

No. 706,115.

Patented Aug. 5, 1902.

A. RULF.

APPARATUS FOR CARBONATING LIQUIDS.

(Application filed Aug. 9, 1901.)

(No Model.)

Fig. 2.

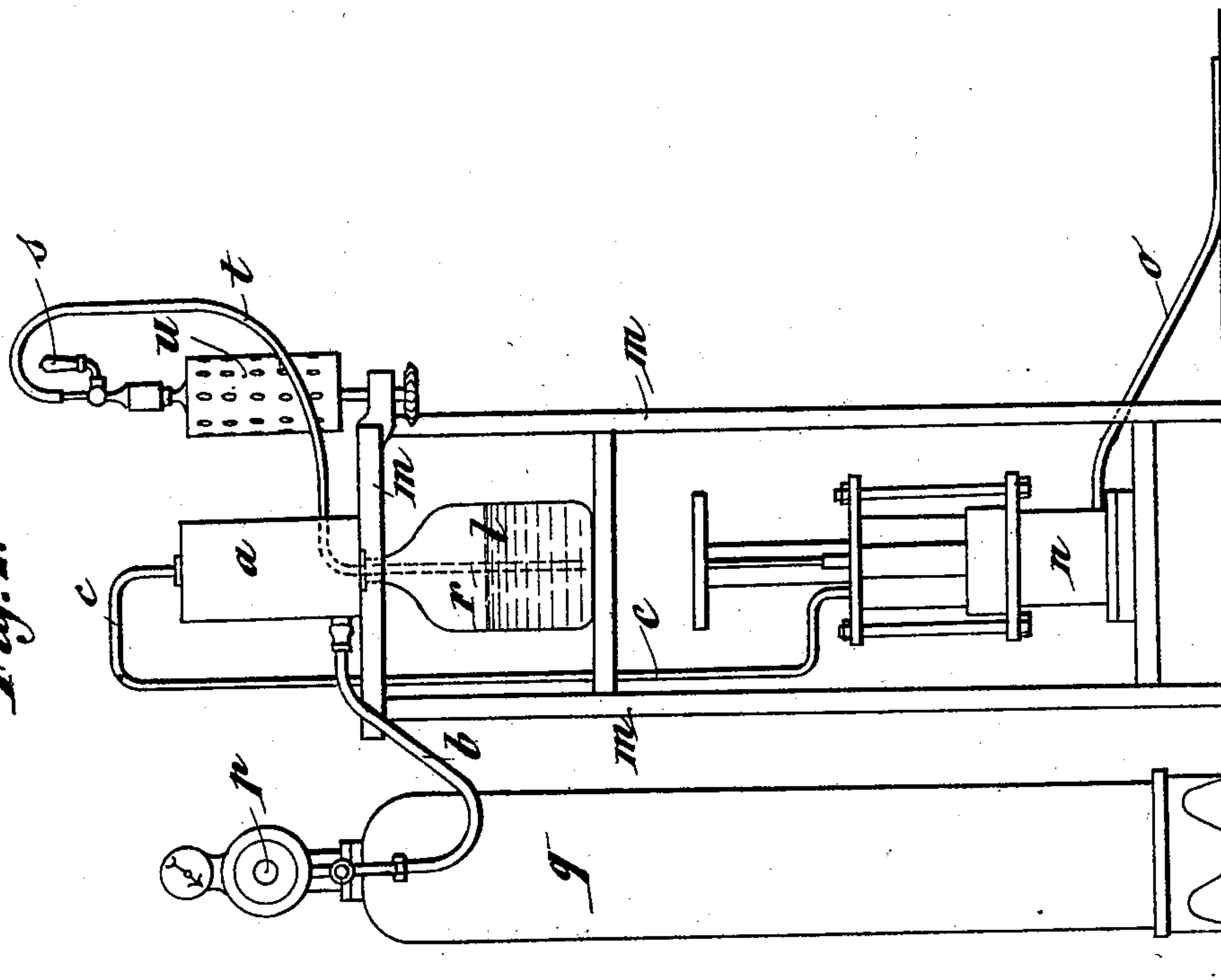
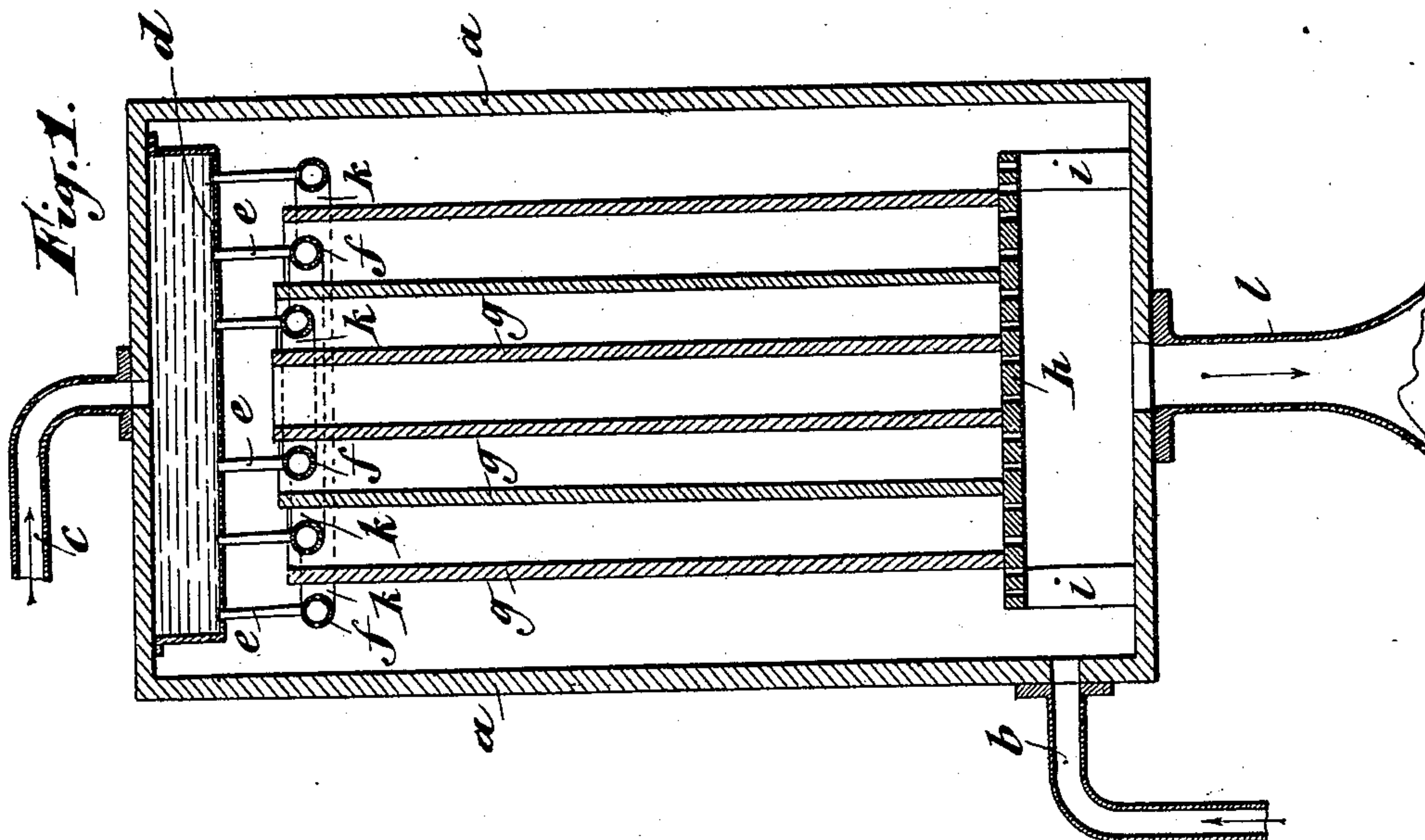


Fig. 1.



Witnesses.

Eugene R. Weber.
Ludwig Flamm.

Inventor.

Ari Rulf
by B. Singer Att'y.

UNITED STATES PATENT OFFICE.

ARI RULF, OF BRUSSELS, BELGIUM.

APPARATUS FOR CARBONATING LIQUIDS.

SPECIFICATION forming part of Letters Patent No. 706,115, dated August 5, 1902.

Application filed August 9, 1901. Serial No. 71,462. (No model.)

To all whom it may concern:

Be it known that I, ARI RULF, a subject of the German Emperor, and a resident of Brussels, Belgium, have invented certain new and useful Improvements in Apparatus for Carbonating Liquids, of which the following is a specification.

This invention relates to apparatus for carbonating liquids; and it has reference particularly to that portion of the mechanism of such apparatus whereby the mixing of the gas and liquid to be carbonated is effected.

The invention consists in an improved form of saturator constituting that portion of the carbonating apparatus particularly referred to above, constructed substantially as will be hereinafter described and finally embodied in the clauses of the claim.

In the accompanying drawings I have shown one form of embodiment of the invention.

Figure 1 is a vertical sectional view of the saturator, and Fig. 2 is an elevation of the complete apparatus.

The saturator, Fig. 1, is composed of a cylinder *a*, closed at both ends and the lower end of which is connected, by means of a pipe *b*, to the carbonic-acid-gas reservoir, while the top of said saturator is connected, by means of a pipe *c*, to an automatic compression-pump actuated, for instance, by the pressure of a water-conduit. Said pump forces water under a pressure corresponding to the pressure of the carbonic-acid gas into the small reservoir *d*, arranged under the top of the cylinder and within the latter, and thence through small passages *e* into pipes *f*, forming concentric rings and to which said passages are connected. Said concentric pipes *f* are arranged in close proximity to the surfaces of concentric cylinders *g*, arranged within the saturator to alternate with the pipes and sustained on a small grating *h*, resting on the bottom of the cylinder, by means of suitable supports *i*, forming a free space between the grating and the bottom of the saturator. The annular pipes *f* are provided with minute openings *k*, through which water is spread upon the external and internal surfaces of the concentric cylinders *g*. Thus, the saturator being filled with carbonic-acid gas, said water will be completely saturated with the

gas, perfect saturation of the water with the gas being greatly facilitated by virtue of the fact that I provide the cylinders *g* with roughened surfaces. The thus saturated liquid drops upon the bottom of the saturator and flows into the receptacle *l*, arranged under the latter, from where it may be drawn off into bottles.

It will be understood that the annular pipes *f* may be connected directly to the pipe *c*, in which case the reservoir *d* is omitted, or the cylinders *g* may be made of any other form and arrangement.

Referring now to Fig. 2, on the lower part of the frame *m* is arranged an automatic compression-pump connected by means of the pipe *o* to a suitable water-conduit. The pressure of the water in the latter operates said pump, which compresses said water and forces same through the pipe *c* into the saturator *a*, arranged on the frame *m* and connected by means of the pipe *b* to the reduction-valve *p*, secured on the carbonic-acid-gas reservoir *q*. The pressure of gas flowing out from the latter is reduced by said reduction-valve to a low pressure corresponding to the pressure of the liquid in the saturator, into which said gas is brought through the pipe *b*. Arranged within receptacle *l* is a tube *r*, the upper end of which is connected to a tube *t*, connected to the cock *s* of the drawing-off apparatus *u*. When there is no water-conduit available for actuating the compression-pump, water may be forced into the saturator by the pressure of the carbonic-acid gas itself. To this end the pump is omitted and substituted by a receptacle, into which liquid is introduced through a valved pipe extending from any reservoir. Said receptacle is connected by means of another valved pipe to the carbonic-acid-gas reservoir provided, to this end, with a second reduction-valve. Thus the liquid contained in the receptacle will be under the pressure of carbonic-acid gas and forced into the saturator. When all the liquid is forced out from said receptacle, the latter is again filled by closing the carbonic-acid-gas-admission valve and opening the liquid-admission valve.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a carbonating apparatus, the combination of an inclosed casing having a discharge-outlet for the carbonated liquid and inlets for the gas and the liquid to be carbonated, a plurality of concentric annular tubes arranged in said casing, communicative connection between said tubes and the liquid-inlet, and concentric cylindrical bodies alternating with said tubes and each open at one end, said tubes and the cylindrical bodies being arranged in close proximity to each other and the former being perforated adjacent said cylindrical bodies, substantially as described.

2. In a carbonating apparatus, the combination of an inclosed casing having a discharge-outlet at the bottom for the carbonated

liquid and inlets for the gas and the liquid to be carbonated, a plurality of concentric annular tubes arranged in said casing, communicative connection between said tubes and the liquid-inlet, concentric cylinders alternating with said tubes and each open at one end, said tubes and the cylinders being arranged in close proximity to each other and the former being perforated adjacent said cylinders, and a perforated support serving as a seat for the lower ends of said cylinders, substantially as described.

ARI RULF.

Witnesses:

J. K. WAGNER,
GREGORY PHELAN.