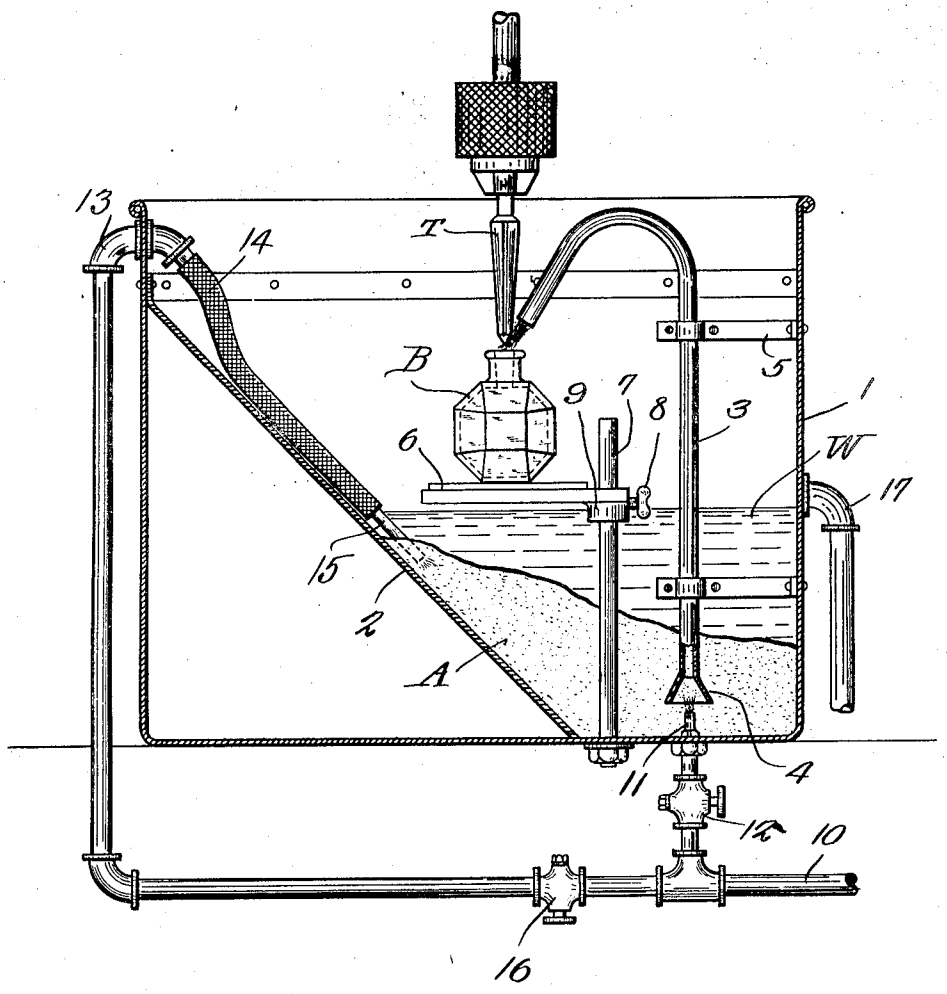
Sept. 5, 1933. J. K. E. DIFFENDERFFER 1,925,751

GRINDING APPARATUS

Filed Nov. 6, 1929



John K. E. Diffenderffer

Inventor;

C. A. Snow & Co.

Attorneys.

Patented Sept. 5, 1933 1,925,751

UNITED STATES PATENT OFFICE

1,925,751

GRINDING APPARATUS

John K. E. Diffenderffer, Baltimore, Md., assignor to Carr-Lowrey Glass Co., Baltimore, Md.

Application November 6, 1929. Serial No. 405,198

1 Claim. (Cl. 51—263)

This invention relates to grinding apparatus and is designed primarily for use in grinding or reaming the inner surfaces of bottle necks.

Heretofore, when grinding the inner surfaces of bottle necks, it has been the practice to use a grinding tool which, while rotating at a high speed, is inserted into a bottle neck. The user of the tool has ordinarily poured an abrasive material into the neck during the grinding operation, one hand being used for this purpose while the other hand is used for holding the bottle or the drill, according to the arrangements provided. This method of grinding has been expensive because it has required the services of highly paid skilled labor and because the grinding operation has not been carried on as speedily as desired.

It is an object of the present invention to provide a mechanism for automatically supplying an abrasive to the interior of the bottle neck during the grinding or reaming operation, the means employed for this purpose being simple, compact, and efficient, while at the same time permitting speeding of production.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed may be made within the scope of what is claimed without departing from the spirit of the invention.

In the accompanying drawing, which is a view partly in section and partly in elevation through the apparatus, the preferred form of the invention has been shown.

Referring to the drawing by characters of reference, 1 designates a tank open at the top and provided with an inclined bottom portion 2 for deflecting abrasive material toward that portion of the tank in which the feeding mechanism is located. This mechanism includes an upwardly extending tube 3 the lower end of which is flared downwardly as indicated at 4 and spaced from the bottom of the tank. The tube can be supported by a bracket 5 extending inwardly from the tank or by any other suitable means provided for that purpose and the upper end of the tube, which is of metal which can be easily flexed, is down-turned so that the terminus thereof will be close to the open end of the neck of a bottle B supported in the tank. The bottle B is adapted to rest on a small table 6 mounted on a standard 7 upstanding from the bottom of the tank. This standard can be in the form of a round rod and the table can be held thereto by means of a set screw 8 or the like extending through a sleeve 9 carried by the table. A water supply pipe 10 is arranged adjacent to the tank and has a nozzle 11 connected thereto. This nozzle extends through the bottom of the tank and is directly under the tube 3. A valve 12 may be used for controlling the flow of water through the nozzle. Pipe 10 is extended to a point adjacent to the top of the tank as shown at 13 where it is connected to a hose 14 adapted to rest on the inclined portion or bottom 2. This hose has a nozzle 15 for directing water downwardly along the inclined bottom 2. A valve 16 may be used for controlling the flow of water from the hose to its nozzle.

An overflow pipe 17 is extended from the tank so that the water level will be maintained at a predetermined point. The water has been indicated at W while a suitable finely comminuted abrasive such as carborundum has been indicated at A.

In practice, a grinding or reaming tool T is mounted for up and down movement within the upper portion of the tank. Valve 12 is opened and valve 16 is also adjusted so that jets of water will escape through the nozzles 11 and 15. The lower end of tube 3 is constantly embedded in the abrasive material A and the jet of water discharged through nozzle 11 will act to force a portion of the abrasive upwardly within the tube 3 so that it will be delivered with a quantity of water from the downturned free end of the tube. The bottle B to be treated is placed on the table 6 where the abrasive will enter the mouth of the bottle. The tool T is then lowered into the neck where it will act on the abrasive and cause the inner surface of the bottle neck to be quickly ground to the desired configuration. The time required for this operation is very short and as soon as the tool is lifted, the bottle can be removed, another substituted therefor, and the operation repeated. The abrasive material with the water used as a vehicle can be poured from each bottle as it is removed from the table and this abrasive material and water together with that which is flowing from the tube will return to the bottom portion of the tank. The abrasive material, because of its greater weight, will quickly settle to the bottom but a jet of water constantly delivered from the nozzle 15 will keep the abrasive material constantly in a

state of agitation so that it will not pack but will flow freely at all times under the action of the jet from nozzle 11.

As the tube 3 is of a bendable material, the outlet end thereof can be adjusted readily to bottles of different sizes so that the abrasive will be properly delivered into the mouths of the bottles when they are placed on the table.

What is claimed is:

The combination with a bottle support, a bottle neck grinding tool supported thereabove, and an upwardly extended tube adjacent to the support having a flared lower end and a downwardly inclined upper end for delivering into the space between the tool and the neck of a supported bottle, said support being adjustable vertically and angularly relative to the outlet end of the tube, of a tank housing the support, tool and tube and having a bottom inclined downwardly below and adjacent to the flared end of the tube for supporting a finely comminuted abrasive and water, an overflow pipe for maintaining the water at a predetermined level, a flexible hose supported on the inclined bottom, an agitating nozzle extending from the hose and adapted to be embedded in the abrasive, a nozzle for directing a jet of water upwardly through the abrasive and into the flared end of the tube, and means outside of the casing for directing water under pressure into both nozzles simultaneously.

JOHN K. E. DIFFENDERFFER.