

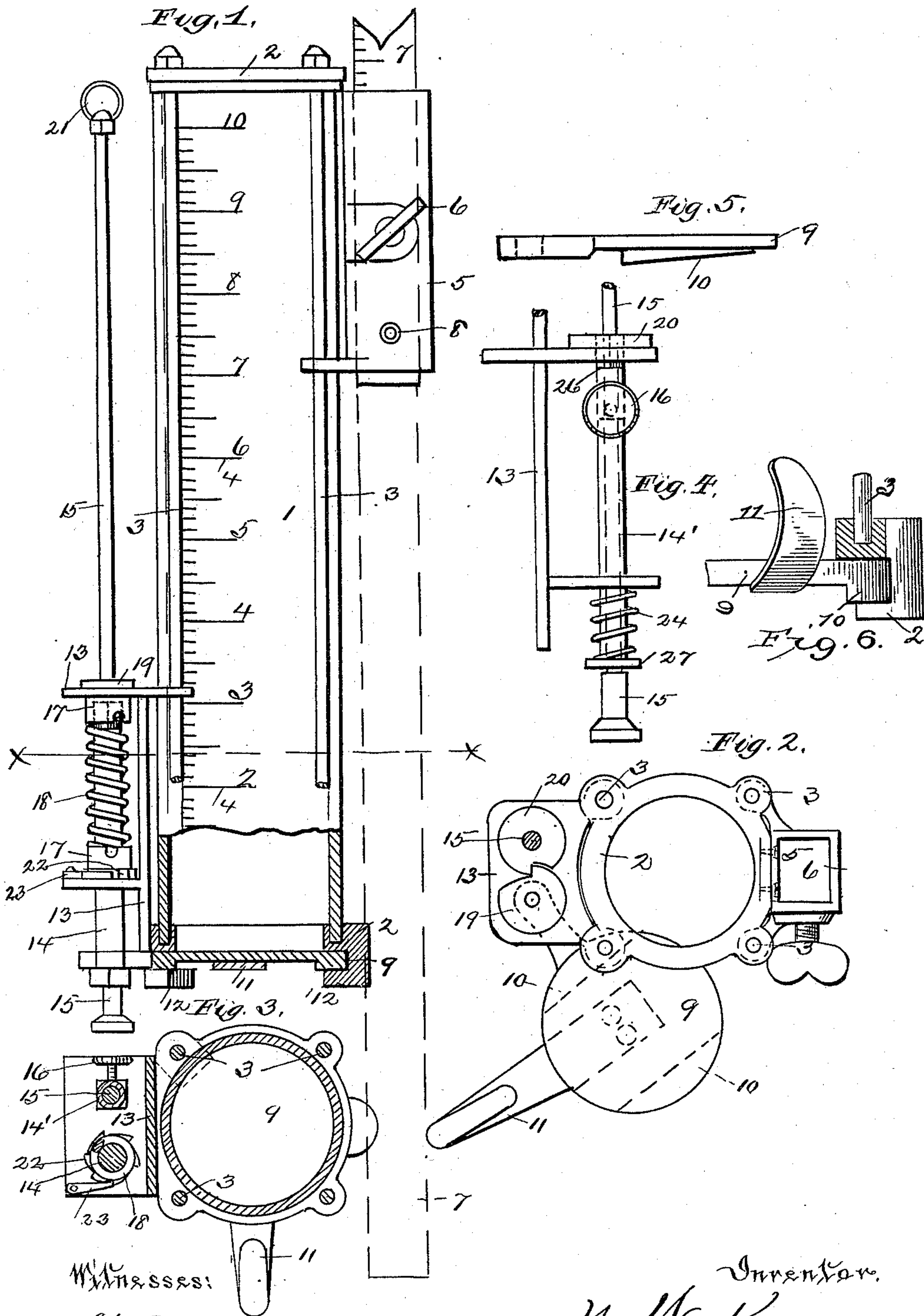
(No Model.)

2 Sheets—Sheet 1.

N. W. KROUSE.  
FLUID TESTER.

No. 533.175.

Patented Jan. 29, 1895.



WITNESSES:  
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(No Model.)

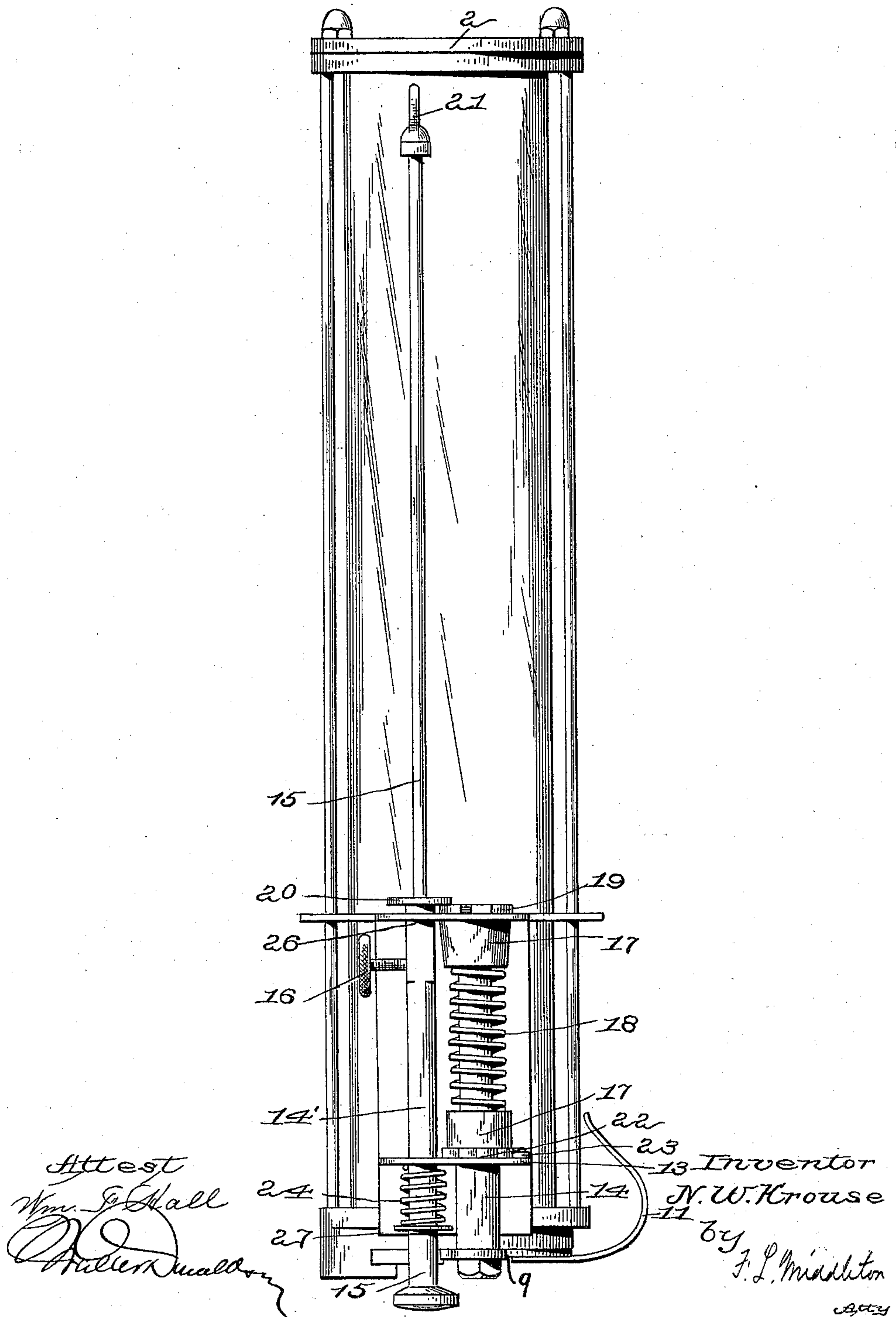
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*Fig. 7.*





# UNITED STATES PATENT OFFICE.

NATHANIEL W. KROUSE, OF ALLEGHENY, PENNSYLVANIA.

## FLUID-TESTER.

SPECIFICATION forming part of Letters Patent No. 583,175, dated January 29, 1895.

Application filed April 21, 1893. Serial No. 471,287. (No model.)

*To all whom it may concern:*

Be it known that I, NATHANIEL W. KROUSE, a citizen of the United States, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Fluid-Testers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to an improved device for testing liquids in tanks, and consists in certain details of construction, and combination of parts as will be fully described hereinafter.

In the accompanying drawings, Figure 1 is a side elevation of my improved liquid tester, partly in section, which is constructed in accordance with my invention. Fig. 2 is a plan view of the same with the rod 15 in section and showing the set screw 6 in a position a quarter removed from that of Fig. 1. Fig. 3 is a sectional plan view taken on the line  $x-x$ . Fig. 4 is a rear elevation of the valve releasing device. Fig. 5 is a side elevation of the valve, showing the inclined surface for closing the same tightly against its seat. Fig. 6 is a detail view of part of the valve and its seat. Fig. 7 is a view a quarter turn from Fig. 1.

To put my invention into practice I provide a glass tube or cylinder 1 of a suitable size, form and construction, and attach to the top and bottom two annular brass rings 2, connected by the rods 3 the lower one of which acts as a valve seat, and the said rings are suitably packed to prevent leakage at their point of contact with the tube 1. Attached to one side of the tube 1 is a guide 5, provided with a thumb screw 6 for the reception of the gage rod 7, by means of which the device may be lowered into a tank for the purpose of removing a sample of the liquid at the bottom of the same. This gage rod 7 may be permanently attached to the device by means of a wood screw passed through an opening 8 formed at a point near the bottom of the guide 5. A spring actuated valve 9, is adapted to operate against the lower annular

ring 2, and thereby close the tube 1. This valve is attached to a vertically arranged rod 14 suitably mounted in the bracket 13, and having a coil spring 18, each end of which is attached to thimbles 17—17. This rod passes loosely through the lower thimble and is cylindrical at that point. The lower thimble rests on a horizontal support integral with the bracket 13, and is provided with a ratchet 22, against which a pawl 23 operates to prevent the said thimble 17 from turning in its bearings. The upper thimble 17 is attached to the rod 14 by means of a square neck to prevent turning, and the said rod 14 is provided with a mutilated disk 19, adapted to engage with a notched disk 20, attached to the releasing device arranged at one side. This releasing device consists in a tube 14' loosely arranged in bearings in the bracket 13, capable of a limited vertical movement in the direction of its length, a notched disk 20 attached rigidly to the top of the same, a square portion 26 to prevent the said tube from turning, a spring 24, and flange 27 to recover, and limit the vertical movement of the tube 14'. Operating within this tube 14' is a rod 15 having an enlargement at the lower end, and a ring 21 at the upper extremity for the purpose of attaching a cord thereto. This rod may be adjusted vertically to any desired position by means of a set screw 16 passed through the tube 14' and impinging upon said rod 15. Formed integral with the lower annular ring 2 are two bearings 12, which engage with inclined and raised surfaces 10 formed integral on the under side of the valve 9, which serve to tighten the valve against its seat, when the same has been violently closed by the action of the spring 18. Attached to the valve 9 is a radial handle 11 by means of which the valve may be opened previous to lowering the device into the liquid.

In operation the device is attached to the gager's rod 7 as shown at Fig. 1 on the drawings, and the valve 9 opened by means of the handle 11, and the same held in that position by the ratchets 19—20. The device is now lowered gently to the bottom of the liquid without disturbing the same, and when the bottom has been reached, the rod 15 coming in contact therewith will move upward, thereby lifting the notched disk 20 out of



mesh with the mutilated disk 19, and permit the spring to operate to close the valve 9, to confine the contents therein and the device is lifted out of the tank bringing a sample of  
 5 the liquid from the bottom. The disks 19, 20 are now out of the same plane, the disk 20 resting upon the disk 19 and the valve may be turned back to open the device when the disks are in this position. When the valve  
 10 is fully opened the disk 20 falls to engage and hold the disk 19 with the valve open this action being due to the spring 24 forcing down the tube 14'.

By releasing the set screw 16, and moving  
 15 the rod 15 down its full length, and again tightening the screw to clamp the rod in that position, a sample of the contents of the tank may be had eight inches from the bottom, which will be found useful when gaging the  
 20 contents of oil tanks, as the outlet is usually that distance above the bottom. By setting this rod 15 in different positions, samples of the liquid may be obtained at various distances above the bottom up to the limit of  
 25 the length of the said rod 15. If it is desired to obtain samples above the length of the rod, a cord or other means is attached to the rod 15 by means of the ring 21, and the gager's rod 7, passed down through its holder 5  
 30 to the desired depth below the valve 9 and clamped in that position by the screw 6, and the valve released by an upward pressure brought against the means attached to the rod 15, and the sample obtained as before  
 35 described.

It will be noticed as shown in Fig. 6 that by the construction and arrangement of the valve 9 and its seat 2, the edges of the seat and valve fit closely together and as the  
 40 valve is closed it will serve to shear or remove any foreign substance from between the two. This advantage will be appreciated by the gagers familiar with the operation of this

class of devices, as in oil tanks considerable sand, pebbles, and other substances accumu- 45 late in the bottom of the tank and render many of the devices for obtaining samples of the oil practically useless.

It will be noticed that by means of the ratchet 22, and its pawl 23, any desired ten- 50 sion may be placed on the spring 18 to close the valve 9 with any degree of force deemed necessary.

The valve 9 having the inclined surface 10 formed integral therewith, affords a means 55 for tightening the same against its seat when violently closed by the action of the spring 18, as the said inclined surface enters its bearing, and acts as a wedge, which serves to effectually close the valve to prevent leakage. 60

A scale of inches arranged vertically along the length of the glass tube 1, gives the operator an opportunity of ascertaining the number of inches and fractions thereof, of the various strata of water, heavy oil, impurities, 65 light oil, &c., contained at different heights above the bottom of the tank.

Having thus described my invention, what I claim, and desire to secure by Letters Pat- 70 ent, is—

A fluid testing device, consisting of a glass tube, a gaging pole attached thereto, the valve 9 fitting a seat on the tube, a vertical bar 14 attached to said valve and under spring tension, the rod 15, the tube 14' en- 75 circling the rod 15, means for clamping the tube to the rod, a spring to return the rod 14' and the releasing disk 20, substantially as described.

In testimony that I claim the foregoing I 80 hereunto affix my signature this 20th day of March, A. D. 1893.

NATHANIEL W. KROUSE. [L.S.]

In presence of—

JAS. J. MCAFEE,  
 M. E. HARRISON.