

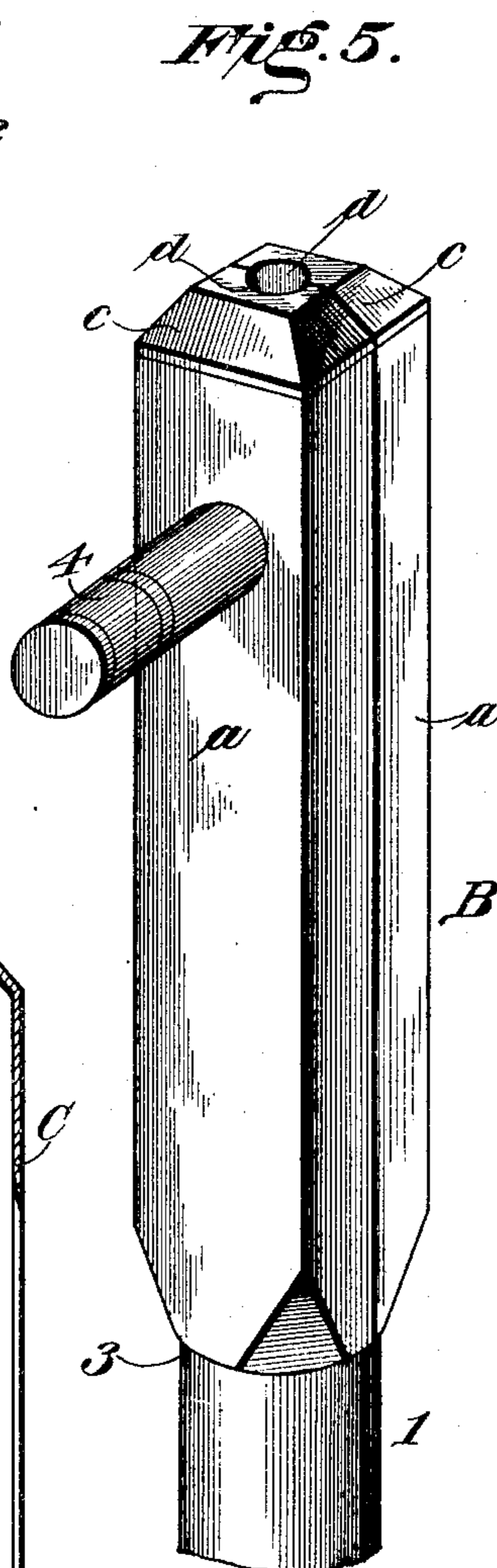
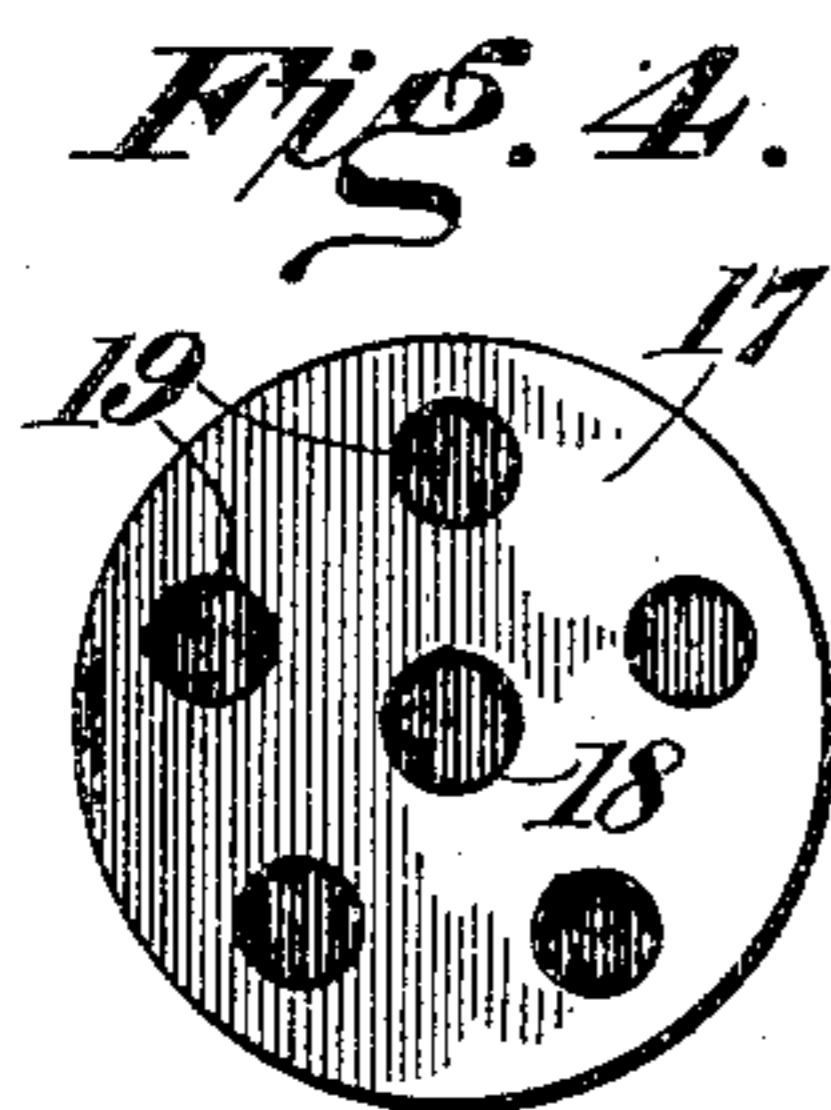
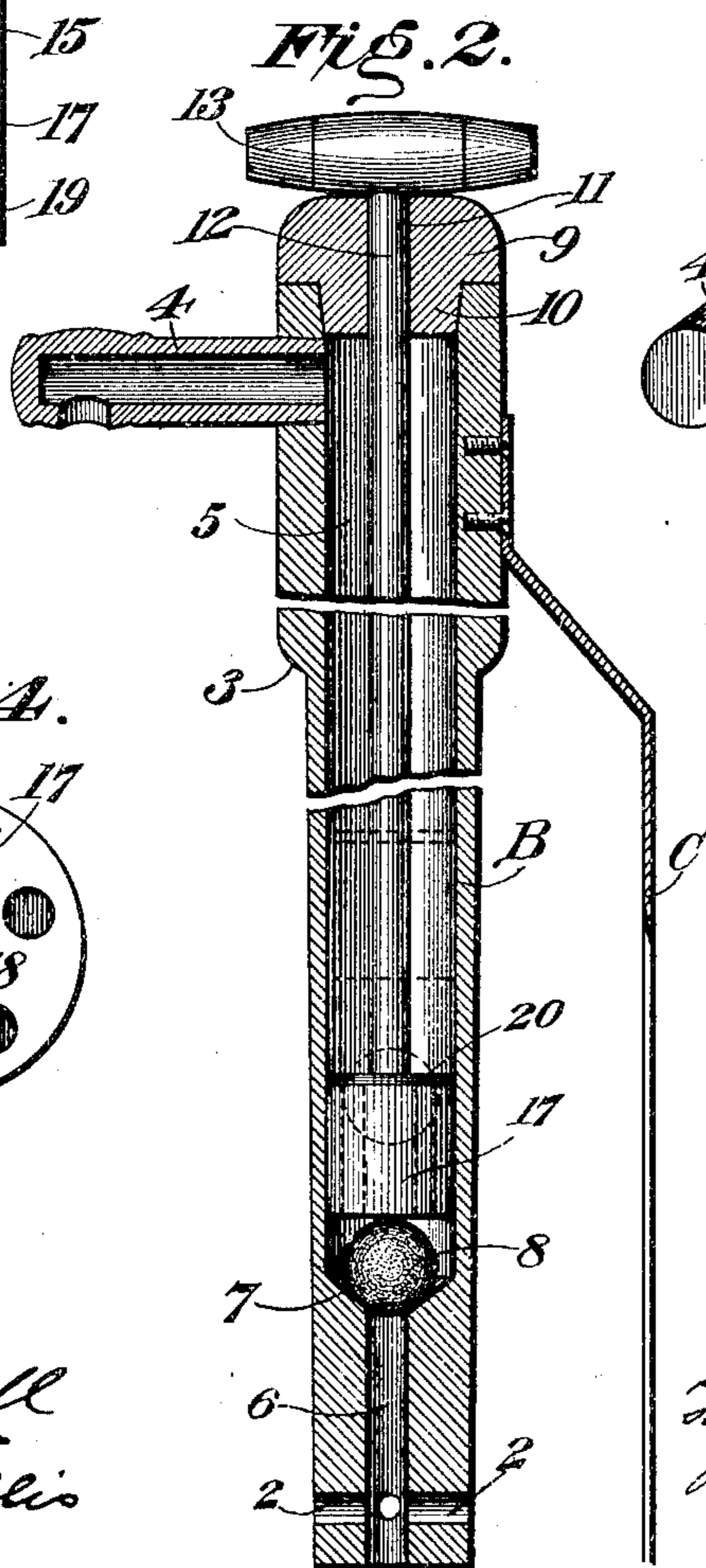
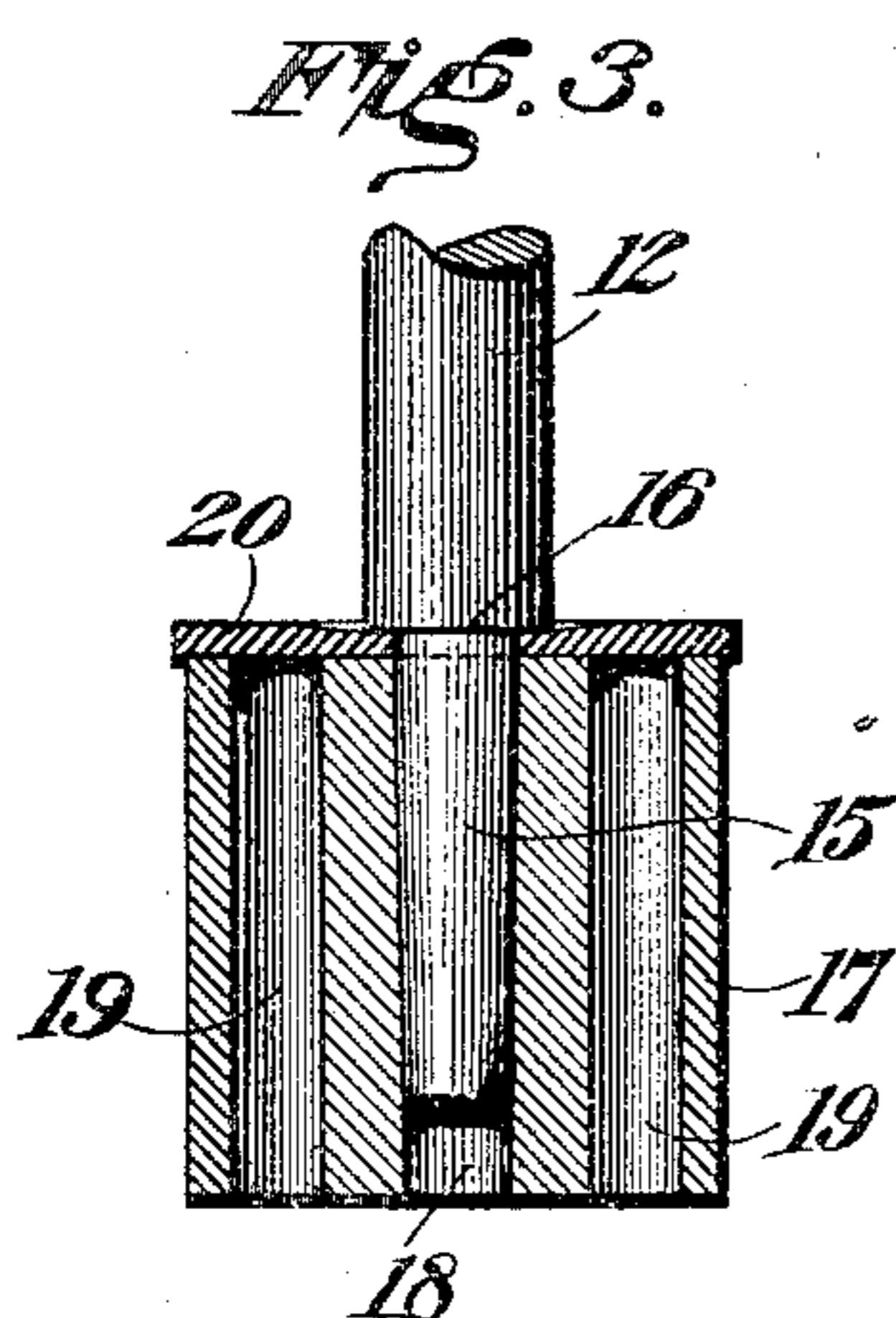
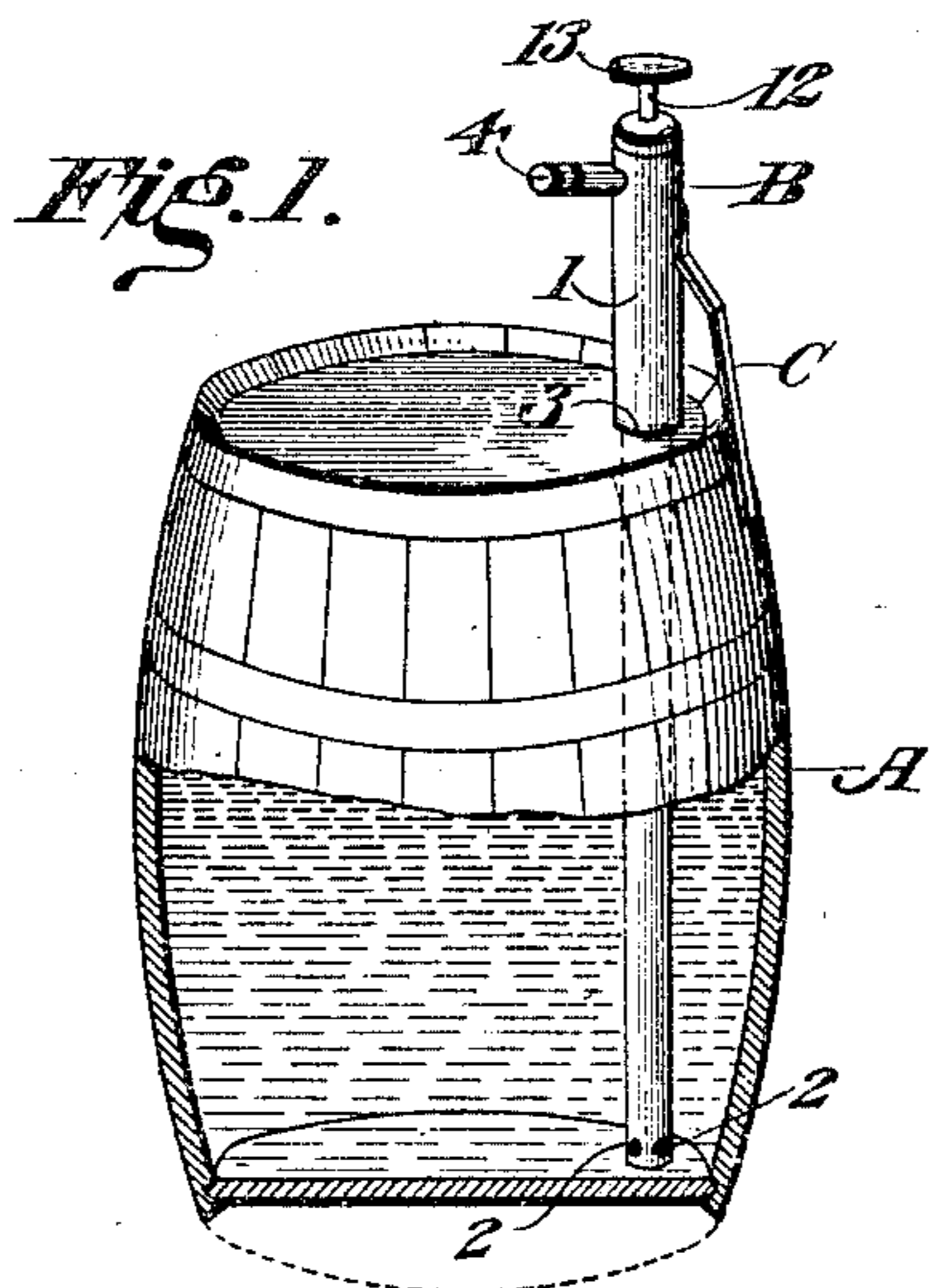
No. 681,807.

Patented Sept. 3, 1901.

T. E. MOON.
LIQUID PUMP.

(Application filed Mar. 27, 1901.)

(No Model.)



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THOMAS ELWOOD MOON, OF SABINA, OHIO.

LIQUID-PUMP.

SPECIFICATION forming part of Letters Patent No. 681,807, dated September 3, 1901.

Application filed March 27, 1901. Serial No. 53,097. (No model.)

To all whom it may concern:

Be it known that I, THOMAS ELWOOD MOON, a citizen of the United States, residing at Sabina, in the county of Clinton and State of Ohio, have invented certain new and useful Improvements in Liquid-Pumps; 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 appertains to make and use the same.

This invention relates to fluid-pumps, and more particularly to vinegar-barrel pumps; and it consists, substantially, in the improvements hereinafter more particularly described, and pointed out in the claims.

The invention has reference more particularly to pumps designed for drawing vinegar from casks or dispensing tanks or vessels, although capable of other uses; and the object of the invention is to provide a device of this kind which is exceedingly simple in construction and inexpensive to manufacture, besides being easily cleaned and readily manipulated when in place.

A further object is to so construct the pump that it can be quickly repaired when broken or worn and also to render the device perfectly reliable in use without leakage or undue overflow.

A further object is to provide means for securely holding or maintaining the pump in proper position within a cask or other suitable retaining vessel for a liquid and also to provide for the ready insertion and removal of the pump whenever desired.

A still further object is to provide means for deriving the proper suction within the pump without the use of extra elements—such as washers, packing, &c.—than the piston and its cooperating valve, and also to provide means whereby the said piston and its valve can each be readily removed and replaced when worn.

The above and additional objects I attain by the means substantially as illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view, in part section, of a liquid-containing cask, tank, or other vessel, showing my improved pump or faucet as applied to or mounted therein for the purpose of drawing off the liquid from time to time. Fig. 2 is a vertical sectional

view of my improved pump or faucet enlarged, showing more clearly the construction of the barrel or cylinder and the arrangement therein of the piston and valves. Fig. 3 is an enlarged view in detail, showing the piston and its valve in section and a portion of the piston-rod in elevation. Fig. 4 is a bottom plan view of the piston; and Fig. 5 is a detail in perspective of the pump-barrel, showing a slight change or difference in the construction of said barrel and the cap or cover therefor.

Before proceeding with a more detailed description it may be stated that I employ a pump barrel or cylinder of any suitable height and transverse dimensions, and said barrel or cylinder is formed at its lower end for a suitable distance with a contracted conduit or port for the passage of the liquid from the cask or other vessel into the said pump-barrel. The barrel or cylinder is also provided at or near its lower end with a suitable number of inlet-openings for the liquid, which openings are in communication with the said conduit or port. At the upper end of this conduit or port is a seat for a loose ball-valve, which operates to prevent the liquid from returning or flowing back into the cask or vessel after the piston has been elevated to draw a quantity of such liquid into the pump barrel or cylinder. Working in a chamber formed in the said pump barrel or cylinder is a piston of peculiar construction, and located above said piston is a suitable flexible valve, which is opened by the liquid on descent of the piston and which is closed by the column of liquid which passes above the same through the piston on the descent of the latter. This valve also constitutes a packing for the piston on the lift or upstroke of the latter, as will hereinafter appear, and the several parts or elements unite or cooperate in such manner as to form an exceedingly-useful device for the purpose intended.

My improved pump or faucet is adapted for use with any and all kinds of liquids and can of course be constructed of any suitable preferred material; but for acid liquids—such as vinegar, for instance—I prefer to construct the same entirely of wood, (except, perhaps, the piston-valve, which is preferably of flexible material, as leather,) and thus the liquid will not become contaminated or tainted, as

would perhaps occur in the use of metal in the structure. Also in order to fill up the pores of the wood, so as to prevent liability to splitting and warping thereof, I may soak
5 or impregnate the same with some suitable chemical substance for this purpose, which will also prevent the taste of the wood from being communicated to the liquid as well as preventing all corrosive effects whatever.

10 Specific reference being had to the drawings, A represents a suitable cask, tank, or vessel for containing any suitable liquid to be drawn therefrom from time to time as needed, and passing through a suitable open-
15 ing in the top of said cask or vessel is my improved pump or faucet B, which comprises a barrel or cylinder 1, having its lower end near to the bottom of the cask and provided at or near such lower end with one or more open-
20 ings 2 for permitting the liquid in the cask to be drawn into the interior of said barrel or cylinder. Preferably, though not essentially, the upper projecting part of the barrel or cyl-
25 nder is slightly enlarged on its exterior, so as to provide an annular flange or shoulder 3, which rests upon the upper surface of the top of the cask, and projecting from the side of said barrel or cylinder at near the top is a
30 suitable spout or nozzle 4, communicating with the interior chamber 5 of the pump and through which the liquid is emptied or dis-
charged from the cask.

In constructing the pump of wood I select a piece or block of suitable size or dimen-
35 sions, and by the use of a suitable implement or auger inserted in one end of the block I first form the chamber 5, which, as shown, extends almost the full height of the pump. I then cut into the block from the other end
40 by the use of an implement or auger of smaller size or diameter, and thus I form the conduit or port 6 for the passage of the liquid into the chamber of the pump, said conduit or
45 port communicating with the said openings 2 and also with the said chamber 5. It is evident, of course, that I am not limited to this manner of forming or constructing the pump-
barrel, but it will be seen that the means em-
50 ployed are simple and do not require special tools or implements. At the point of communication of the said conduit or port with the lower end of said pump-chamber 5 is preferably a conical valve-seat 7, formed by
55 the increased thickness of the walls of the conduit, and working in said chamber upon this valve-seat is preferably a ball-valve 8, which may be of wood, glass, or any other
suitable material for the purpose. The up-
60 per end of the chamber 5 is open, and fitting therein at the top of the pump barrel or cyl-
inder is preferably a removable cover or cap-
piece 9, having a stopper-like projection 10
fitting into the barrel, an opening 11 being
65 formed all the way through the cap-piece for the passage and guidance of the piston-rod
12, also preferably of wood and having at its
upper end a suitable handle 13 for manipu-

lating the same. Said cap-piece is made to fit the upper end of the pump-barrel suffi-
ciently snug or tight so as not to be displaced
70 by the upward movements of said piston-rod, and it permits of the ready insertion and re-
moval of the piston-rod and piston 17 as well as the valve employed. Instead of using said
cap, however, I can construct the pump-bar-
75 rel of two halves *a a*, properly united at the joints (see modification Fig. 5) in any suit-
able way, and each half-section having at its upper end a rigid cap portion *c*, formed with
80 a central notch *d*, the sides of the two said
notches forming an opening or guide for the piston-rod when the two parts of the barrel
and cap portions are joined together. The construction first described, however, is the
85 preferred one in practice.

The piston-rod 12 is reduced in size or di-
ameter for a suitable distance from its lower
end, leaving a terminal portion or stem 15,
preferably slightly tapered toward its lower
extremity, and also forming or leaving an an-
90 nular flange or shoulder 16. Fastened in place upon said tapered terminal portion or
stem 15 of the piston-rod is a piston 17 of di-
ameter to fit the pump-chamber 5 snugly, the
said piston being formed with a vertical cen-
95 tral opening 18, into which the tapered por-
tion of the rod fits or is received. The walls
of said opening 18 are also slightly tapering,
and thus it will be seen that when the piston
is placed upon the said terminal portion or
100 stem and then forced onto the same tightly
it will be held thereon by friction, while still
being capable of ready removal therefrom
when desired. The said piston 17 is provided
with any suitable number of openings or ports
105 19, extending all the way through the same
from top to bottom and which are for the
passage or upward transfer of the liquid in
the chamber 5.

Located or fitting upon the tapered ter-
110 minal portion or stem of the piston-rod is a
valve 20, formed of any suitable flexible ma-
terial, as leather, and which valve is con-
fined in place between the annular flange or
shoulder 16 on the rod and the upper end of
115 the said piston. Now this valve fits the walls
of the chamber 5 quite closely or tightly, and
hence the same becomes practically a pack-
ing for the piston on its lift or upstroke. It
is evident that when the pump is in place
120 and the piston is at the bottom of chamber 5
on first pulling the piston-rod upwardly the
piston is of course carried therewith, thus
producing suction in the chamber 5 and draw-
ing the ball-valve 8 upwardly from its seat,
125 while at the same time a quantity of the liquid
is drawn into the lower part of said chamber
5 from the cask A. In the first ascent of the
said piston the pressure of the air in the up-
per part of chamber 5 is sufficient to hold
130 valve 20 down upon the piston, thus closing
the upper ends of the openings or ports 19
therein, and during the whole of the upward
stroke of the piston liquid from the cask con-

tinues to enter chamber 5 through the conduit or port 6. Now it is understood, of course, that as soon as the upward pull on the piston-rod is discontinued the suction in chamber 5 ceases and the ball-valve 8 again falls to its seat, and thus prevents return or back flow of the liquid from the pump to the cask. On forcing the piston downwardly the liquid enters the openings or ports in the piston and the valve 20 is thereby lifted and the liquid caused to pass through said openings or ports, thus completely transferring the column of liquid to a position above the piston by the time the latter is forced or carried to the lower end of chamber 5. On next again elevating the piston through the medium of its rod it is evident that the said piston (valve 20 being held tightly closed by the weight of the column of water above) will exert a lifting action upon the column of water in the pump-chamber, and thus as the piston continues to ascend the liquid will be discharged at the spout or nozzle 4. With every descent of the piston the latter is tightened upon the tapered terminal portion or stem 15 of its rod by the pressure of the liquid, and it is evident that both said piston and valve 20 can readily be replaced when worn or broken.

In order to hold the pump rigidly in place within the cask or other vessel A, I employ a suitable brace C, secured at its upper end to the side of the pump barrel or cylinder and at its lower end to the side of the said cask or vessel. Said brace is readily detachable, to permit removal of the pump or faucet when desired.

From the foregoing it will be seen that my improved device is very cheap and simple in construction, and it will be understood, of course, that I do not restrict or limit myself to the precise details of the several parts or elements herein shown and described, since immaterial changes could be made in the construction and arrangement thereof and still be within the scope of my invention.

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

1. A vinegar-pump for casks and other vessels, comprising a pump-barrel having an outer annular shoulder or flange, and formed

for a suitable distance from its lower end with an entrance-port having inlet-openings in the walls thereof for a liquid, an inner chamber of greater internal diameter than the port extending practically the full length of the barrel and communicating with said port, the walls of said chamber being continuous or unbroken with the walls of the port, and also less in thickness and forming an intermediate conical valve-seat, a ball-valve operating on said valve-seat to open and close communication between the port and chamber, a piston working in said chamber and provided with a valve controlling openings therein, said valve constituting a packing for said piston, and a supporting-brace for the pump adapted for attachment to a vessel, the whole being combined and arranged substantially in the manner shown and described.

2. A vinegar-pump for casks and other vessels, comprising a pump-barrel having an outer annular flange or shoulder and constructed of a single piece of wood formed for a suitable distance from its lower end with an entrance-port having inlet-openings in the walls thereof for a liquid, an inner chamber of greater internal diameter than the port extending practically the full length of the barrel and communicating with said port, the walls of said chamber being continuous or unbroken with the walls of the port, and also less in thickness and forming an intermediate conical valve-seat, a loose ball-valve operating on said valve-seat to open and close communication between the port and chamber, a piston-rod working through one end of said chamber and having at its inner end a smooth tapered stem and an annular shoulder or flange, a removable piston fitting upon said stem frictionally and having ports or openings, and a removable valve for opening and closing said ports confined on the stem between said shoulder and piston, said valve constituting a packing for the piston, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS ELWOOD MOON.

Witnesses:

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O. A. WEST.