PUBLISHED
JUNE 22, 1943.
BY A. P. C.

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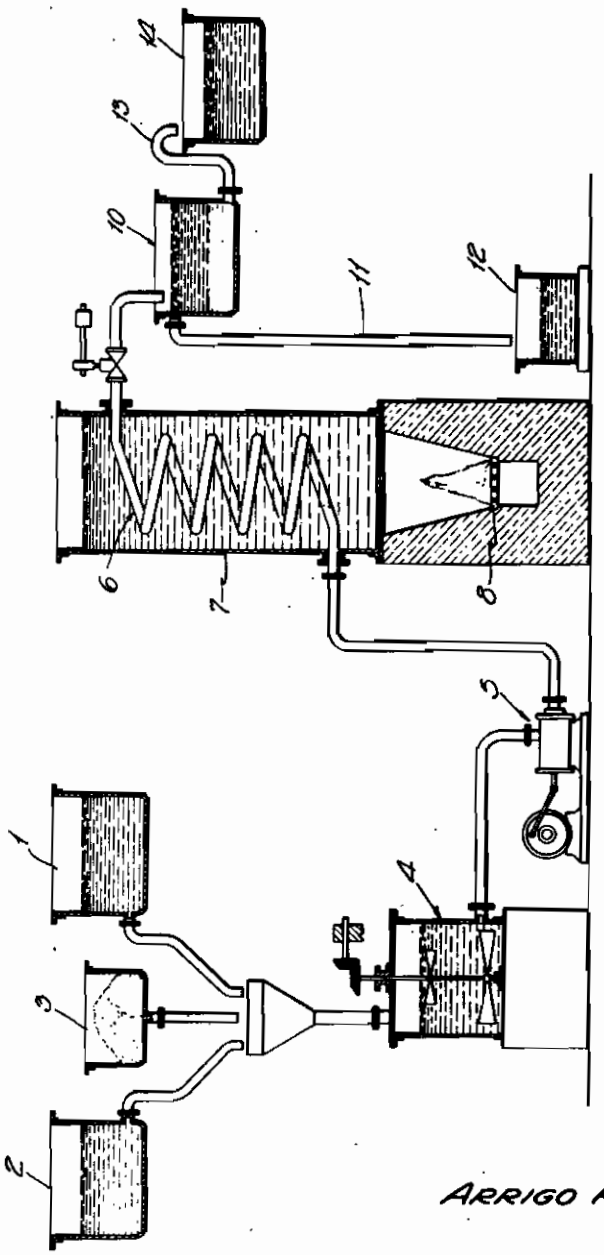
PROCESS FOR THE DISSOCIATION OF FATS

Filed Feb. 10, 1939

Serial No.
255,603



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Published June 22, 1943

Serial No. 255,603

ALIEN PROPERTY CUSTODIAN

PROCESS FOR THE DISSOCIATION OF FATS

Arrigo Rastelli, Milano, Italy; vested in the Alien Property Custodian

Application filed February 10, 1939

According to the most commonly used method, the fats are subjected, in the presence of steam, to a certain pressure at a certain temperature, whereby the glyceride is dissociated into glycerine and fatty acid which subsequently are separated the one from the other. This operation has hitherto been carried out in the following manner: the fat is introdueed, together with a certain amount of water, into an autoclave; the autoclave is closed and steam is introduced which, at a pressure of 6–10 atm. and at the correspondant temperature, causes the fat to hydrolyse. The operation is, however, rather long and lasts at least 8 hours. It has been proposed to speed it by stirring the mass; the difficulties, however, practically encountered in placing the stirrers, are not sufficiently compensated by reduction of time.

I have now found that the dissociation of fats can be realised in a continuous manner by introducing an emulsion of water and fat through a tube of relatively small diameter, in which a high pressure and a high temperature are kept; it is then possible, owing to the fine subdivision of the mass, to obtain a rapid dissociation, not obtainable in the autoclave; it is sufficient, if length of tube, temperature, pressure and rate of flow of the emulsion are regulated in such a manner that at the outlet of the tube the fat be completely separated into the 2 layers: fatty acid and glycerine containing water.

It will be advisable to use a copper tube of a diameter varying from 10 to 100 mm., externally heated by means of an oil bath, a pressure between 10 and 40 atm. and a correspondant temperature, between 150° C. and 250° C.; and finally to add a catalyst for the reaction of the same type as those already used in the ordinary process; for instance zinc oxide. Under these conditions yields, even higher than those obtainable in the autoclave, can practically be obtained.

The attached drawing shows a diagrammatic realisation of the process. The vessels **1**, **2** and **3** contain the fat, the water and the catalyst respectively. The 3 reactants are introduced, in the desired amounts, into the apparatus **4**, where they are conveniently emulsionised; the emulsion is sucked up from pump **5** and compressed in the decomposition tube **6**. This tube is immersed into a bath contained in vessel **7**, heated to the desired temperature by hearth **8**; at the end it is provided with a conveniently regulated valve which permits the mixture after reaction to pass into the decanting vessel **10**; the fatty acid which forms the higher layer, passes into vessel **12** through tube **11**; the glycerine containing water passes on to vessel **14** through tube **13**.

The principal advantages offered by this new process are as follows:

(1) The operation is carried out in an absolutely continuous manner; if the particulars of plant are conveniently elaborated, a completely automatic working can be obtained which guarantees a greater regularity of yields and at the same time requires a much smaller number of workmen than that required for the intermittent process in the autoclave.

(2) The much more reduced sizes of the apparatus, in which the dissociation takes place, allow to reduce the plant costs and especially to economise in materials which is a very important fact, since, as it is well known, the only really suitable metal for the dissociation of fats is copper.

(3) Owing to the little flowing capacity, the mixture of glycerine containing water and fatty acid is allowed to decant in a much more regular and calm manner than that stated when opening the autoclave.

(4) The plant has a much longer duration, since the copper, under these conditions, is not brought in contact with air, which, on the other hand, occurs by force in the known plants, when the autoclave is opened.

(5) Owing to the small masses subjected to high pressure, the explosion danger is practically null.

(6) No steam plant is required, since heating is externally obtained.

ARRIGO RASTELLI.