

[54] **DEVICE FOR CUTANEOUS THERAPEUTIC TREATMENT**

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[22] Filed: **June 5, 1974**

[21] Appl. No.: **476,531**

[30] **Foreign Application Priority Data**

June 6, 1973 France 73.20594

[52] U.S. Cl. **128/218 R; 128/253**

[51] Int. Cl.² **A61M 5/00; A61B 17/20**

[58] Field of Search **128/218 R, 215, 253, 221, 128/218 N, 216, 260, 261, 172.1, 404, 329, 333, 355**

[56] **References Cited**

UNITED STATES PATENTS

1,212,927 1/1917 Flood 128/253

| | | | |
|-----------|---------|-----------------------|---------|
| 1,619,424 | 3/1927 | Latagliata | 128/329 |
| 1,688,332 | 10/1928 | Heck, Jr. et al. | 128/215 |
| 2,588,623 | 3/1952 | Eliscu et al. | 128/253 |
| 2,867,214 | 1/1959 | Wilson | 128/355 |
| 3,595,231 | 7/1971 | Pistor | 128/253 |

FOREIGN PATENTS OR APPLICATIONS

325,001 4/1903 France 128/253

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[57] **ABSTRACT**

A device for cutaneous therapeutic treatment comprising cutaneous micro-puncturing structure in combination with structure for delivering a treatment product onto the outer surface of said micro-puncturing structure and/or onto the skin area treated thereby.

7 Claims, 3 Drawing Figures

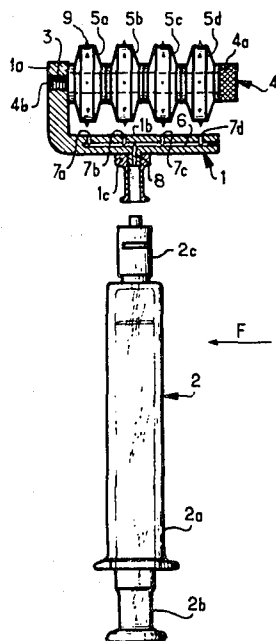


Fig. 2.

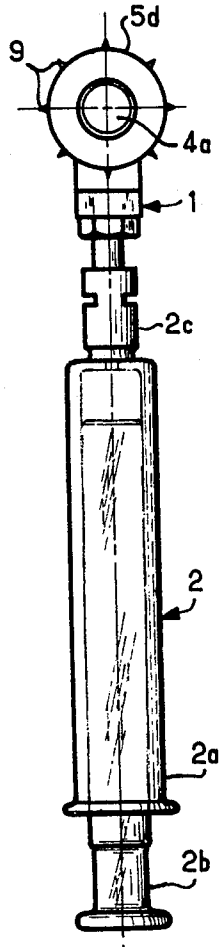


Fig. 4.

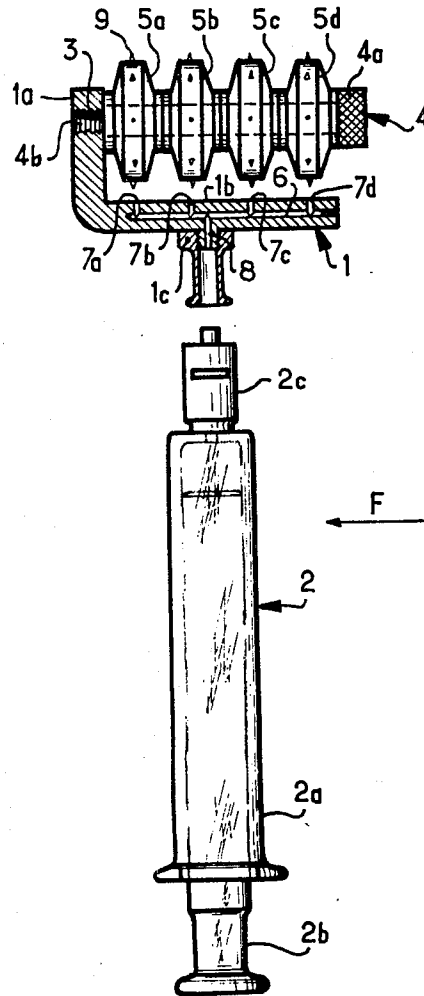
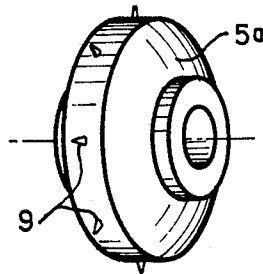


Fig. 3.



DEVICE FOR CUTANEOUS THERAPEUTIC TREATMENT

The present invention relates essentially to a device for cutaneous therapeutic or curative treatment enabling to perform an outstandingly improved action of medicines usually applied onto the skin in particular for invigorating or strengthening and revitalizing it or for suppressing the infections affecting same.

This device is characterized in that it comprises cutaneous micro-puncturing means associated with means for delivering the treatment product.

This device enables to form micro-wounds on the skin and to apply at the same time the treatment product thereon. These cutaneous micro-puncturing means consist preferably of a plurality of points, needles or the like mounted on the device so that they may be more or less driven into the skin according to the nature of the treatment.

The treatment product used may for instance consist: if the skin is irritated: of a cortisone-based liquid or ointment or salve;

if the skin is infected: of an antibiotics-based liquid or ointment or salve corresponding to the possible indications of the antibiogram, preferably in associated with a vaccine in order to locally mobilize a large number of anti-bodies;

if the skin is painful: of an anaesthetic ointment or anticontracture salve;

if the skin is thick or squamous or scaly: of a salicylated ointment or salve;

if the skin is dry and sclerosed or hardened: of an ointment rich in sea-water, in vitamins and in vaso-dilator agents, etc.

On the contrary, when the skin exhibits several associated symptoms, several of the aforesaid ointments or liquids could be associated together within the treatment product.

In the preferred form of embodiment of the invention, said device comprises:

a plurality of micro-puncturing points, needles or the like distributed over the outer surface of one or several elements rotatably mounted on a shaft;

a syringe for injecting the treatment product:

a support or holder comprising at least a first part wherein is accommodated or housed said shaft, a second part preferably arranged in parallel relation to that shaft and including a plurality of discharge holes or ports for delivering the treatment product and a third part forming a connecting fitting or fastening or securing said syringe, said discharge holes being in communication with said fitting through suitable channels or like ducts or passageways.

Various kinds of technological or engineering embodiments are possible; the points or sharp pins, needles or the like would advantageously be mounted according to the present invention at the periphery or about a plurality of independent rollers or like small wheels: according to another form of embodiment and according to the present invention said points or sharp pins, needles or the like would be mounted onto the lateral surface of side of an elongated cylinder.

Preferably the element or elements carrying said points or sharp pins, needles or the like are loosely mounted onto the shaft which carries same thereby to have all of the points, sharp pins or needles located on said element or elements acting or operating by push-

ing and pressing the device onto the skin while using the body or shank portion of the syringe as a handle or grip.

According to the pressure with which the device is pressed onto the skin while pushing it alongside the latter for achieving the micro-puncturing of a given area, said points, sharp pins or needles may be driven in more or less according to the object sought or goal aimed at; these points, sharp pins or needles will be given in particular a length of about 1 millimeter which would then represent the greatest depth of the mechanical preparatory treatment afterwards enabling a more effective action of the treatment product.

According to an alternative embodiment of the process or method for using said device, it is also possible to apply one portion of the treatment product onto the skin before carrying out the micro-puncturing step.

With the device according to the present invention, the practitioner will be able to achieve a positive result more quickly and more easily with the treatment product as the penetration and the diffusion of this product will take place much better than in the case of a mere application without any micro-puncturing operation since the transcutaneous passage of a therapeutic ointment or liquid is often problematical or questionable.

The treatment by means of the device of the present invention may in particular be carried out:

either independently of any other treatment;

or as a complement of a mesotherapy treatment;

or as a treatment preliminary to a conventional dermatology treatment.

It should be noted that the device according to the present invention enables to obtain a much better therapeutic action for instance in the case of humpy or nodulated skins swollen by cellulitis or exhibiting striations, scars or cutaneous devitalized ulcerations, let alone all the skin diseases where the epidermis usually raises a barrier against the usual local therapeutics.

The invention will be better understood and further objects, characterizing features, details and advantages thereof will become apparent as the following explanatory description proceeds with reference to the accompanying diagrammatic drawings given by way of non-limiting example only illustrating a presently preferred embodiment of the invention and wherein:

FIG. 1 shows an elevational front view of said device with parts broken away;

FIG. 2 shows a side view looking in the direction of the arrow F in FIG. 1, of this device; and

FIG. 3 shows a perspective view of a roller or small wheel of the device shown in FIGS. 1 and 2.

The device shown in FIGS. 1 and 2 comprises:

a bent or cranked holder or support 1 including a first portion 1a formed with a tapped bore 3 and a second portion 1b onto which is secured for instance through a screw threaded connection a pipe fitting 1c adapted to receive or accommodate an injection syringe;

the injection syringe 2 comprising a syringe body or barrel 2a, a syringe piston or plunger 2b and a tip portion or end member 2c of a kind adapted to co-operate with the pipe fitting 1c of the holder 1;

a shaft 4 terminating in a head 4a of a diameter larger than that of the shank of the shaft and the outer surface of which is knurled or milled, that end 4b of said shaft which is opposite from the head 4a being screw-threaded and of smaller diameter than the shank portion of said shaft (not seen in the Figures), this screw-threaded end 4b being screwed into the tapped bore 3

of the holder 1; and

a plurality of independent rollers or small wheels (four in the example shown) designated by the reference numerals 5a, 5b, 5c and 5d, respectively, the periphery of each one of these rollers being provided with small points, sharp pins or needles 9 of a length of about 1 millimeter (the diameter of the rollers being of the order of magnitude of 15 mm).

As shown in FIG. 3, each roller comprises in the present instance eight points or sharp pins of this kind which preferably have been inserted and secured onto the bodies of said rollers. These rollers are independent from each other as stated hereinabove and they are freely rotatable about the shaft 4 which is stationary in rotation when said rollers run or ride onto the skin surface in view of the friction motion imparted to the apparatus.

As seen in FIG. 1, the second portion 1b of the holder 1 comprises a network or system 6 of fine channels or ducts terminating at the surface of said second portion located in front of the rollers 5, in a plurality of holes or like ports 7a, 7b, 7c and 7d, respectively, each one of which is located in front of a corresponding roller 5a, 5b, 5c and 5d, respectively, the network or system 6 communicating moreover with the axial duct 8 of the pipe fitting 1c.

In view of the explanations previously given the operation of the device which has just been described is obvious: when the rollers are applied onto the skin by the practitioner which operates this device by holding it through the syringe body portion or barrel 2a, the points or sharp pins or the rollers perform a micro-puncturing of the skin while at the same time the treatment liquid or like fluid contained within the syringe 2 is distributed over the periphery of the rollers and/or the skin area which is being treated owing to an attendant action performed by the practitioner upon the piston or like plunger 2b.

As is apparent from the above description, the several rollers 5a-5d constitute a rotary means supported for rotary movement by the shaft 4 and provided at its outer periphery with the several sharply pointed small projections 9 which are circumferentially and axially distributed with respect to the shaft 4. The shaft 4 extends parallel to the elongated body 1b to which the shaft 4 is fixed with this body 1b being formed with the network 6 of channels or ducts which include a longitudinal bore extending longitudinally along the interior of the body 1b which is parallel to the shaft 4, this longitudinal bore communicating on one side with the plurality of ports 7a-7d which are respectively aligned with the circles along which the several sharply pointed projections 9 are distributed on the peripheries of the rollers 5a-5d, while on the other side the longitudinal bore is in communication with the axial bore of the fitting means 1c which is fixed to the body 1b at the side thereof opposite from the rotary means 5a-5d and which serves as a connecting means for connecting to the body 1b the syringe 2 in such a way that the interior of the syringe 2 communicates with the longitudinal bore of the network 6. Thus the syringe 2 forms a handle by means of which it is possible for the practitioner to manipulate the device, controlling the pressure with which the sharply pointed projections 9 are applied to the skin as well as controlling the manner in which the unit formed by the body 1b and the shaft 4 is drawn rectilinearly over an area of the skin to have micro-puncturing carried out by the sharply pointed projections 9

while the contents of the syringe are delivered from the ports 7a-7d not only to the exterior surface of the rotary means 5a-5d in line with the circumferentially distributed rows of sharply pointed projections 9 but also directly onto the skin.

It should be understood that the present invention is not at all limited to the form embodiment described and shown which has been given by way of example only. In particular it includes all the means constituting technical equivalents of the means described as well as their combinations if same are carried out according to its gist and used within the scope of the appended claims.

What is claimed is:

1. A cutaneous therapeutic treatment device comprising rotary means for rolling along a skin area which is to be treated and fixedly carrying at its exterior surface a plurality of sharply pointed projections for micro-puncturing the skin during rolling of said rotary means therealong, said projections being axially and circumferentially distributed over said exterior surface of said rotary means, a shaft extending through said rotary means and supporting the same for free rotary movement, an elongated body extending parallel to said shaft and means fixing said body to said shaft so that said shaft and body form a unitary structure, said exterior surface of said rotary means being situated between said shaft and elongated body while being spaced together with said projections from said elongated body, the latter being formed with an interior longitudinal bore and with a plurality of ports communicating with said bore and the exterior of said body and directed toward said exterior surface of said rotary means, a syringe, and connecting means connecting said syringe to said elongated body in a manner providing from said syringe a handle for manipulating said unitary structure to roll said rotary means along the skin which is to be treated, said connecting means providing communication means between the interior of said syringe and said longitudinal bore whereby said syringe can be manipulated not only to roll said rotary means along an area of skin to be treated but also to supply to said ports a treating agent to be distributed from said ports not only to said exterior surface of said rotary means and the projections carried thereby but also onto the exterior of the skin which is to be treated.

2. The combination of claim 1 and wherein said projections are circumferentially distributed at said exterior surface of said rotary means in circular rows which are respectively in alignment with said ports.

3. The combination of claim 2 and wherein said projections are uniformly distributed along each circular row.

4. The combination of claim 3 and wherein said rotary means includes a plurality of independent rollers freely turnable on said shaft and each carrying a plurality of said projections which are distributed along a circular row.

5. The combination of claim 1 and wherein each of said micro-puncturing projections extends from said exterior surface of said rotary means through a distance of approximately 1 mm.

6. The combination of claim 1 and wherein said means fixing said shaft to said elongated body includes a member projecting from one end of said elongated body and fixed to one end of said shaft.

7. The combination of claim 6 and wherein said shaft has a threaded connection with said member while said

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rotary means includes a plurality of independent rollers situated in side by side relation on said shaft so that the latter can be removed from said member and from said

rollers while said rollers can be readily assembled with said shaft prior to fixing of the latter to said member.

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