by the Marshall reagent.

The low figure for the acidity number found for castor oil with the Kaufmann reagent and the agreement between the iodine numbers for this oil determined by the Kaufmann, Wijs, Hanus, and Rosenmund-Kuhnhenn methods indicate that little if any subsitution has occurred with the Kaufmann reagent. For those oils in which conjugated unsaturation does not exist, the small amount of acid found may be the result of substitution of halogen, or addition of methoxyl, or both of these reactions. The high acidity numbers found for oiticica and tung oils might have been predicted on the basis of Meinel's studies indicating the influence of conjugated unsaturation on the addition of methoxyl. Experiments have shown that in the case of oils containing conjugated double bonds at least the major portion of the high acidity numbers found is a result of the reaction with alcohol. Table V presents the results of methoxyl determinations on oils before and after treatment with the Kaufmann reagent. The brominated oil was recovered from the iodine number reaction mixture by first washing the carbon tetrachloride layer with water and then removing the carbon tetrachloride by evaporation. The residue was taken up in ethyl ether, and the resulting solution washed repeatedly with water, after which the ether was removed. The methoxyl was determined in a micro-Zeisel apparatus in the usual way. It is possible to calculate the increase in weight of the original oil caused by the addition of bromine and methoxyl as measured by the iodine and acidity numbers. It is assumed that the methoxyl added during bromination is proportional to the acidity number. If this amount of methoxyl is added to that found in the original oil, the calculated figures for methoxyl are obtained (Table V). The agreement of these figures with those found experimentally is sufficient to support the view that at least the major portion of the acid arises from the addition of methoxyl.

SUMMARY

1. The determination of the iodine number of soybean oil by the Kaufmann method is not appreciably affected by moderate changes in temperature and illumination.
2. The excess of reagent is very important and a minimum of 2 hours at room temperature is required.
3. The iodine numbers found by the Kaufmann method differ but little from those found by the Wijs and Hanus methods, except for tung and oiticica oils for which the Hanus method gives values much higher than the Kaufmann and Wijs methods. The Rosenmund-Kuhnhenn method gives results appreciably lower for all oils studied of iodine number above 100.
4. The increased amount of methoxyl in the brominated oil shows that the acid formed during halogenation is not a measure of substitution by the Kaufmann reagent.

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A New Liquid Sampler[1]*

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Abstract

In this article, a new sampling device for use in sampling liquids in barrels, drums, tank cars and deeptanks (whether ship or shore) is described. This instrument will not only show immediately the presence of free water or sludge but will permit an accurate measurement of its depth.

HAVING had some difficulties with the various liquid sampling devices on the market, especially when free water is present, we have devised a new sampler which we believe is a valuable instrument for sampling oils, etc. whether in barrels, tank cars or deeptanks.

This device consists of a hollow metal cylinder, 24" long and $1\frac{15}{16}$" in diameter, substantially semicircular in cross section, and closed at top and bottom. The interior is divided by metal shelves, making twelve two inch compartments. The flat front is closed by a sliding door, machined to give a perfect leak-proof joint. The device has an extension at the top into which can be added 2 ft. rods to reach the bottom of the container. The slide also has an extension to which 2 ft. rods can be added to open the shutter, thereby operating the sampler with two sets of rods.

It is optional whether to use a set of rods for operating the shutter or to operate it by using a strong piece of twine. The shutter will open by pulling and will close by its own weight. The slide has a metal "stop" attached to the bottom to prevent the shutter from leaving the cylinder, when raised to the top.

The instrument is made of a bronze body, monel slide and steel bar attached to the slide, all chromium plated and therefore can be used in almost any kind of liquid without causing any damage to same.

In sampling a barrel or drum, the container is laid on its side with bung up, the bung removed, and the sampler inserted to the bottom. The slide is then opened, held open a few seconds, closed, and the sampler removed. On opening the shutter, the various sections will be found filled with liquid, the whole forming a representative core of the liquid in the package. If any free water is present it will be found in one or more of the segments, and a direct measurement of the amount of free water can be obtained by counting the number of sections containing only water (each section represents two inches and is equivalent to $1\frac{1}{2}$ oz.) and measuring or estimating the proportions of water and oil in the highest section containing water. As many of these individual samplings can be taken as may be necessary, depending upon whether a 5%, 10%, or 100% sample is being drawn.

In tank cars, the sampler is lowered to the bottom, opened, closed, and removed. This will give a core representing the bottom 24 inches

of the car. The sampler is then lowered to a point 24 inches from the bottom (24" rods are used as markers) and a second sample withdrawn. This continues until a sample representing a core of oil from the top to the bottom is obtained. If a larger sample is required, this process is continued until the requisite quantity is obtained.

Deep tanks, whether ship or shore, are sampled in the same manner as tank cars, except that it is necessary to add more of the 2 foot rods.

In all cases, a core of liquid the full depth of the container, whether drum, tank car or barrel, is obtained and thus the sampler complies with the intent of the rules of the Nat'l Cottonseed Products Association, and the New York Produce Exchange, for sampling tank cars.

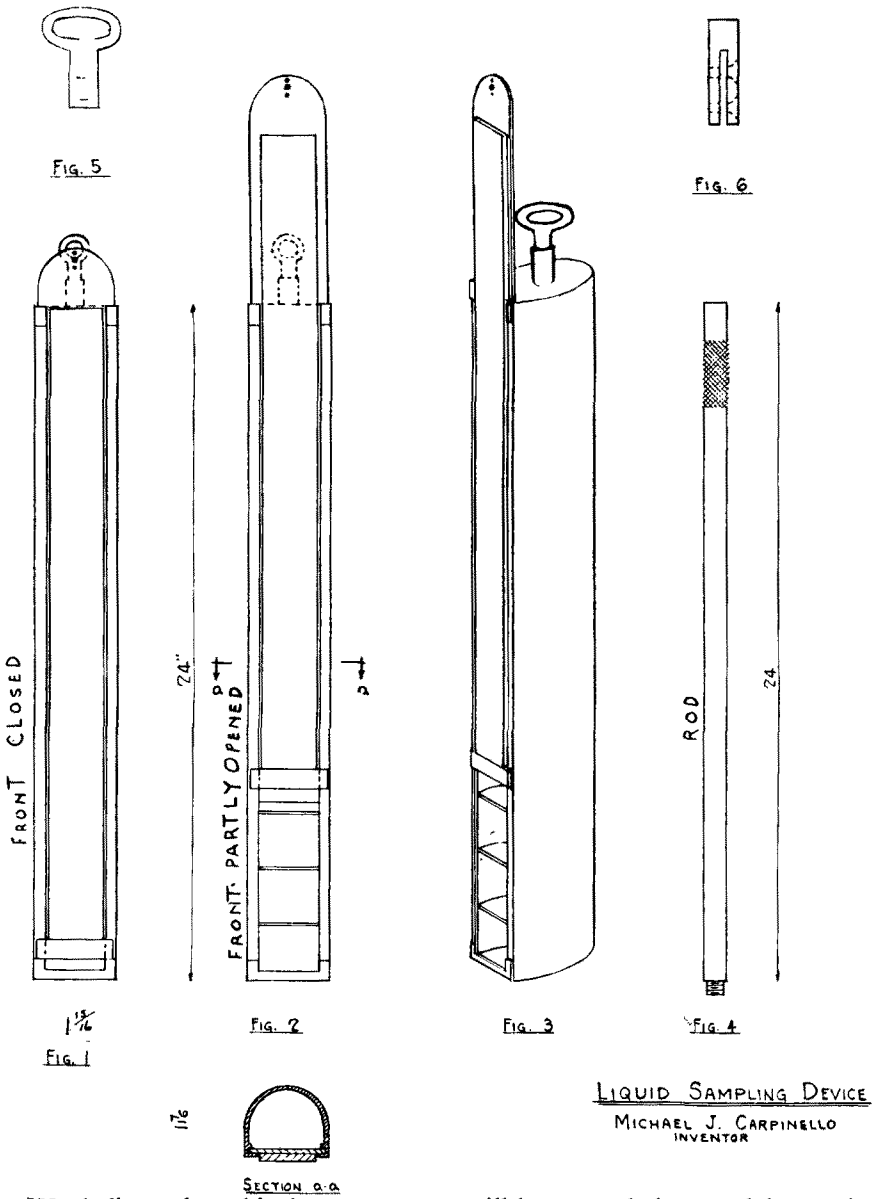
The special advantages of this sampler are:

1. Absolutely leak proof slide or door, thus obviating the dangers of not having the sampler empty when the right level is reached and also of losing part of the sample, while removing the sampler from the container.

2. An actual measurement of the depth of free water or sludge, or both, in the container, whether drum, tank car, or deep tank.

3. The sampler is light in weight and easily carried from place to place. The regulation two inch tryer is entirely too heavy and too long to carry any distance.

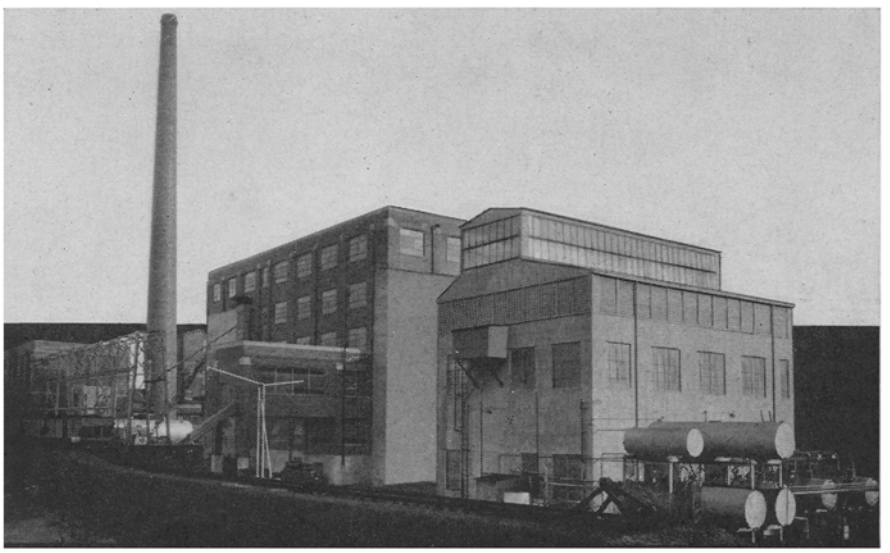
4. Being slightly less than 2" in diameter it can be used in barrels or drums, and it will also fit between the steam coils in a tank-car or deeptank, giving a sample underneath the coils, 1/8" from the bottom of the tank.



LIQUID SAMPLING DEVICE
MICHAEL J. CARPINELLO
INVENTOR

We believe that this instrument offers a new tool which will remove the natural difficulties of drawing proper samples from mixed liquids, such as oils containing water. We will be very glad to explain our instrument to the Society or any other interested parties.

*NOTE: This device is being investigated by the sampling committees of the American Oil Chemists' Society, The New York Produce Exchange, The Olive Oil Association of America, The U. S. Customs, Port of New York, and members of the Oriental Oils Association.



— PLANT —

American Soya Products Corp., Evansville, Ind.