

B. HADANK.

CARBONIC ACID APPARATUS FOR BEER CASKS AND THE LIKE.

APPLICATION FILED FEB. 5, 1906.

3 SHEETS—SHEET 1.

FIG. 1.

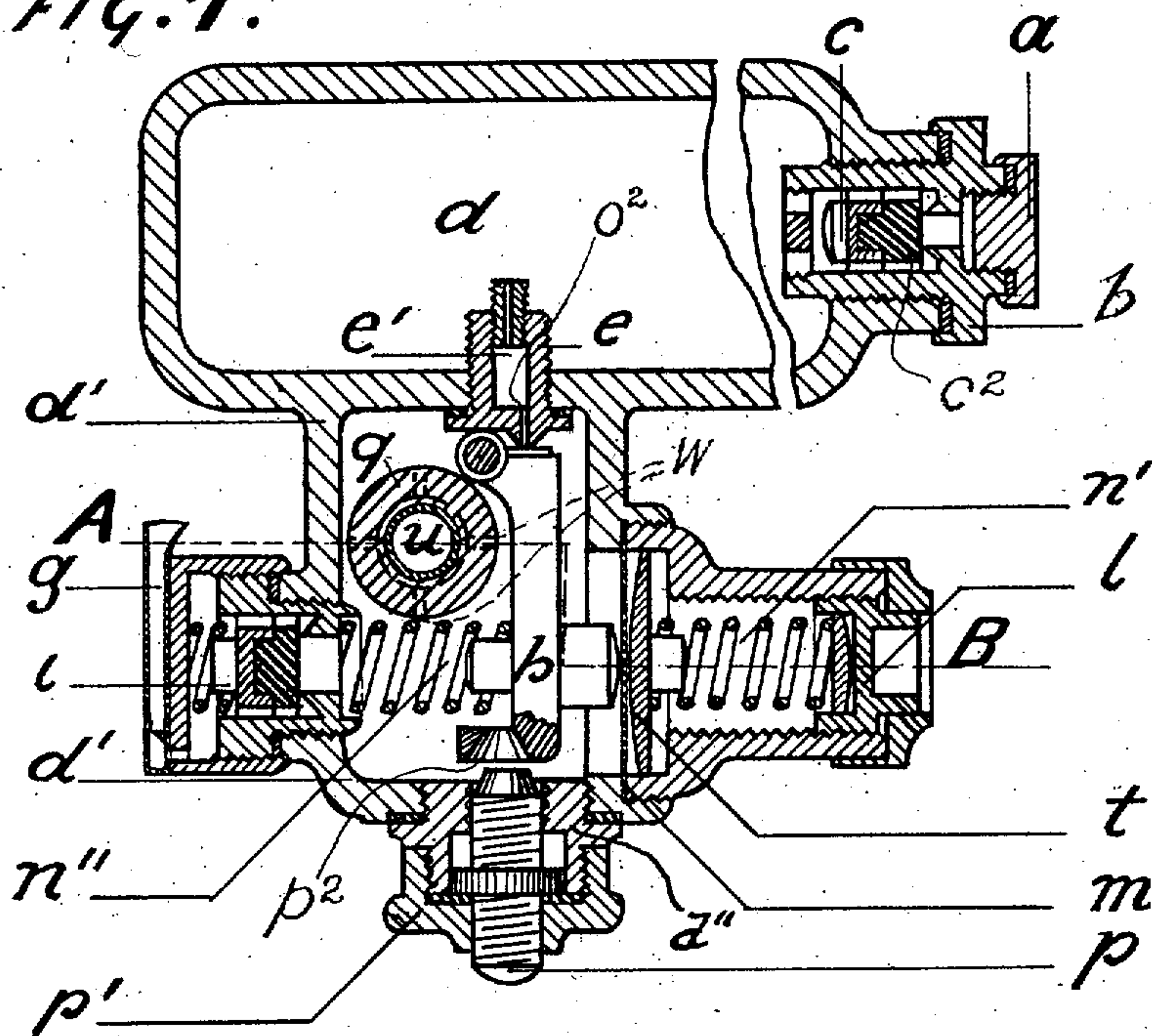
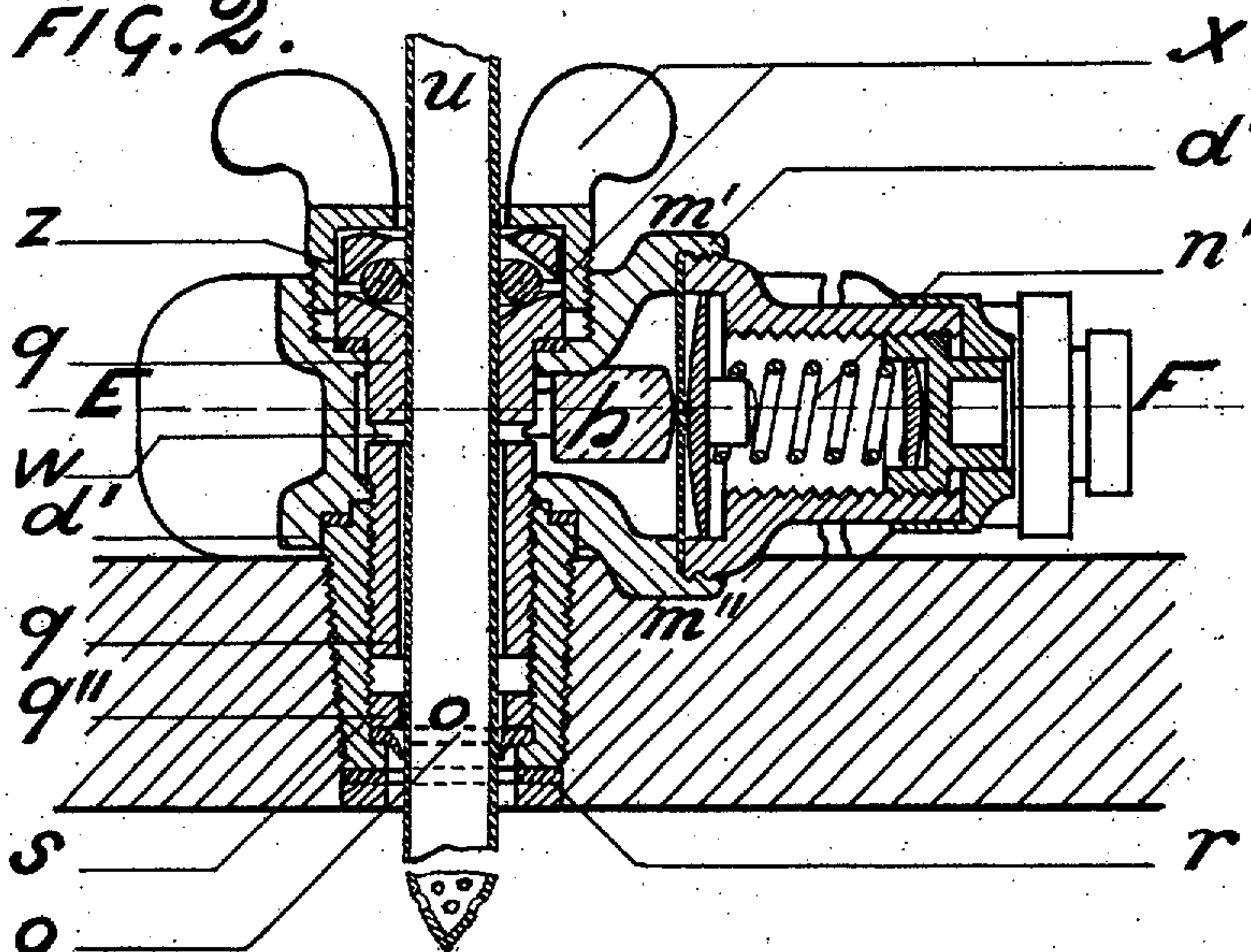


FIG. 2.



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PATENTED APR. 7, 1908.

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3 SHEETS—SHEET 2.

FIG. 3.

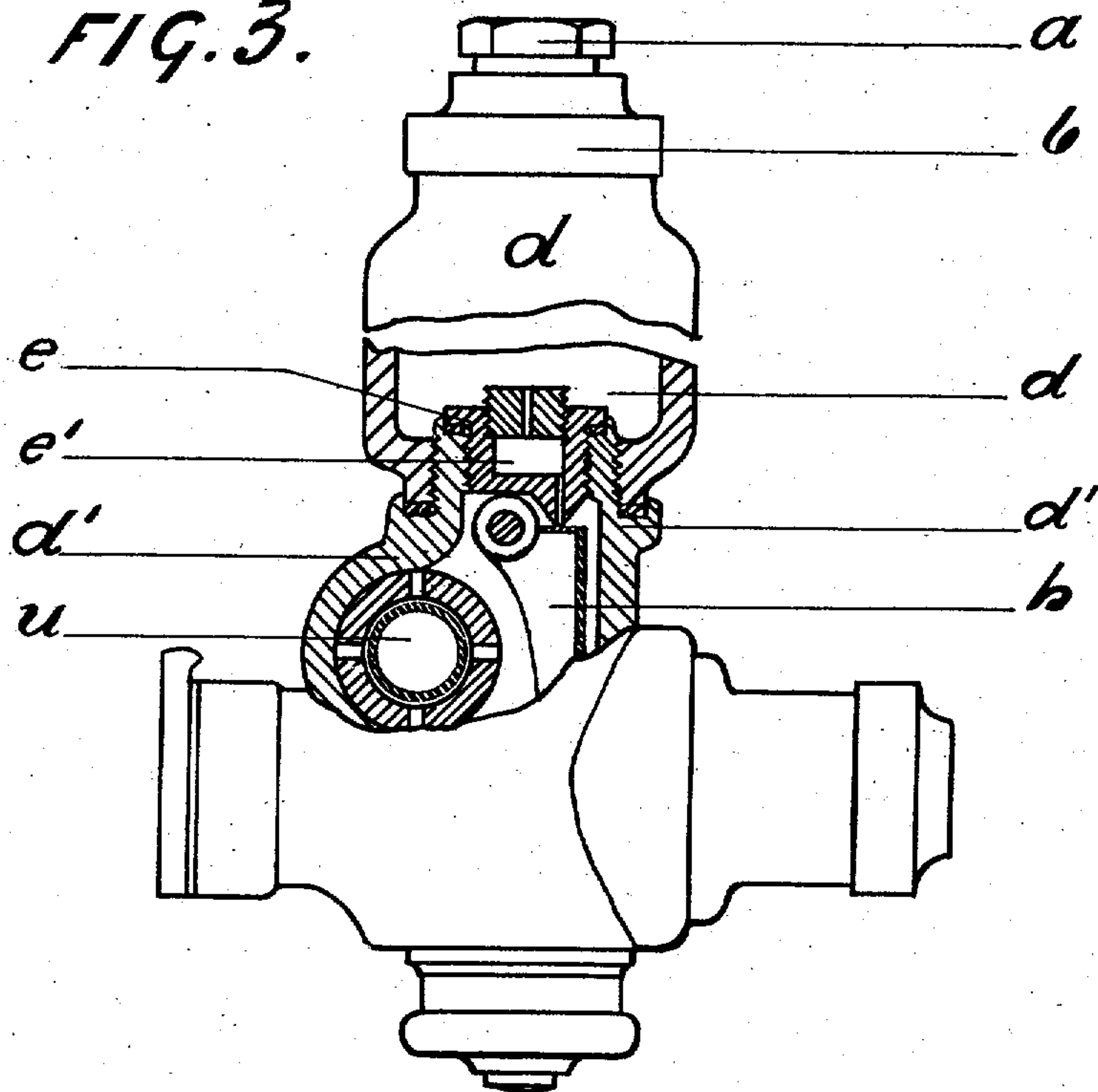
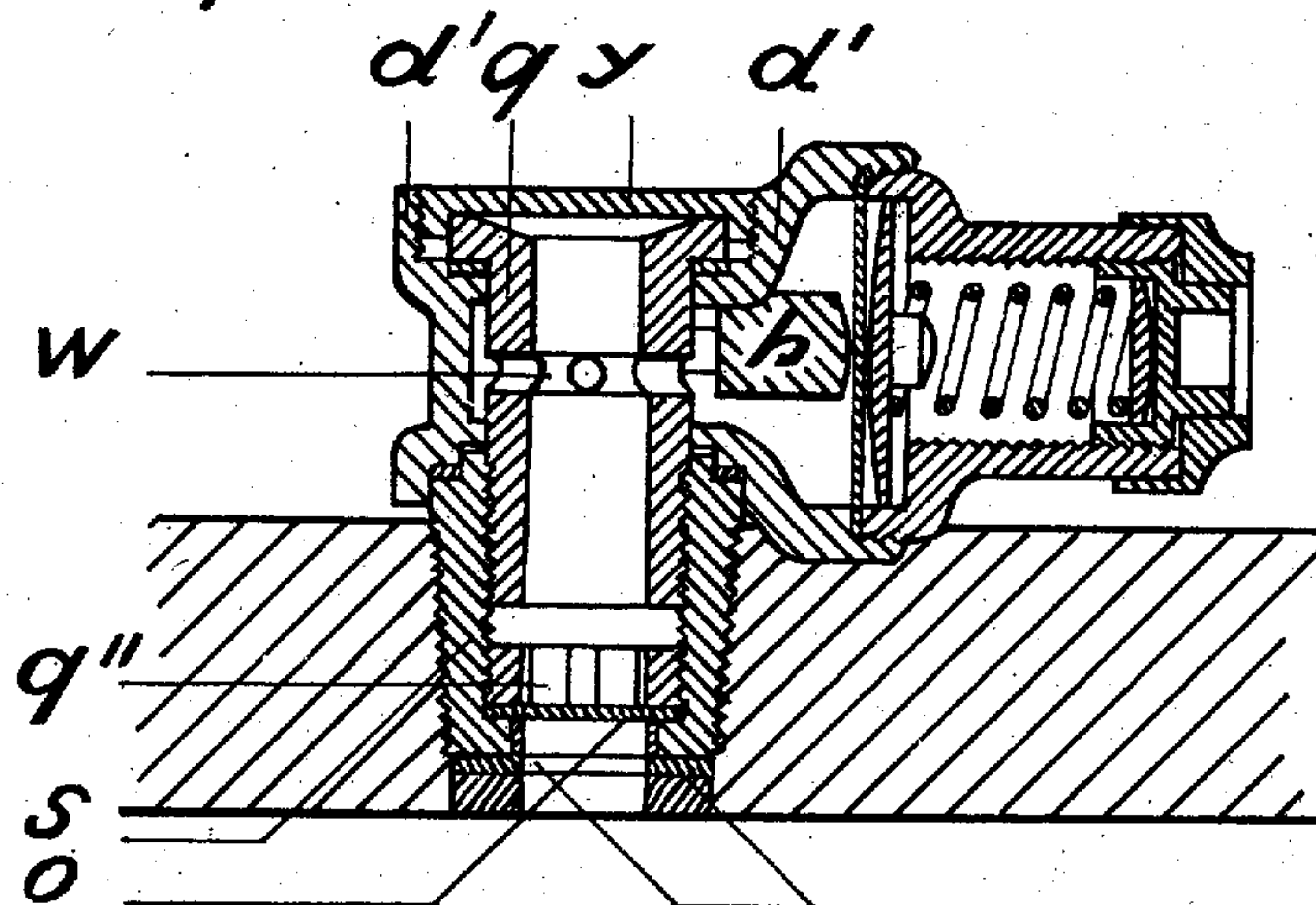


FIG. 4.



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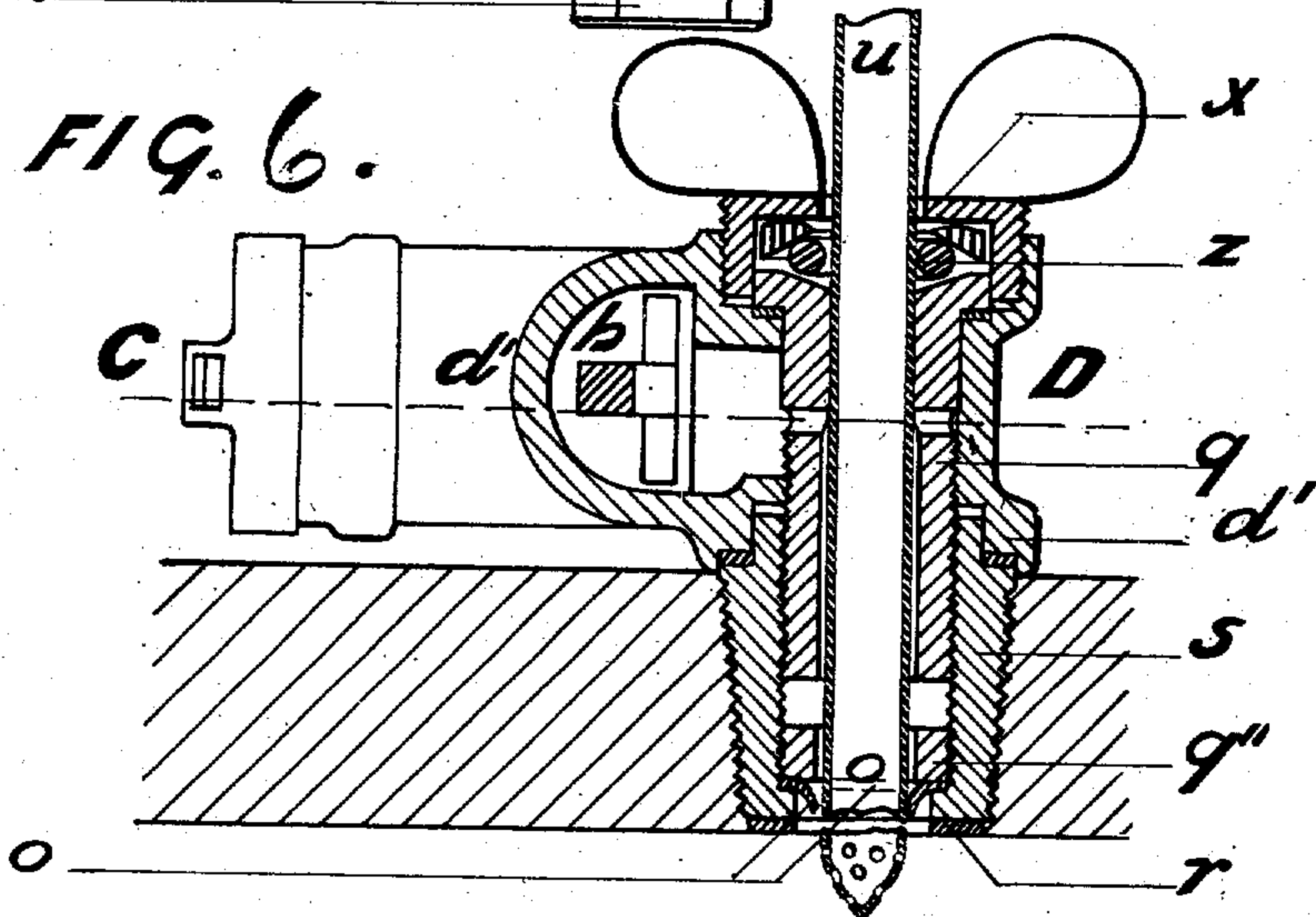
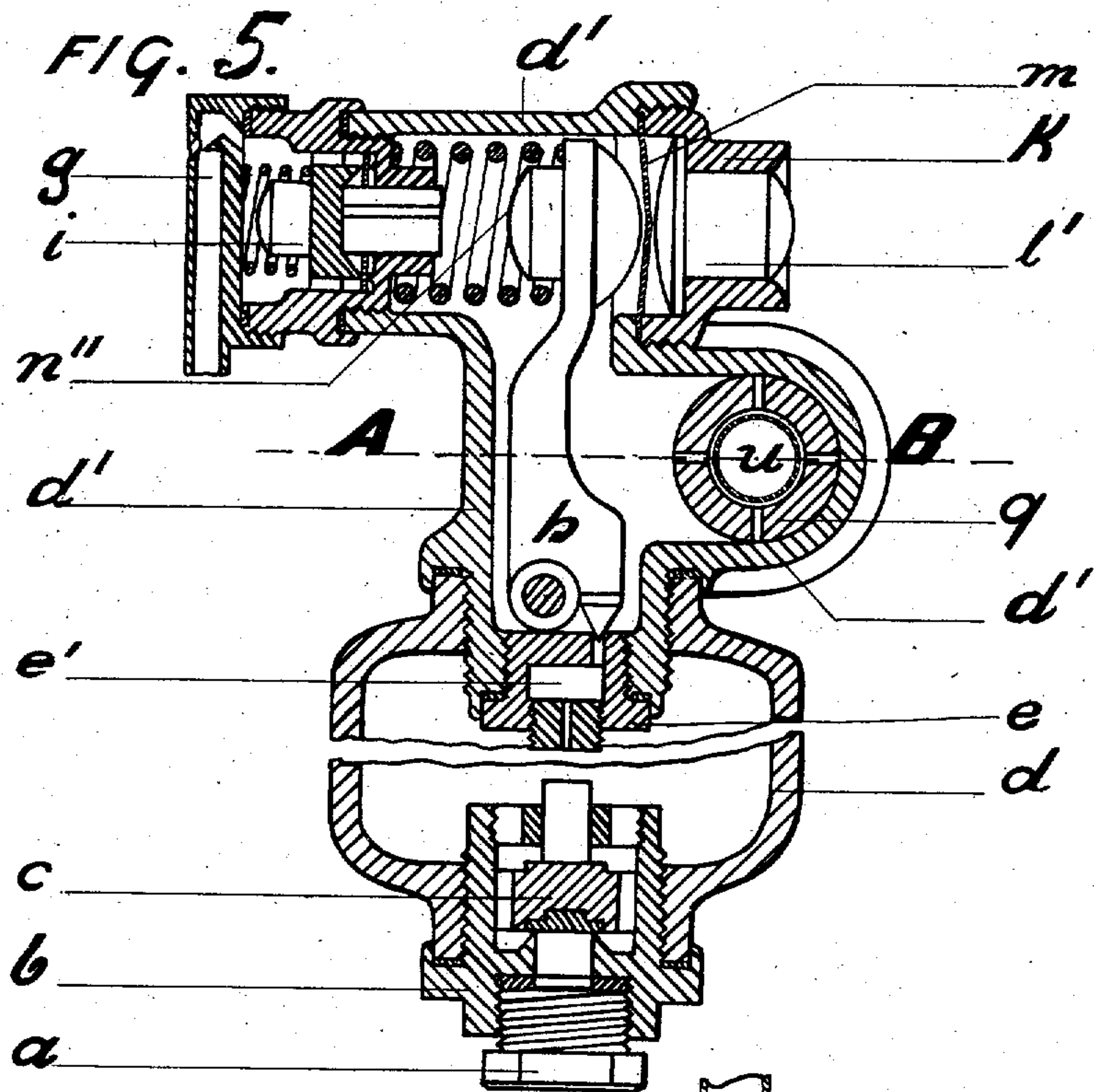
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3 SHEETS—SHEET 3



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UNITED STATES PATENT OFFICE

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CARBONIC-ACID APPARATUS FOR BEER-CASKS AND THE LIKE.

No. 884,017.

Specification of Letters Patent.

Patented April 7, 1908.

Application filed February 5, 1906. Serial No. 299,603.

To all whom it may concern:

Be it known that I, BERNHARD HADANK, mechanical engineer, a citizen of the German Empire, residing at Buenos Ayres, Calle Peru 1661, Argentina, have invented certain new and useful Improvements in Carbonic-Acid Apparatus for Beer-Casks and the Like, of which the following is a specification.

My invention relates to and has for its object a carbonic acid apparatus for drawing off liquids from casks, and particularly for drawing off beer, and which can be conveyed with the cask any required distance.

One of the great objections to former apparatus of this kind is that they require a hole of considerable size for their fitting to the cask.

Another is that they occupy a large space in the casks and further the liquid contents of the cask are not prevented from coming into contact with the metal parts of the apparatus.

One of the important objects of my invention therefore is to provide an apparatus which requires only a small opening for the fastening of its connecting-piece to the cask.

Another important object is to provide an apparatus which can be completely placed in the space between the cask-head and the top ends of the staves above the cask-head, so that the cask does not occupy more space with the apparatus in transit than without it.

Another object is to provide an apparatus in which only one opening is necessary for the introduction of the carbonic acid into the cask and for drawing off the beer.

The above characteristic features of my new apparatus enable it to be left on the cask during the time that the latter is being cleaned, repaired, pitched, etc. It can therefore be fixed on the cask before the latter is filled, that is to say, it can be permanently attached to the same when desired.

Where the improved apparatus is used, the beer will thus be supplied to the consumer in a much better condition than otherwise. Moreover influences which unfavorably affect beer during transit, so far as they are due to carbonic acid apparatus, are here entirely absent; wherefore a higher percentage of the total quantity of beer exported by the brewer will arrive at its destination in condition for consumption. The beer therefore will be cheaper at such place of delivery.

Another advantage of my new apparatus,

which under certain circumstances may be of much importance, is that it does not have to be turned in securing it to the cask. Therefore only that space is necessary which corresponds to the actual bulk of the device, so that it can be fixed quite close to that part of the cask-wall which projects beyond the head.

Further advantages of my present invention are detailed in the following description of the apparatus.

I illustrate two forms of erection of the apparatus in the accompanying drawings, the first having an automatic reducing valve fitted and the second a reducing valve to be worked by hand, in which drawings:

Figure 1 is a horizontal section through the apparatus with an automatic reducing valve on the line E—F in Fig. 2. Fig. 2 is a vertical section on the bent line A—B in Fig. 1. Fig. 3 is a plan, partly in section, of an apparatus which only deviates from that shown in Fig. 1 by the carbonic acid holder consisting of two pieces screwed together instead of being made of one piece. Fig. 4 is a section at A—B in Fig. 1 before the introduction of the drawing-off tap. Fig. 5 is a horizontal section at C—D in Fig. 6 in which the apparatus is provided with a reducing valve to be worked by hand. Fig. 6 is a vertical section at A—B in Fig. 5.

Similar letters of reference refer to similar parts in all views.

a is the screw-plug closing the valve *b*, *c* by which the liquid carbonic acid is let into the holder *d*. After removal of the plug *a*, the holder *d* can be connected with a large carbonic acid holder for filling purposes whether secured to a cask or not. After the holder *d* has been filled and the connection with the large holder interrupted, the valve *c* moves in guides cast on casing *b* and is provided with any suitable packing material *c*² which bears against the seat provided for it in the casing *b* and so prevents escape of carbonic acid. The holder *d* may be formed in one piece with the valve casing *d'*, as shown or the two parts *d*, *d'* may be separately constructed and united by any suitable means without departing from the essential features of the invention or changing the construction of any of the parts.

An essential feature distinguishing the present apparatus from all others is that the part *d'*, which is also provided with regulating device and safety-valve, is not formed

in one with the screwed connecting-piece *s* for securing the apparatus to the cask. This connecting-piece *s* (Figs. 2, and 4) is provided with a conical external thread to screw into the cask-head, similar to the well known cast-on bung-hole bushings. An essential difference from the latter however consists in the bush or socket *s* (Figs. 2 and 4) having a bore which is considerably smaller and of the same diameter throughout and in its being also provided with an internal thread and with a slight shoulder to receive the isolating washer or collar *o*. This latter may be of india-rubber, secured by a screw ring *q''*. The end of the bush *s* which faces the interior of the cask is isolated from the liquid by a washer *r*. If desired, the wood of the head may constitute this isolation member.

In order to secure the apparatus consisting of the parts *d*, *d'* in the bushing *s* so that it may be perfectly and firmly held during transit, a second bush *q* is provided which is adapted to be engaged by a wrench at its head and screwed in place. The head of the latter has a strong flange, received by a corresponding shoulder on the case *d'*, whereby the latter is forced down tightly upon the top of the bush *s*.

As can be seen from Figs. 2, and 4, suitable washers are placed between the respective parts to make tight joints. The bush *q* also serves to receive the racking-pipe *u* (Fig. 2). It is provided with radial holes and is of slightly wider bore below, so that the carbonic acid which enters the space *d'* from the holder *d* can pass through the holes *w* and into the narrow annular space round the pipe *u*. On its passage the carbonic acid will naturally force the collar *o* aside to a certain extent. If however the pressure in the casing *d'* should for any reason become less than that in the cask, the collar *o* will be forced against the pipe *u* by the pressure in the cask and thus prevent escape of the carbonic acid. Escape of carbonic acid into the air when the liquid is being drawn off is prevented by the stuffing box *x*, *z*.

Another important feature of my present invention is that the holder *d* for the carbonic acid and the chamber *d'* with the reducing valve, and all the other arrangements belonging to it are arranged in one plane perpendicular to the central line of the opening leading into the cask. It is therefore possible to place the whole apparatus within the space between the cask-head and the top ends of the staves above the cask-head. Also it is thereby made possible to put a racking-pipe *u* through the apparatus into the cask.

The passage of carbonic acid from the holder *d* into the chamber *d'* is enabled by means of a valve-lever *h*, swinging on a strong pin, the valve face pressing against

the seat formed on a screw plug or box *e* arranged in a suitable manner between the parts *d*, *d'*. In the construction shown in Figs. 1 and 3 this box *e* is simply screwed in. The chamber *e'* is designed to be packed with porous material to prevent the carbonic acid leaving the vessel *d* in liquid form.

During transit of the cask the screw-pin *p* seated in a bushing *p'* is adapted to engage threads in the casing *d''* and is screwed so far in that it presses against the conical seat *p''* in one end of the horse-shoe shaped lever *h*. In this manner the latter is not only pressed firmly against its seat at *e*, but is absolutely prevented from rising from its seat through vibrations or shocks. When in use the screw stud *p* must be turned back into the position shown in Fig. 1, so that its collar lies tight against the screw-cap which covers it, thereby preventing the direct escape of carbonic acid into the air.

The casing *d'* contains a strong spring *n''* the purpose of which is to so turn the lever *h* that it lies firmly against the valve-seat at *e*. In an extension screwed into *d'* there is placed a counter-spring *n'*, one end of which presses against a screw plug *l*, and the other end against a disk *t*. The chamber *d'* is separated from the said extension-chamber containing the spring *n'* by a diaphragm *m* making a gas-tight joint. A projection resembling a hammer-head on the lever *h* presses against the diaphragm.

The automatic reducing valve comprises the parts *h*, *n''*, *m*, *t*, *n'* and *l*, which parts all work together so that the lever *h* automatically uncovers the opening *o''* (see Fig. 1) when the pressure in casing *d'* falls below a predetermined point and the opening *o''* is closed when the pressure in casing *d'* rises to a given point.

For transit the pipe *u* (Fig. 2) and stuffing-box *x*, *z* are removed from the apparatus. These stuffing-box parts may be sent separately from the cask, or may be secured to some part of it, so as to prevent their getting lost. The rubber collar *o*, when the cask is in condition for transit, assumes the form of a flat disk (Fig. 4) and prevents the contents of the cask from entering the chamber *d'*. Any rust, dirt, or the like, which may be present in the chamber *d'* is thus prevented from getting access to the beer and so spoiling it. Subsequently, when the apparatus is in use, the beer is likewise prevented from entering the chamber *d'* on account of the pressure within the latter.

The inner bush *q* (Figs. 2 and 4) holds the apparatus firmly and immovably in position; during transit the stuffing-box cap *x* is replaced by a simple screw-cap *y*. On the cask arriving at its destination, and on its being desired to draw off the beer with the aid of the pipe *u*, the screw-cap *y* (Fig. 4) must be removed and the pipe *u* pushed firmly

downwards through the sleeve or bush *q*, so that it perforates the rubber, or other washer, or collar *o*, and presses it into a more or less hat-shape (Fig. 2). Naturally the washer *o* may be given a hat-shape by other means than that just described.

When, after insertion of the pipe *u*, the beer is to be drawn off, the screw-pin *p* (Fig. 1) must be moved back, as already mentioned, so that the lever *h* is only exposed to the pressure of the spring *n''*. The valve *e*, *h* being still closed, no carbonic acid can escape from *d* to *d'* and consequently no beer can be drawn off. That is to say, the apparatus is in complete order for use, but the racking of the beer can be postponed as long as desired. When it is actually desired to decant the beer, the plug *l* must be screwed in a little, so that the spring *n'* forces the disk *t* and diaphragm *m* inwards, thus pressing back the valve-lever *h* a little and compressing the spring *n''*. The carbonic acid can now enter the chamber *d'* and escape through the holes *w* (Fig. 2) and the narrow chamber of the bush *q*, and forcing its way past the collar *o* will enter the cask. *i* is a safety valve, a whistle *g* of well known construction in connection with the same being blown by escaping carbonic acid.

Instead of the automatic reducing valve which is opened by the spring *n'* as soon as the pressure in the chamber *d'* sinks below a certain limit, an arrangement is shown in Figs. 5 and 6 in which the reducing valve is opened from time to time by pressure of the finger on the button *l'*. The button *l'* moves in a box *k* out of which it cannot fall. The opening which is closed by the lever *h* is so great that pressure of short duration on the button *l'* suffices to let into the chamber *d'* enough carbonic acid for drawing off several liters of the liquid in the cask. As soon as pressure on the knob *l'* ceases, the lever *h* is again pressed by the spring *n''* on to the outlet, so that it is closed. The construction however according to Figs. 5 and 6 is in all essential parts similar to the construction according to Figs. 1 and 2.

In the above description it is generally taken that the apparatus is to be used with liquid carbonic acid and for beer casks. Naturally various other fluids under pressure can be also used in its place in order to

produce the pressure and the device can also be employed on other than beer casks. 55

Without limiting myself to the exact construction and arrangements of parts herein shown and described, what I claim and desire to secure by Letters Patent is:

1. A device for drawing off fluids from fluid-containing casks by means of gas-pressure, comprising in one plane a gas-bottle and an intermediate holder, said bottle and holder adapted to lie snug against the head of the cask and not project beyond the cask ends; a reducing valve cutting off the intermediate holder from the gas-bottle, a hollow connecting piece fitted to the intermediate holder and perpendicular to the plane of the gas-bottle and holder and leading into the cask. 65 70

2. A device for drawing off fluids from fluid-containing casks by means of gas-pressure, comprising in one plane a gas-bottle having an opening for filling from other vessels, which opening is provided with a back-pressure valve, an intermediate holder and a reducing valve cutting off the intermediate holder from the gas-bottle, said bottle, holder and reducing valve adapted to lie snug against the head of the cask and not project beyond the cask ends; a hollow-connecting piece fitted to the intermediate holder perpendicular to the plane of the gas-bottle and intermediate holder and adapted to lead into the cask. 85

3. A device for drawing off fluids from fluid-containing casks by means of gas-pressure, comprising in one plane a gas-bottle, an intermediate holder, and a reducing valve cutting off the intermediate holder from the gas-bottle, said bottle, holder and valve adapted to lie snug against the head of the cask and not project beyond the cask ends; a hollow connecting-piece fitted to the intermediate holder perpendicular to the plane of the gas-bottle and intermediate holder, the bore of the connecting-piece adapted to serve for the introduction of carbonic acid into the cask going through the device, so that it can be used for the introduction of a racking-pipe. 90 95 100

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

BERNHARD HADANK.

Witnesses:

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T. M. RUANP.