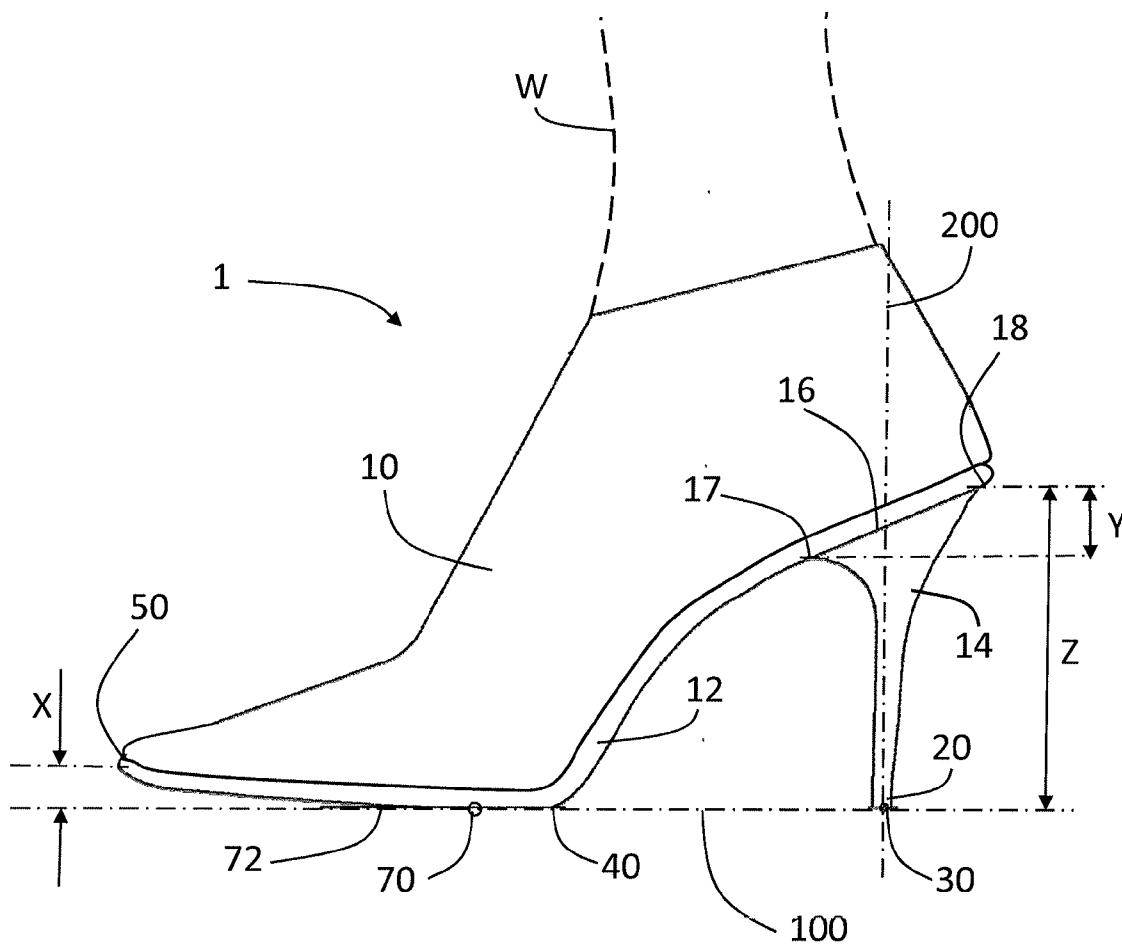




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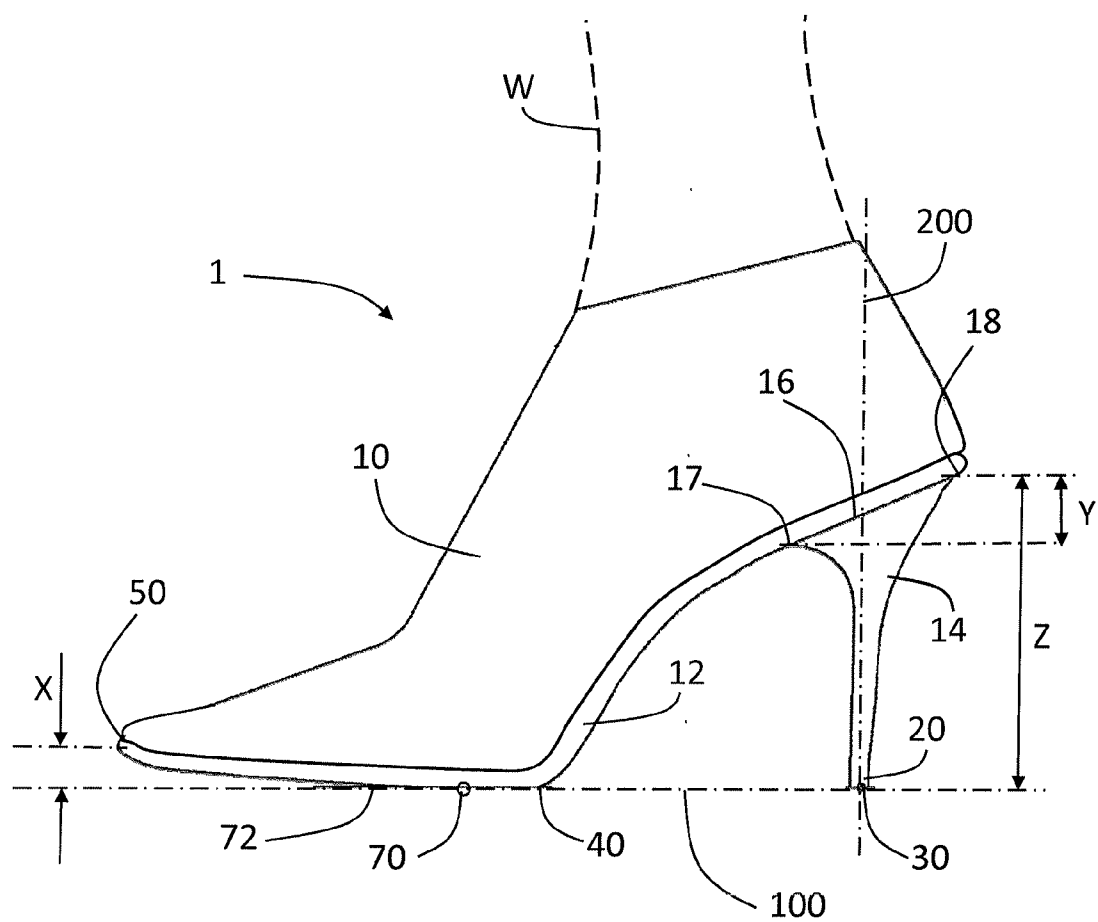


Figure 1

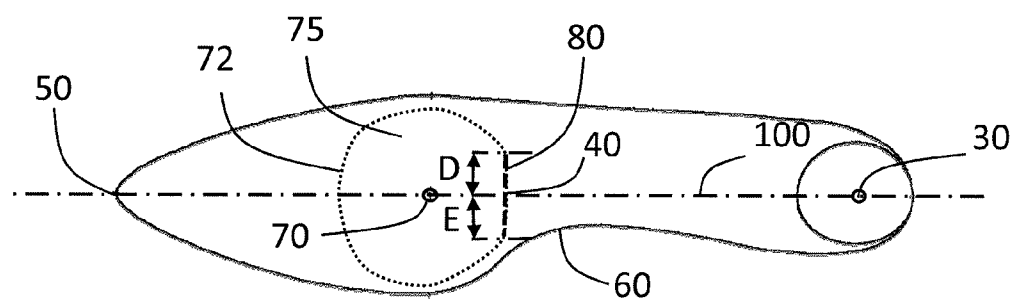


Figure 2

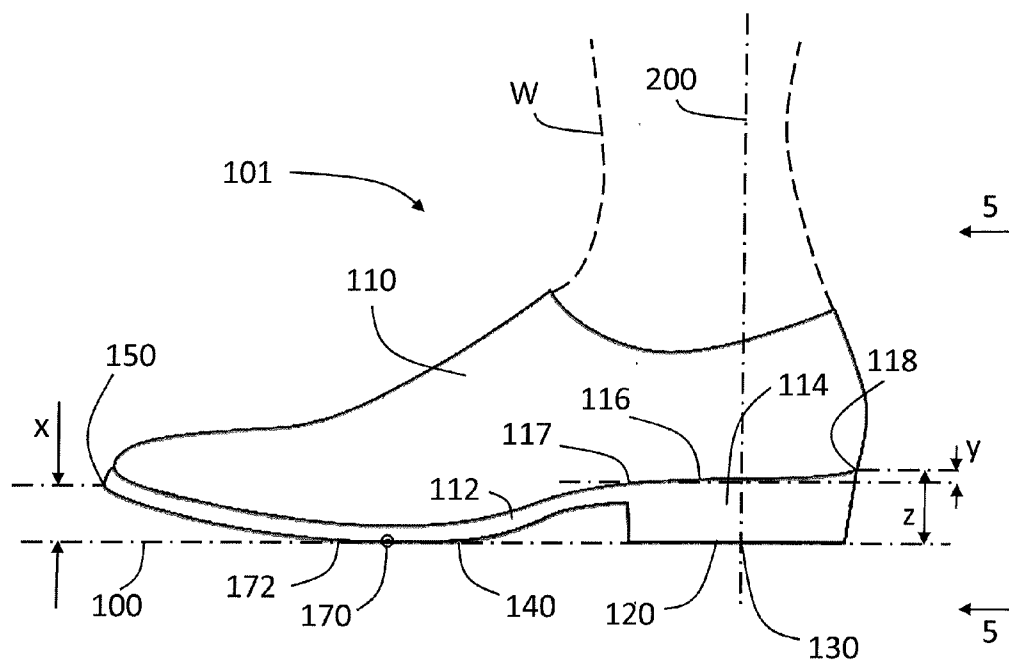


Figure 3

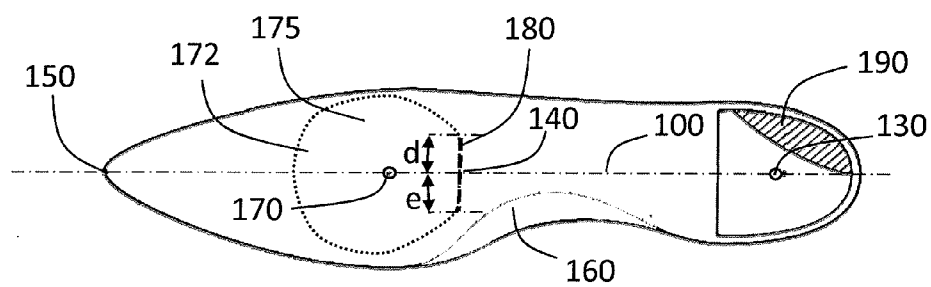


Figure 4

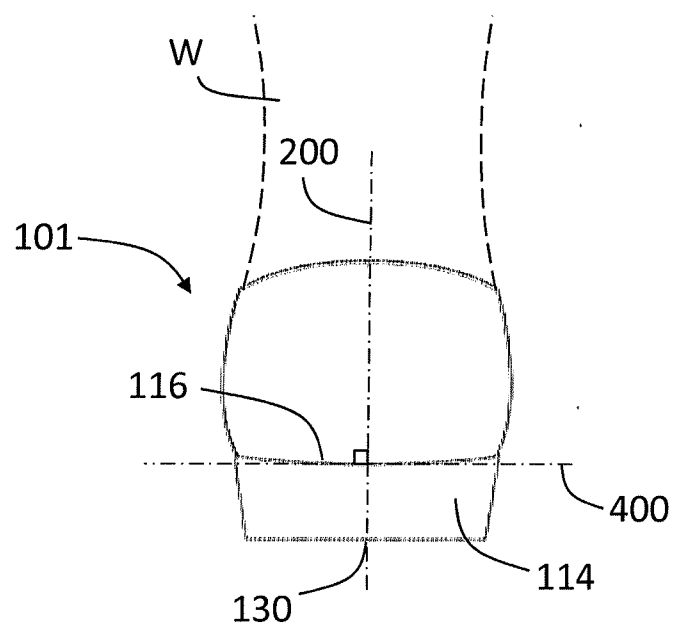


Figure 5

NO PAIN SHOE

BACKGROUND OF THE INVENTION

[0001] Shoes, especially high heel shoes, in the markets presently can be beautiful, but generally have the common problem of bring different hurts and pains to the feet of the wearer. The shoes can cause blistering of the toes, can rub the skin off the heel, and can be tiring when walking, and so on.

[0002] The main problem is that the design and the manufacturing process for shoes has not been adapted to the theory of ergonomics, and has not accurately utilized and taken into consideration of data of the various parts of the feet during the walking process. The appearance of shoes has always been a top priority, at the sacrifice of comfort and affordability for the feet. There remains a need for a “no pain” shoe, and particularly a “no pain” high heel lady’s shoe, that solves these painful problems experienced by everyone who wears such shoes, and particularly high-heel shoes.

[0003] Shoes on the markets presently have several shortcomings.

[0004] Usually after wearing a new pair of high-heel shoes for two weeks or more, the shoes will tend outward, and the heel will tend inwards, so that the wearer of the shoes cannot walk evenly and stably.

[0005] Further, the curvature of the sole of the shoe, between the last ball break point and the heel seat, does not match well to the curvature of the arch of the foot and the wearer, which can result in a gap or space between the foot and the sole of the shoe. In this situation, when walking on the high heel shoes, the weight of the body is supported mostly, or only, by the toes. This condition is unhealthy.

[0006] When walking, the foot slips easily within the shoe, and moves forward in the shoe, making the foot tired and distorted.

[0007] Also, the heel portion of the high-heel shoe is at the wrong elevation, which make the toes easily blister, and causes the skin on the heel to be rubbed off.

[0008] Further, looking at the bottom of the shoes, one can see the toe cap tending inward, and not on the same center line with the heel, which prevents the wearer from standing firmly.

[0009] The height of the heel portion is usually too high or too low, and not consistently in a range that provides endurance for the feet. Therefore, this makes the feet feel tired while walking.

[0010] The center of gravity of the conventional shoe is usually not in the correct place. The heel center point, last ball break point, and the toe point are not on or along the same horizontal center point. This structure of the conventional shoe cannot support the body well, and causes hurt feet and poor foot health.

SUMMARY OF THE INVENTION

[0011] The present invention provides a shoe, including a man’s shoe or a lady’s shoe, and preferably a lady’s shoe and more preferably a high heel lady’s shoe, a shoe, having an upper, a sole, and a heel, which controls the center of gravity of the shoes heel and sole, and maintains the stability of the shoes.

[0012] In an aspect of the invention, the shoe has a heel center point, a last ball break point, and toe point that are positioned or disposed on a same longitudinal, straight, horizontal line. The longitudinal, horizontal center line represents and defines a lateral center of gravity (or lateral center of

weight) through the shoe. Likewise, the heel center point and the toe point are along the longitudinal, horizontal center line. The features minimize or prevent the shoes to tend outward after wearing for a period of time, typically of at least two weeks.

[0013] In another aspect of the invention, the heel center point and the toe point should be controlled on the horizontal point or line that defines the center of gravity, to improve the balance to the foot.

[0014] In an aspect of the invention, the lady’s high heel shoe has a heel height of 100 mm or less from the bottom of the heel base to the upper-rear peripheral point of the heel seat.

[0015] In another aspect of the invention, the high heel shoe has a toe spring having a height between 7 mm and 10 mm, to provide room for the foot to stretch.

[0016] In yet another aspect of the invention, the high heel shoe has a heel seat having a pitch that is controlled to about 20 mm or less, preferably to about 15 mm to 20 mm, to avoid the foot rubbing against the heel portion of the upper (the heel crown), and hurting the foot while walking.

[0017] In another aspect of the invention, a man’s or other low heel shoe has a heel height of 40 mm or less from the bottom of the heel base to the upper-rear peripheral point of the heel seat.

[0018] In a further aspect of the invention, the low heel shoe has a heel portion having a toe spring height within 10 mm.

[0019] In yet another aspect of the invention, the low heel shoe has a heel seat having a pitch that is controlled to about 1 mm to about 2 mm, preferably to about 1.2 mm to about 1.5 mm.

[0020] In another aspect of the invention, the shoe has a configuration that controls the curvature of the sole of the shoe between the last ball break point and the heel seat, to the curvature of the arch of the foot of the wearer, to improve the fit for the foot in the shoe and to support the body comfortably.

[0021] In a further aspect of the invention, the inside radian of the last is controlled to correspond to the center gravity of the shoe that supports the human body.

[0022] The present invention enables a woman, or a man, to have a pair of comfortable shoes, preferably high heel shoes for a lady, that avoid pain for the feet of the wearer. The wearing of the shoes will provide the person (the woman) with healthy feet, which is one of the very important factors for human health, and that contributes greatly to human well-being.

BRIEF DESCRIPTION OF THE FIGURES

[0023] FIG. 1 shows a side elevation view of a high heel shoe of the present invention.

[0024] FIG. 2 shows a bottom plan view of the high heel shoe of FIG. 1.

[0025] FIG. 3 shows a side elevation view of an embodiment of a shoe of the present invention.

[0026] FIG. 4 shows a bottom plan view of the shoe of FIG. 3.

[0027] FIG. 5 shows a rear elevation view of the shoe viewed from line 5-5 of FIG. 3.

DETAILED DESCRIPTION OF THE INVENTION

[0028] The present invention solves some, most and all of the problems described above for conventional shoes, and especially of high-heel shoes.

[0029] FIG. 1 shows a side elevation view, and FIG. 2 a bottom plan view, of a no-pain high heel shoe 1 of the present invention. The high heel shoe 1 has an upper 10, a sole 12, and a high heel 14. The high heel 14 has an upper heel seat 16 that attaches to a rear portion of the underside of the sole 12. The upper heel seat 16 has a lower-forward peripheral point 17 and an upper-rear peripheral point 18 disposed vertically above and along a longitudinal, horizontal center line 100. The longitudinal, horizontal center line 100 lies in a level surface on which the shoe stands. The longitudinal, horizontal center line 100 also represents and defines the lateral center of gravity (or lateral center of weight) through the shoe. The high heel 14 has a lower base 20 with a heel center point 30. The heel center point 30 is disposed along a vertical centerline 200 passing through the high heel 14 and the middle of the upper heel seat 16.

[0030] FIG. 2 shows the sole 12 with a boundary line 72 that defines the boundary of contact area 75 of the forward portion (the ball area) of the sole with the ground (represented by the horizontal line 100). Point 70 represents the center of the contact area 75 of the sole 12. A last ball break line 80 is a substantially line extending laterally on the bottom surface of the sole 12 along the rear-most portion of the boundary line 72 that is closest to the heel base 20. The last ball break point 40 is substantially the center point of the weight of the wearer W along the last ball break line 80, where segment “D” and segment “E” along the last ball break line 80 are substantially equal in length. A toe point 50 defines the forward-most portion of the sole 12.

[0031] The high heel shoe 1 of the invention provides that the heel center point 30, last ball break point 40, and the toe point or tip 50 are all along, or vertically displaced along, the longitudinal, horizontal center line 100. Likewise, the heel center point 30 and the toe point 50 are along the longitudinal, horizontal center line 100. The toe spring, defined as the vertical distance of the toe point 50 above the longitudinal, horizontal center line 100, and denoted as “X” in FIG. 1, should be about 7 mm to about 10 mm. The pitch of the heel seat 16, defined as the vertical distance between the lower-forward peripheral point 17 and an upper-rear peripheral point 18 of the heel seat 16 of the high heel, and denoted as “Y” in FIG. 1, should be 20 mm or less, and preferably 15-20 mm. The height of the high heel 14, from the bottom of the heel base 20 (along the longitudinal, horizontal center line 100) to the upper-rear peripheral point 18 of the upper heel seat 16, and denoted as “Z” in FIG. 1, should 100 mm or less.

[0032] FIGS. 3, 4 and 5 show another embodiment of a shoe of the present invention, illustrated as a man’s shoe 101 or a shoe with a low heel. FIG. 1 shows a side elevation view, FIG. 4 a bottom plan view, and FIG. 5 shows a rear elevation view of the low heel shoe 101. The low heel shoe 101 has an upper 110, a sole 112, and a low heel 114. The low heel 114 has an upper heel seat 116 that attaches to a rear portion of the underside of the sole 112. The upper heel seat 116 has a lower-forward peripheral point 117 and an upper-rear peripheral point 118 disposed slightly vertically above and along a longitudinal, horizontal center line 100, which defines the lateral center of gravity (or lateral center of weight) through the shoe 101. The low heel 114 has a lower base 120 with a heel center point 130. The heel center point 130 is disposed along a vertical centerline 200 passing through the low heel 114 and the middle of the upper heel seat 116.

[0033] FIG. 4 shows the sole 112 with a boundary line 172 that defines the boundary of contact area 175 of the forward

portion (the ball area) of the sole 112 with the ground (represented by the horizontal line 100). Point 170 represents the center of the contact area 175 of the sole 112. A last ball break line 180 is a substantially line extending laterally on the bottom surface of the sole 112 along the rear-most portion of the boundary line 172 that is closest to the heel base 120. The last ball break point 140 is substantially the center point of the weight of the wearer W along the last ball break line 180, where segment “d” and segment “e” along the last ball break line 180 are substantially equal in length. A toe point 150 defines the forward-most portion of the sole 112.

[0034] The low heel shoe 101 of the invention provides that the heel center point 130, last ball break point 140, and the toe point or tip 150 are all along, or vertically displaced along, the longitudinal, horizontal center line 100. Likewise, the heel center point 130 and the toe point 150 are along the longitudinal, horizontal center line 100. As in the earlier embodiment, the weight of a person’s body, when not walking, is shared or distributed equally by or upon the sole 112 of the shoe, avoiding stress and possible damage to the leg and foot resulting from a deviation in the body weight from the center of gravity. The toe spring, defined as the vertical distance of the toe point 150 above the longitudinal, horizontal center line 100, and denoted as “x” in FIG. 1, should be within 10 mm. As in the earlier embodiment, the toe spring distance is controlled for consistency with the movement range of the forefoot, to move freely and avoid pinching.

[0035] The pitch or incline of the heel seat 116, defined as the vertical distance between the lower-forward peripheral point 117 and an upper-rear peripheral point 118 of the heel seat 116 of, and denoted as “y” in FIG. 1, should be about 1.2 mm to 1.5 mm. The height of the heel 114, from the bottom of the heel base 120 (along the longitudinal, horizontal center line 100) to the upper-rear peripheral point 118 of the heel seat 116, and denoted as “z” in FIG. 1, should 40 mm or less. The inclination should be a slight as possible, such that the weight of the wearer does not transfer to the forefoot.

[0036] FIG. 5 shows a rear elevation view of the low heel shoe 101. The heel seat 116 is slightly curved or dished, where a lateral line 400 substantially along the heel contact surface of heel seat 116 is substantially perpendicular to the vertical line 200 through the heel center point 130 (see FIG. 4). This limits stress and damage to the leg and foot resulting from gravity acting upon the foot when resting on a non-level surface. FIG. 5 also shows a heel wear portion 190.

[0037] According to the theory of ergonomics, the pressure point and bearing point of the shoes should be placed on a same straight horizontal line. Controlling the heel center point, last ball break point, and toe point on the same horizontal straight line prevents distortion or twisting of the shoe. The straight line controls the centerline of heel tread point and of toe point.

[0038] When a shoe of the present invention is designed for wear, the curvature of the sole of the shoe between the last ball break point and the heel seat should be configured to match the curvature and shape of the arch of the foot of the wearer, the arch 60, 160 of the sole should have a curvature configured to correspond to the arch of the instep of the wearer (W). When the sole 12, 112 is stressed, the wearer (W) should not experience pressure or feel pain as foot and the arch flexes or stretches.

[0039] The shoe of the present invention does not tend outwardly when wearing, and provides improvement ergonomics and improved balance in the shoes. The shoe elimi-

nates to problem of gapping between the shoe and the foot. Therefore, the foot does not move forward while walking, eliminating foot pain.

[0040] The shoe prevents the foot from slipping and moving forward while walking by giving enough room of the relaxed stretched for feet so that the shoes would not rub off the skin of toes and heel.

[0041] The shoe does not tend outwards, and the heel will not tend inwards, and provides even and stable walking. And it is totally different from the traditional construction of the shoes around the world.

[0042] The shoe has the correct elevation for the height of the heel and the toe spring, to avoid damaged the foot while wearing the shoe, and particularly when wearing a high-heel shoe.

[0043] The shoe also avoids the problem of the wear and tear of the heel lift.

[0044] And the shoe eliminates deviation of the shoe from the center of gravity of the high-heel shoe, so that the shoe can support the body and provide comfortable walking.

1. A shoe that reduces or eliminates pain in the foot wearing the shoe, comprising: an upper, a sole, a heel, and a heel seat, wherein the shoe includes a heel center point, a last ball break point, a toe point, and a longitudinal, horizontal center line that defines a lateral center of gravity through the shoe, wherein the heel center point, the last ball break point, the toe point are disposed along the longitudinal, horizontal center line of the shoe.

2. The shoe according to claim 1, wherein the shoe is a lady's high heel shoe having a height of a toe spring between about 7 mm and about 10 mm.

3. The high heel shoe according to claim 2, wherein the heel has as heel height of 100 mm or less from the bottom of the heel base to an upper-rear peripheral point of the heel seat.

4. (canceled)

5. The shoe according to claim 1, wherein the shoe is a man's or low high heel shoe, having a height of a toe spring between about 7 mm and about 10 mm.

6. The high heel shoe according to claim 6, wherein the heel has a heel height of 40 mm or less from the bottom of the heel base to an upper-rear peripheral point of the heel seat.

7. (canceled)

8. A shoe that reduces or eliminates pain in the foot wearing the shoe, comprising: an upper, as sole having an undersurface, and a heel having a heel base having a heel center point, wherein the sole has:

a longitudinal, horizontal center line,

a last ball break line that extends substantially laterally on the bottom surface of the sole that defines a boundary line of contact of the sole with a level surface on which the high heel shoe stands, and that is closest to the heel base,

a toe point that is the forward-most portion of the sole, and

a last ball break point that is the center of the weight of the wearer along the last ball break point line;

wherein the heel has an upper heel seat that attaches to a rear portion of the undersurface of the sole; and

wherein the heel center point, the last ball break point, and the toe point are all along, or vertically displaced along, the longitudinal, horizontal centerline.

9. The shoe according to claim 4 where the height of the heel, from a bottom of the heel base to an upper-most peripheral point of the upper heel seat, is not higher than 100 mm, including within 40 mm.

10. The high heel shoe according to claims 2, wherein the heel seat has a pitch that is controlled to about 20 mm or less, preferably to about 15 mm to 20 mm.

11. The high heel shoe according to claims 3, wherein the heel seat has a pitch that is controlled to about 20 mm or less, preferably to about 15 mm to 20 mm.

12. The high heel shoe according to claim 5, wherein the heel seat has a pitch that is controlled to about 1 mm to about 2 mm, preferably to about 1.2 mm to 1.5 mm.

13. The high heel shoe according to claim 6, wherein the heel seat has a pitch that is controlled to about 1 mm to about 2 mm, preferably to about 1.2 mm to 1.5 mm.

* * * * *