No. 717,368. Patented Dec. 30, 1902.

# K. ENZINGER.

## BARREL FILLER.

(Application filed Mar. 14, 1902.)

(No Model.)

3 Sheets—Sheet 1.

*Fig. 1.*

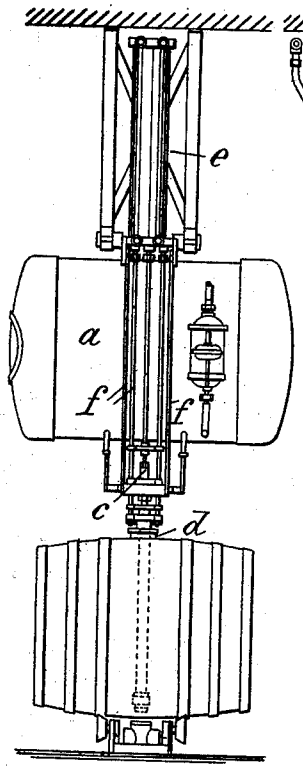
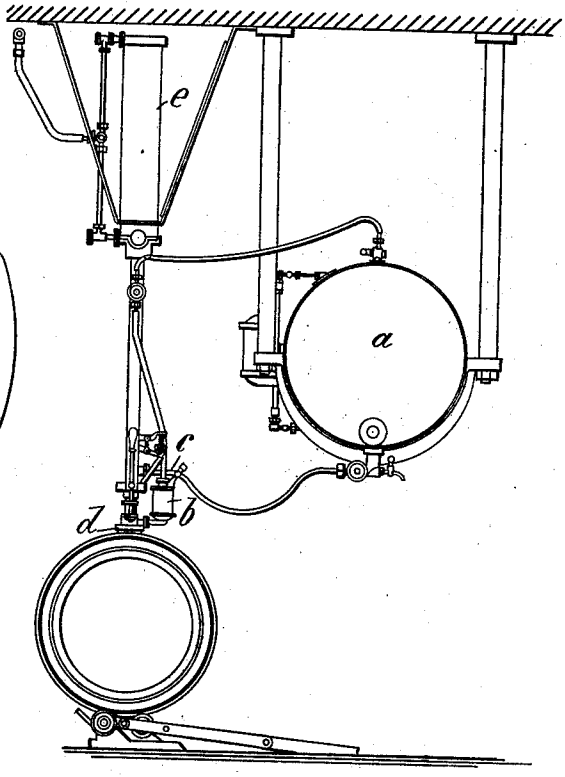



*Fig. 2.*




WITNESSES:
Isabella Haldrow
Adelaide Claire Gleason.

INVENTOR.
Karl Enzinger.
BY Richardson & Co.
ATTORNEYS.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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3 Sheets—Sheet 2.

*Fig. 3.*

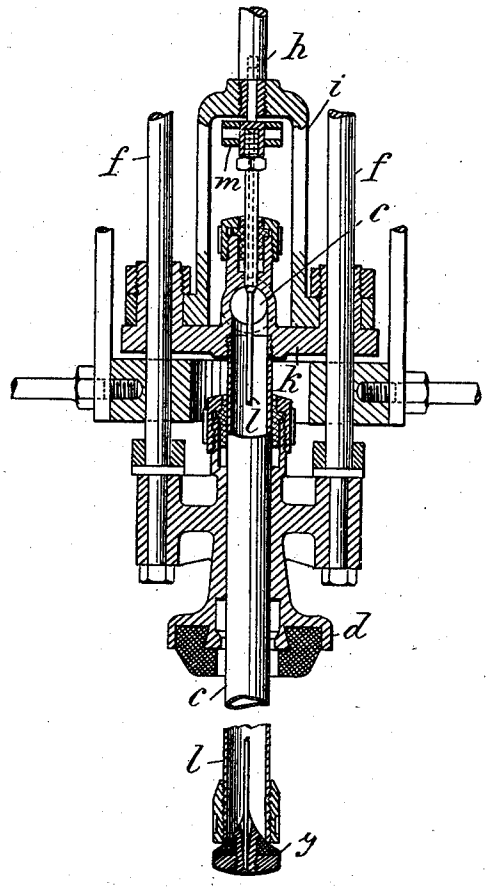
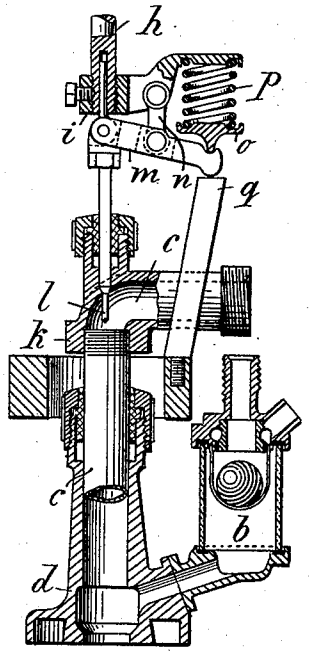



*Fig. 4.*




WITNESSES:
Isabella Haldron.
Adelaide Claire Gleason.

INVENTOR
Karl Enzinger.
BY
Richards & Co.
ATTORNEYS

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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BARREL FILLER.

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(No Model.) 3 Sheets—Sheet 3.

Fig. 5.

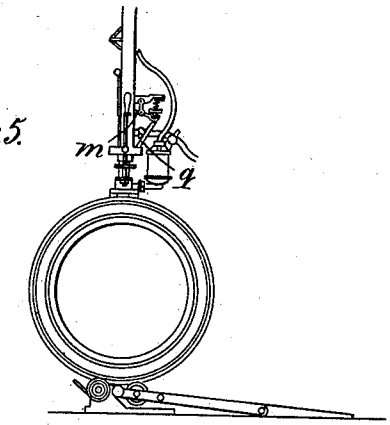



Fig. 6.

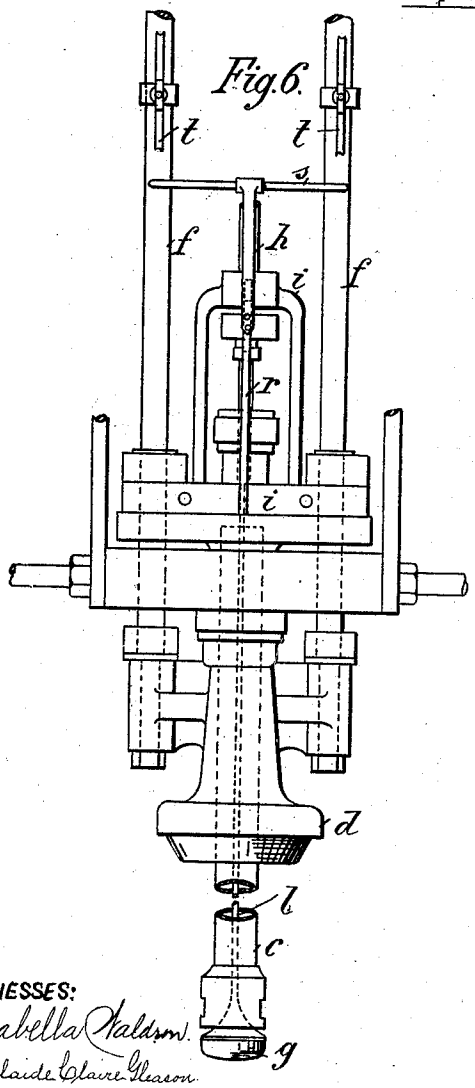
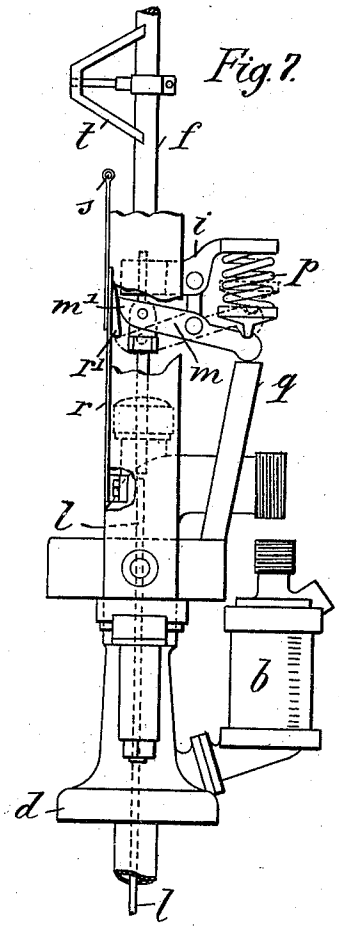



Fig. 7.




WITNESSES:

Isabella Waldron.

Adelaide Claire Gleason.

INVENTOR.

Karl Enzinger

BY Richards & Co.

ATTORNEYS.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

# UNITED STATES PATENT OFFICE.

KARL ENZINGER, OF WORMS, GERMANY, ASSIGNOR TO FILTER- & BRAU-TECHNISCHE MASCHINEN FABRIK ACT. GES. VORM. L. A. ENZINGER, OF WORMS, GERMANY.

## BARREL-FILLER.

SPECIFICATION forming part of Letters Patent No. 717,368, dated December 30, 1902.

Application filed March 14, 1902. Serial No. 98,169. (No model.)

*To all whom it may concern:*

Be it known that I, KARL ENZINGER, mechanical engineer, of Worms, Germany, have invented certain new and useful Improvements in Barrel-Fillers, of which the following is a full, clear, and exact specification.

The present invention relates to barrel-fillers of that class in which a movable filling-pipe conducts the liquid to the bottom of the filling vessel in order to prevent foaming of the beer on running into the barrel. Various attempts have been made to simplify the manipulation of such apparatus, while at the same time increasing the uniformity and certainty of action by dispensing with the uncertain method of operating the apparatus by hand.

The present invention consists in an automatic gear for the valve closing the filling-pipe.

According to this invention the valve-spindle, which is controlled by means of a spring to effect closing of the valve and actuated by the filling-pipe, toward the end of its descent receives an accelerated motion relatively to the filling-pipe through a stop and suitable mechanism, whereby the valve is opened.

The annexed drawings illustrate examples of construction of the new apparatus.

Figure 1 is a front elevation of a barrel-filling apparatus comprising the new gear. Fig. 2 is a side elevation of the same. Fig. 3 is a vertical sectional view, partly broken away, showing the valve-gear drawn to a larger scale. Fig. 4 is a similar view taken at right angles to Fig. 3. Fig. 5 is a side elevation of apparatus similar to that shown in the lower portion of Fig. 2, but of a somewhat modified construction. Fig. 6 is a front elevation of a modification of the valve-gear shown in Fig. 3. Fig. 7 is an elevation of the same seen at right angles to Fig. 6.

Referring more particularly to Figs. 1 and 2, *a* is a vessel through which the liquid has to pass on its way to the barrels. From above a compressed-air hose-pipe conducts to the gage vessel *b* and below a hose for the liquid conducts to the filling-pipe *c*. The socket-piece *d*, with stuffing-box to receive the sliding filling-pipe *c*, is actuated vertically by suitable means operating in an upper cylinder *e*. The latter is provided with a double jacket, and between the outer and the inner wall is an annular piston operating the rods *f f*, so as to actuate the socket *d* vertically up and down, a piston in the inner cylinder actuating the filling-pipe *c*. By suitable operation of valves or cocks the socket *d* is first firmly pressed against the bung-hole of the barrel, so that leakage cannot occur. The interior of the barrel is then connected with the top of the vessel *a*, and thus compressed air let in. Finally the filling-pipe is led down to the bottom of the barrel. In order now to insure of the valve *g* at the bottom of the pipe opening automatically at the right elevation, the following plan is adopted: The piston-rod *h*, extending from the inner cylinder *e*, is connected to the filling-pipe *c* by means of a yoke *i*, bolted to the cross-piece *k*, carrying the pipe *c*. The valve-rod *l* of the valve *g* passes upward through a stuffing-box, its upper end being guided by passing into a recess boxed at the junction of the piston-rod *h* and yoke *i*. Below this point, however, the rod *l* is connected to a lever *m*, pivoted to a link *n*, pendent from the yoke *i*. The other extremity of the lever *m* supports a disk *o* and is pressed downwardly by means of a spiral spring *p*, the upper end of which bears against a portion of the yoke *i*. In this manner the valve-rod *l* is drawn upward, so that the valve at the bottom remains closed. If, however, the spring-actuated end of the lever *m* strikes a stop *q*, projecting from the frame of the apparatus, the spring *p* will be compressed and the other extremity of the lever *m* will impart an accelerated motion of its own to the valve-rod *i*, whereby the valve *g* will be opened. This opening always takes place at the same height. On the inlet-pipe being elevated the spring *p* will again close the valve. When the barrel has been filled under counter-pressure, the compressed air, which during the filling process could return to the vessel *a*, is first cut off. The filling-pipe is then withdrawn, whereupon the valve at once closes again, so that no more liquid can enter, wherefore the space in the barrel occupied by the pipe becomes empty, so far as it is not filled by the contents of the gage vessel *b*, so that the barrel is relieved of superpressure, as desired. With the above apparatus, how-

ever, the operation is dependent upon the size of the gage vessel, which is always of the same capacity, whereas the space which becomes empty on withdrawal of the filling-pipe is smaller in the case of small barrels than in that of larger ones, and consequently varying quantities are necessary in order to wholly fill up this space—*i. e.*, to quite fill the barrel.

According to the modified form of the apparatus illustrated in Figs. 5, 6, and 7 the capacity of the gage vessel is so determined that it is exactly sufficient to fill up the smallest barrel when the foot-valve is closed at commencement of withdrawal of the filling-pipe, but which otherwise keeps the valve open so long that with all barrels to be filled that point is reached at which with the smallest barrel the valve is closed, when therefore the contents of the gage vessel are again sufficient. The above is effected by the provision of a detent which engages the valve-rod when the valve is open, so that closing of the valve can only occur when on raising the pipe the detent mechanism is disengaged by suitable projections on rods of the socket-piece, the position of which depends upon the size of the barrel, whereby the valve is caused always to close corresponding to the capacity of the barrel. The lever *m*, actuating the valve *g* of the pipe *c*, in conjunction with the stop *q*, (or a part connected to this lever,) is provided with a nose *m'*, and the yoke *i* of the filling-pipe *c* has secured to it a flat spring *r*, with detent *r'*. The upper end of the spring *r* is provided with a cross-bar *s*, in the path of which lie diagonal arms *t t*, secured to the rods *f*, serving to press down the socket *d*. The operation of the apparatus is as follows: After the socket *d*, provided with conical rubber plug, has been firmly pressed down upon the bung-hole of the barrel to be filled by means of the rods *f f* the pipe *c* is inserted with its foot-valve *g* through the yoke *i* and rod *h* into the barrel. Shortly before the pipe reaches the barrel-bottom the lever *m* of the valve-rod *l* strikes against the stop *q*, whereby the valve *g* is opened. Hereupon the nose *m'* of the lever *m* engages with the spring-detent *r'*. When the barrel is filled, as can be seen from the gage vessel *b*, the filling-pipe *c* is withdrawn from the barrel. Hereupon the spring *p* would again close the valve *g* were not the lever *m* prevented from turning on its fulcrum by the detent *r'*. The valve thus remains open during withdrawal of the pipe *c* from the barrel, so that liquid will still enter the latter through the said pipe. It is only when the filling-pipe has been raised to a certain definite height corresponding to the size of the barrel and determined by the stop *q* that the spring *r* will be pressed back by the arms *t t*, the detent device disengaged, and the valve *g* closed by the spring *p*. Since the stops *t* are located on the rods *f*, which depress the socket *d* on the bung-hole of the barrels, the valve will always close in the same manner both with small and large barrels. If the valve is to be closed sooner or later, the stops must be adjusted lower or higher accordingly. Thus means is presented for enabling the beer rising into the gage vessel *b* to exactly fill up the space left unoccupied on closing of the valve.

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

1. In a beer-filler having a reciprocating filling-pipe with valve closed by a spindle traveling with said pipe, an automatic valve-gear comprising a bracket secured to the filling-pipe-actuating means, a double-armed spring-actuated lever carried by the bracket, one end of which lever is connected to the valve-spindle, and a fixed stop engaging with the other end of said lever, whereby the lever in its normal position closes the filling-pipe valve, but on engagement with said stop imparts an accelerated motion of its own to the valve-spindle relatively to the filling-pipe, thereby opening the valve, all substantially as described.

2. In a beer-filler having a reciprocating filling-pipe with valve closed by a spindle traveling with said pipe, and a reciprocating socket to receive the pipe and close the bung-hole of the barrel, an automatic valve-gear comprising a device traveling with said spindle and a contrivance engaging said device at a certain period of its travel thereby imparting an accelerated motion to the valve-spindle relatively to the filling-pipe, thus effecting the opening of the said pipe-valve, in combination with a spring-detent mechanism secured to the filling-pipe-actuating means, engaging said spring-actuated device on opening of the valve and a contrivance carried by the socket-actuating means for disengaging said spring mechanism at a certain desired period, all substantially as and for the purposes set forth.

3. In a beer-filler having a reciprocating filling-pipe with valve closed by a spindle traveling with said pipe and a reciprocating socket to receive the pipe and close the bung-hole of the barrel, an automatic valve-gear comprising a bracket secured to the filling-pipe-actuating means, a double-armed spring-actuated lever carried by the bracket, one end of which lever is connected to the valve-spindle, a stop engaging with the other end of said lever, a spring-detent device secured to the filling-pipe-actuating means, and engaging with said spring-actuated lever, a cross-bar carried by said detent device and devices carried by the socket-actuating means for disengaging said detent, all substantially as and for the purposes hereinbefore set forth.

In witness whereof I have hereunto set my hand in presence of two witnesses.

KARL ENZINGER.

Witnesses:
JEAN GRUND,
CARL GRUND.