

No. 737,480.

PATENTED AUG. 25, 1903.

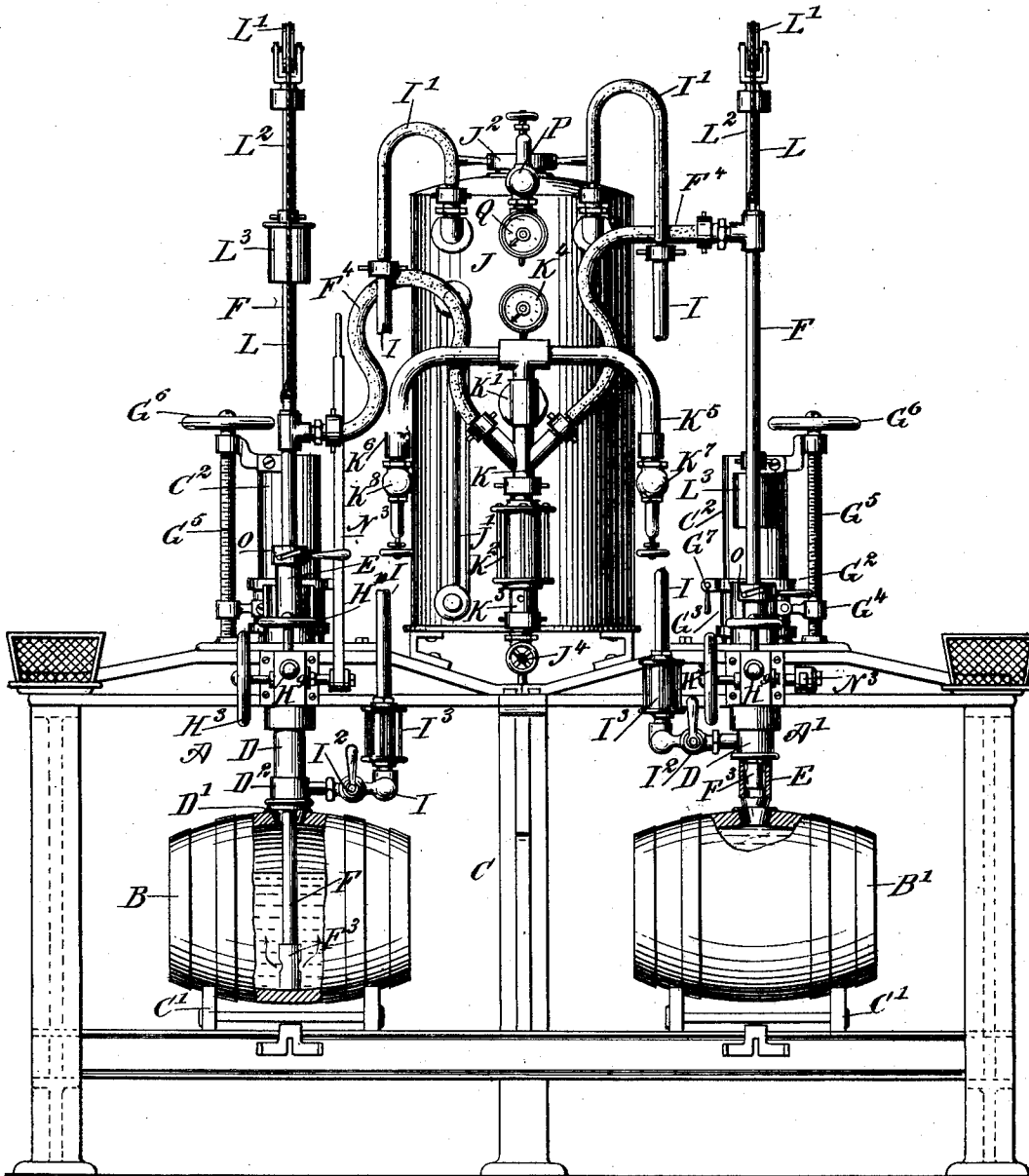
H. REININGER.

COUNTER PRESSURE RACKING AND BUNGING APPARATUS.

APPLICATION FILED JAN. 17, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



WITNESSES:

John Simpson
Rev. J. H. Hooten

Fig 1

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No. 737,480.

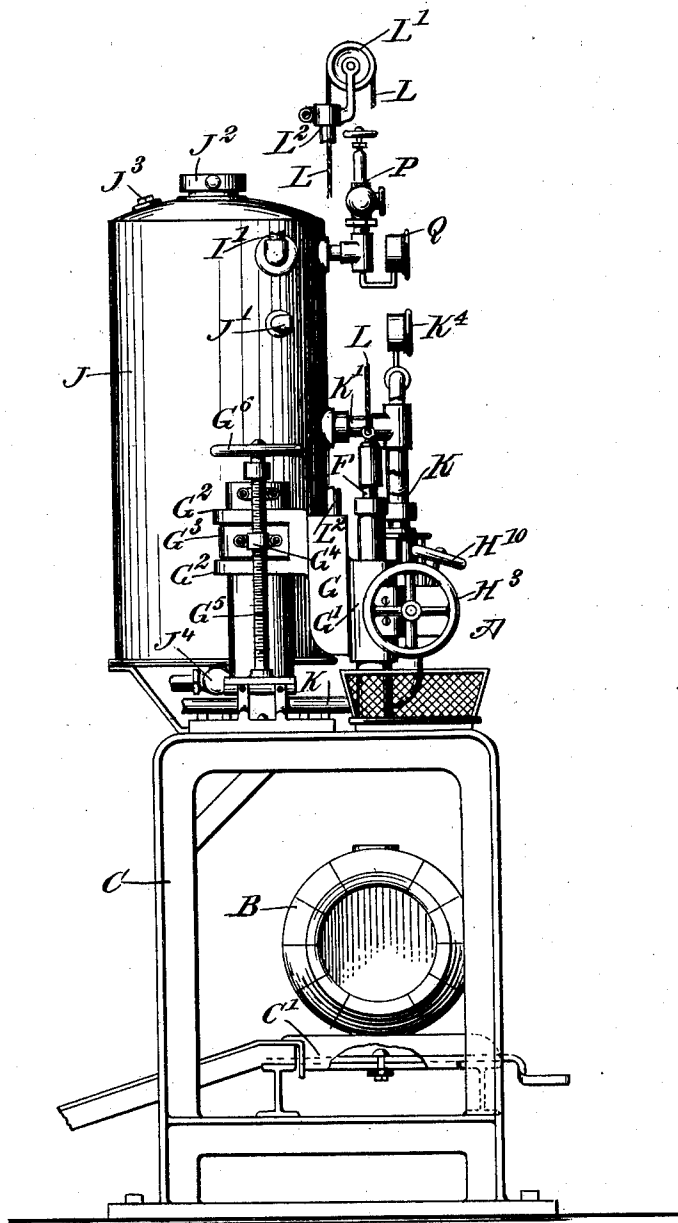
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3 SHEETS—SHEET 2.



WITNESSES:

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Fig. 2

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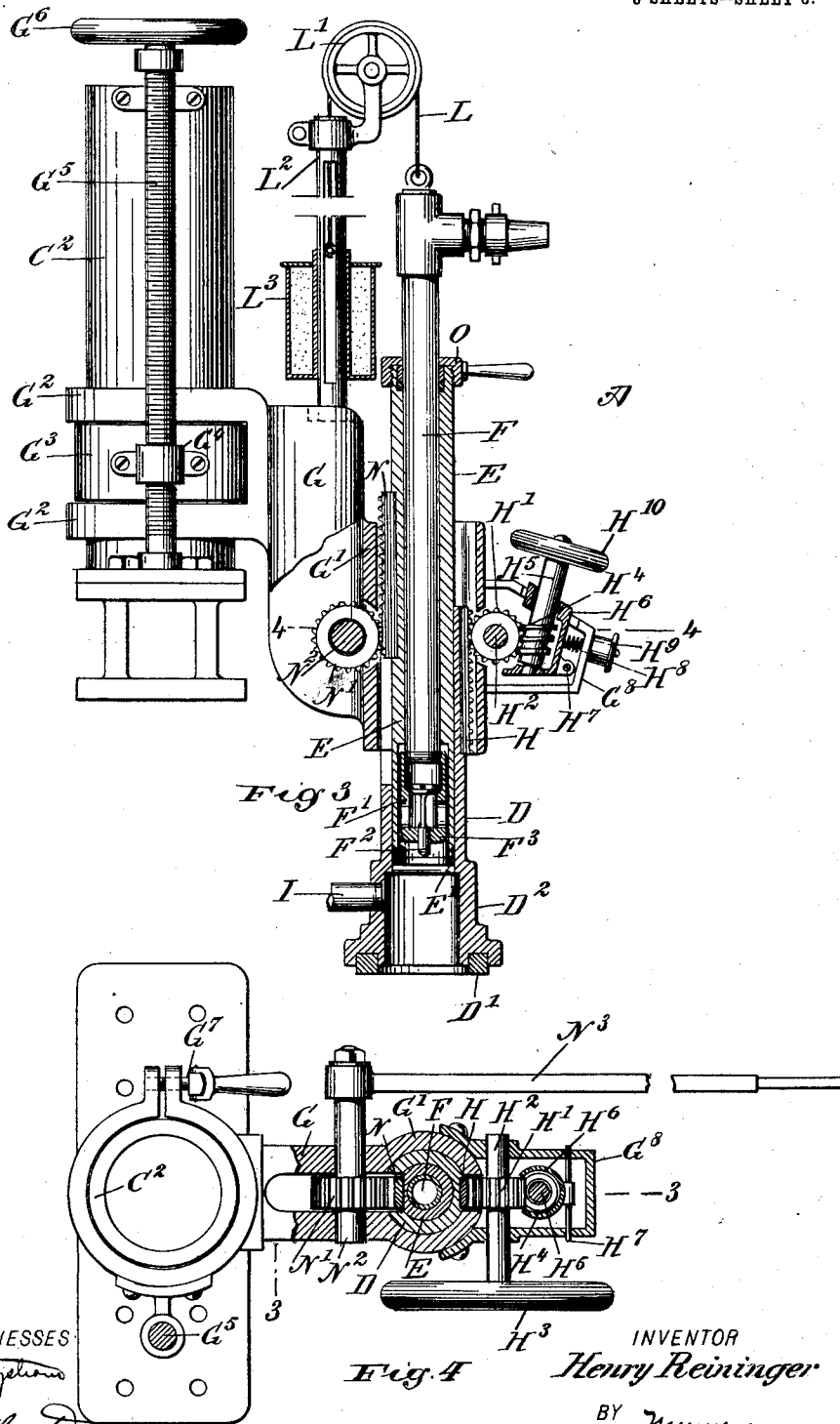
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NO MODEL.

3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

HENRY REININGER, OF NEW ORLEANS, LOUISIANA.

COUNTER-PRESSURE RACKING AND BUNGING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 737,480, dated August 25, 1903.

Application filed January 17, 1903. Serial No. 139,435. (No model.)

To all whom it may concern:

Be it known that I, HENRY REININGER, a citizen of the United States, and a resident of New Orleans, in the parish of Orleans and State of Louisiana, have invented a new and Improved Counter-Pressure Racking and Bunging Apparatus, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved apparatus for racking and bunging beer and other carbonated liquids from a storage cask or tank into smaller packages without loss of carbonic acid or waste of the liquid under treatment.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a front elevation of the improvement, parts being shown in section. Fig. 2 is an end elevation of the same. Fig. 3 is an enlarged transverse section of the improvement on the line 3 3 of Fig. 4, and Fig. 4 is a sectional plan view of the same on the line 4 4 of Fig. 3.

The improved apparatus, as illustrated in Fig. 1, is provided with two sets of devices A and A' for sealing, filling, and bunging barrels or other receptacles B B' in such a manner that while one barrel B is filled the other barrel B', previously filled, is bunged. The sets of devices A and A' are mounted on a suitably-constructed frame C, which supports saddles C' for the barrels B and B' to rest on during the filling and bunging operation, and as the said sets of devices A and A' are alike in construction it suffices to describe but one in detail.

Each of the devices A or A' consists, essentially, of a vertically-disposed sealing-tube D for hermetically sealing the barrel at the bung-hole during the filling operation, and in the said sealing-tube D is mounted to slide vertically a hollow plunger E for driving the bung into the bung-hole of the filled barrel, and in this hollow plunger is mounted to slide

up and down a filling-tube F, adapted to fill the barrel with the liquid.

The sealing-tube D is mounted to slide in a bearing G', formed on a bracket G, having spaced integral rings G² mounted to slide on and to turn on a guideway in the form of a post C², secured to the main frame C at the top thereof, and between the said rings G² of the bracket extends a collar G³, mounted loosely on the post C² and provided with a nut G⁴, in which screws a screw-rod G⁵, mounted to turn in suitable bearings arranged on the post C², and on the upper end of the said screw-rod G⁵ is secured a hand-wheel G⁶ under the control of the operator to turn the said screw-rod to the right or to the left to move the collar G³, and with it the bracket G, up or down, according to the direction in which the hand-wheel G⁶ is turned. By this arrangement the bracket G and the parts carried thereby can be raised or lowered, so as to bring the sealing, filling, and bunging devices into the proper position relative to the size of the barrel or vessel to be filled. When the bracket G has been adjusted to the desired height and swung into proper position to bring the axis of the sealing-tube D in vertical alinement with the axis of the bung-hole, then the bracket G is fastened in place on the post C² by the operator screwing up a nut G⁷ in the split end of one of the rings G², as plainly indicated in Fig. 4.

On the sealing-tube D is secured a vertically-disposed rack H in mesh with a pinion H', secured on a shaft H², mounted to turn in suitable bearings carried by a bracket G⁸, attached to the bearing G' at the front end thereof, and on the said shaft H² is secured a hand-wheel H³ under the control of the operator for turning the shaft H² and pinion H' to cause the rack H, and with it the sealing-tube D, to move up or down, according to the direction in which the hand-wheel H³ is turned. By this arrangement the lower end of the sealing-tube D is moved to or from the bung-hole of the barrel or other vessel B or B' to be filled.

In order to hermetically seal the barrel at the bung-hole by the sealing-tube D, the latter is provided with a rubber gasket D', set into the lower end of the somewhat enlarged

sealing-head D², which forms an integral part of the lower end of the sealing-tube D. Now when the latter is moved downward by the operator turning the hand-wheel H³ in the proper direction the gasket D' finally engages the top of the barrel around the bung-hole, and in order to powerfully compress the gasket D' by moving the sealing-tube farther downward I provide the following device:

The pinion H' is in mesh with a worm H⁴, secured on a shaft H⁵, journaled in a frame H⁶, pivoted at H⁷ in the bracket G⁸, and the said frame is pressed on by a spring H⁸, the tension of which can be regulated by a nut H⁹, screwing in the bracket G⁸. The spring H⁸ normally holds the frame H⁶ in such a position that the worm H⁴ is in mesh with the pinion H' to lock the latter against rotation, thus holding the sealing-tube D in a locked position during the filling operation. On the upper end of the shaft H⁵ is secured a hand-wheel H¹⁰ under the control of the operator, so that when the gasket D' is in engagement with the barrel, as previously explained, then the operator on turning the hand-wheel H¹⁰ rotates the shaft H⁵ and worm H⁴ to powerfully turn the pinion H', so that the sealing-tube D is moved farther downward to compress the gasket D' on the top of the barrel to insure a hermetic sealing of the bung-hole. When the operator turns the hand-wheel H³ with one hand, as previously explained, for quickly lowering or raising the filling-tube D, it is necessary for the operator to pull with the other hand on the hand-wheel H¹⁰, so as to impart a swinging motion to the frame H⁶ to move the worm H⁴ temporarily out of mesh with the pinion H' to permit quick turning of the pinion by the operator manipulating the hand-wheel H³. When the sealing-tube D has been moved to the desired position, then the operator releases the pressure on the hand-wheel H¹⁰, so that the spring H⁸ returns the frame H⁶, and with it the worm H⁴, to their normal locking positions.

Into one side of the enlarged sealing-head D² extends one end of a pipe I, connected at its other end by a flexible hose I' with a pressure-tank J, containing carbonic-acid gas or other fluid under pressure, and in the said pipe I is arranged a valve I² under the control of the operator to connect the pressure-tank J with the head D² of the sealing-tube at the time the gasket D' engages the barrel B, so that the fluid from the pressure-tank J can pass into the barrel to fill the same and to recede during the time the liquid flows through the filling-tube F into the barrel, it being, however, understood that the liquid flows under a somewhat heavier pressure into the barrel than that of the fluid. In the pipe I, adjacent to the valve I², is arranged an observation-glass I³ to enable the operator to see when the barrel is filled, as the liquid then rises from the barrel through the bung-hole into the head D² and pipe I to the observation-glass I³.

The filling-tube F is provided at its lower end with a check-valve F', the stem F² of which extends a short distance beyond the check-valve casing F³, as plainly shown in Fig. 3, so that when the filling-tube F is moved downward by hand to pass into the barrel B or B' then the said projecting end of the stem F² finally comes in contact with the bottom of the barrel, and on the further downward movement of the filling-tube F the check-valve is unseated to allow the liquid to flow from the filling-tube F through the valve-casing F³ into the barrel to fill the same. When the barrel is filled and the operator moves the filling-tube F upward, then the check-valve F' immediately seats itself by the pressure of the liquid within the filling-tube, so that the lower end of the filling-tube is closed against escape of liquid from the filling-tube until the valve F' is again unseated when filling the next barrel.

The upper end of the filling-tube F is connected by a flexible hose F⁴ with a liquid-supply pipe K, leading to the storage cask or tank containing the liquid to be filled into the barrels B B'. The supply-pipe K is supported by a bracket K' from the pressure-tank J, and the said supply-pipe is provided with an observation-glass K² and a sample-cock K³, to enable the operator to obtain samples of the liquid to be filled into the barrels. The supply-pipe K is also provided with a pressure-gage K⁴ to indicate the pressure of the liquid to be filled into the barrels.

From the supply-pipe K lead branch pipes K⁵ K⁶, containing valves K⁷ and K⁸, of which the valve K⁷ is an ordinary stop-valve, for allowing objectionable liquid to flow into a suitable vessel previous to allowing such liquid to flow into the barrel to be filled. The other valve K⁸ is an automatic relief-valve and is connected to a suitable vessel, or in case a pump is used for racking-off in addition to air-pressure then the said valve is connected to the suction of this pump. By this arrangement the valve K⁸ prevents any excess of pressure in the racking-machine or any other apparatus through which the liquid is caused to flow from the storage-tank to the barrel to be filled.

The filling-tube F is counterbalanced, and for this purpose the upper end thereof is connected with one end of a rope L, extending over a pulley L', journaled on a pulley-post L², secured to the bracket G, and the other end of the said rope L supports a counterweight L³, mounted to slide on the post L². By this arrangement the operator can readily move the filling-tube F downward or upward by hand, and when the desired position is reached the filling-tube is locked to the upper end of the hollow plunger by a suitable clamping device O. (Indicated in Fig. 3.)

In order to impart the desired up-and-down sliding movement to the hollow plunger E, the latter is provided with a rack N in mesh with a pinion N', secured on a shaft N²,

mounted to turn in suitable bearings arranged on the bracket G, and on one outer end of the said shaft N² is secured a handle N³ under the control of the operator for turning the shaft N² and the pinion N' for the latter to impart an up-and-down movement to the rack N and the plunger E, according to the direction in which the handle N³ is moved. The tank J previously mentioned is provided with a suitable gage-glass J', and the top of the tank has a hand-hole J² and an air-inlet J³, and from the bottom of the said tank leads a waste-valve J⁴ to connect by a hose with a cask, if desired. The tank J is also provided near its upper end with an air-relief valve P and a pressure-gage Q for indicating the pressure in the said tank.

By reference to Fig. 1 it will be seen that the gages K⁴ and Q are located one above the other, so as to enable the operator to see at a glance that the desired pressures are on the liquid to be filled into the barrel and the air or gas in the tank J to allow proper filling of the liquid into the barrel, as before explained.

The operation is as follows: When the barrel B is in position on its saddle C', as shown in Fig. 1, the operator first turns the handle H³ to move the sealing-tube D downward to bring its gasket D' into contact with the top of the barrel around the bung-hole, and then the gasket is firmly pressed by the operator subsequently turning the hand-wheel H¹⁰, as previously explained. When this has been done, the valve I² is opened, so as to establish communication between the pressure-tank J and the interior of the barrel B to fill the latter with air or gas under pressure. The operator next moves the filling-tube F downward by hand, so that the valve-casing F³ passes to the bottom of the barrel for opening the check-valve F' to allow the liquid to flow into the barrel B under a somewhat higher pressure than that of the air or gas from the tank J. The liquid in filling the barrel causes a return flow of the air or gas under pressure into the tank J, and when the liquid has filled the barrel and rises to the head D² and pipe I into the observation-glass I³ then the operator closes the valve I² and moves the filling-tube F upward to cause the check-valve F' to seat itself, as previously explained. The operator now imparts a return movement to the hand-wheel H³, so that the sealing-tube D moves upward out of engagement with the barrel and then inserts the bung into the bung-hole, after which he imparts a downward swinging motion to the handle N³ to move the hollow plunger E downward in the sealing-tube D to cause the steel head E' of the said hollow plunger to act on the bung to drive the same into the bung-hole, as will be readily understood by reference to the device A. (Shown in Fig. 1.) When the bung is driven into the bung-hole, the operator swings the handle N³ back to its former position to raise the plunger E, and

then the barrel is rolled off the saddle C' and another empty barrel is placed in position on the saddle, and the above-described operation is then repeated.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A racking and bunging apparatus, comprising a fixed guideway, a bracket movable thereon, means for moving the bracket on the guideway, a sealing-tube slidable on the bracket and movable in the direction of its length, means for moving the sealing-tube, a plunger movable lengthwise within the sealing-tube for driving a bung, means for moving the plunger, a filling-tube movable within the plunger, and connected at one end with the liquid-supply and a check-valve in the discharge end of the said filling-tube, adapted to open on coming in contact with the bottom of the vessel to be filled, as set forth.

2. A racking and bunging apparatus, comprising a fixed guideway, a bracket movable thereon, means for moving the bracket on the guideway, a sealing-tube movable in the direction of its length on said bracket, a plunger movable lengthwise within the sealing-tube for driving a bung, a filling-tube movable within the plunger, manually-actuated means for moving the said sealing-tube, and manually-actuated means for moving the said plunger independent of the said sealing-tube and the said filling-tube, as set forth.

3. A racking and bunging apparatus, comprising a fixed guideway, a bracket movable thereon, means for moving the bracket on the guideway, a sealing-tube movable in the direction of its length on said bracket, a plunger movable lengthwise within the sealing-tube, for driving a bung, a filling-tube movable within the plunger, a check-valve in the discharge end of the said filling-tube, adapted to open on coming in contact with the bottom of the vessel to be filled, and means for locking the filling-tube in position, as set forth.

4. A racking and bunging apparatus, comprising a fixed guideway, a bracket movable thereon, means for moving the bracket on the guideway, a sealing-tube slidable on the bracket and having a sealing-head for engagement with the vessel to be filled, a pressure-tank connected with the said sealing-head, a hollow plunger slidable on the sealing-tube, a filling-tube slidable in the hollow plunger and connected with a liquid-supply, manually-actuated means for moving the sealing-tube lengthwise, to engage the said sealing-head with the vessel, and a supplementary actuating device, for forcibly moving the sealing-head in position on the vessel and for locking the tube against return movement, as set forth.

5. A racking and bunging apparatus comprising a fixed guideway, a bracket movable thereon, a sealing-tube slidable on the bracket and having a sealing-head for engagement

with the vessel to be filled, a pressure-tank connected with the said sealing-head, a hollow plunger slidable in the sealing-tube, a filling-tube slidable in the hollow plunger and
 5 connected with a liquid-supply, an observation device in the connection between the sealing-head and the pressure-tank, and a valve in the said connection between the observation device and the sealing-head, as set
 10 forth.

6. A racking and bunging apparatus, comprising a fixed guideway, a bracket movable thereon, means for moving the bracket on the guideway, a sealing-tube slidable on the
 15 bracket, a rack-and-pinion movement for the said sealing-tube, a hollow plunger slidable in the sealing-tube, a rack-and-pinion movement for the said plunger, and a filling-tube slidable in the hollow plunger and connected
 20 at one end with the liquid-supply and provided at the other end with a check-valve, as set forth.

7. A racking and bunging apparatus, comprising a fixed guideway, a bracket movable
 25 thereon, means for moving the bracket on the guideway, a sealing-tube slidable on the bracket, a rack-and-pinion movement for the said sealing-tube, a hollow plunger slidable in the sealing-tube, a rack-and-pinion move-
 30 ment for the said plunger, a filling-tube slidable in the hollow plunger and connected at one end with the liquid-supply and provided at the other end with a check-valve, a pressure-tank, and a connection between the
 35 pressure-tank and the head of the sealing-tube, as set forth.

8. A racking and bunging apparatus, comprising a fixed guideway, a bracket movable
 40 thereon, means for moving the bracket on the guideway, a sealing-tube slidable on the bracket, a rack-and-pinion movement for the said sealing-tube, a hollow plunger slidable in the sealing-tube, a rack-and-pinion move-
 45 ment for the said plunger, a filling-tube slidable in the hollow plunger and connected at one end with the liquid-supply and provided at the other end with a check-valve, a pressure-tank, a connection between the pressure-
 50 tank and the head of the sealing-tube, and an observation device in the said connection, as set forth.

9. A racking and bunging apparatus, comprising a fixed guideway, a bracket movable
 55 thereon, means for moving the bracket on the guideway, a sealing-tube slidable on the bracket, a rack-and-pinion movement for the said sealing-tube, a hollow plunger slidable in the sealing-tube, a rack-and-pinion move-
 60 ment for the said plunger, a filling-tube slidable in the hollow plunger and connected at one end with the liquid-supply and provided at the other end with a check-valve, a liquid-supply pipe, a flexible connection between the
 65 supply-pipe and the filling-tube, and valved outlets connected with the said supply-pipe, as set forth.

10. A racking and bunging apparatus, com-

prising a fixed guideway, a bracket movable
 70 thereon, means for moving the bracket on the guideway, a sealing-tube slidable on the bracket, a rack-and-pinion movement for the said sealing-tube, a hollow plunger slidable in the sealing-tube, a rack-and-pinion move-
 75 ment for the said plunger, a filling-tube slidable in the hollow plunger and connected at one end with the liquid-supply and provided at the other end with a check-valve, a liquid-supply pipe, a flexible connection between the
 80 supply-pipe and the filling-tube, valved outlets connected with the said supply-pipe, and an observation device in the said supply-pipe, as set forth.

11. A racking and bunging apparatus, provided with a bearing, a sealing-tube slidable
 85 in the bearing, a hollow plunger slidable in the sealing-tube, a filling-tube slidable in the plunger, a rack on the said sealing-tube, a pinion in mesh with the rack and journaled on the bearing, a worm adapted to be moved
 90 in mesh with the said pinion, a frame pivoted in the bearing and in which the worm is journaled, a spring pressing the frame to normally hold the worm in mesh with the pinion and means for regulating the tension of the
 95 spring, as set forth.

12. A racking and bunging apparatus, comprising a fixed guideway, a bracket movable
 100 thereon, means for moving the bracket on the guideway, a sealing-tube slidable on the bracket, a rack-and-pinion movement for the said sealing-tube, a hollow plunger slidable in the sealing-tube, a rack-and-pinion move-
 105 ment for the said plunger, a filling-tube slidable in the hollow plunger and connected at one end with the liquid-supply and provided at the other end with a check-valve, and a counterbalance for the said filling-tube, as set forth.

13. A racking and bunging apparatus, provided with a guideway, a collar slidable on
 110 the guideway, a screw-rod for sliding the collar on the guideway, a bracket mounted to turn on the guideway and moved up and down by the said collar, the said bracket having a bearing, a sealing-tube slidable in the
 115 bearing, a hollow plunger slidable in the sealing-tube, and a filling-tube slidable in the plunger, as set forth.

14. A racking and bunging apparatus, provided with a guideway, a collar slidable on
 120 the guideway, a screw-rod for sliding the collar on the guideway, a bracket mounted to turn on the guideway and moved up and down by the said collar, and devices carried by the said bracket, for sealing the vessel to be
 125 filled, for filling the vessel with the liquid and for driving the bung into the bung-hole of the filled vessel, as set forth.

15. A racking and bunging apparatus, provided with a guideway, a bracket mounted to
 130 slide on and to turn on said guideway and having spaced integral rings, a collar slidable on the guideway and located between the said rings, the collar being provided with a nut, a

screw-rod screwing into the nut for sliding the collar on the guideway to move the bracket up and down, means for fastening the bracket in place on the guideway, a vertically-reciprocating tube and sealing-head slidable on the bracket, and means for reciprocating the same, as set forth.

16. A racking and bunging apparatus, comprising a fixed guideway, a bracket movable thereon, means for moving the bracket on the guideway, a sealing-tube slidable on the bracket, a rack-and-pinion movement for the said sealing-tube, a hollow plunger slidable in the sealing-tube, a rack-and-pinion movement for the said plunger, a filling-tube slidable in the hollow plunger and connected at one end with the liquid-supply and provided at the other end with a check-valve, and means for temporarily fastening the filling-tube to the bunging-tube, as set forth.

17. In a racking device for beer or other liquids, the combination of a vertically and horizontally adjustable bracket, a guideway on which said bracket is mounted, means for securing the bracket to the guideway in any desired position, a vertically-reciprocating hollow tube and sealing-head for sealing a package around its bung, means for reciprocating the same, a vertically-reciprocating plunger, the tube and sealing-head receiving and acting as a guide for the said plunger, and means for reciprocating the plunger, as set forth.

18. In a racking device, the combination of an adjusting-bracket, vertically-reciprocating tube and sealing-head, means for reciprocating same, a vertically-reciprocating hollow plunger, the tube and sealing-head to receive and act as a guide for said plunger, means for reciprocating said plunger independently of the hollow tube and sealing-head and a filling-tube movable in said plunger and connected at one end with a liquid-supply and for the purpose as set forth.

19. In a racking device, the combination of an adjustable bracket, a vertically-reciprocating hollow tube and sealing-head, means for reciprocating same, a vertically-reciprocating hollow plunger, for which the hollow tube and sealing-head act as a guide, means for reciprocating the hollow plunger, independent of the tube and sealing-head, a vertically-reciprocating filling-tube, adapted to be inserted into a package, this hollow plun-

ger to receive and act as a guide for the filling-tube, this filling-tube to have at its lower end a valve, which is automatically closed by the weight of the liquid, and for the purpose as set forth.

20. In a racking device, the combination with a liquid-supply pipe connected with a storage-tank, and branch pipes leading from the supply-pipe, one of said branch pipes containing a stop-valve and the other branch pipe containing an automatic relief-valve, of a filling-tube connected with said supply-pipe, a fixed guideway, a bracket movable thereon, means for moving the bracket in the guideway, a sealing-tube slidable on the bracket, and provided with a sealing-head, a pressure-tank connected with the sealing-head, and a hollow plunger slidable in the sealing-head, the said filling-tube being slidable in the hollow plunger, as set forth.

21. A racking and bunging apparatus, comprising a fixed guideway, a bracket movable thereon, means for moving the bracket on the guideway, a sealing-tube slidable on the bracket and provided with a sealing-head, a pressure-tank, a connection between the pressure-tank and the sealing-head, an observation-glass in said connection, a valve located in said connection between the observation-glass and the said sealing-head, means for actuating the sealing-tube, a hollow plunger slidable in the sealing-tube, means for actuating the said plunger, and a filling-tube slidable in the said plunger and connected with a liquid-supply, as set forth.

22. A racking and bunging apparatus, comprising a fixed guideway, a bracket movable thereon, means for moving the bracket on the guideway, a sealing-tube slidable on the bracket, means for actuating the sealing-tube, a hollow plunger slidable in the sealing-tube, means for actuating the said plunger, a filling-tube slidable in the hollow plunger and connected at one end with a liquid-supply and provided at the other with a check-valve, and means for securing the filling-tube in position on the said plunger, as set forth.

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

HENRY REININGER.

Witnesses:

JOHN F. A. HEBEL,
EDMUND WEGENER.