Nov. 16, 1937. H. S. HILL ET AL 2,099,207

VALVE GRINDER

Filed Aug. 7, 1936

FIG 1

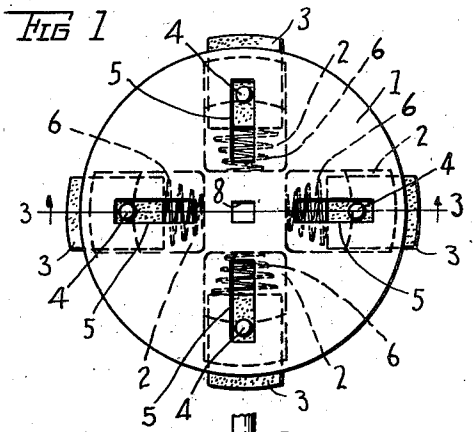


FIG 2

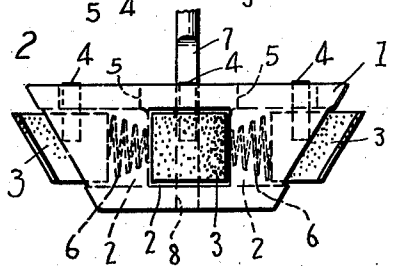


FIG 3

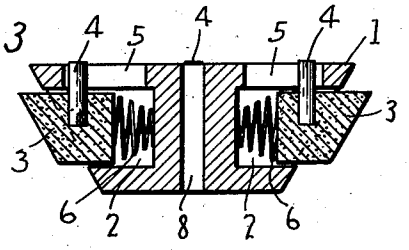


FIG 4

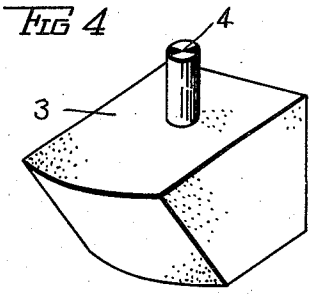


FIG 5



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VALVE GRINDER

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4 Claims. (Cl. 51—184.2)

This invention relates to a valve grinder, it more particularly relating to a grinder which is especially adapted for grinding seats of valves of varying sizes in the flush tanks of toilets.

The object of the invention is to provide a grinder of the character described which will be simple in construction, economical in manufacture and effective in operation.

In the accompanying drawing:

Fig. 1 is a top plan view of a grinder embodying the improvements.

Fig. 2 is a side elevation of the same.

Fig. 3 is a section on the line 3—3 of Fig. 1.

Fig. 4 is a perspective view of one of the grinding elements.

Fig. 5 is an elevation on a reduced scale of the crank which operates the grinder.

Referring to the drawing, 1 represents a circular head, the sides of which are tapered downwardly and inwardly as shown. This head has a plurality of radially extending pockets 2, four being shown in the present case spaced equally apart. Each of these pockets is formed with a straight bottom and top and straight sides, the inner end being closed and the outer end open.

Located in each of these pockets is a grinding element 3, the bottom, top and sides of which are formed straight to conform with the straight bottom, top and side walls of the pocket, the inner end of this grinding element being also formed straight. The forward end of the element, however, is tapered so as to conform to the tapered shape of the valve seat which it is designed to grind and also conform to the tapered shape of the head. These grinding elements are formed of emery, carborundum or similar material.

Each of the grinding elements has secured to the upper side thereof a pin 4 which extends into a radially extending slot 5 in the head 1 which communicates with the pocket.

Interposed between the inner end of each grinding element and the rear wall of the pocket which it occupies is a conical spring 6 which exerts a pressure radially upon the grinding element, the pin 4 serving to limit the outward movement of the grinding element.

In operation the grinding elements will yield against the tension of the springs so as to adjust themselves to the size of the valve seat to be ground so that the tool is adapted to different sized seats. The springs also tend to hold the grinding elements in yielding engagement with the valve seat while being ground.

A crank 7 which, as shown in Fig. 5, has one end thereof adapted to be inserted in a square opening 8 centrally positioned in the head 1, whereby the tool may be rotated.

Having thus described our invention, we claim:

1. In a valve grinder, a tapered head having a series of radially extended pockets open at their outer ends, a grinding element located in each pocket, the outer end of said grinding element being tapered to conform to the tapered shape of said head, a coil spring located between the rear end of each grinding element and the inner end of the pocket in which it is located, and means for limiting the outward throw of each grinding element.

2. In a valve grinder, a tapered head having a series of radially extended pockets open at their outer ends, said head having elongated slots communicating with said pockets, a grinding element located in each pocket, the outer end of said grinding element being tapered to conform to the tapered shape of said head, a spring located between the rear end of each grinding element and the inner end of the pocket in which it is located, and a pin carried by each grinding element extending into an elongated slot in the head.

3. In a valve grinder, a tapered head having a series of radially extended pockets open at their outer ends, a grinding element located in each pocket, the outer end of said grinding element being tapered to conform to the tapered shape of said head, a spring located between the rear end of each grinding element and the inner end of the pocket in which it is located, said head having a centrally positioned vertically extending opening to receive the square end of an operating crank.

4. In a valve grinder, a tapered head having a series of radially extending pockets open at their outer ends, a grinding element located in each pocket, the outer end of said grinding element being tapered to conform to the tapered shape of said head, a spring located between the rear end of each grinding element and the inner end of the pocket in which it is located, said spring being a coil tapered spring with the small end thereof positioned adjacent the inner end of the pocket and the large end thereof adjacent the rear end of the grinding element, and means for limiting the outward movement of each grinding element.

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