

(No Model.)

G. ENGEL.

APPARATUS FOR FORCING BEER.

No. 275,756.

Patented Apr. 10, 1883.

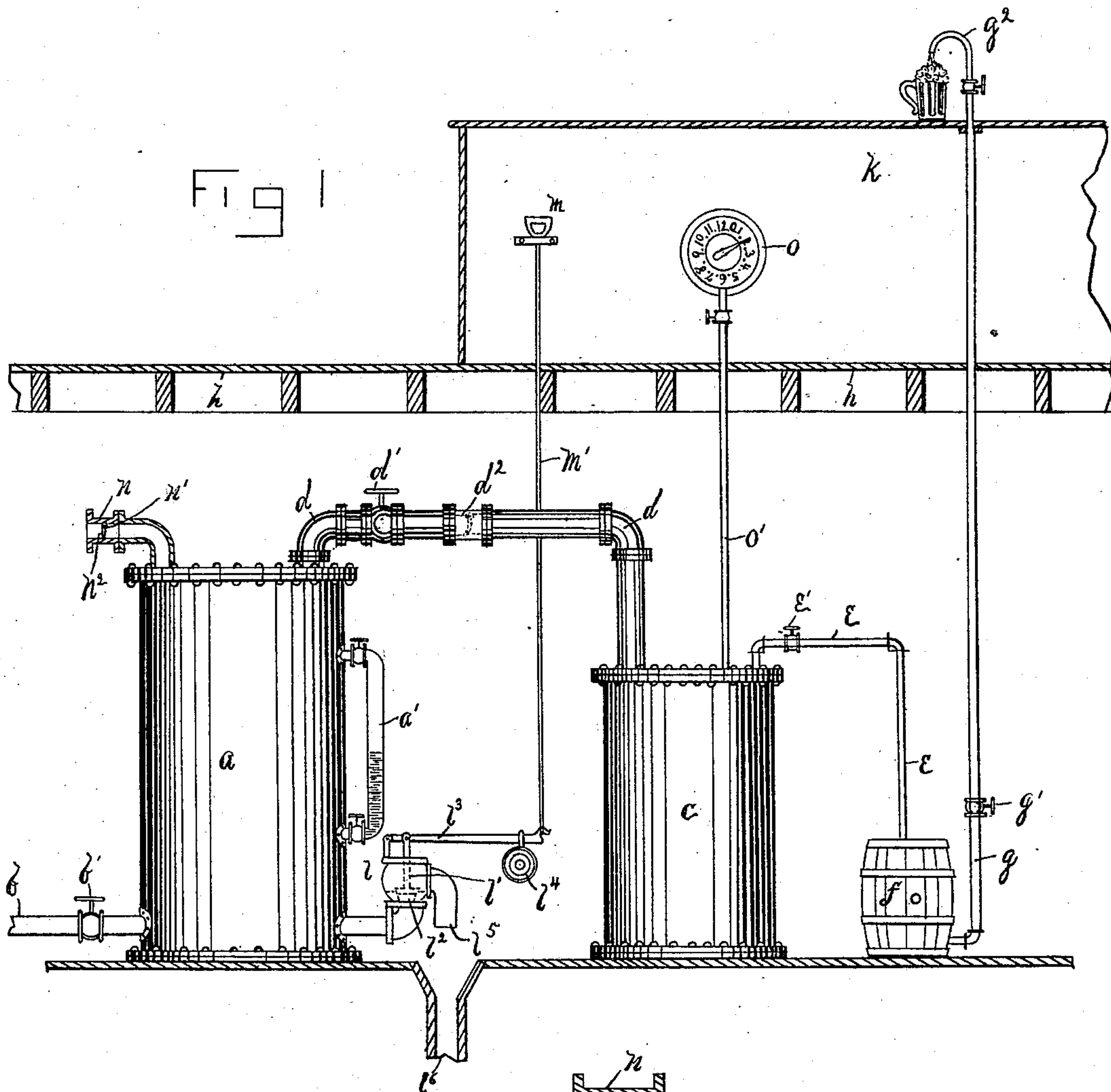
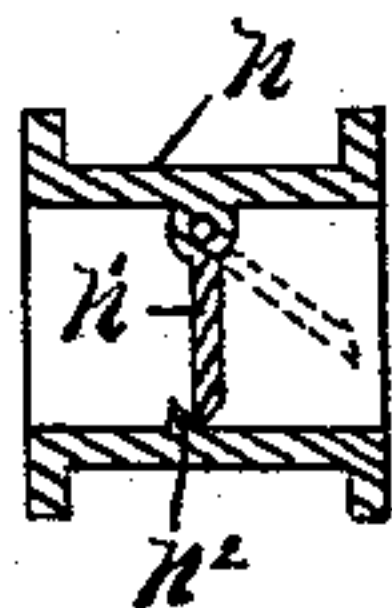


Fig 2



Witnesses:
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UNITED STATES PATENT OFFICE.

GEORGE ENGEL, OF BUFFALO, NEW YORK, ASSIGNOR OF TWO-THIRDS TO
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APPARATUS FOR FORCING BEER.

SPECIFICATION forming part of Letters Patent No. 275,756, dated April 10, 1883.

Application filed October 13, 1882. (No model.)

To all whom it may concern:

Be it known that I, GEORGE ENGEL, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Apparatus for Forcing Beer; 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates more particularly to apparatus especially designed for forcing beer from the keg or cask to the point from which it is to be drawn off for consumption; and it consists substantially of a closed air-tight reservoir, into which water is forced under pressure, and as the water rises in such reservoir it forces the contained air into another and smaller air-tight reservoir, from which it is conducted, in its compressed condition, into the top of the keg or cask containing the ale or beer, and from thence through a suitable pipe passing out from the bottom of the keg or cask, up to the faucet from which it is to be drawn off as desired. The larger reservoir is provided with an automatic escape-cock, which prevents the water from rising beyond a certain height in such reservoir, and also means by which this escape-cock can be operated at a convenient distance to discharge the contents of the larger reservoir when the compression of the air ceases and it becomes necessary to repeat the operation. The connection between the large and small reservoirs is provided with means for automatically confining the compressed air in the small reservoir during the operation of drawing off the water from the large reservoir in its preparation for the next compression. A pressure-gage connecting with the small reservoir is placed at a convenient point for observation.

I will now proceed to describe the manner in which I have at the present time arranged my improved apparatus, it being understood that this arrangement is susceptible of considerable variation without departing from the spirit of my invention.

In the drawings, Figure 1 is a vertical section of the two floors of a building, showing the arrangement and location with respect to the two floors of my improved apparatus; and Fig. 2 is an enlarged sectional detail view.

Referring to the drawings, *a* is an air-tight reservoir or compartment, which is connected, near its bottom, with the street water-main or other source of supply by means of the pipe *b*, having the stop-cock or faucet *b'*. *c* is another and smaller air-tight reservoir, the interior of which is connected with the interior of reservoir *a* and an automatic air-vent, by means of the pipe *d*, which opens into each reservoir at their upper portions. This pipe is provided with the stop-cock *d'*.

e is a pipe which connects the upper part of the small reservoir with the keg or cask *f*, which contains the ale or beer. The pipe *e*, which has the stop-cock *e'*, enters the keg or cask *f* through its upper head, and into the lower portion of this keg is introduced another pipe, *g*. The two reservoirs *a* *c* and the keg *f*, together with their connections, a portion of which has just been described, are located, as shown in the drawings, in the basement or cellar, and the pipe *g*, having the stop-cock *g'*, and leading from the bottom of the keg *f*, passes up through the floor *h* and ends in a faucet, *g''*, located, as shown, upon the counter *k*, a rear view of which is shown in the drawings.

The ale or beer is forced from the keg into the pipe *g*, under pressure, in the following manner: A stream of water is turned into the reservoir *a* from the pipe *b* by means of the cock *b'*. It is only necessary for the flow of water to be very gradual, as the pressure required is comparatively small. As the water slowly rises in the reservoir the contained air above it is forced through the pipe *d* into the smaller reservoir *c*, and from thence through pipe *e* into the top of the keg. As the pressure increases, the ale or beer is forced up through pipe *g* to the faucet *g'*. While the water continues to rise in the reservoir *a* the pressure is correspondingly increased to an amount to be governed by the relative sizes of the reservoirs *a* and *c*.

In practice I have found by making the reservoir *a* of a capacity of about ninety gallons and the smaller reservoir *c* of a capacity of

about twenty gallons that when the water has risen nearly to the top of the large reservoir a pressure of about ten pounds to the square inch will be exerted against the ale or beer in the keg to raise it to the faucet g' . To prevent the water from rising beyond a certain point in the reservoir a , I have provided it, near its bottom, with the automatic safety-cock l , communicating with the interior of the reservoir. This safety-cock has the sliding valve l' , (shown in dotted lines,) which rests against the opening l^2 , (also shown in dotted lines,) and serves to hold the water in the reservoir a until it has reached a certain height, by means of the pressure exerted against such sliding valve, by the pivoted lever l^3 , upon which the weight l^4 is adjustably located. This weight is so adjusted upon the lever as to exert a pressure sufficient to hold the water in the reservoir until it has reached a certain fixed height, the pressure of the water beyond such point being sufficient to raise the valve l' and allow the water escape through the orifice l^5 into a drain, l^6 , until it has again reached its proper level. A water-gage, a' , is provided, by means of which the safety-cock can be set for any desired height of water in the reservoir.

When it becomes necessary to empty the reservoir in order to renew the pressure upon the contained air in the apparatus it is only necessary to pull up the handle m of the rod m' , the end of which is secured to the lever l^3 . By this arrangement the reservoir can be emptied of its contents from the floor above and the operation of again compressing the air commenced.

In order to assist in discharging the water from the reservoir a , I have provided the air-vent n , of rectangular form, located at the top of the reservoir, and having the swinging valve n' , (more clearly shown in Fig. 2,) which, operating to and from the projecting stop n^2 , serves to admit air into the reservoir while its contents are being discharged, but which closes automatically when the pressure is being produced. A similar valve is located in the pipe d at d^2 , which, operating in a similar manner, serves to prevent the compressed air in the reservoir c from being forced back into the larger reservoir a while the pressure therein is removed as its contents are being discharged.

A pressure-gage, o , communicating with the reservoir c through pipe o' , is located upon the upper floor, as shown, by means of which the amount of pressure is at all times indicated. It will readily be seen from the foregoing description that it is only necessary to place the keg or cask of beer in connection with the pipes e and g and turn on the water through cock b' , when the apparatus can be regulated, and the pressure renewed and maintained at will from the floor above by the attendant serving the beer.

The reservoirs a and c can be made of galvanized sheet tin or iron, owing to the small amount of pressure required, and by varying the relative size of the reservoirs the amount

of pressure to be produced by the apparatus can be increased or diminished accordingly, and more than one keg or cask, each communicating with independent faucets, can be operated from the reservoir c .

My improved apparatus is so arranged that a sufficient amount of pressure can be uninterruptedly maintained, for while the pressure is removed from reservoir a , during the discharge of its contents preparatory to the next period of compression, sufficient pressure has been stored up in reservoir c and confined therein by the automatic valve d^2 to last until the pressure in reservoir a has again been raised to the proper degree.

When the empty keg or cask is to be removed and a full one substituted it is only necessary to close the stop-cock e' upon the pipe e to retain the pressure in reservoir c until the keg or cask is properly adjusted.

I am aware that it is not novel, broadly, to compress air in a closed reservoir by forcing water into the same, for the purpose herein described, and I do not therefore lay claim to such broad idea; but

What I do claim as of my invention is—

1. An apparatus for forcing beer, consisting substantially of a closed reservoir connected with the street water-main or other source of supply, provided with means for automatically regulating the height of the water to be forced therein for compressing the contained air in such reservoir, an automatic air-vent, and also means for discharging the contents of the reservoir for the purpose of renewing the pressure, a smaller closed reservoir connected with the larger reservoir, adapted to receive and hold the compressed air from the larger reservoir, the pipe connecting the two reservoirs being provided with an automatic valve for retaining the compressed air in the smaller reservoir, and suitable connections from the smaller reservoir to the beer-keg and from the keg to the faucet, all combined and operating substantially as shown and described.

2. An apparatus for forcing beer, consisting of the reservoir a , having the automatic air-vent n , the safety-cock l , with its rod m' , pipe-connection b , and gage a' , the reservoir c , connected with the reservoir a by pipe d , having the automatic valve d^2 , and the pipe e , with cock e' , connecting the reservoir c with the beer-keg f , all combined and operating substantially as shown and described.

3. In an apparatus for forcing beer, the combination of the reservoir a , having the pipe-connections b and d , gage a' , and automatic air-valve n , with the safety-cock l l' l^2 l^3 l^4 and its rod m' , as and for the purpose stated.

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

GEORGE ENGEL.

Witnesses:

OTTO HODDICK,
W. T. MILLER.