

[54] FOOT MASSAGE PAD

[75] Inventor: **Mulford J. Nobbs**, Hacienda Heights, Calif.[73] Assignee: **Con-Stan Industries, Inc.**, City of Industry, Calif.[22] Filed: **Jan. 28, 1974**[21] Appl. No.: **437,010**

[52] U.S. Cl. 128/25 B

[51] Int. Cl. A61h 1/02

[58] Field of Search 128/25 B, 62, 67, 582

[56] References Cited

UNITED STATES PATENTS

3,100,483	8/1963	Altmeyer et al.	128/25 B
3,595,244	7/1971	Kugler	128/582
3,757,774	9/1973	Hatuno	128/25 B

Primary Examiner—Lawrence W. Trapp

Attorney, Agent, or Firm—George F. Smyth

[57] ABSTRACT

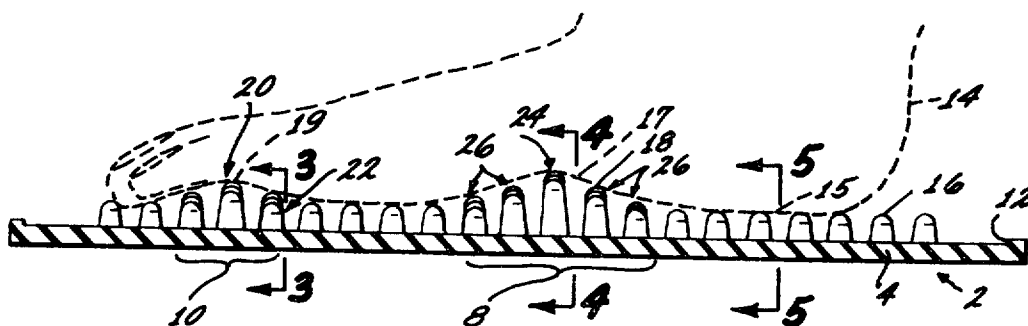
A foot exercising and massaging pad having a base member and a plurality of upstanding resilient protuberances formed on a surface of the base member. Certain of the protuberances have a greater height than other of the protuberances with an arch region and a toe joint region being defined by protuberances of greater height. The arch region and toe joint region are spaced apart by a distance which approximates the

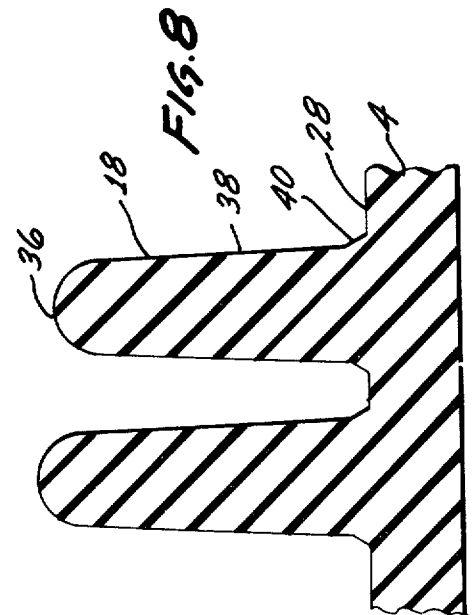
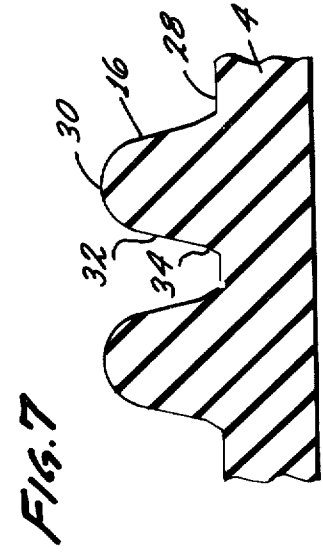
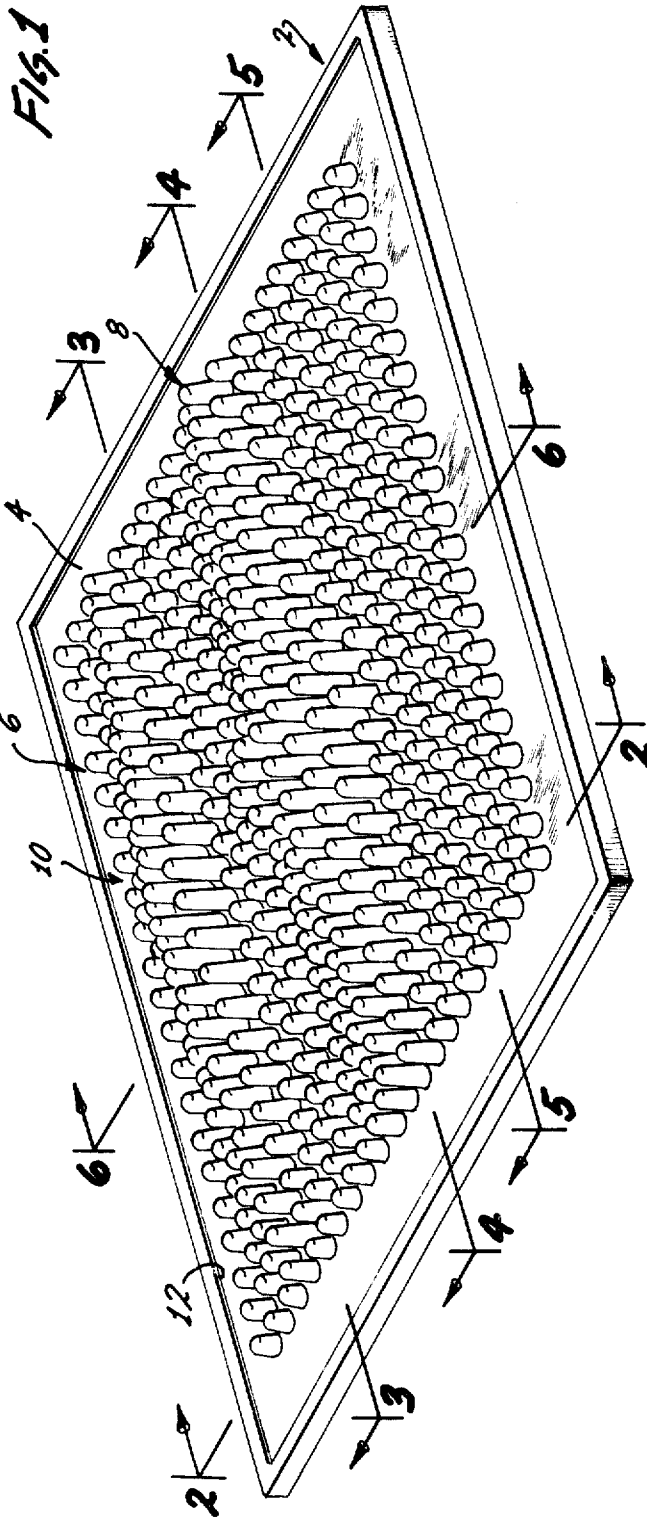
distance between the average user's arch and toe joint. When a user's foot is placed upon the pad, the foot is, thus, supported and stimulated through contact of the foot with the protuberances with the arch of the user's foot contacted by protuberances of greater height in the arch region and the toe joint of the foot contacted by protuberances of greater height in the toe joint region.

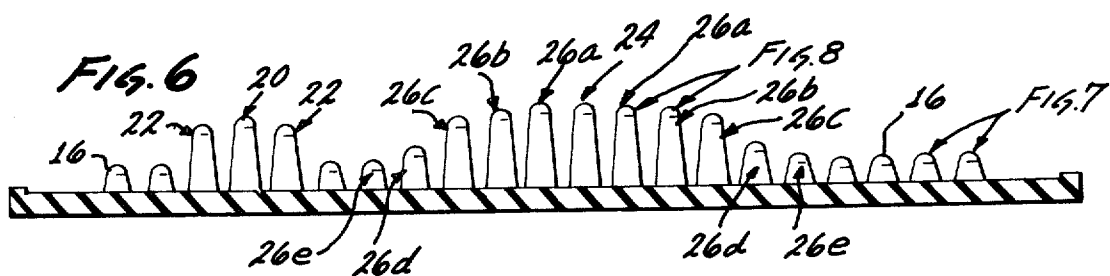
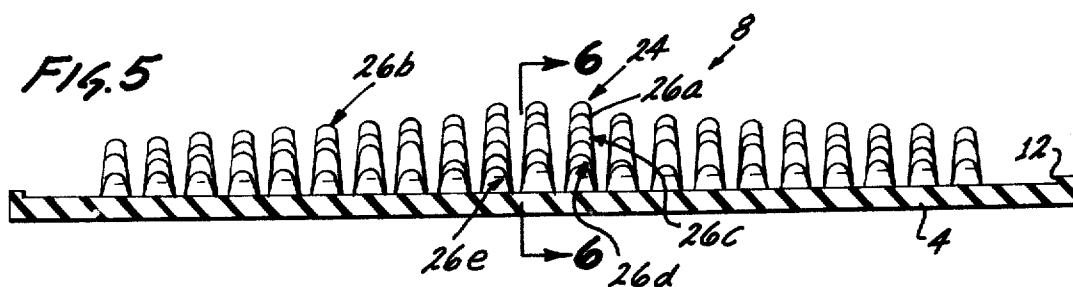
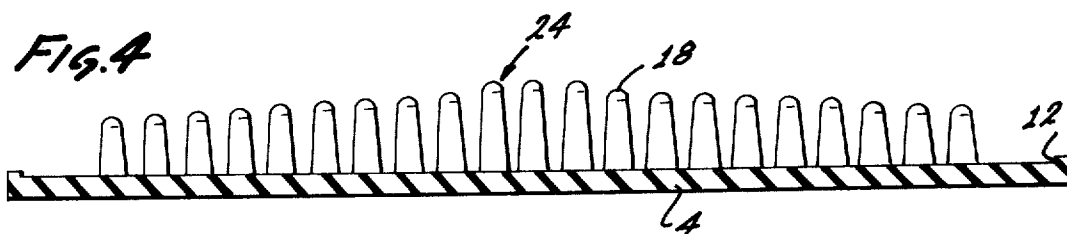
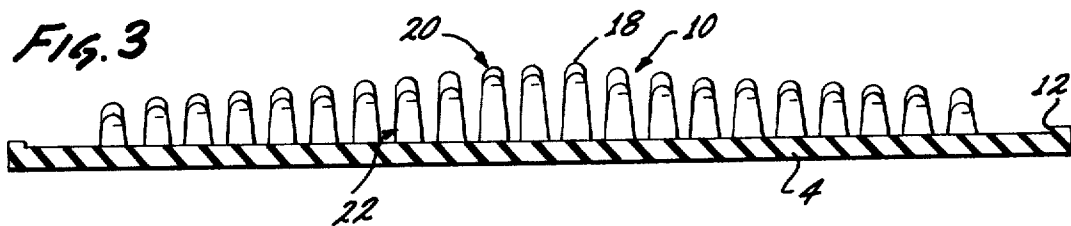
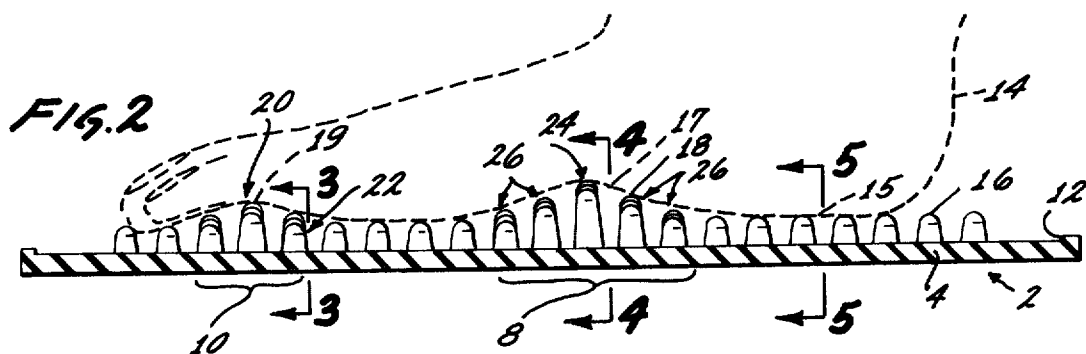
The protuberances in the arch region may be nonuniform in height to provide a sub-region in which the height of the protuberances is greater than the height of the protuberances in the remainder of the arch region. Likewise, the protuberances in the toe joint region may be nonuniform in height to define a sub-region with the protuberances in the sub-region being higher than the protuberances in the remainder of the toe joint region. By movement of the user's foot to bring the foot into contact with the sub-regions of protuberances within the arch and toe joint regions, the degree of contact between the user's foot and the protuberances may be increased to provide increased stimulation of the arch and toe joint region.

The height of the protuberances in the arch region may be varied in a transverse direction with the variation approximating the variation in the height of the arch of a human foot. Similarly, the protuberances in the toe joint region may be varied in height in a transverse direction with the variation in height approximating the curvature of a human foot at the toe joint region.

12 Claims, 8 Drawing Figures







FOOT MASSAGE PAD

BACKGROUND OF THE INVENTION

Foot exercising and massaging devices are known in which a plurality of upstanding protuberances are formed on a surface of a resilient mat such that the user may stimulate his feet by standing on the mat with the protuberances in contact with the feet. Such devices are shown, for example, in the Altmeyer, et al. U.S. Pat. No. 3,100,483 and the Schock U.S. Pat. No. 2,476,921.

The bottom surface of a normal human foot is not flat but, rather, is curved upwardly in the arch region and in the toe joint region. Thus, when a user's foot is placed in contact with a foot exerciser mat as shown in the Altmeyer, et al. or Schock patents, there is not uniform contact between the upstanding protuberances and the bottom of the foot. Rather, there is greater contact with the lower surfaces of the foot and much less contact with the upwardly curved regions of the foot at the arch and toe joint.

Due to the anatomy of the human foot, there is considerable flexing of the foot at the arch and toe joint. Consequently, it is frequently these areas which are most easily tired during walking or standing. Thus, it is these areas which most require stimulation during foot massage. However, in previous foot exercising and massaging pads, the arch and toe joint regions are not adequately stimulated.

During massage by an experienced masseur, the intensity of the massage will generally be increased gradually. Thus, initially, in massaging a foot, the foot will be massaged gently to loosen and relax the muscles. Thereafter, the intensity of the massage will be increased to stimulate the massaged areas, such as the arch and the toe joint, more forcefully. Forceful stimulation of the arch and toe joint increases the flow of blood to these areas which aids in the relief of soreness and improving the muscle tone.

Foot massage pads of the prior art do not, generally, provide for a means to gradually increase the intensity of foot massage in the manner which would be used by a masseur. Thus, the foot is not adequately stimulated to increase the blood flow to the fatigued and sore areas such as the arch and toe joint.

SUMMARY OF THE INVENTION

In providing a solution to the shortcomings of previously known foot massage pads, there is provided a foot massage pad which defines a surface configuration that approximates the curvature of the human foot to adequately stimulate the arch and toe joint. Moreover, due to the configuration of the exercise pad, the intensity of the applied stimulation may be varied through movement of the foot from one place to another on the pad. This permits stimulation of the foot in a manner similar to that used by a masseur, with the foot first being stimulated gently and the degree of stimulation being gradually increased to provide more intense stimulation of the arch and toe joint.

The precise shape of the arch and toe joint may vary from one person to another with, for example, one person having a high arch and another having a relatively low arch. Due to the configuration of the present foot exercising pad, these individual differences may be accommodated. Thus, a user having a relatively low arch may, by properly placing his foot on the exercise pad, pick a portion whose surface configuration most

closely resembles the shape of his particular foot. Similarly, a different user having a relatively high arch may place his foot on the pad in an area where the surface configuration most closely resembles the shape of his foot.

The present foot exercising and massaging pad includes a base member having a plurality of upstanding resilient protuberances formed on a surface thereof. Certain of the upstanding protuberances have a greater height than other of the protuberances. An arch region and toe joint region are defined by protuberances having a greater height with the arch region and toe joint regions being spaced transversely apart by a distance which approximates the distance between the arch and toe joint of the average user.

When the user's foot is placed on the pad, the foot is supported and stimulated through contact of the foot with the protuberances with the arch and toe joint being contacted by protuberances of greater height. The user's foot is, thus, exercised and massaged in the foot areas (arch and toe joint) which are most susceptible to soreness and fatigue.

The upstanding protuberances on a surface of the pad may be substantially equally spaced in respect to each other. Also, the base member may be formed of a resilient material and the base member and upstanding protuberances may be formed as an integral structure.

The protuberances in the exercising and massaging pad preferably have a substantially circular cross-section. Also, the protuberances are preferably tapered and include an outwardly tapered base portion through which the protuberances are joined to the surface of the base member. Additionally, the protuberances may terminate in rounded tips with tapered shank portions intermediate the tips and the tapered base portions. This configuration makes the protuberances more flexible adjacent their ends and stiffer adjacent their base portions.

The outwardly tapered base portions through which the protuberances may be connected to the surface of the base member provide increased strength at the connections to reduce shearing of the protuberances from the surface of the base member. Also, the outwardly tapered base portions permit a more even transmission of forces from the protuberances into the base member.

The protuberances in the arch and toe joint regions of the pad may be nonuniform in height to provide subregions in which the height of protuberances is greater than in the remainder of the arch or toe joint regions. During usage of the exercising and massaging pad, the degree of contact with the arch or toe joint may be increased by moving the foot to place the arch or toe joint over a sub-region where the height of the protuberances is greater. The variation in height of the protuberances within the arch and toe joint regions may be gradual so that the intensity of the stimulation received by the foot may be gradually increased or decreased by gradually moving the foot with respect to the foot exercising and massaging pad.

The height of protuberances in the arch or toe joint regions may be nonuniform in a generally transverse direction, i.e., in general alignment with the axis of the foot when placed on the pad with the arch and toe joint in contact with the arch and toe joint regions. This variation in the height of the protuberances may provide a

curvature which approximates the gradual curvature of the foot at the arch and toe joint. Thus, each area of the user's foot may receive approximately the same level of stimulation from the upstanding protuberances.

BRIEF DESCRIPTION OF THE DRAWINGS

To more fully illustrate the invention, reference is made to the accompanying drawings which illustrate an embodiment of the invention and in which:

FIG. 1 is a pictorial view of a foot exercising and massaging pad having a base member and a plurality of upstanding resilient protuberances formed on a surface of the base member;

FIG. 2 is a sectional view taken along line 2—2 of FIG. 1 to illustrate the arch and toe joint regions formed by protuberances of greater height with the arch and toe joint of a user's foot in contact with the protuberances of the arch and toe joint regions;

FIG. 3 is a sectional view taken along line 3—3 of FIG. 1 and FIG. 2 illustrating the variation in the height of the protuberances in the toe joint region to approximate the curvature of the human foot at the toe joint and to provide a sub-region having protuberances of a greater height than the balance of the protuberances in the toe joint region;

FIG. 4 is a sectional view taken along line 4—4 of FIG. 1 and FIG. 2 to illustrate the variation in height of a center row of protuberances in the arch region with the protuberances gradually increasing in height to reach a maximum height at a sub-region having protuberances of greater height than the protuberances in the remainder of the arch region;

FIG. 5 is a sectional view taken along line 5—5 of FIG. 1 and FIG. 2 to illustrate the height variation of protuberances in the arch region to approximate the curvature of the arch of a human foot and to form a sub-region in which the protuberances have a greater height than the protuberances in the remainder of the arch region;

FIG. 6 is a sectional view taken along line 6—6 of FIG. 1 and FIG. 5 to illustrate the height of the protuberances in the sub-regions of the arch and toe joint regions in which the protuberances are of greatest height;

FIG. 7 is an enlarged sectional view of the two shorter protuberances indicated by the arrows in FIG. 6, and

FIG. 8 is an enlarged sectional view of the two longer protuberances indicated by the arrows in FIG. 6.

DETAILED DESCRIPTION

A foot massage and exercise pad 2 illustrated in FIG. 1 includes a base member 4 and a plurality of resilient upstanding protuberances 6 formed on a surface of the base member. Preferably the base member 4 is made of a resilient material with both the base member and the protuberances 6 formed, for example, from rubber or a similar resilient material. Conveniently, the shore hardness of the resilient material forming the base member 4 and protuberances 6 may range from about 65 to about 75.

The protuberances 6 on the upper surface of the foot massage and exercise pad 2 form an arch region 8 and a toe joint region 10 in which the protuberances have a greater height than the balance of protuberances on the pad to provide stimulating contact with the upwardly curved portions of the foot at the arch and toe joint. As illustrated, the arch region 8 and toe joint re-

gion 10 are generally parallel with the transverse distance between the arch and toe joint regions being relatively uniform. An upstanding lip 12 provides a dam about the upper surface of the pad 2 such that the pad may, for example, be used immediately after a shower when the user's feet are still wet. When used in this manner, water which collects on the upper surface of the pad 2 is retained thereon by the lip 12.

FIG. 2 is a sectional view taken along the line 2—2 of FIG. 1 in a direction generally transverse to the axes of the arch region 8 and the toe joint region 10. A user's foot 14, shown in phantom line drawing, may be placed against the upper surface of the pad 2 with the axis of the foot positioned transverse to the arch region 8 and toe joint region 10. As thus positioned, the lower surfaces of the foot, such as the heel 15, will be contacted by short protuberances 16. However, the arch 17 and toe joint 19 will be contacted by longer protuberances 18.

As illustrated, the height of the longer protuberances 18 in the arch region 8 and toe joint region 10 is varied to provide a curvature of the arch and toe joint regions in two directions. There is a gradual increase in the height of the protuberances 18 along the axes of the arch region 8 and toe joint region 10 from the ends of the arch and toe joint regions toward their centers. Also, there is a gradual increase and decrease in height of the protuberances 18 in a direction transverse to the arch region 8 and toe joint region 10 to provide a contour approximating the contour of the human foot.

As illustrated, a center row 20 of protuberances in the toe joint region 10 have a greater height than the protuberances in adjacent rows 22. The gradual increase in height of the protuberances 18 in proceeding from adjacent rows 22 to the center row 20 provides a curvature which closely resembles the curvature of the toe joint 19 of the user's foot 14.

Similarly, a center row 24 of protuberances in the arch region 8 have a greater height than protuberances in the adjacent rows 26 positioned on either side of the center row. The gradual increase in height in moving from one adjacent row 26 to the next and on to the center row 24 followed by a gradual decrease in proceeding from the center row 24 to the adjacent rows 26 provides a curvature which approximates the curvature of the user's arch 17. When the user's foot 14 is placed against pad 2 as shown in FIG. 2 with the foot then being reciprocated in short strokes, the longer protuberances 18 in the arch region 8 and toe joint region 10 provide stimulation of the arch 17 and toe joint 19. Unlike foot exercising and massaging pads of the prior art, the configuration of the longer protuberances 18 provides a contour which conforms to the foot with the stimulation, thereby, being directed to the arch 17 and toe joint 19.

FIG. 3, which is a sectional view taken along line 3—3 of FIGS. 1 and 2, illustrates the configuration of the longer protuberances 18 in the toe joint region 10. As shown, the protuberances 18 of adjacent rows 22 and the center row 20 are gradually increased in height from the ends to the middle of the toe joint region. In addition, the protuberances 18 are increased in height in proceeding from an adjacent row 22 to the center row 20. The gradual increase in height in proceeding from adjacent rows 22 to the center row 20 provides a conformation to the toe joint region which approximates the curvature of the human foot at the toe joint.

The gradual increase in height in proceeding from the ends of the adjacent rows 22 or the center row 20 to the middle portions of the adjacent rows or center row permits a gradual increase in the stimulation afforded by pad 2 by moving the toe joint inwardly toward the middle portion of the toe joint region 10. During this gradual movement of the foot, the increasing height of the protuberances 18 provides a gradually increased stimulation to the toe joint.

Also, the gradual increase in the height of the protuberances 18 in proceeding from the ends of the toe joint region 10 toward its middle portion makes the exercise pad 2 more adaptable for feet of varying shapes. Thus, if the user's foot has a relatively high curvature at the toe joint, the foot may initially be placed closer to the middle portion of the toe joint region 10. Similarly, in massaging a foot having a lower curvature at the toe joint, the foot may initially be placed closer to the ends of the toe joint region 10.

Turning to a discussion of the arch region 8, FIG. 4 is a sectional view taken along line 4—4 of FIGS. 1 and 2 to illustrate the size and configuration of the protuberances 18 in the center row 24. As illustrated, the protuberances 18 gradually increase in height in proceeding from either end of the center row 24 toward its middle portion. This permits varying the degree of stimulation provided to the arch by movement of the foot inwardly toward the middle portion of the center row 24, thereby bringing protuberances 18 of greater height into contact with the arch.

FIG. 5 is a sectional view taken along line 5—5 of FIGS. 1 and 2 to illustrate the variation in the height of protuberances in the adjacent rows 26 during progression toward the center row 24. For ease in description, the adjacent rows 26 are denoted as 26a, 26b, 26c, 26d, and 26e to indicate the relative position of the adjacent row with respect to the center row 24. Adjacent row 26a is immediately adjacent to center row 24 while adjacent row 26b is immediately adjacent to row 26a. Likewise, row 26c is adjacent to row 26b with row 26d being immediately adjacent to row 26c. Proceeding transversely in either direction from the center row 24, the adjacent rows of protuberances in the arch region are, thus, numbered 26a, 26b, 26d, and 26e.

As shown in FIG. 5, the protuberances in the adjacent rows 26 increase gradually in height in moving toward the center row 24 from 26e to 26d, 26d to 26c, etc. This provides a contour to the arch region 8 which approximates the curvature of the human arch. As indicated, the protuberances in rows 26d and 26e are not increased in height in proceeding inwardly from the ends of the rows until the middle portion of the arch region 8 is reached. On reaching the middle portion of arch region 8, the protuberances in the rows 26d and 26e are then increased in height. This provides the middle portion of the arch region 8 with a greater depth (i.e., distance as measured in a transverse direction) than the outer portions of the arch region. This can be seen in FIG. 1 in which the arch region 8 is depicted as having an increased depth at its center portion.

FIG. 6 is a sectional view taken along line 6—6 of FIGS. 1 or 5 to illustrate the curvature of the arch region 8 and toe joint region 10 as viewed at a section through the subregions in which the protuberances have the greatest height. As thus viewed, the relationship of the adjacent rows 26a, 26b, 26c, 26d, and 26e with respect to the center row 24 in the arch region 8

is clearly depicted. Also, the position of the adjacent rows 22 with respect to the center row 20 in the toe joint region 10 is clearly evident. In addition, the greater depth of the arch region 8 at its middle portion is evident. With reference to FIG. 2, note the lesser depth of the arch region 8 when viewed from one of its ends.

The protuberances 18 are highest along the crests of the arch region 8 and toe joint region 10 as shown in FIG. 6. The figure, thus, illustrates the size and configuration of the protuberances 18 which are designed to give maximum stimulation to the foot during an exercise and massage treatment.

FIG. 7 is a detailed sectional view through the two short protuberances 16 as indicated by the arrows in FIG. 6. The protuberances 16 may be formed integrally with the base member 4 with both being formed of a resilient material such as rubber. The protuberances 16 may, thus, be connected to an upper surface 28 of the base member 4 with the protuberances having a rounded tip 30 which merges into a tapered shank 32. The tapered shank 32 diminishes in size toward the tip 30 so that the protuberances 16 are more resilient adjacent their ends. The lower portion of the tapered shank 32 merges into an outwardly tapered conical base portion 34 through which the protuberances are connected to the upper surface 28. The outwardly tapered base portion 34, thus, provides increased strength at the point of connection to the upper surface 28. Also, the outwardly tapered base portion 34 transmits forces applied to the protuberances more uniformly to the base member 4.

FIG. 8 is a detailed sectional view, similar to FIG. 7, illustrating two of the longer protuberances 18 with the position of these protuberances indicated by the arrows in FIG. 6 connecting the protuberances to the legend "FIG. 8." The protuberances 18 in FIG. 8 are of unequal height since the left protuberance is in row 26a while the right protuberance is in row 26b. Each of the protuberances 18 terminates in a rounded tip 36 positioned at the end of a tapered shank 38. The tapered shank 38, being smaller adjacent its upper extremity, provides for greater flexure of the outward portions of the protuberances. The lower portion of tapered shank 38 merges into an outwardly tapered base portion 40 through which the protuberance is connected to the upper surface 28. As described previously, the function of the base portions 40 is to provide greater strength to prevent shearing of the protuberances from the surface 28. Moreover, the outwardly tapered base portions 40 permit a more even transmission of forces from the protuberances 18 into the base member 4.

I claim:

1. A foot exercising and massaging pad comprising:
 - a base member;
 - a plurality of upstanding resilient protuberances formed on a surface of said base member;
 - an arch region and a toe joint region defined by protuberances of greater height;
 - said arch region and toe joint region being spaced apart by a distance which approximates the distance between the arch and toe joint of a human foot;
 - the protuberances in the arch region and in the toe joint region being varied in height in a direction transverse to said arch region and toe joint region with the variation in the height of the protuber-

ances in said transverse direction approximating the curvature of the arch and toe joint of the human foot, and
 the protuberances in said arch region varying in height in a generally uniform manner in a direction along the axis of the arch region with the protuberances increasing gradually in height in proceeding from either end of the arch region along the axis of the arch region toward the center of the arch region,
 whereby the user of the exercising and massaging pad can increase the stimulation of the arch of the foot by moving the foot from the ends of the arch region toward the center of the arch region to bring protuberances of greater height in said arch region into contact with the arch of the foot.

2. The foot exercising and massaging pad of claim 1 wherein
 the protuberances in said toe joint region are varied in height in a generally uniform manner in a direction along the axis of the toe joint region with the protuberances increasing gradually in height in proceeding from either end of the toe joint region along the axis of the toe joint region toward the center of the toe joint region,
 whereby the user of the exercising and massaging pad can increase the stimulation of the toe joint of the foot by moving the foot from the ends of the toe joint region toward the center of the toe joint region to bring protuberances of greater height in said toe joint region into contact with the toe joint of the foot.

3. The foot exercising and massaging pad of claim 2 wherein the base member is formed of a resilient material.

4. The foot exercising and massaging pad of claim 3 wherein the base member and the upstanding protuberances are an integral structure.

5. The foot exercising and massaging pad of claim 1 wherein the base member is formed of a resilient material.

6. The foot exercising and massaging pad of claim 5 wherein the base member and the upstanding protuberances are an integral structure.

7. The foot exercising and massaging pad of claim 6 wherein
 said protuberances include an outwardly tapered base portion joining the protuberances to the surface of the base member,
 whereby forces applied to the protuberances are more uniformly transmitted to the base member through the outwardly tapered base portions.

8. The foot exercising and massaging pad of claim 7 wherein
 said protuberances include tapered shanks with the thicker portions of the shanks merging into the outwardly tapered base portions.

9. The foot exercising and massaging pad of claim 8 including
 rounded tips at the ends of said protuberances, and the thinner portions of said shanks merging into the rounded tips.

10. The foot exercising and massaging pad of claim 9 wherein
 said protuberances have a substantially circular cross section.

11. The foot exercising and massaging pad of claim 10 including
 an upstanding lip surrounding the said surface of the base member.

12. The foot exercising and massaging pad of claim 1 wherein the depth of the arch region is non-uniform with the arch region having a relatively deep portion for a user having a long arch and a relatively shallow portion for a user with a short arch.

* * * * *

40

45

50

55

60

65