{0005}

An object of the present invention is to provide a disposable wearing article improved so that the tensile stress in the middle of the crotch region as well as in the vicinity thereof can be set to be higher than in the other regions without adjusting the number and thickness of the leg elastic elements and a relatively large body waist retaining space can be formed to protect the wearer's skin from being soiled with body waste.

{Solution to Problem}

{0006}

According to the present invention, there is provided a disposable wearing article having a longitudinal direction and a transverse direction orthogonal to the longitudinal direction, including a side facing the wearer's skin and a side facing away from the wearer's skin, a front waist region, a rear waist region and a crotch region extending between the front and rear waist regions.

{0007}

The improvement according to the present invention is characterized in that the ~~crotch region is provided in respective lateral portions with a plurality of leg elastic elements so as to be stretchable and contractible in the longitudinal direction and, of the leg elastic elements, the~~

~~outermost elastic element in each of the lateral portions has a shape concavely curved in a longitudinally middle zone of the crotch region and in the vicinity thereof.~~

article further includes front and rear elastic waist panels defining the front and rear waist regions, a crotch member located in the crotch region and a part of the front and rear waist regions and having a front end and a rear end bonded to the front waist panel and the rear waist panel, respectively, and a liquid-absorbent structure bonded to the crotch region on the side facing the wearer's skin, the crotch region has elasticized lateral portions formed by folding lateral portions of the crotch member and adapted to be spaced upward from the liquid-absorbent structure, each of the elasticized lateral portions is provided with strand- or string-like leg elastic elements extending from the crotch region to the front and rear waist regions, the leg elastic elements comprise

~~[0008]~~

~~The present invention additionally includes embodiments as follows:~~

~~(1) The leg elastic elements include a plurality of strand- or string-like~~ first leg elastic elements extending rectilinearly in the longitudinal direction immediately inboard of the respective ~~side edges of the crotch region and a plurality of~~

~~strand- or stripe-like~~elasticized lateral portions and second leg elastic elements extending in the longitudinal direction outboard of the first leg elastic elements as viewed in the transverse direction, each of the second leg elastic elements ~~having a shape concavely curved in a longitudinally middle zone of the crotch region and in the vicinity thereof~~comprises rectilinear segments disposed in the front and rear ends of the crotch member and extending in the front and rear waist regions and a concavely curved segment located in the crotch region, and elasticized regions defined by the first leg elastic elements have tensile stress higher than that of elasticized regions defined by the second leg elastic elements.

{0008}

The present invention additionally includes embodiments as follows:

~~(2) The wearing article includes a liquid-absorbent structure attached to the side of the crotch region facing the wearer's skin and elasticized lateral portions adapted to be spaced upward from the liquid-absorbent structure under contraction of the leg elastic elements.~~

~~(3) Elasticized regions defined by the first leg elastic elements have a tensile stress higher than that of elasticized~~

~~regions defined by the second leg elastic elements.~~

~~(~~4(1) A dimension by which each pair of the adjacent second leg elastic elements ~~are~~ is spaced from each other in the ~~first leg elastic elements~~transverse direction is gradually reduced as the ~~first and~~ second ~~leg~~ elastic elements get closer to the middle zone of the crotch region.

~~(5) The front and rear waist regions are defined by an annular elasticized waist panel and the crotch region is defined by a crotch member partially attached to the elasticized waist panel.~~

~~(6) The crotch member has front and rear ends and at least one of the front and rear ends is attached to the outer surface of the elasticized waist panel.~~

~~(7) Each of the second leg elastic elements includes a~~ (2) The concavely curved segment ~~in the middle zone of the crotch region and in the vicinity thereof and a pair of~~ of the second leg elastic elements has a tensile stress higher than that of the rectilinear segments ~~being contiguous to the concavely curved segment and~~ of the second leg elastic elements.

(3) The front and rear ends of the crotch member are bonded to the outer surfaces of the front and rear elastic waist panels, respectively.

(4) The front adhesive region substantially overlaps an inner

end of the front waist panel and has a substantially trapezoidal shape contoured by an inner end extending ~~to ends of the second leg elastic elements opposite~~in the transverse direction between the inner side edges of the respective elasticized lateral portions, an outer end substantially overlapping the front end of the crotch member and extending in the ~~longitudinal direction wherein the concavely curved segment has a tensile stress higher than that~~transverse direction, and both side edges obliquely extending from the outer end toward the inner end between the inner and outer ends, and the rear adhesive region has a substantially rectangular shape which is transversally long and includes an inner end extending in the transverse direction and substantially overlapping an inner end of the ~~rectilinear segment~~rear waist panel and an outer end extending in the transverse direction and substantially overlapping an rear end of the crotch membern.

{Advantageous Effects of Invention}

{0009}

According to the present invention, the crotch region is

so-called open-type diaper.

{0041}

10 disposable wearing article (disposable diaper)

11 elasticized waist panel

12 crotch member

13 front waist region

14 rear waist region

15 crotch region

35 front end

36 rear end

40 liquid-absorbent structure

41 elasticized lateral portion

50 first leg elastic element

51 second leg elastic elements

53 concavely curved segment

54, 55 rectilinear segment

X transverse direction

Y longitudinal direction

CLAIMS

[Claim 1~~+~~]

A disposable wearing article having a longitudinal direction and a transverse direction orthogonal to the longitudinal direction, comprising a side facing the wearer's skin and a side facing away from the wearer's skin, ~~-~~a front waist region, a rear waist region and a crotch region extending between the front and rear waist regions, wherein:

the article further includes

front and rear elastic waist panels defining the front and rear waist regions, respectively,

a crotch ~~region is provided~~ member located in ~~respective~~the crotch region and a part of the front and rear waist regions and having a front end and a rear end bonded to the front waist panel and the rear waist panel, respectively, and

a liquid-absorbent structure disposed in the crotch region on the side facing the wearer's skin,

the crotch region has elasticized lateral portions formed by folding lateral portions of the crotch member and adapted to be spaced upward from the liquid-absorbent structure,

each of the elasticized lateral portions is provided with ~~a plurality of~~ strand- or string-like leg elastic elements ~~so as to be stretchable and contractible in the longitudinal~~

~~direction; and~~ extending from the crotch region to the front and rear waist regions,

~~of the leg elastic elements, the outermost elastic element in each of the lateral portions has a shape concavely curved in a longitudinally middle zone of the crotch region and in the vicinity thereof.~~

~~(Claim 2)~~

~~The wearing article defined by Claim 1, wherein the leg elastic elements include a plurality of strand- or string-like~~the leg elastic elements comprise first leg elastic elements extending rectilinearly in the longitudinal direction immediately inboard of the respective ~~side edges of the crotch region and a plurality of strand- or stripe-like~~elasticized lateral portions and second leg elastic elements extending in the longitudinal direction and outboard of the first leg elastic

elements as viewed in the transverse direction, ~~each of the second leg elastic elements having a shape concavely curved in a longitudinally middle zone of the crotch region and in the vicinity thereof.~~

~~[Claim 3]~~

~~The wearing article defined by Claim 1 or 2, including a liquid-absorbent structure attached to the side of the crotch region facing the wearer's skin and elasticized lateral portions adapted to be spaced upward from the liquid-absorbent structure under contraction of the leg elastic elements.~~

~~[Claim 4]~~

~~The wearing article defined by Claim 2 or 3, wherein~~ each of the second leg elastic elements comprises rectilinear segments located in the front and rear ends of the crotch member and extending in the front and rear waist regions and a concavely curved segment located in the crotch region, and

elasticized regions defined by the first leg elastic elements have tensile stress higher than that of elasticized regions defined by the second leg elastic elements.

[Claim ~~5~~2]

The wearing article defined by ~~any one of Claims 2 through 4~~Claim 1, wherein a dimension by which each pair of the adjacent

second leg elastic elements ~~are~~ is spaced from ~~the first leg elastic elements~~ each other in the transverse direction is gradually reduced as the ~~first and~~ second ~~leg~~ elastic elements get closer to ~~the~~a middle zone of the crotch region.

~~(Claim 6)~~

~~The wearing article defined by any one of Claims 1 through~~

~~5, wherein the front and rear waist regions are defined by an annular elasticized waist panel and the crotch region is defined by a crotch member partially attached to the elasticized waist panel.~~

[Claim ~~7~~3]

The wearing article defined by Claim ~~6, wherein the crotch member has front and rear ends and at least one of the front and rear ends is attached to the outer surface of the elasticized waist panel.~~

~~[Claim 8]~~

~~The wearing article defined by any one of Claims 2 through 7, wherein each~~ 1 or 2, wherein the concavely curved segment of the second leg elastic elements ~~includes a concavely curved segment in the middle zone of the crotch region and in the vicinity thereof and a pair of rectilinear segments being contiguous to the concavely curved segment and respectively extending to ends of the second leg elastic elements opposite in the longitudinal direction and wherein the concavely curved segment~~ has a tensile stress higher than that of the rectilinear ~~segment~~segments of the second leg elastic elements.

[Claim 4]

The wearing article defined by any one of Claims 1 through 3, wherein the front and rear ends of the crotch member are bonded to outer surfaces of the front and rear elastic waist panels, respectively.

[Claim 5]

The wearing article defined by Claim 4, wherein

the front adhesive region substantially overlaps an inner end of the front waist panel and has a substantially trapezoidal shape contoured by an inner end extending in the transverse direction between the inner side edges of the respective elasticized lateral portions, an outer end substantially overlapping the front end of the crotch member and extending in the transverse direction, and both side edges obliquely extending from the outer end toward the inner end between the inner and outer ends, and

the rear adhesive region has a substantially rectangular shape which is transversally long and includes an inner end extending in the transverse direction and substantially overlapping an inner end of the rear waist panel and an outer end extending in the transverse direction and substantially overlapping an rear end of the crotch member.