip, U^1. This lip stands closely adjacent to the soft metal, and defends it against injury from ordinary blows.

In connection with the threaded lip—or perhaps it may be better termed threaded portion U^2 of the main body within—the soft metal is very effectually guarded. Nothing can hit the soft metal except the proper edge of the casting T, and this can only hit it when it has been properly screwed down so as to strike exactly in the right position.

As ordinarily arranged the soft metal of a cover or cap is always liable to be struck by this edge in false positions, and to be variously and irregularly cut and form leaks. It is also liable to be struck by wrenches and by other hard objects in the ordinary exigencies of use. Our invention avoids these evils. We produce a surface where the screw-thread terminates on the cap U, which is in or very near the plane of the radius of the said cap, as indicated by Z in Fig. 3. This surface may be produced by machinery, or even by filing. It performs an important function in practice by clearing the screw-threads of the top casting T, which are liable to be clogged with thick oil or other substances in the exigencies of introducing oil rapidly and carelessly.

As screw-threads are ordinarily formed the surfaces at their commencement can exercise but little influence in clearing the thread. The surface is usually gradually contracted upon the dirt in a screw-thread so as to press it in tighter instead of plowing or scraping it out. We cut away or file away the commencement of the screw-thread until we come to a point where it is full-sized, and then produce a clean surface, standing in a position as indicated by Z, to scrape out the dirt from the thread as the screw-cap U is turned down.

The surface Z may be at right angles to the motion of the thread, as represented, or it may be inclined considerably either way, or variously distorted. It is important only that it is adapted to perform the functions of cleanly scraping out the thread of the female screw as it is turned down therein.

In cases where the oily or other incumbrance in the screw-thread is peculiarly viscid or otherwise obstinate, the surface Z may be undercut so as to enter the screw-thread like the point of a plow, and thus still more effectually incline outward the thick liquid or solid material which it shall meet therein; but we esteem it sufficient for ordinary practice with petroleum to make it at right angles to the motion of the thread or in the plane of the radius of the cap, as shown.

We make the point of the operating-screw M bear in a cavity near the base of the valve D, to press down the latter efficiently into its seat in closing the valve tightly. In opening the valve the large collar M^2 effects the operation by lifting on the collar D′, bolted on the top of the body D of the valve. This collar or top piece D′ has a cavity large enough to slip easily over the threaded portion of the operating-shaft M above. This arrangement avoids the necessity for any complicated devices for connecting and disconnecting the valve and its operating-stem.

It is, of course, important, for good work, that the portion of the operating-shaft immediately above the large collar M^2 shall be finished smoothly and be of a size a little larger than the greatest diameter of the threaded portion; in other words, it should fit tight and easy within the interior of the collar or valve-top D′.

Although the threads of the several screws are represented as V-shaped they may be square, and we prefer to have them square in most cases.

We claim—

1. The angular clearing-surface Z on the threaded portion U^2 of the cover or cap U, adapted to clear the screw-threads of the top casting T, as specified.

2. The within-described cap U, carrying the

soft metal *u*, as shown, and arranged to serve, as shown, relatively to the edge of the top casting T, for the purposes herein set forth.

3. The threaded portion U^2 and edge-guard or lip U^1 on the cap U, arranged to serve in connection with each other so as to provide for efficiently and tightly securing and easily releasing the parts, and guarding the soft metal against injury, as specified.

In testimony whereof we have hereunto set our names in presence of two subscribing witnesses.

H. F. SNYDER.
G. S. SNYDER.
AUTES SNYDER.

Witnesses:
T. C. ROGERS,
HENRY D. HEISER,
J. W. MCKEE.