

# Major Patents

## ■ Patents registered in 2019

| Registration Number         | Name  | Inventor(s)  |
|-----------------------------|---|--|
| Japan - 06465282            | LINEAR MOTOR  | Yuqi Tang, Takashi Matsushita, Kazuhito Yamaura  |
| Japan - 06480316            | MOTOR CONTROLLER  | Yuji Ide, Toshio Hiraide   |
| Japan - 06480849            | INTERCONNECTION POWER SUPPLY SYSTEM   | Makoto Ishida, Minoru Yanagisawa   |
| Japan - 06489746            | MAGNETIC SHIELD COVER FOR ENCODER OF MAGNETIC DETECTION TYPE AND ENCODER OF MAGNETIC DETECTION TYPE | Kazuhiro Makiuchi, Yoshihiro Shoji   |
| Japan - 06489842            | MOTOR CONTROLLER  | Yuji Ide, Takao Oshimori, Hiroaki Koike  |
| Japan - 06491497            | MOTOR CONTROL DEVICE  | Yuji Ide, Daigo Kuraishi, Akihiko Takahashi, Toshio Hiraide  |
| Japan - 06498087            | MEASUREMENT DEVICE  | Masahiro Koike, Tomoaki Ikeda, Takahisa Toda, Yo Muramatsu, Katsumichi Ishihara, Hikaru Urushimoto |
| Japan - 06498541            | MEASUREMENT DEVICE  | Katsumichi Ishihara, Takahisa Toda, Yo Muramatsu   |
| Japan - 06518515            | SENSOR FOR MOTOR  | Takayoshi Seki   |
| Japan - 06529894            | CORELESS LINEAR MOTOR   | Yuqi Tang  |
| Japan - 06570783            | MEASUREMENT DEVICE  | Yo Muramatsu, Takahisa Toda, Katsumichi Ishihara, Hikaru Urushimoto                                |
| Japan - 06601788            | MOTOR ROTATOR, MOTOR DEVICE, AND METHOD FOR MANUFACTURING THE MOTOR ROTATOR                         | Koji Nakatake, Masaaki Ohashi  |
| Philippines - 1-2015-000337 | MOTOR CONTROL UNIT  | Yuji Ide, Takao Oshimori, Hiroaki Koike  |
| Philippines - 1-2016-000071 | MOTOR CONTROL DEVICE  | Yuji Ide, Daigo Kuraishi, Akihiko Takahashi, Toshio Hiraide  |
| Europe - 02107669           | MOTOR WITH AN ELECTROMAGNETIC BRAKE   | Toshihito Miyashita, Masahiro Yamaguchi  |
| Europe - 02169812           | MOLDED MOTOR  | Toshihito Miyashita, Hiroshi Hioki, Junichi Chiku  |
| Europe - 02199620           | AXIAL FLOW FAN  | Katsumichi Ishihara  |
| Europe - 02295818           | CENTRIFUGAL FAN   | Kevin Yen, Hiromitsu Kuribayashi   |
| Europe - 02381111           | FAN WITH REDUCED NOISE  | Naoya Inada, Toshiyuki Nakamura, Toshiki Ogawara, Yoshinori Miyabara                               |
| Europe - 02644902           | AXIAL FLOW FAN  | Naoya Inada, Jiro Watanabe   |
| Europe - 02662571           | FAN FRAME   | Masahiro Koike, Soma Araki, Toshiki Ogawara  |
| Europe - 02706243           | AXIAL FLOW FAN  | Atsushi Yanagisawa   |
| Europe - 02913912           | LINEAR MOTOR  | Akihiko Takahashi  |
| Europe - 03141764           | MEASUREMENT DEVICE  | Masahiro Koike, Tomoaki Ikeda, Takahisa Toda, Yo Muramatsu, Katsumichi Ishihara, Hikaru Urushimoto |
| Korea Patent 101952145      | SHAFT ROTARY TYPE LINEAR MOTOR AND SHAFT ROTARY TYPE LINEAR MOTOR UNIT                              | Yuqi Tang, Satoshi Sugita  |
| Korea - 101967926           | MOTOR CONTROLLER  | Yuji Ide, Michio Kitahara, Satoshi Yamazaki  |
| Korea - 101971691           | GROUND WIRE CONNECTION STRUCTURE FOR MOTOR  | Toshihito Miyashita, Manabu Horiuchi   |
| Korea - 101992818           | MOTOR STRUCTURE   | Toshihito Miyashita, Manabu Horiuchi   |
| Korea - 101993174           | LINEAR MOTOR  | Yuqi Tang, Takashi Matsushita  |
| Hong Kong - HK1199559       | LINEAR MOTOR  | Yuqi Tang, Satoshi Sugita  |
| Hong Kong - HK1204716       | LINEAR MOTOR UNIT   | Yuqi Tang, Kazuhito Yamaura  |
| Hong Kong - HK1204717       | LINEAR MOTOR  | Yuqi Tang, Takashi Matsushita  |
| Taiwan - I649942            | LINEAR MOTOR  | Yuqi Tang, Takashi Matsushita  |

| Registration Number      | Name   | Inventor(s)  |
|--------------------------|--|--|
| Taiwan - I649957         | CONTROL DEVICE OF FAN MOTOR  | Takahisa Toda, Takashi Kaise, Jiro Watanabe                              |
| Taiwan - I657645         | LINEAR MOTOR UNIT  | Yuqi Tang, Kazuhito Yamaura  |
| Taiwan - I661179         | MAGNETIC SHIELD COVER FOR ENCODER OF MAGNETIC DETECTION TYPE AND ENCODER OF MAGNETIC DETECTION TYPE                    | Kazuhiro Makiuchi, Yoshihiro Shoji                                       |
| Taiwan - I661654         | STATOR CORE AND PERMANENT MAGNET MOTOR   | Toshihito Miyashita, Manabu Horiuchi                                     |
| Taiwan - I661657         | GROUND WIRE CONNECTION STRUCTURE FOR MOTOR   | Toshihito Miyashita, Manabu Horiuchi                                     |
| Taiwan - I666853         | STATOR, METHOD FOR MANUFACTURING STATOR, AND MOTOR   | Toshihito Miyashita, Masashi Suzuki, Manabu Horiuchi, Masaki Musha       |
| Taiwan - I667616         | PRODUCT SPECIFICATION SETTING APPARATUS AND FAN MOTOR HAVING THE SAME  | Tetsuya Yamazaki, Takahisa Toda  |
| Taiwan - I671614         | MOTOR CONTROLLER   | Yuji Ide, Michio Kitahara, Satoshi Yamazaki                              |
| Taiwan - I673434         | WATERPROOF AXIAL FLOW FAN  | Katsumichi Ishihara, Akira Nakayama, Tatsuya Midorikawa, Masato Kakeyama |
| Taiwan - I675965         | HOUSING OF FAN MOTOR   | Toshiya Nishizawa, Haruka Sakai, Jiro Watanabe, Masashi Yokota           |
| Taiwan - I677631         | STRUCTURE FOR ATTACHING COOLING FAN  | Daigo Kuraishi   |
| Taiwan - I678065         | MOTOR CONTROLLER   | Yuji Ide, Michio Kitahara, Satoshi Yamazaki, Toshio Hiraide              |
| China - ZL201410443216.5 | COIL INSULATING STRUCTURE / Bobbin with Grooves for Inserting Insulating Slot Closer (OF ELECTROMAGNETIC MOTOR STATOR) | Koji Nakatake, Yasushi Yoda, Masaaki Ohashi                              |
| China - ZL201410459216.4 | HOUSING OF FAN MOTOR   | Toshiya Nishizawa, Haruka Sakai, Jiro Watanabe, Masashi Yokota           |
| China - ZL201410468768.1 | CONTROL DEVICE OF FAN MOTOR  | Takahisa Toda, Takashi Kaise, Jiro Watanabe                              |
| China - ZL201410730354.1 | WATERPROOF AXIAL FLOW FAN  | Katsumichi Ishihara, Akira Nakayama, Tatsuya Midorikawa, Masato Kakeyama |
| China - ZL201410745918.9 | MOTOR CONTROLLER   | Yuji Ide, Michio Kitahara, Satoshi Yamazaki                              |
| China - ZL201510023115.7 | STATOR CORE AND PERMANENT MAGNET MOTOR   | Toshihito Miyashita, Manabu Horiuchi                                     |
| China - ZL201510042487.4 | STATOR, METHOD FOR MANUFACTURING STATOR, AND MOTOR   | Toshihito Miyashita, Masashi Suzuki, Manabu Horiuchi, Masaki Musha       |
| China - ZL201510063992.7 | MOTOR STRUCTURE  | Toshihito Miyashita, Manabu Horiuchi                                     |
| China - ZL201510088131.4 | LINEAR MOTOR   | Akihiko Takahashi  |
| China - ZL201510105596.6 | STRUCTURE FOR ATTACHING COOLING FAN  | Daigo Kuraishi   |
| China - ZL201510217658.2 | MOTOR CONTROLLER   | Yuji Ide, Michio Kitahara, Satoshi Yamazaki, Toshio Hiraide              |
| China - ZL201510528340.6 | STEPPER MOTOR  | Yasushi Yoda, Koji Nakatake, Masaaki Ohashi                              |
| China - ZL201510572450.2 | MOTOR CONTROLLER   | Yuji Ide, Satoshi Yamazaki, Masahisa Koyama                              |
| China - ZL201510612683.0 | MOTOR CONTROL UNIT   | Yuji Ide, Takao Oshimori, Hiroaki Koike                                  |
| U.S. - 10170970          | STEPPER MOTOR  | Yasushi Yoda, Koji Nakatake, Masaaki Ohashi                              |
| U.S. - 10193431          | LINEAR MOTOR   | Akihiko Takahashi  |
| U.S. - 10224797          | LINEAR MOTOR   | Yasushi Misawa, Hiroyuki Sato, Akihiko Takahashi, Satoshi Sugita         |
| U.S. - 10236732          | INDUCTOR TYPE ROTARY MOTOR   | Satoshi Sugita, Yuqi Tang, Yasushi Misawa, Shigenori Miyairi             |
| U.S. - 10260519          | BIDIRECTIONAL AXIAL FAN DEVICE   | Satoshi Fujimaki, Toshiya Nishizawa, Takashi Kawashima                   |
| U.S. - 10274341          | MAGNETIC SHIELD COVER FOR ENCODER OF MAGNETIC DETECTION TYPE AND ENCODER OF MAGNETIC DETECTION TYPE                    | Kazuhiro Makiuchi, Yoshihiro Shoji                                       |

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|---------------------|---|--|
| U.S. - 10312763     | STATOR, METHOD FOR MANUFACTURING STATOR, AND MOTOR                          | Toshihito Miyashita, Masashi Suzuki, Manabu Horiuchi, Masaki Musha |
| U.S. - 10344764     | AXIAL BLOWER AND SERIES-TYPE AXIAL BLOWER                                   | Toshiyuki Nakamura, Shuji Miyazawa                                 |
| U.S. - 10367393     | MOTOR ROTATOR, MOTOR DEVICE, AND METHOD FOR MANUFACTURING THE MOTOR ROTATOR | Koji Nakatake, Masaaki Ohashi                                      |
| U.S. - 10393127     | HOUSING OF FAN MOTOR  | Toshiya Nishizawa, Haruka Sakai, Jiro Watanabe, Masashi Yokota     |
| U.S. - 10465692     | FAN MOTOR   | Naruhiko Kudo, Munenori Takakuwa, Tatsuya Midorikawa               |

## Internal Recognition: Invention Grand Prize (Excellence Award)

Awarded in May 2019

| Prize            | Title                                     | Division                           | Name  |
|------------------|---|------------------------------------|---|
| Excellence Award | Drainage Structure of Splash Proof Blower | Cooling Systems Div., Design Dept. | Masaki Kodama, Toshiya Nishizawa, Kakuhiko Hata |

## Internal Recognition: Manufacturing Grand Prize (Excellence Award)

Awarded in May 2019

| Prize            | Title   | Division  | Name  |
|------------------|---|---|---|
| Excellence Award | Injection Mold Technology which Realized Both Miniaturization and High Quality Product Appearance | Cooling Systems Div., Production Dept. Production Engineering Sect. 2   | Yoichi Yamada<br>Rikiya Niimura               |
| Excellence Award | Automation of Plate Processing for Linear Servo Motors  | Human Resources Dept.<br>(On secondment from SANYO DENKI Techno Service Co., LTD.)  | Takashi Miyasaka,<br>Toru Kamimura            |
|                  |   | SANYO DENKI Techno Service CO., LTD.<br>Servo Systems Div.,<br>Production Engineering Dept.,<br>Process Engineering Sect. 1, Subsect. 1 | Hideaki Kobayashi<br><br>Yoshiaki Hirabayashi |