



(51) International Patent Classification:

H01R 12/72 (2011.01) H01R 4/18 (2006.01)

H01R 12/70 (2011.01)

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(21) International Application Number:

PCT/US2020/039919

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(22) International Filing Date:

26 June 2020 (26.06.2020)

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

62/868,722 28 June 2019 (28.06.2019) US

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(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ,

(54) Title: LOW-PROFILE EDGE CONNECTOR AND CONNECTOR SYSTEM USING SAME

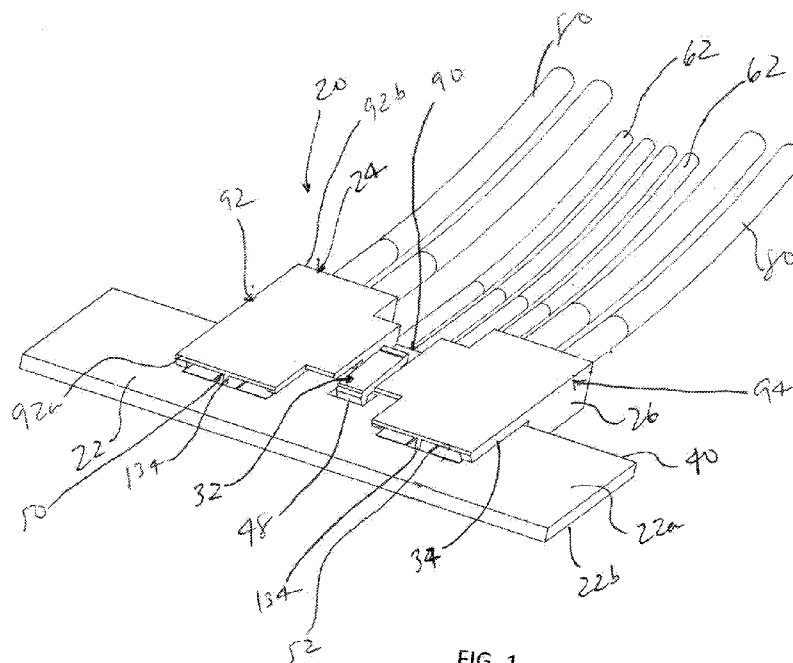


FIG. 1

(57) Abstract: An edge connector is configured to connect to a circuit board. The edge connector includes first, second and third terminal mounts which define a plurality of first, second and third terminal receiving passageways. First terminals are mounted in the first passageways; second terminals are mounted in the second passageways; and third terminals are mounted in the third passageways. The first terminals carry a first electrical specification of the edge connector and the second and third terminals carry a second electrical specification of the edge connector which is different than the first electrical specification.

TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

- *with international search report (Art. 21(3))*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

LOW-PROFILE EDGE CONNECTOR AND CONNECTOR SYSTEM USING SAME

[0001] This application claims the domestic benefit of United States Provisional Application Serial No. 62/868,722, filed on June 28, 2019, which is incorporated herein by reference in its entirety.

FIELD OF THE DISCLOSURE

[0002] This disclosure relates to field of connectors, more specifically to the field of connectors that can mount to an edge of a circuit board.

DESCRIPTION OF RELATED ART

[0003] Connectors that can mount to an edge of a circuit board are known. Existing designs, while function, tend to have a higher than desirable profile while requiring more board real estate than is desired. Consequentially, certain individuals would appreciate an improved connector for mounting to an edge of a circuit board.

SUMMARY OF THE DISCLOSURE

[0004] An edge connector is configured to mount to an edge of a circuit board. The edge connector has a low profile and is releasable while providing for a secure and robust electrical connection. The edge connector includes first, second and third terminal mounts which define a plurality of first, second and third terminal receiving passageways. First terminals are mounted in the first passageways; second terminals are mounted in the second passageways; and third terminals are mounted in the third passageways. The first terminals carry a first electrical specification of the edge connector and the second and third terminals carry a second electrical specification of the edge connector which is different than the first electrical specification. A movable latch extends from the first terminal mount. The latch is positioned between the second and third terminal mounts.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] The present invention is illustrated by way of example and not limited in the accompanying figures in which like reference numerals indicate similar elements and in which:

[0006] FIG. 1 depicts a top perspective view of a connector system which includes an embodiment of a low-profile edge connector;

- [0007] FIG. 2 depicts a bottom perspective view of the connector system;
- [0008] FIG. 3 depicts a bottom plan view of a circuit board of the connector system;
- [0009] FIG. 4 depicts a top plan view of the circuit board;
- [0010] FIG. 5 depicts a bottom perspective view of the connector system, with a housing of the connector system removed so that internal components can be seen;
- [0011] FIG. 6 depicts a top perspective view of a first terminal of the connector system;
- [0012] FIG. 7 depicts a top perspective view of a second or third terminal of the connector system;
- [0013] FIG. 8 depicts a cross-sectional view of the connector system, and shown from the rear of the connector system;
- [0014] FIG. 9 depicts a cross-sectional view of the connector system through a latch of the connector system;
- [0015] FIG. 10 depicts a cross-sectional view of the connector system through one of the first terminals of the connector system;
- [0016] FIG. 11 depicts a cross-sectional view of the connector system through one of the second terminals of the connector system; and
- [0017] FIG. 12 depicts the cross-sectional view of FIG. 11, but shown in perspective.

DETAILED DESCRIPTION OF THE ILLUSTRATED EMBODIMENT

[0018] The detailed description that follows describes exemplary embodiments and is not intended to be limited to the expressly disclosed combination(s). Therefore, unless otherwise noted, features disclosed herein may be combined together to form additional combinations that were not otherwise shown for purposes of brevity.

[0019] As shown in FIGS. 1 and 2, a connector system 20 includes a circuit board 22 that is configured to mate with a low-profile edge connector 24. The low-profile edge connector 24 includes a housing 26 which supports a plurality of terminals 28, 30a-d. The housing 26, which can be formed of an insulative material, includes an integral latch 32 which is configured to attach the edge connector 24 to the circuit board 22. The housing 26 allows for a touch safe connector and has a circuit board receiving slot 34 extending between side edges thereof that is configured to engage the circuit board 22. The housing 26 is designed to direct the circuit board 22 into the circuit board receiving slot 34. The terminals 28, 30a-d mate with the circuit board 22. Directional terms such as front, rear, upper, lower and the like are used herein for ease in describing the edge connector 24. The use of these terms does not denote a required orientation of the edge connector 24 during assembly and during use.

[0020] The circuit board 22 is formed in a known manner. As best shown in FIGS. 3 and 4, the circuit board 22 has planar upper and lower surfaces 22a, 22b, and edges, at least one edge 40 of which is at least partially planar. A first set 42 of spaced apart contact pads are provided on the lower surface 22b proximate to the edge 40. A second set 44a of spaced apart contact pads is provided on the lower surface 22b proximate to the edge 40, and adjacent to one side of the first set 42. A third set 44b of spaced apart contact pads is provided on the lower surface 22b proximate to the edge 40, adjacent to the other side of the first set 42. The second set 44a and the third set 44b are spaced apart from each other by the first set 42. In some embodiments, fourth and fifth sets 44a', 44b' of spaced apart contact pads are provided on the upper surface 22a proximate to the edge 40. The respective contacts in the fourth set 44a' vertically align with the respective contacts in the second set 44a. The respective contacts in the fifth set 44b' vertically align with the respective contacts in the third set 44b. A locking aperture 48 extends through the circuit board 22 from the upper surface 22a to the lower surface 22b, is spaced from the edge 40, and intersects the first set 42. A first slot 50 extends through the circuit board 22 from the upper surface 22a to the lower surface 22b, extends forwardly from the edge 40 and is positioned between adjacent contact pads of the second set 44a. The slot 50 has side walls 50a, 50b which extend from the edge 40 and are parallel to each other, and an end wall 50c at the front ends of the side walls 50a, 50b. A second slot 52 extends through the circuit board 22 from the upper surface 22a to the lower surface 22b, extends forwardly from the edge 40 and is positioned between adjacent contact pads of the third set 44b. The slot 52 has side walls 52a, 52b which extend from the edge 40 and are parallel to each other, and an end wall 52c at the front ends of the side walls 52a, 52b. The slots 50, 52 may have different widths or may have the same width.

[0021] The terminals 28, 30a-d are provided for carrying different electrical requirements for the connector system 20 to operate. The first terminals 28 carry a first electrical specification of the edge connector 24 and the second and third terminals 30a-d carry a second electrical specification of the edge connector 24. In some embodiments, the terminals 28 are signal terminals and the terminals 30a-d are power terminals. In some embodiments, the terminals 28 are low power terminals and the terminals 30a-d are high power terminals. In an embodiment, the terminals 28 are formed from a first shape, and the terminals 30a-d are formed from a second shape which is different from the first shape.

[0022] As best shown in FIG. 6, each terminal 28 is formed from a planar body 54, a plurality of legs 56 extending upwardly from a rear end of the body 54, a curved contact 58 extending upwardly from the front of the body 54, and a tang 60 extending downwardly from

the body 54. In use, the legs 56 are crimped to an associated wire 62. In an embodiment, the terminals 28 can have a double beam structure that allows the terminal 28 to have a desirable normal force without requiring a thick terminal contact.

[0023] As best shown in FIG. 7, each terminal 30a-d is formed from a planar upper body portion 64, a planar lower body portion 66, and a curved side body portion 68 which connects the upper and lower body portions 64, 66 along one side thereof along the longitudinal length of the upper and lower body portions 64, 66. In an embodiment, a plurality of spaced apart upper spring fingers 70 extend longitudinally from a front end of the upper body portion 64, and a plurality of spaced apart lower spring fingers 72 extend longitudinally from a front end of the lower body portion 66. In other embodiments, a single upper spring finger 70 extends longitudinally from the front end of the upper body portion 64, and a single lower spring finger 72 extends longitudinally from the front end of the lower body portion 66. In some embodiments, at least one spring finger 74 extends longitudinally from a front end of the side body portion 68. If the spring finger(s) 74 is provided, contact pads (not shown) are provided on the side walls 50a, 50b, 52a, 52b of the slots 50, 52 which connect each contact pad in the sets 44a, 44b to the respective contact pad in the sets 44a', 44b'. Each spring finger 70, 72 (and spring finger(s) 74 if provided), is planar with the exception of a curved section 76 provided along the length thereof. Each spring finger 70, 72, 74 is configured to flex relative to the respective body portion 64, 66, 68. A U-shaped crimp body portion 78 extends from a rear end of each of the body portions 64, 66, 68. In use, the crimp body portion 78 is crimped to an associated wire 80. An upper tang 82 extends upwardly from the upper body portion 64, and a lower tang 84 extends downwardly from the lower body portion 66. The upper tang 82 can be flexed relative to the upper body portion 64, and the lower tang 82 can be flexed relative to the lower body portion 66.

[0024] In some embodiments, the side body portion 68 and any spring finger(s) 74, and the lower body portion 66, its spring fingers 72 and its tang 84 are eliminated such that each terminal 30a-d only includes the planar upper body portion 64 and its upper tang 82, the at least one upper spring finger 70 extending from the front end of the upper body portion 64, and the crimp body portion 78 extending from the rear end of the upper body portion 64. In these embodiments, only the sets 44a, 44b of contact pads are provided on the upper surface 22a of the circuit board 22.

[0025] As shown in FIGS. 1, 2 and 8-12, the housing 26 is integrally formed from a first, central terminal mount 90, a second outer terminal mount 92 extending laterally from one side of the central terminal mount 90, and a third outer terminal mount 94 extending laterally

from the other side of the central terminal mount 90. The central terminal mount 90 houses the terminals 28 therein; the first outer terminal mount 92 houses the terminals 30a, 30b therein; the second outer terminal mount 94 houses the terminals 30c, 30d therein. The latch 32 is integrally formed with the central terminal mount 90.

[0026] As best shown in FIGS. 8-10, the central terminal mount 90 has front and rear ends 90a, 90b, an upper wall 96 extending longitudinally therebetween, a lower wall 98 extending longitudinally therebetween, side walls 100, 102 extending longitudinally therebetween and between side edges of the upper and lower walls 96, 98, and a plurality of spaced apart dividing walls 104 extending longitudinally between the front and rear ends 90a, 90b and between the upper and lower walls 96, 98. The upper and lower walls 96, 98 are parallel to each other. The side walls 100, 102 and the dividing walls 104 are parallel to each other and are perpendicular to the upper and lower walls 96, 98. The walls 96, 98, 100, 102, 104 form a plurality of longitudinally extending terminal receiving passageways 106 in which the terminal 28 are seated. The upper wall 96 extends from the rear end 90b, but terminates prior to the front ends of the lower wall 98 and the dividing walls 104 such that front upper portions of the terminal receiving passageways 106 have open upper ends 108 as shown in FIG. 10. In addition, the dividing walls 104 have portions 104a forward of the front end 96a of the upper wall 96 which have a vertical height which is less than portions 104b rearward of the front end 96a of the upper wall 96. Each side walls 100, 102 and each dividing wall 104 has a pocket 105 on the side which faces the terminal receiving passageway 106. Forwardly of the front end 96a of the upper wall 96, the lower wall 98 has a plurality of cutouts 110, see FIGS. 2 and 10, extending from the front end of the housing 26 and which align with the terminal receiving passageways 106, such that such that front portions of the terminal receiving passageways 106 have open lower ends. The portion of each terminal receiving passageway 106 forward of the front end 96a of the upper wall 96 forms part of the circuit board receiving slot 34.

[0027] Seating of one of the terminals 28 within one of the terminal receiving passageways 106 is described with the understanding that the other terminals 28 are seated in the terminal receiving passageways 106 in the same manner. The planar body 54 seats on an upper surface of the lower wall 98, and the crimp body portion 78 extends rearwardly therefrom. The curved contact 58 seats in the cutout 110 and the pockets 105 and extends into the open upper end 108 in an unflexed condition. The tang 60 engages with a rear end surface 110a of the cutout 110 to secure the terminal 28 in the terminal receiving passageway 106 and prevent the terminal 28 from being released from the housing 26.

[0028] Each terminal mount 92, 94 is identically formed, and as such, only terminal mount 92 is described.

[0029] As best shown in FIGS. 8 and 11, the terminal mount 92 has front and rear ends 92a, 92b, an upper wall 126 extending therebetween, a lower wall 128 extending therebetween, side walls 130, 132 extending longitudinally between the front and rear ends 92a, 92b and between side edges of the upper and lower walls 126, 128, and a dividing wall 134 extending longitudinally between the front and rear ends 92a, 92b and between the upper and lower walls 126, 128. The upper and lower walls 126, 128 are parallel to each other. The side walls 130, 132 and the dividing wall 134 are parallel to each other and perpendicular to the upper and lower walls 126, 128. Side wall 130 is integrally formed with side wall 100 of the central terminal mount 90. The walls 126, 128, 130, 132, 134 form a plurality of longitudinally extending terminal receiving passageways 136 in which the terminals 30 are seated. The side walls 130, 132 extend from the rear end 92b, but terminate prior to the front end 92a such that front portions of the terminal receiving passageways 136 have open side edges and form part of the circuit board receiving slot 34. The dividing wall 134 extends from the rear end 92b to the front end 92a. A protrusion 140, see FIG. 11, extends downwardly from upper wall 126 into each terminal receiving passageway 136 and forms a forward wall 140a which is perpendicular to the upper wall 126, a rearward wall 140b which is angled relative to the upper wall 126 and forms a chamfer, and a lower surface 140c extending between the forward wall 140a and the rearward wall 140b and is parallel to the upper wall 126. A protrusion 142, see FIG. 11, extends upwardly from lower wall 128 into each terminal receiving passageway 136 and forms a forward wall 142a which is perpendicular to the lower wall 128, a rearward wall 142b which is angled relative to the lower wall 128 and forms a chamfer, and a lower surface 142c extending between the forward wall 142a and the rearward wall 142b and is parallel to the lower wall 128. The forward walls 140a, 142a align with each other. The terminal receiving passageways 106 in the terminal mount 90 are parallel to the terminal receiving passageways 136 in the terminal mounts 92, 94.

[0030] Terminals 30a, 30b are seated within the terminal module 92, and terminals 30c, 30d are seated within the terminal module 94. In each terminal receiving passageway 136, the upper body portion 64 is proximate to the upper wall 126 and the free end of the tang 82 engages with the wall 140a, and the lower body portion 66 is proximate to the lower wall 128 and the free end of the tang 84 engages with the forward wall 142a. The engagement of the tangs 82, 84 with the terminal modules 92, 94 prevents the terminals 30 from being released

from the housing 26. In each terminal receiving passageway 136, the upper spring fingers 70, 72 extend forwardly of the forward walls 140a, 142a, and the crimp body portion 78 extends rearwardly from the rearward wall 140b and seats within the terminal receiving passageway 136. Each terminal 30a-d is inserted through the rear end 92b of the terminal modules 92, 94 and is pushed toward the front end 92a of the of the terminal modules 92, 94. The chamfers provided by the rearward walls 140b, 142b of the protrusions 140, 142 provide a lead in surface against which the spring fingers 70, 72 engage which causes the spring fingers 70, 72 to flex inwardly toward each other as the spring fingers 70, 72 pass by the protrusions 140, 142. Likewise, the rearward walls 140b, 142b provide a lead in surface against which the tangs 82, 84 engage which causes the tangs 82, 84 to flex inwardly toward each other as the tangs 82, 84 pass by the protrusions 140, 142. The tangs 82, 84 resume their sprung back position once the tangs 82, 84 pass by the protrusions 140, 142. In an embodiment, the side body portions 68 of terminals 30a, 30b are proximate to the dividing wall 134 in terminal module 92, and the side body portions 68 of terminals 30c, 30d are proximate to the dividing wall 134 in terminal module 94.

[0031] The rear end 90b of the central terminal mount 90 is forward of the rear ends 92b of the outer terminal mounts 92, 94. The front end 90a of the central terminal mount 90 is rearward of the front ends 92a of the outer terminal mounts 92, 94. The latch 32 extends from the upper surface of the upper wall 96 and forwardly over the open upper ends 108 of the terminal receiving passageways 106 and into the circuit board receiving slot 34. The latch 32 is between the outer terminal mounts 92, 94. The latch 32 is formed from a cantilevered arm 114 having an engaging member 116 at an end which is capable of engaging within the locking aperture 48 in the circuit board 22, and a cantilevered actuation shoulder 118 that are each provided on opposite sides of a fulcrum 120. The arm 114 extends parallel to the side walls 100, 102. The engaging member 116 extends forwardly of the central terminal mount 90. The actuation shoulder 118 is attached to the end of the arm 114 and is provided between the terminal modules 92, 94. In an embodiment, the engaging member 116 may be a hook having a chamfered front end. In an embodiment, the fulcrum 120 may be double fulcrum. In an embodiment, the fulcrum 120 may be a single fulcrum.

[0032] The actuation shoulder 118 has an upper surface which a digit of a user can engage to actuate the latch 32. When viewed from the side of the housing 26, the upper surface of the actuation shoulder 118 is flush with, or slightly above, the top surfaces of the terminal mounts 92, 94. The upper surface of the actuation shoulder 118 may be ribbed or embossed to promote gripping by the user's digit. In an at-rest position as described herein, a lower

surface of the actuation shoulder 118 is spaced from the base wall upper 96. Since latch 32 is positioned between the terminal mounts 92, 94 and the upper surface of the actuation shoulder 118 is flush with, or slightly above, the top surfaces of the terminal mounts 92, 94, a low-profile edge connector 24 is provided.

[0033] When the latch 32 is in an at-rest position, the engaging member 116 aligns with the upper wall 96. When the actuation shoulder 118 is depressed to move the latch 32 to an activated position, the actuation shoulder 118 moves closer to the upper wall 96, the fulcrum 120 flexes, and the engaging member 116 moves out of alignment with the upper wall 96. When the pressure is released, the latch 32 resumes its at-rest position.

[0034] To mate the circuit board 22 with the edge connector 24, the edge 40 of the circuit board 22 is inserted into the circuit board receiving slot 34. The dividing walls 134 of the terminal mounts 92, 94 slide along the slots 50, 52 as the circuit board 22 is slid into the circuit board receiving slot 34. The curved contacts 58 engages with the edge 40 of the circuit board 22 and flexes downward toward the planar body 54, and slide along the contact pads of the first set 42. The curved contacts 58 engages with and form an electrical path between the first set 42 of spaced apart contact pads on the circuit board 22 and the edge connector 24. The fingers 70, 72 flex away from each other upon contact with the edge 40 and slide along the contact pads of the sets 44a, 44b, 44a', 44b'. The curved section 76 of each finger 70, 72 engages with and form an electrical path between the contact pads of the sets 44a, 44b, 44a', 44b' on the circuit board 22 and the edge connector 24. If fingers 74 are provided, the fingers 74 flex upon engagement with the circuit board 22 and slide along the contact pads (not shown) provided on the side walls 50a, 50b, 52a, 52b and the curved section 76 of the fingers 74 form an electrical path between the circuit board 22 and the edge connector 24. Upon engagement of the front end of the engaging member 116 of the latch 32 with the edge 40 of the circuit board 22, the engaging member 116 pivots away from the upper surface 22b of the circuit board 22 and slides along upper surface 22b until the engaging member 116 seats within the locking aperture 48. If each slot 50, 52 in the circuit board 22 is sized to receive only one of the dividing walls 134, the edge connector 24 cannot be inserted upside down onto the circuit board 22. The engagement of the engaging member 116 with the locking aperture 48 prevents the removal of the edge connector 24 from the circuit board 22.

[0035] The circuit board 22 can be released from the edge connector 24 by depressing the actuation shoulder 118 to move the latch 32 to the activated position. This removes the engaging member 116 from the locking aperture 48 and the circuit board 22 can be pulled out

from circuit board receiving slot 34 of the edge connector 24. Thereafter, the actuation shoulder 118 is released to move the latch 32 to the at-rest position.

[0036] While the drawings show that the central terminal mount 90 includes four terminals 28, it is to be understood that less than four passageways 106 or more than four passageways 106 may be provided through the terminal mount 90 to accommodate more or fewer terminals 28 and the same number of associated contact pads are provided on the circuit board 22. While the drawings show that each terminal mount 92, 94 includes two terminals 30, it is to be understood that more than two passageways 136 may be provided through each terminal mount 92, 94 to accommodate more terminals 30 and the same number of associated contact pads are provided on the circuit board 22.

[0037] In addition, while a single latch 32 is shown, the central terminal mount 90 could be elongated to provide another latch. If multiple latches are provided, the latches may be coupled together such that actuation of one of the latches causes actuation of the remainder of the latches.

[0038] The disclosure provided herein describes features in terms of preferred and exemplary embodiments thereof. Numerous other embodiments, modifications and variations within the scope and spirit of the appended claims will occur to persons of ordinary skill in the art from a review of this disclosure.

Claims:

1. An edge connector configured to connect to a circuit board, the edge connector comprising:
 - a first terminal mount having walls defining front and rear ends, and first and second opposite sides, and defining a plurality of first terminal receiving passageways extending longitudinally therethrough;
 - first terminals mounted in the first terminal receiving passageways;
 - a second terminal mount having walls defining front and rear ends, and first and second opposite sides, and defining a plurality of second terminal receiving passageways extending longitudinally therethrough, the second terminal mount being positioned on the first side of the first terminal mount, the second terminal receiving passageways being parallel to the first terminal receiving passageways;
 - second terminals mounted in the second terminal receiving passageways;
 - a third terminal mount having walls defining front and rear ends, and first and second opposite sides, and defining a plurality of third terminal receiving passageways extending longitudinally therethrough, the third terminal mount being positioned on the second side of the first terminal mount, the third terminal receiving passageways being parallel to the first and second terminal receiving passageways; and
 - third terminals mounted in the third terminal receiving passageways, and
 - wherein the first terminals carry a first electrical specification of the edge connector and the second and third terminals carry a second electrical specification of the edge connector.
2. The edge connector of claim 1, wherein the first terminals are signal terminals, and the second and third terminals are power terminals.
3. The edge connector of claim 1, wherein the first terminals are low power terminals, and the second and third terminals are high power terminals.
4. The edge connector of claim 1, wherein the first terminals are formed from a first shape and the second and third terminals are formed from a second shape which is different than the first shape.

5. The edge connector of claim 1, further comprising a movable latch extending from an upper surface of the first terminal mount, the latch positioned between the second and third terminal mounts.

6. The edge connector of claim 5, wherein the latch includes a hook.

7. The edge connector of claim 1, wherein a circuit board receiving slot is formed at front ends of the terminal mounts.

8. The edge connector of claim 1, wherein each first terminal includes a planar body, a curved contact and at least one pair of legs, the legs being capable of being crimped to an associated wire.

9. The edge connector of claim 8, wherein each first terminal further includes a tang extending from the planar body which engages with one of the walls of the first terminal mount.

10. The edge connector of claim 9, wherein the first terminal mount includes surfaces which engage with the tangs.

11. The edge connector of claim 1, wherein each second and third terminal includes a planar upper body portion, a planar lower body portion, a curved side body portion connecting the upper and lower body portions along one side thereof along longitudinal length of the upper and lower body portions, at least one upper spring finger extending longitudinally from a front end of the upper body portion, and at least one lower spring finger extending longitudinally from a front end of the lower body portion, and a crimp body portion extending from the body portions and being capable of being crimped to an associated wire.

12. The edge connector of claim 11, wherein each second and third terminal further includes at least one spring finger extending longitudinally from a front end of the side body portion.

13. The edge connector of claim 12, wherein each second terminal further includes a tang extending from at least one of the upper and lower body portions thereof which engages with one of the walls of the second terminal mount, and each third terminal further includes a tang extending from at least one of the upper and lower body portions thereof which engages with one of the walls of the third terminal mount.

14. The edge connector of claim 11, wherein each first terminal includes a planar body, a curved contact and at least one pair of legs, the legs being capable of being crimped to an associated wire.

15. A connector system comprising:
a circuit board having first, second and third sets of contact pads provided thereon, the circuit board having a first slot extending from a rear edge thereof and between adjacent ones of the contact pads of the second set, and having a second slot extending from the rear edge thereof and between adjacent ones of the contact pads of the third set; and
an edge connector including

a first terminal mount having front and rear ends, an upper wall extending therebetween, a lower wall extending therebetween, and dividing walls extending therebetween and defining a plurality of first terminal receiving passageways extending longitudinally therethrough,

first terminals mounted in the first terminal receiving passageways and configured to be connected to the first set of contact pads,

a second terminal mount having front and rear ends, an upper wall extending therebetween, a lower wall extending therebetween, and a dividing wall extending therebetween and defining a plurality of second terminal receiving passageways extending longitudinally therethrough, the second terminal mount being positioned on the first side of the first terminal mount, the second terminal receiving passageways being parallel to the first terminal receiving passageways,

second terminals mounted in the second terminal receiving passageways and configured to be connected to the second set of contact pads,

a third terminal mount having front and rear ends, an upper wall extending therebetween, a lower wall extending therebetween, and a dividing wall extending therebetween and defining a plurality of third terminal receiving passageways extending longitudinally therethrough, the second terminal mount being positioned on

the first side of the first terminal mount, the third terminal receiving passageways being parallel to the first and second terminal receiving passageways,

third terminals mounted in the third terminal receiving passageways and configured to be connected to the third set of contact pads, and

wherein the first terminals carry a first electrical specification of the edge connector and the second and third terminals carry a second electrical specification of the edge connector, and

wherein the dividing walls of the second and third terminal mounts seat within the slots in the circuit board.

16. The connector system of claim 15,

wherein the second and third sets of contact pads are on a first side of the circuit board,

the circuit board further having a fourth set of contact pads on a second side thereof, the fourth set vertically aligning with the second set of contact pads, wherein the second terminals are further configured to be connected to the fourth set of contact pads, and the circuit board further having a fifth set of contact pads on the second side of the circuit board, the fifth set of contact pads vertically aligning with the third set of contact pads, wherein the third terminals are further configured to be connected to the fifth set of contact pads; and

wherein each second terminal has at least one first spring finger configured to be connected to respective ones of the contact pads in the second set and at least one second spring finger configured to be connected to respective ones of the contact pads in the fourth set, and

wherein each third terminal has at least one first spring finger configured to be connected to respective ones of the contact pads in the third set and at least one second spring finger configured to be connected to respective ones of the contact pads in the fifth set.

17. The connector system of claim 16,

wherein contact pads are further provided on longitudinally extending sides of the first slot to electrically connect the second and fourth sets of contact pads together, and wherein each second terminal further has at least one first spring finger configured to be connected to respective contact pads on the longitudinally extending sides of the first slot,

wherein contact pads are further provided on longitudinally extending sides of the second slot to electrically connect the third and fifth sets of contact pads together, and wherein each third terminal further has at least one first spring finger configured to be connected to respective contact pads on the longitudinally extending sides of the second slot.

18. The connector system of claim 15, wherein the circuit board further includes a locking aperture, and wherein the edge connector further includes a movable latch extending from an upper surface of the first terminal mount, the latch positioned between the second and third terminal mounts, the latch being configured to engage with the locking aperture.

19. The connector system of claim 15, wherein the first terminals are signal terminals, and the second and third terminals are power terminals.

20. The connector system of claim 15, wherein the first terminals are low power terminals, and the second and third terminals are high power terminals.

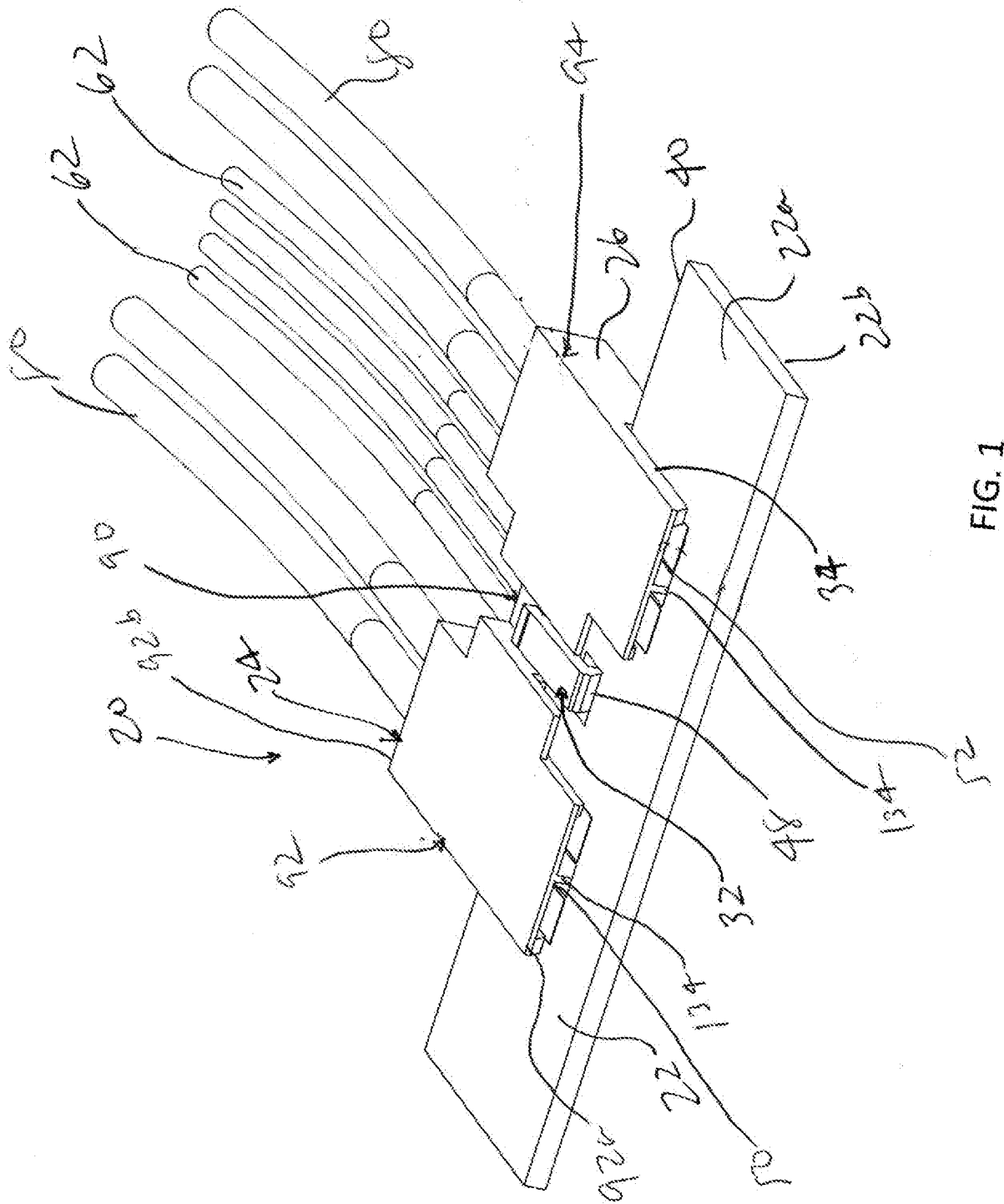


FIG. 1

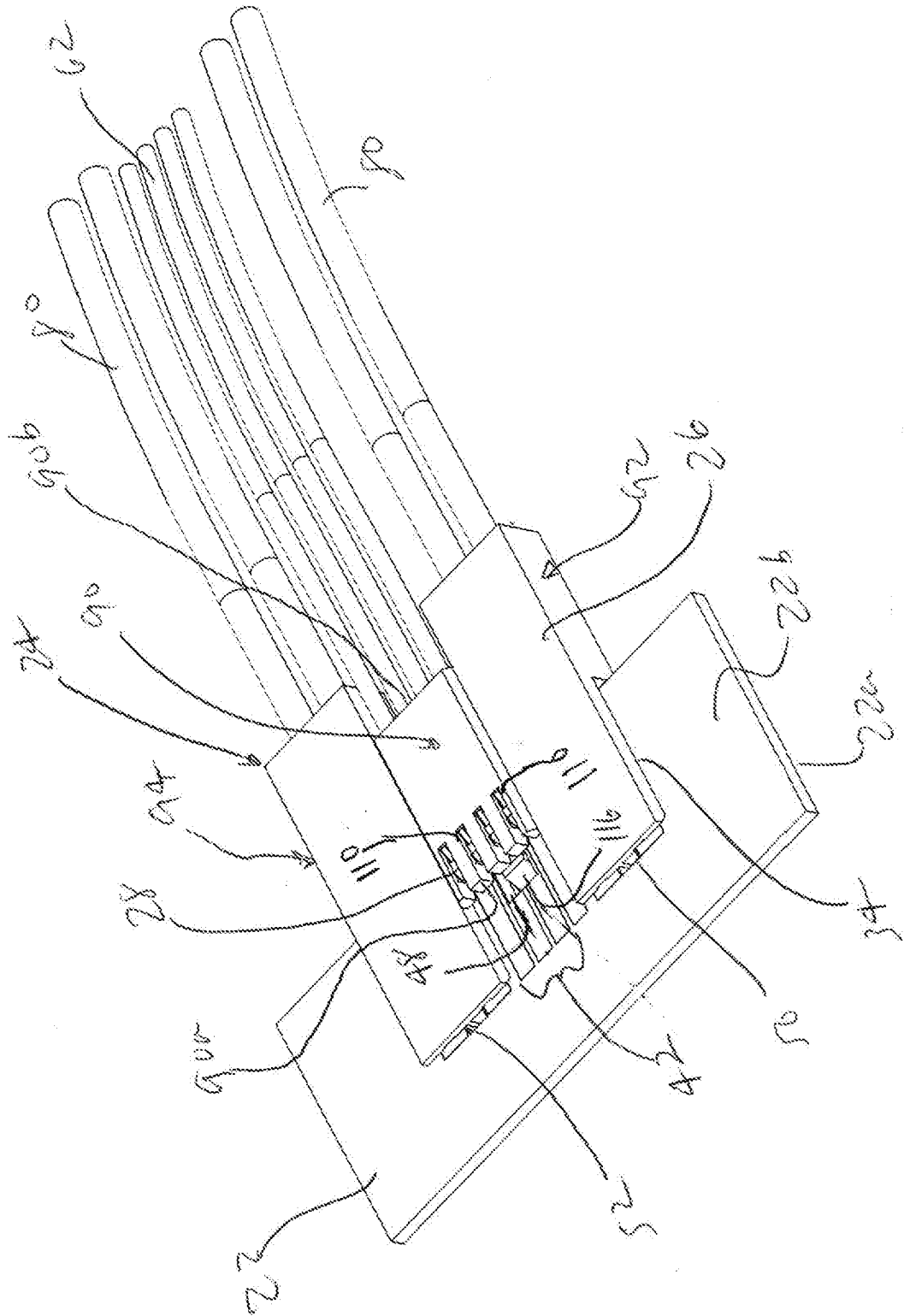
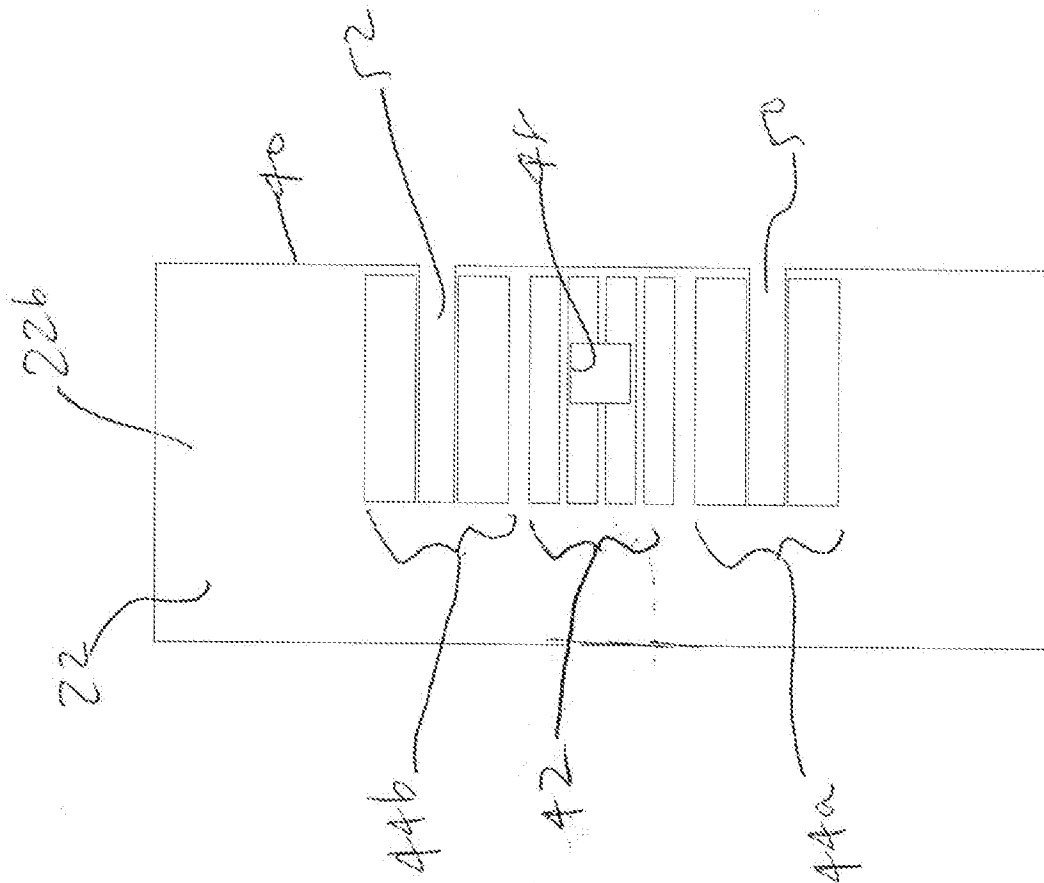


FIG. 2



3
G
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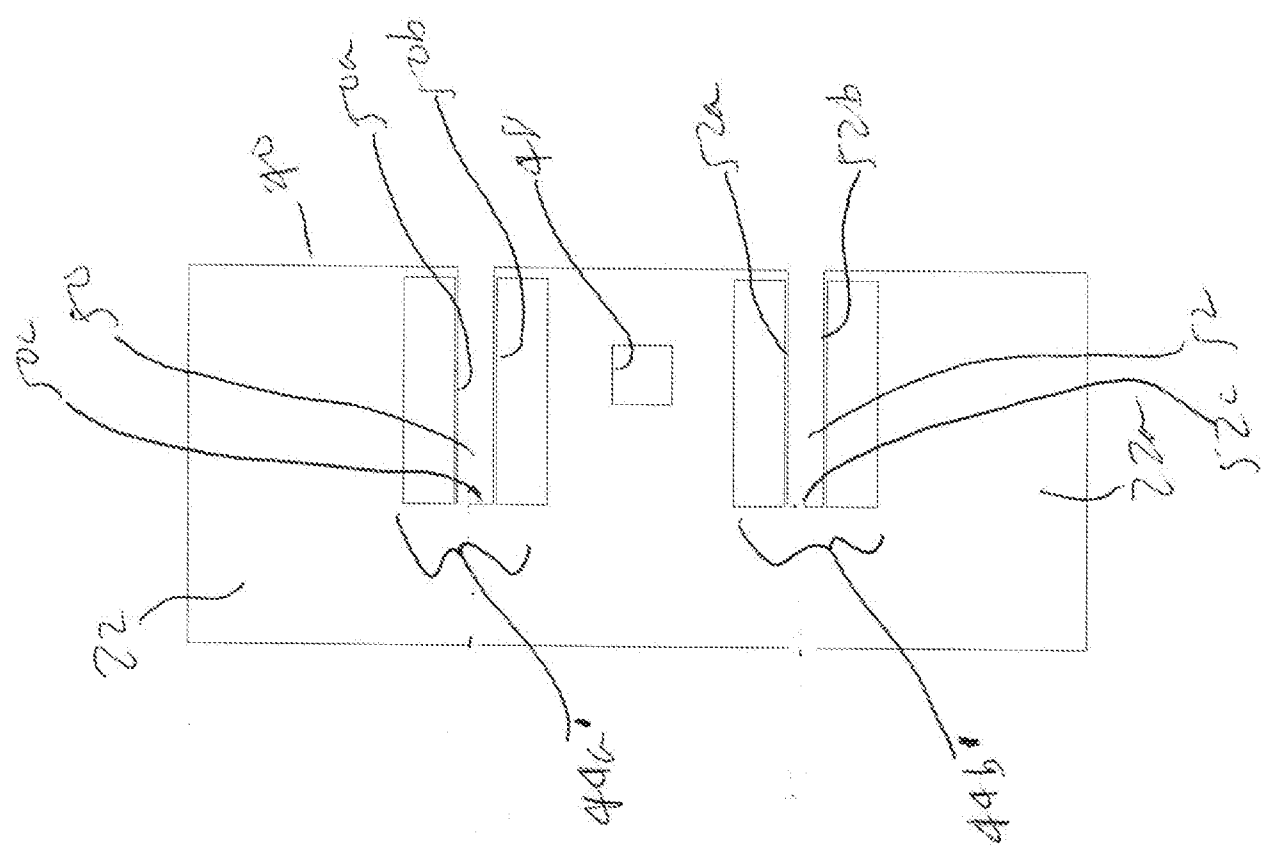


FIG. 4

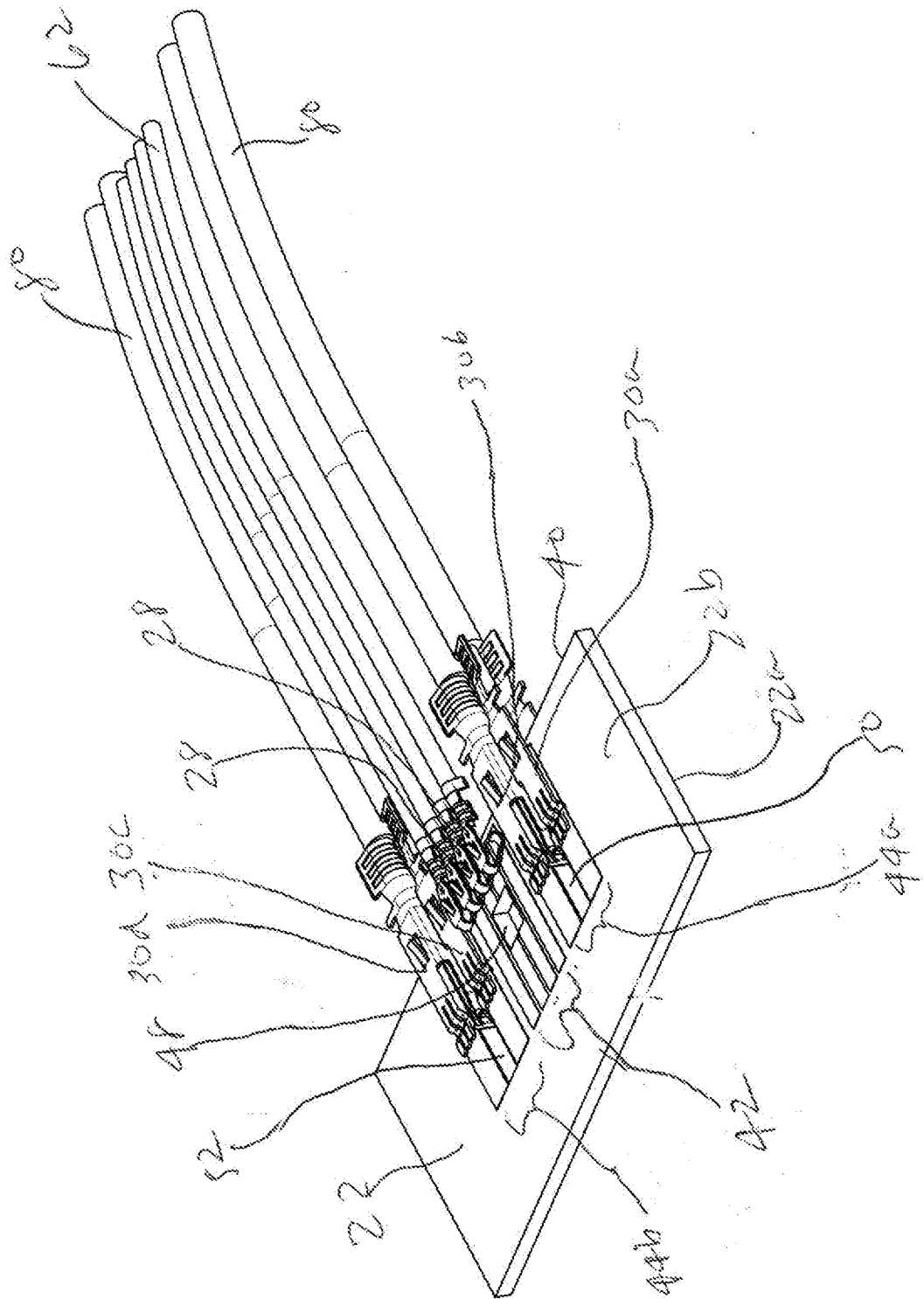
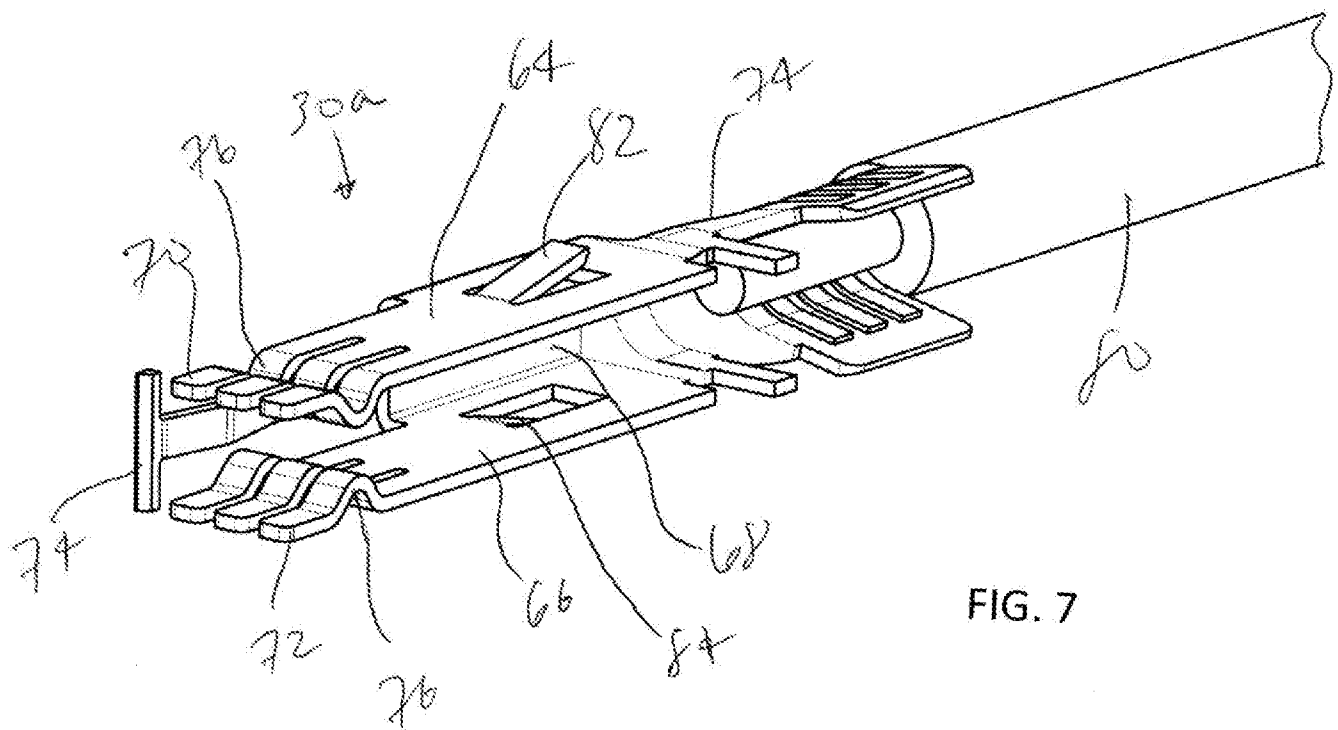
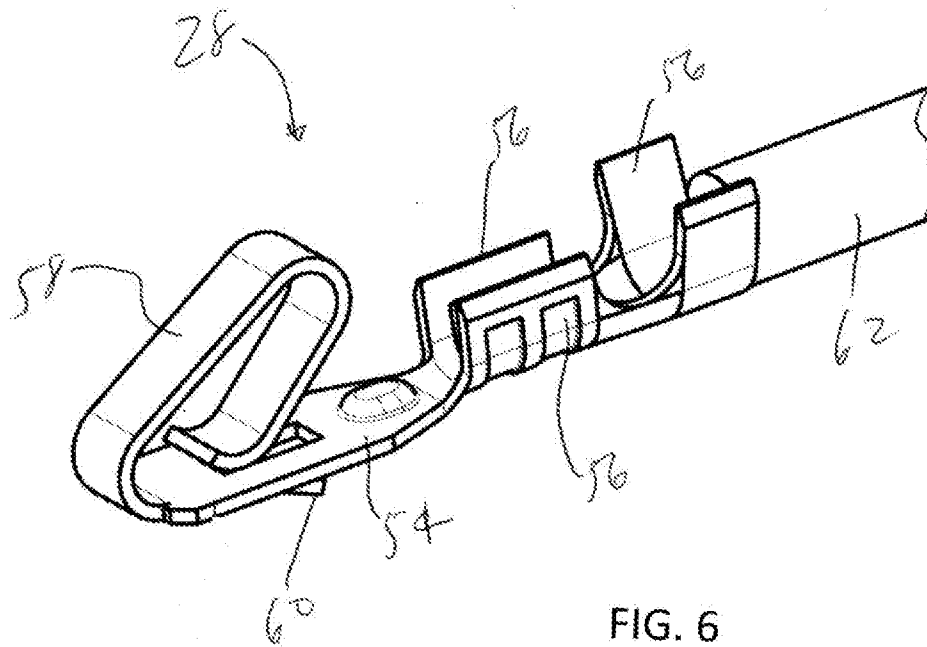


FIG. 5



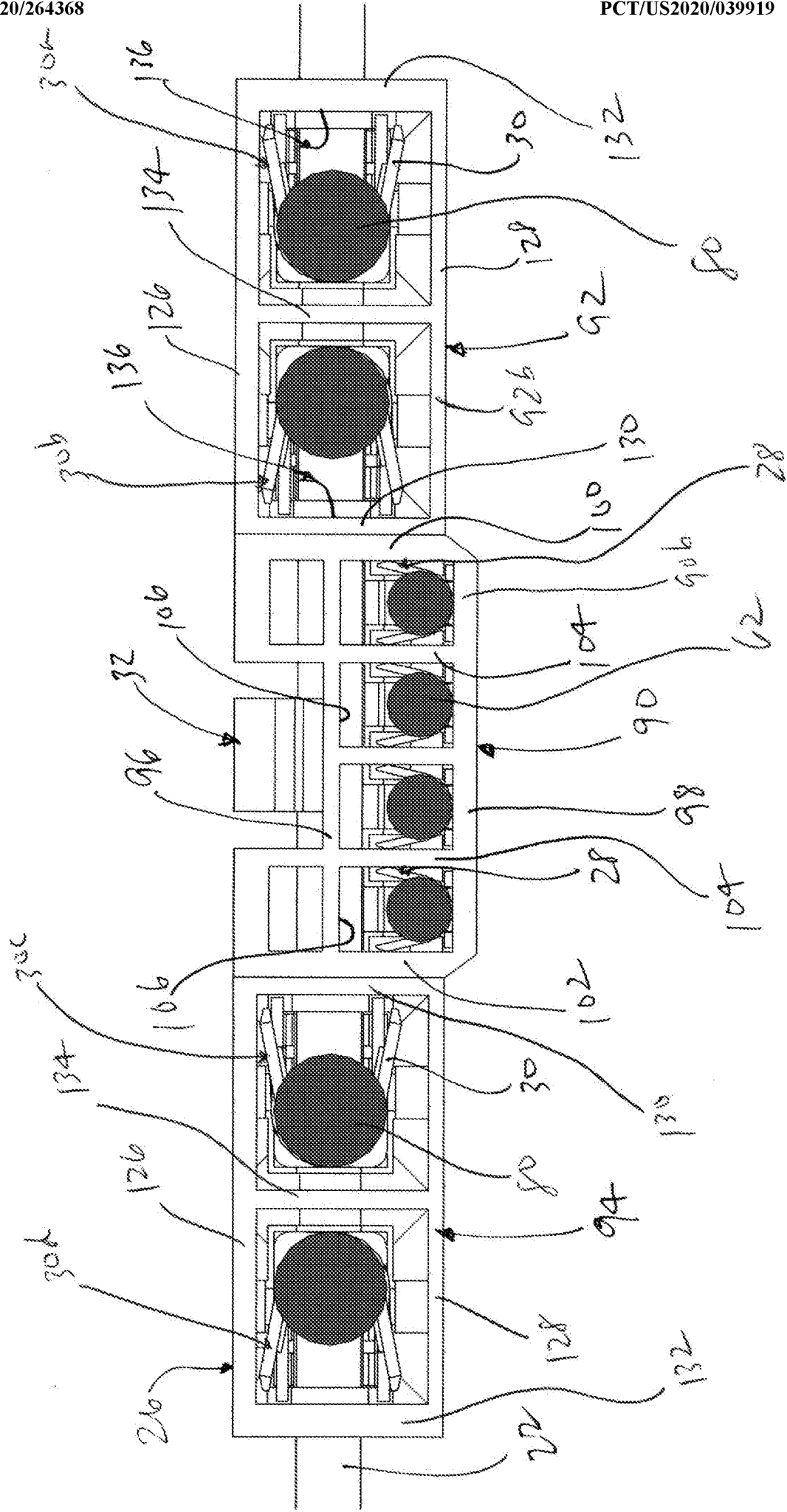


FIG. 8

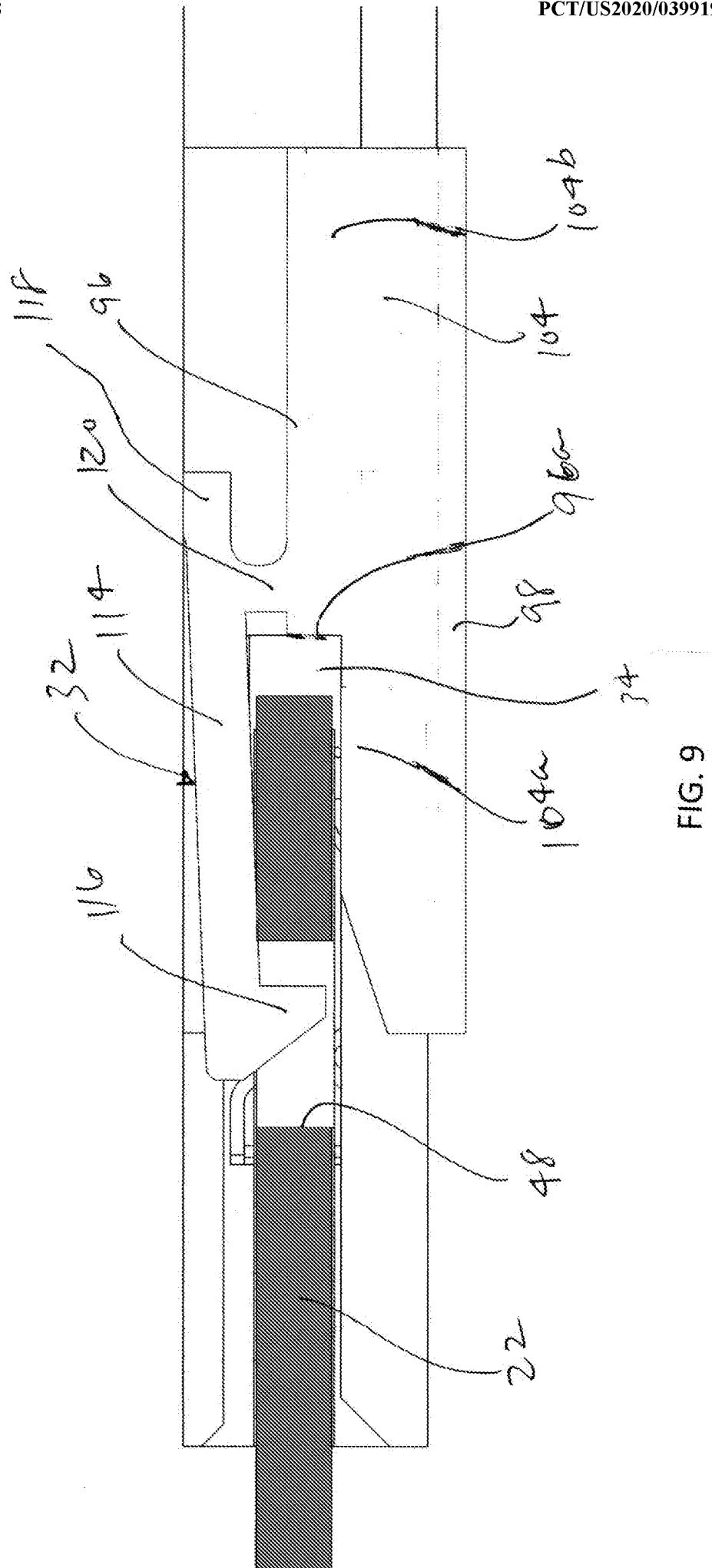


FIG. 9

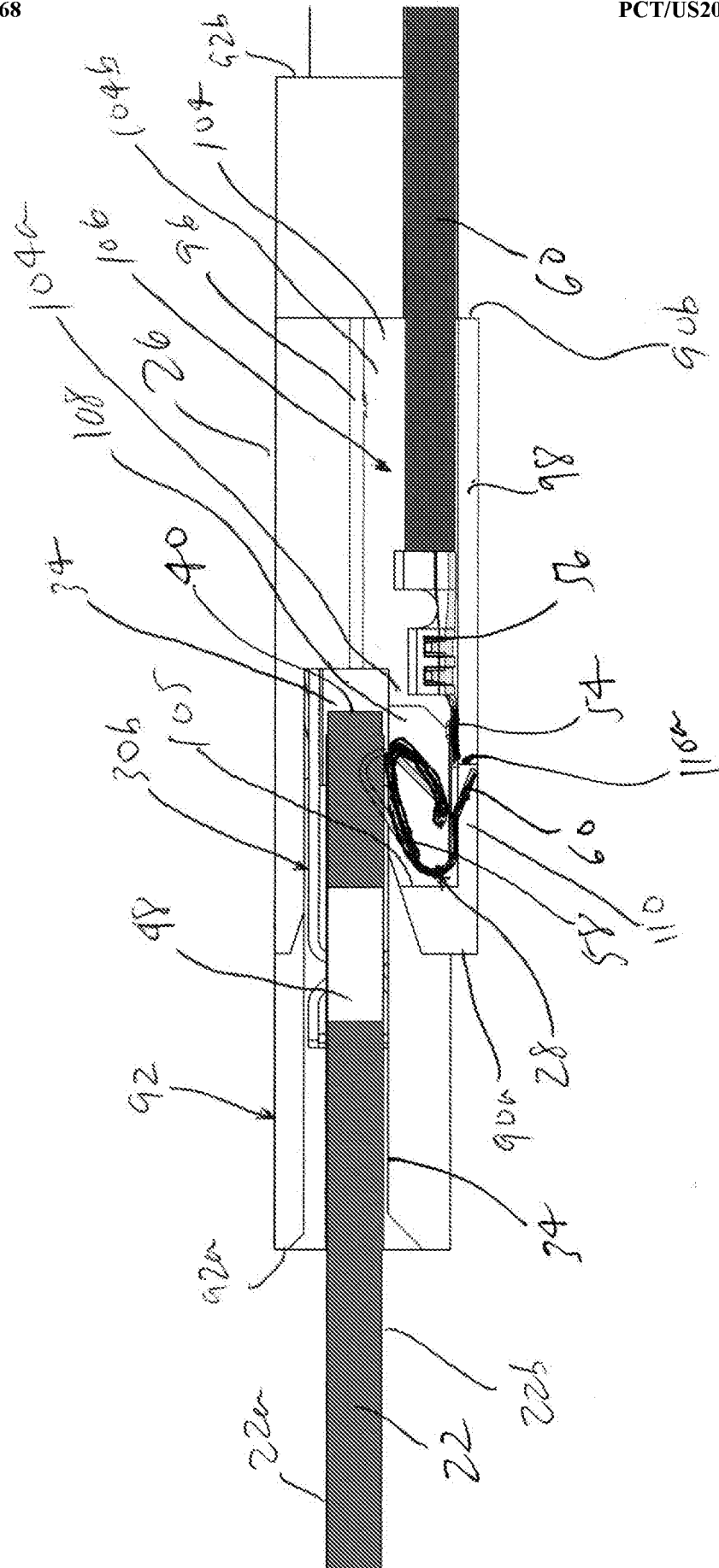


FIG. 10

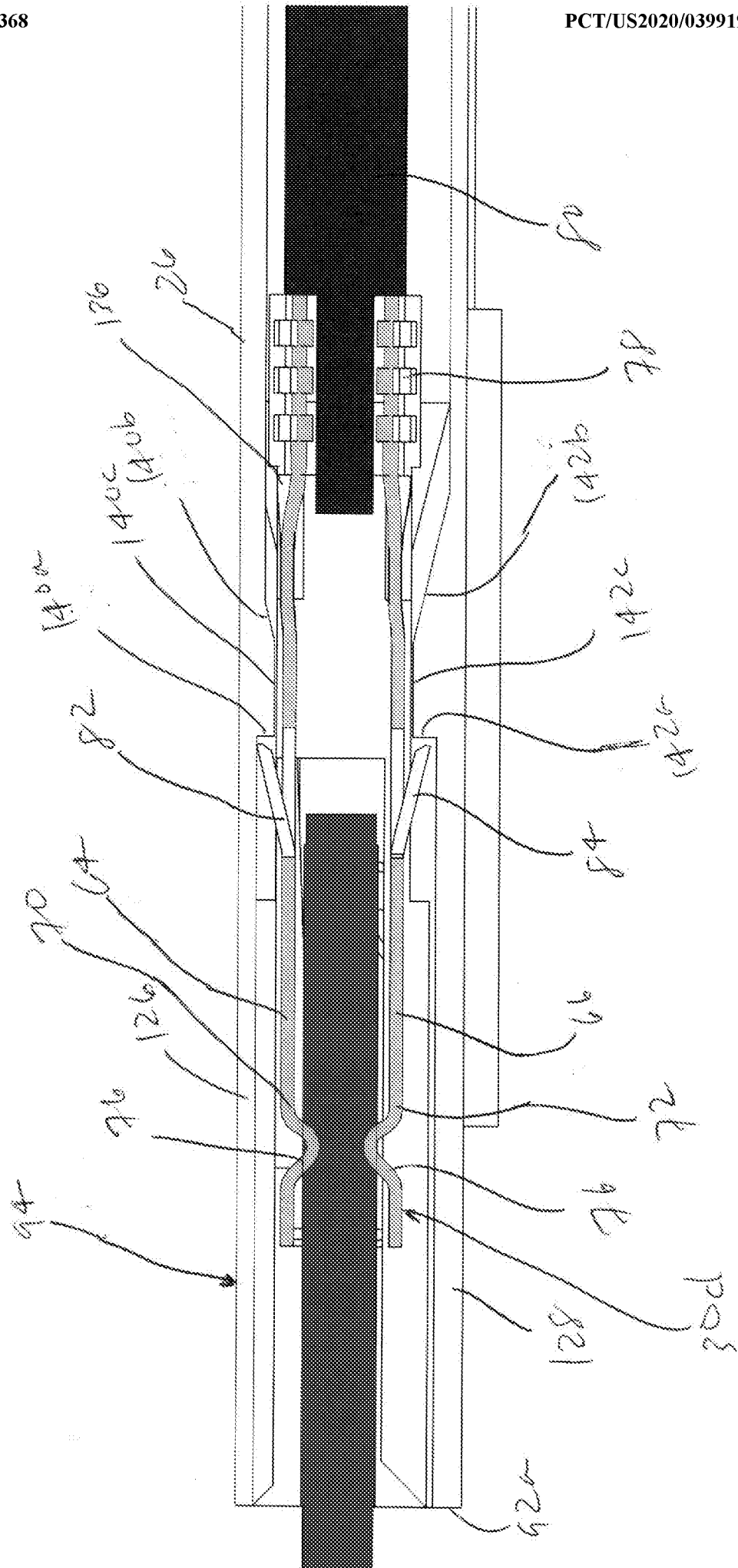


FIG. 11

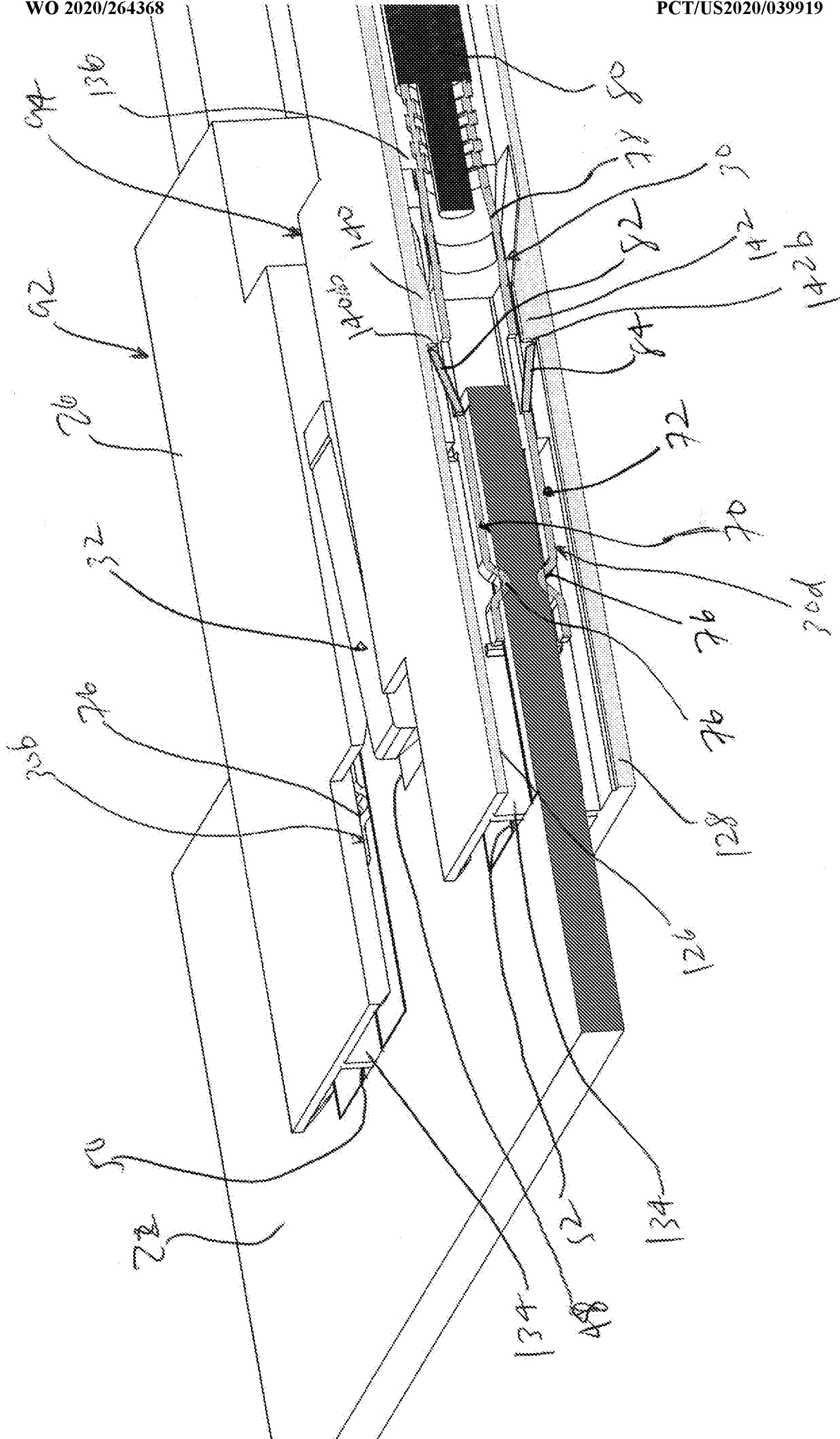


FIG. 12

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2020/039919**A. CLASSIFICATION OF SUBJECT MATTER****H01R 12/72(2011.01)i, H01R 12/70(2011.01)i, H01R 4/18(2006.01)i**

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

H01R 12/72; H01R 024/00; H01R 13/6598; H01R 24/76; H01R 43/18; H05K 3/30; H01R 12/70; H01R 4/18

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: edge, connector, terminal, mount, passageway

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2011-0300760 A1 (HUNG VIET NGO) 08 December 2011 paragraphs [0034]-[0039]; and figures 2A-4	1-20
Y	EdgeLock Wire-to-Edge-Card Signal Connector, MOLEX, 08 February 2019 [retrieved on 2020-09-28]. Retrieved from < http://www.literature.molex.com/SQ_LImages/kelmscott/Molex/PDF/Images/987651-7552.PDF > page 1	1-20
A	US 2002-0119704 A1 (TOSHIYASU ITO et al.) 29 August 2002 paragraphs [0038]-[0044]; and figures 3-7	1-20
A	US 2013-0084753 A1 (YONG-JIAN HUANG et al.) 04 April 2013 claims 1-10; and figures 1-3	1-20
A	US 2015-0340817 A1 (XIANG LI et al.) 26 November 2015 paragraphs [0015]-[0024]	1-20



Further documents are listed in the continuation of Box C.



See patent family annex.

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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

21 October 2020 (21.10.2020)

Date of mailing of the international search report

22 October 2020 (22.10.2020)

Name and mailing address of the ISA/KR

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

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