E. FRIEDMAN.

BUNG AND TAP FOR BARRELS.

APPLICATION FILED OCT. 5, 1907.

976,647.

Patented Nov. 22, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

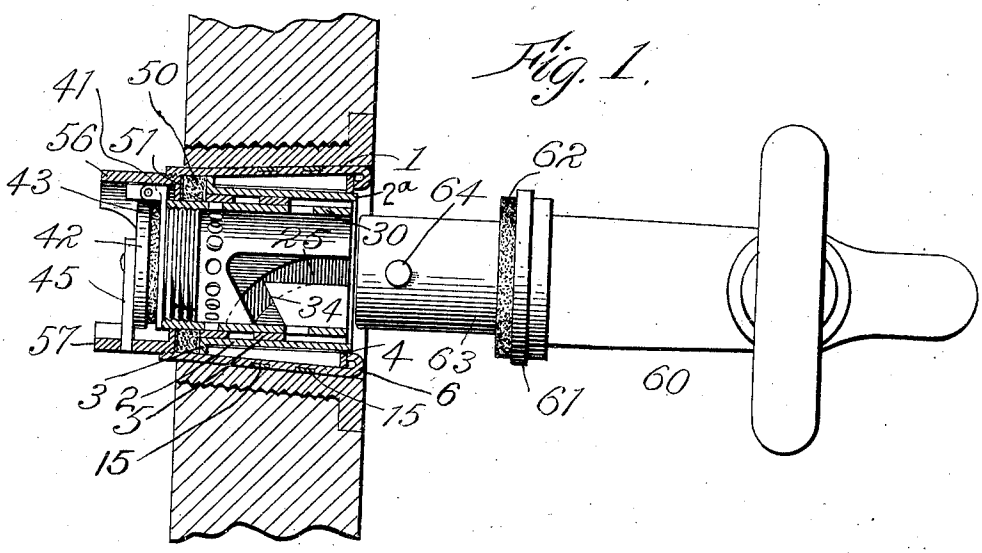
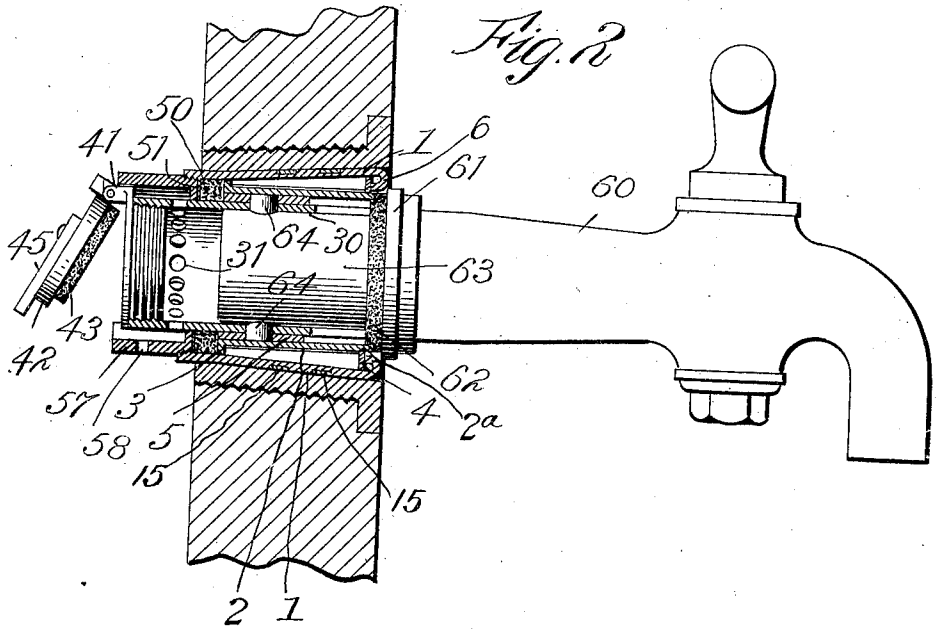


Fig. 2.



Witnesses:

A. H. Bromberg

L. Flynn

Edgar Friedman Inventor

By his Attorneys Knight Bros.

E. FRIEDMAN.

BUNG AND TAP FOR BARRELS.

APPLICATION FILED OCT. 5, 1907.

976,647.

Patented Nov. 22, 1910.

2 SHEETS—SHEET 2.

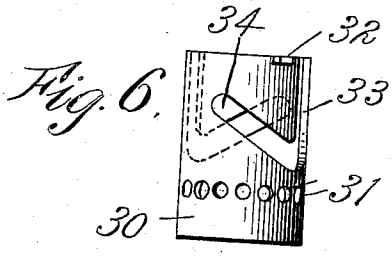


Fig. 6.

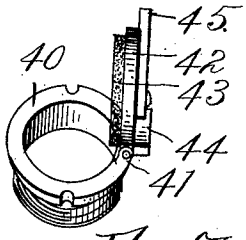
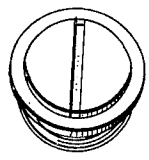


Fig. 7.

Fig. 8



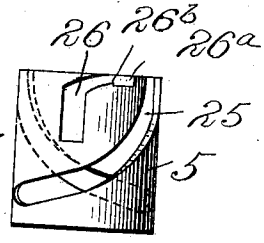


Fig. 5.

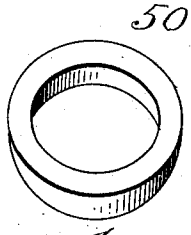


Fig. 9.

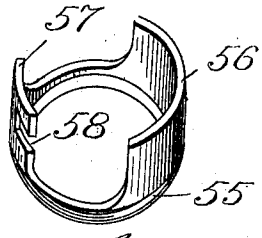


Fig. 10.

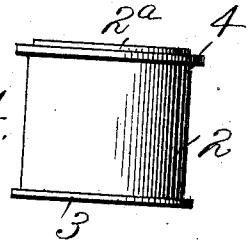
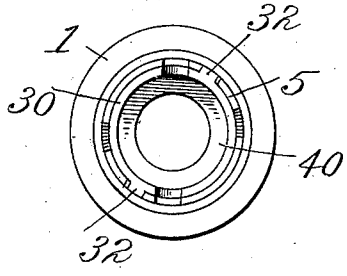


Fig. 4.

Fig. 11.



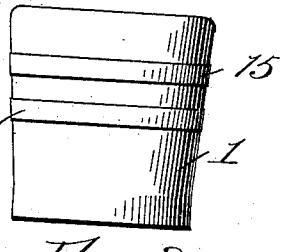


Fig. 3

Witnesses:
H. S. Bromberg.
L. Hyman.

Edgar Friedman Inventor
By his Attorneys Knight Bros.

UNITED STATES PATENT OFFICE.

EDGAR FRIEDMAN, OF NEW YORK, N. Y.

BUNG AND TAP FOR BARRELS.

976,647. Specification of Letters Patent. Patented Nov. 22, 1910.

Application filed October 5, 1907. Serial No. 396,008.

To all whom it may concern:

Be it known that I, EDGAR FRIEDMAN, a citizen of the United States, residing at New York, in the county and State of New York, have invented certain new and useful Improvements in Bungs and Taps for Barrels, of which the following is a specification.

The purpose of my present invention is to provide a valved metal bung for kegs or barrels, such as are usually employed in handling beer or similar fermented liquors.

My improved valved metal bung is intended to take the place of the ordinary wooden bung or stopper which is now commonly used.

In carrying out my invention I form a metal bung or stopper of a plurality of sheet metal stampings which are separately formed and then assembled into a valved bung or stopper which is adapted to be driven into the ordinary bushed bung hole of a barrel or keg.

My improved stamped sheet metal bung comprises an outer tapered shell having one or more exterior packing rings, an inner cylindrical shell firmly seated and permanently secured in the outer tapered shell, a slotted key shell fitted snugly within and suitably secured to said cylindrical shell and formed with guide grooves or key slots for effecting the opening and closing of the valve, and a valve thimble mounted within said slotted key shell and movable longitudinally and rotatably therein under the action of the opening tap or tool. This valve thimble is formed with angular grooves or slots which coöperate with the grooves or slots of the stationary slotted key shell for opening and closing the valve. Any suitable form of valve may be provided to be opened and closed by the movement of the valve thimble in the bung, but I prefer to form the valve thimble with a plurality of perforations adjacent to its inner end to permit the free flow of the liquor when said thimble is in open position. A packing ring in the end of the bung surrounds the thimble and forms a tight joint below the perforations when the thimble is in closed position, and above the perforations when the thimble is in open position. I may also arrange at the inner end of the valve thimble a flap valve which is automatically opened and closed by the movement of the valve thimble. This flap valve, which closes the end of the valve thimble, is mainly for the purpose of permitting the introduction of a decanting tube. The flap valve is hinged to a collar secured in the end of the valve thimble and is formed with an outwardly projecting heel which is adapted to engage a flange projecting from a collar secured in the end of the bung, so that when the valve thimble is pulled inwardly the engagement of said heel with said flange will close the flap valve, and when the valve thimble is moved outwardly said heel will be freed from said flange to permit the flap valve to open. To further secure the flap valve in closed position I prefer to provide it on its free edge with a projecting lug or finger which is thrown into engagement with a cam slot in another flange projecting from said bung collar so that when the valve thimble is pulled inwardly to close the flap valve, and is then rotated to lock the valve in closed position, the engagement of such lug or finger with said cam slot will force the flap valve firmly against its seat.

In arranging the cam grooves or slots in the inner stationary slotted key shell and the valve thimble, I prefer to form these grooves or slots in diametrically opposite positions in oppositely inclined directions upon the respective members, so that said cam grooves or slots will intersect each other with the result that the engagement of a proper tool with said intersecting grooves, such for instance by the insertion of a tap or faucet formed with diametrically opposite pins or lugs will open and close the valve by a simple rotary motion, the intersecting grooves or slots serving to accelerate the opening and closing movements. The sheet metal bung is preferably provided with packing rings formed of metal foil. The outer tapered shell of the bung has shallow annular grooves cut, depressed or stamped into it, and in these shallow grooves are mounted rings of thin strips of metal foil packing. The packing strips are formed by pasting the metal foil upon heavy paper and cutting them into the required width and then mounting them in the shallow grooves upon the bung by a suitable adhesive, such for instance as shellac.

In order that my invention may be fully understood I will first describe the same with reference to the accompanying drawings, and afterward point out the novelty more particularly in the annexed claims.

In said drawings Figure 1 is a sectional elevation of my improved valved bung in closed position in a section of a barrel, the faucet for operating in connection with the bung being shown in position to be inserted in the bung. Fig. 2 is a similar view taken at right angles to Fig. 1 and showing the valve of the bung opened and the faucet in operative position. Figs. 3, 4, 5, 6, 7, 8, 9 and 10 are detail views of parts of my improved valve bung. Fig. 11 is a top plan view of the complete bung.

The main feature of my present invention is the construction of a valved bung or bushing of stamped sheet metal, with a view to producing a practically indestructible article at a comparatively low cost. The bung or bushing proper comprises an outer tapered shell 1, an inner cylindrical shell 2 formed with an annular flange 3 at one end and having a flat ring or collar 4 firmly seated upon the other end, and a cylindrical key shell 5. These main parts of the body portion of the bung or bushing are of such shape that they can be readily stamped out of sheet metal. The outer portion 1 receives the inner cylindrical shell 2 as shown in Figs. 1 and 2, the collar 3 and ring 4 being of the proper diameters to snugly fit the interior bore of the shell 1. When these parts are assembled in this manner, the outer end of the shell 1 is turned over to form a curved annular rib 6 as shown in Figs. 1 and 2. This turned-in portion 6 of the outer shell engages the ring 4 and securely and permanently fastens the shell 2 in place. The shell 5 is then driven in to rest in the position shown in Figs. 1 and 2, the parts being secured in any suitable manner, either by the tight fit or by brazing or sweating them together.

It will be observed that the parts so far as described are assembled to provide an annular recess or cavity beneath the flange 3 and inner end of key cylinder 5 to receive a rubber packing ring as hereinafter explained. The outer end of the cylinder 2 projects beyond the ring 4 to present an annular rib 2^a within the rib 6 above referred to for the purpose of providing a seat for the rubber washer or gasket of the faucet or tap hereinafter referred to.

After these parts have been assembled and secured in place as explained, I cut two shallow grooves in the outer periphery of the tapered shell 1 to receive the packing rings 15. These packing rings 15 are preferably formed of metal foil such as zinc or tin, and in making the packing rings I mount the metal foil upon a tough paper by using a suitable adhesive and cut strips from this paper lined foil and mount these strips in the grooves formed in the shell 1. The strips can be effectively secured in the grooves by the use of shellac. These packing rings of metal foil have proved effective in forming a tight joint with the ordinary metal bushing shown at 20 with which the bung holes of barrels and kegs are usually lined.

The key cylinder 5 is formed with two oppositely arranged key slots 25 which are open at their outer ends and curve inwardly and downwardly to points adjacent to the inner end of the cylinder. These key slots are in effect spiral grooves formed in the inner bore of the body portion of the bung or bushing. The key cylinder 5 is also formed with two oppositely arranged locking and guiding slots or channels 26. The main portion of each of these channels 26 extends longitudinally of the cylinder 5, but at the outer end each slot projects laterally and ends against a limiting shoulder 26^a, a slight projection 26^b serving to engage lugs on the valve thimble hereinafter referred to for retaining the valve in closed position.

30 is the cylindrical valve thimble formed with an annular series of perforations 31 and with the diametrically opposite radial lugs or projections 32 which are adapted to operate in the locking and guiding slots 26 of the key cylinder 5. The valve thimble 30 is also formed with oppositely arranged key slots 33 extending longitudinally from the outer end of the valve thimble and formed with outwardly projecting spiral extensions 34 for the purpose hereinafter explained.

The inner end of the valve thimble 30 may be permanently closed by a screw cap such as shown in Fig. 8 if it is desired to depend entirely upon the perforations 31 for the outlet of the liquor, or it may be closed by a flap valve as shown in Fig. 7, if it is desired to provide for the insertion of a decanting tube. In fact any form of valve may be arranged upon the valve thimble mounted to be operated by the movements of the valve thimble, but in the remaining description of this part of my invention I will refer to the mechanism as provided with the flap valve which is shown in the drawings.

A flanged ring or collar 40 is threaded into the inner end of the valve thimble 30, said collar being provided with ears or lugs 41 upon which the flap valve 42 is hinged as shown. This flap valve 42 consists of a disk of metal with a disk of rubber 43 suitably secured to its inner face and adapted to close the opening in the flanged collar 40. Flap valve 42 has a curved heel 44 projecting longitudinally of the valve thimble when the valve is in closed position, and an arm or finger 45 projecting radially of the valve disk 42.

50 is a soft rubber ring or washer seated in the inner end of the bung or stopper against collar 3, 51 is a metal washer engaging the

washer 50, and 55 is a flanged retaining collar threaded into the inner end of the shell 1 of the bung and firmly securing the rubber washer 50 in place.

The valve thimble 30 is mounted within the key cylinder 5 from the outer end before the flap valve is put in place. The lugs 32 of the valve thimble normally rest in the outer ends of the slots 26 against the shoulders 26[a], the thimble being retained in this position by the small shoulders or projections 26[b].

The collar 55 is formed with an inwardly projecting curved flange 56 which is adapted to engage the heel 44 of the flap valve for closing the valve when the valve thimble is pulled outwardly into closed position. Said collar 55 also carries a flange 57 formed with a cam slot 58 into which the arm or finger 45 of the flap valve engages when the valve is closed and the thimble is given a partial rotation in the bung.

Fig. 1 shows the valve in closed position. It will be observed that the upward extension 34 of the key slot 33 of the valve thimble intersects a portion of the spiral key slot 25 of the key cylinder. It will also be observed that the open ends of the slots in both the key cylinder and valve thimble are in registered position when the valve is closed.

60 represents an ordinary tap or faucet such as is employed in drawing off beer or ale from barrels or kegs. This faucet is formed with an annular shoulder 61 against which is seated a rubber packing ring 62 and an inwardly projecting tubular portion 63 adapted to be inserted in the tubular bung, and diametrically opposite pins or lugs 64 which are adapted to engage the key slots of the key cylinder 5 and the valve thimble 30, said lugs or pins 64 being of just the right length to radially engage the slots in both of these members.

The action of inserting the faucet and opening the valve of the bung will be understood with reference to Figs. 1 and 2. The faucet is presented with the lugs 64 in line with the open ends of the key slots 25 and 33 and as soon as said lugs are in engagement with said slots the faucet is gradually rotated to the right, causing the inner tubular end of the faucet to move gradually inwardly in the bung because of the movement of the lug 64 in the spiral key slots 25. The first part of this inward movement of the faucet will cause a slight rotating motion of the valve thimble 30 to the right by reason of the engagement of lugs 64 with the walls of the longitudinal portions 33 of the key slots of the thimble. This preliminary rotary motion of the valve thimble accomplishes several things. The locking lugs 32 are moved away from the locking ends of slots 26 of the key cylinder into the vertical portions of the slots in readiness for the longitudinal movement of the valve thimble. This preliminary motion of the valve thimble also disengages the arm or finger 45 from the cam slot 58 of flange 57 in readiness for the opening of the flap valve. The continued inward rotary movement of the faucet moves the lugs 64 into engagement with the outwardly extending curved extensions 34 of the key slots of the valve thimble so that the lugs 64 will then engage the intersecting portions of the curved key slots of the two members so that the final inward and rotary movement of the faucet will force the valve thimble inwardly in the bung to move the annular series of perforations 31 out past the packing washer 50 and at the same time disengage the heel 44 of the flap valve from the flange 56 to allow the flap valve to open. The open position of the valve with the faucet in place is shown in Fig. 2. This movement of the faucet in inserting it in the bung for opening the valve will force the rubber washer 62 into intimate contact with the annular rib 2[a] at the outer end of the bung so as to make a tight joint between the bung and the faucet.

The removal of the faucet will close the valve by a reversal of the described operation, the first movement of the valve being longitudinally to close down the flap valve by the engagement of its heel 44 with the flange 56 and to draw the series of perforations 31 up beyond the rubber packing ring 50, while the final rotative motion of the valve thimble locks the flap valve into closed position by the engagement of the arm or finger 45 with the cam slot 58 of the flange 57, and at the same time locks the valve thimble in closed position by the engagement of the lugs 32 with the shouldered recesses at the ends of the locking and guiding slots 26.

In the operation of my improved valved bung with a faucet or tap as just explained, it will be observed that the faucet or tap is locked in operative engagement with the bung to be used in combination therewith. It is frequently necessary to open the valve of the bung without securing a tap or faucet thereto, such for instance in case of washing out the barrel or keg. To accomplish this I provide a suitable tool consisting of a stem and diametrically opposite pins or lugs which are of just half the length of the lugs 64 upon the faucet as above explained, and applying this tool to the valved bung I am able to engage the slots of the valve thimble only (that is the lugs or pins are just long enough to engage the slots of the valve thimble and do not project far enough radially to engage the slots in the stationary sleeve) and by a suitable turn to the right to unlock the valve thimble and an inward thrust,

the valve is opened and the tool can be withdrawn to permit the washing of the barrel or keg. I have not thought it necessary to illustrate the tool for opening the valve independently of the tap or faucet, since it will be understood that such a tool will be of practically the shape of the inner end of the faucet with the lugs similarly arranged, but of only half the depth as those lugs used upon the faucet. Such a tool is in effect what is commonly known as a pin wrench.

In the longitudinal opening and closing movements of the valve thimble, the engagement of lugs 32 with slots 26 prevent rotary movement of the valve thimble.

I would have it clearly understood that the term "valve" employed in the following claims is used in its broadest sense to cover any and all forms of valves in the combinations defined, and that the claims are not intended to be limited to the specific structure of either of the two forms of valves shown and described, excepting when such specific structure is defined in the claims.

What I claim is:

1. The combination of a hollow-walled sheet metal bung, formed with external annular grooves, with packing rings secured in said grooves.

2. A bung comprising an outer tapered sheet metal shell, a cylindrical sheet metal shell having annular rings or flanges encircling its ends, said ringed or flanged shell being fitted within and permanently secured to said outer shell, and a valve upon said bung.

3. A bung formed of a plurality of stamped sheet metal shells permanently secured together, the innermost shell being formed with key slots, a valve thimble movably mounted within said slotted shell and formed with coöperating key slots, and a valve operated by said movable thimble.

4. A bung formed of a plurality of concentric sheet metal shells nested together and permanently secured, the innermost shell being formed with key slots, and a concentric sheet metal valve thimble movably mounted within said slotted shell and formed with cooperating key slots, and a valve carried by said movable thimble.

5. A bung comprising an outer tapered sheet metal shell, a cylindrical sheet metal shell having annular rings or flanges encircling its ends, said ringed or flanged shell being fitted within and permanently secured to said outer shell, the outer end of said cylindrical shell projecting beyond the outer ring or flange to form an annular packing seat, and a valve upon said bung.

6. A bung comprising an outer tapered sheet metal shell, a cylindrical sheet metal shell having annular rings or flanges encircling its ends, said ringed or flanged shell being fitted within and permanently secured to said outer shell, the outer end of said outer shell being turned inwardly into engagement with one of said rings or flanges, and a valve upon said bung.

7. A bung comprising an outer tapered sheet metal shell, a cylindrical sheet metal shell having annular rings or flanges encircling its ends, said ringed or flanged shell being fitted within and permanently secured to said outer shell, an inner sheet metal shell secured within said cylindrical shell and formed with key slots, and a sheet metal valve thimble movably mounted within said slotted shell and formed with coöperating key slots, and a valve operated by said movable thimble.

8. In a bung, the combination of a tubular body portion formed with internal spiral key slots, with a valve thimble carrying a valve and movably mounted within the body portion of the bung, said valve thimble being formed with spiral key slots which extend in angular relation to the key slots of the body portion.

9. In a bung, the combination of a tubular body portion formed with internal spiral key slots, with a longitudinally movable valve thimble carrying a valve and mounted within the body portion of the bung, said valve thimble being formed with spiral key slots which extend in angular relation to the key slots of the body portion.

10. In a bung, the combination of a tubular body portion formed with two oppositely arranged internal spiral key slots, with a longitudinally movable valve thimble carrying a valve and mounted within the body portion of the bung, said valve thimble being formed with two oppositely arranged spiral key slots which extend in angular relation to the key slots of the body portion.

11. In a bung, the combination of a tubular body portion formed with oppositely arranged key slots, each of which extends downwardly and circumferentially from its outer end, with a valve thimble carrying a valve movably mounted in the body portion and formed with coöperating key slots which extend downwardly from the outer end parallel with the longitudinal axis of the bung, and then incline upwardly and circumferentilly to intersect the key slots of the body portion.

12. In a bung, the combination of a tubular body portion formed with oppositely arranged spiral key slots, with a valve thimble carrying a valve movably mounted in the body portion and formed with oppositely arranged key slots which coöperate with the key slots of the body portion, and a tap formed with diametrically opposite lugs which are adapted to engage the key slots of the body portion and valve thimble for the purpose set forth.

13. In a bung, the combination of a body

portion formed with angularly disposed key slots extending from its outer end, and locking and guiding slots extending circumferentially and longitudinally, with a valve thimble carrying a valve and movably mounted in the body portion, said valve thimble being formed with lugs which engage the locking and guiding grooves of the body portion, and with key slots which intersect the key slots of the body portion, substantially as set forth.

14. In a bung, the combination of a body portion formed with angularly disposed key slots extending from its outer end, and locking and guiding slots extending circumferentially and longitudinally and formed with locking shoulders in their circumferential portions, with a valve thimble carrying a valve and movably mounted in the body portion, said valve thimble being formed with lugs which engage the locking and guiding slots of the body portion, and with key slots which intersect the key slots of the body portion, substantially as set forth.

15. In a bung, the combination of a tubular body portion, a valve thimble movably mounted in the body portion, a flap valve hinged to the inner end of the valve thimble and formed with a heel projecting from its hinged side, and a flange projecting from the body portion into operative relation with the heel upon the flap valve.

16. In a bung, the combination of a tubular body portion, a valve thimble movable longitudinally in the body portion, a flap valve hinged to the inner end of the valve thimble and formed with a heel projecting from its hinged side, and a flange projecting from the body portion into operative relation with the heel upon the flap valve.

17. In a bung, the combination of a tubular body portion, a valve thimble movably mounted in the body portion, a flap valve hinged to the inner end of the valve thimble and formed with a heel projecting from its hinged side, a flange projecting from the body portion into operative relation with the heel upon the flap valve, an arm projecting from the free end of said flap valve, and a flange projecting from the body portion and formed with a cam slot with which said arm is adapted to engage.

18. In a bung, the combination of a tubular body portion, a valve thimble movable longitudinally and circumferentially in the body portion, a flap valve hinged to the inner end of the valve thimble and formed with a heel projecting from its hinged side, a flange projecting from the body portion into operative relation with the heel upon the flap valve, an arm projecting from the free end of said flap valve, a flange projecting from the body portion and formed with a cam slot with which said arm is adapted to engage, and means for operating said valve thimble.

EDGAR FRIEDMAN.

Witnesses:
WM. E. KNIGHT,
P. F. SONNEK.