DEMOUNTABLE CELL HOLDER ADAPTER FOR BROKEN INFRARED SALT WINDOWS

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ABSTRACT. — Recovery and continued use of broken demountable salt windows for infrared spectroscopy are possible through use of a readily constructed demountable cell holder adapter.

One of the problems frequently encountered by infrared spectroscopists employing demountable cells, particularly with the nujol mull technique, is that of broken sodium chloride cell windows. Such windows are moderately expensive and have been essentially useless when broken. The adapter herein described permits recovery and much extended useful life of broken salt windows.

DESCRIPTION

The adapter is constructed from stainless steel, cut from either 3/16-inch plate or 3-inch diameter bar stock. The adapter consists of two plates, a 1½-inch square base plate mounted directly over the shoulders of the conventional demountable cell holder lugs and an upper plate used instead of the demountable cell holder cover plate. The dimensions of the adapter are shown in Figure 1. The location of the rectangular light-path holes must coincide with that of the particular demountable cell holder employed. Appropriate modification must be made for cell holders with three mounting lugs, rather than four. Although the two plates may be mirror images of each other, except for the difference in diameter of the mounting holes, it is convenient to make the base plate substantially larger than the cover plate, so that the demountable cell may be assembled quickly and accurately.

APPLICATION

Broken sodium chloride salt windows must be trimmed to the rectangular dimensions required to fit the adapter—approximately ⅜ x ¾ inches. This may be readily accomplished with an ordinary single-edge razor blade. Thus, at least one, and sometimes two, usable windows may be obtained from each broken window, since the frequently employed circular windows usually break near the center.

Rectangular gaskets approximately ⅜ x 1 inches are also fabricated for use with the reshaped cell windows. These are conveniently cut from polyethylene film — the authors use discarded polyethylene film gloves for this purpose.

An adapter of the type described has been used in the authors' laboratory for nearly a year by beginning and advanced students, as well as by more experienced infrared research workers. In general, the adapter has proved convenient to use and the rather small cell windows resulting from the previously described trimming have not seemed excessively difficult to handle. At the same time, a considerable saving in expenditures for new cell windows has been effected.

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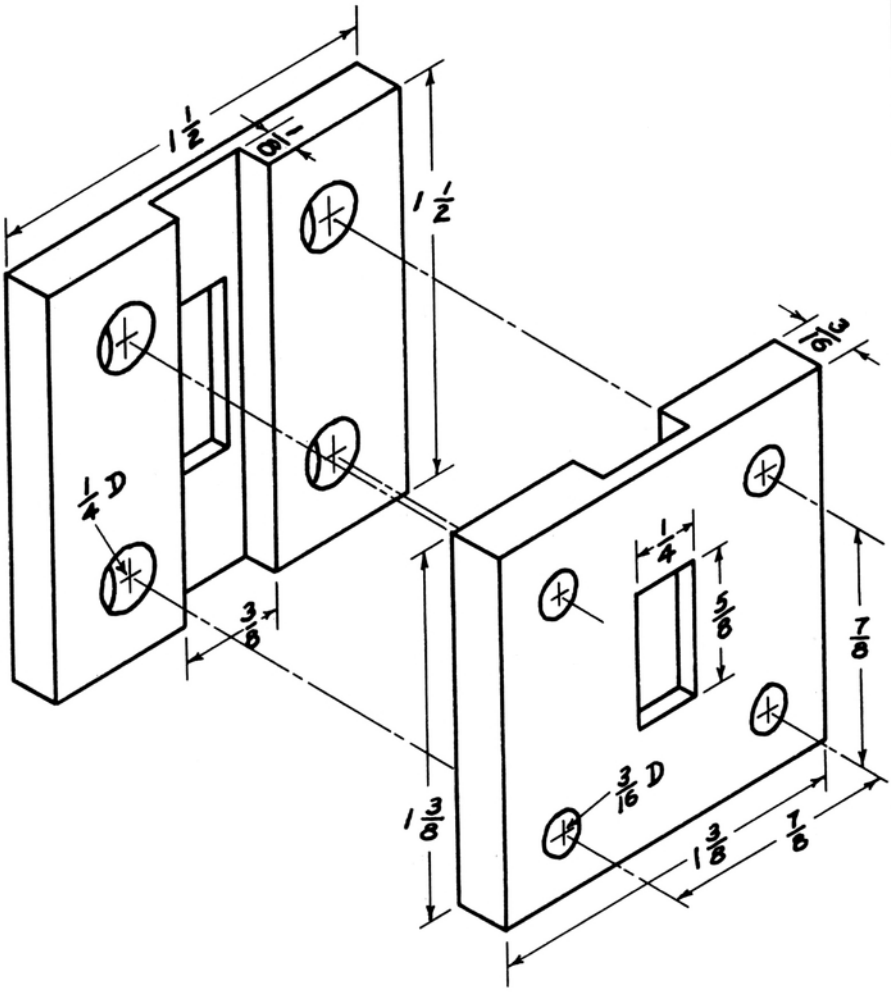

FIGURE 1.—Demountable cell holder adapter for broken sodium chloride windows. Dimensions shown in inches; holes are appropriately centered.