

## Power Shaker-Mixer for Use With Small Glass Vials

In a recent publication (1) from this laboratory, reference was made to a high speed mixing device which greatly facilitated two steps in the preparation of fatty acid methyl esters. Although the basic machine (Wig-L-Bug, Crescent Dental Manufacturing Co., Lyons, Ill.) is well known as a dentist's amalgamator and is widely used in spectroscopic laboratories for sample preparation, numerous requests have been received about the machine and the modification employed.

Basically, the standard Wig-L-Bug shaker was adapted to hold a 5 ml glass screw neck vial (A. H. Thomas, Philadelphia, Pa., No. 9802-E) fitted with a molded plastic cap (A. H. Thomas, No. 2849A-13). The dimensions of the vial with cap were  $\frac{5}{8} \times 1\frac{7}{8}$  in. and the weight of the fully loaded vial was 7.5 g. In the procedure, the glass reaction vial is tightly sealed by the plastic cap with cork backed tinfoil liner and losses of volatiles or contamination of the product are thus avoided. Much of the convenience of the procedure is due to the selection of this readily available, inexpensive vial which serves as a weighing vial, reaction, mixing and extraction vessel and eventually for storage of the methyl ester solution.

The modification of the Wig-L-Bug is illustrated in Figure 1. The front and rear holder are made of machined aluminum blocks. The upright supports of the holder are type 301, 22 gauge stainless steel (hard spring temper) and are reinforced with two additional leaves.

To simplify the design the holder was not equipped with a gate to keep the vial in place during operation. Ordinarily, the spring tension is sufficient to restrain the vial from leaving the holder. An inexpensive substitute for the gate, a size 33 rubber band is looped over the vial and around the front and rear of the holder and serves as an effective safety device.

In the development of the holder, the modified shaker with fully loaded vial was tested and observed under stroboscopic light to determine the proper stiffness for the holder leaf springs. Excessive flexing was found to yield spring failure in a relatively short time. The use of the stroboscopic test light is highly recommended to evaluate the vial holder leaf springs.

Any additional details on the construction of the holder may be obtained from the authors.

FRANCIS E. LUDDY  
ADOLPH J. MENNA  
ROBERT R. CALHOUN, JR.  
Eastern Utilization Research and  
Development Division, ARS, USDA  
Philadelphia, Pa. 19118

### REFERENCE

- Luddy, F. E., R. A. Barford, S. F. Herb and P. Magidman, *JAOCS* 45, 549 (1968).

[Received April 11, 1969]

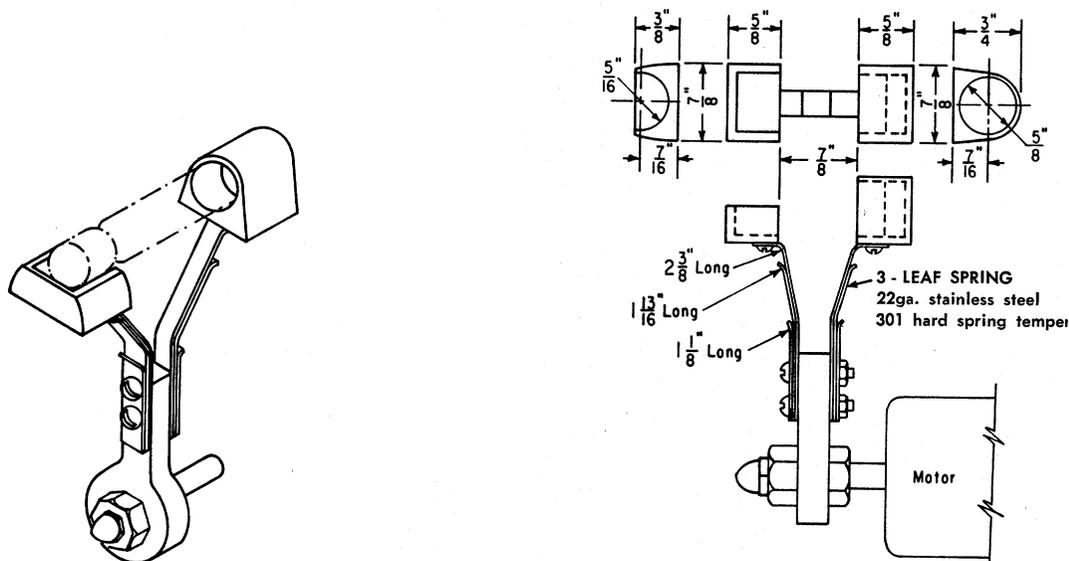


FIG. 1. Power shaker-mixer for preparation of fatty acid methyl esters.