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REMOVABLE BOWL COLD TRAP

E. C. Evans and E. F. Babelay

Work Supervised by
L. A. Smith
Laboratory Division
Frank W. Hurd, Director

CARBIDE AND CARBON CHEMICALS COMPANY
UNION CARBIDE AND CARBON CORPORATION
K-25 Plant
Oak Ridge, Tennessee

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A B S T R A C T

A new bowl type cold trap which can be attached to vacuum systems by means of gaskets has been devised. This trap is superior to other types of removable bowl cold traps because of ease of replacement, economy, and lower breakage rate.

REMOVABLE BOWL COLD TRAP

Cold traps are used on vacuum systems to aid in securing higher vacuum, to prevent corrosive materials from entering the pumps, to reduce the amount of undesirable gases which are released to the atmosphere, and to facilitate the collection of condensible materials for further use.

The general requirements for a cold trap include low heat conductivity from the connecting tubulation and hence low coolant consumption, low cost, ease of condensate removal, a good vacuum seal, and inertness under the conditions of the operation. In certain applications, transparency is also an asset.

Glass cold trap bowls have customarily been connected to vacuum systems by means of tapered or spherical ground joints, Dresser couplings, or flanges. In most applications, the traps must be disconnected occasionally in order to be emptied of condensed material. Ground glass joints have the serious disadvantage of sticking, even when well lubricated. In some cases, the application of heat is sufficient for separation of the joint. This procedure, however, is sometimes ineffective; and joints are often broken when force is applied.

A new type of removable bowl cold trap which eliminates certain undesirable features of conventional glass or metal and glass cold traps has been developed in the Works Laboratory. The removable bowl for this cold trap, illustrated in figure 1, consists of a section of glass tubing closed at one end and provided with a thickened flange on the open end. Atmospheric pressure seals it to the system by compression against a neoprene or gum rubber gasket retained in a metal flange. The gasket may be coated with Apiezon M or N or Fluorothene G grease to aid in obtaining a vacuum seal. The Fluorothene grease is used when chemical inertness is required. Two metal segments retain the bowl in position when it is not evacuated.

Experience has shown that this bowl is less expensive and suffers less breakage than the types formerly used. It is easily cleaned, and provides an excellent vacuum seal. It has a low rate of coolant consumption and a distinct advantage over traps which employ ground glass joints in that it can be removed quickly without warming, thereby minimizing evaporation of materials condensed in the bowl. This new trap has been found so advantageous that other types of traps in this laboratory are being replaced by ones of the new design as rapidly as time permits.

① METAL TOP
Mat'l: Brass

② BOWL RETAINING RING
Mat'l: 1/8" Brass
(2 Req'd)

WORKS LABORATORY DEPT. K-25 LABORATORY DIVISION		
COLD TRAP (Removable bowl type)		
CARBIDE & CARBON CHEM. CO. UNION CARBIDE CORPORATION		
DWN <i>[Signature]</i>	GKD <i>[Signature]</i>	APPD <i>[Signature]</i>
DATE: 5-4-51	Dwg NO: LDW-C-856	

FIGURE 1