DOUBLE FLUSH FASTENER FOR ATTACHING CLEATS

Inventor: ROBERT J. CORBETT, WOODWAY, TX (US)

Correspondence Address:
GREENBERG TRAURIG LLP (LA)
2450 COLORADO AVENUE, SUITE 400E,
INTELLECTUAL PROPERTY DEPARTMENT
SANTA MONICA, CA 90404 (US)

Assignee: ALCOA GLOBAL FASTENERS, Torrance, CA (US)

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ABSTRACT

A two piece fastener for securing at least one sole member to a metal cleat to provide better traction in footwear is disclosed. The fastener comprises a pin member and a sleeve member having an internal locking mechanism. In exemplary embodiments, the internal locking mechanism is defined by axial movement of the pin to engages a sleeve stop shoulder in a through bore located in the sleeve moving it radially inward into the internal locking section of the pin. After the internal locking section has been substantially filled, the pin and sleeve are locked together stopping movement of the pin. The fastener provides both water resistance and easy removability with the use of a tool.
DOUBLE FLUSH FASTENER FOR ATTACHING CLEATS

BACKGROUND

[0001] 1. Field

[0002] A fastener for utilization with cleats for athletic footwear is disclosed. In particular, a two piece fastener including a pin and sleeve having an internal lock providing both moisture resistance and ease of removal is disclosed.

[0003] 2. General Background

[0004] Athletic shoes may require the use of cleats or other antislip devices. The cleats made be made of metal of ceramic. One of the challenges for providing athletic footwear is to provide an efficient technique to attach the cleats to the shoe.

[0005] There are currently several types of fasteners utilized for placing metal cleats in athletic shoes. Previous designs for metal cleat includes utilizing a solid squeeze rivet for removal of the cleats. However, these designs do not allow removal and replacement of cleats once they are worn down from excessive use.

[0006] Other previous designs of cleat fasteners utilize an internal lock having a spline lock design wherein the pin contains locking splines on the shank of the pin. While providing for a removable fastener, the locking splines create grooves in the fastener that create leak points into the shoes, allowing excess moisture into the shoes.

[0007] Thus, there is a need to provide a fastener for attaching cleats to footwear that prevents leakage and still provides easy removability.

SUMMARY

[0008] A fastener for securing at least one sole member to a metal cleat to provide better traction in footwear is disclosed. In exemplary embodiments, the fastener is a two piece member having both a sleeve and a pin.

[0009] In an exemplary embodiment, the fastener has an internal locking mechanism that provides moisture resistance for the fastener, but also allows for easy removability.

[0010] In an exemplary embodiment, the internal locking mechanism directs a portion of material of the sleeve substantially radially inward to lock the pin and sleeve together and stop axial movement of the pin into the sleeve during installation.

[0011] In one embodiment of the fastener, the sleeve member comprises an enlarged head sleeve shank portion, a through bore, and a sleeve stop shoulder. The through bore having an bore portion and a reduced diameter bore portion.

[0012] In another embodiment, the pin member comprises an enlarged head, a shank portion with a diameter, and a reduced diameter shank portion, the reduced diameter shank portion having a diameter about the same as and providing a clearance with the reduced diameter bore portion, wherein at a juncture of the shank portion and reduced diameter shank portion is a pin stop shoulder, the reduced diameter shank portion having an internal locking section adjacent the pin stop shoulder.

[0013] During installation of the fastener, the pin stop shoulder and sleeve stop shoulder engage for directing the material of the sleeve stop shoulder substantially radially inward into the internal locking section to lock the pin and sleeve together and stop axial movement of the pin into the sleeve.

[0014] Other objects, features, and advantages of the present disclosure will become apparent from the subsequent description and the appended claims.

DRAWINGS

[0015] The foregoing aspects and advantages of present disclosure will become more readily apparent and understood with reference to the following detailed description, when taken in conjunction with the accompanying drawings, wherein:

[0016] FIG. 1 illustrates an exemplary embodiment of the fastener showing both the pin and sleeve prior to installation of the fastener.

[0017] FIG. 2 illustrates another exemplary embodiment of the fastener showing the pin and sleeve pressed together and locked.

[0018] FIG. 3 illustrates a close up view of one exemplary embodiment of the fastener, showing an exemplary embodiment of the sleeve stop shoulder.

[0019] FIG. 4 illustrates an exemplary embodiment of the fastener prior to installation in relationship to a plurality of soleplies and a metal cleat.

[0020] FIG. 5 illustrates an exemplary embodiment of the installed fastener.

[0021] FIG. 6 illustrates an exemplary tool that may be utilized to remove the fastener and replace the cleat.

DETAILED DESCRIPTION

[0022] A fastener for attaching cleats to footwear is disclosed. The cleats provide improved traction for footwear. Any type of cleat may be utilized for any sport. In exemplary embodiments, the fastener is utilized to connect the cleat to the footwear. Looking now at the Figures, the fastener comprises a hollow sleeve 12 and a pin 14 which are to be joined together with an internal locking mechanism.

[0023] The hollow sleeve 12 has a generally straight shank portion 16 with a uniform outer diameter terminating at its outer end 18 with an enlarged head 20. The sleeve 12 has a central through bore 22 which includes a shank bore portion 24 and a reduced diameter bore portion 26. The hollow sleeve further comprises an annular stop shoulder 28 defined at the juncture of the shank bore portion 24 and the reduced diameter bore portion 26.

[0024] In an exemplary embodiment shown in FIG. 3, a small slit 30 separates the stop shoulder from the reduced diameter bore portion 24. In exemplary embodiments, the sleeve stop shoulder may terminate in a tapered portion 34 to assist in moving of the stop shoulder 28 into a locking position. The stop shoulder 28 has a similar outer diameter to that of the shank bore portion 26.

[0025] The pin 14 includes an elongated shank portion 38 terminating at one end with an enlarged head portion. The pin member 14 comprises an elongated generally smooth pin shank portion 42 and a generally smooth reduced diameter pin shank portion 48. In an exemplary embodiment, the enlarged head portion has an enlarged flush head 45. At the other end 50 of the pin member 14 has a slight taper 58 to help move the pin 14 into the reduced diameter bore portion 26 of the sleeve 12 during installation.

[0026] The diameter of pin shank portion 42 is generally the same as that of the shank bore portion 24 in the sleeve 12, i.e. slight clearance to slight interference. The smooth
reduced diameter portion 48 is generally the same as that of the to provide a slight clearance to slight interference.

[0027] An annular pin stop shoulder 52 is defined by the juncture of the reduced diameter pin portion 48 and the pin shank portion 40 and has an end surface 57 which is generally planar. An annular internal locking section 44 is defined by an annular groove located immediately adjacent the pin stop shoulder 52.

[0028] In an exemplary embodiment, the annular internal locking section 44 of the pin 14 is formed to have its wall 46 curved. This assists the internal locking section 44 in retaining the lock material of sleeve stop shoulder 28 and resisting rearward push out of pin 14 during installation.

[0029] To install, at least one sole ply 60 for the construction of a shoe and a metal cleat 66 is placed between the pin member 14 and sleeve 12. In an exemplary embodiment, three sole plies will be place installation force should be placed on both the outer end of the sleeve 18 and the enlarged head 40 of the pin 14 to press the pin 14 and sleeve 12 together.

[0030] As axial movement of the pin 14 continues the pin stop shoulder surface 52 engages the sleeve stop shoulder surface 28 moving it radially inwardly into the internal locking section 44. After the internal locking section 44 has been substantially filled, movement of the pin 14 is arrested and the relative axial force applied between the pin 14 and sleeve 12 maintains the pin locked into the sleeve member.

[0031] As previously discussed, the sleeve stop shoulder 28 is annularly separated for a selected distance along the annular slit 30. The slit 30 or separation enhances the radially inward folding action of the material of the sleeve stop shoulder 28 into the internal locking section of the pin 14.

[0032] In other exemplary embodiments, the sleeve stop shoulder surface 36 is inclined or tapered to assist the material of the sleeve stop shoulder 28 to be folded or moved radially inward. In this regard the engaging surface of pin stop shoulder 52 is oriented relative to that of the sleeve surface 36 such as to assist in the radially inward folding action; thus the material of sleeve stop shoulder 28 will be substantially directed radially inward and not radially outward.

[0033] The volume of the material of the sleeve stop shoulder 28 is selected relative to the volume of the internal locking section 44 such that the internal locking section will be substantially filled and axial movement of the pin 14 will be stopped at the desired location generally when that filled condition occurs, i.e. such that pin break at breakneck 60 occurs within the sleeve head. Thus, the volume of sleeve stop shoulder 28 which is separated from the remainder of the sleeve 12 by the tapered portion and slit 30 is generally equal to or greater than the volume necessary to fill the internal locking section 58 and adjacent area between the pin 14 and sleeve 12.

[0034] In exemplary embodiments, the pin stop shoulder surface 57 first acts to fold and/or deform the material of the sleeve stop shoulder 28 radially inward; as this occurs substantially all of the surface 57 (including that portion extending into internal locking section 44) will be active as a stop. When filling the internal locking section 44 the movement of locking material from the sleeve stop shoulder 28 is generally entirely radially inward.

[0035] Upon installation of the fastener, the enlarged head of the pin will interlock with the top layer 70 of sole plies 60. The enlarged head 45 of the pin will press into the sole ply 60 so that the top 70 is flush with the end 40 of the pin member 14, improving the comfort of the footwear.

[0036] The fastener also allows for easy removal and replacement of cleats utilizing a tool 90. The tool 90 with include a punch or drill piece 92 that will interlock with the outer end of the pin member. To remove the fastener, the tool 90 can be pushed into the through bore of the sleeve 12 punching the outer end 50 of the pin member 14, and pushing the pin member 14 out of the sleeve 12.

[0037] In exemplary embodiments, there will be exhibited external flushness of the pin 14 with the external head surface 18 of the sleeve. The flushness of the outer end 18 of the sleeve 12 and the outer end 66 of the pin 14 provides visual confirmation of proper installation. This flushness also prevents water from seeping through the fastener 10 and provide moisture resistance to the shoe.

[0038] Additionally, the disclosed construction of the fastener promotes good filling of the locking section 44 and also minimizes variations in the axial position of the pin 14 at which the groove 58 is filled. As a result, any moisture would be prevented from entering the shoes via the cleat fastener 10.

[0039] While the above description contains many particulars, these should not be considered limitations on the scope of the disclosure, but rather a demonstration of embodiments thereof. The fastener and uses disclosed herein include any combination of the different species or embodiments disclosed. Accordingly, it is not intended that the scope of the disclosure in any way be limited by the above description. The various elements of the claims and claims themselves may be combined any combination, in accordance with the teachings of the present disclosure, which includes the claims.

1. A fastener for securing at least one sole member to a metal cleat to provide better traction in footwear comprising:
   a sleeve member having an enlarged head sleeve shank portion, a through bore, the through bore having an enlarged bore portion and a reduced diameter bore portion and a sleeve stop shoulder;
   a pin member having an enlarged head, an enlarged shank portion, and a reduced diameter shank portion, the reduced diameter shank portion having a diameter about the same as and providing a clearance with the reduced diameter bore portion, wherein at a juncture of the shank portion and reduced diameter shank portion is a pin stop shoulder, the reduced diameter shank portion having an internal locking section adjacent the pin stop shoulder; and
   wherein the pin stop shoulder and sleeve stop shoulder have an engaging surface for directing the material of the sleeve stop shoulder substantially radially inward into the internal locking section to lock the pin and sleeve together and stop axial movement of the pin into the sleeve during installation.
2. The fastener of claim 1 wherein the internal locking section has a curved wall to facilitate movement of the sleeve stop shoulder into the internal locking section.
3. The fastener of claim 1 wherein the sleeve stop shoulder is separated from the bore portion of the sleeve by an annular slit to facilitate easier movement of the stop shoulder into the internal locking section of the pin.
4. The fastener of claim 1 wherein the sleeve stop shoulder terminates in a generally tapered portion defined by a surface extending radially inward and downward toward outer end of pin.
5. The fastener of claim 1 wherein the sleeve stop shoulder has a volume sufficient to generally fill a volume defined by the internal locking section of the pin.

6. The fastener of claim 1 wherein a tool having a punch may be utilized to remove the fastener from the metal cleat.

7. The fastener of claim 1 providing a double flush fastener that resists the entrance of water into the footwear.

8. A fastener for securing at least one sole member to a metal cleat to provide better traction in footwear comprising:
   - a sleeve member having an enlarged head sleeve shank portion, a through bore, the through bore having an bore portion and a reduced diameter bore portion;
   - a pin member having an enlarged head, a shank portion with a diameter, and a reduced diameter shank portion, the reduced diameter shank portion having a diameter about the same as and providing a clearance with the reduced diameter bore portion, the reduced diameter shank portion;
   - wherein an internal locking mechanism directs a portion of material of the sleeve substantially radially inward to lock the pin and sleeve together and stop axial movement of the pin into the sleeve during installation.

9. The fastener of claim 8 wherein the internal locking mechanism is a pin stop shoulder at a juncture of the shank portion and reduced diameter shank and a sleeve stop shoulder engaged by the pin stop shoulder for directing the material of the sleeve stop shoulder substantially radially inward into the internal locking section to lock the pin and sleeve together and stop axial movement of the pin into the sleeve during installation.

10. The fastener of claim 9 wherein the internal locking section has a curved wall to facilitate movement of the sleeve stop shoulder into the internal locking section.

11. The fastener of claim 9 wherein the sleeve stop shoulder is separated from the bore portion of the sleeve by an annular slit to facilitate easier movement of the stop shoulder into the internal locking section of the pin.

12. The fastener of claim 9 wherein the sleeve stop shoulder terminates in a generally tapered portion defined by a surface extending radially inward and downward toward outer end of pin.

13. The fastener of claim 9 wherein the sleeve stop shoulder has a volume sufficient to generally fill a volume defined by the internal locking section of the pin.

14. The fastener of claim 8 wherein a tool having a punch may be utilized to remove the fastener from the metal cleat.

15. The fastener of claim 8 providing a double flush fastener that resists the entrance of water into the footwear.

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