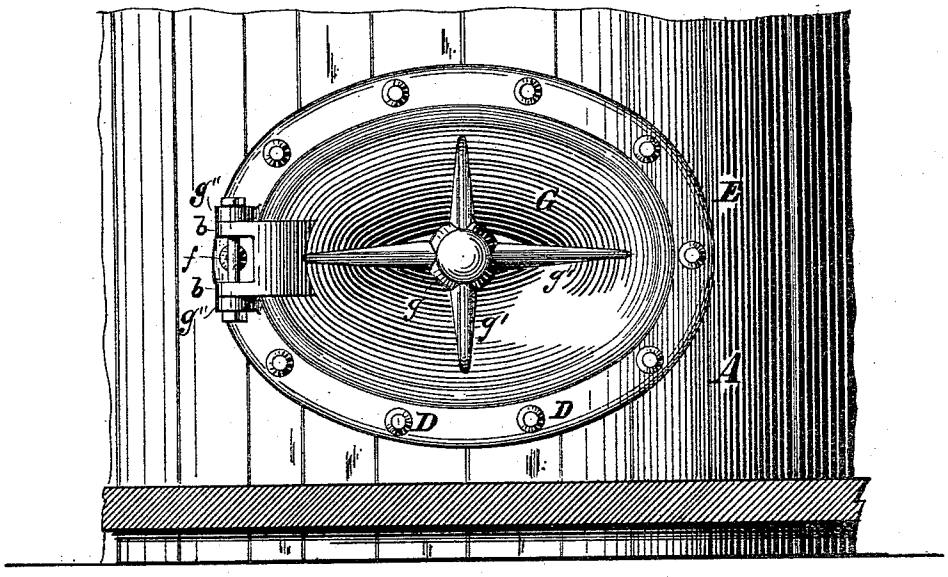
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W. HEISER.

MAN HOLE FITTING FOR WOODEN VESSELS.

No. 457,777. Patented Aug. 18, 1891.

FIG. 1.



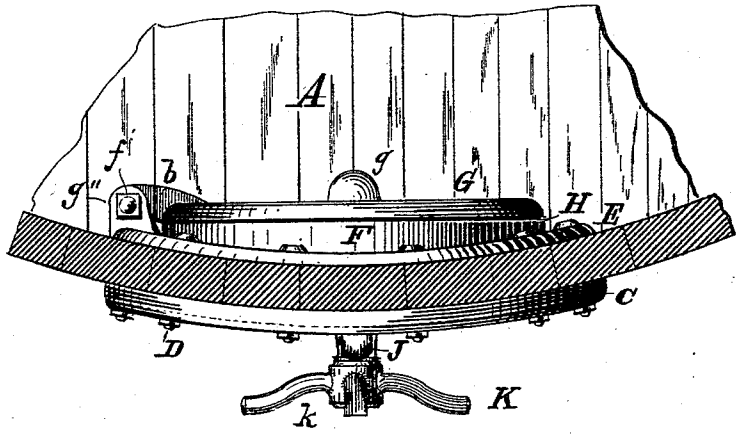


FIG. 2.

Witnesses:

Wm O Stark

Bentie G Stark

Inventor:

William Heiser,

by Michael J & Wm O. Stark,

Attorneys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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W. HEISER.

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FIG. 3.

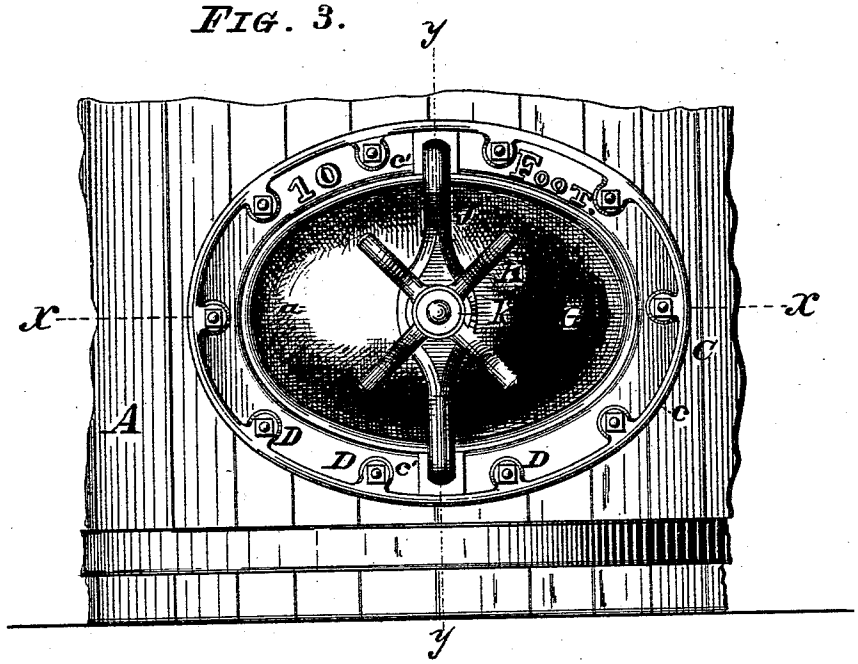


FIG. 4.

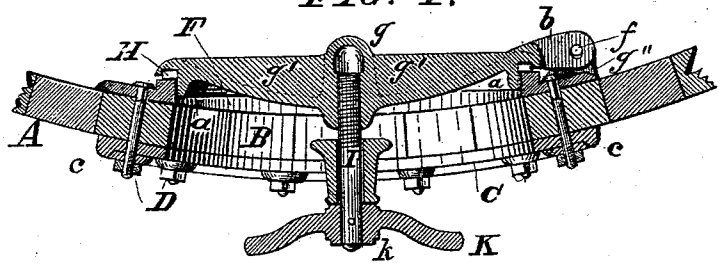
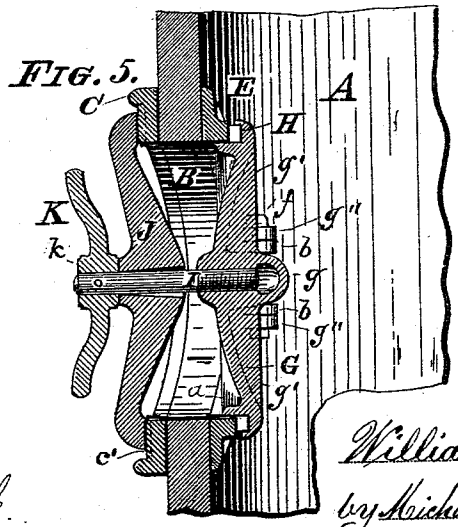


FIG. 5.



Witnesses:

Wm O Stark

Bentie L Stark

Inventor:

William Heiser,

by Michael J & Wm O Stark,

Attorneys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

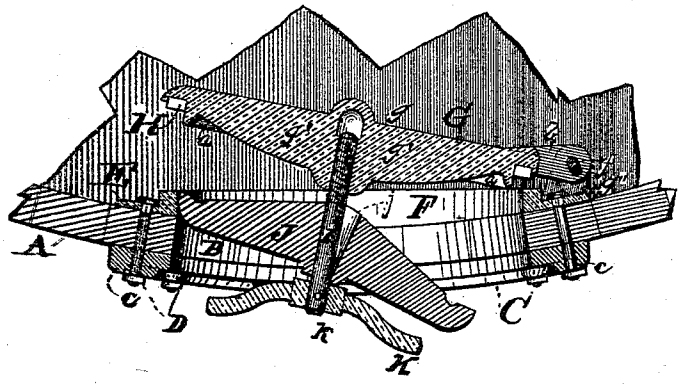
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W. HEISER.

MAN HOLE FITTING FOR WOODEN VESSELS.

No. 457,777. Patented Aug. 18, 1891.

FIG. 6.



Witnesses:
A. Stark
Emmie D. Stark

Inventor:
William Heiser,
by Michael J. & Wm. O. Stark
Attorneys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM HEISER, OF BUFFALO, NEW YORK.

MAN-HOLE FITTING FOR WOODEN VESSELS.

SPECIFICATION forming part of Letters Patent No. 457,777, dated August 18, 1891.

Application filed April 2, 1890. Serial No. 346,258. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HEISER, of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Man-Hole Fittings for Wooden Vessels; 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 general reference to improvements in man-hole fittings for wooden vessels, such as brewer's storage and stock vats and similar casks; and it consists, essentially, in the novel and peculiar combination of parts and details of construction, as hereinafter first fully set forth, and then pointed out in the claim.

In the drawings already mentioned, which serve to illustrate my said invention more fully, Figure 1 is a rear elevation of a portion of a storage-vat provided with my improved man-hole fittings. Fig. 2 is a plan, and Fig. 3 a front elevation, of the same. Fig. 4 is a horizontal section in line *x x* of Fig. 3. Fig. 5 is a vertical section in line *y y* of said Fig. 3. Fig. 6 is a horizontal section in line *x x* of Fig. 3, showing the cover-plate partly opened and the yoke inclined to its axis to enable it to pass through the man-hole in the vessel.

Like parts are designated by corresponding letters of reference in all the figures.

The object of this invention is the production of an efficient, cheap, and serviceable fitting and cover for man-holes of wooden vessels such as barrels, tanks, casks, and similar tight storage-vats, and it is especially designed to overcome several objections to similar devices heretofore in use for analogous purposes.

A is the usual wooden vessel having the opening or man-hole in the well-known manner, such man-holes being generally placed into the curved staves of both horizontal and vertical vessels. This man-hole B, I provide on the exterior of the barrel-staves with an elliptical ring C, having in its face a series of holes, through which bolts D are passed, and which bolts also penetrate the said staves and an elliptical ring E in the interior of the cask, said rings C E being produced in the process of casting and of a thickness capable of withstanding the strain to which they are subjected, a bead *c* around the outer edge of the outer ring serving to strengthen the same in an efficient manner. These two rings are curved to fit the curvature of the staves on the outer and inner sides of the vat, and they are made in various sizes, so as to accommodate all casks from six to twenty feet in diameter. The inner ring has near its opening a rim F, (clearly illustrated in Fig. 2 and also in Figs. 4 and 5,) the edge of which is straight to form a plane bearing-surface for an elliptical cover-plate G, having within a suitable groove an elastic gasket H, which renders the joint between the cover and rim tight in conjunction with a tightening-screw I and a yoke J, as will hereinafter more fully appear. The external contour of the cover-plate G is that of an ellipse, and its body is of a concavo-convex transverse section, with the convex side toward the outside of the cask, the concave side being provided centrally with an inwardly-projecting boss *g* and four ribs *g'*, radiating from said boss and terminating near the outer edge of said cover-plate. On the outer convex side there is an outwardly-projecting rim *a*, fitting the opening in the inner ring E and acting as a guide for the said cover-plate to keep it properly in position. On the back of the said cover-plate there are two perforated lugs *b b*, fitting between two rearwardly-projecting lugs *g''* on the inner ring E, a bolt *f* being the pivot around which the cover-plate G will swing. The boss *g* is internally screw-threaded to receive the screw-bolt I, already referred to. This bolt has on its outer end a hand-wheel K, the center or hub of which *k* bears upon the central portion of the yoke J, the latter swiveling loosely upon said screw-bolt I and bearing with its outer ends upon the raised portions *c'* of the outer ring C. The handle or hand-wheel K is affixed to the screw I in any suitable manner, so that by revolving it the screw I will also turn to tighten or loosen the man-hole cover G in a manner readily comprehended. The object of thus constructing the fastening for the cover is primarily to facilitate ship-

ping of the parts by removing them from the cover-plate G, which in shipping reduces the bulk of the parts to a considerable extent. The depth of the internally-screw-threaded boss *g* exceeds the ordinarily-required limit, so that should my fittings be furnished to coopers and others who supply the wooden portion of the structure it will fit the ordinary variations in the thickness of the staves without adjustment of any kind.

In man-hole covers having flat doors and the ribs in front or toward the outside of the vat there is a liability of breaking the covers, owing to the internal pressure of the vat and the strain exerted by the tightening-screw, subjecting them to the tensile stress. In my present construction, where the cover is of concavo-convex form and the strengthening-ribs on the back in the concave side, the parts are subjected to compression, and in practice I have found that, with an equal amount of metal in the parts, the cover will stand twice or three times the pressure without breakage. It will therefore be readily seen that by this construction I have produced a very efficient and substantial fitting for man-holes in wooden vessels, which may be manufactured at small cost and supply a long-felt want. In the yoke J there is a taper aperture *j*, Fig. 6, which enables the yoke to rock upon the tightening-screw I. This I have thus arranged to facilitate the swinging of the yoke through the man-hole B into the interior of the cask without removing it from its tightening-screw I and without unnecessarily enlarging said opening. This is an advantage, because I can thereby make the minor axis of the ellipse of the rings nearly as large as the major axis thereof and still not making the entire opening so large as to be ojectionable. In Fig. 6 I have shown the parts in a position to illustrate this feature of my invention, the yoke being inclined to its axis and the cover-plate partly open.

In operation the cover-plate G is closed by swinging it upon its hinge against the inner plane rim F of the inner ring E. Now the yoke is turned a quarter-turn, so that its two curved ends rest upon the projections *c'* of the outer ring C, after which the handle-nut K is revolved to tighten the cover by acting upon the yoke. If access to the interior of the cask is desired, the handle-nut K is turned in the proper direction and the yoke J turned so that it coincides with the major axis of the elliptical rings and the man-hole B, in which position, and aided by the said yoke being inclined to its axis, it will swing through said man-hole into the interior of the cask entirely out of the way, so that free access may be had thereto for cleaning and other purposes. This feature adds largely to the utility and usefulness of my present device.

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

The combination of the inner and outer rings, the yoke bearing against the outer ring and having a central tapered opening, the concave cover-plate hinged to the inner ring, having a central internally-threaded boss and provided with radial strengthening-ribs on its concave side, the threaded spindle passing through the tapered opening in the yoke and engaging the internally-threaded boss, and the wheel or handle on the outer end of the spindle.

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

WM. HEISER.

Attest:

MICHAEL J. STARK,
WM. O. STARK.