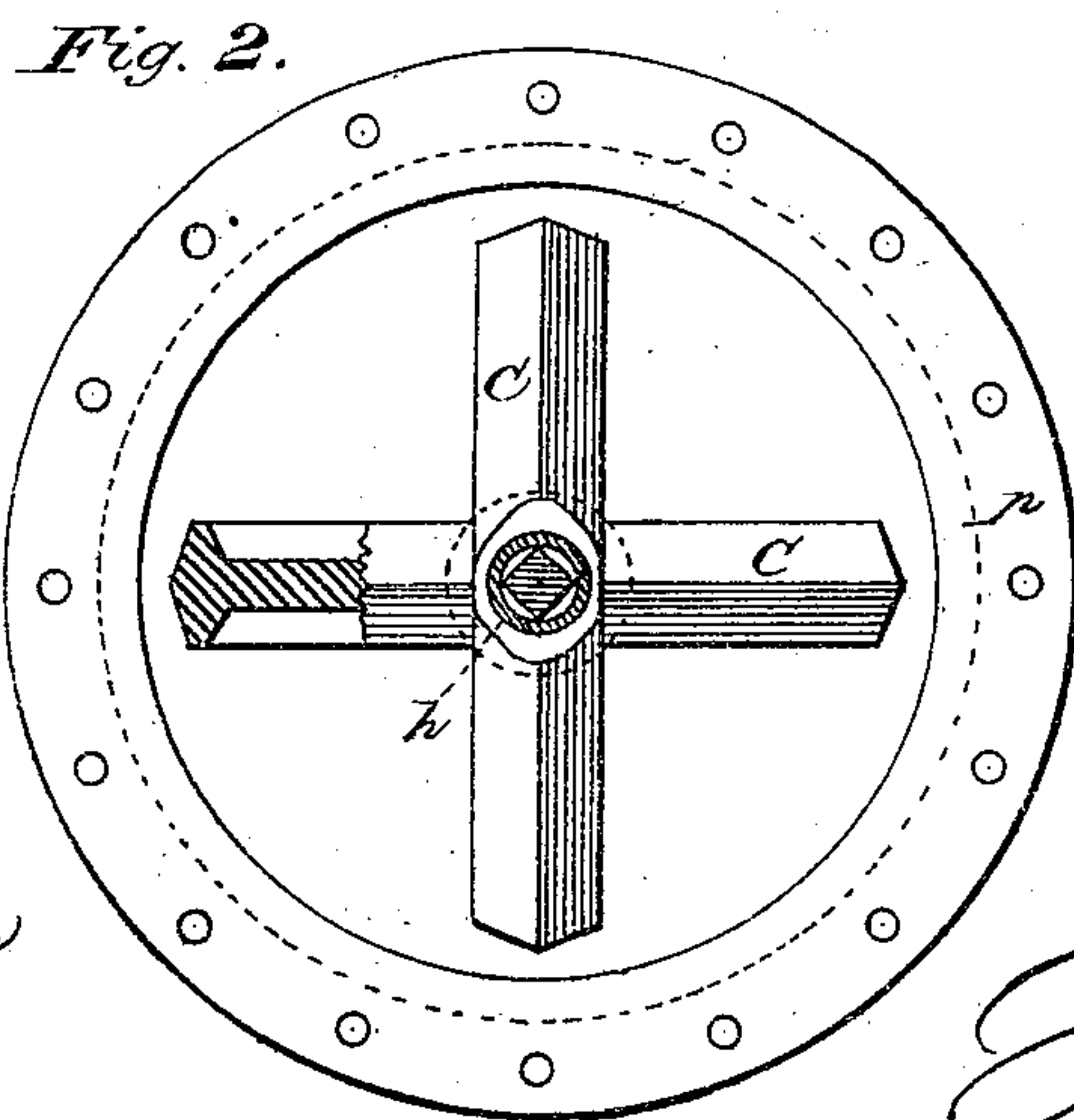
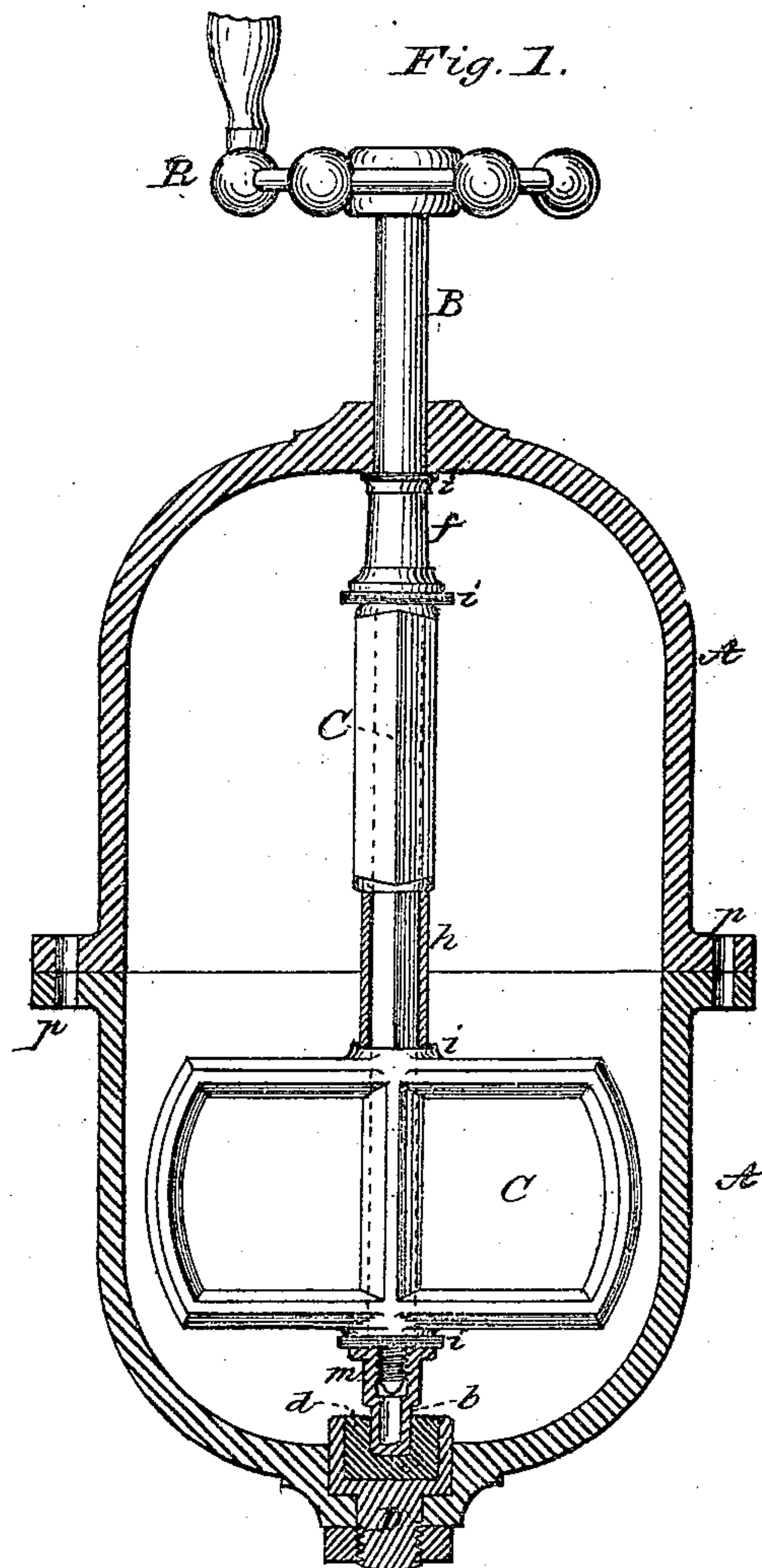


J. MATTHEWS.

Apparatus for Charging Liquids with Carbonic Acid.

No. 141,571.

Patented August 5, 1873.



Witnesses.

*P. H. Simmons*  
*John D. Wilson*

Inventor.

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# UNITED STATES PATENT OFFICE.

JOHN MATTHEWS, OF NEW YORK, N. Y.

## IMPROVEMENT IN APPARATUS FOR CHARGING LIQUIDS WITH CARBONIC ACID.

Specification forming part of Letters Patent No. **141,571**, dated August 5, 1873; application filed July 17, 1873.

*To all whom it may concern:*

Be it known that I, JOHN MATTHEWS, a resident of the city of New York, in the county of New York, and State of New York, have invented certain new and useful Improvements in Apparatus for Charging Liquids with Carbonic Acid; 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 pertains to make and use it, reference being had to the accompanying drawings which form part of this specification, in which—

Figure 1 is a longitudinal section, and Fig. 2 a cross-section.

In order to charge liquids with carbonic acid, it is necessary to constantly agitate the liquid as the gas flows into it. The aerated liquids are largely used as beverages, and must, therefore, be kept free from contamination with metallic solutions. Liquids charged with carbonic-acid gas have a considerable solvent action upon the ordinary metals, such as copper, brass, iron, lead, and zinc.

The agitators heretofore used in the manufacture of soda-water, mineral-waters, and other like beverages, have generally been made of brass, copper, or other metal, superficially washed with tin, or coated with enamel or wax varnish. These coatings soon wear off, and the beverages become contaminated with portions of the metal dissolved. Moreover, the bearings upon which the agitator turns are liable to rapid wear, which causes the metal to be ground off into the beverage.

The object of my invention is to avoid these sources of contamination in aerated beverages; and it consists in forming the agitator with a center bar of steel or other stiff metal, and covering over its whole length and at its bearings with sleeves of tin or other innocuous metal, which will resist the wear for a considerable time.

The fans of the agitator I construct of ceramic ware, glass, hard rubber, or other non-metallic substance. The fans are held upon the shaft by the end collars on the sleeves

around the shaft being pressed up against them. The shaft is also covered with a thin sheet of tin and elastic washers are placed between the fans to prevent access of water to the shaft, and as packings to prevent breakage of the fans if jarred. The fans are also packed upon the central shaft with cement, fibrous material, asbestos, rubber, or other equivalent material, so as to prevent any motion on the shaft, and to prevent breakage from jarrings. The inner bearing of the agitator has a non-metallic bushing secured to the metal of the fountain or reservoir in which the agitator revolves by a setting of tin or other innocuous metal or material. This bushing may be of hard rubber, ceramic ware, glass, or other equivalent material, which will resist wear, and which even if worn off the fine particles will not contaminate the beverage.

The following description will enable others to make and use my invention.

In the drawing, A is the shell or fountain of two halves fastened together by bolts, as shown at *p*, in the usual manner. B is the shaft, on which is fastened the fans or beaters C. The shaft is revolved by means of R. The tin sleeves around the shaft are shown at *f* and *h*, and the covering or thimble *m* cover the step. Between the sleeves and beaters or fans are elastic washers *i*. D is the step for the lower bearing, and has a bushing of rubber or other material, *d*, in which the cased lower end *b* of the shaft revolves.

By this arrangement it will be seen that every part of the agitator or beater is completely incased and protected from access of the liquid, so that no communication can occur. The space between the shaft and the sleeves and washers, and between the shaft and the fans is packed with cement, asbestos, rubber, or other partially-elastic material, so that the fans, when made of fragile material, as porcelain or glass, will not be broken by jarring of the machine.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. The improved apparatus herein described for mixing carbonic acid with liquids, con-



sisting of an agitator having non-metallic beaters and shaft incased, substantially as set forth.

2. The shaft-casing, composed of the sleeves, beaters, and washers, combined and arranged as set forth.

3. The step D and bushing *d*, in combination with the shaft B, provided with the foot

*m*, so as to protect the lower bearing-surfaces, as described.

In testimony that I claim the foregoing I have hereunto set my hand this 30th day of June, 1873.

Witnesses: JOHN MATTHEWS.

P. H. HINMAN,  
JOHN D. WILSON.