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(54) ASSEMBLY SYSTEM

MONTAGESYSTEM

SYSTÈME D'ASSEMBLAGE

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Description

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] Embodiments of the present disclosure relate to an assembly system, particularly, to an assembly system adapted to insert leads into a housing.

Description of the Related Art

[0002] In the technical field of manufacturing a connector, it is desired generally to insert a first lead and a second lead into a housing from both sides of the housing, respectively, and then to solder ends of the inserted first lead and second lead together. In order to ensure the soldering quality, the ends of the inserted first lead and second lead must be aligned and contacted with each other.

[0003] In the relevant art, the operation of inserting the first lead and the second lead is usually performed manually. Generally, the worker needs to insert the first lead into the housing, and then insert the second lead into the housing. However, during inserting the second lead, the first lead that has been inserted into the housing tends to move. This causes the inserted first lead tending to be offset from its precise installation position, and may intervene and hinder the insertion of the second lead. Thus, such an arrangement decreases the efficiency of inserting the leads, and lowers the quality of the product.

[0004] EP 1 236 563 A1 discloses an electric connection between two leads, wherein the leads are arranged in a housing and soldering material in a contact section between these leads is melted via ultrasound.

[0005] A robotic system for assembling electrical components with a printed circuit board is shown in US 4 910 859 A.

[0006] Further connections between two leads or assembly systems are described in EP 1 619 759 A1, CN 105 817 851 A and US 2014/109385 A1.

[0007] An apparatus and method for processing a stacked-type connector of a wire harness is disclosed in EP 1 220 366 A2. A pressing unit is provided for pressing a joint portion of a housing of a stacked-type connector to have a generally U-shaped configuration. In a predetermined housing stacking order, a stacking unit stacks the housings whose joint portions have been pressed by the pressing unit.

SUMMARY OF THE INVENTION

[0008] An objective of the present disclosure is to solve at least one aspect of the above mentioned problems and disadvantages occurred in the prior art.

[0009] According to an aspect of the present disclosure, there is provided an assembly system comprising an assembly mechanism. The assembly mechanism comprises a fixation device adapted to fix a housing and a first lead assembly mechanism and a second lead assembly mechanism provided at both sides of the fixation device, respectively, wherein the first lead assembly mechanism is adapted to insert a first lead into the housing, the second lead assembly mechanism is adapted to insert a second lead into the housing, and the first lead is inserted into the housing before the second lead. The assembly system further comprises a pressing mechanism adapted to hold the first lead inserted into the housing at a correct installation position, so as to prevent the first lead from being offset from the correct installation position and hindering the insertion of the second lead during inserting the second lead.

[0010] According to an exemplary embodiment of the present disclosure, the pressing mechanism comprises a robot and a pressing tool mounted on the robot, the robot being adapted to move the pressing tool, and the pressing tool being adapted to press and hold the first lead, in order to hold the first lead inserted into the housing at the correct installation position.

[0011] According to a further exemplary embodiment of the present disclosure, the pressing tool is formed with a slot matched with a shape of the first lead and adapted to hold the first lead.

[0012] According to a further exemplary embodiment of the present disclosure, the assembly mechanism comprises a base on which the first lead assembly mechanism, the second lead assembly mechanism and the fixation device are mounted.

[0013] According to a further exemplary embodiment of the present disclosure, the first lead assembly mechanism comprises a first lead clamp adapted to clamp the first lead, the first lead clamp being slidably mounted on the base and being movable in a first horizontal direction, so that the first lead that is clamped on the first lead clamp is inserted into the housing fixed on the fixation device.

[0014] According to a further exemplary embodiment of the present disclosure, the second lead assembly mechanism comprises a second lead clamp adapted to clamp the second lead, the second lead clamp being slidably mounted on the base and being movable in the first horizontal direction, so that the second lead that is clamped on the second lead clamp is inserted into the housing fixed on the fixation device.

[0015] According to another exemplary embodiment of the present disclosure, the first lead assembly mechanism further comprises: a first moving device adapted to be moved back and forth in the first horizontal direction; and a first connecting device slidably mounted on the first moving device and adapted to be moved between an engagement position and a disengagement position, wherein when the first connecting device is moved to the engagement position, the first connecting device connects the first moving device to the first lead clamp, so that the first lead clamp is moved back and forth with the first moving device in the first horizontal direction; and when the first connecting device is moved to the disen-

gagement position, the first moving device is disengaged from the first lead clamp, so that the first lead clamp is no longer moved with the first moving device.

[0016] According to another exemplary embodiment of the present disclosure, the second lead assembly mechanism further comprises: a second moving device adapted to be moved back and forth in the first horizontal direction; and a second connecting device slidably mounted on the second moving device and adapted to be moved between an engagement position and a disengagement position, wherein when the second connecting device is moved to the engagement position, the second connecting device connects the second moving device to the second lead clamp, so that the second lead clamp is moved back and forth with the second moving device in the first horizontal direction; and when the second connecting device is moved to the disengagement position, the second moving device is disengaged from the second lead clamp, so that the second lead clamp is no longer moved with the second moving device.

[0017] According to another exemplary embodiment of the present disclosure, the first connecting device and the second connecting device are adapted to be moved in a second horizontal direction perpendicular to the first horizontal direction.

[0018] According to another exemplary embodiment of the present disclosure, the assembly system further comprises a vision system adapted to guide the insertions of the first lead and the second lead.

[0019] According to another exemplary embodiment of the present disclosure, the vision system is further adapted to detect depths by which the first lead and the second lead are inserted into the housing.

[0020] According to another exemplary embodiment of the present disclosure, the vision system is further adapted to monitor whether the first lead and the second lead are properly inserted into the housing. When the vision system detects that the first lead or the second lead is not properly inserted into the housing, the vision system controls the assembly system to insert the first lead or the second lead again.

[0021] According to another exemplary embodiment of the present disclosure, when the vision system determines that the first lead has been properly inserted into the housing, the vision system controls the pressing mechanism to hold the first lead at the correct installation position.

[0022] According to another exemplary embodiment of the present disclosure, after the first lead and the second lead have been properly inserted into the housing, ends of the first lead and the second lead are aligned and contacted with each other.

[0023] According to another exemplary embodiment of the present disclosure, the assembly system further comprises a moving mechanism on which the assembly mechanism is mounted, the moving mechanism being adapted to move the assembly mechanism mounted thereon from a loading station to an assembly station; wherein when the assembly mechanism is at the loading station, the first lead, the second lead and the housing are loaded and fixed on the assembly mechanism; and when the assembly mechanism is at the assembly station, the assembly mechanism inserts the first lead and the second lead into the housing, respectively.

[0024] In the above exemplary embodiments of the present disclosure, a set of assembly system automatically completes the task of assembling the first lead and the second lead into the housing, improving the efficiency of inserting the leads into the housing, and increasing the quality of the product..

[0025] Other objectives and advantages of the present disclosure will become apparent from the following description of the present disclosure when taken in conjunction with the accompanying drawings, and may give a comprehensive understanding of the present disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

[0026] The above and other features of the present disclosure will become more apparent by describing in detail exemplary embodiments thereof with reference to the accompanying drawings, in which:

Fig. 1 shows an illustrative perspective view of an assembly system according to an exemplary embodiment of the present disclosure;

Fig. 2 shows an illustrative perspective view of an assembly mechanism of the assembly system as shown in Fig. 1; and

Fig. 3 shows a schematic view illustrating a pressing tool pressing and holding a first lead.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS OF THE INVENTION

[0027] The technical solution of the present disclosure will be described hereinafter in further detail with reference to the following embodiments, taken in conjunction with the accompanying drawings. In the specification, the same or similar reference numerals indicate the same or similar parts. The description of the embodiments of the present disclosure hereinafter with reference to the accompanying drawings is intended to explain the general inventive concept of the present disclosure, and should not be constructed as a limitation to the present disclosure.

[0028] In addition, in the following detailed description, for the sake of explanation, numerous specific details are set forth in order to provide a thorough understanding of the disclosed embodiments. It will be apparent, however, one or more embodiments may also be practiced without these specific details. In other instances, well-known structures and devices are illustrated schematically in order to simplify the drawing.

[0029] According to a general technical concept of the

present disclosure, there is provided an assembly system comprising an assembly mechanism. The assembly mechanism comprises a fixation device for fixing a housing and a first lead assembly mechanism and a second lead assembly mechanism provided at both sides of the fixation device, respectively, wherein the first lead assembly mechanism is adapted to insert a first lead into the housing, the second lead assembly mechanism is adapted to insert a second lead into the housing, and the first lead is inserted into the housing before the second lead. The assembly system further comprises a pressing mechanism adapted to hold the first lead inserted into the housing at a correct installation position, so as to prevent the first lead from being offset from its correct installation position and hindering operation of inserting the second lead.

[0030] Fig. 1 shows an illustrative perspective view of an assembly system according to an exemplary embodiment of the present disclosure; Fig. 2 shows an illustrative perspective view of an assembly mechanism 100 of the assembly system as shown in Fig. 1; and Fig. 3 shows a schematic view illustrating a pressing tool 210 pressing and holding a first lead 10.

[0031] As shown in Figs. 1-3, in an illustrated embodiment, the assembly system mainly comprises an assembly mechanism 100 mainly comprising a fixation device 130 for fixing a housing 30, a first lead assembly mechanism 110, 111, 112 provided at one side of the fixation device 130, and a second lead assembly mechanism 120, 121, 122 provided at other side of the fixation device 130.

[0032] As shown in Figs. 1-3, in an illustrated embodiment, the first lead assembly mechanism 110,111, 112 is adapted to insert a first lead 10 into the housing 30, the second lead assembly mechanism 120, 121, 122 is adapted to insert a second lead 20 into the housing 30, and the first lead 10 is inserted into the housing 30 before the second lead 20.

[0033] As shown in Figs. 1-3, in an illustrated embodiment, the assembly system further comprises a pressing mechanism 200, 210 adapted to hold the first lead 10 inserted into the housing 30 at a correct installation position, so as to prevent the first lead 10 from being offset from its correct installation position and hindering the insertion of the second lead 20 during inserting the second lead 20.

[0034] As shown in Figs. 1-3, in an illustrated embodiment, the pressing mechanism 200, 210 comprises a robot 200 and a pressing tool 210 mounted on the robot 200. The robot 200 is adapted to move the pressing tool 210, and the pressing tool 210 is adapted to press and hold the first lead 10, in order to hold the first lead 10 inserted into the housing 30 at its correct installation position.

[0035] As shown in Fig. 3, in an illustrated embodiment, the pressing tool 210 is formed with a slot matched with a shape of the first lead 10 and adapted to hold the first lead 10 firmly.

[0036] As shown in Figs. 1-3, in an illustrated embodiment, the assembly mechanism 100 further comprises a base 101, on which the first lead assembly mechanism 110, 111, 112, the second lead assembly mechanism 120, 121, 122 and the fixation device 130 are mounted.

[0037] As shown in Figs. 1-3, in an illustrated embodiment, the first lead assembly mechanism 110, 111, 112 comprises a first lead clamp 110 adapted to clamp the first lead 10. The first lead clamp 110 is slidably mounted on the base 101 and is movable in a first horizontal direction X, so that the first lead 10 that is clamped on the first lead clamp 110 is inserted into the housing 30 fixed on the fixation device 130.

[0038] As shown in Figs. 1-3, in an illustrated embodiment, the second lead assembly mechanism 120, 121, 122 comprises a second lead clamp 120 adapted to clamp the second lead 20. The second lead clamp 120 is slidably mounted on the base 101 and is movable in the first horizontal direction X, so that the second lead 20 that is clamped on the second lead clamp 120 is inserted into the housing 30 fixed on the fixation device 130.

[0039] As shown in Figs. 1-3, in an illustrated embodiment, the first lead assembly mechanism 110, 111, 112 further comprises: a first moving device 111 adapted to be moved back and forth in the first horizontal direction X; and a first connecting device 112 slidably mounted on the first moving device 111 and adapted to be moved between an engagement position and a disengagement position. When the first connecting device 112 is moved to the engagement position, the first connecting device 112 connects the first moving device 111 to the first lead clamp 110, so that the first lead clamp 110 is moved back and forth with the first moving device 111 in the first horizontal direction X; and when the first connecting device 112 is moved to the disengagement position, the first moving device 111 is disengaged from the first lead clamp 110, so that the first lead clamp 110 is no longer moved with the first moving device 111.

[0040] As shown in Figs. 1-3, in an illustrated embodiment, the second lead assembly mechanism 120, 121, 122 further comprises: a second moving device 121 adapted to be moved back and forth in the first horizontal direction X; and a second connecting device 122 slidably mounted on the second moving device 121 and adapted to be moved between an engagement position and a disengagement position. When the second connecting device 122 is moved to the engagement position, the second connecting device 122 connects the second moving device 121 to the second lead clamp 120, so that the second lead clamp 120 is moved back and forth with the second moving device 121 in the first horizontal direction X; and when the second connecting device 122 is moved to the disengagement position, the second moving device 121 is disengaged from the second lead clamp 120, so that the second lead clamp 120 is no longer moved with the second moving device 121.

[0041] As shown in Figs. 1-3, in an illustrated embodiment, the first connecting device 112 and the second

connecting device 122 are adapted to be moved in a second horizontal direction Y perpendicular to the first horizontal direction X.

[0042] In an exemplary embodiment of the present disclosure, the first moving device 111 and the second moving device 121 may comprise an electrical cylinder or a servo drive, which may be adapted to control and adjust moving speed and accelerated speed of the first moving device 111 and the second moving device 121, thereby ensuring successful insertion of the first lead 10 and the second lead 20.

[0043] In an exemplary embodiment of the present disclosure, the motion of the first connecting device 112 or the second connecting device 122 in the second horizontal direction Y is driven by a pneumatic cylinder.

[0044] As shown in Figs. 1-3, in an illustrated embodiment, the assembly system further comprises a vision system 300 adapted to guide the insertions of the first lead 10 and the second lead 20.

[0045] As shown in Figs. 1-3, in an illustrated embodiment, the vision system 300 is also adapted to detect depths by which the first lead 10 and the second lead 20 are inserted into the housing 30, so as to ensure the inserted depths of the first lead 10 and the second lead 20 are equal to a predetermined depth.

[0046] As shown in Figs. 1-3, in an illustrated embodiment, the vision system 300 is also adapted to monitor whether the first lead 10 and the second lead 10 are properly inserted into the housing 30. When the vision system 300 detects that the first lead 10 or the second lead 20 is not properly inserted into the housing 30, the vision system 300 controls the assembly system to perform the operation of inserting the first lead 10 or the second lead 20 again.

[0047] As shown in Figs. 1-3, in an illustrated embodiment, when the vision system 300 determines that the first lead 10 has been properly inserted into the housing 30, the vision system 300 controls the pressing mechanism 200, 210 to hold the first lead 10 at its correct installation position.

[0048] As shown in Figs. 1-3, in an illustrated embodiment, after the first lead 10 and the second lead 20 have been properly inserted into the housing 30, ends of the first lead 10 and the second lead 20 are aligned and brought into contact with each other.

[0049] As shown in Figs. 1-3, in an illustrated embodiment, the assembly system further comprises a moving mechanism 400 adapted to be moved in the second horizontal direction Y. The assembly mechanism 100 is mounted on the moving mechanism 400. The moving mechanism 400 is adapted to move the assembly mechanism 100 mounted thereon from a loading station to an assembly station. When the assembly mechanism 100 is at the loading station, the first lead 10, the second lead 20 and the housing 30 are loaded and fixed on the assembly mechanism 100; and when the assembly mechanism 100 is at the assembly station, the assembly mechanism 100 inserts the first lead 10 and the second lead 20 into the housing 30, respectively.

[0050] It should be appreciated by those skilled in the art that the above embodiments are intended to be illustrative, modifications may be made to the above embodiments by those skilled in the art, and structures described in various embodiments may be freely combined without having structural and principle conflict.

[0051] Although the present disclosure has been described with reference to the attached drawings, the embodiments disclosed in the drawings are intended to illustrate the preferred embodiments of the present disclosure, but should not be constructed as a limitation to the present disclosure.

[0052] Although some embodiments of the general concept of the present disclosure has been shown and described, it would be appreciated by those skilled in the art that modifications may be made to these embodiments without departing from the scope of the present disclosure, which is defined in the appended claims.

Claims

1. An assembly system, comprising:

an assembly mechanism (100) comprising a fixation device (130) adapted to fix a housing (30) and a first lead assembly mechanism (110, 111, 112) and a second lead assembly mechanism (120, 121, 122) provided at both sides of the fixation device (130), respectively,
the first lead assembly mechanism (110, 111, 112) being adapted to insert a first lead (10) into the housing (30), the second lead assembly mechanism (120, 121, 122) being adapted to insert a second lead (20) into the housing (30), and the first lead (10) being inserted into the housing (30) before the second lead (20),
characterized in that, the assembly system further comprises a pressing mechanism (200, 210) adapted to hold the first lead (10) inserted into the housing (30) at a correct installation position, so as to prevent the first lead (10) from being offset from the correct installation position and hindering operation of inserting of the second lead (20).

2. The assembly system according to claim 1, wherein, the pressing mechanism (200, 210) comprises a robot (200) and a pressing tool (210) mounted on the robot (200), the robot (200) being adapted to move the pressing tool (210), and the pressing tool (210) being adapted to press and hold the first lead (10), in order to hold the first lead (10) inserted into the housing (30) at the correct installation position.

3. The assembly system according to claim 2, wherein, the pressing tool (210) is formed with a slot matched

with a shape of the first lead (10) and adapted to hold the first lead (10) .

4. The assembly system according to claim 1, wherein, the assembly mechanism (100)comprises a base (101) on which the first lead assembly mechanism, the second lead assembly mechanism and the fixation device are mounted.

5. The assembly system according to claim 4, wherein, the first lead assembly mechanism (110, 111, 112) comprises a first lead clamp (110) adapted to clamp the first lead (10), the first lead clamp (110) being slidably mounted on the base (101) and being movable in a first horizontal direction (X), so that the first lead (10) that is clamped on the first lead clamp (110) is inserted into the housing (30) fixed on the fixation device (130).

6. The assembly system according to claim 5, wherein, the second lead assembly mechanism (120, 121, 122) comprises a second lead clamp (120) adapted to clamp the second lead (20), the second lead clamp (120) being slidably mounted on the base (101) and being movable in the first horizontal direction (X), so that the second lead (20) that is clamped on the second lead clamp (120) is inserted into the housing (30) fixed on the fixation device (130).

7. The assembly system according to claim 6, wherein, the first lead assembly mechanism (110, 111, 112) further comprises:

a first moving device (111) adapted to be moved back and forth in the first horizontal direction (X); and

a first connecting device (112) slidably mounted on the first moving device (111) and adapted to be moved between an engagement position and a disengagement position,

wherein when the first connecting device (112) is moved to the engagement position, the first connecting device (112) connects the first moving device (111) to the first lead clamp (110), so that the first lead clamp (110) is moved back and forth with the first moving device (111) in the first horizontal direction (X); and

when the first connecting device (112) is moved to the disengagement position, the first moving device (111) is disengaged from the first lead clamp (110), so that the first lead clamp (110) is no longer moved with the first moving device (111).

8. The assembly system according to claim 7, wherein, the second lead assembly mechanism (120, 121, 122) further comprises:

a second moving device (121) adapted to be moved back and forth in the first horizontal direction (X); and

a second connecting device (122) slidably mounted on the second moving device and adapted to be moved between an engagement position and a disengagement position,

wherein when the second connecting device (122) is moved to the engagement position, the second connecting device (122) connects the second moving device (121) to the second lead clamp (120), so that the second lead clamp (120) is moved back and forth with the second moving device (121) in the first horizontal direction (X); and

when the second connecting device (122) is moved to the disengagement position, the second moving device (121) is disengaged from the second lead clamp (120), so that the second lead clamp (120) is no longer moved with the second moving device (121).

9. . The assembly system according to claim 8, wherein,

the first connecting device (112) and the second connecting device (122) are adapted to be moved in a second horizontal direction ()Y perpendicular to the first horizontal direction (X).

10. . The assembly system according to claim 1, wherein,

the assembly system further comprises a vision system (300) adapted to guide the insertions of the first lead (10) and the second lead (20).

11. . The assembly system according to claim 10, wherein,

the vision system (300) is further adapted to detect depths by which the first lead (10) and the second lead (20) are inserted into the housing (30).

12. . The assembly system according to claim 10, wherein,

the vision system (300) is further adapted to monitor whether the first lead (10) and the second lead (20) are properly inserted into the housing; and

wherein when the vision system (300) detects that the first lead (10) or the second lead (20) is not properly inserted into the housing (30), the vision system (300) controls the assembly system to perform the operation of inserting the first lead (10) or the second lead (20) again.

13. . The assembly system according to claim 12, wherein,

when the vision system (300) determines that the

first lead (10) has been properly inserted into the housing (30), the vision system (300) controls the pressing mechanism (200, 210) to hold the first lead (10) at the correct installation position.

14. . The assembly system according to claim 1, wherein,
after the first lead (10) and the second lead (20) have been properly inserted into the housing (30), ends of the first lead (10) and the second lead (20) are aligned and brought into contact with each other.

15. . The assembly system according to claim 1, wherein,

the assembly system further comprises a moving mechanism (400) on which the assembly mechanism (100) is mounted, the moving mechanism (400) being adapted to move the assembly mechanism (100) mounted thereon from a loading station to an assembly station;
wherein when the assembly mechanism (100) is at the loading station, the first lead (10), the second lead (20) and the housing (30) are loaded and fixed on the assembly mechanism (100); and
when the assembly mechanism (100) is at the assembly station, the assembly mechanism (100) inserts the first lead (10) and the second lead (20) into the housing (30), respectively.

Patentansprüche

1. Montagesystem, das umfasst:

einen Montagemechanismus (100), der eine Fixiervorrichtung (130), die zum Fixieren eines Gehäuses (30) eingerichtet ist, und einen ersten Zuleitungs-Montagemechanismus (110,100 11,112) sowie einen zweiten Zuleitungs-Montagemechanismus (120,100 21,122) umfasst, die jeweils an beiden Seiten der Fixiervorrichtung (130) vorhanden sind,
wobei der erste Zuleitungs-Montagemechanismus (110, 111, 112) zum Einführen einer ersten Zuleitung (10) in das Gehäuse (30) eingerichtet ist, der zweite Zuleitungs-Montagemechanismus (120, 121, 122) zum Einführen einer zweiten Zuleitung (20) in das Gehäuse (30) eingerichtet ist, und die erste Zuleitung (10) vor der zweiten Zuleitung (20) in das Gehäuse (30) eingeführt wird,
dadurch gekennzeichnet, dass das Montagesystem des Weiteren einen Drückmechanismus (200, 210) umfasst, der so eingerichtet ist, dass er die in das Gehäuse (30) eingeführte erste Zuleitung (10) in einer korrekten Installationsposition hält, um zu verhindern, dass die erste Zuleitung (10) gegenüber der korrekten Einbauposition verschoben wird und den Vorgang zum Einführen der zweiten Zuleitung (20) behindert.

2. Montagesystem nach Anspruch 1, wobei
der Drückmechanismus (200, 210) einen Roboter (200) sowie ein an dem Roboter (200) angebrachtes Drückwerkzeug (210) umfasst, der Roboter (200) so eingerichtet ist, das er das Drückwerkzeug (210) bewegt, und das Drückwerkzeug (210) so eingerichtet ist, dass es die erste Zuleitung (10) drückt und hält, um die in das Gehäuse (30) eingeführte erste Zuleitung (10) in der korrekten Installationsposition zu halten.

3. Montagesystem nach Anspruch 2, wobei
das Drückwerkzeug (210) mit einem Schlitz versehen ist, der an eine Form der ersten Zuleitung (10) angepasst und zum Halten der ersten Zuleitung (10) eingerichtet ist.

4. Montagesystem nach Anspruch 1, wobei
der Montagemechanismus (100) einen Träger (101) umfasst, an dem der erste Zuleitungs-Montagemechanismus, der zweite Zuleitungs-Montagemechanismus und die Fixiervorrichtung angebracht sind.

5. Montagesystem nach Anspruch 4, wobei
der erste Zuleitungs-Montagemechanismus (110, 111, 112) eine erste Zuleitungs-Klemmvorrichtung (110) umfasst, die zum Festklemmen der ersten Zuleitung (10) eingerichtet ist, wobei die erste Zuleitungs-Klemmvorrichtung (110) verschiebbar an dem Träger (101) angebracht ist und in einer ersten horizontalen Richtung (X) so bewegt werden kann, dass die erste Zuleitung (10), die an der ersten Zuleitungs-Klemm-vorrichtung (110) festgeklemmt ist, in das an der Fixiervorrichtung (130) fixierte Gehäuse (30) eingeführt wird.

6. Montagesystem nach Anspruch 5, wobei
der zweite Zuleitungs-Montagemechanismus (120, 121, 122) eine zweite Zuleitungs-Klemmvorrichtung (120) umfasst, die zum Festklemmen der zweiten Zuleitung (20) eingerichtet ist, wobei die zweite Zuleitungs-Klemmvorrichtung (120) verschiebbar an dem Träger (101) angebracht ist und so in der ersten horizontalen Richtung (X) bewegt werden kann, dass die zweite Zuleitung (20), die an der zweiten Zuleitungs-Klemmvorrichtung (120) festgeklemmt ist, in das an der Fixiervorrichtung (130) fixierte Gehäuse (30) eingeführt wird.

7. Montagesystem nach Anspruch 6, wobei der erste Zuleitungs-Montagemechanismus (110, 111, 112) des Weiteren umfasst:

eine erste Bewegungsvorrichtung (111), die zum Hin- und Herbewegen in der ersten horizontalen Richtung (X) eingerichtet ist; sowie
eine erste Verbindungsvorrichtung (112), die verschiebbar an der ersten Bewegungsvorrichtung (111) angebracht und so eingerichtet ist, dass sie zwischen einer Eingriffsposition und einer Freigabeposition bewegt wird,
wobei, wenn die erste Verbindungsvorrichtung (112) an die Eingriffsposition bewegt wird, die erste Verbindungsvorrichtung (112) die erste Bewegungsvorrichtung (111) so mit der ersten Zuleitungs-Klemmvorrichtung (110) verbindet, dass die erste Zuleitungs-Klemmvorrichtung (110) mit der ersten Bewegungsvorrichtung (111) in der ersten horizontalen Richtung (X) hin- und herbewegt wird; und
wenn die erste Verbindungsvorrichtung (112) an die Freigabeposition bewegt wird, die erste Bewegungsvorrichtung (111) so von der ersten Zuleitungs-Klemmvorrichtung (110) gelöst wird, dass die erste Zuleitungs-Klemmvorrichtung (110) nicht mehr mit der ersten Bewegungsvorrichtung (111) bewegt wird.

8. Montagesystem nach Anspruch 7, wobei der zweite Zuleitungs-Montagemechanismus (120, 121,122) des Weiteren umfasst:

eine zweite Bewegungsvorrichtung (121), die zum Hin- und Herbewegen in der ersten horizontalen Richtung (X) eingerichtet ist; sowie
eine zweite Verbindungsvorrichtung (122), die verschiebbar an der zweiten Bewegungsvorrichtung (121) angebracht und so eingerichtet ist, dass sie zwischen einer Eingriffsposition und einer Freigabeposition bewegt wird,
wobei, wenn die zweite Verbindungsvorrichtung (122) an die Eingriffsposition bewegt wird, die zweite Verbindungsvorrichtung (122) die zweite Bewegungsvorrichtung (121) so mit der zweiten Zuleitungs-Klemmvorrichtung (120) verbindet, dass die zweite Zuleitungs-Klemmvorrichtung (120) mit der zweiten Bewegungsvorrichtung (121) in der ersten horizontalen Richtung (X) hin- und herbewegt wird; und
wenn die zweite Verbindungsvorrichtung (122) an die Freigabeposition bewegt wird, die zweite Bewegungsvorrichtung (121) so von der zweiten Zuleitungs-Klemmvorrichtung (120) gelöst wird, dass die zweite Zuleitungs-Klemmvorrichtung (120) nicht mehr mit der zweiten Bewegungsvorrichtung (121) bewegt wird.

9. Montagesystem nach Anspruch 8, wobei
die erste Verbindungsvorrichtung (112) und die zweite Verbindungsvorrichtung (122) so eingerichtet sind, dass sie in einer zweiten horizontalen Richtung (Y) senkrecht zu der ersten horizontalen Richtung (X) bewegt werden.

10. Montagesystem nach Anspruch 1, wobei
das Montagesystem des Weiteren ein Bilderkennungssystem (300) umfasst, das so eingerichtet ist, dass es die Vorgänge zum Einführen der ersten Zuleitung (10) und der zweiten Zuleitung (20) leitet.

11. Montagesystem nach Anspruch 10, wobei
das Bilderkennungssystem (300) des Weiteren so eingerichtet ist, dass es Tiefen erfasst, um die die erste Zuleitung (10) und die zweite Zuleitung (20) in das Gehäuse (30) eingeführt werden.

12. Montagesystem nach Anspruch 10, wobei

das Bilderkennungssystem (300) des Weiteren so eingerichtet ist, dass es überwacht, ob die erste Zuleitung (10) und die zweite Zuleitung (20) ordnungsgemäß in das Gehäuse (30) eingeführt sind; und
wobei, wenn das Bilderkennungssystem (300) erfasst, dass die erste Zuleitung (10) oder die zweite Zuleitung (20) nicht ordnungsgemäß in das Gehäuse (30) eingeführt ist, das Bilderkennungssystem (300) das Montagesystem so steuert, dass der Vorgang zum Einführen der ersten Zuleitung (10) oder der zweiten Zuleitung (20) erneut durchgeführt wird.

13. Montagesystem nach Anspruch 12, wobei
wenn das Bilderkennungssystem (300) feststellt, dass die erste Zuleitung (10) ordnungsgemäß in das Gehäuse (30) eingeführt worden ist, das Bilderkennungssystem (300) den Drückmechanismus (200, 210) so steuert, das die erste Zuleitung (10) an der korrekten Installationsposition gehalten wird.

14. Montagesystem nach Anspruch 1, wobei
nachdem die erste Zuleitung (10) und die zweite Zuleitung (20) ordnungsgemäß in das Gehäuse (30) eingeführt worden sind, die Enden der ersten Zuleitung (10) und der zweiten Zuleitung (20) ausgerichtet und miteinander in Kontakt gebracht werden.

15. Montagesystem nach Anspruch 1, wobei

das Montagesystem des Weiteren einen Bewegungsmechanismus (400) umfasst, an dem der Montagemechanismus (100) angebracht ist, wobei der Bewegungsmechanismus (400) so eingerichtet ist, dass er den daran angebrachten Montagemechanismus (100) von einer Beladestation zu einer Montagestation bewegt;
wobei, wenn sich der Montagemechanismus (100) an der Beladestation befindet, die erste Zuleitung (10), die zweite Zuleitung (20) und das

Gehäuse (30) auf den Montagemechanismus (100) geladen und daran fixiert werden; und
wenn sich der Montagemechanismus (100) an der Montagestation befindet, der Montagemechanismus (100) die erste Zuleitung (10) und die zweite Zuleitung (20) jeweils in das Gehäuse (30) einführt.

Revendications

1. Système d'assemblage comprenant :

un mécanisme d'assemblage (100) comprenant un dispositif de fixation (130) conçu pour fixer une enveloppe (30), un premier mécanisme d'assemblage de conducteurs (110, 111, 112) et un second mécanisme d'assemblage de conducteurs (120, 121, 122) disposés respectivement des deux côtés du dispositif de fixation (130),
le premier mécanisme d'assemblage de conducteurs (110, 111, 112) étant conçu pour insérer un premier conducteur (10) dans l'enveloppe (30), le second mécanisme d'assemblage de conducteurs (120, 121, 122) étant conçu pour insérer un second conducteur (20) dans l'enveloppe (30), et le premier conducteur (10) étant inséré dans l'enveloppe (30) avant le second conducteur (20),
caractérisé en ce que le système d'assemblage comprend en outre un mécanisme de pressage (200, 210) conçu pour maintenir inséré dans l'enveloppe (30) le premier conducteur (10) à une position d'installation correcte, de sorte à empêcher le premier conducteur (10) de se décaler de la position d'installation correcte et de gêner l'opération d'insertion du second conducteur (20).

2. Système d'assemblage selon la revendication 1, dans lequel :
le mécanisme de pressage (200, 210) comprend un robot (200) et un outil de pressage (210) monté sur le robot (200), le robot (200) étant conçu pour déplacer l'outil de pressage (210) et l'outil de pressage (210) étant conçu pour comprimer et maintenir le premier conducteur (10) afin de maintenir le premier conducteur (10) inséré dans l'enveloppe (30) à la position d'installation correcte.

3. Système d'assemblage selon la revendication 2, dans lequel :
l'outil de pressage (210) est formé d'une encoche appariée à la forme du premier conducteur (10) et conçu pour maintenir le premier conducteur (10).

4. Système d'assemblage selon la revendication 1, dans lequel :
le mécanisme d'assemblage (100) comprend une base (101) sur laquelle sont montés le premier mécanisme d'assemblage de conducteurs, le second mécanisme d'assemblage de conducteurs et le dispositif de fixation.

5. Système d'assemblage selon la revendication 4, dans lequel :
le premier mécanisme d'assemblage de conducteurs (110, 111, 112) comprend une première pince à conducteur (110) conçue pour serrer le premier conducteur (10), la première pince à conducteur (110) étant montée tout en pouvant coulisser sur la base (101) et étant mobile dans une première direction horizontale (X) de sorte à ce que le premier conducteur (10), qui est serré sur la première pince à conducteur (110) soit inséré dans l'enveloppe (30) fixée sur le dispositif de fixation (130).

6. Système d'assemblage selon la revendication 5, dans lequel :
le second mécanisme d'assemblage de conducteurs (120, 121, 122) comprend une seconde pince à conducteur (101) conçue pour serrer le second conducteur (20), la seconde pince à conducteur (120) étant montée tout en pouvant coulisser sur la base (101) et étant mobile dans la première direction horizontale (X) de sorte à ce que le second conducteur (20), qui est serré sur la seconde pince à conducteur (120) soit inséré dans l'enveloppe (30) fixée sur le dispositif de fixation (130).

7. Système d'assemblage selon la revendication 6, dans lequel le premier mécanisme d'assemblage de conducteurs (110, 111, 112) comprend en outre :

un premier dispositif de déplacement (111) conçu pour être déplacé en va-et-vient dans la première direction horizontale (X), et
un premier dispositif de connexion (112) monté pour pouvoir coulisser sur le premier dispositif de déplacement (111) et conçu pour être déplacé entre une position d'accouplement et une position de désaccouplement,
dans lequel, lorsque le premier dispositif de connexion (112) est déplacé dans la position d'accouplement, le premier dispositif de connexion (112) raccorde le premier dispositif de déplacement (111) à la première pince à conducteur (110) de sorte à ce que la première pince à conducteur (110) soit déplacée en va-et-vient avec le premier dispositif de déplacement (111) dans la première direction horizontale (X), et
lorsque le premier dispositif de connexion (112) est déplacé vers la position de désaccouplement, le premier dispositif de déplacement (111) est désaccouplé de la première pince à conduc-

teur (110) de sorte à ce que la première pince à conducteur (110) ne soit plus déplacée avec le premier dispositif de déplacement (111).

8. Système d'assemblage selon la revendication 7, dans lequel le second mécanisme d'assemblage de conducteurs (120, 121, 122) comprend en outre :

un second dispositif de déplacement (121) conçu pour être déplacé en va-et-vient dans la première direction horizontale (X), et
un second dispositif de connexion (122) monté pour pouvoir coulisser sur le second dispositif de déplacement (121) et conçu pour être déplacé entre une position d'accouplement et une position de désaccouplement,
dans lequel, lorsque le second dispositif de connexion (122) est déplacé dans la position d'accouplement, le second dispositif de connexion (122) raccorde le second dispositif de déplacement (121) à la seconde pince à conducteur (120) de sorte à ce que la seconde pince à conducteur (120) soit déplacée en va-et-vient avec le second dispositif de déplacement (121) dans la première direction horizontale (X), et
lorsque le second dispositif de connexion (122) est déplacé vers la position de désaccouplement, le second dispositif de déplacement (121) est désaccouplé de la seconde pince à conducteur (120) de sorte à ce que la seconde pince à conducteur (120) ne soit plus déplacée avec le second dispositif de déplacement (121).

9. Système d'assemblage selon la revendication 8, dans lequel :
le premier dispositif de connexion (112) et le second dispositif de connexion (122) sont conçus pour être déplacés dans une seconde direction horizontale (Y) perpendiculaire à la première direction horizontale (X).

10. Système d'assemblage selon la revendication 1, où :
le système d'assemblage comprend en outre un système de vision (300) conçu pour guider les insertions du premier conducteur (10) et du second conducteur (20).

11. Système d'assemblage selon la revendication 10, dans lequel :
le système de vision (300) est en outre conçu pour détecter les profondeurs avec lesquelles premier conducteur (10) le premier conducteur (10) et le second conducteur (20) sont insérés dans l'enveloppe (30).

12. Système d'assemblage selon la revendication 10, dans lequel :
le système de vision (300) est en outre conçu pour surveiller si le premier conducteur (10) et le second conducteur (20) sont convenablement insérés dans l'enveloppe, et
dans lequel, lorsque le système de vision (300) détecte que le premier conducteur (10) ou que le second conducteur (20) n'est pas convenablement inséré dans l'enveloppe (30), le système de vision (300) pilote le système d'assemblage pour qu'il effectue de nouveau l'opération d'insertion du premier conducteur (10) et du second conducteur (20).

13. Système d'assemblage selon la revendication 12, dans lequel :
lorsque le système de vision (300) a déterminé que le premier conducteur (10) a été convenablement inséré dans l'enveloppe (30), le système de vision (300) pilote le mécanisme de pressage (200, 210) pour maintenir le premier conducteur (10) à la position correcte d'installation.

14. Système d'assemblage selon la revendication 1, dans lequel :
après que le premier conducteur (10) et le second conducteur (20) ont été convenablement insérés dans l'enveloppe (30), les extrémités du premier conducteur (10) et du second conducteur (20) sont alignées et amenées en contact l'une avec l'autre.

15. Système d'assemblage selon la revendication 1, où :

le système d'assemblage comprend en outre un mécanisme de déplacement (400) sur lequel est monté le mécanisme d'assemblage (100), le mécanisme de déplacement (400) étant conçu pour déplacer le mécanisme d'assemblage (100) monté sur lui-même depuis un poste de chargement jusqu'à un poste d'assemblage,
dans lequel, lorsque le mécanisme d'assemblage (100) se trouve au poste de chargement, le premier conducteur (10), le second conducteur (20) et l'enveloppe (30) sont chargés et fixés sur le mécanisme d'assemblage (100), et
lorsque le mécanisme d'assemblage (100) se trouve au poste d'assemblage, le mécanisme d'assemblage (100) insère respectivement le premier conducteur (10) et le second conducteur (20) dans l'enveloppe (30).

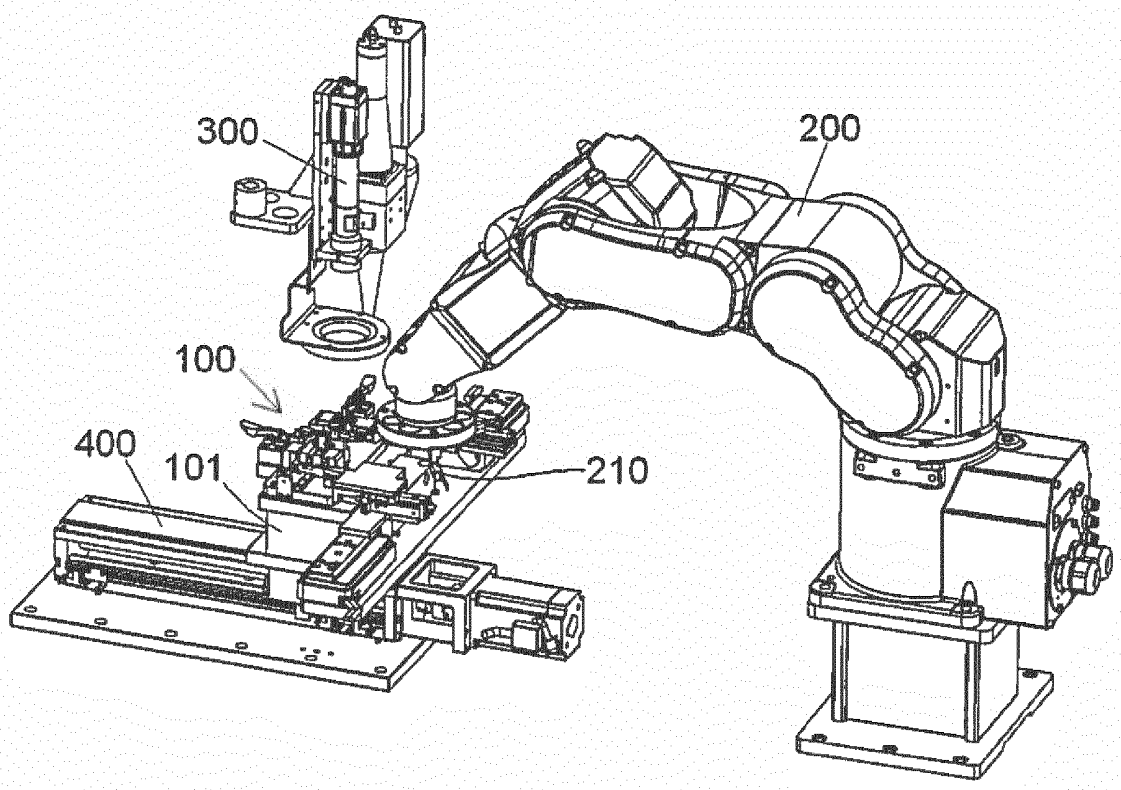

Fig. 1

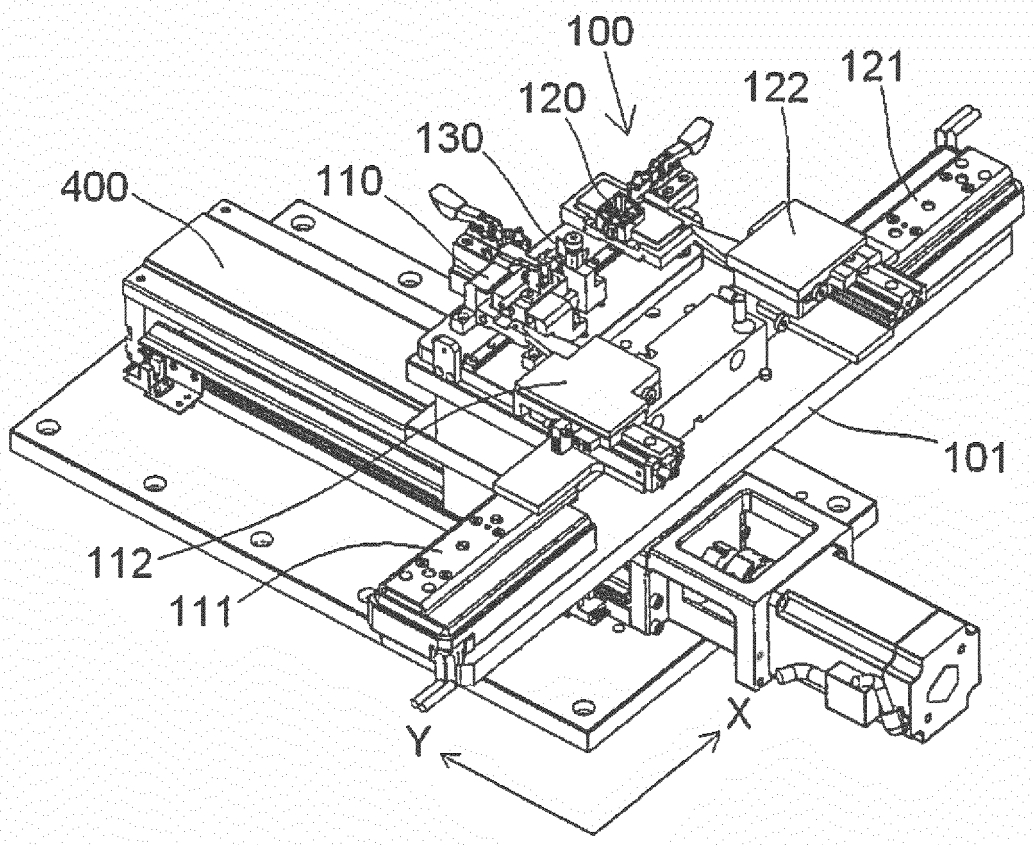

Fig. 2

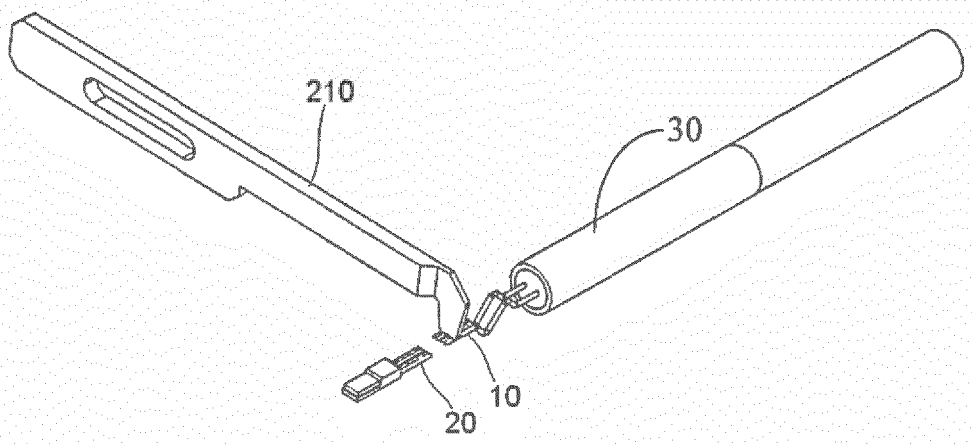

Fig. 3

REFERENCES CITED IN THE DESCRIPTION

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