April 24, 1962 A. F. PEYRON 3,030,967

PROCESS FOR APPLYING COSMETIC MATERIAL TO THE SKIN

Filed Oct. 6, 1959 2 Sheets-Sheet 1

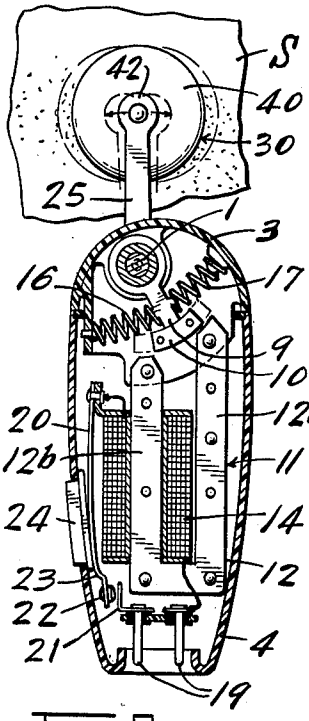


FIG-2-

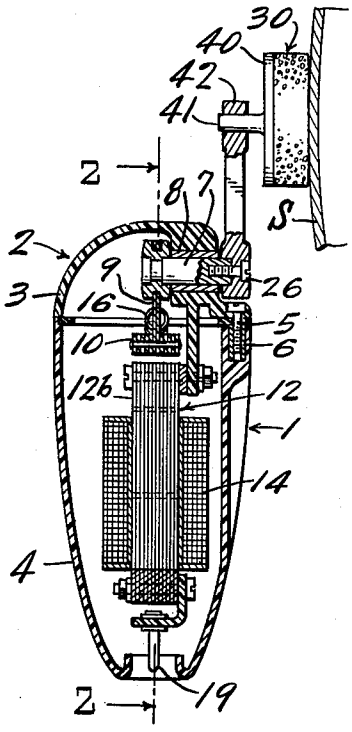


FIG-1-

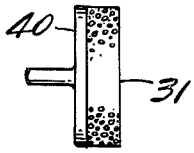


FIG-3-

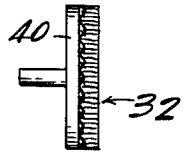


FIG-4-

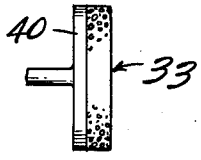


FIG-5-

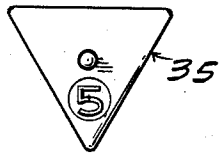


FIG-8-

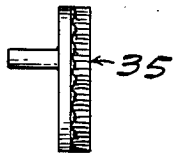


FIG-7-

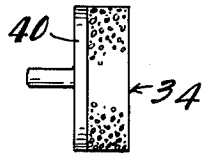


FIG-6-

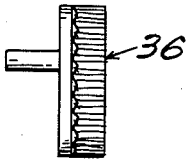


FIG-9-

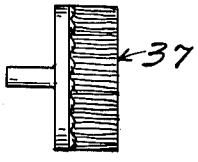


FIG-10-

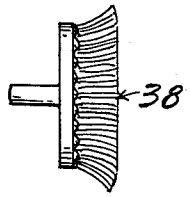


FIG-11-

April 24, 1962 A. F. PEYRON 3,030,967

PROCESS FOR APPLYING COSMETIC MATERIAL TO THE SKIN

Filed Oct. 6, 1959 2 Sheets-Sheet 2

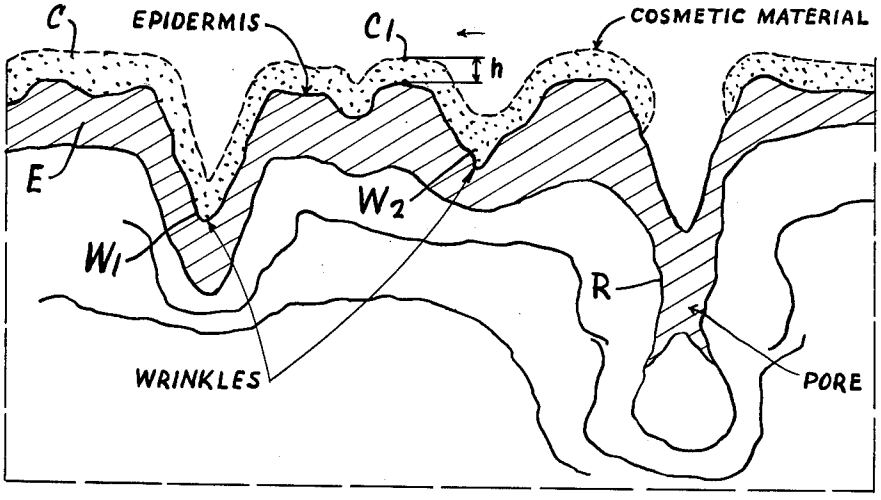


FIG-12-

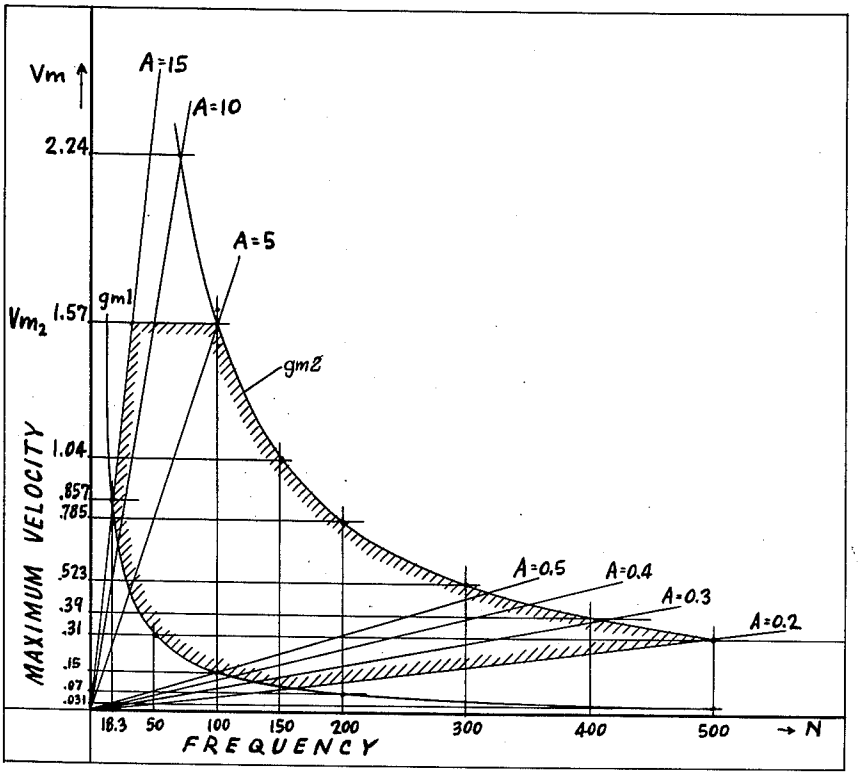


FIG-13-

United States Patent Office 3,030,967
Patented Apr. 24, 1962

3,030,967
PROCESS FOR APPLYING COSMETIC MATERIAL TO THE SKIN

Antoine Francois Peyron, 4 Rue de Londres, Paris, France
Filed Oct. 6, 1959, Ser. No. 844,826
7 Claims. (Cl. 132—1)

The present invention relates to a process of applying cosmetic material to the skin. The term "cosmetic material" is used in a general sense to include make-up cosmetics and cleansing preparations whether in powder, paste, cake or cream form.

This application is a continuation-in-part of my application Serial No. 752,871, filed August 4, 1958.

The application of make-up normally comprises the application of a make-up "foundation" which is ordinarily a cream, the application of coloring material, such as a base tint or grease rouge, the application of face powder and the application and fixing of a dry rouge. Make-up removal comprises a thorough intermingling of a cleansing cream or other make-up remover with the remaining traces of make-up on the skin, the resulting mixture being easily wiped off. The present invention relates only to the process of applying cosmetic material, and in particular the uniform distribution of the material on the skin and is not concerned with wiping away the mixture of make-up and make-up remover during the cleansing operation, since this can easily be done by hand.

When make-up products are applied by hand, it is impossible to prevent the formation of thicker layers at certain uneven points on the surface of the skin, for example, folds, wrinkles, points of sudden change of curvature, enlarged pores, etc. Moreover, prolonged efforts to achieve perfection by manual application tend to accentuate rather than decrease the accumulation of powder and grains of coloring material in the irregularities of the skin. Upon continued rubbing in an effort to disperse the thicker layers, the pressure of the hand causes the grains to be rubbed into wrinkles, pores, etc., thereby emphasizing these skin defects.

The lasting quality of make-up is achieved by applying several layers of powder to the face. Beauty institutes frequently use as many as eight layers of powder for an evening make-up. However, when the powder is applied by hand, it agglomerates in small heaps of several grains and each of these small heaps is held by the adhesive quality of the previously applied materials and the sebum of the skin and by surface tension. This results in an uneven distribution of the powder on the skin. When perspiration begins to mix with the previously applied materials and the sebum, the make-up will appear shiny wherever the powder is thin because of the uneven distribution and the clogged pores, and other defects will be further accentuated.

It is an object of the present invention to provide a process which will overcome the aforementioned defects and will achieve a perfect and lasting make-up application over the whole surface of the face.

It is a further object to provide a process which will achieve a very even distribution of the grains of coloring material and powder over the entire surface of the skin despite its irregularities. The resulting layer is of uniform thickness and is herein designated as a thin uniform layer.

It is yet another object of the invention to provide a process which will carry out the make-up operations with greater speed and with greater economy of effort than is required when carrying them out by hand.

In accordance with the process of the present invention, cosmetic materials are applied to the skin by means of appropriate applicators or buffers which spread the cosmetic on the surface of the skin to obtain a thin uniform layer of cosmetic material by applying to the cosmetic particles repeated accelerating forces parallel to the skin and of a predetermined value without exerting any substantial pressure in a direction perpendicular to the surface of the skin. The process in accordance with the present invention is suitably carried out by apparatus comprising a set of interchangeable applicators or buffers of selected characteristics and power operated means for imparting to the buffers an alternating movement along a trajectory which lies approximately in a plane tangential to the surface of the skin, the alternative movements of the buffer having selected frequency, amplitude and acceleration. Moreover, means is preferably provided for varying and controlling the amplitude and frequency of the alternative movement of the buffers according to the make-up operation being performed.

The nature, object and advantages of the invention will be more fully understood from the following description and claims in conjunction with the accompanying drawings, in which:

FIG. 1 is a longitudinal section of apparatus for carrying out the process of the present invention. The apparatus is shown in operative relation with respect to the surface of the skin.

FIG. 2 is a longitudinal section taken approximately on the line 2—2 of FIG. 1.

FIGS. 3 to 7 are side views of typical buffers of the apparatus.

FIG. 8 is a plan of the buffer shown in FIG. 7.

FIGS. 9 to 11 are side views of other buffers.

FIG. 12 is a schematic view representing an enlarged cross section of the skin and illustrating a uniform thin layer of cosmetic material applied to the skin by the process of the present invention.

FIG. 13 is a graph illustrating relations of frequency velocity amplitude and acceleration of a buffer of apparatus operating in accordance with the process of the present invention.

In the process according to the present invention a portion of cosmetic material that is to be applied to the face is either deposited on the face by hand or is put on a buffer, for example, by bringing the buffer into contact with material in a box or jar. The material is then spread uniformly on a selected area of the skin by means of the buffer moving with an alternative movement along a trajectory which is approximately tangential to the surface of the skin. To obtain a thin uniform layer of make-up, three conditions must be met: First, there must be a good chance of the buffer making contact with each particle of make-up to be applied, second, there should be only sufficient pressure on this particle during such contact as to make it move independently despite its adherence to adjacent material, and, third, force should be applied to the particle of cosmetic material in a direction tangential to the surface of the skin without the exertion of substantial pressure perpendicular to the skin to move the grain on the skin. These three conditions are met by the process of the present invention.

The buffer used in carrying out the process of the invention, for example, a soft dense brush, is in constant contact with a great number of particles of the cosmetic and will hence have every chance of coming into contact with each particle in the area to which it is applied. Moreover, the alternative movement of the buffer produces acceleration of a selected value. Hence, when each point of the buffer meets the particles of cosmetic, it applies this acceleration to them in an amount depending on the effective mass of the cosmetic particle at the point of application. Finally, since the alternative movements occur in a direction parallel to the surface of the skin without substantial pressure normal to the skin, the buffer moves the particles along the skin surface so as

to distribute the cosmetic particles on the surface to achieve a thin uniform layer. The grains or particles of cosmetic material are moved at such speed that they do not fall into pores, wrinkles or other depressions of the skin and hence do not fill up such skin irregularities.

When powder is applied to the face it tends to agglomerate in small heaps each composed of several grains. These heaps are engaged by the buffer and broken into individual grains or several much smaller heaps. The powder is thereby spread into a thin uniform layer. In the same way, any grains accumulating in a wrinkle or other skin irregularity will be removed, the grains being carried away until a uniform thin layer is left. In contrast, the usual manual method of applying powder by use of a rubbing force substantially without acceleration, serves only to rub the accumulated grains further into the wrinkles thereby accentuating the imperfections of the skin.

In a similar way, the application of other make-up products by the process of the present invention helps to form a thin layer with the make-up material uniformly dispersed on the surface of the skin. When the process in accordance with the invention is used to apply a cream make-up "foundation," it provides a uniform layer of cream of uniform thickness which is conducive to an application of coloring materials and powder in which the appearance of the natural texture of the skin is preserved. The fact that the superficial disjointed cells of the corneous layer are not subjected to pressure permits a better permeation of the interstices between them so that a foundation of uniform thickness for rouge and powder is obtained.

Moreover, the mingling of the foundation cream with the sebum of the skin is improved as a result of the mixing effected by the gentle pressure and tangential mechanical action of the buffer which creates a differential action between the cream and the superficial surface of the skin. This homogeneous mixture of cream and sebum contributes to the stability of the greasy layer obtained and permits a much better and more even application of the grains of coloring material and powder. In applying make-up remover, the present process achieves a thorough intermixing of the remover with make-up remaining on the face without forcing the make-up into the pores or other irregularities of the skin surface. The better the mixture of make-up remover and make-up the more easily both can be wiped off.

Apparatus suitable for carrying out the process of the present invention is shown by way of example in the drawings, it being understood that the process is in no way limited to use of the particular apparatus herein shown. Referring to FIGS. 1 and 2, the apparatus **1** is shown as comprising a casing **2** having an upper head portion **3** which carries the operating mechanism of the apparatus, and a lower shell portion **4** which is removably secured to the head portion by screws **5** which are screwed into metal lugs **6** countersunk in the lower casing **4**. The casing is of ovoid shape and of a size to be held conveniently in the hand. It is conveniently molded of nylon or other plastic material having high impact strength and good electrical insulating characteristics.

A shaft **7** extends laterally out through the side of the head portion **3** in a direction perpendicular to the longitudinal axis of the casing and is rotatably supported by a metal or plastic bearing sleeve **8** which is preferably made of self-lubricating material. An arm **9** fixed on the inner end of the shaft **7** carries an arcuate armature **10** formed of magnetic material. The armature **10** cooperates with a U-shaped electromagnet **11** having a laminated core **12** comprising a longer leg **12***a* and a shorter leg **12***b*. The magnet is energized by a winding **14** which is shown as surrounding the leg **12***b*. Opposed compression springs **16** and **17** acting between the arm **9** and the casing tend to position the armature **10** adjacent the longer leg **12***a* of the electromagnet. The ends of the pole pieces **12***a* and **12***b* have an arcuate surface concentric with the shaft **7**. The armature **10** likewise has an arcuate surface concentric with the shaft and oscillates close to the arcuate ends of the poles **12***a* and **12***b*. During its oscillations, the armature **10** has substantially a constant air gap with respect to the end of the pole **12***a* while it has a variable air gap with respect to the end of the pole **12***b*. When the coil **14** is energized by an alternating current, the armature **10** is caused to oscillate by the variation and change of direction of the magnetic field, such oscillations being maintained by the opposing springs **16** and **17**. The armature **10** and electromagnet **11** thus comprise an electric motor for driving the shaft **7** with an oscillating movement. Current is supplied to the motor from terminal pins **19** under control of a switch **20** comprising a stationary contact **21** and a movable contact **22** carried by a spring arm **23**. An elongated push button **24** set into an opening in the side of the casing **2** is engageable with the spring arm **23** to press the movable contact **22** into engagement with the stationary contact **21**. The push button **24** is located in a convenient position to be pressed by the fingers when the apparatus is held in the hand so that the motor can be turned on and off as desired.

An arm **25** is removably fixed on the outer end of the casing in a direction approximately parallel to the longitudinal axis of the casing. An applicator or buffer **30** is removably mounted on the outer end of the arm **25** with its skin contacting surface substantially perpendicular to the axis of shaft **7** so that when the apparatus is held in the position shown in FIG. 1 with the buffer against the skin and the electromagnet **11** is energized with alternating current, the buffer **30** is moved back and forth in a direction parallel to the skin.

The buffer **30** should have a surface providing a great number of contact points between the buffer and the cosmetic. These contact points should be separate in order to act independently on individual cosmetic particles. The surface of facial skin involves large zones which are approximately level and smaller zones which are more curved. It is therefore preferable to use an applicator which has a fairly level surface. The surface should be no larger than one make-up zone of the face. Finally, the surface of the buffer should be of material which will increase the probability of encounter between the contact points of the applicator and the grains or particles of the cosmetic. Good examples of material suitable for the surface of the buffer include soft cellular material like polyurethane or foam rubber and soft fibrous materials such as pile fabrics and brushes. The use of velvet or mohair has been found extremely satisfactory. The apparatus is provided with a plurality of interchangeable buffers which are selected according to the cosmetic material being applied.

Typical buffers are shown by way of example in FIGS. 3 to 11. In FIG. 3 there is shown a circular buffer **31** having a diameter of approximately 1⅛ inches and having a skin engaging surface formed of soft foam material with a thickness of about one quarter inch. This buffer is suitable for applying cleansing lotions and creams.

In FIG. 4 there is shown a circular buffer **32** comprising pile material mounted on a plastic base. The pile has a length of approximately one eighth of an inch and is soft and dense. The buffer **32** is suitable for applying astringent.

In FIG. 5 there is shown a circular buffer **33** which is similar to that of FIG. 3 except that the foam material is thinner, having a thickness of about three-sixteenths of an inch. This buffer is suitable for applying foundation cream.

In FIG. 6 there is shown a circular buffer **34** which is similar to that of FIG. 3 except that the foam material is slightly thicker, having a thickness of approximately five sixteenths of an inch. Buffer **34** is suitable for applying makeup base.

In FIGS. 7 and 8 there is shown a buffer **35** having an active surface formed of short dense pile material similar to the buffer of FIG. 4, except that the buffer is of triangular shape. This triangular buffer is suitable for applying cream rouge.

In FIG. 9 there is shown another triangular buffer **36** which is formed with pile material and is similar to that shown in FIGS. 7 and 8 except that the pile is longer, having for example a length of approximately a quarter of an inch. Buffer **36** is suitable for applying cake rouge.

In FIG. 10 there is shown a circular buffer **37** comprising a soft brush preferably formed of dense pile material mounted on a suitable base. The pile has a depth of approximately three-eighths of an inch. Buffer **37** is suitable for applying cake or loose powder.

In FIG. 11 there is shown a buffer **38** which is similar to that shown in FIG. 10 except that the brush is much softer, the pile being formed of very fine soft fibers or filaments. This buffer is used to give the face a final finish.

Each of the buffers comprises a base **40** preferably formed of plastic material. The pile fabric, sponge or other material forming the face-engaging portion of the buffer is suitably cemented onto the base. An integral tapered stem **41** projecting from the rear of the base fits snugly into a tapered hole **42** in the outer end of the arm **25** of the apparatus. This mounting permits the various applicators to be changed easily and quickly.

A typical procedure in applying make-up by the process of the present invention comprises the following steps: foundation cream is applied with buffer **33** by spreading a little cream on the buffer with a spatula and then holding the buffer against the face while pressing the switch button **23** to energize the motor. The buffer is caused to glide lightly over the skin in slow straight strokes either across the face or up and down until the foundation cream has been uniformly spread over the desired portion of the face. Make-up base is then applied with buffer **34** in a similar manner. Cream rouge is applied with buffer **35**. A small amount of cream rouge is preferably placed on the back of the hand and then picked up with the buffer with the motor operating. The buffer is then caused to glide lightly over the cheeks to apply the rouge. Powder is applied with buffer **37**. The buffer is placed directly in the powder box with the motor turned off and then patted against the face to deposit the powder on the skin. The apparatus is then turned on and caused to glide over the face to distribute the powder uniformly. Cake rouge is applied with buffer **36**. A small amount of the rouge is picked up with the buffer while running and the buffer is then caused to glide lightly over the cheeks. Buffer **38** is used to give a final finish.

Buffer **31** is designed especially for cleansing the face with a lotion, milk or cream. A few drops of cleansing lotion is placed in the palm of the hands and the buffer is allowed to absorb a little of it. The buffer is then caused to glide lightly over the face to mix the cleansing lotion thoroughly with make-up remaining on the skin. The mixture of make-up and cleansing lotion is then removed by patting the skin with absorbent cotton or facial tissues. If an astringent is used, it is applied with buffer **32** by placing a few drops of astringent in the palm of the hand and dipping the buffer into it. The buffer is then caused to glide lightly over the face while the motor is operating.

The application of powder or other cosmetic material to the skin is shown schematically in FIG. 12 which represents an enlarged cross section. The skin is shown as comprising the epidermis E with wrinkles W1 and W2 and a pore R. A uniform thin layer C of cosmetic material is shown on the skin as it would when applied by the process of the present invention.

During the operation of applying cosmetic material to the skin in accordance with the process of the present invention, each particle of cosmetic for example a particle designated C1 (FIG. 12) is subject to three systems of forces:

(1) The forces resulting from the action of the buffer which is characterized by a variable local acceleration, the maximum value of which is substantially constant.

(2) The forces of molecular attraction of the cosmetic product to adjacent particles of the product including the forces of internal cohesion of the cosmetic.

(3) The forces of capillary attraction to which the cosmetic is subjected in the neighborhood of the skin and which tend to hold it on the skin.

Only the first system of forces tends to move the particle of cosmetic material; the other two systems of forces tend to hold it in place. Therefore, the buffer will exert locally a thinning action on the layer of cosmetic until the thickness of the layer is small enough so that the forces of capillary attraction will be greater than the driving forces exerted by the active surface of the buffer. The forces of capillary attraction depend (for all practical purposes) on a single variable, namely the thickness of the cosmetic layer. Since the values of the forces of the other two systems remain substantially constant, the cosmetic particles will be moved by the buffer so as to exert a thinning action on the layer of cosmetic until the forces of capillarity combined with the forces of molecular attraction of the product equal the forces tending to move the particles of adhesive. Hence if the cosmetic layer is thicker in one portion, particles of cosmetic are removed from the thicker portion until its thickness is reduced to the point where the forces of capillary attraction hold the particles against further removal. The result is that the cosmetic material is spread over the surface of the skin in a thin uniform layer which follows the profile of the skin without clogging the pores.

Moreover, the mingling of the cream or foundation of the make-up with the sebum of the skin is improved as a result of the mixing effected by the gentle pressure and variable acceleration of the tangential mechanical action which creates a differential movement between the cosmetic product and the superficial surface of the skin. The resulting homogeneous mixture of cream and sebum contributes to the stability of the layer obtained and permits a much better application of the rest of the make-up. In applying make-up remover, the process of the present invention achieves thorough intermixing of the remover with make-up remaining on the face without forcing the make-up into the pores or other irregularities of the skin surface.

One of the essential modes of action of the process in accordance with the invention is to subject the cosmetic material to accelerations in the neighborhood of the skin by means of oscillating buffers. The effectiveness of this action depends essentially on the maximum acceleration g_m of the buffer. The acceleration of the oscillating buffer depends in turn on the frequency and amplitude of movement per cycle of oscillation. The amplitude considered is that of the base or support of the buffer. The frequency of the alternative movements of the buffer lies between two limits. The lower limit is the point below which the acceleration of the applicator at a reasonable amplitude is insufficient to permit the buffer to move grains or particles of cosmetic independently of the material surrounding them. If the frequency is too low and the amplitude is increased to give the required value of acceleration, the maximum velocity of the buffer reaches an undesirable high value at which heating or irritation of the surface of the skin might be produced. The upper limit of frequency is likewise fixed by several considerations. In general, it should not exceed a value at which with reasonable amplitude, the acceleration does not exceed the desirable maximum value. It has been found that the amplitude should not be less than 0.2 mm. and not greater than 15 mm. Best results are obtained with an amplitude between 0.5 and 5 mm.

If g_m is the maximum acceleration during a cycle and

if A is the amplitude and N the frequency of alternative movement these elements can be related by the formula $g_m=2\pi^2N^2A$. This formula is exact in the case of a sinusoidal movement and approximate in the case of a non-sinusoidal movement. It will be seen that the maximum value of the acceleration is proportional to the amplitude and to the square of the frequency. Moreover, the maximum speed of movement is given by the formula

$$V_m=2\pi N\frac{A}{2}=\pi NA$$

We therefore have the relation

$$V_m=\frac{g_m}{2\pi N}$$

It has been found by experimentation that with a frequency of 100 cycles per second the amplitude should be in the range defined by a lower limit of .5 mm. and an upper limit of 5 mm. With these values, it will be seen that the two extreme values of maximum acceleration are:

g_{m1}=98.7 m./sec./sec.
g_{m2}=987 m./sec./sec.

Two curves representing these values of acceleration are shown in the graph of FIG. 13 in which the horizontal axis represents frequency in cycles per second and the vertical axis represents maximum velocity in meters per second. Different amplitudes are indicated by radial lines designated A=0.2 etc., the amplitude being measured in millimeters. It has further been found that a maximum velocity exceeding 1.57 meters per second is undesirable. A range of values usable in accordance with the present invention is indicated in FIG. 13 by the shaded area bounded by the acceleration curve g_{m1}, a line representing maximum amplitude A=15, a horizontal line representing maximum velocity of 1.57 meters per second, a curve representing the acceleration g_{m2} and an inclined line representing a minimum amplitude of A=.02. The latter value is determined by the tolerances that are to be expected in the mechanical parts of the apparatus and the dimensions of the grains or particles of the cosmetic products. It will thus be seen that the limits of frequency are between approximately 20 and 500 cycles per second and that the limits of amplitude are from approximately 0.2 mm. to 15 mm. For commercial apparatus suitable for use in the home, it has been found preferable to use a frequency of the order of 60 to 120 cycles and an amplitude between 0.5 mm. and 5 mm. As different values of acceleration are desirable for different cosmetic products, it is desirable to be able to vary the acceleration used. This can be accomplished either by varying the frequency or the amplitude. While the frequency can be controlled in various ways, for example by varying the frequency of the exciting current, it has been found more convenient to obtain the desired value of acceleration by controlling the amplitude of movement.

With the apparatus shown by way of example in FIGS. 1 and 2, the amplitude can be varied by varying the moment of inertia of the oscillatory system comprising the shaft **7**, arm **9**, armature **10**, arm **25** and buffer **30**. Thus the weights of the several buffers used for different products are selected so as to provide the amplitude and hence the acceleration desired. As will be seen from FIGS. 3 to 11 the buffers are of different sizes and different weights, the weight being controlled by the weight of the active material and also by the thickness of the base.

Another factor to be considered when using a buffer having relatively long flexible bristles as illustrated for example in FIG. 10 is the relation between the natural frequency of vibration of the bristles and the frequency of movement of the buffer. If the natural frequency of the bristles is the same as the frequency of the buffer, the amplitude of movement of the ends of the bristles will be considerably greater than the amplitude of movement of the base portion of the buffer. If the natural frequency of the bristles is much higher than that of the buffer i.e. if the bristles are relatively stiff, the movement of the end portions of the bristles will be substantially the same as that of the base portion of the buffer. If, on the contrary, the natural frequency of the bristles is much smaller i.e. if the bristles are very soft, the amplitude of movement of the end portions of the bristles will be less than that of the base portion of the buffer.

For intermediate values of the natural frequency of vibration of the bristles, the bristle ends are set in motion progressively. The amplitude passes through the value of the driving amplitude of the support for values which are dependent upon damping but which are in practice of the order of half the frequency of the support. To attain the greatest possible amplitude of movement of the bristle ends in a dry state, the weight and length of the bristles are calculated so that their natural resonant frequency is close to the driving frequency of the support. Moreover, the maximum weight of cosmetic material that a bristle can retain is limited to 20 or 30 times the weight of the bristles. When the bristles are loaded with cosmetic material, the natural frequency of the bristles is lower and the amplitude is hence smaller than the driving frequency. As the bristles progressively become unloaded through application of the cosmetic material to the skin, the amplitude of the bristle ends increases until it reaches a maximum value when the bristles are fully unloaded.

By suitably controlling the accelerating forces applied to the particles of adhesive the thickness of the layer of cosmetic material on the skin can be controlled since, as pointed out above, the accelerating forces applied by the buffer tend to remove particles of material until a balance is reached between the forces tending to move the particles of material and the forces tending to hold them in place. It will thus be seen that the novel process in accordance with the invention makes it possible to obtain a thin uniform layer of cosmetic material which improves both the appearance and the lasting qualities of the make-up. An important advantage of the process in accordance with the invention lies in the possibility of obtaining a make-up which is as natural in appearance as the skin itself since with its uniform thickness it possesses a perfectly uniform color and the same texture as the skin. Moreover, the make-up is obtained with a smaller amount of cosmetics, this is advantageous not only from the point of view of economy but also by reason of improved skin hygiene. The lasting qualities of the make-up are also increased since the uniform thin layer of make-up material perfectly follows the skin in its movement as though it were a second living skin superimposed on the original. When make-up is applied by hand, it has been found that continually changing conditions of heat and dampness impairs the appearance of the skin. The accumulation of cosmetics in wrinkles and other depressions of the skin are connected by thin layers in which the stresses are temporarily balanced. However, when the stresses are changed because of changes in temperature or humidity, the balance is disturbed and cracking of the cosmetic layer occurs. When the layer of make-up is of uniform thickness as it is when applied with the process of the present invention, changes in stress do not result in rupture of the layer since the stresses are uniform and balanced. For these reasons the make-up is also more resistant to the action of rain or perspiration. Moreover, when used consistently for a period of time, the process in accordance with the invention improves the health and condition of the skin by avoiding the clogging of pores and also avoiding the rubbing, irritation and stretching and distortion of the skin that is characteristic of present make-up methods. The process in accordance with the invention further

makes it possible to remove make-up quickly and thoroughly instead of rubbing it deeper into the pores and other depressions. The process in accordance with the present invention thus represents a highly important advance in the art.

It will be understood that changes or modifications may be made in the process without departing from the scope and spirit of the invention and also that the process is in no way limited to the particular apparatus which has been shown by way of example as suitable for carrying out the process.

What I claim and desire to secure by Letters Patent is:

1. A process of applying cosmetic material to the skin, which comprises bringing a portion of said material into contact with the skin and bringing an applicator into contact with said material without substantial pressure in a direction toward the skin surface and moving said applicator rapidly back and forth with an alternating motion along a path substantially parallel to the surface of the skin and with a frequency of the order of 120 cycles per second and an amplitude of 0.5 to 5 mm., said applicator having a soft surface of substantial area engaging a multiplicity of particles of said material and imparting to said particles by said motion accelerating forces to effect a differential movement between said material particles and the surface of the skin and distribute said material in a thin layer of substantially uniform thickness over a selected area of said skin surface.

2. A process of applying cosmetic material to the skin, which comprises bringing a portion of said material into contact with the skin and bringing an applicator into contact with said material without substantial pressure in a direction toward the skin surface and moving said applicator rapidly back and forth with an alternating motion along a path parallel to the surface of the skin and with a frequency of the order of 30 to 240 cycles per second and an amplitude of the order of 0.5 to 5 mm., said applicator having a soft surface of substantial area engaging a multiplicity of particles of said material and imparting to said particles by said motion accelerating forces to effect a differential movement between said material particles and the surface of the skin and distribute said material in a thin layer of substantially uniform thickness over a selected area of said skin surface.

3. A process according to claim 2, in which said applicator moves in an arcuate path.

4. A process of applying cosmetic material to the skin, which comprises bringing a portion of said material into contact with the skin and bringing an applicator into contact with said material without substantial pressure in a direction toward the skin surface and moving said applicator rapidly back and forth with an alternating motion along a path substantially parallel to the surface of the skin and with a frequency of at least 30 cycles per second and an amplitude of the order of 0.5 to 5 mm., said applicator comprising a base and a multiplicity of fine flexible closely arranged fibres projecting from said base and engaging a multiplicity of particles of said material to impart to said particle by said motion accelerating forces to effect a movement of said particles on the skin surface, which leaves said skin surface substantially undisturbed, and distribute said material in a thin layer of substantially uniform thickness over a selected area of said skin surface.

5. A process according to claim 4 in which the frequency at which said applicator is moved is approximately equal to the natural resonant frequency of said fibres.

6. A process of applying cosmetic material to the skin, which comprises bringing a portion of said material into contact with the skin and bringing an applicator into contact with said material without substantial pressure in a direction toward the skin surface and moving said applicator rapidly back and forth with an alternating motion along a path substantially parallel to the surface of the skin and with a selected amplitude in the range of 0.2 to 15 millimeters and a selected frequency related to said selected amplitude to provide a maximum acceleration in the range of 98.7 and 987 meters per second per second and a maximum velocity not greater than 1.57 meters per second, said applicator having a soft surface of substantial area engaging a multiplicity of particles of said material and imparting to said particles by said motion accelerating forces to effect a differential movement between said material particles and the surface of the skin and distribute said material in a thin layer of substantially uniform thickness over a selected area of said skin surface.

7. A process of applying cosmetic material to the skin, which comprises bringing a portion of said material into contact with the skin and bringing an applicator into contact with said material without substantial pressure in a direction toward the skin surface and moving said applicator rapidly back and forth with an alternating motion along a path substantially parallel to the surface of the skin and with a selected amplitude in the range of 0.2 to 15 millimeters and a selected frequency related to said selected amplitude to provide a maximum acceleration in the range of 98.7 and 987 meters per second per second and a maximum velocity not greater than 1.57 meters per second, said applicator having a soft surface of substantial area engaging a multiplicity of particles of said material and imparting to said particles by said motion accelerating forces to effect a differential movement between said material particles and the surface of the skin and distribute said material in a thin layer of substantially uniform thickness over a selected area of said skin surface, and varying the amplitude and acceleration of said applicator to establish a selected depth of said layer.

References Cited in the file of this patent

UNITED STATES PATENTS

2,063,801	Gano	Dec. 8, 1936
2,141,304	Kirwan et al.	Dec. 27, 1938
2,526,190	Alvarez	Oct. 17, 1950