(No Model.)

G. W. ARNOLD & W. C. HILL.

PUMP.

No. 388,239. Patented Aug. 21, 1888.

Fig. 1.

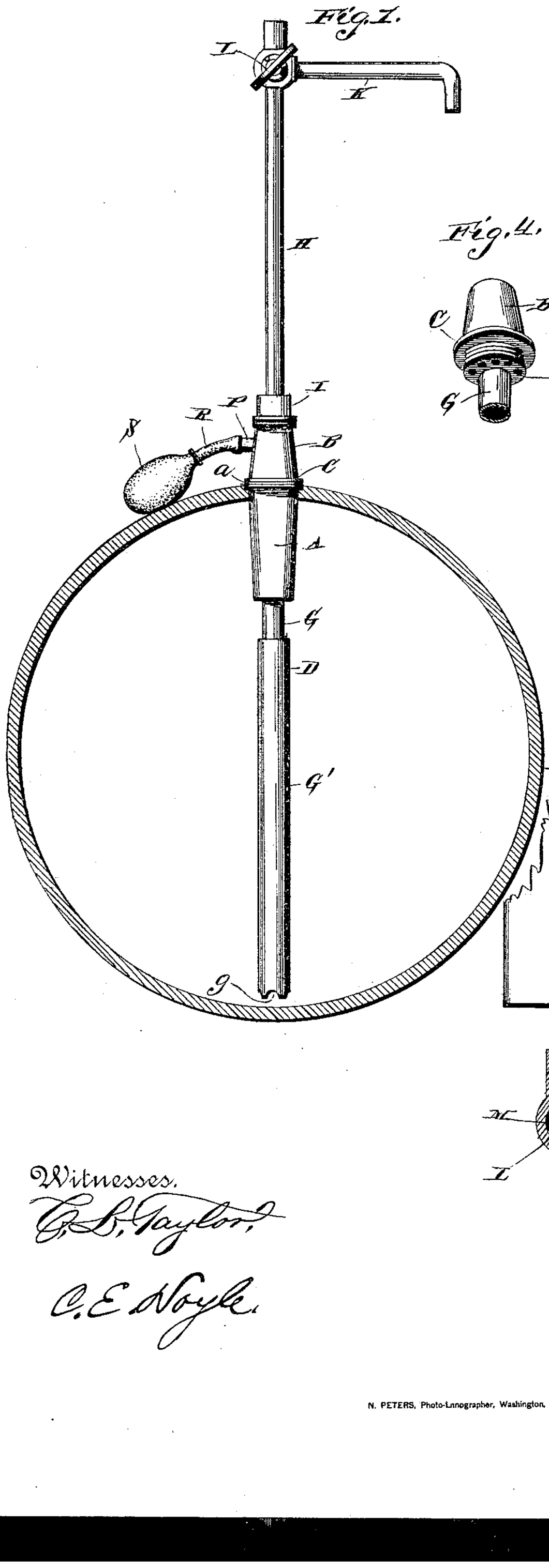


Fig. 2.

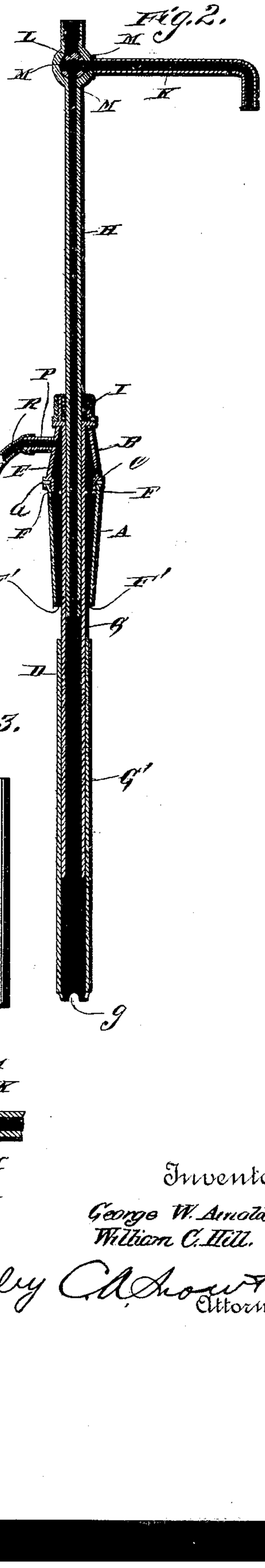
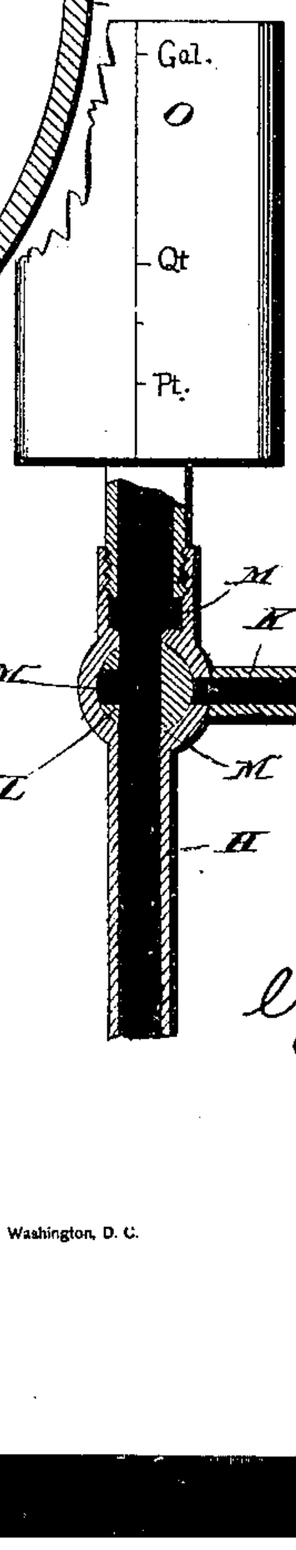


Fig. 4.

Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

GEORGE W. ARNOLD AND WILLIAM C. HILL, OF MOUNT PLEASANT, PENNSYLVANIA.

PUMP.

SPECIFICATION forming part of Letters Patent No. 388,239, dated August 21, 1888.

Application filed December 2, 1887. Serial No. 256,813. (No model.)

To all whom it may concern:

Be it known that we, GEORGE W. ARNOLD and WILLIAM C. HILL, citizens of the United States, residing at Mount Pleasant, in the county of Westmoreland and State of Pennsylvania, have invented new and useful Improvements in Measuring-Pumps, of which the following is a specification.

Our invention relates to improvements in measuring-pumps adapted to be employed for drawing liquids from barrels, casks, &c., through the bung-hole; and it has for its objects to provide improved means for measuring the liquid as it is drawn.

The invention consists in a pump which forces air into the barrel or cask to compress the air above the liquid therein, the tube inserted at its lower end in the liquid and serving as a channel for the liquid out of the cask or barrel, the measuring-vessel on the upper end of the tube to receive the liquid which is forced up the tube by the compression of the air, the spout in the side of the tube close to the bottom of the measuring-vessel, and the stop-cock in the tube at the inner end of the spout, whereby the liquid may either be forced into the measuring-vessel and then allowed to flow out through the spout into a suitable vessel, or may be pumped directly out through the spout.

The invention consists, further, in the construction and arrangement of the parts to produce the said results, which are hereinafter more fully described in connection with the accompanying drawings, wherein—

Figure 1 is a side view of the pump. Fig. 2 is a vertical section of the same. Fig. 3 is a detail view showing the measuring device. Fig. 4 is a detail view of the shell.

Referring by letter to the drawings, A designates a conical-shaped tube which is interiorly screw-threaded at the upper or outer end, and is designed to be tightly driven into the bung-hole of the barrel or cask to be emptied. A shell, B, slightly conical in form, is screwed at the lower end in the upper end of this conical tube, and it is provided at the lower end with a lateral annular flange, C, which bears upon the upper end of the said tube A. Packing *a* is interposed between the flange and the upper end of the tube to enable a tight joint to be formed. A tube, D, is inclosed at the upper end in the shell B, and the space between the tube and sides of the shell forms an air-chamber, E. It will be seen that the bottom of the shell is thus arranged at the upper end of the conical tube A, and perforations F F in the said bottom establish a communication between the cylinder and the tube. The tube D extends below the lower end of the shell and passes down through the tube A into the barrel or cask to which the pump is applied. A small annular space, F′, is left between the sides of the tube D and the lower edge of the conical tube to allow the air which is forced into the shell and tube to escape into the barrel. The tube D is formed in sections G G′, the section G being attached rigidly to the shell in the position shown and described by means of solder or any other suitable means, and the lower section, G′, slides over the upper section. The lower end of the lower section is provided with a number of small notches, *g g*, (or small openings may be preferred,) through which the liquid in the barrel may pass when the lower end of the tube D is tightly pressed against the bottom of the barrel. A tube, H, slides in the upper end of the tube D, and the latter is provided with a packing-box, I, to prevent leakage between the sides of the said tubes. The tube H is vertically movable, for a purpose hereinafter more fully explained.

K represents a spout, which is attached to the side of the tube H, near the upper end and communicates with the interior thereof, and L represents a stop-cock, which is disposed within the tube H at the inner end of the said spout. The body of the stop-cock is provided with three openings, M, which communicate with each other, and these openings are adapted to align with the tube H above and below the stop-cock and with the spout K. Therefore it will be seen that the stop-cock may be arranged so as to form a direct passage up the tube H, or to establish communication between the lower portion of the said tube and the spout or the upper portion of the

tube and the spout. The axial motion of the stop-cock is limited by any simple and well-known device to prevent all of the said passages from being aligned at the same time, and, therefore, when the diametrically-opposite openings M M are aligned with the upper and lower portions of the tube H the other opening M is on the side of the stop-cock opposite to the spout, and therefore the latter is closed.

O represents a measuring-vessel, which is attached to and communicates with the tube H at its upper end, and it is graduated to measure any desired quantities of liquids.

The shell B is provided on one side with a short tube or nipple, P, to which is attached a flexible tube, R, adapted to convey the air from the pump to the shell. The drawings show a rubber bulb, S, connected to the free end of the rubber tube, which is of a similar construction to the bulb of a syringe, and this is the character of pump which we propose to use in connection with the small sizes of our device, as it will be found amply sufficient in strength and easily operated. In the large sizes of our pumps we will use compressing-pumps of a different construction, which will have more power than that shown in the drawings.

The manner of applying this device to a barrel or cask will be readily understood from the foregoing. The conical tube is tightly driven into the bung-hole after the bung has been drawn, the lower end of the tube D is passed through the same, and the lower end of the shell is screwed into the outer end thereof after the sections of the tube D have been so arranged as to reach to the bottom of the barrel. The barrel is air-tight, and as the air which is forced thereinto presses with great force upon the surface of the liquid the latter rises in the tubes D and H and passes into the vessel O. When the desired quantity of liquid has entered the said vessel, the stop-cock is turned to cut off the supply, and (if desired) allow the said liquid, which is now measured, to flow through the spout.

The stop-cock may be so arranged as to entirely cut off the lower portion of the tube H from the outside air, thus confining the odor of the liquid and preventing any injury to the liquid which might arise from exposure to the air. The pump and the air chambers and tubes are entirely isolated from the liquid-conducting tubes, and therefore there is no danger of a stoppage. The tube H is formed vertically adjustable to enable the spout K to be raised or lowered to suit the height of the vessel into which it is delivering the liquid.

Many forms of measuring-pumps are known; but in a great number of them the measurement is accomplished by revolving cylinders or revolving wings operating in a cylinder; but the accuracy of their measurement is necessarily affected somewhat by the condition of the instrument, and also by the condition of the liquid which is being measured. Further, they do not show plainly the means of measurement, and therefore their accuracy cannot be so well established. In our device, however, we use a measuring-vessel which may, if desired, be tested and stamped to attest its accuracy, and the condition of the instrument or of the liquid cannot affect the accuracy of the measurement.

It will be seen that if it is so desired the liquid may be pumped from the barrel directly through the spout into a suitable receiving-vessel.

Having thus described our invention, what we claim, and desire to secure by Letters Patent of the United States, is—

1. In a pump, the combination of the conical tube A, adapted to be secured in an opening in a barrel, the shell screwed in the outer end thereof and having an air-compressing pump attached thereto, the tube D, passing through the tube A and the shell, the tube H, having the spout K near its upper end, and the stop-cock L in the tube H at the inner end of the spout, substantially as and for the purpose specified.

2. In a pump, the combination of the conical tube A, the tube D, passing through the same and leaving an annular air-passage at the lower end of the said tube A, the shell B around the upper end of the tube D, forming the air-chamber E, which communicates with the interior of the tube A, the air-compressing pump connected to the shell, and the tube H, inserted in the upper end of the tube D and passing through a packing-box, I, and having the spout K attached thereto, substantially as and for the purpose specified.

3. In a pump, the combination of the conical tube A, the shell attached thereto and having a tube, P, on the side, the air-chamber E within the shell, having the perforations F in the bottom, which communicate with the tube A, the fluid-conducting tube passing through the tube A and the shell, and the air-compressing pump attached to the tube P, substantially as and for the purpose specified.

4. In a pump, the tube A, adapted to be inserted in the bung of a barrel and interiorly tapped at its upper end, the shell screwing at its lower end into the tube A and having the lateral flange C, the packing-ring *a* between the flange C and the upper end of the tube A, the fluid-conducting tubes passing through the tube and shell, and the air-pump connected to the interior of the shell, substantially as specified.

5. In a pump, the combination of the tube A, the shell secured in the upper end thereof and having a perforated bottom, the tube D, passing through the tube A and the shell and rigidly attached at its upper end to the shell, the adjustable tube H, sliding within the tube D and having a spout at its upper end, and the air-pump attached to the shell, substantially as specified.

6. In a pump, the combination of the tube A, shell B, connected thereto, the tube D, having the telescoping sections G and G′, one of which passes through the tube A and shell B and is attached to the latter, and the air-pump connected to the shell and communicating with the space between the tube and the shell, substantially as specified.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in presence of two witnesses.

GEORGE W. ARNOLD.
WILLIAM C. HILL.

Witnesses:
JOHN J. HURST,
C. E. GILBERT.