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Buker

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[54] **APPARATUS FOR TREATMENT OF SKIN LESIONS**

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[51] **Int. Cl.** **A61f 7/12**

[58] **Field of Search** ..... 128/256, 38–40, 128/184, 257, 401, 260, 272, 154, 132 R, 172.1, 266

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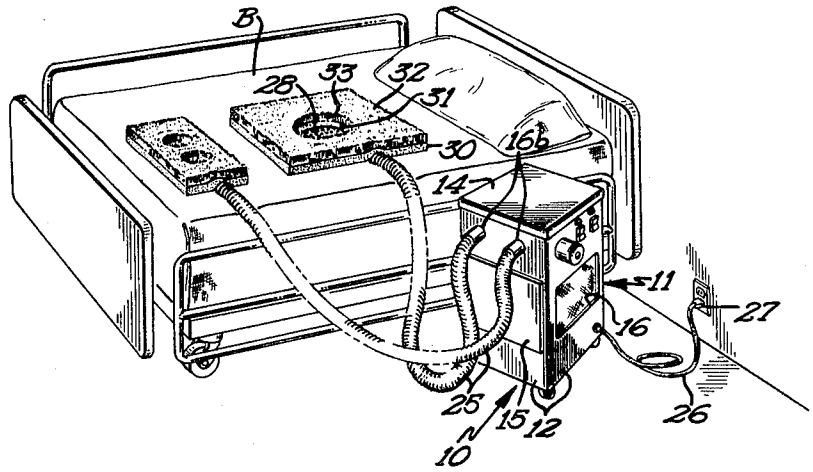
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[57] **ABSTRACT**

An apparatus for treatment of skin lesions comprising a housing having a blower therein for producing and directing a stream of air through conduits or hoses to an air distributor. A yieldable pad having an opening therethrough is positioned upon the air distributor and is engaged by a patient sitting or lying thereon so that the opening in the pad circumscribes that surface area of the patients body to be treated. Air is continuously directed over that surface of the patient to be treated and this air treatment serves to accelerate healing of skin lesions such as bedsores and the like.

4 Claims, 2 Drawing Figures



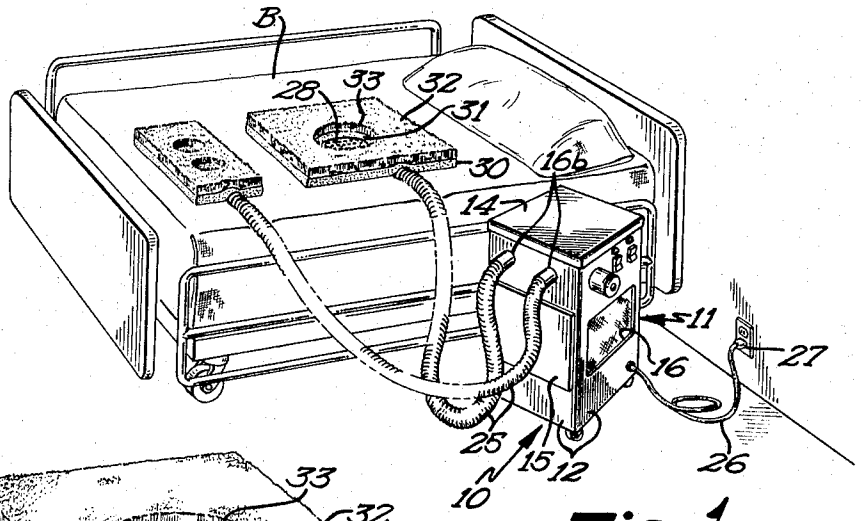
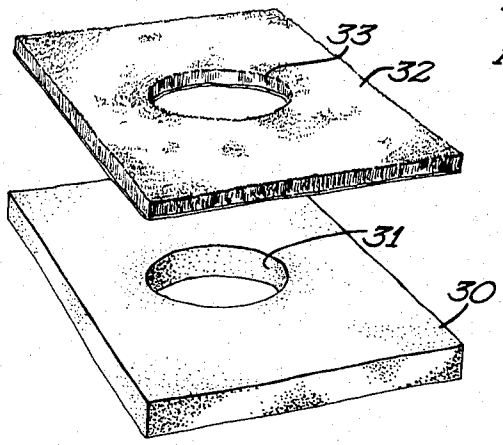

B
28
33
32
31
30
16b
14
11
16
27
25
15
12
26
10

Fig 1


33
32
31
30

10
14
11b
11
20
22
23
24
21
19
11c
18
25
11a
28a
29
28
28b
25
15
13
16
17
16a
12
12
26
27

Fig 2

APPARATUS FOR TREATMENT OF SKIN LESIONS

FIELD OF THE INVENTION

This invention relates to an apparatus for use in treating skin lesions such as bed sores of a non-ambulatory patient.

SUMMARY OF THE INVENTION

One of the problems experienced by non-ambulatory patients such as those confined to beds or wheelchairs, is the occurrence of skin lesions such as bedsores and the like. Although these skin lesions can be treated, treatment is difficult since such patients often have little, if any voluntary control over their body. These bedsores also tend to spread rapidly and when the lesion enlarges it is difficult to effectively treat.

It is therefore a general object of this invention to provide a novel and improved apparatus for treating non-ambulatory patients suffering from skin lesions such as bedsores and the like. The apparatus comprising the invention is operable to continuously direct a stream of air, preferably cooled, over that specific area of the patients body to be treated.

More specifically, the apparatus includes a blower chamber having a fan therein which produces a stream of air that is directed through conduit means for discharge through an air distributor. The air discharged from the air distributor is directed into an opening in a yieldable pad which is engaged by a patient lying or setting thereon. The opening in the pad circumscribes that area of the patient's body to be treated so that the lesion is constantly subjected to a stream of air. This controlled stream of air, which is preferably cooled, speeds and accelerates the healing of the lesion.

FIGURES OF THE DRAWINGS

FIG. 1 is a perspective view of the treatment apparatus;

FIG. 2 is an enlarged perspective view of the apparatus with certain parts thereof broken away and other parts thereof illustrated in exploded relation for clarity.

DESCRIPTION OF THE PREFERRED EMBODIMENTS OF THE INVENTION

Referring now to the drawings, it will be noted that one embodiment of the novel treatment apparatus, designated generally by the reference numeral **10**, is there shown. The treatment apparatus **10** includes a generally rectangular shaped housing **11** comprised of substantially flat, generally rectangular shaped vertically extending side walls **12**, a bottom wall **13**, and a substantially flat removable top wall **14**. The housing **11** is provided with suitable rollers or casters to facilitate movement of the housing from one location to another. The interior of the housing is compartmented and defines an inlet chamber **11*a*** and a blower or fan chamber **11*b***, these chambers being separated by a transverse substantially flat partition or wall **11*c***. It will also be noted that one side wall **12** of the housing has an opening therein which is closed by an access door **15**. It will be noted that the access door **15** is hingedly mounted on the associated side wall **12** and permits access to both the inlet chamber **11a** and the blower chamber **11b**.

One of the side walls **12** of the housing has an inlet opening **16** therein which communicates with the inlet chamber **11a**. A screen **16a** spans the inlet opening **16** in the side wall of the housing and, in the embodiments shown, is actually mounted on the inner surface of the side wall **12** having the inlet opening therein. A filter **17** is mounted interiorly of the inlet chamber **11*a*** and also is positioned against that side wall **12** having the inlet opening **16** therein so that the filter spans the inlet opening. With this arrangement, any air flowing through the inlet opening will be effectively filetered as it passes through the filter **17**.

The inlet chamber **11*a*** also has a refrigeration unit **18** therein which includes conventional refrigeration components such as a compressor, evaporator, and heat exchanger component. This refrigeration unit **18** may be selectively operated or may be rendered inoperative as desired by a user.

The partition **11*c*** has an opening **19** therein which serves to intercommunicate with the inlet chamber **11*a*** and the blower chamber **11*b***. A squirrel cage type blower **20** is mounted in the blower chamber **11**, the blower including a blower housing **20*a*** having a fan therein which is driven by an electric motor **21**. The blower is provided with an outlet **20*b*** and an inlet (not shown). The motor **21** is positioned exteriorly of the housing and is provided with suitable sound insulation to dampen the sound produced thereby. In this respect, the interior of the housing defining the blower chamber **11*b*** will also be provided with suitable sound insulation to minimize the occurrence of any noise produced by operation of the apparatus.

The blower chamber **11b** also has an ultraviolet germicidal lamp **22** mounted therein closely adjacent the outlet **20*b*** of the blower housing **20*a***. The ultraviolet germicidal lamp actually includes a socket which is mounted interiorly of the blower chamber by suitable brackets, the lamp being connected by electrical conductors to the circuit of the electric motor **21**. The circuit for the electric motor **21** for controlling the blower **20** includes a switch **23** mounted on one of the side walls **12** adjacent the upper end thereof. A refrigeration unit control switch **24** is also mounted closely adjacent the blower switch **23** to permit the refrigeration unit **18** to be selectively energized or de-energized as desired. The circuitry for a refrigeration unit and the circuitry for the electric motor **21** for the blower are connected by suitable electrical conductors to a source of electrical current. In this respect, the electrical conductors for the fan motor and refrigeration unit circuits are contained within a cable **26** connected to an electric bayonet-type plug **27**. The electric bayonet-type plug **27** may be connected to any conventional wall outlet such as that shown in FIG. 1 of the drawings.

One of the side walls **12** of the housing **11** has a plurality of openings therein and in the embodiments shown, two such openings **16*b*** are provided, each communicating with the blower chamber **11*b***. These openings **16*b*** constitute outlet openings for the blower chamber **11*b*** and each has one end of a coupling of an elongate flexible hose **25** connected thereto. The other end of each hose is connected to one of a pair of air distributors **28**. In the embodiments shown, each air distributor is of hollow generally rectangular shaped rigid construction comprised of opposed panels or walls **28*a*** which are spaced apart, but which are sealingly and fixedly connected adjacent their peripheries so that a chamber **28*b*** is defined therebetween.

The connection between each air distributor **28** and the associated hose or conduit **25** constitutes the inlet of the distributor **28** and the upper of the panels **28***b* has a plurality of apertures **29** therein throughout substantially the major portion of the surface thereof. These apertures intercommunicate the interior **28***b* of each air distributor with the exterior. Thus, when the air is directed from the blower chamber **11***b* through the conduits **25** into the air distributors **28,** air will be discharged through the apertures **29.** It is pointed out that the apparatus may be used with a single air distributor in most cases. Therefore, when a single air distributor is used, it will be necessary to merely disconnect the coupling of one of the hoses from its outlet **16***b* of the blower chamber **11***b*. Although not shown, a suitable closure member will be provided for closing the unused outlet opening **16***b* for the blower chamber **11***b*.

Each air distributor **28** is preferably of a size substantially less than the average size of the dorsal area of a patient's torso. However, it is pointed out that the air distributors may be constructed of any suitable size and shape.

A generally rectangular shaped pad or member **30** of predetermined thickness is positioned upon the air distributor **28** and this pad is adapted to be engaged by a patient lying or sitting thereon. The pad **30** is preferably formed of a yieldable, resilient material, such as foam rubber, and is preferably air impervious so that air will not pass therethrough. The pad **30** is provided with an opening **31** therethrough, and this opening **31** may be of circular configuration. The thickness dimension of the pad **30** is sufficient so that when a patient is lying or sitting upon the pad, and even though the pad is compressed, the opening **31** will actually define a chamber or space which is confined by the air distributor and by the patient's body. The opening **31** will preferably be of a size which is only slightly larger than the area of the skin lesion so that the opening circumscribes the skin lesion.

A cover pad **32** may be provided, the cover pad **32** being formed of an air pervious material, preferably fibrous and preferably water impervious, suitable plastic material such as Kodell. The pad **32** is also provided with an opening **33** therethrough which corresponds generally in shape and size to the opening **31.** In this respect, the opening **33** is preferably slightly larger than the opening **32.** It is also pointed out that the pad **32** would correspond in size and shape to the supporting pad **30** which in turn is preferably larger than the air distributor **28.** With this arrangement, it will be seen that air will be distributed from the air distributor into the opening **31** and continuously over the selected surface area portion of the patient to be treated.

In the embodiments shown, one of the pads **30** has a pair of openings therein while the other pad has a single opening therein. The pad containing the pair of openings is adapted for use in applying air directly to the heels or to the dorsal surfaces of a patient's legs. It is also pointed out that when additional air distributors and pads are desired, each or one of the hoses or conduits **25** may be provided with a suitable type coupler to permit a single hose to supply air to one or more air distributors.

In use, the apparatus will be connected to a source of electrical current and the switch **33** will be switched to the closed position thereby energizing the motor **21** and the germicidal lamp **22.** The air will be induced through the inlet opening **16** and to the inlet chamber **11***a* through the opening **19** and into the blower chamber **11***b*. The air will then be directed outwardly through the hose or hoses **25** and into the air distributor **28.** The air will be discharged from the air distributor through the apertures **29** and impelled directly into the opening **31** in the pad **30.** Since the patient is lying upon the pad, and since the opening **31** circumscribes the air to be treated, the skin lesion will be continuously subjected to a dry, preferably cool stream of air. It has been found that when a skin lesion is maintained in a dry, preferably cool condition, the healing process is accelerated. If it is desirable to cool the air, it is only necessary to close the switch **24** to thereby energize the refrigeration unit so that the stream of air is cooled as it passes through the housing **11.** Although not shown in the drawing, a suitable thermostat may also be provided for controlling the temperature of the cooled air as it passes through the inlet chamber **11***a*. The thermostat circuit would be electrically connected in controlling relation with respect to the circuit for the refrigeration unit **18.**

With this arrangement, the patient suffering from bedsores or skin ulcers can be effectively treated by specifically directing a stream of air to selected surface area of the patient's body. This minimizes overcooling the patient while assuring that the affected area is in a dried cooled condition.

This particular apparatus has special utility in hospitals, nursing homes and similar institutions which contain many non-ambulatory patients. The present apparatus is also adaptable for use with patients confined to wheelchairs since these patients also readily develop skin lesions.

From the foregoing description, it will be seen that I have provided a novel treatment apparatus which is highly effective in treating skin lesions such as bedsores and the like. The treatment apparatus is especially adapted for maintaining affected areas in a dried, preferably cooled condition which is generally the optimum condition for healing.

Thus it will be seen that I have provided a novel treatment apparatus which is not only of simple and inexpensive construction and operation, but one which functions in a more efficient way than any heretofore known comparable structure.

What is claimed is:

1. An apparatus for use in treating skin lesions such as bedsores of non-ambulatory patients, comprising:

a housing having a blower chamber therein, an inlet and an outlet opening in said housing communicating with said blower chamber, a blower mechanism in said chamber for producing and causing a stream of air to flow through said inlet into said blower chamber and through said outlet, an air pervious filter extending across said inlet opening for removing air entrained particles from the stream of air,

elongate flexible conduit means connected in communicating relation with said outlet,

a pad formed of flexible, yieldable material presenting a support surface for a portion of the body of the person lying thereon, and having an opening therein corresponding to a small surface area portion of the body of the person to be treated, said pad having a thickness dimension of predetermined magnitude so that said opening therein defines a

flow chamber when a patient is positioned upon the pad,

air distribution means connected with said conduit means and directing air into the flow distributing chamber defined by the opening in said pad, whereby a stream of cooled air will be directed against that specific body portion of the patient circumscribed by said opening.

2. The apparatus as defined in claim **1** wherein said air distributing means comprises a substantially flat, hollow structure having an upper wall member provided with a plurality of apertures therein, said pad engaging said upper wall member of said distributor structure so that certain of said apertures therein discharge air directly into the opening in the pad.

3. The apparatus as defined in claim **1** and means for cooling the air prior to the discharge thereof into said conduit means.

4. The apparatus as defined in claim **1** and an ultraviolet lamp in said blower chamber adjacent the discharge outlet therein.

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