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(54) **ANTI-SLIPPERY FOOTWEAR**

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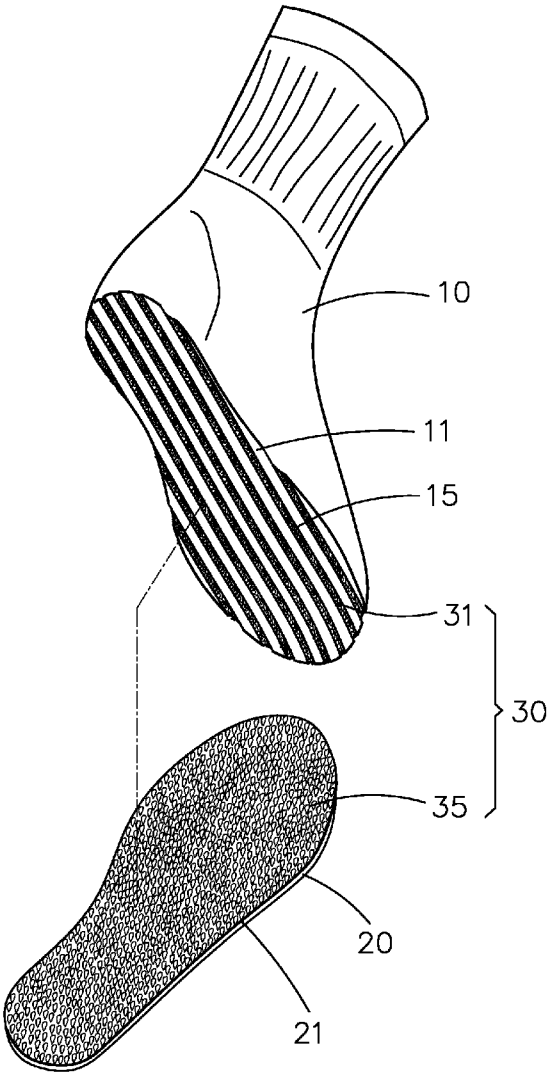
(52) **U.S. Cl.** ..... **36/43**; 36/9 R; 2/239; 36/59 R

(57) **ABSTRACT**

An anti-slippery footwear includes a sock, an insole, and an attaching structure formed on the attaching surfaces of the sock and insole. The attaching structure has a first attaching portion and a second attaching portion to provide anti-slippery effect while being attached with each other. At least one of the attaching surfaces of the sock and the insole has a recessed portion to accommodate at least one of the first and second attaching portions therein. The joining portions of the attaching structures are slightly lower than the attaching surface of the sock or the insole, such that when the individual wearing the sock is trying to put on a shoe that has the insole, the first and second attaching structures will not attach with each other before the shoe is properly worn by the individual. Instead, the first and second attaching structures will attach to each other only after the shoe is properly worn and a downward pressure is applied thereto.



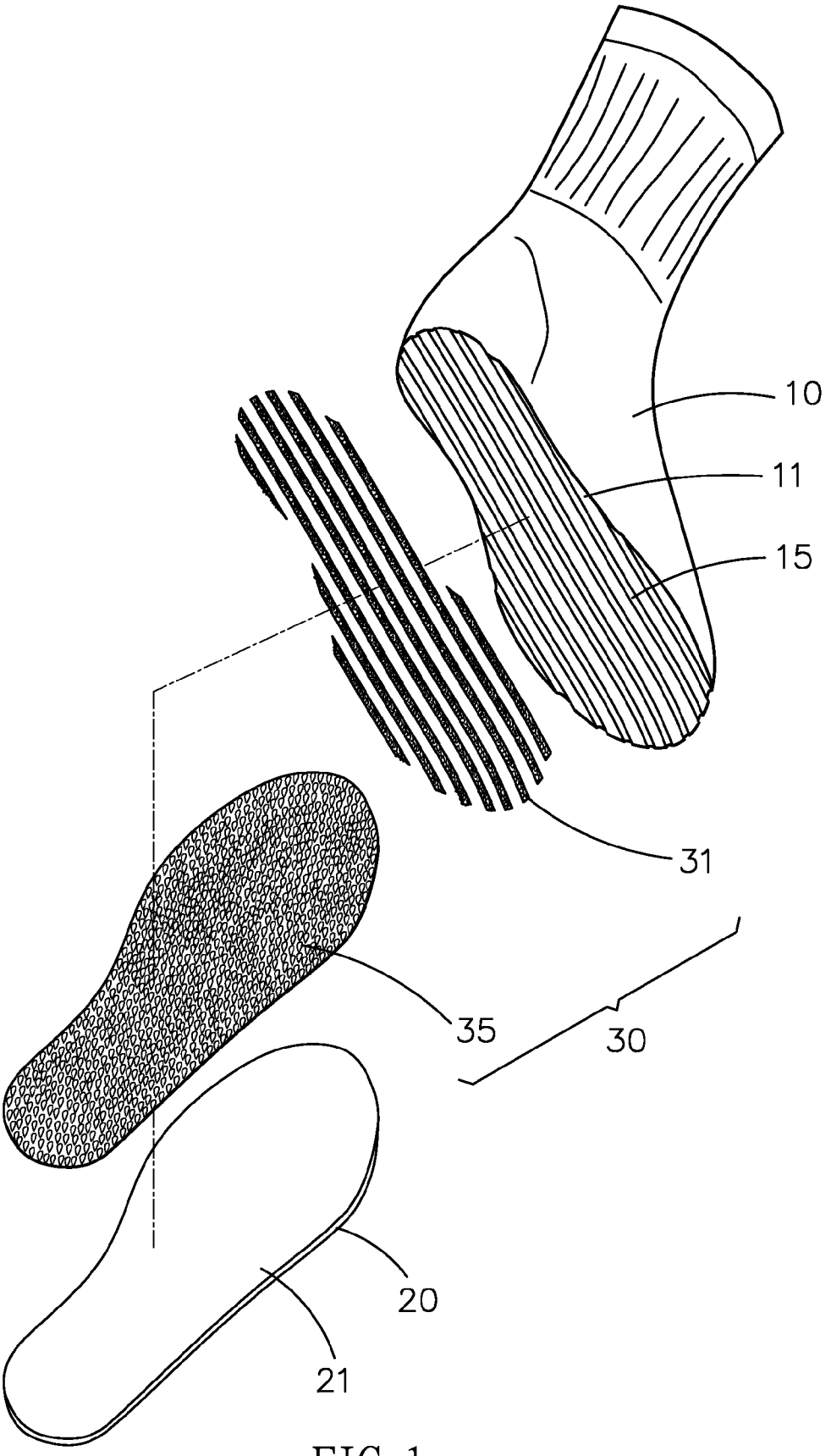


FIG. 1

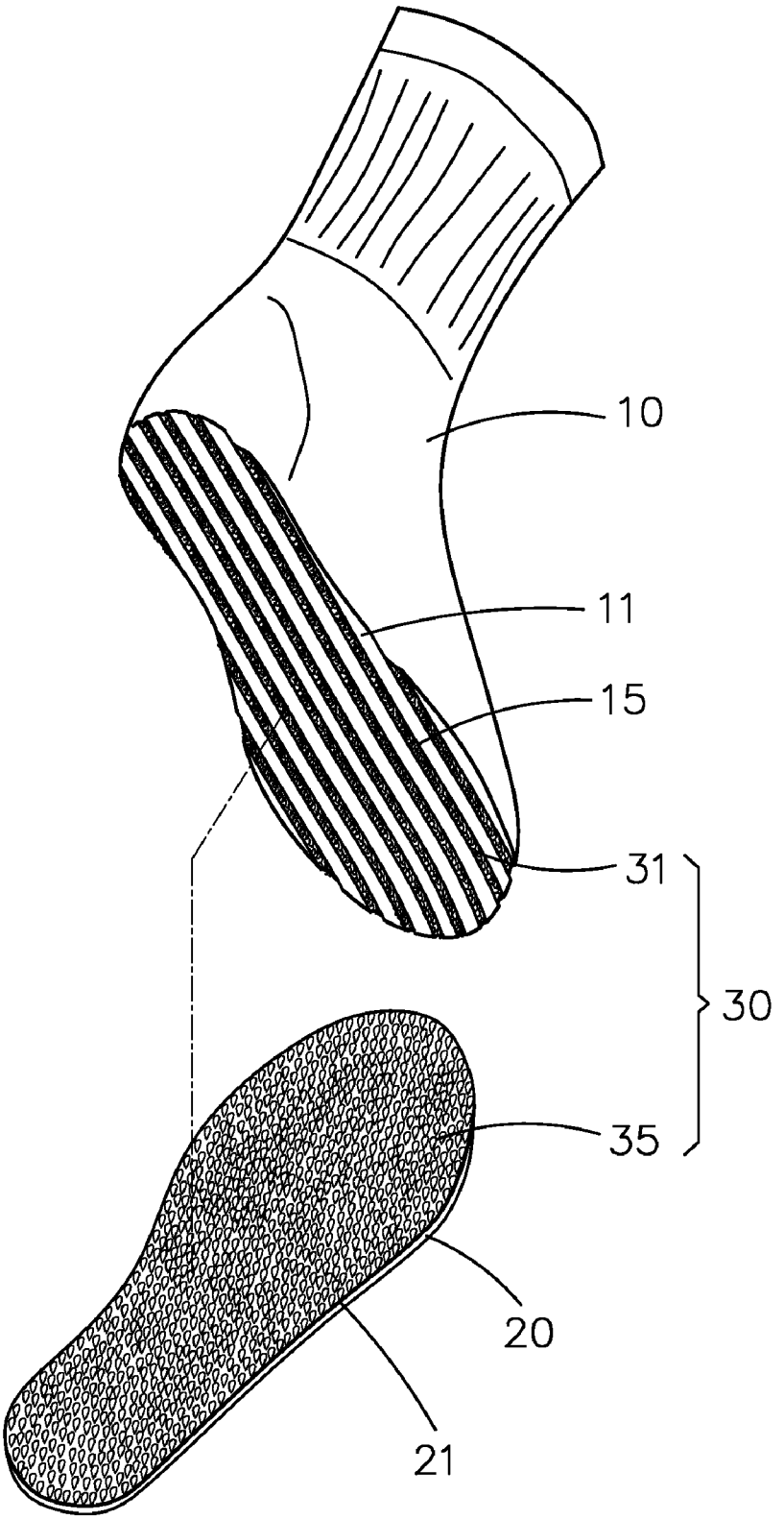


FIG. 2

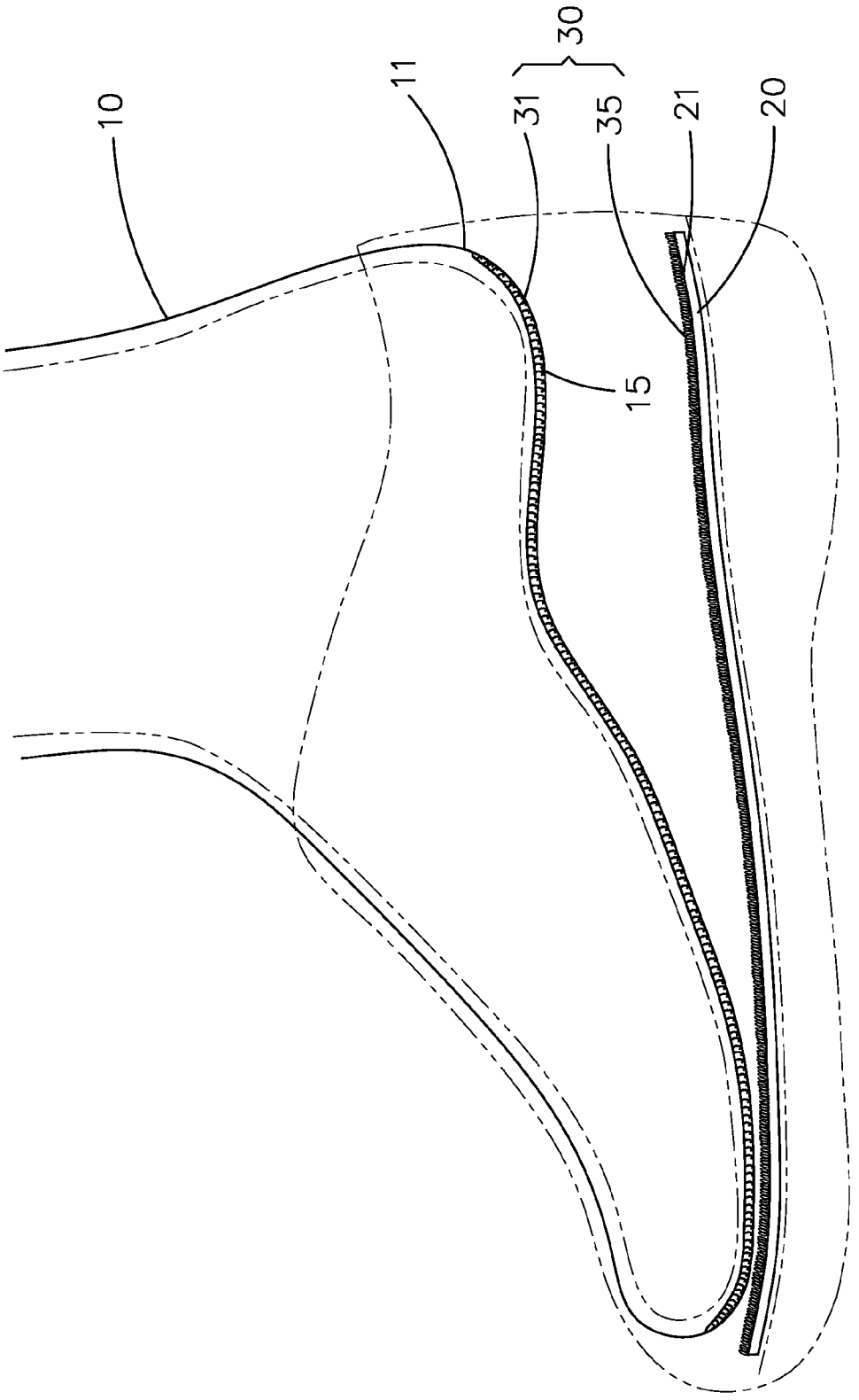


FIG. 3A

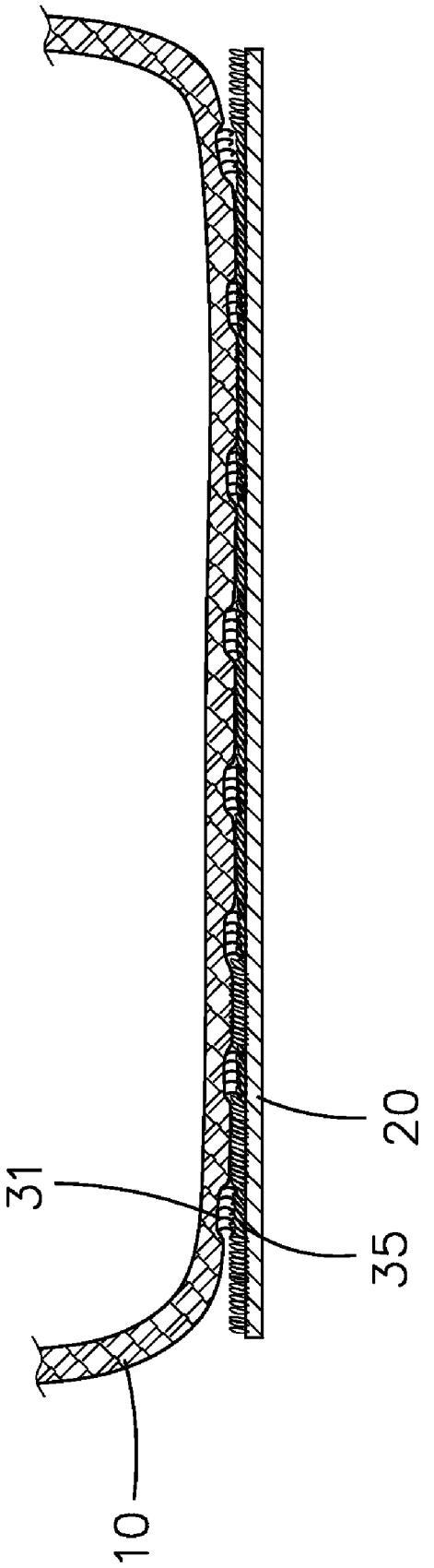


FIG. 3B

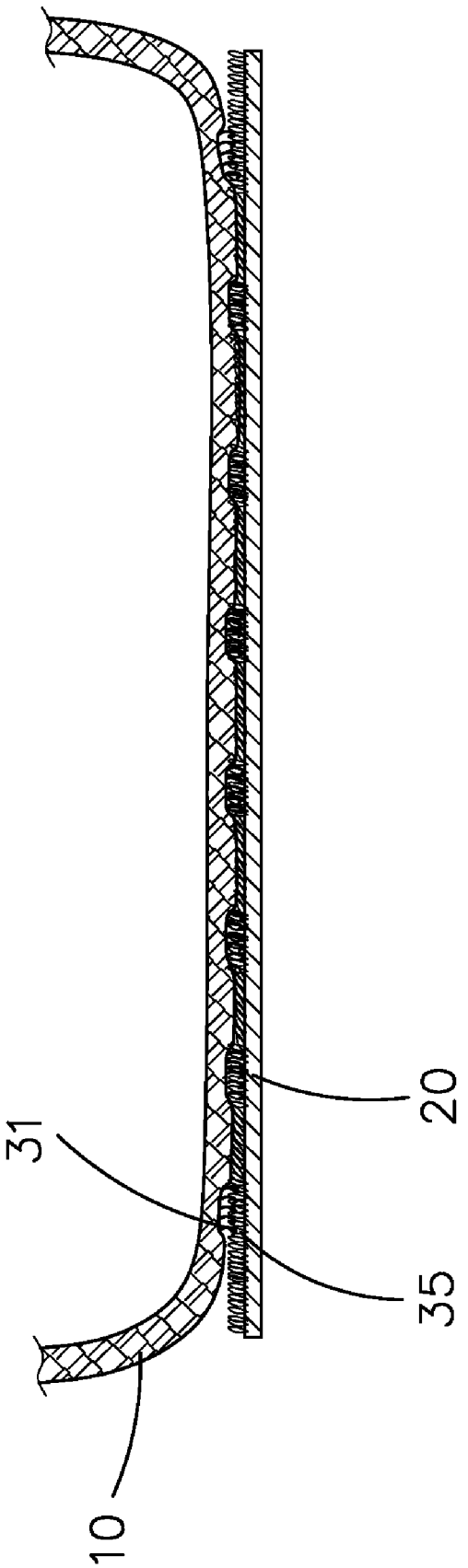


FIG. 3C

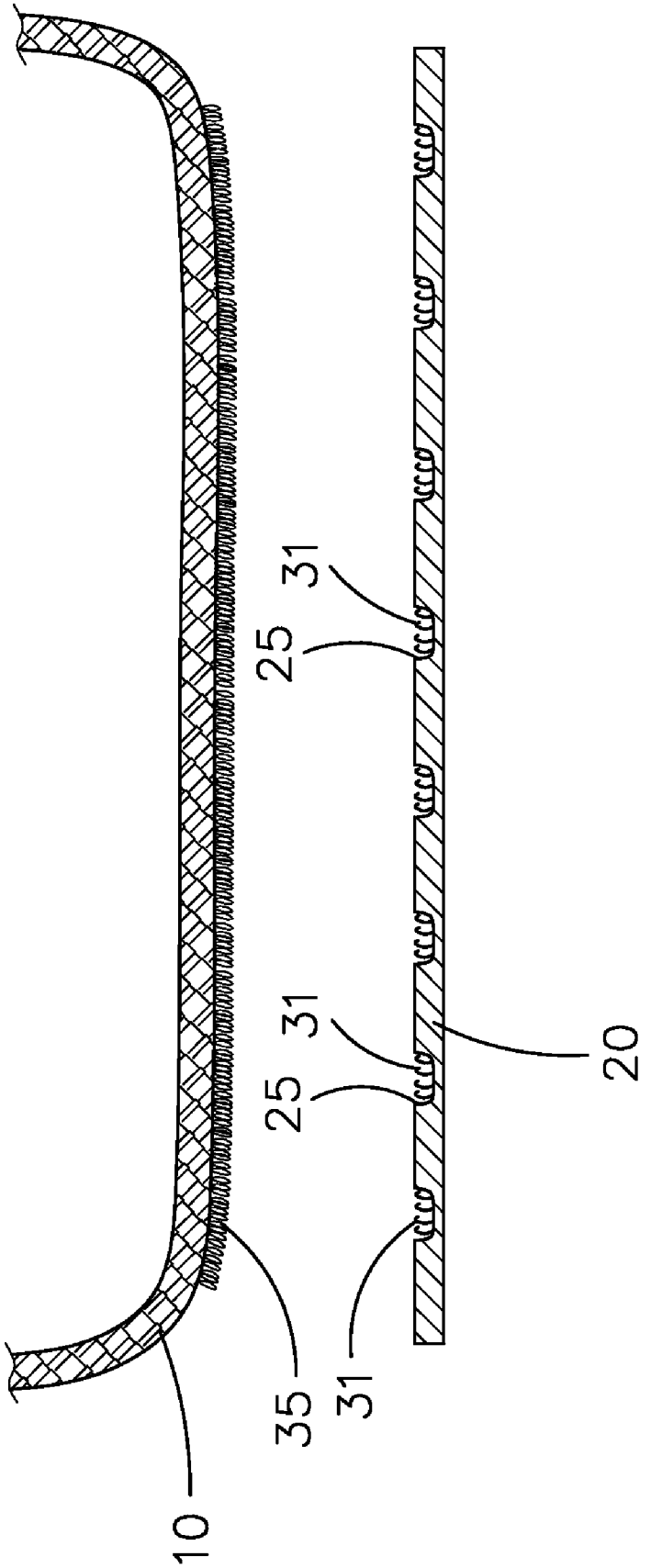


FIG. 4

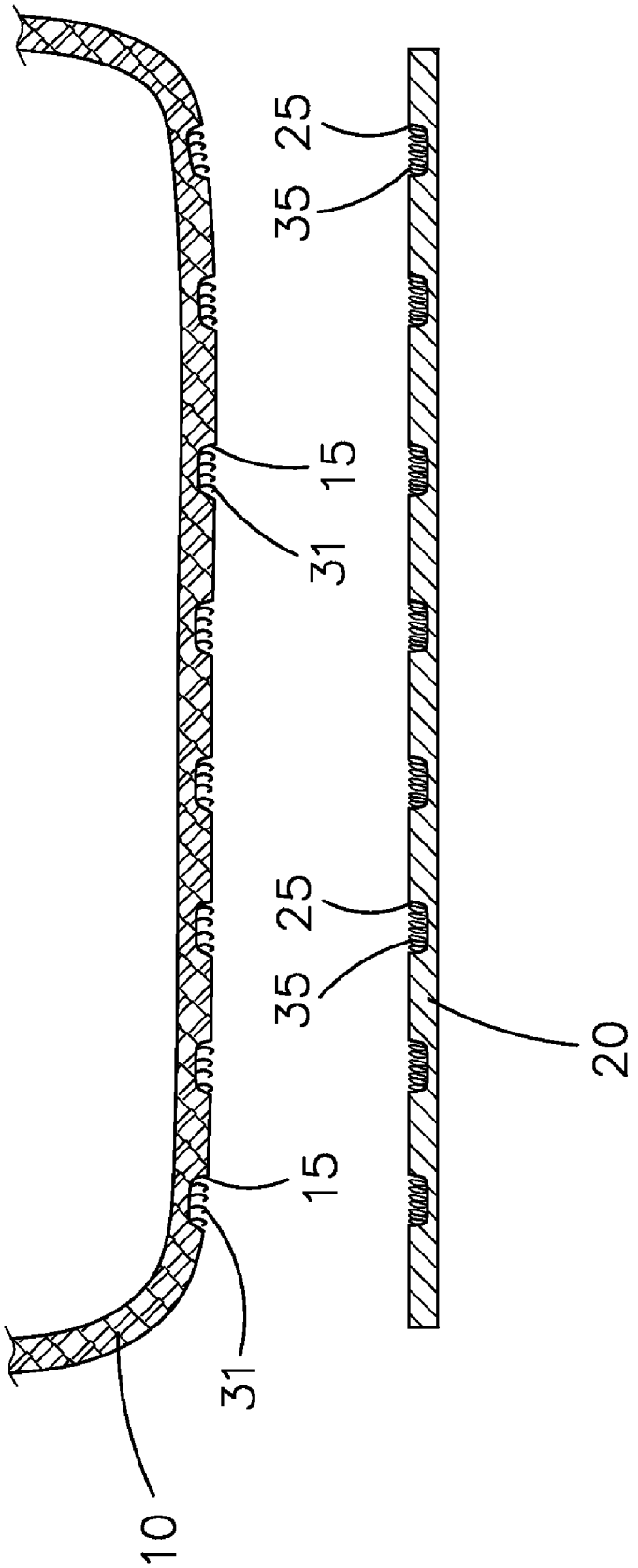


FIG. 5

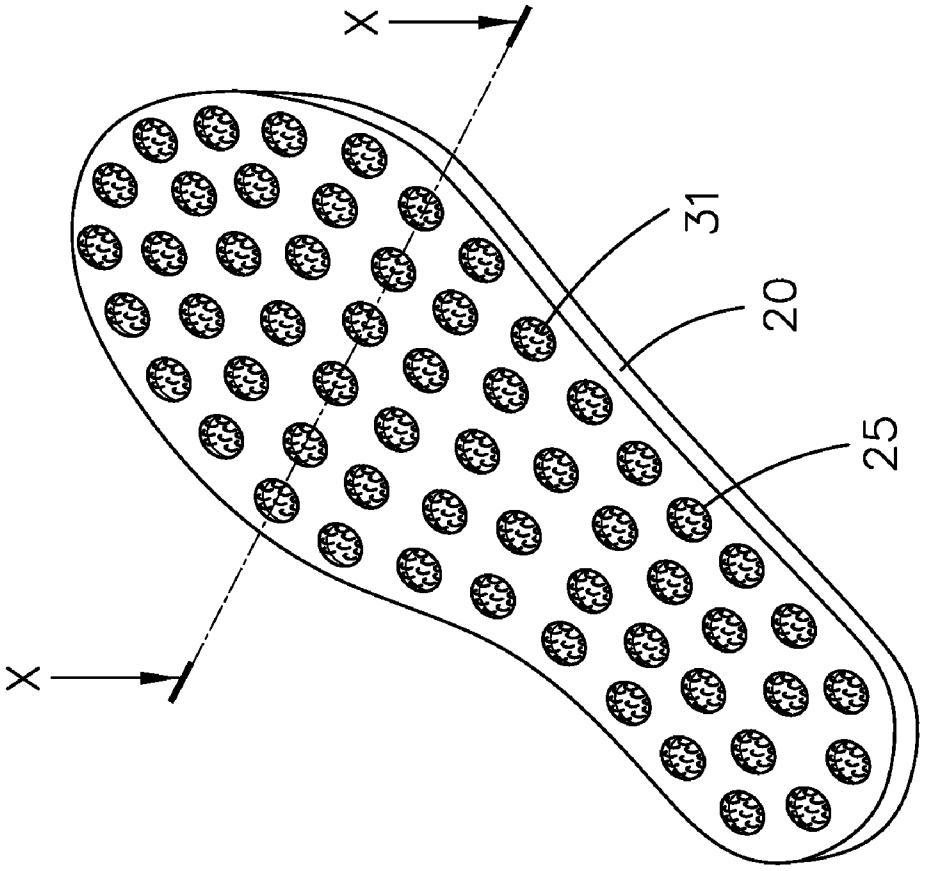
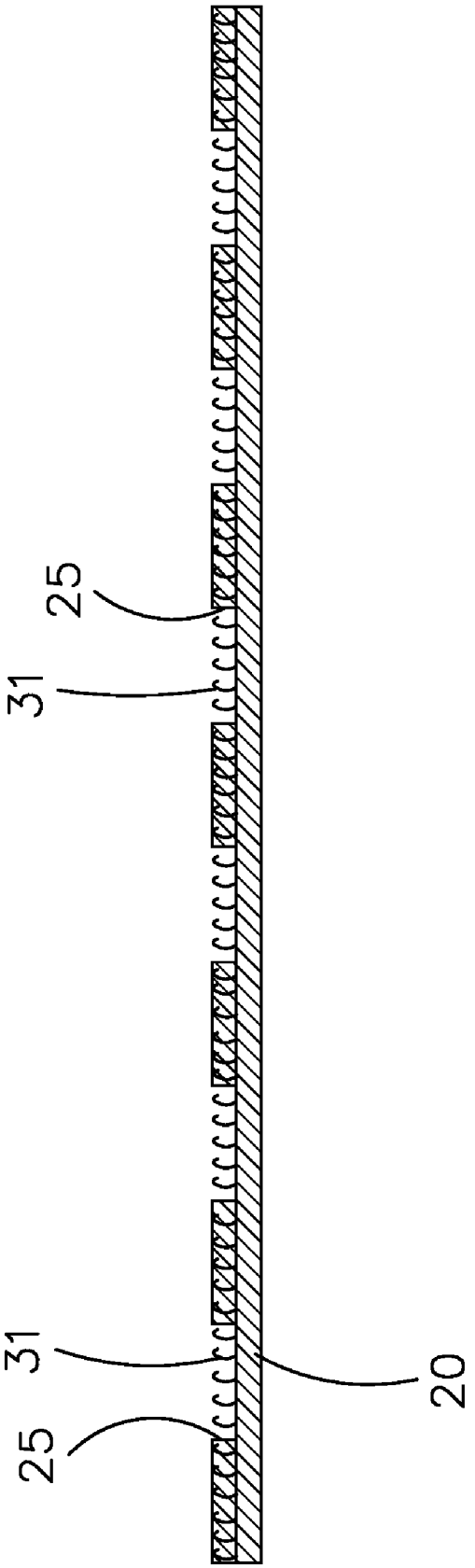


FIG. 6



X–X

FIG. 7

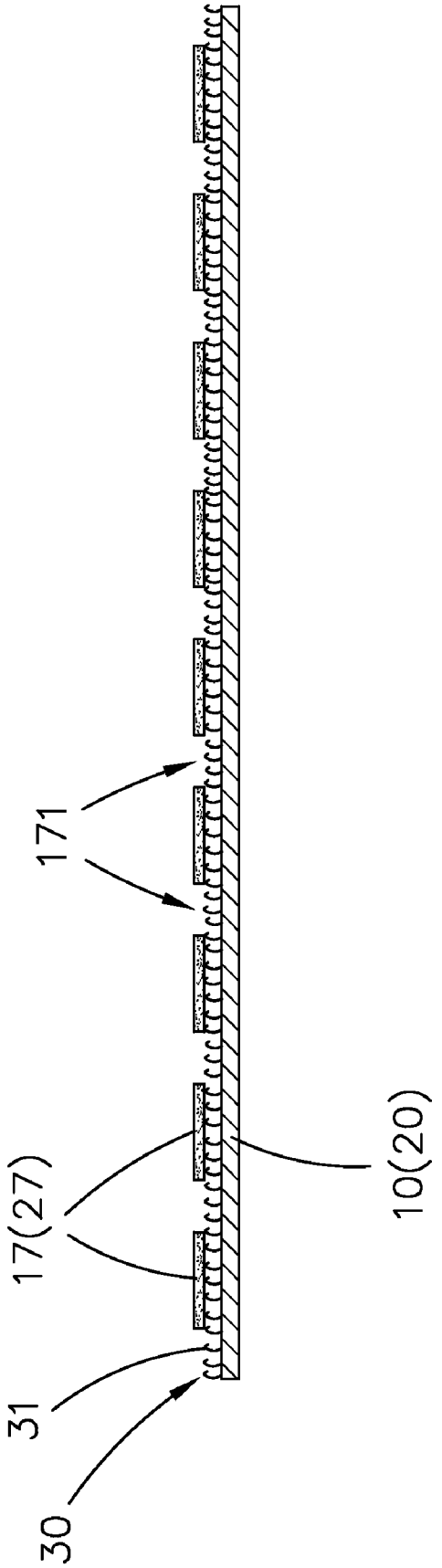


FIG. 8

ANTI-SLIPPERY FOOTWEAR

BACKGROUND

[0001] The present invention relates in general to an anti-slippery footwear, and more particularly, to a set of sock and insole attachable to each other after being pressed against each other.

[0002] Before putting on shoes, socks are typically worn to improve the flexibility, protection and warmth of our feet. To avoid the exactly-matching size of shoes that pressurizes the feet, a slightly larger size of shoes is typically preferred. Therefore, a gap between the feet and the shoes is existed; and therefore, the feet are likely to slip within the shoes because the socks are typically made of woven material, and the insoles of the shoes are typically made smooth. In the occasion that rapid movement is desired, such slippery effect may cause injury.

[0003] To overcome such problem, several anti-slippery structures between the socks and the insoles have been developed. Various structures have been disclosed in the patents No. WO 01/65959, WO 99/44449, U.S. Pat. No. 6,880,268, U.S. Pat. No. 3,059,350, JP 60/34603 and GB 2309625. In the U.S. Pat. No. 3,059,350, a front retaining member and a rear retaining member are formed on the top surface of a sandal. In the Great Britain Patent No. 2309625, a plurality of adhesive straps is formed on the bottom surface of the sock to attach the insole or shoe pad to achieve anti-slippery effect. In WO 01/65959, the mutually adhesive straps are attached to the heel-portion of the sock and the insole.

[0004] Among all structures as disclosed above, the sock and the insole are attached to each other before the foot is properly positioned within the shoe, such that the sock is easily displaced before the shoe is properly worn by the user. The repositioning of the socks often causes lumps or displacement of the insole, which again, make the foot uncomfortable.

BRIEF SUMMARY

[0005] A set of sock and insole is provided to prevent the foot from slipping within the shoe. The set of sock and insole allows the individual to put on the shoe and adjust the position of the foot within the shoe before the sock and insole are attach to each other. Therefore, the discomfort caused by repositioning the foot and the sock will be avoided.

[0006] An anti-slippery footwear of the present invention includes an insole, a sock and an attaching structure. The insole has a first attaching surface. The sock has a second attaching surface. The attaching structure includes a first attaching portion formed on the first attaching surface and a second attaching portion formed on the second attaching surface. At least one of the first and the second attaching portion is recessed from the corresponding attaching surface, such that the first and second attaching portion are removably attached together only when being pressed against each other.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] These and other features and advantages of the various embodiments disclosed herein will be better understood with respect to the following description and drawings, in which like numbers refer to like parts throughout, and in which:

[0008] FIG. **1** shows an exploded view of a set of anti-slippery sock and shoe;

[0009] FIG. **2** shows the perspective view of the sock and the shoe before attaching to each other;

[0010] FIGS. **3**A to **3**C show the attachment of the sock and the shoe;

[0011] FIG. **4** shows another embodiment of the anti-slippery sock and shoe;

[0012] FIG. **5** shows yet another embodiment of the anti-slippery sock and shoe;

[0013] FIG. **6** shows an insole with an attaching structure formed integrally therewith;

[0014] FIG. **7** shows the cross-sectional view of FIG. **6** along line X-X; and

[0015] FIG. **8** shows a modification of the anti-slippery sock and shoe

DETAILED DESCRIPTION

[0016] A set of sock and insole is provided and illustrated in FIG. **1**. As shown, the set of sock and insole includes a sock **10**, an insole **20** and an attaching structure **30**. The sock **10** includes a bottom surface **11** to be attached to a corresponding surface **21** of the insole **11**. The attaching structure **30** is formed on the attaching surfaces **11** and **21**.

[0017] Preferably, at least one of the bottom surface **11** of the sock **10** and the top surface **21** of the insole **20** has a recessed portion. For example, the bottom surface **11** has a recessed structure **15** as shown in FIGS. **1**, **2** and **3**, or the top surface **21** has a recessed structure **25** as shown in FIG. **4**. The recessed structures **15** and **25** can be in the form of recessed holes or stripes. As shown in FIG. **1**, the recessed structure **15** includes a plurality of recessed grooves formed on the bottom surface **11** of the sock **10**. The attaching structure **30** includes a first attaching portion **31** formed in the recessed grooves **15** and a second attaching portion **35** formed on the surface **21** of the insole **20**. The first and second attaching portions **31** and **35** of the attaching structure **30** include the detachable adhesive or attaching structures such as Velcro or temporary adhesive, for example.

[0018] As the first attaching portion **31** of the attaching structure **30** is not in contact with the second attaching portion **35** of the attaching structure **30** at the time the individual is putting on the shoe, the individual can easily adjust the position of the foot as well as the sock **10** within the shoe without being stuck by the insole **20**. Once the position of the foot and the sock **10** is properly adjusted, the first attaching portion **31** can be brought in contact with the second attaching portion **35** when the individual applies a force thereon by stomping the foot or simply standing up. Thereby, the sock **10** and the insole **20** are attached to each other to avoid slippage.

[0019] The application is illustrated in FIG. **3**. As shown, when the foot wearing the sock **10** entering the shoe, the first attaching portion **31** formed on the sock **10** will not attach the second attaching portion **35** formed on the insole **20** as shown in FIG. **3**A. When the foot is properly positioned and stepping downward, the sock **10** or the insole **20** are pressed against each other as shown in FIG. **3**B. Thereby, the first attaching portion **31** of the attaching structure **30** is exposed and in contact with the second attaching portion **35**. The first and second attaching portions **31** and **35** are thus attached to

each other as shown in FIG. **3**C to provide the anti-slippery effect without causing any discomfort to the individual.

[0020] FIG. **5** shows another embodiment in which both the attaching surfaces **11** and **21** include the recessed structures **15** and **25**, and the attaching portions **31** and **35** are formed within the recessed structures **15** and **25** only. Similar to the above embodiments, the sock **10** and the insole **20** will only attach each other while being pressed against each other. Therefore, the discomfort caused by the reposition of sock **10** and foot is prevented.

[0021] In FIGS. **6** and **7**, the insole **20** and the attaching structures **31** and are formed integrally, and the material for forming the insole **20** and the attaching structures **31** and **35** includes foam.

[0022] As shown in FIG. **8**, the first and second attaching portions **31** and **35** are formed on the attaching surfaces **11** and **20**, respectively, and attaching sheets **17** and **27** are used to cover the first and second attaching portions **31** and **35**. As shown, each of the attaching sheets **17** and **27** is perforated with at least one hole **171** to expose the first and second attaching portions **31** and **35**. The thickness of the attaching sheets **17** and **27** prevents the exposed first and second attaching portions **31** and **35** attached to each other at the time the foot is wearing the shoe. However, similarly to the above, when the shoe is put on and the foot and sock **10** are properly positioned within the shoe, the first and second attaching portions **31** and **35** can be pressed to attach to each other, so as to provide the anti-slippery effect.

[0023] The attaching sheets **17** and **27** may be formed by materials including the thermal plastic material such as PE, PP, PVC, PU, PC, PET, thermoplastic elastomer compounds such as TPU, TPE, TPR, EVA, or foams.

[0024] The above description is given by way of example, and not limitation. Given the above disclosure, one skilled in the art could devise variations that are within the scope and spirit of the invention disclosed herein, including configurations ways of the recessed portions and materials and/or designs of the attaching structures. Further, the various features of the embodiments disclosed herein can be used alone, or in varying combinations with each other and are not intended to be limited to the specific combination described herein. Thus, the scope of the claims is not to be limited by the illustrated embodiments.

What is claimed is:

1. An anti-slippery footwear, comprising:
an insole having a first attaching surface;
a sock having a second attaching surface; and
an attaching structure including a first attaching portion formed on the first attaching surface and a second attaching portion formed on the second attaching surface, wherein at least one of the first and the second attaching portion is recessed from a corresponding attaching surface, such that the first and second attaching portion are removably attached together only when being pressed against each other.

2. The footwear of claim **1**, wherein the recessed attaching portions include a plurality of holes or stripes and attaching materials formed therein.

3. The footwear of claim **2**, wherein the attaching materials are integrally formed with the insole or sock.

4. The footwear of claim **1**, wherein the attaching structure includes Velcro.

5. The footwear of claim **1**, wherein the insole is fabricated from foam.

6. The footwear of claim **1**, wherein at least one of the first or the second attaching portions includes an attaching material formed on the corresponding attaching surface and a perforated covering sheet partially covering the attaching material.

7. The footwear of claim **6**, wherein the covering sheet is fabricated from thermal plastic material, thermoplastic elastomer compound, EVA or foam.

8. The footwear of claim **7**, wherein the thermal plastic material includes PE, PP, PVC, PU, PC, PET.

9. The footwear of claim **7**, wherein the thermoplastic elastomer compound includes, TPU, TPE, TPR.

10. A sock, comprising:
a bottom surface having at least a recessed portion; and
an attaching structure formed within the recessed portion to be removably attachable to a corresponding attaching structure formed on an insole or on an interior bottom surface of a shoe.

11. The sock of claim **10**, wherein the recessed portion includes a plurality of holes or stripes and attaching materials formed therein.

12. The sock of claim **10**, wherein the attaching structure includes Velcro.

13. The sock of claim **10**, wherein the attaching structure includes an attaching material formed on the bottom surface and a perforated covering sheet partially covering the attaching material.

14. The sock of claim **13**, wherein the covering sheet is fabricated from thermal plastic material, thermoplastic elastomer compound, EVA or foam.

15. The sock of claim **14**, wherein the thermal plastic material includes PE, PP, PVC, PU, PC, PET.

16. The sock of claim **14**, wherein the thermoplastic elastomer compound includes, TPU, TPE, TPR.

17. An insole, comprising:
a top surface having at least a recessed portion; and
an attaching structure formed within the recessed portion to be removably attachable to a corresponding attaching structure formed on a bottom surface of a sock.

18. The insole of claim **17**, wherein the recessed portion includes a plurality of holes or stripes and attaching materials formed therein.

19. The insole of claim **17**, wherein the attaching structure includes Velcro.

20. The insole of claim **17**, wherein the attaching structure includes an attaching material formed on the corresponding attaching surface and a perforated covering sheet partially covering the attaching material.

21. The insole of claim **20**, wherein the covering sheet is fabricated from thermal plastic material, thermoplastic elastomer compound, EVA or foam.

22. The insole of claim **21**, wherein the thermal plastic material includes PE, PP, PVC, PU, PC, PET.

23. The insole of claim **21**, wherein the thermoplastic elastomer compound includes, TPU, TPE, TPR.

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