June 20, 1944. W. E. HARRIS 2,351,855

CERAMIC BUBBLE CAP

Filed Nov. 10, 1942

Fig. 1.

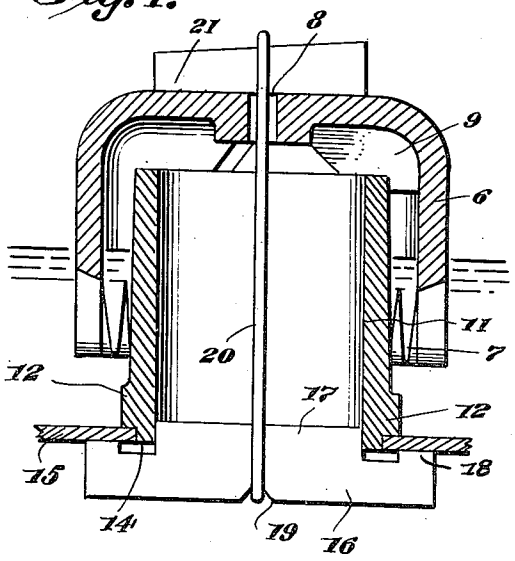


Fig. 3.

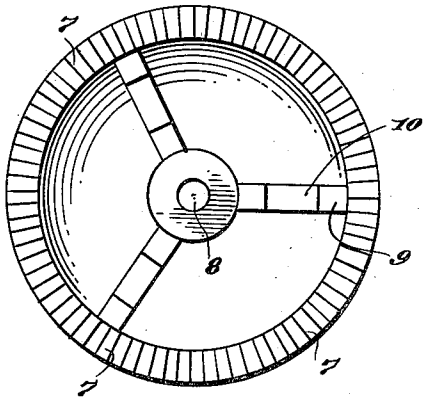


Fig. 2.

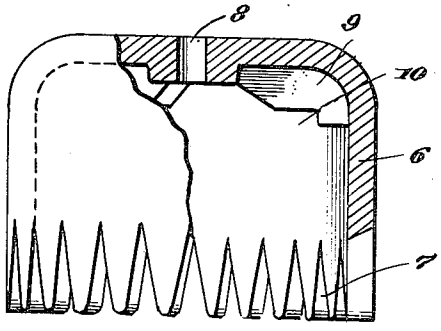
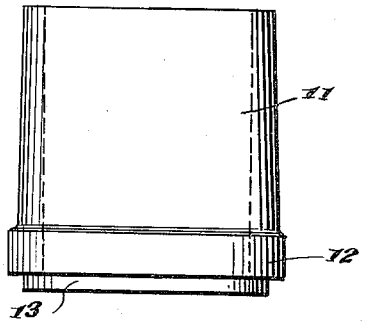


Fig. 4.



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Patented June 20, 1944

2,351,855

UNITED STATES PATENT OFFICE

2,351,855

CERAMIC BUBBLE CAP

Watt E. Harris, Houston, Tex.

Application November 10, 1942, Serial No. 465,117

1 Claim. (Cl. 261—114)

This invention relates to improvements in bubble caps for use in liquid-gas contact equipment such as fractionating and rectifying columns, scrubbers, and the like, and comprises a cap construction wherein the cap may be completely removed from and readily attached to the tray plate of the bubble cap column.

The main object of the invention is to provide a bubble cap which is adapted to be easily and quickly installed and removed from the tray plate, thereby saving considerable time and labor in its installation, over known bubble cap constructions. This quick and easy installation is readily accomplished by the simplicity with which the cap and chimney are held to the tray as by a connecting tie rod and a tapered key.

Another object is to make the cap out of a ceramic material which is not subject to corrosion and thereby greatly increase the life of such a cap.

Other objects and advantages will be noted from the following description and drawing in which:

Fig. 1 is a vertical section view showing the ceramic bubble cap and its related parts in assembled position.

Fig. 2 is a side elevation, partly in section.

Fig. 3 is a bottom view of the cap, and

Fig. 4 is a side elevation of the chimney.

Referring to the drawing, 6 indicates a bubble cap having its lower edge serrated as shown at 7, a hole 8 through its top and on its inner top and sides having a plurality of supporting flanges 9 having seating portions 10 which seat and support the cap on the upper end of the chimney 11. The chimney 11 is enlarged at 12 near its lower end and terminates in a reduced annular portion 13 adapted to receive the edge 14 of the tray plate 15. A bracket or crowfoot 16 is placed beneath the tray plate, said bracket having an upstanding center portion 17 fitting snugly within the chimney 11 and contacting the inner surface thereof when in position. Each end of the bracket terminates in upstanding lugs 18 which contact the under side of the tray plate 15 forcing the edge of the tray plate tightly against the chimney to thereby hold the same in position. The center of the bracket is notched as at 19 to receive and hold in place the lower hooked end of a tie rod 20. The tie rod 20 extends upwardly through the chimney 11 and through the hole 8 in the top of the cap, the upper hooked end of the tie rod receiving a tapered key 21 which can be readily inserted to hold the structure in assembled relation, the key forming a wedge between the top of the cap and the tie rod.

In the operation of assembling the ceramic bubble cap and its related parts, first the bracket 16 is passed through the hole in the tray with the tie rod connected thereto, after which the chimney 11 is placed in position on the tray plate. Thereafter the bubble cap 6 is placed on the chimney with the tie rod extending upwardly through the hole 8 and then the tapered key is knocked through the hooked upper end of the tie rod thereby drawing and holding the assembly in its assembled relation. It will readily be seen that the above described assembling operation is very quick and simple, saving considerable time. In disassembling the structure the tapered key is removed whereupon every part of the assembly can be quickly and easily removed. Of course it will be understood that the assembling operation as above described is performed by two men, one man working above and another man working beneath the tray plate 15.

Although a specific construction of a ceramic bubble cap assembly is illustrated and described, various modifications may be made within the scope of the following claim.

I claim:

A ceramic bubble cap assembly comprising in combination a bubble cap tray, a chimney and a cap, said chimney having an annular seat at its base fitting an opening in the tray, a bracket having a center portion engaging the lower inside surface of the chimney and also having end lug portions engaging the under side of said tray, and a tie rod engaging said bracket and extending upwardly through the assembly and fastened at its upper end to a tapered key, said key bearing against the cap top to hold the assembly in place.

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