Feb. 8, 1927. 1,617,231

J. BURCHAM

DRILL

Filed May 27, 1926 2 Sheets-Sheet 1

Fig. 1.

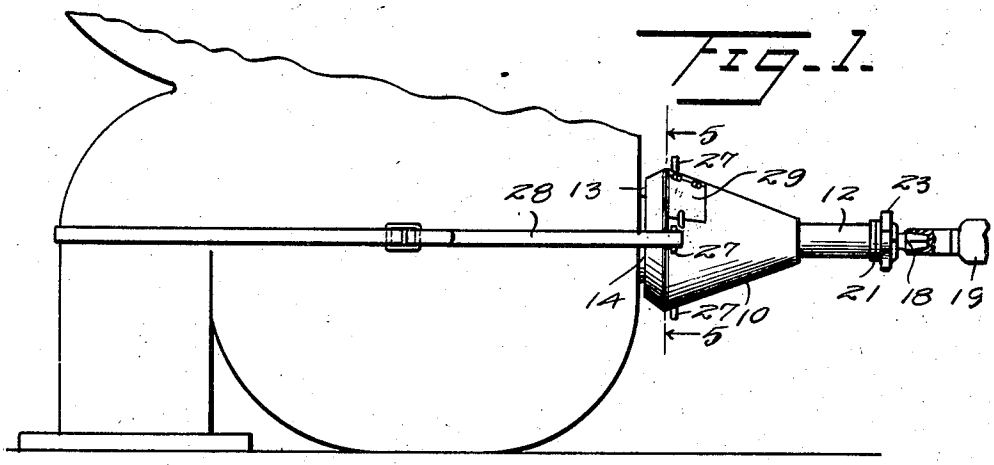


Fig. 2.

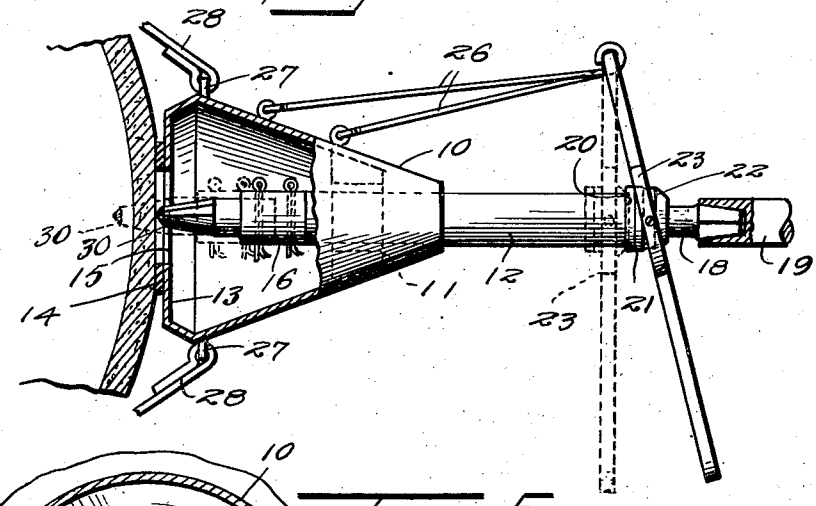
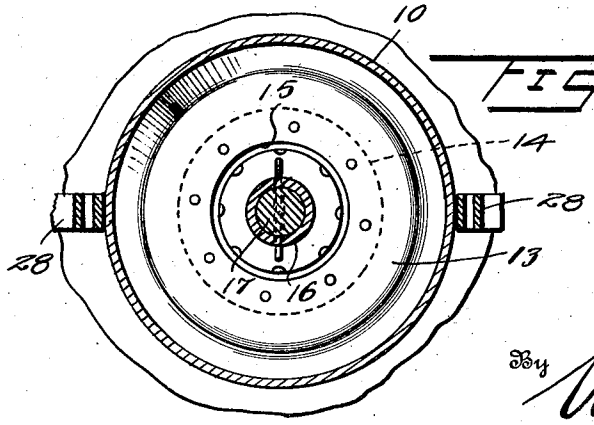


Fig. 3.



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Filed May 27, 1926 2 Sheets-Sheet 2

Fig. 3.

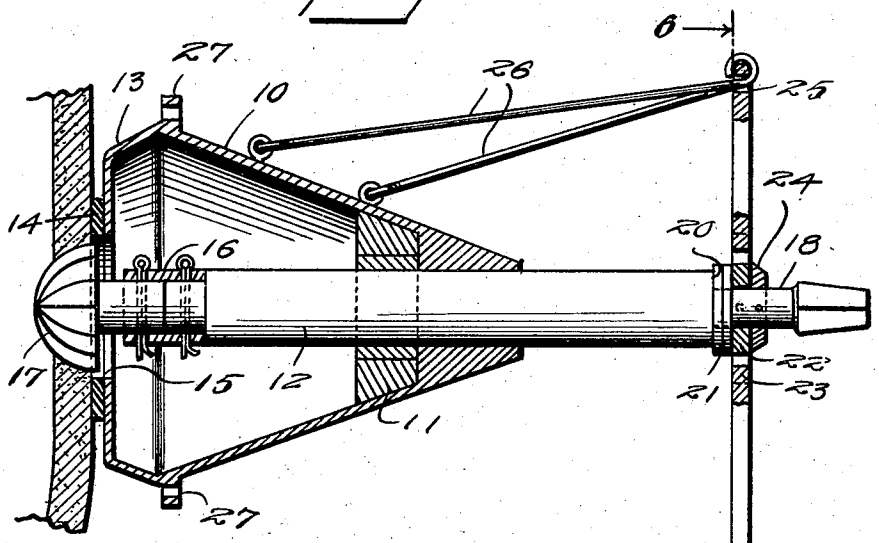


Fig. 6.

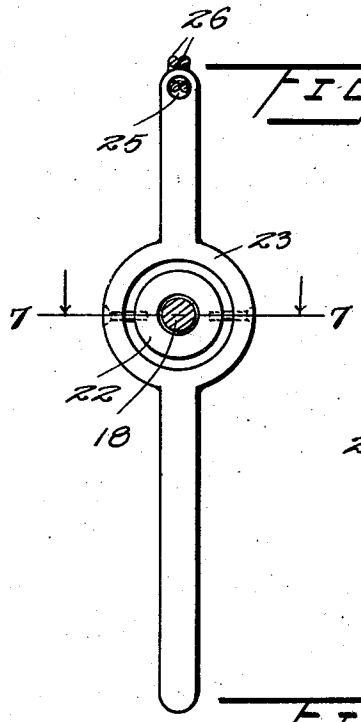


Fig. 4.

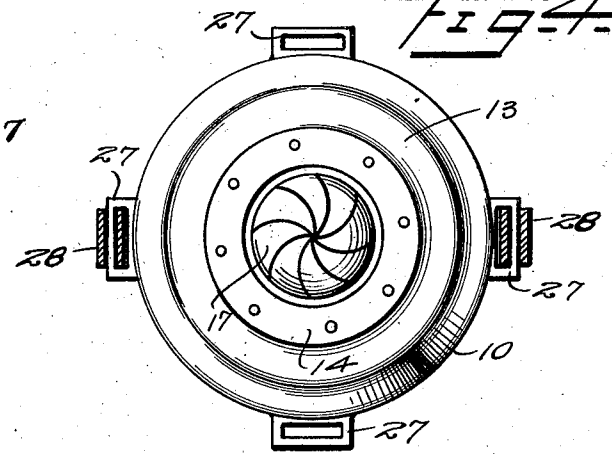
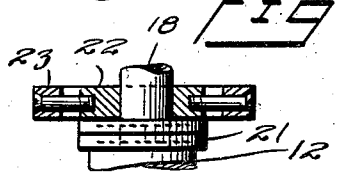


Fig. 7.



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Patented Feb. 8, 1927. 1,617,231

UNITED STATES PATENT OFFICE.

JOHN BURCHAM, OF SAN DIEGO, CALIFORNIA.

DRILL.

Application filed May 27, 1926. Serial No. 112,089.

This invention relates to drills and more particularly to a drill for drilling vitreous materials, such as the bowls of closet systems and the like.

An important object of the invention is to provide a drill having a rotating burr or cutter, together with means for feeding powdered carborundum or the like to the burr during the cutting operation of such construction that waste of the material is avoided.

A further object of the invention is to provide a device of this character which may be readily secured to a regularly shaped article, such as closet bowls, so as to permit drilling of openings therein for use in cleaning out the basin of the bowl, as described in my co-pending application, Serial No. 89,186, filed February 18, 1926, for toilet bowls.

These and other objects I attain by the construction shown in the accompanying drawings, wherein for the purpose of illustration is shown a preferred embodiment of my invention and wherein:—

Figure 1 is a side elevation showing a drill constructed in accordance with my invention applied to a closet bowl;

Figure 2 is a similar view taken at right angles to Figure 1, enlarged and partially in section to illustrate a starting drill in use;

Figure 3 is a similar view with the finishing drill in use;

Figure 4 is a front elevation of the drill;

Figure 5 is a section on the line 5—5 of Figure 1;

Figure 6 is a section on the line 6—6 of Figure 3;

Figure 7 is a detail sectional view on the line 7—7 of Figure 6.

Referring now more particularly to the drawings, the numeral 10 indicates a truncoconical sleeve at the smaller end of which is formed a bearing 11 through which a shaft 12 is rotatably and slidably directed. The larger end of the sleeve has a closure comprising a metallic plate 13, the outer face of which at the center thereof is provided with a rubber washer 14 which projects inwardly beyond the edges of an opening 15 formed in the plate. Through this opening, the shaft 12 may be extended and this end of the shaft 12 is provided with a lug 16 for the reception of drilling elements of burrs 17.

The opposite end of the shaft 12 is reduced to form a chuck engaging shank 18 adapted for engagement with the chuck of an air or chuck drill 19 or with any other suitable source of power. The reduction provides a shoulder 20 upon which is seated a thrust bearing 21 which is, in turn, abutted by a collar 22 surrounding the shank and pivotally engaged with a lever 23 intermediate the ends thereof. Means are provided, as at 24, for preventing escape of the collar 22 from the shaft. One end of the lever has an opening 25 with which are engaged the ends of links 26 which are in turn secured to the casing or sleeve 10. This sleeve is further provided with a plurality of circumferentially spaced loops 27 adjacent its base end which are adapted for the reception of the ends of a strap 28 which may be passed about the article to be drilled and provide a means for holding the gasket 14 of the end 13 firmly in engagement with the surface of the member, so that a seal is provided, preventing the escape of powdered cutting material arranged about the shaft 12 within the sleeve 10. The sleeve is preferably formed with a door 29 by means of which the powdered material may be replenished from time to time.

In the use of the device, the strap 28 is placed about the article which is to be drilled and pulled tightly, so that the gasket firmly seals to the member. In starting the drilling operation, a starting drill or burr 30 is preferably employed to provide a lead for the larger drill 17 which is to produce the final opening. The powdered carborundum passing through the opening and about the drill will be forced by the drill into engagement with the surface being drilled, so that a rapid cutting action is provided.

Since the construction hereinbefore set forth is obviously capable of a certain range of change and modification without materially departing from the spirit of the invention, I do not limit myself to such specific structure except as hereinafter claimed.

I claim:—

In a drill for drilling vitreous materials and the like, a casing for the reception of an abrasive and having a bearing formed therein, a shaft rotatably and slidably directed through the bearing, the casing having an opening through which one end

of the shaft projects, said end of the shaft having a burr receiving chuck, means for sealing the casing to the member which is to be drilled, the opposite end of the shaft being adapted for engagement in the chuck of a driving element, a lever pivoted intermediate its ends to and rotatably engaged with said shaft adjacent the last named end, a connection between the casing and one end of the lever and a door in the casing through which an abrasive may be inserted into the casing and the operation of the drill may be observed.

In testimony whereof I hereunto affix my signature.

JOHN BURCHAM.