Patented Nov. 14, 1939

2,180,280

UNITED STATES PATENT OFFICE

2,180,280

PERSPIRATION ACCELERATOR

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No Drawing. Application October 20, 1936, Serial No. 106,537

5 Claims. (Cl. 167—62)

This invention relates to a method and means for producing an accelerated sensible perspiration of the human body.

It is recognized that the sweat glands play an important part in the chemistry of the human body, functioning as outlets for eliminating poisonous and waste materials, and it is frequently desirable, and sometimes necessary, to produce a sustained sensible perspiration over considerable periods.

In the past, various methods have been employed for inducing sensible perspiration. Various drugs are known, which, taken internally, tend to produce sensible perspiration, but such drugs are generally harmful if taken in too great quantities or over too long a period, and in some cases are dangerous to administer.

The application of heat, to cause sensible perspiration, as in electric or steam cabinets, or Turkish baths, is commonly used, together with administration of hot liquids, but such methods are subject to the disadvantage that they require special apparatus, available only at certain points, and to further and more serious disadvantage that they require that the body be subjected over considerable periods, to enervating heat (and usually to excessive humidity), which is known to produce harmful results, and even death.

As an example, it is well known that in Turkish baths, where a hot room is provided to cause perspiration, bathers must be carefully watched and removed from the room before harmful effects can occur, and it is well known that certain types of would-be bathers cannot be permitted in the hot room at all. Deaths of bathers in that room are not infrequent when these precautions are not observed.

It is an object of this invention to provide a new method and means for accelerating or increasing sensible perspiration of the human body.

It is a further object of this invention to provide a method and means for accelerating sensible perspiration, without the employment of drugs or special apparatus, and without subjecting the body to enervating temperature and humidity.

It is a further object of our invention to provide a substance which may be applied externally on the skin and which will serve to produce an accelerated or greater sensible perspiration than could otherwise be produced under the same environmental temperature and humidity conditions, and which will also cause a continued sensible perspiration under environmental temperature and humidity conditions such that sensible perspiration would ordinarily not occur.

It is a further object of our invention to provide such a substance in a form which does not produce objectionable reaction when applied to the skin, does not require massage to produce its effect, may be easily applied and removed, and is free from drugs which might have a harmful effect on the body or the parts thereof.

Still other objects and advantages of our invention will be apparent from the specification.

The features of novelty which we believe to be characteristic of our invention are set forth with particularity in the appended claims. Our invention itself, however, both as to its fundamental principles and as to its preferred embodiments, will best be understood by reference to the specification.

Perspiration of the human body may be classed as of two kinds, sensible and insensible. In the latter, the visible amount expressed by the sweat glands is small compared with that in the former case, and the skin may appear and feel dry. In the former case, relatively large amounts of perspiration are expressed in a short time, and it may gather into drops large enough to trickle down the body.

The human body is known to be, in normal, healthy persons, self-regulating in temperature, to a considerable degree, and an important part of this regulating action is performed by the sweat glands. When the ambient temperature and/or humidity rises to such an extent that one feels uncomfortably warm, the sweat glands are stimulated and sensible perspiration begins.

This expressed perspiration ordinarily spreads over the skin, and unless the surrounding air is saturated with moisture, more or less evaporation takes place, this evaporation absorbing heat from the skin, and tending to lower the skin temperature (and also body temperature to a lesser degree) and tending to decrease sensible perspiration until a condition of temperature equilibrium is reached.

If the air is saturated with moisture, little or no evaporation can take place, and little or no cooling of the skin occurs, and perspiration may continue for long periods.

In normal, healthy persons, evaporation of perspiration may be regarded as a self-regulating control of the sweet glands, a high rate of evaporation cooling the skin; the nerves controlling the sweat glands then checking or reducing the activity of those glands.

We have discovered that by the use of our in-

vention, a sensible perspiration may be started under conditions such that it would otherwise not occur, may be caused to continue at a greater rate than it otherwise would under the same conditions, and may be caused to continue under environmental temperature and humidity conditions such that it would stop almost immediately if our invention were not employed.

We have discovered that by coating the skin with a composition according to our invention, and causing perspiration to start, as by subjecting the body to a mild perspiration-starting heat for a short time (which may be less than that required to produce sensible perspiration without the employment of our invention), sensible perspiration will occur, and to a much greater degree than it would if the coating were not applied, and will continue as long as the coating is left on, to a much greater degree than it would under the same environmental temperature and humidity conditions without the employment of the coating, and will continue even under environmental temperature and humidity conditions insufficient (without the employment of our coating) to maintain a sustained sensible perspiration.

As an example, under temperature and humidity conditions such that normally no sensible perspiration occurs, one may apply our coating to the body and expose himself to sunlight or other source of heat or warmth for a few minutes, starting a perspiration. It will be found that the perspiration which occurs under such conditions is considerably greater than that which would occur under the same conditions if our coating were not employed, as can readily be demonstrated.

This perspiration is termed an accelerated perspiration. As soon as it starts, the subjection of the body to heat may be discontinued if desired. If the environmental temperature and humidity conditions are such that perspiration would occur without the employment of our coating, in the case of normal individuals, such perspiration will continue, when our invention is employed, at a greatly increased rate. Ordinarily it will also continue as long as the ambient temperature is not too much below normal body temperature, even though the environmental temperature and humidity conditions may be such that sensible perspiration would not occur without the employment of our coating.

When it is desired to stop sensible perspiration, the coating may be rubbed or washed off, whereupon normal evaporation and heat loss control of the sweat glands is re-established.

Thus, it is possible to produce an accelerated sensible perspiration over long periods in persons who cannot or do not desire to use drugs for the purpose, and who are unable or unwilling to undergo the enervating effect of long exposure to elevated temperature.

We have discovered that perspiration may be accelerated as described, by coating the body surface with a layer or film of non-evaporating, non-absorbent composition, insoluble in water, having a relatively low viscosity, and a surface tension reduced to a value such that there is produced and maintained upon the skin a self-closing film, permitting free passage of perspiration globules therethrough, and closing upon itself immediately after the passage of such globules therethrough.

One substance which operates very satisfactorily is a saturated hydrocarbon suitably treated to reduce its surface tension. Very satisfactory results have been obtained when the composition to be used for the coating has a melting point no greater than normal body temperature, or at least not sufficiently greater to prevent it from assuming a liquid form when applied to the body, a viscosity (Saybolt) at 210° F., between 38 seconds and 50 seconds, and a surface tension of 30 to 32 dynes per cm. at 103° F.

While coatings having the characteristics above given have been found to produce satisfactory results, we do not desire to limit ourselves thereto, as variations may occur in compositions which will produce the desired effect.

In producing our preferred composition we may utilize mineral oil within the limits of about 45% to 70%; petrolatum 13% to 25%; and waxes 20% to 35%; the particular proportions being chosen to meet the particular conditions.

The mineral oil, if employed, preferably should have the following characteristics:

Viscosity (Saybolt) at 100° F.	70 to 350 seconds.
Specific gravity	.830 to .950.
Color (Saybolt)	X30 or better.
Odor and taste	Pass U. S. P. for liq. petrolatum.
Carbonizable impurities	Pass U. S. P. for liq. petrolatum.

The petrolatum employed preferably should conform to U. S. P. "Petrolatum Album". The waxes employed may be refined paraffine wax, U. S. P. "Paraffinum"; beeswax, U. S. P. "Cera Alba"; spermacetti U. S. P. "Cetaceum", and Ozokerite, bleached grade.

Examples of formulas which may be employed and which will operate to produce the results desired are the following:

	1	2	3	4	5	6
Mineral oil	56	50	50	45	67	55
Petrolatum	19	23	20	20	13	21
Refined paraffin wax	25	18	30	25	12	20
Spermacetti	----	9	----	10	----	----
Ozokerite	----	----	----	----	3	4
Beeswax	----	----	----	----	5	----

Of those formulas given in the foregoing paragraph, that in column 6 is for most purposes generally preferred.

While we prefer to use mineral oil, animal oil, such as neat's foot oil, or vegetable oil, such as linseed oil, olive oil, or oil of sesame, may be employed with the addition of a suitable agent or agents to bring the surface tension and viscosity to a value such as to produce a self-closing film permitting the free passage of perspiration globules therethrough. Because animal and vegetable oils tend to turn rancid, suitable preservatives may be added in case the composition is to be kept on hand, but if mineral oil is used, such will not be necessary.

The composition may be made by melting the desired amount of waxes to be employed and mixing the melted waxes with the oil, the latter being warmed, and stirring the mixture until homogeneous. Depending on the composition, the mixture may be a liquid at about normal body temperature, and a liquid semi-solid or cream at temperatures a little lower.

If the composition is a liquid when desired to be applied, it may be simply rubbed lightly on the skin in the same manner as any other liquid, and if in the form of a cream, may be spread lightly on as in applying cold cream; no friction or mas-

sage being required in either case to produce the desired effect. In either event, it forms a liquid film upon the skin which is non-absorbent, non-volatile, and insoluble in water. It contains no irritating or harmful drugs, is not objectionable to apply and may be simply removed by rubbing or washing.

Without desiring to bind ourselves to any theoretical explanation of the action of our composition, we believe that the non-evaporating and non-absorbent quality of the layer or film, and its insolubility in water, cause it to remain on the skin without evaporation, absorption, or washing off by perspiration, for long periods. Its relatively low viscosity and low surface tension, which cause it to remain in the form of a self-closing film over the skin and the orifices of the sweat glands, nevertheless permits the free passage of perspiration globules through the film and causes the closure of the film upon itself immediately after the passage of the globules through it. There may also be a stimulation of the sweat glands, so that they express a greater amount of sensible perspiration than they would under the same environmental temperature and humidity conditions if the coating were not employed.

The expressed perspiration cannot spread upon the skin and cannot offer the large liquid-air surface contact favorable to evaporation, as it would otherwise, and evaporation is thereby materially reduced, and the perspiration gathers in drops and runs off the body.

The film also serves to some extent as a heat insulator for the skin, insulating it against heat losses, so that relatively small reductions in temperature which might otherwise cause termination of sensible perspiration, do not affect the nerves as they ordinarily would to check the flow of sensible perspiration.

While we have described certain preferred embodiments of our invention, it should be understood that modifications and changes may be made without departing from the spirit and scope thereof, as will be clear to those skilled in the art.

We claim:

1. A perspiration accelerator for application externally to the human skin, comprising mineral oil within the limits 45% to 70%; petrolatum 13% to 25%; and waxes 20% to 35%.

2. A perspiration accelerator for application externally to the human skin, comprising an oily substance including mineral oil, 45% to 70%; petrolatum, 13 to 25%, and wax or waxes, 20 to 35%; having a surface tension between 30 and 32 dynes per centimeter at 103° F.

3. A perspiration accelerator for application externally to the human skin, comprising substantially mineral oil, 55%; petrolatum 21%; paraffin wax 20%; and ozokerite 4%.

4. A perspiration accelerator for application to the human skin, comprising mineral oil, 45 to 70%; petrolatum 13 to 25%, and 20% to 35% of wax from the group; paraffin, spermacetti, ozokerite, and beeswax.

5. A perspiration accelerator for application externally to the human skin, comprising a mixture of mineral oil between the limits of 45 and 70%, petrolatum between the limits of 13 and 25%, and wax or waxes between the limits of 20 and 35%, and having a viscosity (Saybolt) at 210° F. between 38 and 50 seconds.

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