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MACHINE FOR DEPOSITING CREAM, CHOCOLATE, OR THE LIKE ON BISCUITS

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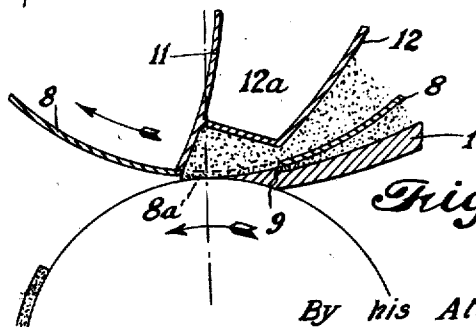
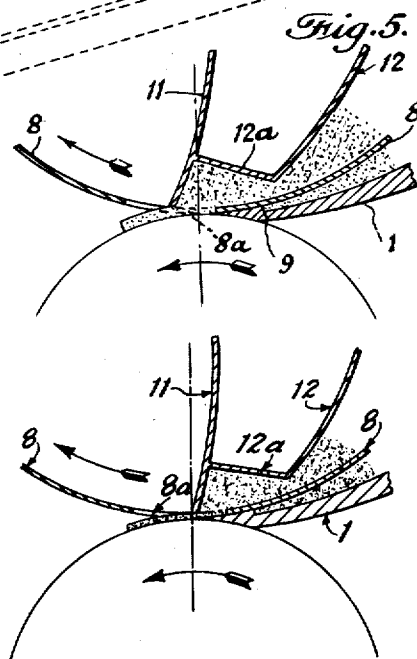
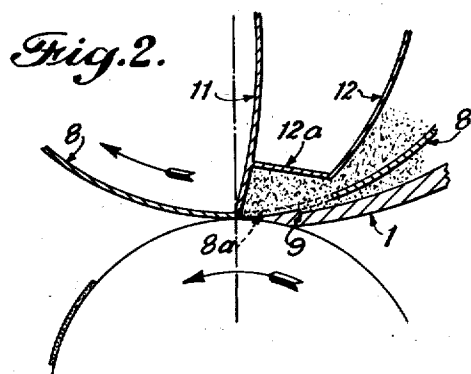
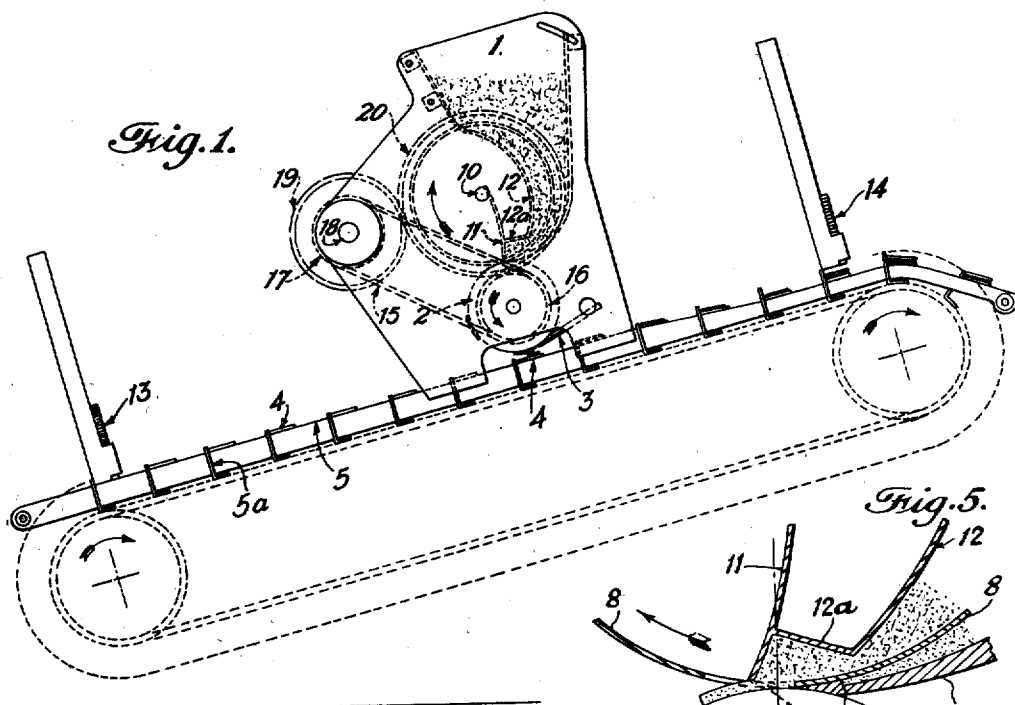


Fig. 3.

By his Attorney:-

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UNITED STATES PATENT OFFICE

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MACHINE FOR DEPOSITING CREAM, CHOCOLATE, OR THE LIKE ON BISCUITS

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6 Claims. (Cl. 107-27)

This invention relates to an improved depositing machine for dealing with plastic substances. The improved machine is not restricted as to the nature of plastic material with which it may deal, nor in the use to which the deposits when made may be put. For convenience of description the invention will be referred to as applied to a machine for applying cream to biscuits preparatory to making a cream sandwich, but other uses will readily suggest themselves to persons skilled in the art.

The object of the invention is to provide fundamental improvements in the manipulation of the deposit, to avoid the very serious drawbacks in machines as hitherto known.

It is necessary in machines of this nature, first that the measured quantities of material to be deposited are prepared at strictly regular intervals, and in consistent form (as regards their dimensions etc.), secondly that the measured quantities be deposited without damage to themselves or to the articles receiving them, and finally that the deposited material and its recipient be moved away from the place of deposit so as not to obstruct the next comer.

In biscuit-creaming machines however, as hitherto known, the measured quantity of cream or other plastic substance has been applied to the biscuit directly, at the point of its preparation, and owing to the adhesive nature of the cream, and the friable nature of the biscuits, and to the frequent variations in size in the biscuits, breakages at the place of deposit are common, resulting in the fouling of the machine, the damage to oncoming biscuits, and the necessity of stopping the machine to rectify the fault.

A machine made according to the present invention has none of the above drawbacks, since the plastic material is not applied to its recipient at the point of its measurement and formation, and should any flaw occur in any particular measured quantity of cream, or should a biscuit be broken, the faulty parts are automatically moved on so that no fouling of the machine takes place, and the succeeding biscuits are undamaged. By this machine also, it is possible to employ multi-line machines with advantage, as distinct from a single line machine, since the operation of the machine is quite independent of variations in thickness etc. of the biscuits.

According to the invention, the measured quantity of plastic material is deposited in predetermined form on to an intermediate carrier member, which moves it away from the measuring and forming appliance, and from which it is removed

by a doctor or the like so as to be deposited on the biscuit or other recipient passing below.

In the preferred embodiments of the invention, the intermediate carrier member is a roller (although an endless band or other carrier may be employed), and said member is operated so that it moves in the same direction as the extruding cream at the part adjacent the measuring and forming appliance, and in the same direction as the biscuit at the part where the cream is removed.

The invention also comprises improved constructions and arrangements of measuring and forming appliances. In one case, the improved appliance comprises a rotating cylindrical stencil, passing through a cream box, the moving stencil and a stationary baffle plate within the box co-operating to create a slight pressure on the cream sufficient to fill the stencil opening. In an example of this form of measuring and forming appliance, there is a movable stencil, means for filling the stencil, means for wiping off the filling on the outer face of the stencil and means on the inner side of and inclined to the stencil to give a compressing wedging action to the material, as the stencil is moved, thereby forcing the material through the stencil and at the same time wiping it off on the inside. Also the means on the inner side of the stencil for giving the compressing action may be adjustable to vary the degree and point of compression.

The invention is illustrated in the accompanying drawing, wherein:—

Fig. 1 is a side elevation of a machine for making sandwich biscuits, having the invention applied thereto. In this machine a roller is shown as the intermediate carrying member, and a measuring and forming appliance answering to the first case named above is shown;

Fig. 2 is an enlarged sectional elevation of the operating parts of the measuring appliance shown in Fig. 1, the expression of the dab of cream being about to begin;

Fig. 3 is a similar view to Fig. 2 but showing the dab of cream half formed;

Figs. 4 and 5 are views corresponding to Figs. 2 and 3, but showing an alternative position of the baffle plate for giving a thicker dab of cream.

Referring to Fig. 1, the dab of cream expelled from the cream box 1, is directed on to and carried by the roller 2, and is later removed from such roller by the doctor 3, so as to drop on to the biscuit 4, travelling below the roller, on the conveyor 5. Although the biscuits are shown a distance away from the periphery of the roller,

they could be arranged nearer to it and, in fact, almost touching it.

The intermediate carrier member (roller 2) is driven so that its surface speed is in synchronism with the rate of cream expulsion and with the speed of the biscuit conveyor.

Referring now to the cream measurer and former shown in Figs. 1 to 5, a rotary cylindrical stencil 8 is arranged between and fitting against one of the side plates of the hopper 1. At the lower part of the stencil, the transverse wall of the hopper is arranged with its inner face coincident with the stencil, a step 9 being provided so that such face acts to wipe the outer periphery of the stencil. The cylindrical stencil 8 is suitably mounted for rotation between the side walls of the hopper.

Adjustably fixed to that side of the hopper opposite the disc is a curved spring blade 11 inclined to the inner periphery of the stencil 8 and with its end pressing against the same. The spring blade 11 forms the inner compressing and scraping member and is the full width of the stencil, extending from said disc to the hopper side, or, at least at its scraping end, is wider than the shaped holes 8a in the stencil. The scraping or trailing edge of the spring blade 11 is adjustably positioned relative to the feather edge of the transverse wall of the hopper by rotating the blade support about the shaft 10, so that it determines to some extent the amount of extrusion which will occur as the stencil passes under it. If the separating distance between these edges is increased this will increase the amount of extrusion. For example, in Figs. 4 and 5 the blade 11 is shown in a position further from the step 9, with the result that the dab of cream is thicker than in Figs. 2 and 3.

Alternatively, by lowering the roller 2, or band 6, the cream deposit is thickened.

A baffle plate 12 in the hopper, with a flanged part 12a, serves to prevent a too-free flow of cream, and the flange 12a serves to shape the immediate extrusion chamber.

If the stencil is relatively thin, say $\frac{1}{8}$ inch, and the cream of a suitable consistency, the shapes of cream will fall out of themselves. On the other hand, the travelling drum 2, or band 6 is arranged adjacent to the opening, so that in the first place it provides an abutment to limit the extrusion thickness of the cream and in the second place it continues the forward movement of the cream with its stencil hole so as to draw it out therefrom, see Figs. 3 and 5.

In such an arrangement, the spring blade 11 will be positioned so that sufficient extrusion occurs to press the shape of material firmly on to the wheel or band, but without distorting its shape.

The removal of the cream dabs from the wheel or band is effected by means of the doctor 3 or wire or knife or the like, and the dabs are arranged to fall into position on to the biscuits 4 on the travelling conveyor 5 and may even be lightly pressed at such time on to such biscuits. A further biscuit, to make a sandwich may be added in a subsequent process in any suitable manner.

In Fig. 1 a known arrangement of biscuit feeding arrangements is shown, comprising the stacks 13, 14, before and after the hopper, the biscuits being drawn out by the elements 5a on the conveyor 5.

The compression in the hopper is obviously obtained by the inclination of the inner scraping

member 11 giving a wedging action within the stencil. The outer scraper 9 is also preferably arranged to fill the "bight" between the stencil and the roller 2. The stencil 11 is preferably constructed and mounted so as to be easily changeable for one having holes of another shape. There may be V slots or other gaps in the plate 11 between the stencil openings, through which "bands" of cream will rotate and thus help to increase the pressure on the main body of cream.

The roller 2 is rotated by a chain 15 and chain wheels 16, 17, the latter being on a shaft 18 carried by the side plates, which shaft also carries a toothed wheel 19 meshing with a wheel 20 on the shaft 10. The shaft 18 may be connected with the drive of the conveyor 5 in any suitable known manner.

In a modification not illustrated, the hopper and stencil may be divided into side-by-side compartments by plates and discs respectively, so that creams of different colour or taste may be used simultaneously, there being stencil openings for each compartment.

Other uses of the invention would be in depositing cake dough or batter into tins, or in icing cakes or the like. These and similar operations are intended to be covered by the appended claims.

What I claim is:—

1. A depositing machine comprising a container having two side walls, a transverse wall and a baffle plate, a hollow rotary cylindrical stencil passing from the container between the transverse wall and the baffle plate, a carrier roller osculating with the cylindrical stencil at the point of emergence from the container, the transverse wall being shaped to a feather edge to fill the bight between the osculating members and being stepped on its inner side so as to wipe the outer face of the stencil, and the baffle plate being adjustable angularly of the stencil from a position just above the feather edge of such transverse wall to positions away from it to vary the thickness of the deposit.

2. A depositing machine comprising a rotary hollow cylindrical stencil osculating exteriorly with a moving carrier member which receives the cream from the stencil openings, a cream container through which the rotary stencil passes, one wall of such container wiping the outer face of the stencil as it leaves the container, and a blade within the hollow stencil wiping the inner surface of the stencil, wherein the blade constitutes one wall of the container.

3. A depositing machine comprising a rotary hollow cylindrical stencil osculating exteriorly with a moving carrier member which receives the cream from the stencil openings, a cream container through which the rotary stencil passes, one wall of such container wiping the outer face of the stencil as it leaves the container, and a blade within the hollow stencil wiping the inner surface of the stencil, wherein that part of the container wall which wipes the outer face of the rotary stencil also fills the bight between the osculating members.

4. A depositing machine comprising a rotary hollow cylindrical stencil osculating exteriorly with a moving carrier member which receives the cream from the stencil openings, a cream container through which the rotary stencil passes, one wall of such container wiping the outer face of the stencil as it leaves the container, and a blade within the hollow stencil wiping the inner surface of the stencil, wherein that part of the

container wall which wipes the outer face of the rotary stencil also fills the bight between the osculating members, and wherein the blade within the hollow stencil constitutes one wall of the container, the blade operating at or near the point of osculation.

5 5. A depositing machine comprising a rotary hollow cylindrical stencil osculating exteriorly with a moving carrier member which receives the
10 cream from the stencil openings, a cream container through which the rotary stencil passes, one wall of such container wiping the outer face of the stencil as it leaves the container, and a
15 blade within the hollow stencil wiping the inner surface of the stencil, wherein that part of the container wall which wipes the outer face of the rotary stencil also fills the bight between the osculating members, and wherein the blade within
20 the hollow stencil constitutes one wall of the container, the blade operating at or near the point

of osculation and being adjustable towards and away from the container wall which wipes the outer face of the stencil, to vary the size of the outlet through which the stencil passes from the container.

5 6. A depositing machine comprising a rotary hollow cylindrical stencil osculating exteriorly with a moving carrier member which receives the cream from the stencil openings, a cream container through which the rotary stencil passes, 10 one wall of such container wiping the outer face of the stencil as it leaves the container, and a blade within the hollow stencil wiping the inner surface of the stencil, wherein the blade within the hollow stencil also constitutes a stationary 15 baffle plate shaped and positioned so as to cooperate with the moving stencil to create a slight pressure on the material in the container.

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