

No. 654,714.

Patented July 31, 1900.

H. W. COLBY.
ART OF RACKING BEER.

(Application filed Jan. 15, 1900.)

(No Model.)

2 Sheets—Sheet 1.

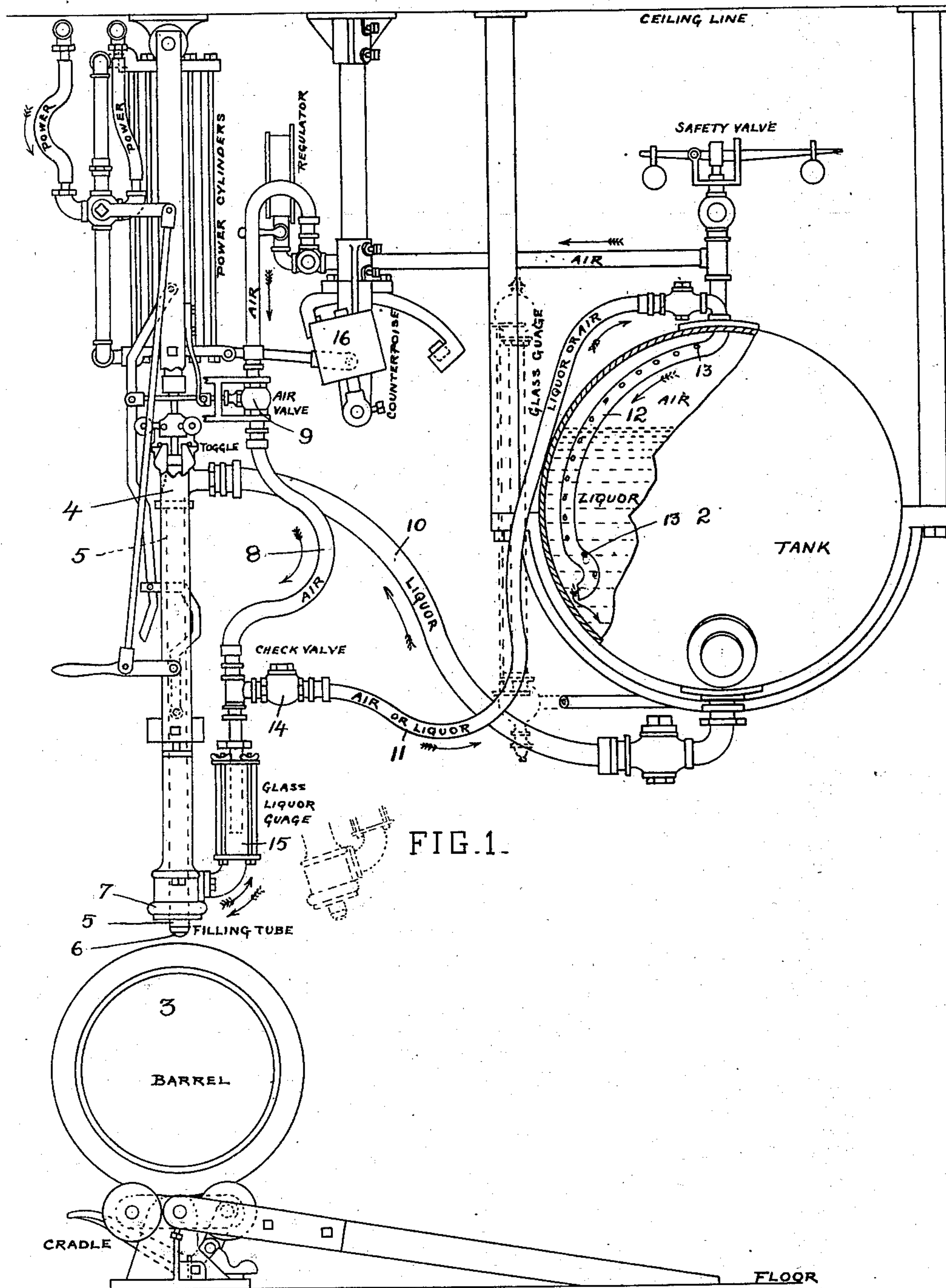


FIG. 1.

WITNESSES:

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INVENTOR.

Harry W. Colby
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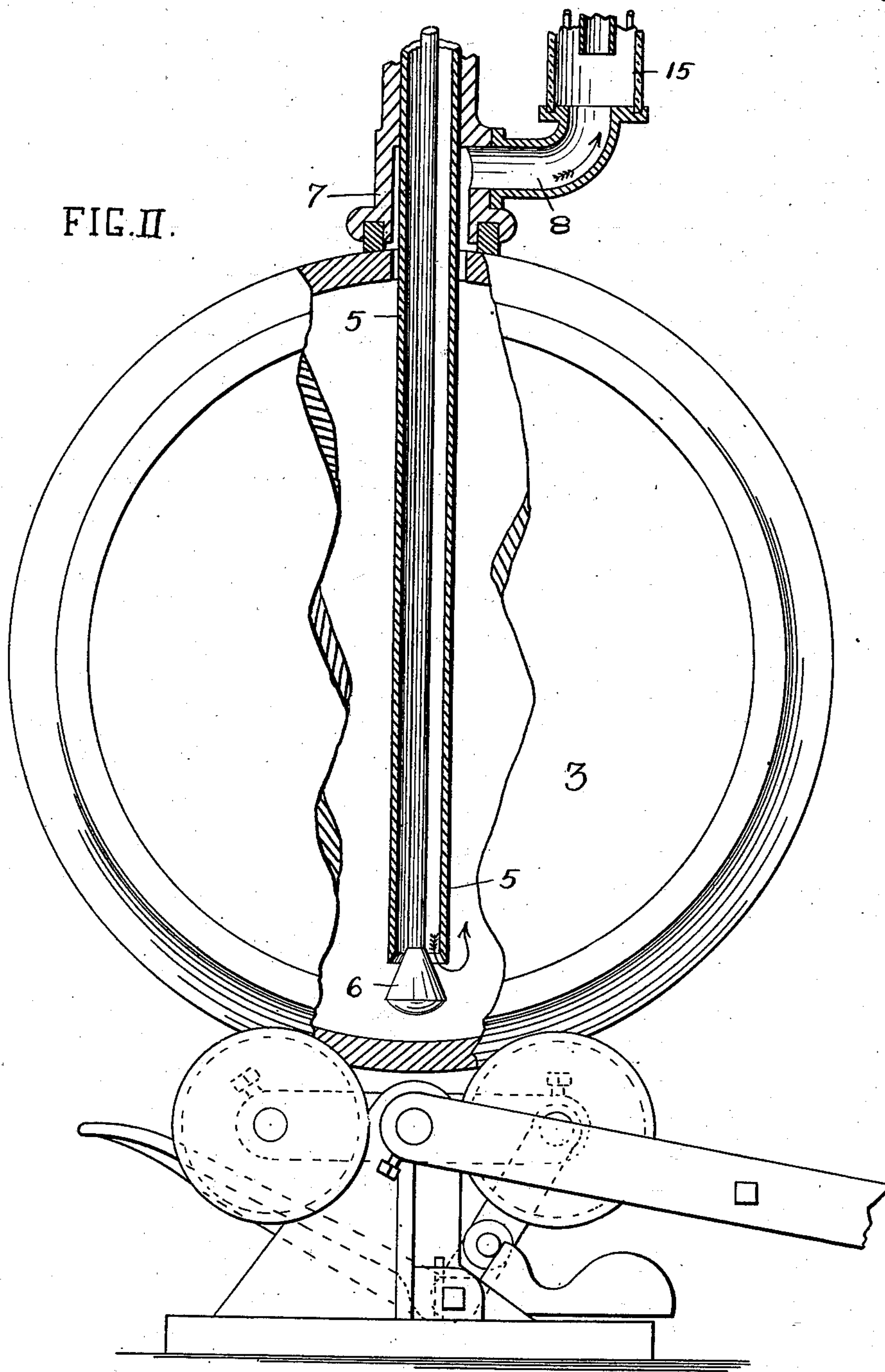
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2 Sheets—Sheet 2.

FIG. II.



WITNESSES:

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UNITED STATES PATENT OFFICE.

HARRY W. COLBY, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE AUTOMATIC RACKING MACHINE COMPANY, OF SAME PLACE.

ART OF RACKING BEER.

SPECIFICATION forming part of Letters Patent No. 654,714, dated July 31, 1900.

Original application filed March 15, 1899, Serial No. 709,225. Divided and this application filed January 15, 1900. Serial No. 1,412. (No model.)

To all whom it may concern:

Be it known that I, HARRY W. COLBY, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in the Art of Racking Beer or other Gas-Charged Liquids Under Pressure from Tanks into Barrels or Packages, of which the following is a specification.

This application is a division of my pending application, Serial No. 709,225, filed March 15, 1899, on apparatus for racking beer.

The method, process, or improvement in the art of racking beer or other gas-charged liquids under pressure from a closed tank into a barrel or package forming the subject of this application consists, essentially, in first sealing the barrel or package which is to be filled and forming an air or gas communication between the sealed barrel or package and the closed tank and establishing an equilibrium of air or gas pressure in the tank and barrel or package to be filled by causing air or gas to flow from the upper portion of the closed tank into the sealed barrel or package and then maintaining such equilibrium of pressure in the two while the liquid flows by gravity from the tank at a higher level into the barrel or package placed at a lower level by causing the air or gas displaced from the barrel or package by the entering liquid to flow back into the closed tank through an air-outlet pipe or communication between the tank and the barrel or package being filled, which remarkable process or method of operation I have discovered may be practicably performed by reason of my discovery that after an equilibrium of pressure is first established between the tank above and the barrel to be filled below the force of the descending column of liquid in the filling-tube will force the liquid, which rises in the air-outlet tube to the level of the liquid in the tank when one package becomes full, to the still higher level at which the air-outlet pipe or communication enters the tank, so that said air-outlet pipe or communication between the tank above and the barrel below will not, in fact, in practice be closed by reason of the tend-

ency of the liquid to rise therein to the level of the liquid in the tank when the barrel or package becomes full. By this method or process I am enabled to rapidly and cheaply rack or draw beer or other gas-charged liquids from closed tanks into barrels or packages without causing any foaming and consequent loss or deterioration in quality. The air or gas outlet pipe through which the air or gas flows back from the sealed barrel or package into the closed tank and by which the pressure in the two is maintained uniform or at an equilibrium is bent or inclined at the portion thereof within the tank and provided with perforations or openings on its upper side, so that the liquid, which at the beginning of the filling operation fills this air-outlet pipe to the level of the liquid in the tank, may flow gently back into the body of the liquid in the tank, while the air or gas which may be mixed therewith may escape into the upper portion of the tank, and thus prevent any agitation of the liquid in the tank and consequent foaming.

My invention will be more clearly understood by those skilled in the art by reference to the accompanying drawings, forming a part of this specification, and in which—

Figure I represents a side elevation of an apparatus suitable for use in practicing my invention, and Fig. II an enlarged detail vertical section.

I will now describe my invention more in detail in connection with the accompanying drawings.

In said drawings, 2 represents a closed tank containing beer or other gas-charged liquid under pressure.

3 represents the barrel or package in which the beer or gas-charged liquid under pressure is to be racked or drawn. The barrel or package 3 is supported on a suitable barrel-support 34 at a sufficient distance below the tank 2 to cause the liquid to flow by its own gravity from the tank above into the barrel below when and while an equilibrium of air or gas pressure is established and maintained between the two vessels.

5 is a filling-tube having a valve 6 at its

lower end and which is adapted to be inserted into the barrel through the bung or opening thereof, so that the open end of the filling-tube will come near the lower portion of the barrel.

7 is a sealing head or sleeve surrounding the filling-tube and adapted to seal the barrel or package by being forced against the same around the bung.

8 is an air-inlet pipe having a valve at 9 for opening and closing the same and which leads from the upper portion of the tank 2 to the sealing sleeve or head 7 and through which the air or gas under pressure in the tank 2 may flow into the sealed barrel or package 3, and thus establish an equilibrium or pressure between the barrel or package before the liquid begins to flow from the closed tank into the sealed barrel or package through the filling-tube 5 and the filling-pipe 10, which leads from the lower portion of the tank to and connects with the filling-tube 5.

11 is an air or gas outlet pipe or tube connected at its lower end with the air-inlet pipe 8 and leading to the upper portion of the tank. This air-outlet pipe 11 has an inclined or curved portion 12 extending into the tank 2, so that the liquid which rises or may rise in the air-outlet pipe 11 to the level of the liquid in the tank 2 when the barrel or package 3 becomes full and which at the beginning of the filling of the next barrel is forced back into the tank 2 along with the air displaced from the barrel 3 by the entering liquid may gently flow back into the mass of liquid into the tank without occasioning any jet or spray, and thus cause foaming of the gas-charged liquid in the tank. To permit the air to escape into the upper portion of the tank and separate itself from the liquid which is being returned from the pipe 11 into the tank, I provide the inclined or curved pipe 12 within the tank with openings or perforations 13 on its upper side, through which the liquid flows down along the inclined pipe into the liquid in the tank 2.

With the above brief description of the apparatus illustrated in the drawings and which I prefer to use in practicing my invention the several steps constituting my method or process may now be clearly described, so that it will be readily understood by those skilled in the art.

The barrel or package 3 is first sealed by forcing the hollow sealing head or sleeve 7 down upon the barrel around the bung thereof. A communication is thus formed between the sealed barrel 3 and the closed tank 2 by opening the air-valve 9 in the air-inlet pipe 8, which connects the sealing head or sleeve with the upper portion of the tank 2. An equilibrium of air or gas pressure is next established between the tank 2 and the barrel 3 by air or gas under pressure flowing from the upper portion of the tank into the barrel through the air-inlet pipe or communication 8. The filling-tube 5 being now inserted in the

barrel, so that its lower end extends near the bottom thereof, its valve 6 is open and the liquid flows by gravity from the closed tank 2 above into the sealed barrel 3 below, owing to the different heights or levels at which the two vessels are placed, and during this step or operation the equilibrium of pressure previously established between the tank and barrel is maintained by conducting the air which is displaced from the barrel by the entering liquid back into the closed tank 2 through the air-outlet pipe 11, and at the beginning of this operation the liquid which remains in the air-outlet pipe 11 from the check-valve 14 to the level of the liquid in the tank 2 is caused to flow back into the tank through said pipe 11 by the force of the descending column of liquid in the filling-tube 5. I have discovered and demonstrated by practical use that the liquid in the air-outlet pipe 11 at the beginning of the flow of the liquid from the tank into the barrel may thus be forced to the top of the tank 2 and to a height of several feet above the level of the liquid in said tank. At the beginning of the flow of the liquid into the barrel through the filling-tube the air and liquid which are being forced back into the tank 2 through the pipe 11 separate from each other in the pipe 12 within the tank 2, the air or gas escaping through the holes or perforations 13, while the liquid flows gently down the inclined pipe and enters the liquid in the tank without agitating the same. After the barrel becomes full of liquid the flow of the liquid from the tank into the barrel automatically ceases when it reaches its own level in the pipe 11, as there is an equilibrium of pressure. The valve 6 of the filling-tube 5 is then closed and the filling-tube withdrawn, and as the filling-tube is withdrawn the liquid which has risen in the gage 15 flows back into the barrel and fills the space left by the withdrawal of the filling-tube, thus leaving the barrel completely full. The sealing-head is then withdrawn from the barrel, and the frame 4, carrying it, is swung to one side, as indicated by the dotted lines in Fig. 1, it being held in this position by the counterbalance 16, and then the bung-plug is quickly driven into the barrel.

For a more full or detailed description of the apparatus illustrated in the accompanying drawings reference is here made to the patent to be granted upon my said pending application, Serial No. 709,225, filed March 15, 1899.

I claim—

1. The improvement in the art of racking beer or other liquids under pressure from a closed tank into a barrel or package through its bung-opening at the upper portion thereof, consisting in first sealing the barrel or package around its bung-opening and forming an air communication between said barrel or package and said closed tank through the sealed bung-opening of said barrel or package, then establishing an equilibrium of pressure

between said tank and barrel or package by permitting air or gas to flow from the upper portion of the closed tank into the sealed barrel or package through its sealed bung-opening, and then causing the liquid to flow by gravity from the tank above and be discharged into the lower part of the barrel below through a connecting-pipe and a filling-tube extending through said sealed bung-opening to the lower part of the barrel or package, and maintaining the equilibrium of pressure in the tank and barrel or package while the liquid flows by gravity from the tank into the barrel by causing the air or gas displaced from the barrel by the entering liquid to flow back into the closed tank, substantially as specified.

2. The improvement in the art of racking beer or other liquids under pressure from a closed tank into a barrel or package, consisting in first sealing the barrel or package and forming an air communication between said barrel or package and said closed tank, then establishing an equilibrium of pressure between said tank and barrel or package by permitting air or gas to flow from the upper portion of the closed tank into the sealed barrel or package, and then causing the liquid to flow by gravity from the tank above into the barrel below through a connecting filling-tube and pipe, and maintaining the equilibrium of the pressure in the tank and barrel or package while the liquid flows by gravity from the tank into the barrel by causing the air or gas displaced from the barrel by the entering liquid to flow back into the closed tank through a connecting air-outlet pipe leading into the upper portion of the tank, the liquid standing in the air-outlet pipe at the beginning of the liquid flow into the barrel being caused to enter the tank above the level of the liquid

therein by the force of the descending column of the liquid entering the barrel by the filling-tube, substantially as specified.

3. The improvement in the art of racking beer or other liquids under pressure from a closed tank into a barrel or package, consisting in first sealing the barrel or package and forming an air communication between said barrel or package and said closed tank, then establishing an equilibrium of pressure between said tank and barrel or package by permitting air or gas to flow from the upper portion of the closed tank into the sealed barrel or package, and then causing the liquid to flow by gravity from the tank above into the barrel below through a connecting filling-tube and pipe, and maintaining the equilibrium of the pressure in the tank and barrel or package while the liquid flows by gravity from the tank into the barrel by causing the air or gas displaced from the barrel by the entering liquid to flow back into the closed tank through a connecting air-outlet pipe leading into the upper portion of the tank, the liquid standing in the air-outlet pipe at the beginning of the liquid flow into the barrel being caused to enter the tank above the level of the liquid therein by the force of the descending column of the liquid entering the barrel by the filling-tube and separating the air, which enters with the liquid that is thus returned into the tank, from said liquid at the upper portion of the tank and before said liquid enters the mass of liquid in the tank, substantially as specified.

HARRY W. COLBY.

Witnesses:

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EDMUND ADCOCK.