IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION

SCAN TOP ENTERPRISE COMPANY, LTD., *Plaintiff,* vs. WINPLUS NORTH AMERICA,INC., WINPLUS COMPANY, LTD., SEARS HOLDINGS CORPORATION, ASHLAND INC., BIG LOTS, INC., SERVICE CHAMP INC. AND JOHN DOES 1-10, *Defendants.*	**CIVIL ACTION NO. 14 CV 7505** **JURY TRIAL DEMANDED**

COMPLAINT

Plaintiff Scan Top Enterprise Company, Ltd. by its attorneys, for its Complaint for patent infringement and other causes of action against Winplus Company, Ltd., Winplus North America, Inc., Sears Holdings Corporation, Ashland Inc., Big Lots, Inc., Service Champ Inc. and John Does 1-10 (collectively "Defendants") on knowledge, information and belief, alleges as follows:

Jurisdiction and Venue

1. This is an action for patent infringement arising under the patent laws of the United States, Title 35, United States Code.

2. Jurisdiction over this action is proper in this court under 28 U.S.C. § 1332.

3. The amount in controversy exceeds $75,000.00.

4. This Court has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338.

5. Supplementary jurisdiction over the state law claims in this court is proper pursuant to 28 U.S.C. § 1367.

6. Defendants are subject to personal jurisdiction in the Northern District of Illinois consistent with the principles of due process, because each of the Defendants maintains offices and facilities in this District, offers its products for sale in this District, has transacted business in this District, has committed and/or induced acts of patent infringement in this District, and/or has placed infringing products into the stream of commerce through established distribution channels with the expectation that such products will be purchased by residents of this District.

7. Venue is proper in this district under 28 U.S.C. § 1391 and § 1404.

The Parties

8. Scan Top Enterprise Company, Ltd. ("Scan Top") is a Taiwanese corporation, with its principal place of business in RM #4E-17, No. 5, Sec. 5, Hsin Yi Road, Taipei, Taiwan.

9. Upon information and belief, Winplus North America, Inc. is a California corporation, with its principal place of business at 820 South Wanamaker Ave., Ontario, California 91761.

10. Upon information and belief, Winplus Company, Ltd. is a Chinese corporation with its principal place of business at Suite 6-11, 7th Floor Corporation Park, 11 On Lai Street, Shatin, NT Hong Kong. Winplus North America, Inc. and Winplus Company, Ltd. are hereinafter collectively referred to as "Winplus."

11. Sears Holdings Corporation ("SHC") is a Delaware corporation, with its principal place of business at 3333 Beverly Road, Hoffman Estates, Illinois 60179.

12. Ashland Inc. is a Kentucky corporation with its principal place of business at 50 E. River Center Blvd., Covington, Kentucky 40512.

13. Big Lots, Inc. is an Ohio corporation with its principal place of business at 300 Phillipi Road, Columbus, Ohio 43228.

14. Upon information and belief, Service Champ, Inc. is a Pennsylvania corporation with its principal place of business at 180 New Britain Boulevard, Chalfont, PA 18914.

15. John Does 1-10 are corporations and individuals against whom the plaintiff may assert all or some of the claims set forth in this pleading, but their identities are not yet ascertainable at this point without further discovery.

Factual Background

16. Scan Top is a global leader in the research, development, and manufacture of automobile parts including windshield wiper blades. Scan Top windshield wiper blades are sold worldwide. Among its many wiper-blade products, Scan Top manufactures three windshield wiper blade connectors, model nos. PT-3, PH and TL-2. Scan Top's wiper blade connectors are designed to connect to a variety of wiper arms on different makes and models of automobiles.

17. As a global leader in windshield wiper development, Scan Top has invented and patented many windshield wiper products.

18. On April 9, 2013, U.S. Patent No. 8,413,292 ("the '292 Patent") entitled "Windshield Wiper Assembling Structure for Preventing Loose Attachments of Driven Wiper Arm" was duly and legally issued to two inventors. The '292 Patent has been assigned to Scan Top, which holds substantially all rights, title and interest in the patent. A copy of the '292 Patent is attached as Exhibit A.

19. The '292 Patent relates generally to a variety of apparatus for snugly connecting a windshield wiper to the wiper arm. The claims of the '292 Patent cover Scan Top's PT-3 model of wiper blade connector.

20. On February 18, 2014, U.S. Patent No. 8,650,701 ("the '701 Patent") entitled "Connecting Assembly for Windshield Wiper" was duly and legally issued to two inventors. The '701 Patent has been assigned to Scan Top, which holds substantially all rights, title and interest in the patent. A copy of the '701 Patent is attached as Exhibit B.

21. The '701 Patent relates generally to a variety of apparatus for snugly connecting a windshield wiper to the wiper arm. The claims of the '701 Patent cover Scan Top's TL-2 model of wiper blade connector.

22. Windshield wiper blades are typically packaged and sold with one or more wiper blade connectors so that the wiper can be installed on a wide variety of makes and models of automobile. For example, in the past defendants have sold wiper blades with all three of Scan Top's PT-3, TL-2 and PH connectors in the same package.

23. In or about February 2011, Winplus and Scan Top entered into a Distribution Agreement under which Scan Top would supply Winplus with windshield wiper assemblies that include a replacement wiper blade and a plurality of wiper blade connectors. In fulfillment of the Distribution Agreement, Scan Top manufactured and supplied Winplus with a wiper assembly that included the PT-3, TL-2 and PH connectors packaged with a replacement wiper blade. Scan Top manufactured and supplied Winplus with several other replacement wiper assemblies.

24. In the course of their manufacturer-distributor relationship and under terms of confidentiality, Scan Top supplied Winplus with proprietary technical documents, technical drawings and data necessary to manufacture the PT-3, TL-2 and PH windshield wiper blade connectors (the "Documents and Data"). The Documents and Data are kept confidential by Scan Top and comprise valuable trade secrets.

25. Scan Top's Documents and Data derive independent economic value from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from their disclosure or use.

26. On or about April 13, 2011, Allen Chai, President of Winplus, asked Scan Top to send him the Documents and Data so that Winplus could investigate whether Scan Top's new designs infringe the patents of any third party. At Mr. Chai's request, and in reliance on his promise to keep the Documents and Data confidential, Scan Top sent Winplus a copy of the Documents and Data.

27. On several occasions including April 13, 2011 and April 17, 2011, Scan Top informed Winplus that it had made additional changes to its new wiper design. At Mr. Chai's request, and in reliance on his promise to keep the Documents and Data confidential, Scan Top sent Winplus the updated Documents and Data.

28. All of the Documents and Data sent by Scan Top to Winplus were expressly marked "Patent Pending" or "Confidential". Scan Top employed and continues to employ reasonable efforts to maintain the secrecy of the Documents and Data.

29. Winplus knew the Documents and Data were confidential and constituted trade secrets of Scan Top.

30. Winplus lacked the ability to design and manufacture reliable and high quality windshield wiper blade connectors.

31. On information and belief, without Scan Top's authorization, knowledge or permission, Winplus copied and transmitted the proprietary and confidential Documents and Data to another windshield wiper blade manufacturer ("Third Party Manufacturer") for the purpose of supplementing or supplanting Scan Top as Defendants' manufacturing partner.

32. On information and belief, Winplus instructed or induced the Third Party Manufacturer to use Scan Top's Documents and Data to produce counterfeit or "knock-off" connectors identical or substantially identical to Scan Top's PT-3, TL-2 and/or PH connectors (the "Infringing Connectors").

33. The Third Party Manufacturer has made and continues to make the "Infringing Connectors" for Winplus, and has sold and continues to sell them to Winplus.

34. On information and belief, the Third Party Manufacturer used Scan Top's Documents and Data to produce the Infringing Connectors and sell them in the market place for profit.

35. Winplus acquired Scan Top's Documents and Data through unlawful and deceptive means.

36. On information and belief, the Third Party Manufacturer used improper means to acquire Scan Top's Documents and Data, or else knew or had reason to know that Scan Top's Documents and Data were derived from or through a person who owed a duty to Scan Top to maintain their secrecy.

37. Winplus has aided and abetted the Third Party Manufacturer's infringing acts by providing it with the Documents and Data and instructing it to manufacture the Infringing Connectors in accordance with the Documents and Data.

38. Winplus has sold and continues to sell the Infringing Connectors to several distributors including Defendants SHC, Ashland, Inc., Big Lots, Inc. and Service Champ, Inc. The Infringing Connectors are packaged and sold with Winplus' replacement wiper blades as a replacement wiper assembly.

39. Winplus' distributors, including those identified above, have sold and continue to sell the Infringing Connectors to retail stores. For example, SHC has sold and continues to sell

the Infringing Connectors to SHC's retail stores, which include Sears Stores, Sears Auto Center and Kmart Stores. The Infringing Connectors are sold in SHC's retail stores in packages bearing the label and trademark "Valvoline Aquablade." A photograph of SHC's packaging containing the Infringing Connectors is shown in Exhibit C.

40. One or more of the connectors contained within the assembly shown in Exhibit C infringes the '292 Patent.

41. One or more of the connectors contained within the assembly shown in Exhibit C infringes the '701 Patent.

42. Defendants' sales of the Infringing Connectors have occurred and continue to occur within this judicial district and elsewhere within the United States.

43. Defendants' acts have been without the authorization, permission, consent or knowledge of Scan Top.

Count I
Infringement of the '292 Patent

44. Scan Top re-alleges and incorporates herein by reference each of the allegations set forth above.

45. Defendants' acts constitute patent infringement under 35 U.S.C. section 271.

46. Defendants have infringed, directly or indirectly, the '292 Patent, either literally or under the doctrine of equivalents, by making, using, selling or offering for sale, importing and/or selling after importation wiper blade connectors that embody each element of at least one claim of the '292 Patent.

47. Defendants have infringed and continue to infringe the '292 Patent directly and indirectly by making, importing, offering for sale, using and/or selling, by way of example and

not limitation, a connector, which is sold under the mark Valvoline Aquablade and which is identical or substantially identical to Scan Top's PT-3 connector.

48. Defendants have profited by infringing the '292 Patent. Scan Top has suffered and continues to suffer damages due to Defendants' infringement of the '292 Patent.

49. Prior to committing the unlawful act alleged herein, Winplus had actual knowledge of the '292 Patent. Thus, Winplus' acts have been willful and/or with a wanton and reckless disregard for Scan Top's rights.

50. Scan Top has suffered irreparable harm to its business, reputation, and goodwill, and, unless Defendants are enjoined and restrained by this court, Defendants will continue in the activities alleged herein and as a result thereof, Scan Top will continue to sustain irreparable harm to its business, reputation and goodwill.

51. Scan Top has no adequate remedy at law.

Count II
Infringement of the '701 Patent

52. Scan Top re-alleges and incorporates herein by reference each of the allegations set forth above.

53. Defendants' acts constitute patent infringement under 35 U.S.C. section 271.

54. Defendants have infringed, directly or indirectly, the '701 Patent, either literally or under the doctrine of equivalents, by making, using, selling or offering for sale, importing and/or selling after importation wiper blade connectors that embody each element of at least one claim of the '701 Patent.

55. Defendants have infringed and continue to infringe the '701 Patent directly and indirectly by making, importing, offering for sale, using and/or selling, by way of example and

not limitation, a connector, which is sold under the mark Valvoline Aquablade and which is identical or substantially identical to Scan Top's TL-2 connector .

56. Defendants have profited by infringing the '701 Patent. Scan Top has suffered and continues to suffer damages due to Defendants' infringement of the '701 Patent.

57. Prior to committing the unlawful act alleged herein, Winplus had actual knowledge of the '701 Patent. Thus, Winplus' acts have been willful and/or with a wanton and reckless disregard for Scan Top's rights.

58. Scan Top has suffered irreparable harm to its business, reputation, and goodwill, and, unless Defendants are enjoined and restrained by this court, Defendants will continue in the activities alleged herein and as a result thereof, Scan Top will continue to sustain irreparable harm to its business, reputation and goodwill.

59. Scan Top has no adequate remedy at law.

Count III
Direct Copyright Infringement under 17 U.S.C. § 501

60. Scan Top re-alleges and incorporates herein by reference each of the allegations set forth above.

61. Winplus' acts constitute federal copyright infringement in violation of the Copyright Act, 17 U.S.C. § 501.

62. The copyrights in the following works have been assigned to Scan Top, which filed the following applications for copyright registration with the United States Copyright Office on September 8, 2014:

TITLE	WORK	CASE NO.
PT-3	Technical Drawing	1-1729824934

TL-2	Technical Drawing	1-1729995381
PH	Technical Drawing	1-1729995481
PH-3	Technical Drawing	1-1729995534
RQ1	Technical Drawing	1-1730065667

63. Winplus and the Third Party Manufacturer had access to all or part of Scan Top's Documents and Data.

64. The Infringing Connectors are a derivative work of the Documents and Data.

65. Winplus' unauthorized copying of the Documents and Data, and the Third Party Manufacturer's creation of derivative works from the Documents and Data, infringes Scan Top's exclusive copyrights under § 106 of the Copyright Act.

66. Winplus and the Third Party Manufacturer have acted willfully and knowingly, or with wanton disregard, of Scan Top's copyrights in the Documents and Data by using, reproducing, imitating, adapting, modifying, and transforming Scan Top's Documents and Data.

67. Prior to committing the unlawful act alleged herein, Winplus and the Third Party Manufacturer had actual knowledge of Scan Tops claim of copyright protection in the Documents and Data. Thus, Winplus' acts have been willful and/or with a wanton and reckless disregard for Scan Top's rights.

68. Scan Top has suffered irreparable harm to its business, reputation, and goodwill, and, unless Winplus is enjoined and restrained by this court, Winplus will continue in the activities alleged herein and as a result thereof, Scan Top will continue to sustain irreparable harm to its business, reputation and goodwill.

69. Scan Top has no adequate remedy at law.

Count IV
Misappropriation of Trade Secrets
Illinois Trade Secrets Act, 765 ILCS §1065 et seq.

70. Scan Top re-alleges and incorporates herein by reference each of the allegations set forth above.

71. Winplus' and the Third Party Manufacturer's acts constitute misappropriation of trade secrets under Illinois Trade Secrets Act, 765 ILCS §1065 et seq.

72. Prior to committing the unlawful act alleged herein, Winplus and/or the Third Party Manufacturer knew or should have known that Scan Top's Documents and Data are trade secrets. Thus, Winplus' acts have been willful and/or with a wanton and reckless disregard for Scan Top's rights.

73. Scan Top has suffered irreparable harm to its business, reputation, and goodwill, and, unless Winplus is enjoined and restrained by this court, Winplus will continue in the activities alleged herein and as a result thereof, Scan Top will continue to sustain irreparable harm to its business, reputation and goodwill.

74. Scan Top has no adequate remedy at law.

Count V
Unjust Enrichment

75. Scan Top re-alleges and incorporates herein by reference each of the allegations set forth above.

76. Defendants' acts constitute unjust enrichment.

77. Defendants lacked the ability to develop reliable, high quality windshield wiper blade connectors to effectively compete in the market place. Defendants received and retained a benefit by acquiring and using Scan Top's trade secrets, proprietary designs and wiper blade connector technology without paying for them.

78. The profits derived by Defendants from the sale of the Infringing Connectors exceeds the profit Defendants would have derived but for the acts alleged herein.

79. It is inequitable and unjust for Defendants to retain the benefit of its wrongful conduct without paying for its value.

80. Prior to committing the unlawful act alleged herein, Defendants knew or should have known that they were obligated to pay Scan Top for the Documents and Data and/or a license under the '292 and '701 Patents. Thus, Defendants' acts have been willful and/or with a wanton and reckless disregard for Scan Top's rights.

81. Scan Top has suffered irreparable harm to its business, reputation, and goodwill, and, unless Defendants are enjoined and restrained by this court, Defendants will continue in the activities alleged herein and as a result thereof, Scan Top will continue to sustain irreparable harm to its business, reputation and goodwill.

82. Scan Top has no adequate remedy at law.

Count VI
Fraud

83. Scan Top re-alleges and incorporates by reference the allegations set forth above.

84. Winplus' and the Third Party Manufacturer's acts constitute fraud under Illinois common law.

85. Winplus made false representations of an existing fact to Scan Top with actual knowledge of the falsity, by falsely stating that it wanted to study the Documents and Data only for purposes of assessing infringement of any third party patents. In reality or in addition, Winplus wanted to copy the Documents and Data and send them to a Third-Party Manufacturer, which would supplement or supplant Scan Top as Winplus' exclusive manufacturer.

86. Winplus made false representations of an existing fact to Scan Top with actual knowledge of the falsity, by falsely stating that it would keep Scan Top's Documents and Data confidential. In reality or in addition, Winplus planned to disclose the Documents and Data to Third-Party Manufacturers, which would supplement or supplant Scan Top as Winplus' exclusive manufacturer.

87. On information and belief, Winplus represented to the Third Party Manufacturer that it had obtained the Documents and Data lawfully.

88. Based on their business relationship, Winplus owed a duty of confidentiality, candor and fair dealing to Scan Top.

89. Scan Top acted in justifiable reliance of Winplus' representations to its substantial detriment.

90. To its substantial detriment, Scan Top justifiably relied on the representations made by Winplus in disclosing its highly confidential Trade Secret Information.

91. Scan Top has suffered irreparable harm to its business, reputation, and goodwill, and, unless Winplus is enjoined and restrained by this court, Winplus will continue in the activities alleged herein and as a result thereof, Scan Top will continue to sustain irreparable harm to its business, reputation and goodwill.

92. Scan Top has no adequate remedy at law.

Count VII
Civil Conspiracy

93. Scan Top re-alleges and incorporates by reference the allegations set forth above.

94. Winplus' and the Third Party Manufacturer's acts constitute civil conspiracy under Illinois common law.

95. On information or belief, Winplus and the Third-Party Manufacturer acted in concert to commit each of the unlawful acts described above.

96. Neither Winplus nor the Third-Party Manufacturer possessed the knowledge to develop reliable, high-quality windshield wiper blade connectors such as Scan Top's PT-3, TL-2, or PH connectors. Winplus and the Third-Party Manufacturer thus conspired to unlawfully obtain that knowledge from Scan Top, use that knowledge to make the Infringing Connectors, and unfairly compete with Scan Top.

97. Scan Top has suffered irreparable harm to its business, reputation, and goodwill, and, unless Winplus is enjoined and restrained by this court, Winplus will continue in the activities alleged herein and as a result thereof, Scan Top will continue to sustain irreparable harm to its business, reputation and goodwill.

98. Scan Top has no adequate remedy at law.

Demand For Jury Trial

Pursuant to Rule 38(b) of the Federal Rules of Civil Procedure, Scan Top respectfully requests a trial by jury of all issues properly triable by jury.

Prayer For Relief

WHEREFORE, Plantiff Scan Top prays for:

a) judgment in favor of Scan Top and against Defendants on all Counts of the Complaint;

b) an award of damages on all counts to which Scan Top is entitled under law;

c) an award of costs and disbursements;

d) an award of attorneys fees;

e) punitive damages due to the willful, wanton and malicious conduct of defendants;

f) judgment declaring that this case is exceptional and awarding Scan Top its expenses, costs and attorney fees in accordance with 35 U.S.C. §§ 284 and 285 and Rule 54(d) of the Federal Rules of Civil Procedure;

g) a permanent injunction pursuant to 35 U.S.C. §283 enjoining the Defendants, their agents, servants, employees, representatives, successors, and assigns, and all persons, firms, or corporations in active concert or participation with any of the Defendants, from the following:

1) making, using, selling, offering for sale, or importing the Infringing Connectors;

2) making, using, selling, offering for sale, or importing any products manufactured using the Documents and Data;

3) using for any purpose whatsoever the Documents and Data, or disclosing, whether directly or indirectly, to anyone any of Scan Top's proprietary, confidential, and trade secret information, no matter how obtained by Defendants;

4) making or disseminating any copies in any format whatsoever of the Documents and Data;

5) exporting from the United States any inventory of Infringing Connectors or products manufactured using the Documents and Data;

h) a permanent injunction pursuant to 35 U.S.C. §283 compelling Defendants, their agents, servants, employees, representatives, successors, and assigns, and all persons, firms, or corporations in active concert or participation with any of the Defendants, to do the following:

1) delivering to Scan Top any products in U.S. inventory that were manufactured using the Documents and Data for destruction;

2) delivering to Scan Top all copies of the Documents and Data and any other proprietary or confidential information in Defendants' possession no matter how obtained by Defendants;

3) deleting all electronic or archival backup copies of the Documents and Data and any other proprietary or confidential information in Defendants' possession no matter how obtained by Defendants; and,

i) such other and further relief as the court may deem just and proper.

Date: September 26, 2014

Respectfully submitted,

By: /s/ Kao Lu
Kao Lu (*pro hac vice* to be filed)
Joseph M. Konieczny (*pro hac vice* to be filed)
Ryder, Lu, Mazzeo & Konieczny, LLC
1425 E. Darby Road
Haverford, PA 19083
Tel: 610-446-2563
Fax: 610-446-8841
Email: klu@ryderlu.com
jkonieczny@ryderlu.com

Attorneys for Scan Top Enterprise Company, Ltd.

Cynthia G. Feeley
Feeley & Associates, P. C.
161 North Clark Street
Suite 4700
Chicago, Illinois 60610
ARDC No. 3128982
(312) 541-1200
feeleypc@aol.com
Local Counsel for Scan Top Enterprise Company, Ltd.

EXHIBIT A

EXHIBIT A

US008413292B2

(12) **United States Patent**
Yang et al.

(10) **Patent No.: US 8,413,292 B2**
(45) **Date of Patent: Apr. 9, 2013**

(54) **WINDSHIELD WIPER ASSEMBLING STRUCTURE FOR PREVENTING LOOSE ATTACHMENT OF DRIVEN WIPER ARM**

(76) Inventors: **Chih-Ming Yang**, Taipei (TW); **Chuan-Chih Chang**, Taipei (TW)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 7 days.

(21) Appl. No.: **13/310,789**

(22) Filed: **Dec. 4, 2011**

(65) **Prior Publication Data**

US 2012/0317740 A1 Dec. 20, 2012

(30) **Foreign Application Priority Data**

Jun. 14, 2011 (CN) ..... 2011 2 0199051 U

(51) **Int. Cl.**
B60S 1/40 (2006.01)
B60S 1/38 (2006.01)

(52) **U.S. Cl.** **15/250.32**; 15/250.351

(58) **Field of Classification Search** 15/250.31, 15/250.32, 250.43, 250.44, 250.361, 250.351, 15/250.201

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

7,299,520 B2 * 11/2007 Huang 15/250.32
2006/0064838 A1 * 3/2006 Poton 15/250.32

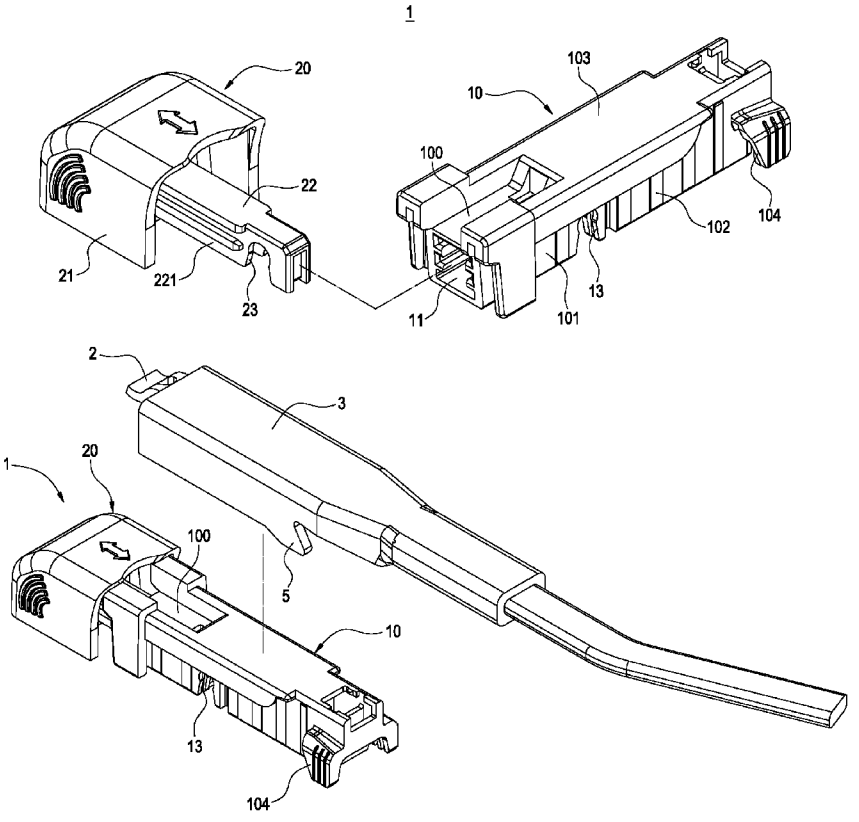
* cited by examiner

Primary Examiner — Gary Graham
(74) *Attorney, Agent, or Firm* — Chun-Ming Shih; HDLS IPR Services

(57) **ABSTRACT**

A windshield wiper assembling structure for preventing loose attachment of a driven wiper arm assembles the driven wiper arm having a hook arm on a windshield wiper fixing stage. The windshield wiper assembling structure includes an assembling stage and a positioning stage. The assembling stage has a through groove, an elastic blocking slice, and a first fastening groove which is formed at one side edge of the elastic blocking slice. The first fastening groove fastens on the windshield wiper fixing stage. The assembling stage has a containing groove on a top surface thereof to accommodate the hook arm. The positioning stage has a cover cap and a positioning arm which is extended from the cover cap. The positioning arm has a second fastening groove corresponding to the first fastening groove. The second fastening groove fastens on the windshield wiper fixing stage and corresponding to the first fastening groove.

14 Claims, 8 Drawing Sheets



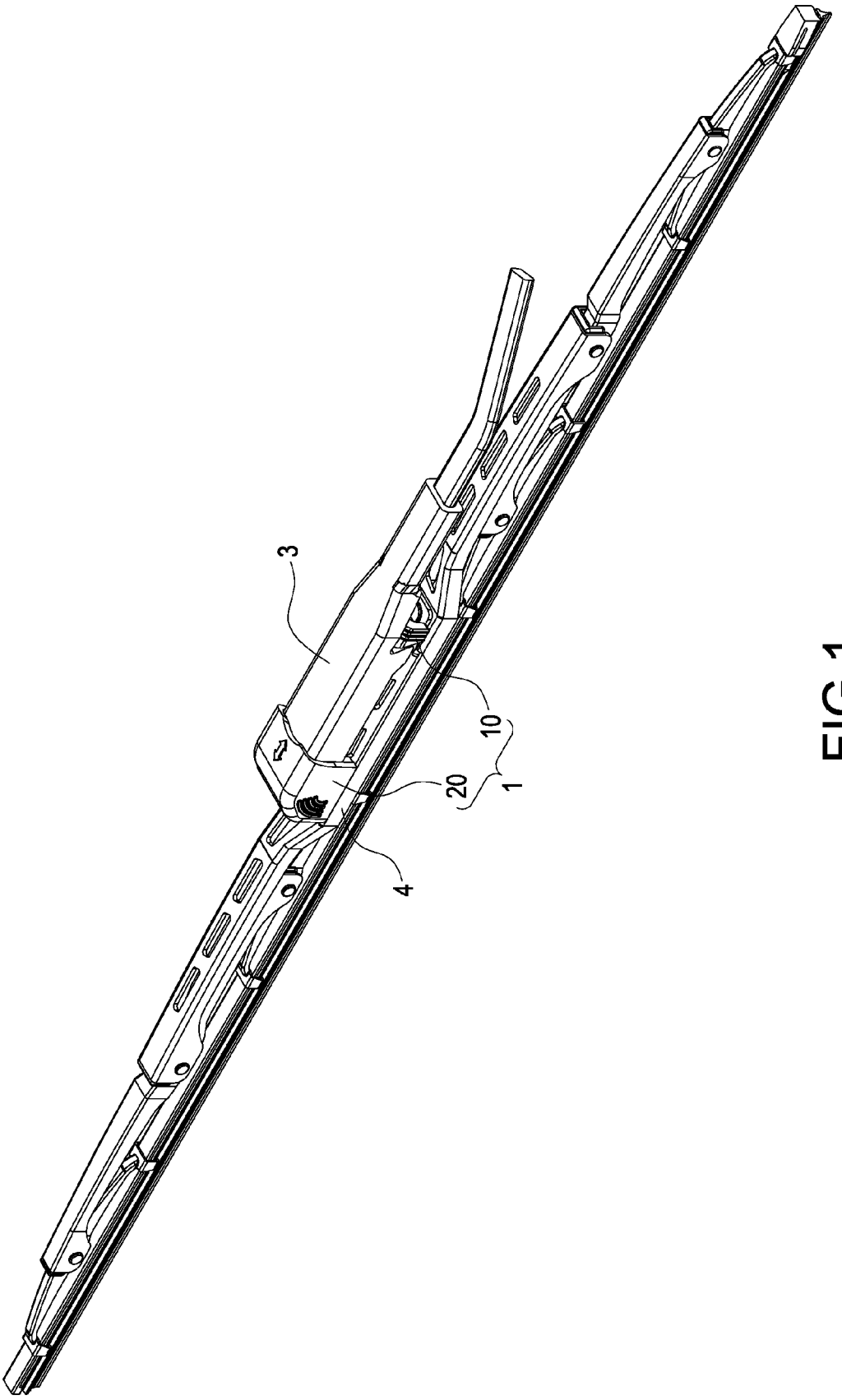


FIG.1

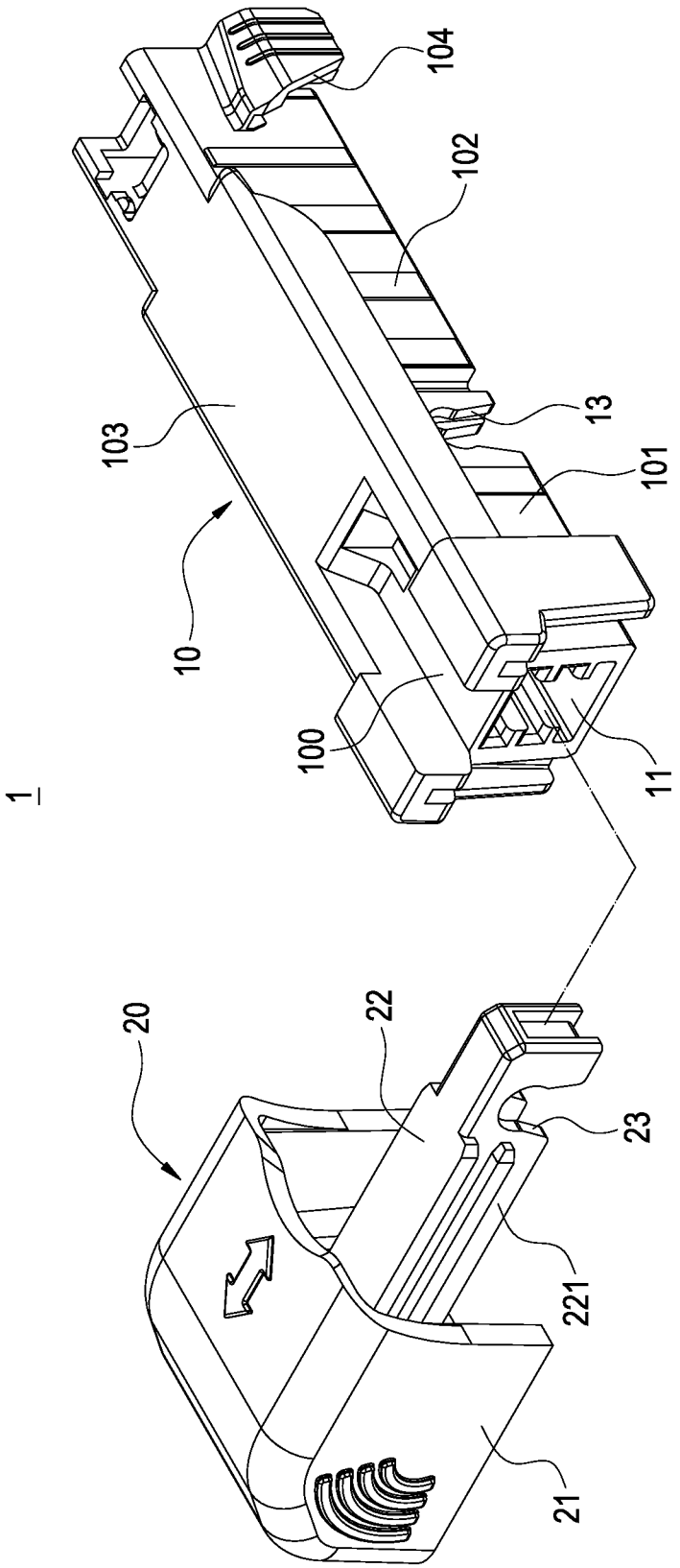


FIG.2

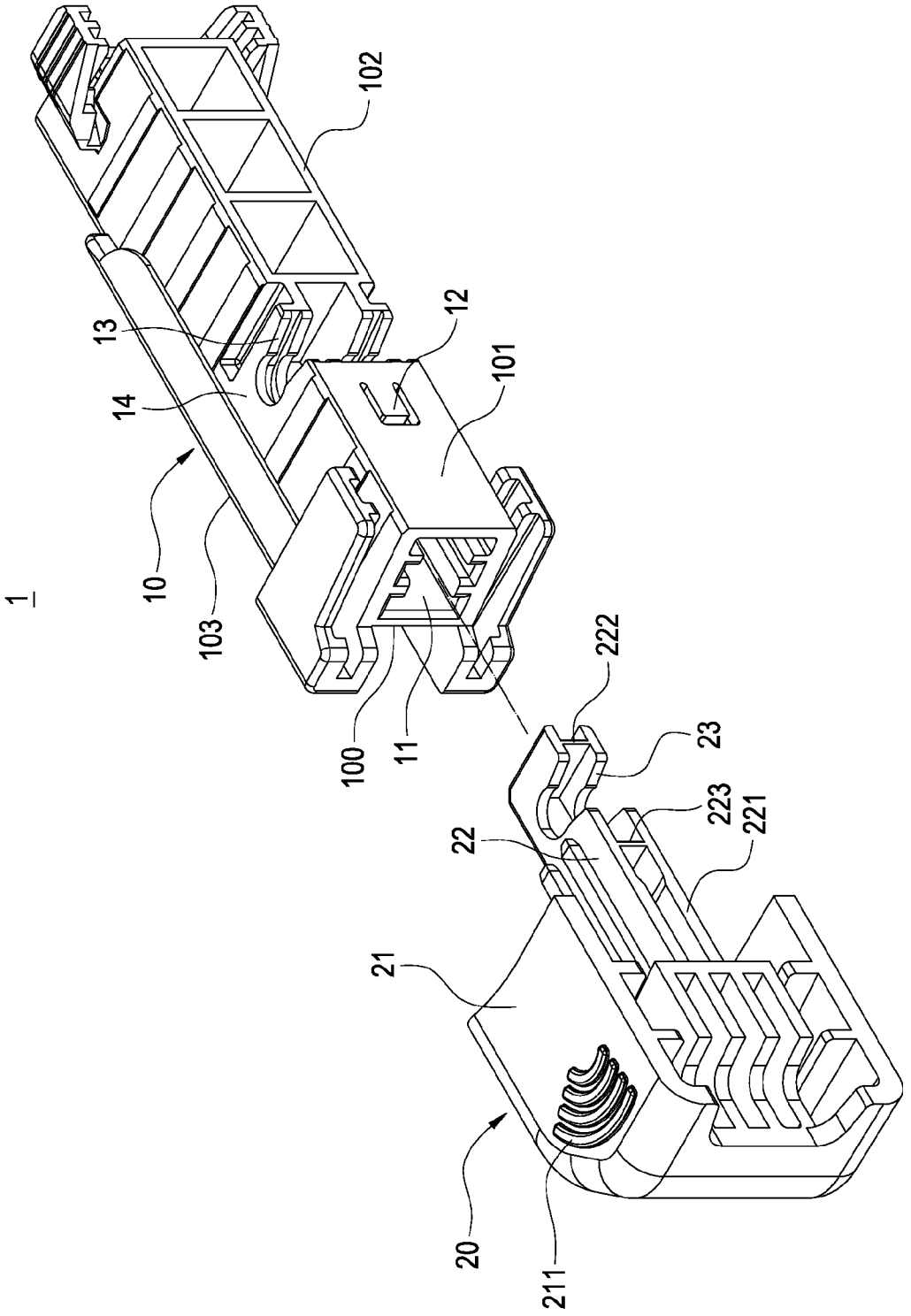


FIG.3

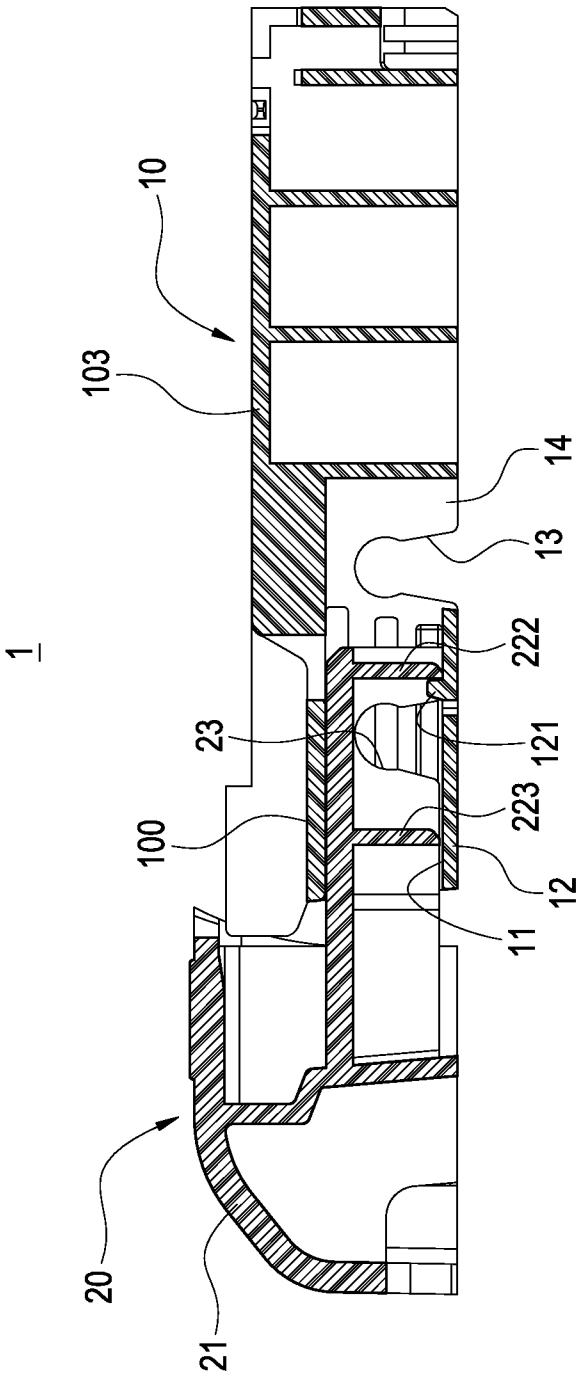


FIG.4

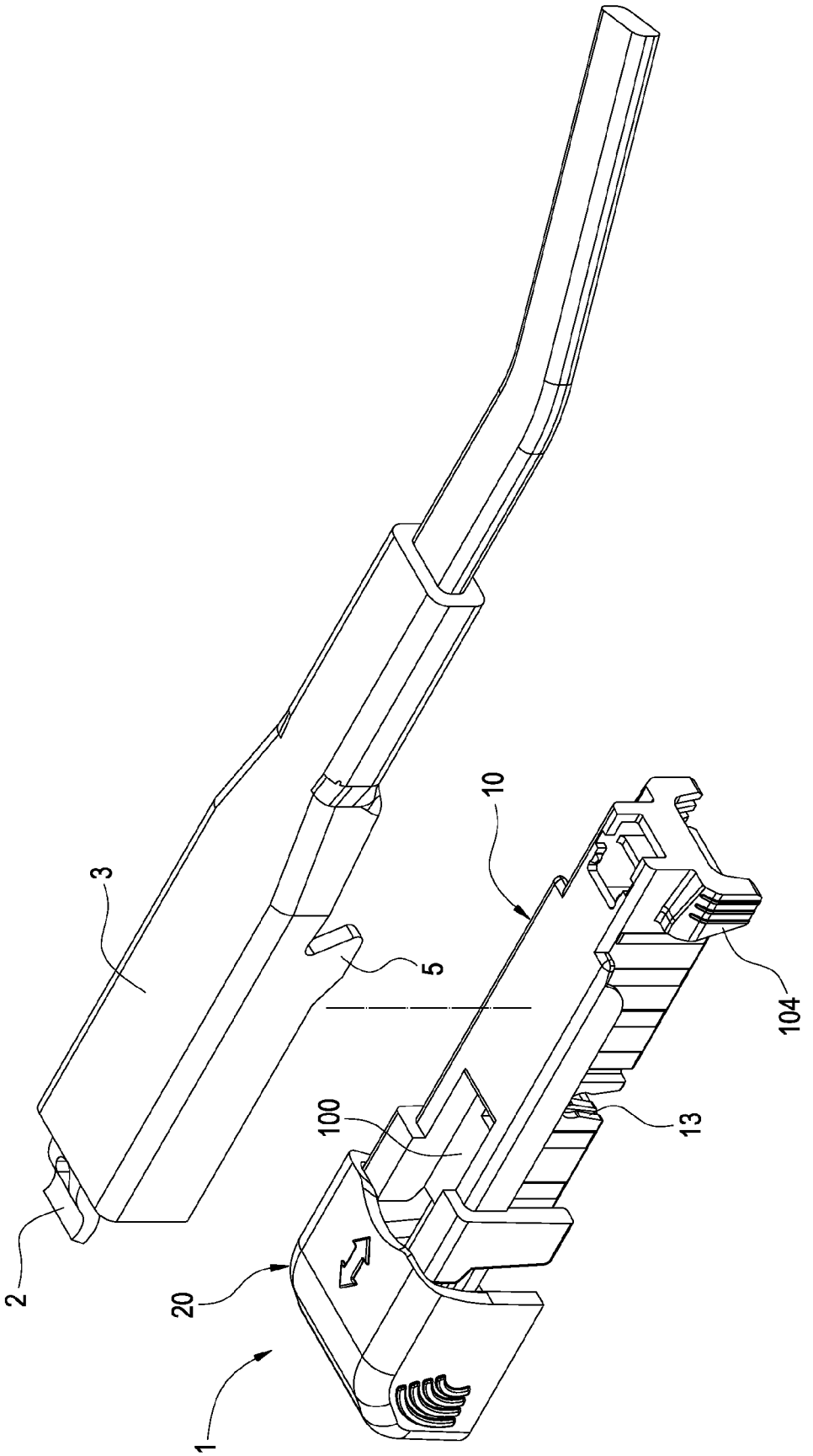


FIG.5

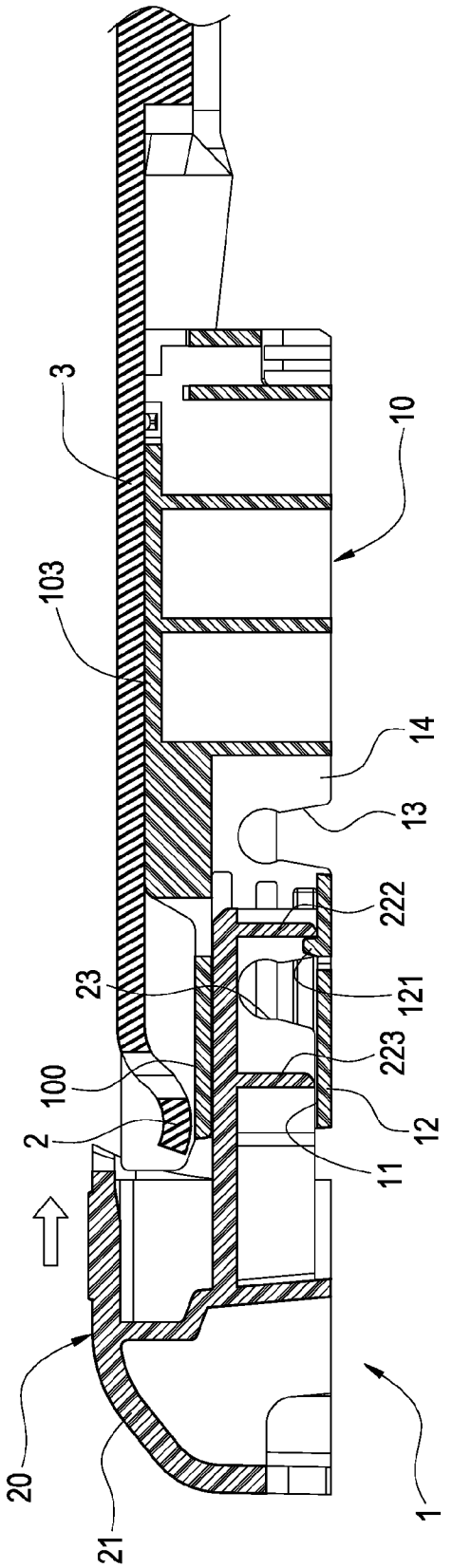

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FIG.6

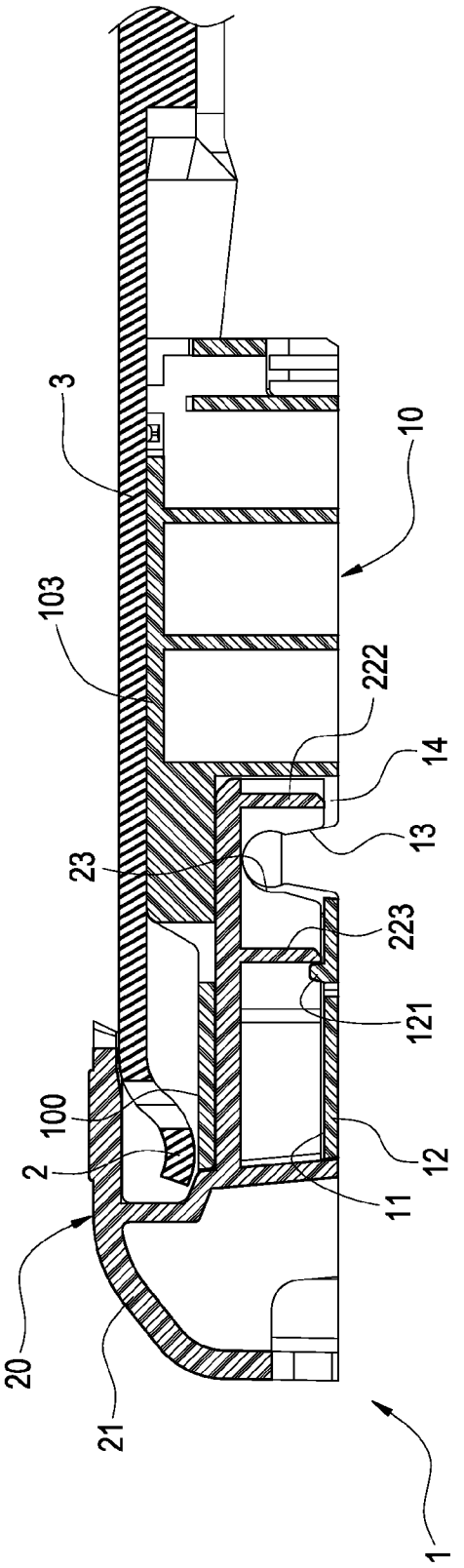
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FIG.7

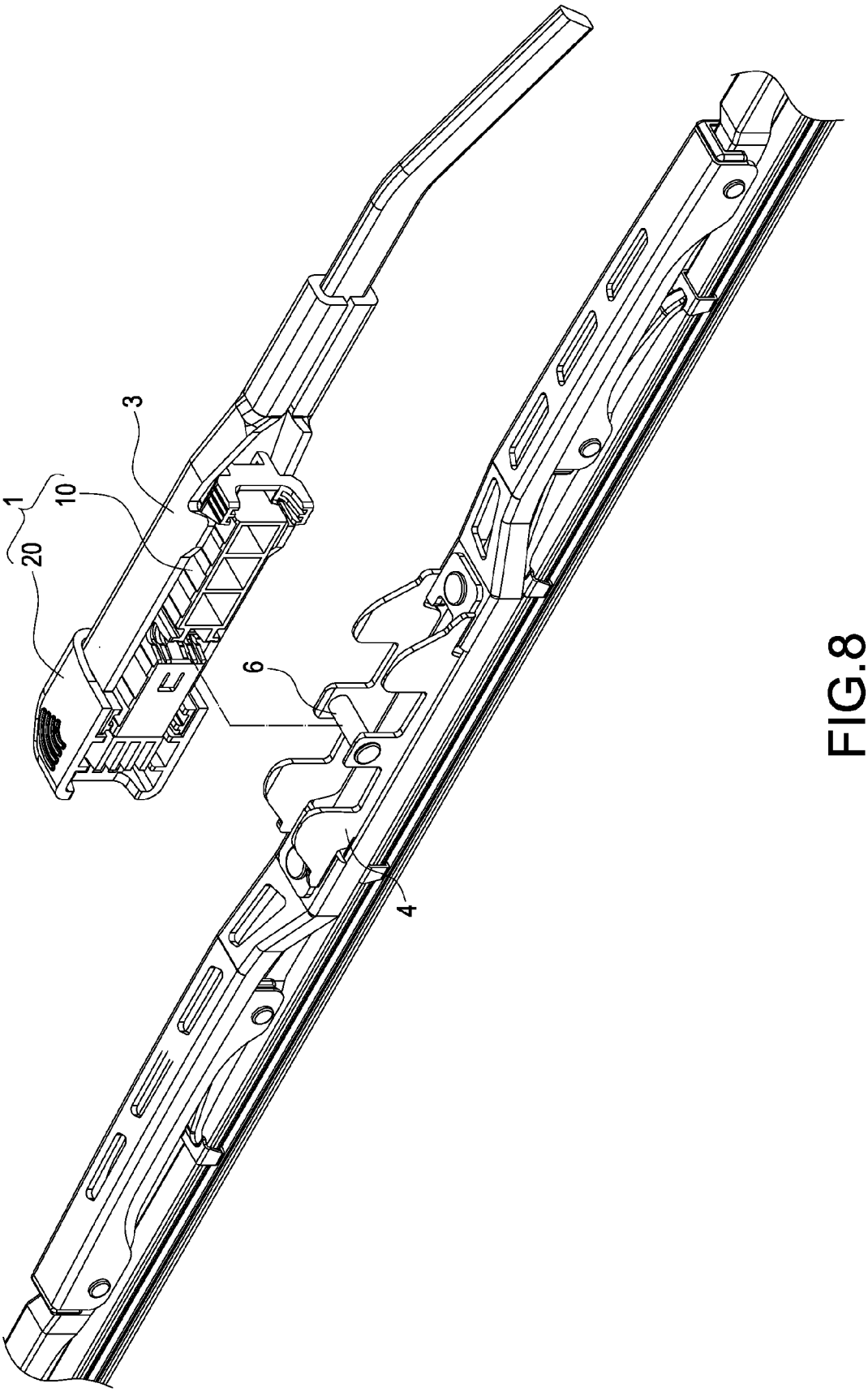

FIG.8

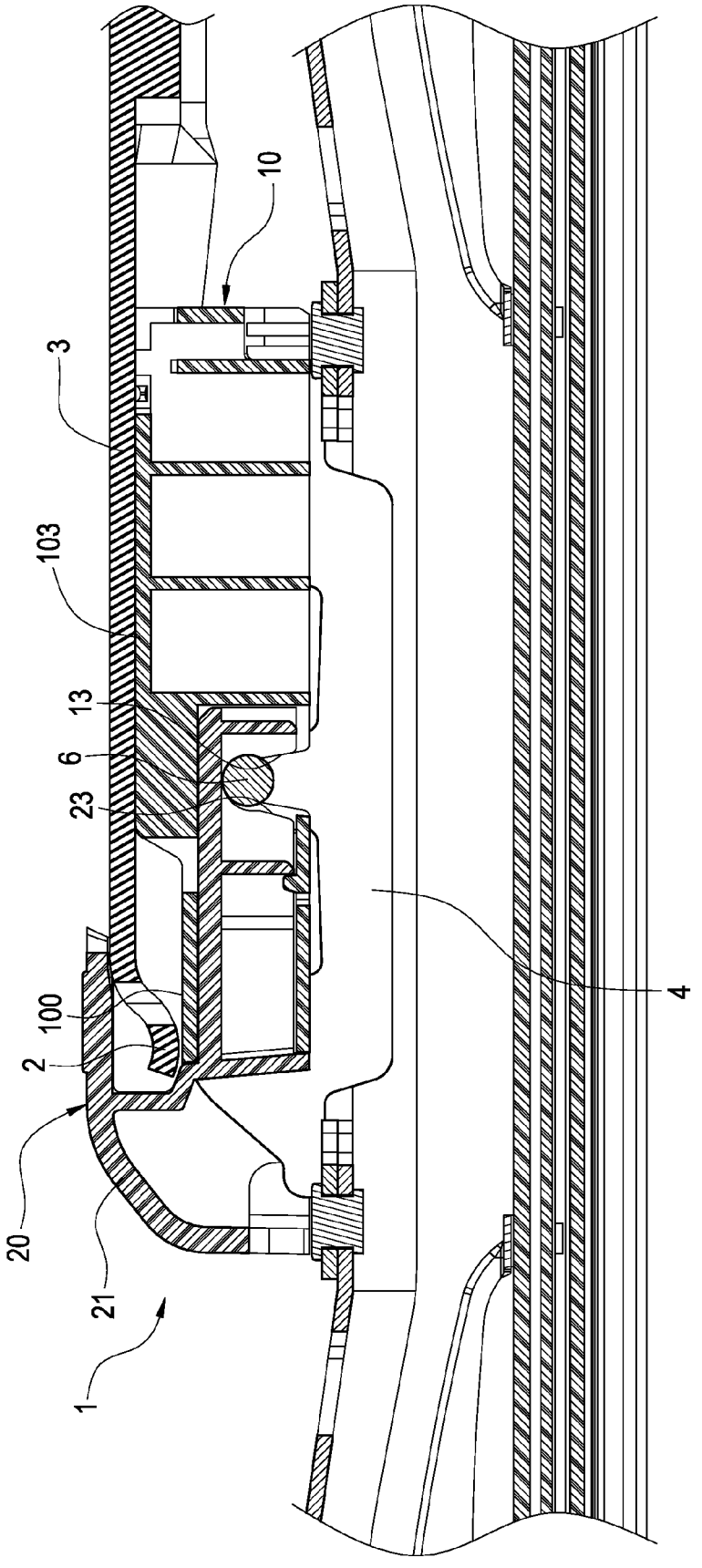

FIG.9

WINDSHIELD WIPER ASSEMBLING STRUCTURE FOR PREVENTING LOOSE ATTACHMENT OF DRIVEN WIPER ARM

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates generally to a windshield wiper structure, and more particularly to a windshield wiper structure which is installed on a vehicle window.

2. Description of Prior Art

In general, a windshield wiper for a vehicle is installed on a vehicle window of the vehicle. The windshield wiper is connected to a driven wiper arm of the vehicle and the windshield wiper is repeatedly wiped on the vehicle window by applying force on the windshield wiper via the driven wiper arm.

The available windshield wiper on the market mainly includes an assembling stage, a fixing stage, and a supporting rack. The supporting rack installs rubber-made wiper blades on a bottom surface of the supporting rack. The supporting rack is assembled on a bottom surface of the fixing stage and the assembling stage is installed on a top surface of the fixing stage so that the driven wiper arm of the vehicle can be installed on the assembling stage. Accordingly, the wiper blades assembled on the supporting rack is provided to wipe water and dirt attached on the vehicle window by repeatedly swishing the windshield wiper driven by the driven wiper arm back and forth.

The combination structure of the prior art windshield wiper is usually formed by embedding or engaging the driven wiper arm and the assembling stage. The combination structure of the driven wiper arm and the assembling stage is used for a period of time, however, the two components tend to have loose attachment. Accordingly, the driven wiper arm would not reliably press wiper blades so that wiper blades could not tightly contact the vehicle window.

Accordingly, it is desirable to provide a windshield wiper assembling structure for preventing loose attachment of a driven wiper arm to overcome the above-mentioned disadvantages.

SUMMARY OF THE INVENTION

An object of the present invention is to provide a windshield wiper assembling structure for preventing loose attachment of a driven wiper arm so that the driven wiper arm can be firmly combined on the windshield wiper assembling structure.

Another object of the invention is to provide a windshield wiper assembling structure for preventing loose attachment of a driven wiper arm to make the driven wiper arm reliably press wiper blades and wiper blades can tightly contact on the vehicle window so that the windshield wiper can provide good wiping effect.

In order to achieve the above-mentioned objects, the present invention discloses a windshield wiper assembling structure for preventing loose attachment of a driven wiper arm to combine the driven wiper arm having a hook arm on a windshield wiper fixing stage. The windshield wiper assembling structure includes an assembling stage and a positioning stage.

The assembling stage has a through groove, an elastic blocking slice which is arranged in a route of the through groove, and a first fastening groove which is formed at one side edge of the elastic blocking slice. The first fastening groove is fastened on the windshield wiper fixing stage. The assembling stage has a containing groove on a top surface of the assembling stage to accommodate the hook arm.

The positioning stage has a cover cap and a positioning arm which is extended from the cover cap. The hook arm is plunged into the cover cap. The positioning arm has a second fastening groove which is corresponded to the first fastening groove. The positioning arm is slid in the through groove and abutted by the elastic blocking slice. The second fastening groove is fastened on the windshield wiper fixing stage and corresponding to the first fastening groove.

Comparing with the prior art, the driven wiper arm of the present invention is plunged into the positioning stage to make the positioned stage being fastened and positioned by the assembling stage so that the driven wiper arm can be firmly combined on the windshield wiper assembling structure. Also, wiper blades can tightly contact on a vehicle window so that the windshield wiper can provide good wiping effect.

BRIEF DESCRIPTION OF DRAWING

The features of the invention believed to be novel are set forth with particularity in the appended claims. The invention itself, however, may be best understood by reference to the following detailed description of the invention, which describes an exemplary embodiment of the invention, taken in conjunction with the accompanying drawings, in which:

FIG. **1** is a schematic view of using a windshield wiper assembling structure according to the present invention;

FIG. **2** is a first schematic perspective exploded view of the windshield wiper assembling structure according to the present invention;

FIG. **3** is a second schematic perspective exploded view of the windshield wiper assembling structure according to the present invention;

FIG. **4** is an assembled cross-sectional view of the windshield wiper assembling structure according to the present invention;

FIG. **5** is a schematic view of combining the windshield wiper assembling structure to a driven wiper arm according to the present invention;

FIG. **6** is a first assembled cross-sectional view of the driven wiper arm and an assembling stage according to the present invention;

FIG. **7** is a second assembled cross-sectional view of the driven wiper arm and the assembling stage according to the present invention;

FIG. **8** is a schematic assembled view of the assembling stage and a windshield wiper fixing stage according to the present invention; and

FIG. **9** is an assembled cross-sectional view of the assembling stage and the windshield wiper fixing stage according to the present invention.

DETAILED DESCRIPTION OF THE INVENTION

Reference will now be made to the drawing figures to describe the present invention in detail. Although the present invention has been described with reference to the preferred embodiment thereof, it will be understood that the invention is not limited to the details thereof.

Reference is made from FIG. **1** to FIG. **4** which are a schematic view of using a windshield wiper assembling structure, a first and a second schematic perspective exploded views of the windshield wiper assembling structure, and an assembled cross-sectional view of the windshield wiper assembling structure according to the present invention,

respectively. The present invention discloses a windshield wiper assembling structure **1** for preventing loose attachment of a driven wiper arm **3**. The windshield wiper assembling structure **1** is provided to combine the driven wiper arm **3** having a hook arm **2** on a windshield wiper fixing stage **4** to prevent loose attachment of the driven wiper arm **3** from the windshield wiper fixing stage **4**. The windshield wiper assembling structure **1** includes an assembling stage **10** and a positioning stage **20**.

The assembling stage **10** has a through groove **11**, an elastic blocking slice **12** which is arranged in a route of the through groove **11**, and a first fastening groove **13** which is formed at one side edge of the elastic blocking slice **12**. The first fastening groove **13** is fastened on the windshield wiper fixing stage **4** and the assembling stage **10** has a containing groove **100** on a top surface of the assembling stage **10** to accommodate the hook arm **2**.

The positioning stage **20** has a cover cap **21** and a positioning arm **22** which is extended from the cover cap **21**. The hook arm **2** is plunged into the cover cap **21**. The positioning arm **22** has a second fastening groove **23** which is corresponded to the first fastening groove **13**. The positioning arm **22** is slid in the through groove **11** and abutted by the elastic blocking slice **12**. The second fastening groove **23** is fastened on the windshield wiper fixing stage **4** and corresponding to the first fastening groove **13**.

The combination structure between the assembling stage **10** and the positioning stage **20** is described in detail as follows. The assembling stage **10** has a first frame **101**, a second frame **102**, and a combining plate **103** which is formed on top surfaces of the first frame **101** and the second frame **102**. The first frame **101** and the second frame **102** are arranged in a line. The first frame **101** forms the through groove **11**. The second frame **102** forms a stop **104** at an outer side of the second frame **102** to abut against the driven wiper arm **3**. In this embodiment, the stop **104** is wedge-shaped, but not limited.

The combining plate **103** forms the containing groove **100** at one side end of the combining plate **103**. The elastic blocking slice **12** is formed on a bottom surface of the first frame **101**. The elastic blocking slice **12** has a free end and the free end forms a hook **121**. A set of opposite positioning plates **14** are arranged between the first frame **101** and the second frame **102** and each positioning plate **14** has the first fastening groove **13** thereon. That is, the two first fastening grooves **13** are arranged between the first frame **101** and the second frame **102**. In this embodiment, the first fastening groove **13** is a U-shaped groove with a wider outside and narrower inside.

Furthermore, the cover cap **21** has a plurality of sliding-proof ribs **211**. The positioning arm **22** is partially exposed outside the cover cap **21** and the second fastening groove **23** is arranged at an outer end of the positioning arm **22**. The positioning arm **22** has a set of opposite through plates **221** and each through plate **221** has the second fastening groove **23** thereon. In addition, the positioning arm **22** forms a first retaining wall **222** and a second retaining wall **223** at two side edges of the second fastening groove **23**, respectively.

Reference is made from FIG. **5** to FIG. **7** which are a schematic view of combining the windshield wiper assembling structure to a driven wiper arm and a first and a second assembled cross-sectional views of the driven wiper arm and an assembling stage according to the present invention, respectively. The hook arm **2** of the driven wiper arm **3** is placed in the containing groove **100** when the windshield wiper assembling structure **1** is combined to the driven wiper arm **3**. In addition, the driven wiper arm **3** has a projecting wing **5**. The projecting wing **5** abuts against one side edge of the stop **104** of the assembling stage **10** so that the driven wiper arm **3** is positioned on the assembling stage **10**.

Afterward, the assembling stage **10** is pushed toward the positioning stage **20** so that the hook arm **2** is plunged into the cover cap **21**. After the positioning arm **22** slides into the through groove **11** for a distance, the first retaining wall **222** presses the elastic blocking slice **12** to go across the hook **121**. When the positioning arm **22** continuously slides to make the second fastening groove **23** correspond to the first fastening groove **13**, the second retaining wall **223** fastens and positions the hook **121** of the elastic blocking slice **12**, thus assembling the driven wiper arm **3** on the windshield wiper assembling structure **1**. The driven wiper arm **3** is fastened and positioned by the assembling stage **10** and the positioning stage **20** so as to prevent loose attachment of the driven wiper arm **3** from the windshield wiper assembling structure **1**.

Reference is made to FIG. **8** and FIG. **9** which are a schematic assembled view and an assembled cross-sectional view of the assembling stage and the windshield wiper fixing stage according to the present invention, respectively. As the above-mentioned description, the windshield wiper assembling structure **1** is provided to combine on the windshield wiper fixing stage **4**. The windshield wiper fixing stage **4** has a pivot **6**. The pivot **6** is used to embed the first fastening groove **13** of the assembling stage **10** and the second fastening groove **23** of the positioning stage **20**. In practical applications, the driven wiper arm **3** can be firmly combined on the assembling stage **10** so that the windshield wiper can provide good wiping effect.

It is to be understood that both the foregoing general description and the following detailed description are exemplary, and are intended to provide further explanation of the invention as claimed. Other advantages and features of the invention will be apparent from the following description, drawings and claims.

What is claimed is:

1. A windshield wiper assembling structure for preventing loose attachment of a driven wiper arm, the assembling structure combining the driven wiper arm having a hook arm on a windshield wiper fixing stage; the windshield wiper assembling structure comprising:

an assembling stage having a through groove, an elastic blocking slice arranged in a route of the through groove, and a first fastening groove formed at one side edge of the elastic blocking slice, the first fastening groove fastened on the windshield wiper fixing stage, the assembling stage having a containing groove on a top surface of the assembling stage to accommodate the hook arm; and

a positioning stage having a cover cap and a positioning arm extended from the cover cap, the hook arm plunged into the cover cap, the positioning arm having a second fastening groove corresponded to the first fastening groove, the positioning arm slid in the through groove and abutted by the elastic blocking slice, the second fastening groove fastened on the windshield wiper fixing stage and corresponding to the first fastening groove.

2. The windshield wiper assembling structure of claim **1**, wherein the assembling stage has a first frame, a second frame, and a combining plate formed on top surfaces of the first frame and the second frame, the first frame and the second frame are arranged in a line.

3. The windshield wiper assembling structure of claim **2**, wherein the first frame forms the through groove, the second frame forms a stop at an outer side of the second frame to abut against the driven wiper arm.

4. The windshield wiper assembling structure of claim 3, wherein the driven wiper arm has a projecting wing, the stop is wedge-shaped, the projecting wing abuts against one side edge of the stop.

5. The windshield wiper assembling structure of claim 2, wherein the elastic blocking slice is formed on a bottom surface of the first frame.

6. The windshield wiper assembling structure of claim 2, wherein the first fastening groove is arranged between the first frame and the second frame.

7. The windshield wiper assembling structure of claim 6, wherein the first frame and the second frame have a set of opposite positioning plates and each positioning plate has the first fastening groove on the positioning plate.

8. The windshield wiper assembling structure of claim 7, wherein the first fastening groove is a U-shaped groove with a wider outside and narrower inside.

9. The windshield wiper assembling structure of claim 1, wherein the elastic blocking slice has a free end and the free end forms a hook.

10. The windshield wiper assembling structure of claim 2, wherein the combining plate forms the containing groove at one side end of the combining plate.

11. The windshield wiper assembling structure of claim 1, wherein the cover cap has a plurality of sliding-proof ribs arranged on an outer surface of the cover cap.

12. The windshield wiper assembling structure of claim 1, wherein the positioning arm is partially exposed outside the cover cap and the second fastening groove is arranged at an outer end of the positioning arm.

13. The windshield wiper assembling structure of claim 12, wherein the positioning arm has a set of opposite through plates and each through plate has the second fastening groove on the through plate.

14. The windshield wiper assembling structure of claim 9, wherein the positioning arm forms a first retaining wall and a second retaining wall at two side edges of the second fastening groove, respectively, the second retaining wall fastens on the hook when the second fastening groove is corresponded to the first fastening groove.

* * * * *

EXHIBIT B

EXHIBIT B

(12) **United States Patent**
Yang et al.

(10) **Patent No.: US 8,650,701 B2**
(45) **Date of Patent: Feb. 18, 2014**

(54) **CONNECTING ASSEMBLY FOR WINDSHIELD WIPER**

(75) Inventors: **Chih-Ming Yang**, Taipei (TW); **Chuan-Chih Chang**, Taipei (TW)

(73) Assignee: **Danyang UPC Auto Parts Co., Ltd.**, Danyang (CN)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 406 days.

(21) Appl. No.: **13/025,208**

(22) Filed: **Feb. 11, 2011**

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Dec. 13, 2010 (TW) ..... 99224092 U

(51) **Int. Cl.**
B60S 1/40 (2006.01)

(52) **U.S. Cl.**
USPC **15/250.32**; 15/250.351

(58) **Field of Classification Search**
USPC 15/250.32, 250.43, 250.44, 250.201, 15/250.361, 250.351, 250.31, 250.33
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

6,530,111 B1 3/2003 Kotlarski
7,891,044 B2 2/2011 Fink et al.
8,381,348 B2 * 2/2013 Egner-Walter et al. 15/250.04
2008/0134455 A1 * 6/2008 Kinnaert et al. 15/250.32
2011/0047742 A1 * 3/2011 Kim et al. 15/250.32

FOREIGN PATENT DOCUMENTS

DE 102005016486 A1 10/2006
DE 102008049269 A1 4/2010
EP 2113432 A1 2/2008
TW M315183 U 7/2007
WO WO2005039944 A1 5/2005

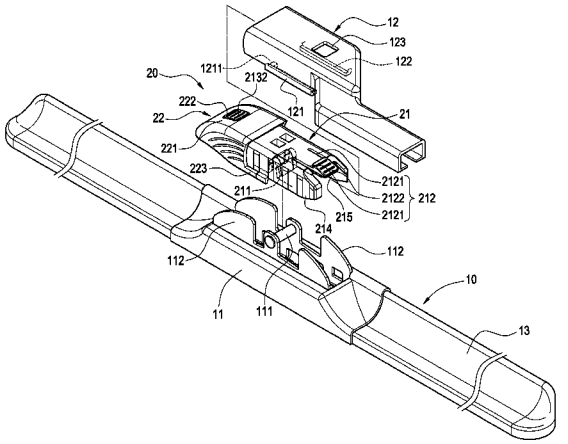
* cited by examiner

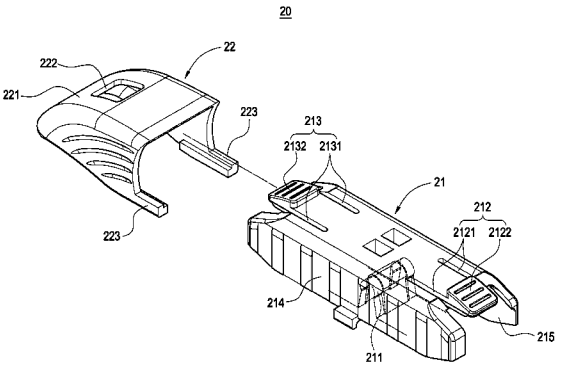
Primary Examiner — Gary Graham
(74) *Attorney, Agent, or Firm* — Chun-Ming Shih; HDLS IPR Services

(57) **ABSTRACT**

A connecting assembly (**10**) for a windshield wiper (**10**) includes a fixing member (**11**) and a supporting arm (**12**). The connecting assembly (**20**) includes a pivoting base (**21**) and a cover cap (**22**). The pivoting base (**21**) comprises an engaging portion (**211**) , a first insertion portion (**212**) and a second insertion portion (**213**) extending from the engaging portion (**211**) in opposite directions. The engaging portion (**211**) is engaged with the fixing member (**11**). The first insertion portion (**212**) and the second insertion portion (**213**) are symmetrical to each other with respect to the engaging portion (**211**). The cover cap (**22**) is assembled with the supporting arm (**12**) and put outside the first insertion portion (**212**) and the second insertion portion (**213**) in dual directions. Since the first insertion portion (**212**) and the second insertion portion (**213**) are configured to be symmetrical to each other, the supporting arm (**12**) can be firmly connected to the windshield wiper (**10**) with a changeable connecting direction.

6 Claims, 9 Drawing Sheets





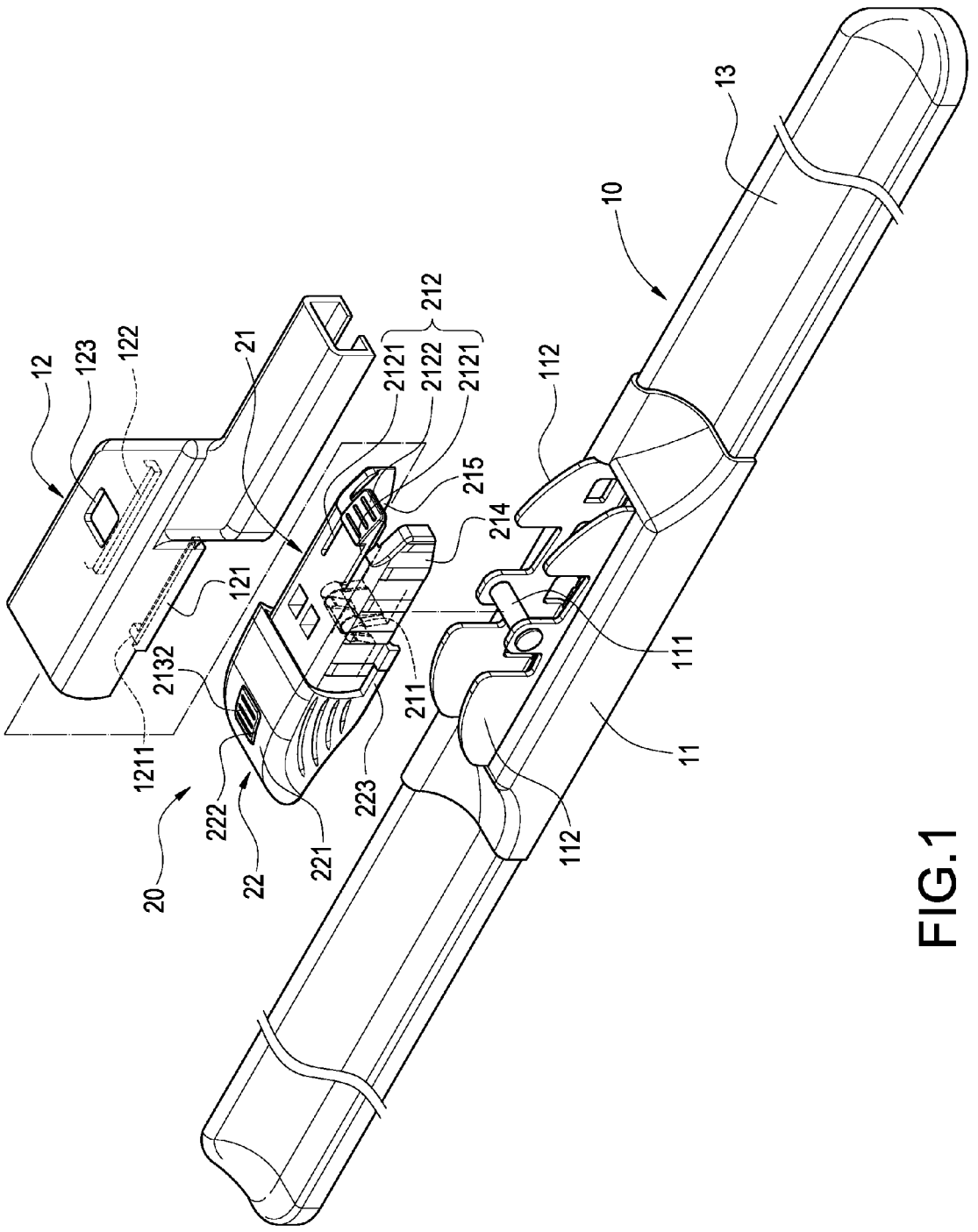

12
123
122
21
212
2121
2122
2121
112
13
10
215
214
121
2132
211
111
1211
222
223
11
20
22
221
112

FIG.1

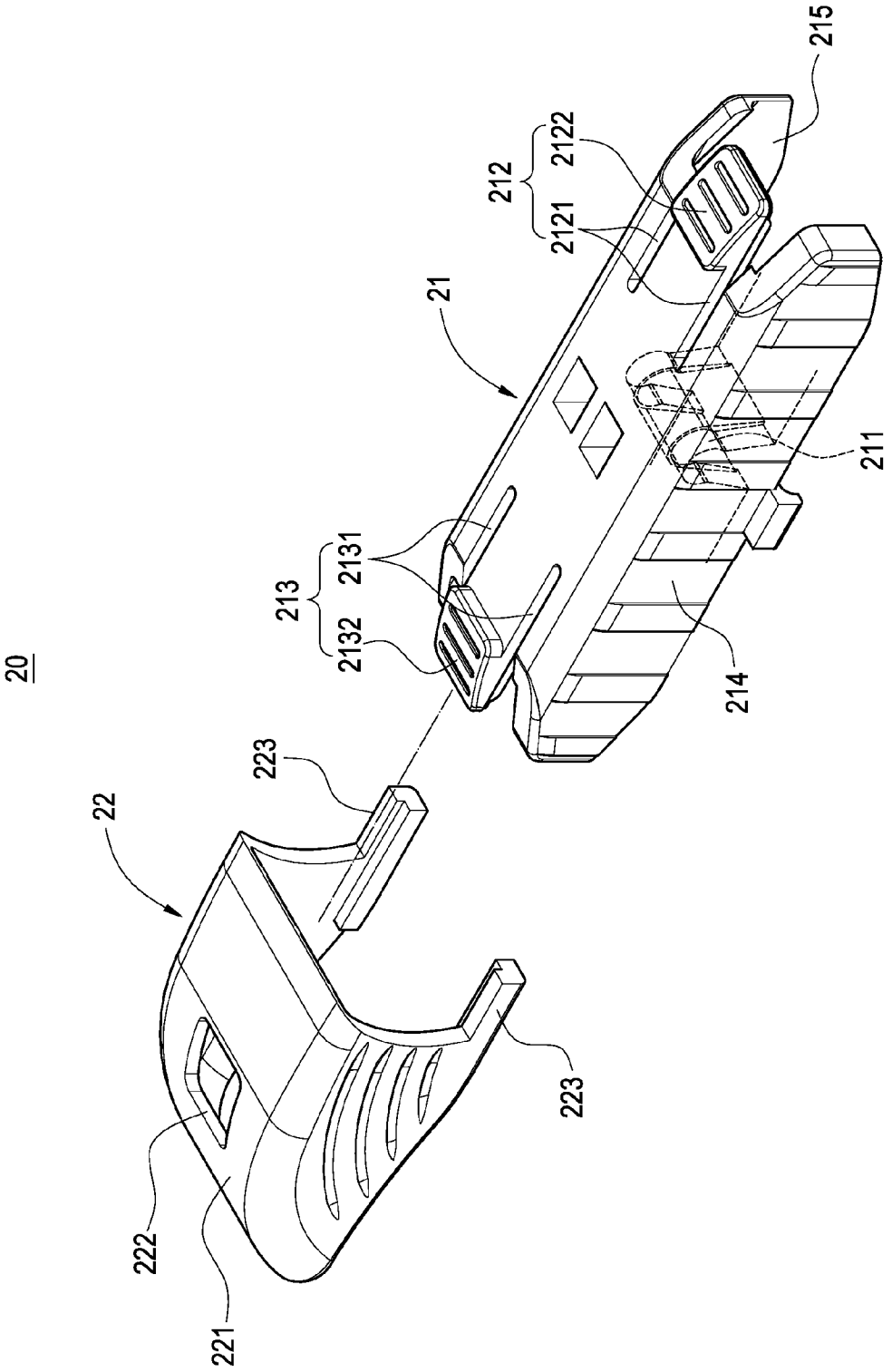


FIG.2

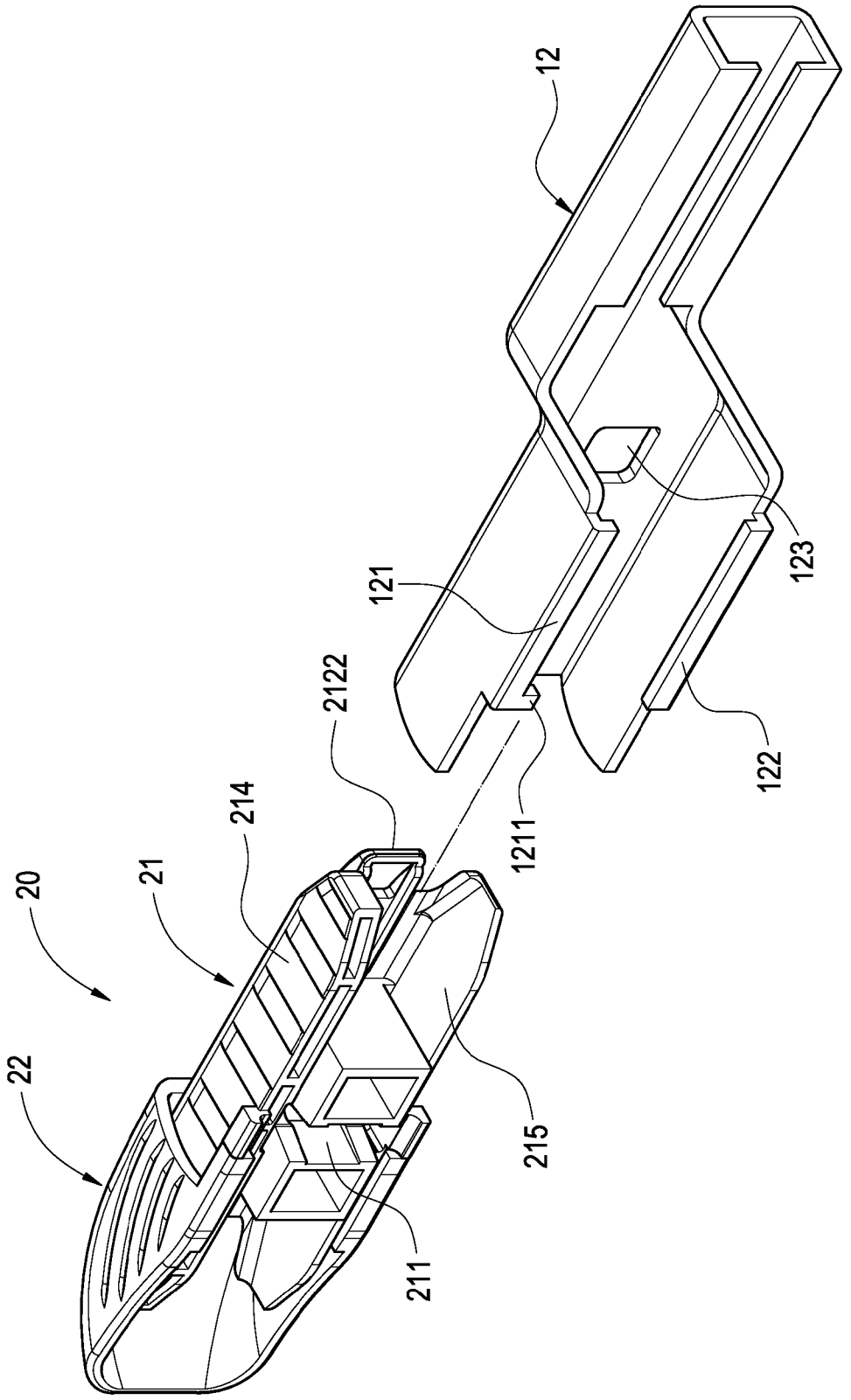


FIG.3

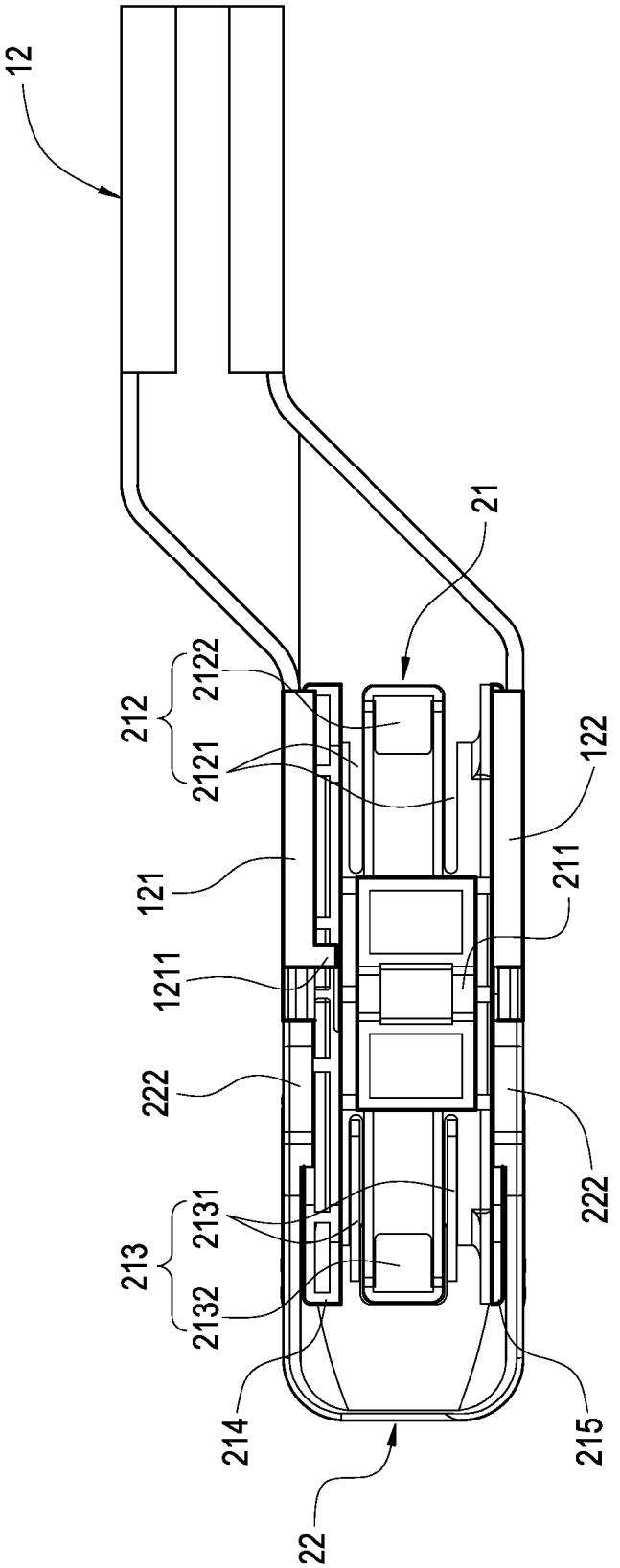

12
21
212
2122
2121
122
121
211
1211
222
222
213
2131
2132
214
215
22

FIG.4

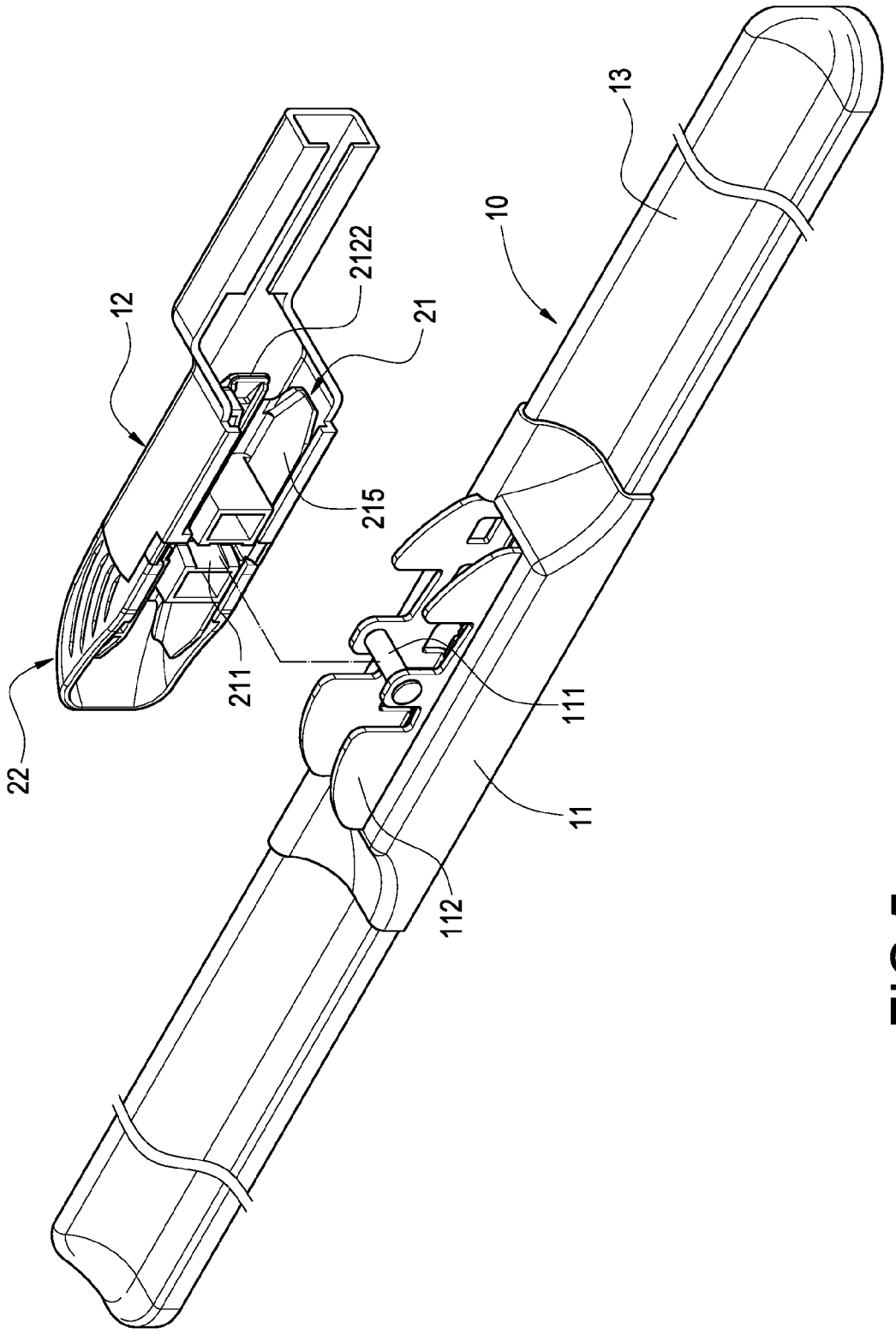


FIG.5

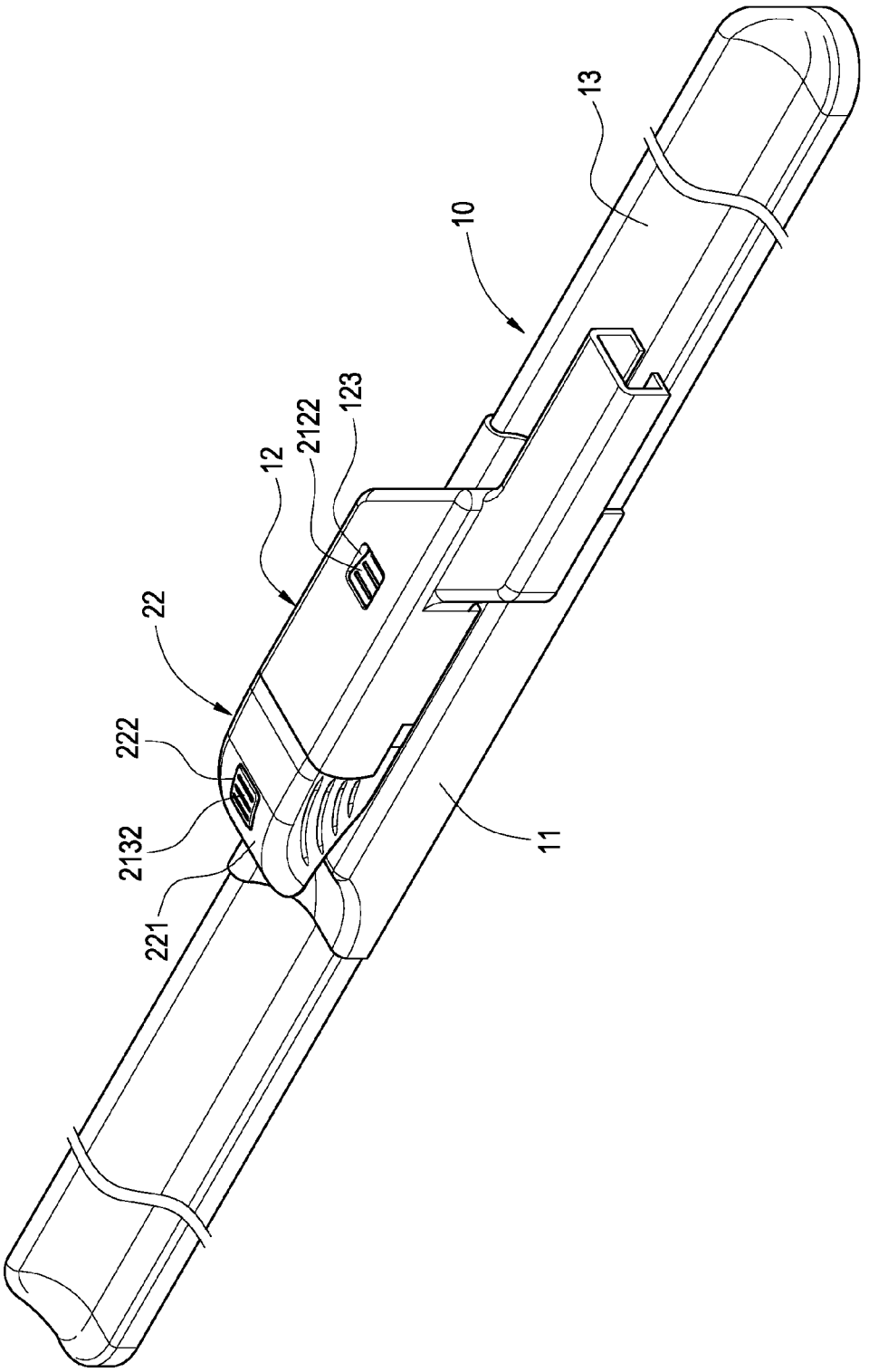


FIG.6

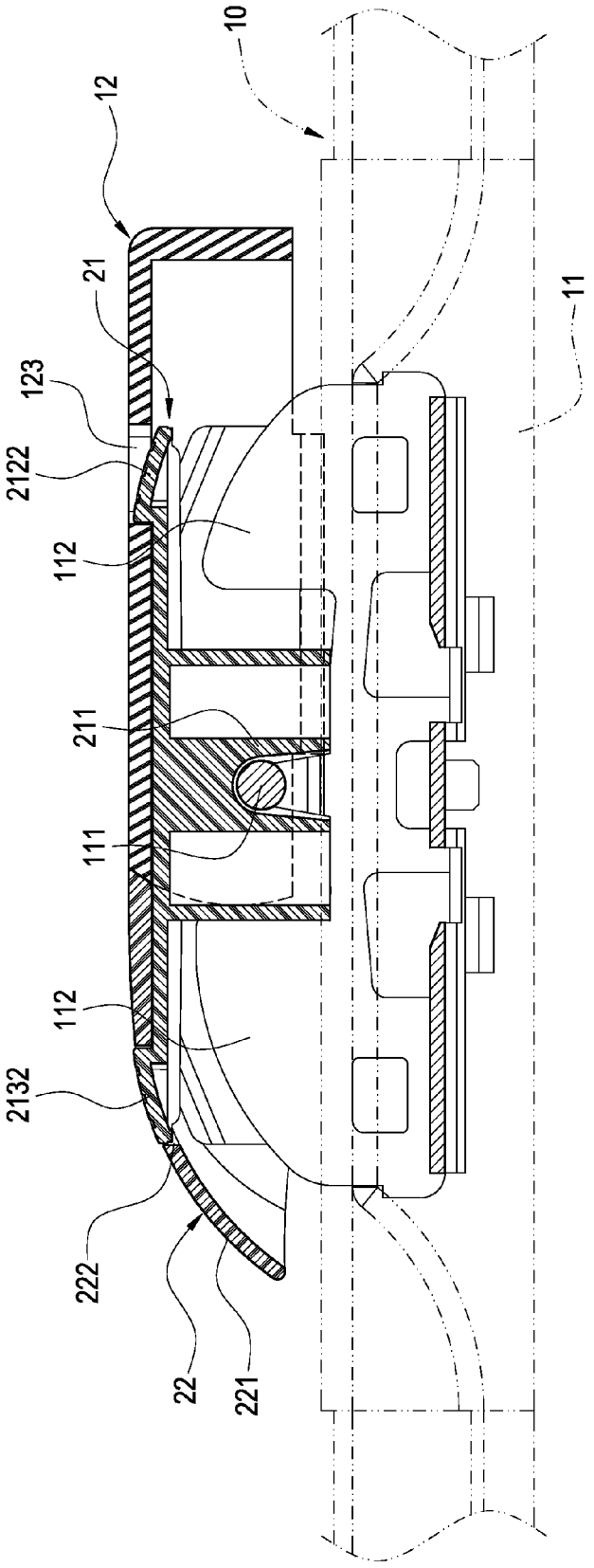
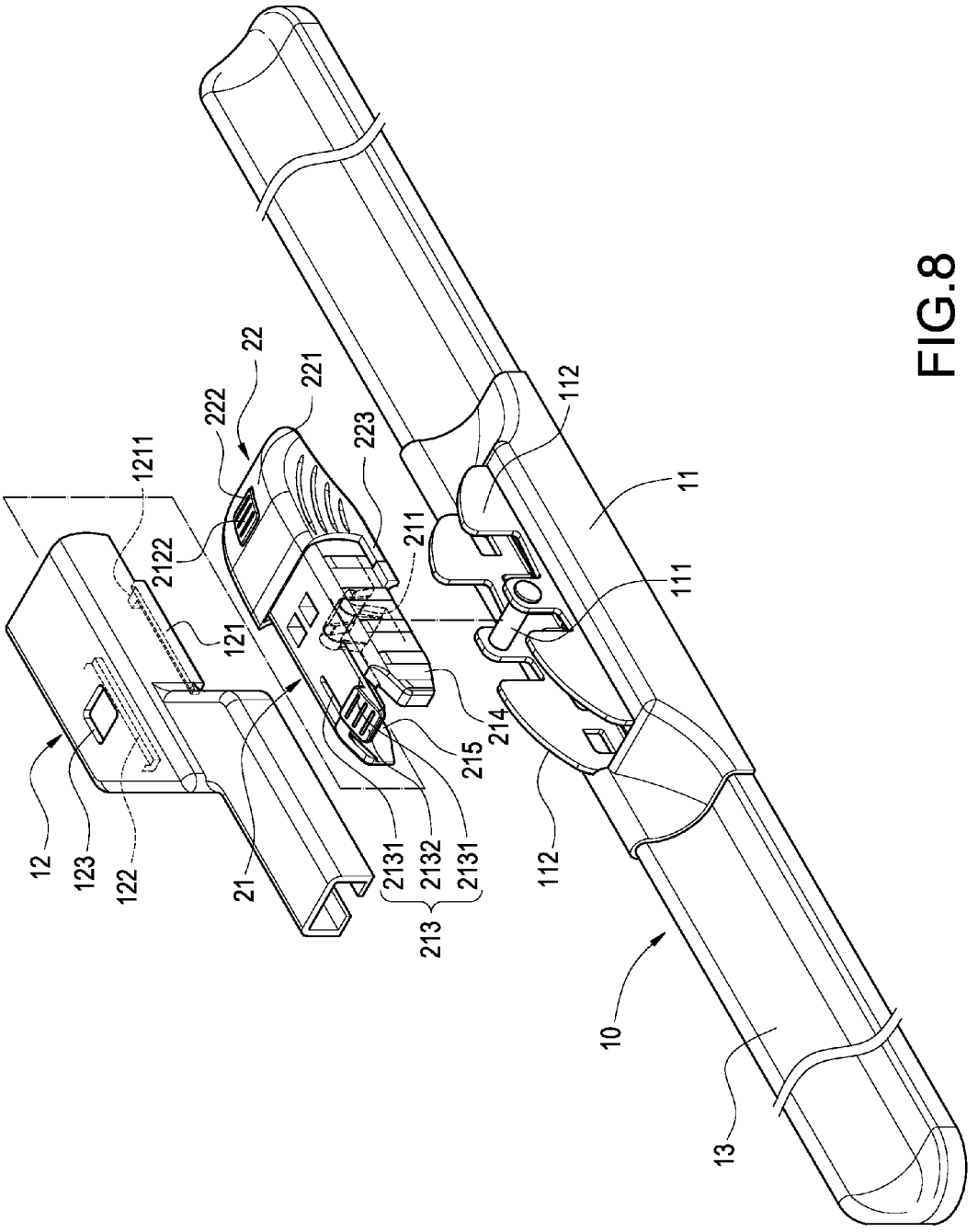


FIG.7


22
221
222
223
1211
2122
121
211
112
11
111
214
215
12
123
122
21
2131
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213
112
10
13

FIG.8

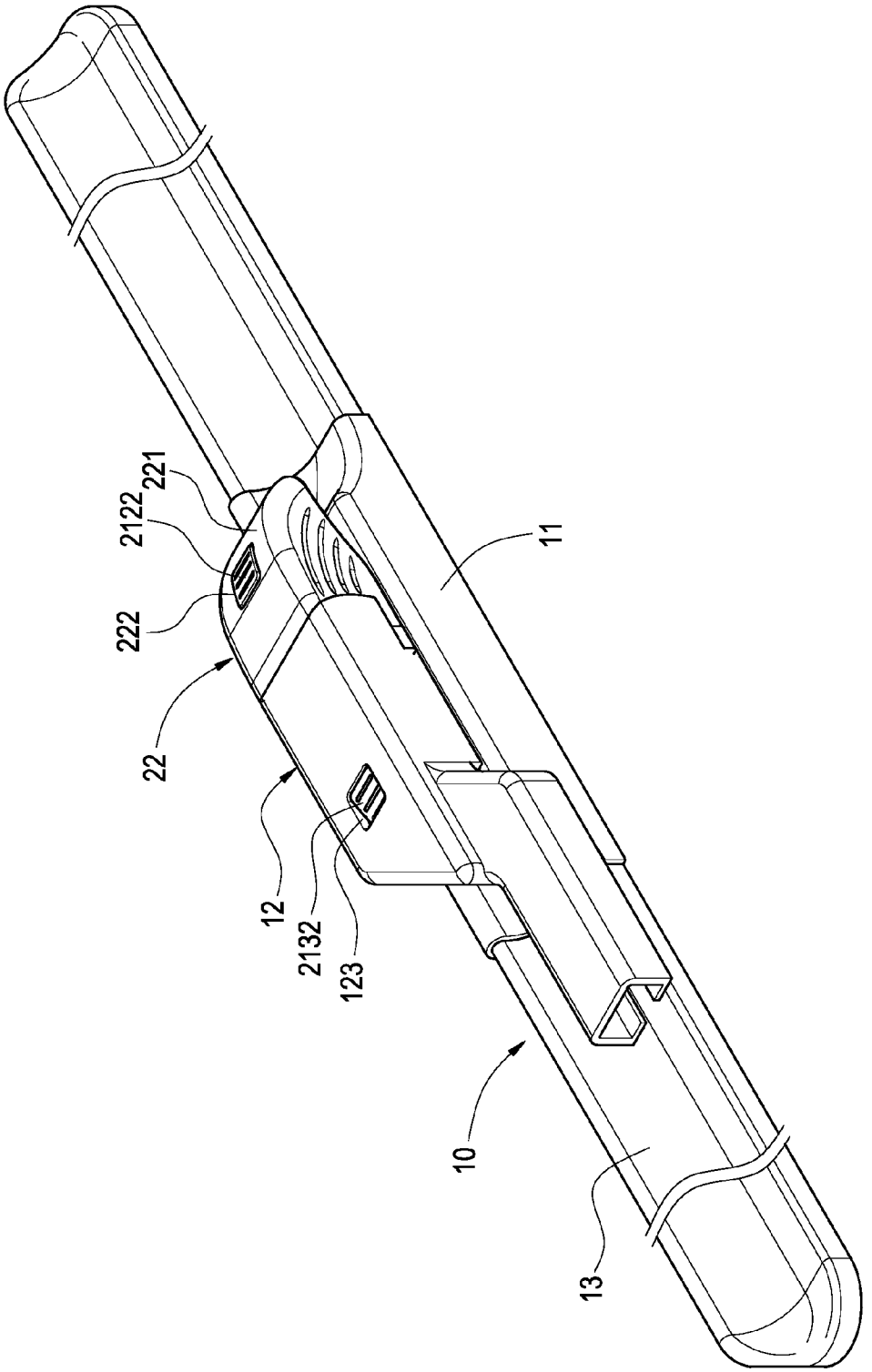

FIG.9

CONNECTING ASSEMBLY FOR WINDSHIELD WIPER

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a windshield wiper, and in particular to a connecting assembly for a windshield wiper.

2. Description of Prior Art

A windshield wiper includes a supporting piece, a connector and a wiper blade. The connector is fixed to the middle portion of the top surface of the supporting piece. The wiper blade is fixed to the bottom surface of the supporting piece. The connector is connected to a wiper arm, so that the wiper arm can drive the windshield wiper for operation. By this structure, the wiper blade can wipe off rain or dirt attached onto the windshield.

When the above-mentioned windshield wiper suffers damage, the supporting piece and the wiper blade can be replaced by a new one. Thus, it is advantageous to design the connector as an interchangeable component suitable for various kinds of automobiles. For example, Taiwan Patent No. M315183 discloses a windshield wiper, in which a connecting assembly having two locking arms engaged with the supporting piece is provided.

However, the locking arms of the connecting assembly are formed by extending from a base, so that the locking arms are not solid and may get broken easily. Further, not all supporting pieces are provided with a locking trough for allowing the locking arm to be engaged therewith. On the other hand, unlike the conventional windshield wiper, the current windshield wiper is required to swing in multiple directions in order to increase its function. As a result, the connecting assembly for the current windshield wiper has to be configured to meet the above demands.

Therefore, it is an important issue for the present Inventor to solve the above-mentioned problems.

SUMMARY OF THE INVENTION

The present invention is to provide a connecting assembly for a windshield wiper, in which a first insertion portion and a second insertion portion are configured to be symmetrical to each other. By this structure, the supporting arm and the windshield wiper can be connected easily with a changeable connecting direction.

The present invention provides a connecting assembly for a windshield wiper. The windshield wiper includes a fixing member and a supporting arm. The connecting assembly includes a pivoting base and a cover cap. The pivoting base comprises an engaging portion, a first insertion portion and a second insertion portion extending from the engaging portion in opposite directions. The engaging portion is engaged with the fixing member. The first insertion portion and the second insertion portion are symmetrical to each other with respect to the engaging portion. The cover cap is assembled with the supporting arm and put outside the first insertion portion and the second insertion portion in dual directions.

The present invention has the following advantageous features. Two side plates on both sides of the pivoting base are configured to have different thicknesses, which is a fool-proof design to facilitate the correct engagement of the pivoting base and the fixing member. Further, the supporting arm can be designed to match the two side plates of different thickness, so that the windshield wiper can be assembled more correctly.

BRIEF DESCRIPTION OF DRAWING

FIG. **1** is an exploded perspective view showing a windshield wiper of the present invention;

FIG. **2** is an exploded perspective view showing a connecting assembly of the present invention;

FIG. **3** is a bottom perspective view showing the connecting assembly of the present invention;

FIG. **4** is an assembled bottom view showing the connecting assembly of the present invention;

FIG. **5** is a schematic view showing the structure of the windshield wiper of the present invention;

FIG. **6** is an assembled view showing the windshield wiper of the present invention;

FIG. **7** is an assembled cross-sectional view showing the windshield wiper of the present invention;

FIG. **8** is an exploded perspective view showing the windshield wiper according to another embodiment of the present invention; and

FIG. **9** is an assembled perspective view showing the windshield wiper according to another embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

The detailed description and technical contents of the present invention will become apparent with the following detailed description accompanied with related drawings. It is noteworthy to point out that the drawings is provided for the illustration purpose only, but not intended for limiting the scope of the present invention.

Please refer to FIGS. **1** to **4**. The present invention relates to a connecting assembly for a windshield wiper. The windshield wiper **10** has a fixing member **11** and a supporting arm **12**. The connecting assembly **20** includes a pivoting base **21** and a cover cap **22**.

The windshield wiper **20** further comprises a pressurizing piece **13** having a concave surface and an asymmetrical profile. The fixing member **11** is provided on the windshield wiper **10** and configured to have an asymmetrical profile corresponding to that of the pressurizing piece **13**. The fixing member **11** comprises a shaft rod **111** and an insertion piece **112**. The supporting arm **12** comprises a first locking block **121**, a second locking block **122** and a trough **123**. The first locking block **121** is formed with a protrusion **1211**.

The pivoting base **21** comprises an engaging portion **211**, a first insertion portion **212**, a second insertion portion **213**, a first side plate **214** and a second side plate **215**. The engaging portion **211** is provided within the pivoting base **21** and engaged with the shaft rod **111** and the insertion piece **112** of the fixing member **11**. The first insertion portion **212** and the second insertion portion **213** extend from the engaging portion **211** in opposite directions and are integrally formed with the pivoting base **21**. The first insertion portion **212** and the second insertion portion **213** are symmetrical to each other with respect to the engaging portion **211**. The first insertion portion **212** is provided with two first slots **2121** and a first end locking piece **2122** between the two first slots **2121**. The second insertion portion **213** is provided with two second slots **2131** and a second end locking piece **2132** between the two second slots **2131**. The first insertion portion **212** and the second insertion portion **213** are symmetrical to each other, so that the supporting arm **12** can be selectively connected to one of the first insertion portion **212** and the second insertion portion **213**. Each of the first slot **2121** and the slot groove **2131** is an elongate slot. When the supporting arm **12** is connected to the first insertion portion **212** or the second

insertion portion **213**, the first slots **2121** or the second slots **2131** are subjected to an inward elastic deformation, so that the trough **123** can be engaged with the first end locking piece **2122** or the second end locking piece **2132**. In this way, the pivoting base **21** can be fixed to the supporting arm **12**. Further, in order to fix the pivoting base **21** to the pressurizing piece **13**, the thickness of the first side plate **214** is larger than that of the second side plate **215**. The first side plate **214** and the second side plate **215** are engaged with the first locking block **121** and the second locking block **122** respectively. The first locking block **121** is formed with a protrusion **1211** serving as a fool-proof mechanism. When the first locking block **121** is connected to the second side plate **215**, the protrusion **1211** abuts against the engaging portion **211**, thereby restricting the connection of the pivoting base **21** to the supporting arm **12**.

The cover cap **22** has a curved plate **221**. The curved plate **221** is provided with a locking hole **222**. One side of the cover cap **22** is formed with two engaging blocks **223**. The cover cap **22** and the supporting arm **12** can be assembled with the first insertion portion **212** and the second insertion portion **213** in dual directions. Also, the cover cap **22** and the supporting arm **12** are assembled with the pivoting base **21**. Thus, when the cover cap **22** and the supporting arm **12** are connected with the first insertion portion **212** or the second insertion portion **213**, the first slots **2121** or the second slots **2131** are subjected to an inward elastic deformation, so that the first end locking piece **2122** or the second end locking piece **2132** can be fixed to the cover cap **22**. The curved plate **221** downwardly presses the first end locking piece **2122** or the second end locking piece **2132**, so that the locking hole **222** can be engaged with the first end locking piece **2122** or the second locking piece **2132**. The engaging blocks **223** are fixed to the first side plate **214** and the second side plate **215**, so that the cover cap **22** and the supporting arm **12** can be connected to the pivoting base **21**.

Please refer to FIGS. **5** to **7**, which are schematic views showing the structure of the present invention. The pivoting base **21** and the fixing member **11** are connected to the windshield wiper **10** and the supporting arm **12**. The fixing member **11** is provided on the windshield wiper **10**. The pivoting base **21** comprises an engaging portion **211** fixedly provided on the fixing member **11**. The pivoting base **21** is further provided with a first insertion portion **212** and a second insertion portion **213** that are configured to be symmetrical with each other. The supporting arm **12** can be selectively connected to one of the first insertion portion **212** and the second insertion portion **213**. As shown in these figures, when the supporting arm **12** is connected to the first insertion portion **212**, the first slots **2121** are subjected to an inward elastic deformation, so that the trough **123** is engaged with the first end locking piece **2122**, thereby fixing the pivoting base **21** to the supporting arm **12**. At this time, the cover cap **22** is connected to the second insertion portion **213** to face the supporting arm **12**. The second slots **2131** are subjected to an elastic deformation, so that the locking hole **222** can be engaged with the second end locking piece **2132**. In this way, the cover cap **22** and the supporting arm **12** are connected with the pivoting base **21**, thereby allowing the supporting arm **12** to be connected to the windshield wiper **10** in one direction. Therefore, the windshield wiper **10** can swing in one direction.

Please refer to FIGS. **8** and **9**, which show another embodiment of the present invention. The supporting arm **12** is connected to the second insertion portion **213**. The second slots **2131** are subjected to an elastic deformation, so that the second end locking piece **2132** can be engaged with the trough **123**, thereby fixing the pivoting base **21** to the supporting arm **12**. In this way, the cover cap **22** is connected to the first insertion portion **212** to face the supporting arm **12**. The first slots **222** are subjected to an elastic deformation, so that the locking hole **222** is engaged with the first end locking piece **2122**. As a result, the cover cap **22** and the supporting arm **12** are connected to the pivoting base **21**, thereby allowing the supporting arm **12** to be connected to the windshield wiper **10** in another direction. Thus, the windshield wiper **10** can swing in another direction.

Although the present invention has been described with reference to the foregoing preferred embodiments, it will be understood that the invention is not limited to the details thereof. Various equivalent variations and modifications can still occur to those skilled in this art in view of the teachings of the present invention. Thus, all such variations and equivalent modifications are also embraced within the scope of the invention as defined in the appended claims.

What is claimed is:

1. A connecting assembly (**20**) for a windshield wiper (**10**), the windshield wiper (**10**) including a fixing member (**11**) and a supporting arm (**12**), the connecting assembly (**20**) including:

a pivoting base (**21**) comprising an engaging portion (**211**), and a first insertion portion (**212**) and a second insertion portion (**213**) extending from the engaging portion (**211**) in opposite directions, the engaging portion (**211**) being engaged with the fixing member (**11**), the first insertion portion (**212**) and the second insertion portion (**213**) being symmetrical to each other with respect to the engaging portion (**211**); and

a cover cap (**22**) assembled with the supporting arm (**12**), the supporting arm (**12**) and the cover cap (**22**) being put outside the first insertion portion (**212**) and the second insertion portion (**213**) respectively,

wherein a trough (**123**) of the supporting arm (**12**) is engaged with a first end locking piece (**2122**) of the first insertion portion (**212**), and a locking hole (**222**) of the cover cap (**22**) is engaged with a second end locking piece (**2132**) of the second insertion portion (**213**).

2. The connecting assembly (**20**) for a windshield wiper (**10**) according to claim **1**, wherein the first insertion portion (**212**) is provided with first slots (**2121**) to form the first end locking piece (**2122**), and the first slots (**2121**) are subjected to an inward elastic deformation of the first insertion portion (**212**) when the supporting arm (**12**) is connected to the first insertion portion (**212**), thereby fixing to the supporting arm (**12**).

3. The connecting assembly (**20**) for a windshield wiper (**10**) according to claim **1**, wherein the second insertion portion (**213**) is provided with second slots (**2131**) to form the second end locking piece (**2132**), and the second slots (**2131**) are subjected to an inward elastic deformation of the second insertion portion (**213**) when the cover cap (**22**) is connected to the second insertion portion (**213**), thereby fixing to the cover cap (**22**).

4. The connecting assembly (**20**) for a windshield wiper (**10**) according to claim **1**, wherein the cover cap (**22**) has a curved plate (**221**), and the curved plate (**221**) is provided with the locking hole (**222**).

5. The connecting assembly (**20**) for a windshield wiper (**10**) according to claim **4**, wherein the curved plate (**221**) downwardly presses the second end locking piece (**2132**), so that the second end locking piece (**2132**) can be engaged in the locking hole (**222**).

6. The connecting assembly (**20**) for a windshield wiper (**10**) according to claim **1**, wherein the pivoting base (**21**) has

a first side plate (**214**) and a second side plate (**215**), the thickness of the first side plate (**214**) is larger than that of the second side plate (**215**).

* * * * *

EXHIBIT C

EXHIBIT C


High Quality Natural Molded Rubber with Graphite Coating
Aerodynamic Design
Best Streak Free and Chatter Free Performance
AquaBLADE
price drop
$18.99
reg. $21.99
Valvoline
aquablade wiper blade 24 in
• temporary price drop
2/3
price drop
price drop
$22.49
reg. $25.99
Valvoline
aquablade wiper blade 26 in
• temporary price drop
2/3
price drop
15"
380mm
Valvoline
Gold SERIES
22"
550mm
Valvoline
AquaBLADE
28"
700mm
Valvoline
AquaBLADE
28"
Valvoline
AquaBLADE


650mm
Valvoline
AquaBLADE
kmart
KMART STORE 7293
713 E. BALTIMORE PIKE
CLIFTON HEIGHTS, PA 19018
(610)622-5000
** WELCOME TO YOUR **
** KMART STORE 7293 **
CASHIER: JASMINE HA
GENERAL MERCHANDISE
TOTAL SAVED: 7.05
TOTAL NUMBER OF ITEMS = 1
RECEIPT# 07293 012814 004 30642
01/28/14 11:58 AM 7293 04 3066 0019
WE'RE LISTENING!
help us serve you better by
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