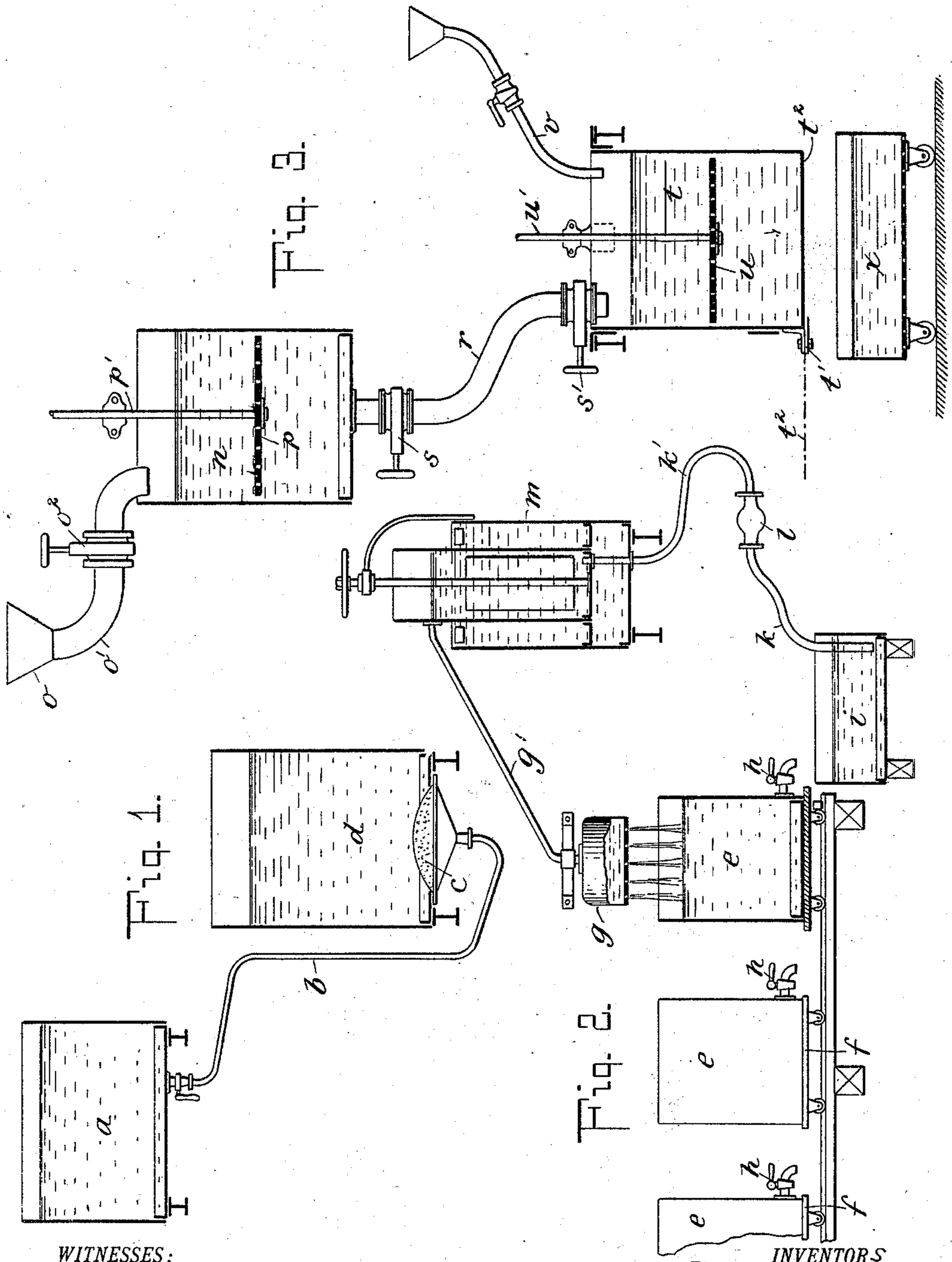
(No Model.)

T. CORDEWEENER & A. DE KUNWALD.

PROCESS OF MAKING EDIBLE FATS.

No. 550,676. Patented Dec. 3, 1895.



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PROCESS OF MAKING EDIBLE FATS.

SPECIFICATION forming part of Letters Patent No. 550,676, dated December 3, 1895.

Application filed January 11, 1894. Serial No. 496,559. (No specimens.)

To all whom it may concern:

Be it known that we, TONY CORDEWEENER and ALFRED DE KUNWALD, of the city of Paris, France, have invented Improvements in Processes of Making Edible Fats, of which the following is a full, clear, and exact description.

The manufacture of artificial butters or hydrated vegeto-animal fats is based in principle upon emulsion processes—that is to say, the fatty matters in a melted state and in presence of hydrated elements, such as milk, cream, or water, are emulsified by means of various kinds of apparatus, whereby, as far as possible, the fatty element in a melted condition is subdivided throughout the liquid. As regards the emulsion thus obtained, it is to be observed that the fatty elements thus mixed are never permanently united, for by allowing the emulsion to rest at the temperature at which it has been churned the fatty matter separates from the liquid element and floats upon the surface of the latter in the form of oil. The artificial emulsion obtained under the above conditions curdles if suddenly cooled. This lowering of the temperature has for its object to physically unite the elements constituting the fatty matter—oleine, margarine, and stearine. Under these conditions the fatty matter is drowned in an excess of liquid matters, which prevents the formation of a perfect emulsion when the solution is cooled. The emulsion thus imperfectly fixed is afterward treated mechanically, by kneading, rolling, or working, for the purpose of eliminating the liquid in excess.

We have devised a process of manufacture differing from that above described by the entire suppression of any apparatus for subdividing the melted fat in the liquid element.

Our improved process, forming the subject of the present application for Letters Patent, is based on the formation of an emulsion of the constituent elements of the fatty matter in a dry non-hydrated condition, and also upon the hydration in the cold of the permanently-emulsified fatty elements.

Reference is to be had to the accompanying drawings, forming part of this specification, which illustrate one form of apparatus employed in carrying out the successive operations by which the invention is carried into effect.

Figure 1 is a longitudinal sectional view of the means employed for fixing by refrigeration the constituent elements of the melted fat. Fig. 2 is a side elevation, partly in section, of the means employed for converting the fixed fatty matters into a translucent product, which is afterward brought to the temperature necessary to facilitate working it. Fig. 3 is a longitudinal sectional view of the means employed for decoloring, unifying, hydrating, and odorizing the translucent matter, and also the means for preventing a friable texture of the fatty matter.

In order to physically unite the non-emulsified elements—oleine, margarine, and stearine—constituting the fatty matters of various sources, we proceed in the following manner: These matters in a melted condition are placed in the container *a*, Fig. 1, and pass thence by pipe *b* through a rose *c*, fixed in the bottom of a vessel *d*, containing a suitable liquid, such as water, at a low temperature—that is to say, at a temperature lower than the fatty matters. The elements of the melted fatty matter—oleine, margarine, and stearine—on being thus suddenly subjected to a relatively-low temperature are permanently emulsified and in consequence of the difference of density rise to the surface of the refrigerating liquid in container *d*, whence they are removed and placed in the vessels *e*, Fig. 2. The congelation in the vessel *d* may be obtained in any suitable manner, as by means of cooled metallic surfaces or by means of liquids or gaseous fluids. The fatty matter thus congealed forms an opaque mass and after remaining for a few hours in vessels *e* becomes converted into a translucent product of nacreous aspect. In order to hydrate and decolor this translucent product, the fatty matter in vessels *e* is raised to a temperature varying between 20° and 22° centigrade by the circulation therein of a liquid, such as water, having a temperature of about 22° centigrade for the purpose of softening the mass and facilitating its working. This liquid washes out the color of the fatty matter and in this sense decolors it. This circulation of liquid at a constant temperature is

obtained in the following manner: Each vessel *e*, mounted upon a truck *f*, is brought beneath a container *g*, having a finely-perforated bottom, through which the warm liquid is showered upon the mass contained in vessel *e*, which liquid in passing through the fatty matter gives up its heat thereto and is drawn off by cock *h* into a tank *i*, into which dips the suction-pipe *k* of a pump *l*, whereby the liquid is returned to the heater *m*, where it circulates and is reheated for use over again. The warm liquid is showered upon the mass in vessel *e* until it has acquired the desired temperature. With regard to this temperature it should be remarked that the constituent elements of the fatty matter are permanently emulsified into a homogeneous whole, when by a sudden cooling they pass rapidly and without any appreciable transition from a melted to a solid state. The elements thus fixed remain united until they attain a temperature verging on the melting-point, beyond which the separation of the fatty elements again manifests itself and the fatty matter resolves itself into its elements. Consequently the temperature to which the translucent product is brought should always be some degrees lower than the point of separation of the fatty elements. The product after having been thus brought to the required temperature is run through a funnel *o*, pipe *o'*, and valve o^2 into a vessel *n*, Fig. 3, provided with a perforated dasher *p*, connected to the rod *p'* and reciprocated by any suitable means. (Not shown.) The semisolid mass, which at the outset was yellow and translucent, is thus caused to pass through the perforations of the dasher and becomes thereby transformed, without any appreciable elevation of temperature, into a whitish matter of creamy appearance. At this moment cream or milk is supplied through funnel *o* to the vessel *n* for the purpose of incorporating in the mass the flavoring and odorous elements, which, by the action of the dasher, become intimately infused into the pores of the fatty matter. If the fatty mass were to be at this moment removed from the apparatus and allowed to rest for a few hours, it would become converted into a solid mass of brittle texture, and in order to deprive it of this brittle character it requires to be subjected to an energetic kneading, whereby it is again softened and acquires all the distinctive qualities of butter. In order to prevent the mass from acquiring this brittle texture and at the same time avoid the necessity of subjecting it to the settling and kneading operations above described, the fatty matter is run through a pipe *r*, provided with valves *s s'*, into a vessel *t*, also provided with a perforated disk *u*, mounted upon a rod *u'* and reciprocated by any suitable means. (Not shown.) Immediately the mass is charged into the vessel *t* cold water is added through pipe *v* in sufficient quantity to bring the mass to a temperature of from 12° to 14° centigrade, and the plunger then operated, whereby the mass is cooled uniformly throughout. This done the bottom t^2 of vessel *t* is swung round on a center *t'* to allow the finished product to fall into a truck *x*, having a perforated bottom, in which it is left to drain for a few hours. Under these conditions the fatty matter never becomes brittle, and a final kneading or working for the purpose of eliminating the excess of water imparts to it all the visibly apparent qualities of natural butter.

It is to be understood that we reserve the right to make such modifications as may be deemed desirable in the physical and mechanical reactions herein described, and also to vary the forms, dimensions, and materials employed in the construction of the apparatus without in any way departing from the principle of the invention.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed, we declare that what we claim is—

1. The herein described process of making edible fats, which consists in melting non-hydrated fat, subjecting said melted fat to a sudden cooling, allowing the mass to stand as described, raising the temperature of the mass to less than the melting point in a de-coloring liquid and finally working in cold water, substantially as and for the purposes specified.

2. The herein described process of making edible fats, which consists in melting non-hydrated fat, subjecting said melted fat to sudden cooling, allowing the mass to stand as described, raising the temperature of the mass to less than the melting point in a de-coloring liquid, then churning with milk and finally working the resulting mass in cold water, substantially as and for the purposes specified.

The foregoing specification of our improvements in and apparatus for the manufacture of margarine and alimentary fat signed by us this 27th day of December, 1893.

TONY CORDEWEENER.
ALFRED DE KUNWALD.

Witnesses:
CLYDE SHROPSHIRE,
ALBERT MOREAU.