Dec. 11, 1956 H. R. ROBBINS 2,773,681

PORTABLE SODA FOUNTAIN

Filed April 29, 1954

FIG. 1

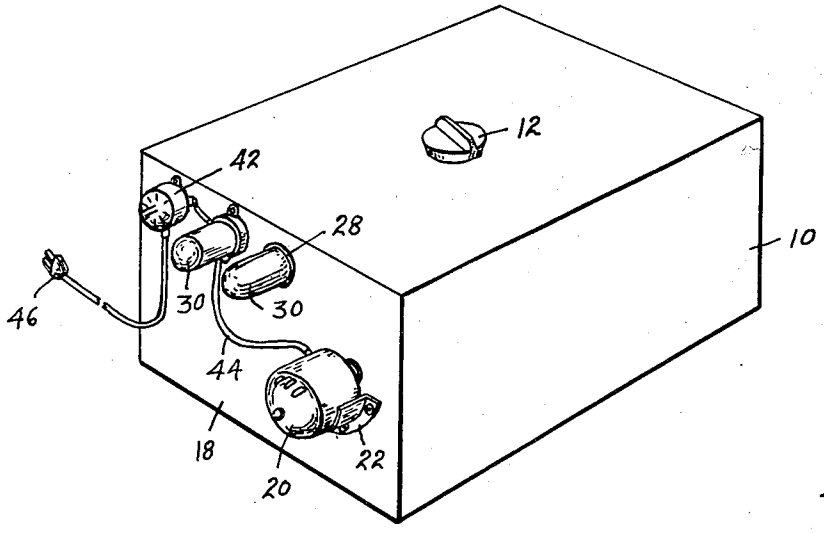


FIG. 4

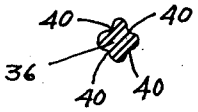


FIG. 2

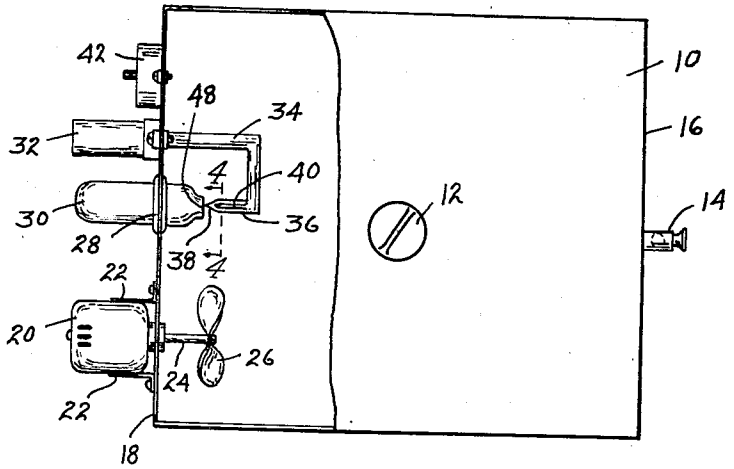
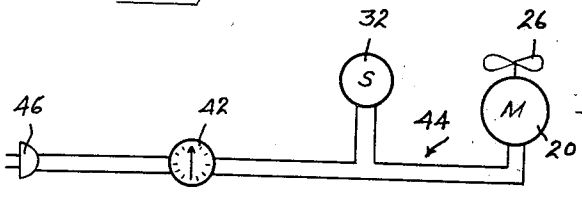


FIG. 3



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PORTABLE SODA FOUNTAIN

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5 Claims. (Cl. 261—93)

My invention relates to apparatus for carbonating water to be used in beverages and one of the important objects of the invention is to provide such an apparatus for home use.

Another object of this invention is to provide apparatus of the above class which embodies novel means for supplying gas from a commercially prepared container to a water tank or box together with means for thoroughly mixing the gas and water.

Still another object of my invention is to provide an apparatus as described having associated therewith control means for simultaneously putting into operation the mixing device and gas discharging means with such control means being designed for selectively regulating the duration of operation of the mixing unit.

These and other objects will be apparent to those skilled in the art.

My invention consists in the construction, arrangement, and combination of the various parts of the device, whereby the objects contemplated are attained as hereinafter more fully set forth, specifically pointed out in my claims, and illustrated in the accompanying drawings, in which:

Fig. 1 is a perspective view illustrating a preferred embodiment of my invention,

Fig. 2 is a top plan view of this invention partially broken away to more fully illustrate its construction,

Fig. 3 is a wiring diagram showing the simple electric circuit employed, and

Fig. 4 is a cross sectional view of the punch means for the gas cartridge taken on the line 4—4 of Fig. 2.

Referring to the drawings a container **10** for water may be formed from any suitable material characterized preferably by lightness in weight so as to be susceptible of easy portability. A filler cap **12** is mounted in the top central portion of the container and a spigot **14** is placed at the lower central portion of the front side **16** thereof. On the rear side **18** of container **10** I have mounted an electric motor **20** by means of suitable brackets **22** so that the motor shaft **24** extends into the interior of container **10** and carries a mixing blade **26** on the free end thereof as shown in Fig. 2.

Also on the back side **18** I have provided a transverse opening or hole to the interior of container **10** which is fitted with a watertight resilient washer-like member **28** adapted to frictionally receive a capsule or cartridge **30**, containing carbon dioxide gas of a type commercially available for use in making carbonated beverages. Adjacent the position of cartridge **30** and also on back **18** there is attached a solenoid **32** having an arm **34** extending into the interior of container **10** where it is bent or otherwise formed into a U-shape to provide a punch member **36** having a pointed end **38** which terminates at a point that will be adjacent the inner end of cartridge **30** when the latter is inserted as described. Punch member **30** is provided with one or more surface grooves **40** that extend longitudinally thereon but terminate short of the pointed end **38**.

A time switch means **42** is mounted to the rear **18** of container **10** and is electrically connected in series as at **44** to the solenoid **30** and motor **20** and is designed to connect to a source of electric power (not shown) by means of plug **46**. No invention per se is claimed in motor **20**, solenoid **30** or switch **42** and it will be understood that many commercial types and forms are available from which suitable models can be selected to perform the desired functions. Switch **42** should be of the type which closes circuit **44** when set and which is designed so that it can be selectively set to operate for a predetermined time interval, after which circuit **44** will be opened. Solenoid **30** is of a type in which arm **34** is normally yieldingly held in an extended position when not energized, and which when energized will cause arm **34** to retract.

This apparatus, as thus described and with switch **42**, solenoid **30** and motor **20** electrically connected in series will operate in the following manner. Container **10** is first filled substantially with water through the top opening available by removing filler cap **12**. Cartridge **30** is then manually partially inserted into container **10** wherein it will be frictionally held by washer **28** and it will be understood that this cartridge is of a well known form requiring the end **48** to be punctured in order to release the gas. In this position, with plug **46** properly connected to a source of electric current, switch **42** is set for the desired period of operation. Being connected in series, electrically, motor **20** will commence operation immediately upon setting of switch **42** so that blade **26** is agitating the water in container **18** and simultaneously with this operation, solenoid will be energized so that the retraction of arm **34** results in punch **36** puncturing or perforating the end **48** of cartridge **30**. Solenoid **30** will remain energized until circuit **44** is closed by switch **42**, and, therefore, to assure the proper discharge of gas from the cartridge **30** into the water in container **18**, the groove or grooves **40** in punch **36** have been provided. These grooves, as described do not extend to the point **38** so that the initial contact end of punch **36** has no surface indentations or grooves. However, once penetration is accomplished, that part of punch **36** containing the surface grooves **40** will be resting in the opening in cartridge end **40** to provide an adequate passageway or passageways for the escape of the gas. As soon as switch **42** has reached the time limit selected, circuit **44** will be opened so that motor **20** ceases operation and solenoid **30** returns to the position shown in Fig. 2. Thereafter, of course, the carbonated water thus formed can be withdrawn through spigot **14** as needed for mixing with other ingredients for the desired beverage. It should also be pointed out that any suitable variable resistance means such as a rheostat can be connected to motor **20** for controlling the speed of blade **26** without departing from the principle of this invention.

This entire apparatus is designed in an exceedingly compact unit adapted particularly for home and individual use as contrasted with commercial use. It, therefore, may be stored easily in the home refrigerator or used on outings and produces substantially the same result as that accomplished by the larger and more complicated structures of the commercial variety. Consequently, by virtue of its simple construction and usability as described a susbtantial savings and economy is afforded the user in preparing his own soft drinks, for example, since drink extract in bulk can be purchased at a major savings over the prepared bottled drinks which must otherwise be used.

It is submitted that the invention shown and described is aptly suited to achieve the purposes intended and is characterized by a combination of highly useful and mutually cooperating elements that combine their re-

spective and proportionate functions in accomplishing the objects sought to be obtained.

Some changes may be made in the construction and arrangement of my portable soda fountain without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims, any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

I claim:

1. Apparatus for carbonating water, comprising, a container for water having an inlet and valve controlled outlet for the water, an agitator means mounted on said container so as to extend into the interior thereof, an electric circuit designed for connection to a source of electric power, an electric motor connected to said electric circuit for driving said agitator means, a cartridge containing carbon dioxide gas, said cartridge being of the type requiring puncturing at one end to release the gas therefrom, said container provided with an opening into which said cartridge can be manually partially inserted so that the puncturable end thereof extends into said container, an electrically operated punch means mounted on said container for puncturing said cartridge and connected to said electric circuit in series with said electric motor, and a manually operated switch means in said electric circuit whereby operation of said punch means and said electric motor can be placed into or out of operation simultaneously.

2. Apparatus for carbonating water, comprising, a container for water having an inlet and valve controlled outlet for the water, an agitator means mounted on said container so as to extend into the interior thereof, an electric circuit designed for connection to a source of electric power, an electric motor connected to said electric circuit for driving said agitator means, a cartridge containing carbon dioxide gas, said cartridge being of the type requiring puncturing at one end to release the gas therefrom, said container provided with an opening into which said cartridge can be manually partially inserted so that the puncturable end thereof extends into said container, an electrically operated punch means mounted on said container for puncturing said cartridge and connected to said electric circuit in series with said electric motor, and a manually operated time control switch means in said electric circuit whereby operation of said punch means and said electric motor can be placed into or out of operation simultaneously and can be maintained in operating status for predetermined intervals.

3. Apparatus for carbonating water, comprising, a container for water having an inlet and valve controlled outlet for the water, an agitator means mounted on said container so as to extend into the interior thereof, an electric circuit designed for connection to a source of electric power, an electric motor connected to said electric circuit for driving said agitator means, a cartridge containing carbon dioxide gas, said cartridge being of the type requiring puncturing at one end to release the gas therefrom, said container provided with an opening into which said cartridge can be manually partially inserted so that the puncturable end thereof extends into said container, an electrically operated punch means mounted on said container for puncturing said cartridge and connected to said electric circuit in series with said electric motor, a manually operated switch means in said electric circuit whereby operation of said punch means and said electric motor

can be placed into or out of operation simultaneously, a pointed end on said punch member, and a surface groove in said punch member spaced inwardly from said pointed end.

4. Apparatus for carbonating water, comprising, a container for water having an inlet and valve controlled outlet for the water, an agitator means mounted on said container so as to extend into the interior thereof, an electric circuit designed for connection to a source of electric power, an electric motor connected to said electric circuit for driving said agitator means, a cartridge containing carbon dioxide gas, said cartridge being of the type requiring puncturing at one end to release the gas therefrom, said container provided with an opening into which said cartridge can be manually partially inserted so that the puncturable end thereof extends into said container, an electrically operated punch means mounted on said container for puncturing said cartridge and connected to said electric circuit in series with said electric motor, a manually operated switch means in said electric circuit whereby operation of said punch means and said electric motor can be placed into or out of operation simultaneously, a pointed end on said punch member, and a surface groove in said punch member spaced inwardly from said pointed end; the portion of said punch member having said groove resting in the opening of said cartridge formed by the puncturing thereof until said punch member is withdrawn.

5. Apparatus for carbonating water, comprising, a container for water having an inlet and valve controlled outlet for the water, an agitator means mounted on said container so as to extend into the interior thereof, an electric circuit designed for connection to a source of electric power, an electric motor connected to said electric circuit for driving said agitator means, a cartridge containing carbon dioxide gas, said cartridge being of the type requiring puncturing at one end to release the gas therefrom, said container provided with an opening into which said cartridge can be manually partially inserted so that the puncturable end thereof extends into said container, a solenoid on said container connected to said electric circuit in series with said electric motor, an arm formed with a punch member connected to said solenoid so that said punch member is within said container and disposed in line with the puncturable end of said cartridge, said punch member normally yieldingly held out of engagement with said cartridge, said solenoid when energized retracting said arm so that said punch member punctures said cartridge, and switch means in said electric circuit to simultaneously energize or deenergize respectively said electric motor and said solenoid.

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