3 Sheets—Sheet 1.

W. NOLL.

LIQUID FORCING APPARATUS.

No. 185,565. Patented Dec. 19, 1876.

Fig 3.

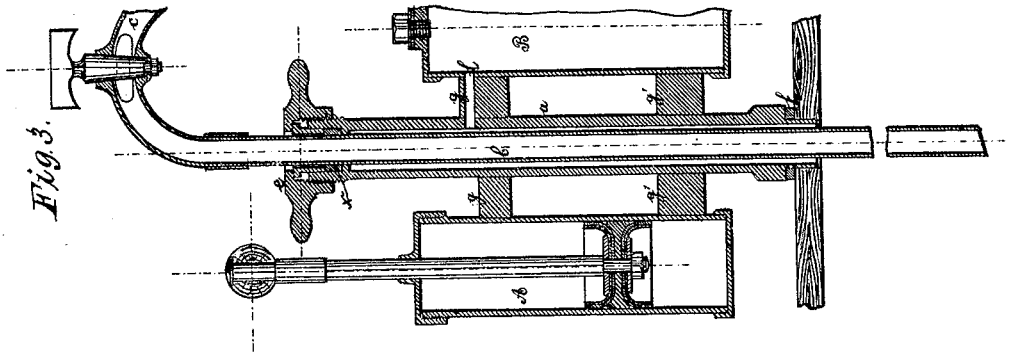


Fig 2.

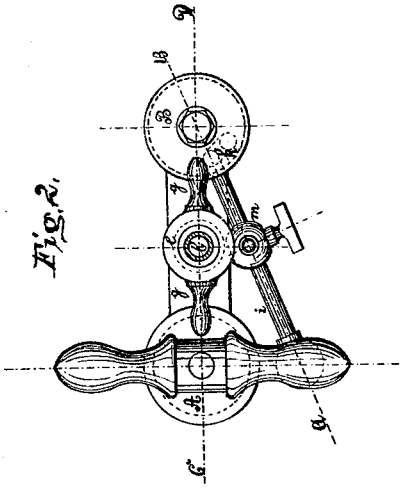
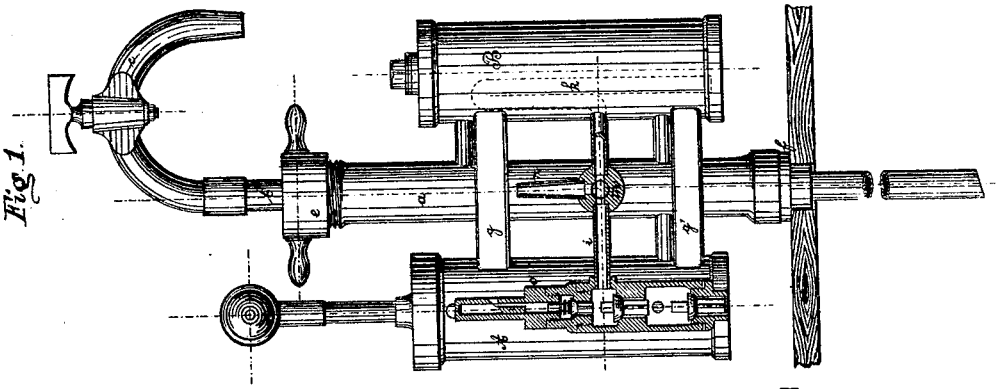


Fig 1.



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3 Sheets—Sheet 2.

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LIQUID FORCING APPARATUS.

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Fig. 5.

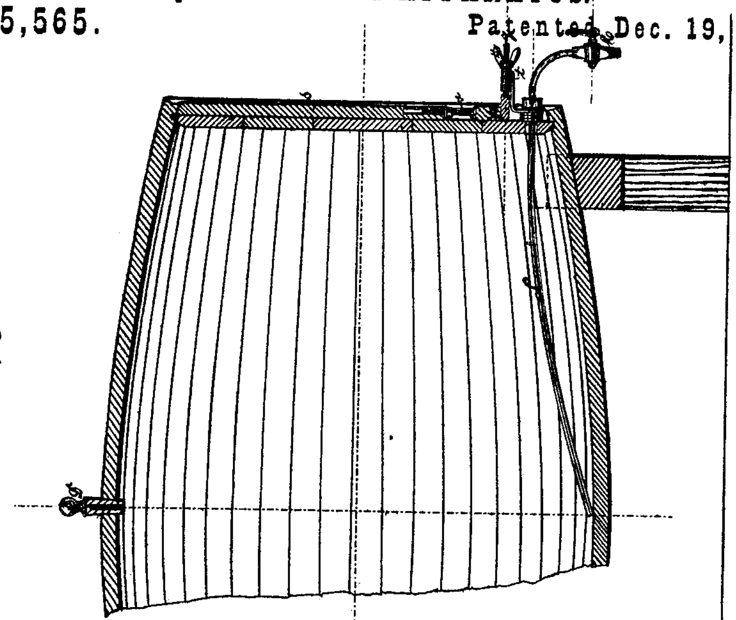
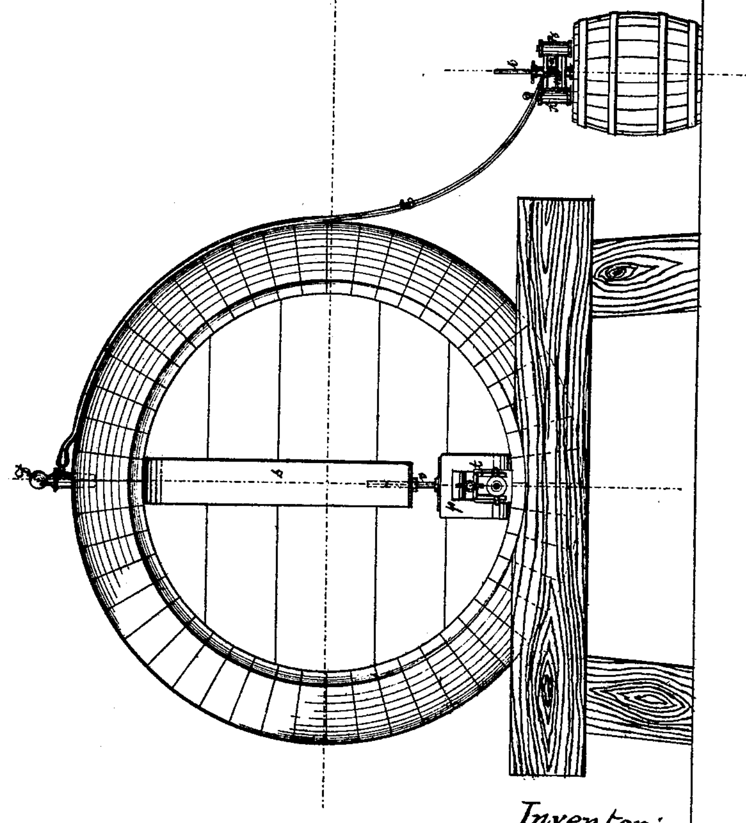


Fig. 4.



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LIQUID FORCING APPARATUS.

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Fig. 6.

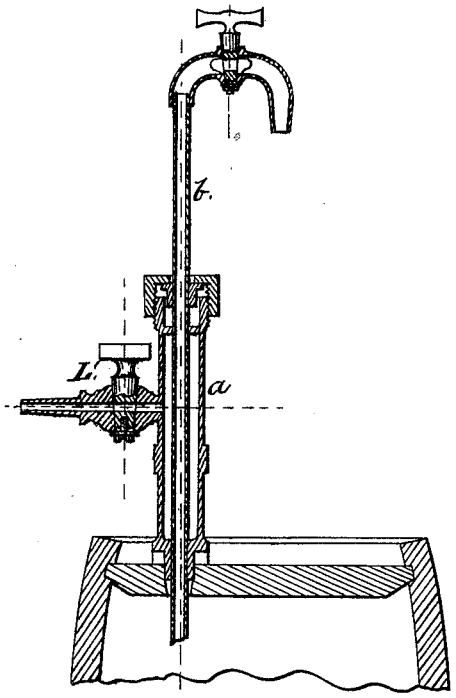


Fig. 7.

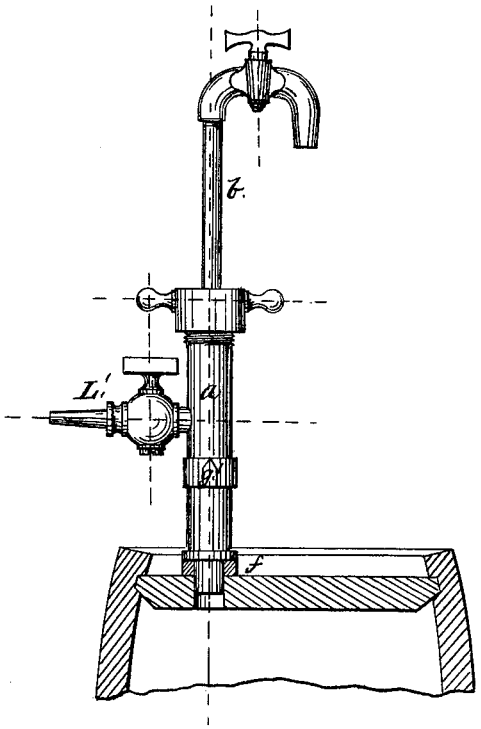


Fig. 8.

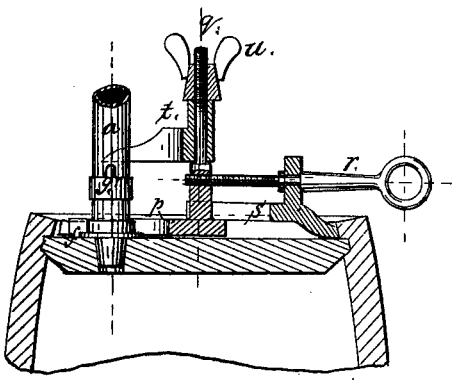
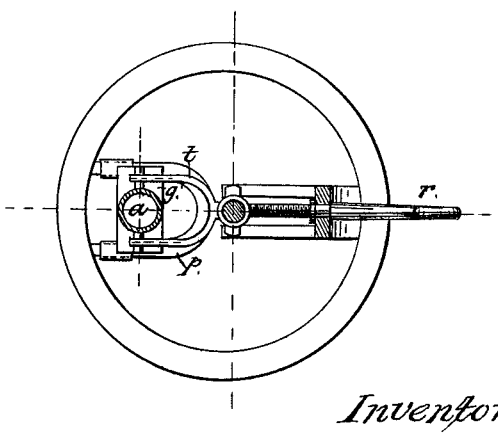


Fig. 9.



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UNITED STATES PATENT OFFICE.

WILHELM NOLL, OF MINDEN, PRUSSIA.

IMPROVEMENT IN LIQUID-FORCING APPARATUS.

Specification forming part of Letters Patent No. **185,565**, dated December 19, 1876; application filed October 10, 1876.

To all whom it may concern:

Be it known that I, WILHELM NOLL, of Minden, in the Province of Westphalia and Kingdom of Prussia, have invented an Apparatus for Drawing or Forcing Liquids from Barrels and other vessels, of which the following is a specification:

The object of the present invention is to provide an apparatus by the use of which liquids in general, but more particularly beer, may be drawn or forced from barrels by pneumatic pressure, in a simple and perfect manner.

The invention consists in the combination of an air-pump and an air washer or purifier, with a tapping-plug and a discharge-tube, the several parts being connected with each other so as to be portable and capable of being attached to a barrel or keg.

Another feature of the invention is the special device for attaching the forcing apparatus to a barrel, the same consisting of two adjustable arms, which are forced against the sides of the barrel, and a vertically-movable clamp-piece bearing upon the supporting-frame of the apparatus, so as to hold the same in place. The invention will be more fully described hereinafter, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation, partly in section, of my improved forcing apparatus. Fig. 2 is a plan or top view, and Fig. 3 is a vertical sectional view of the same. Figs. 4 and 5 are modifications of my invention, showing an apparatus for emptying large barrels. Figs. 6 and 7 show a tapping plug and tube, which are used when liquids are to be drawn from two kegs simultaneously. Figs. 8 and 9 represent in detail the device for attaching the forcing apparatus to a barrel or keg.

The letter A denotes a cylinder air-pump of the ordinary construction, and B represents a vertical cylinder, designed to contain a solution of permanganate of potassa or other chemical substance, capable of purifying or washing the air forced into it by the air-pump. The air-pump and washer are attached to the opposite ends of horizontal top and bottom arms *g g'*, which extend from a hollow plug, *a*, located midway between the pump and washer. Said plug fits into the bung-hole of the keg or barrel, and it contains a liquid-discharge tube, *b*, which is of such a length as to reach to the bottom of the barrel, when it is pushed into the same. At the upper end of the plug *a* is a winged or armed screw-nut, *e*, which serves in connection with a tubular washer, *x*, and stuffing-box, to form an air-tight joint between the plug and liquid-discharge tube.

For attaching the forcing device directly to a keg or barrel, I employ a device, consisting of two adjustable arms, *p* and *s*, and a vertically-adjustable pressure bar or fork, *t*. The arm *p* is bifurcated or branched to permit the tapping-plug to enter between the same, and the arm *s* is slotted and movable upon the arm *p*, and can be adjusted to or from the same by means of the screw *r*. The arms *p* and *s* lie upon the barrel-head, and are designed to be forced under the ends of the staves or against the sides of the barrel. This operation is effected by turning the screw *r*, the movement of the arm *s* being permitted by causing its slotted inner portion to move on a vertical screw post or stem, *q*. A pressure arm or fork, *t*, fitted on said stem, is made adjustable in a vertical direction, and is capable of being held in firm contact or engagement with one of the arms *g* of the supporting-frame by a screw-nut, *u*, surmounting the stem *q*.

The manner of fitting the apparatus to a barrel, and tapping the same when the contents are to be discharged, is to fit the clamp in position with the presser-arm raised, so as to enable the tapping-tube to be forced into the bung-hole, but not to such a great extent as to force the bung entirely into the barrel. The air-forcing apparatus having been firmly attached to the barrel, and the joint between the latter and the tapping-plug made air-tight by a packing-gasket, *f*, all that is necessary to cause the flow of liquid is to push the discharge-tube in a downward direction, which will force the bung into the barrel, and open the communication between the barrel and air-pump, or rather the air-washer. The air-pump is provided with the necessary adjuncts, such as a safety or relief valve, an inlet-valve, and an alarm-whistle, *o*. The communicating-channel between the air-pump and the air washer or purifier is a tube, *i*, which termi-

nates in a goose-neck, *k*, within the purifier-cylinder, so as to cause the incoming air to pass to the bottom of the same, and up through the solution used for removing foreign matters from the air, and purifying the same. The tube contains a two-way cock, *m*, which can be turned so as to convey the air from the pump to the purifier, or to close the communication between the two. The cock can also be adjusted so as to convey the air from the pump into a discharge-nozzle, *n*, applied to the middle of the tube *i*. In still another position of the cock, communication is opened between the purifier and the nozzle, so as to discharge the air contained in the purifier either into the atmosphere or into a reserve tapping-plug. The air purified passes into the barrel or keg through a channel or tube, *l*, and the hollow plug *a*, the discharge-tube *b* being made sufficiently small in diameter to permit the ready flow of air between the same and the plug. When the air enters the barrel it exerts a pressure upon the liquid contained therein, and forces the same up through the discharge-tube, which can terminate at any desired point. The discharge-tube is provided with an ordinary stop-cock for shutting off the flow of liquid.

The apparatus above described is specially adapted for forcing liquors kept on draft. For emptying large casks, I make use of an apparatus shown in Figs. 4 and 5, in which a tapping-tube, L, having a faucet, M, is introduced into the cask, and retained therein by the adjustable clamp device heretofore described, the same being only slightly varied in form to suit the change of position. The air-pump and purifier are in this instance applied to an empty keg, which is pumped full of air, purified in the manner already described. This having been done, the two-way cock is manipulated to shut off the communication between the pump and washer, and open it between the air-receiver and the large cask, a flexible tube, E, attached to the chambered bung D, and the nozzle *n*, serving to convey the air from the receiver into the cask. The air entering the latter exerts a pressure upon the liquid and forces it out through the tube L. For discharging the contents of two kegs or barrels at the same time, I employ a reserve tapping-plug and tube, Figs. 6 and 7, which are attached to the keg by the clamp device above described. The tapping-plug is, in this instance, provided with a nozzle, L′, which is connected with the nozzle *n* of the air-pump apparatus of the other keg by means of a flexible tube. The air is first pumped into the keg provided with the forcing apparatus, and then by properly setting the two-way cock the air is admitted from this keg into the one provided with the reserve tapping-plug. Thus the discharge of the contents of two casks can take place simultaneously.

The advantages of my invention as applied to the drawing off of liquors, especially those containing gases, are manifest.

I disclaim the broad idea of forcing air into barrels for expelling the contents thereof, this having been heretofore done, with impure air taken generally from cellars, &c.; but

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

1. The portable liquid-forcing apparatus herein described, consisting of the air-pump A, air washer or purifier B, tapping-plug *a*, movable discharge-tube *b*, tube *i*, two-way cock *m*, and nozzle *n*, substantially as and for the purpose specified.

2. The combination, in a liquid-forcing apparatus, of an air-pump, A, and an air washer or purifier, B, whereby the air is purified before it comes in contact with the liquid to be expelled, substantially as herein set forth.

3. The combination of the arms *p s*, presser-fork *t*, stem *q*, screw *r*, and nut *u*, with the air-forcing apparatus, and barrel or keg, as and for the object stated.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

WILHELM NOLL.

Witnesses:
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OTTO DAVISSON.