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(54) A HEAT EXCHANGER

(57) A condenser (100) includes a first and a second manifold (30a) and (30b) and a receiver drier (40). The first and the second manifold (30a) and (30b) are connected by tubes configuring a first and a second pass (10a) and (10b) of a heat exchange fluid. The receiver drier (40) connected to the second manifold (30b) provides fluid connection between the first and the second pass (10a) and (10b). The second manifold (30b) is connected to the receiver drier (40) through a channel (50). The channel (50) receives fluid from the first pass (10a) through a first hole (32a) and a second hole (32b) of the second manifold (30b) that are distant from each other. The channel (50) further supplies the receiver drier (40) with fluid through a first opening (42a) of the receiver drier (40) which is closer to the first hole (32a) than the second hole (32b).

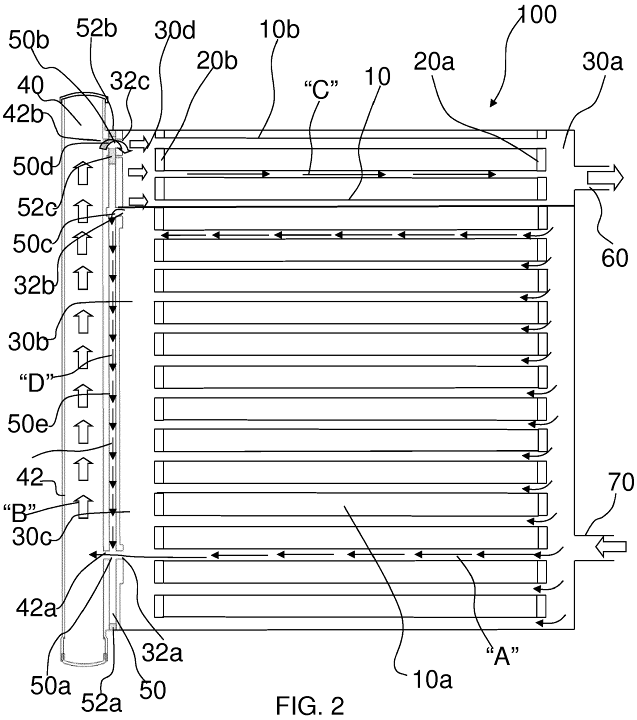

FIG. 2

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Description

[0001] The present invention relates to a heat exchanger, particularly a condenser for an air conditioning unit for a vehicle.

[0002] Conventional air conditioning system for example for a vehicle cabin includes a condenser, an evaporator, an expansion device, a compressor and a heater. The compressor pumps refrigerant gas up to a high pressure and temperature. Thereafter, refrigerant gas enters the condenser, where the refrigerant gas rejects heat energy to external ambient (through ambient air or a specific low temperature coolant circuit), gets cooled, and condenses into liquid phase. Thereafter, the expansion valve regulates refrigerant liquid to flow at proper rate, reducing its pressure due its expansion, and finally, the cooled liquid refrigerant flows to the evaporator, where the cooled liquid refrigerant is evaporated, reducing its temperature. As the liquid refrigerant evaporates, the refrigerant extracts or absorbs heat energy from air inside an enclosure to be conditioned, specifically, a vehicle cabin in case of a vehicle air conditioning system and returns to the compressor, and the above cycle repeats. In the process, the heat is extracted from inside the vehicle cabin and rejected to outside vehicle cabin, resulting in cooling of air inside the vehicle cabin.

[0003] The conventional air conditioning system configured with expansion valves are also configured with a receiver drier that is disposed in the high-pressure section of the air conditioning system, usually located between condenser and expansion valve in the air conditioning loop. Referring to **FIG. 1** of the accompanying drawings, a condenser **1** with a receiver drier **3** is illustrated. The condenser **1** includes a first manifold **2a** and a second manifold **2b** formed at opposite sides of a condenser core **4.** Further, the heat exchange tubes of the condenser core **4** connects the first manifold **2a** to the second manifold **2b.** The first manifold **2a** includes an inlet "I" for ingress of refrigerant into the condenser **1** and an outlet "O" for egress of refrigerant from the condenser **1.** The second manifold **2b** is in fluid communication with the receiver drier **3.** The receiver drier **3** is in form of an airtight container of a tubular configuration with extreme ends thereof closed by lids **5.** The receiver drier **3** is either mounted along an outlet side of the condenser core **4** or is integrally formed along the outlet side of the condenser core **4.** The receiver drier **3** includes an inlet **3a** and an outlet **3b.** The inlet **3a** receives refrigerant that is condensed by passing through heat exchange tubes **4a** defining a first pass of the condenser core **4.** The receiver drier **3** acts as a temporary storage for refrigerant (and oil) and receives a desiccant material to absorb moisture (water) that may have entered inside an air conditioning system of which the condenser is a part of. The receiver drier **3** also includes a filter to trap debris that may have entered inside fluid lines of the air conditioning system. Accordingly, the receiver drier **3** prevents the moisture and/or debris from reaching critical elements of the air conditioner unit, particularly the compressor, thereby preventing any detrimental impact to performance or damage to the critical elements of the air conditioning system. The outlet **3b** delivers condensed refrigerant from which debris and moisture has been removed by passing through the receiver drier **3** to heat exchange tubes **4b** defining a second pass of the condenser core **4** for sub-cooling of the condensed refrigerant from which debris and moisture has been removed. The sub-cooled refrigerant egresses through the outlet "O".

[0004] However, with such configuration of the condenser **4** and the receiver drier **3,** the distribution and flow of the refrigerant through the heat exchange tubes of the condenser core **4** is non-uniform. Particularly, dead zones **4c** are formed at the certain regions of the condenser core **4,** thereby detrimentally impacting efficiency and performance of the condenser. Few prior art propose use of external jumper lines to manipulate pressure drop across heat exchanger tubes to achieve uniform flow distribution of refrigerant through the condenser core 4, however, such an arrangement increases overall size of the condenser and cause packaging issues.

[0005] Accordingly, there is a need for a condenser with an arrangement for improving distribution of refrigerant through a core of the condenser for preventing dead zone formation in the core of the condenser and improving efficiency and performance of the condenser. Also, there is a need for an arrangement for achieving uniform distribution of refrigerant through a core of the condenser that is compact in configuration and does not impact overall size of the condenser and as such packaging issues are avoided.

[0006] An object of the present invention is to provide a condenser exhibiting improved distribution of refrigerant through a core of the condenser while still obviating drawbacks associated with conventional arrangement for improving distribution of refrigerant through the core.

[0007] Another object of the present invention is to provide a condenser with an arrangement for improving distribution of refrigerant through a core of the condenser and preventing dead zone formation in the core of the condenser.

[0008] Still another object of the present invention is to provide a condenser with improved distribution of refrigerant through core thereof, thereby exhibiting improved efficiency and performance.

[0009] Yet another object of the present invention is to provide a condenser with improved distribution of refrigerant through core thereof without requiring any external jumper lines, as such the condenser is compact and packaging issues are avoided.

[0010] Another object of the present invention is to provide a condenser that is simple in construction.

[0011] In the present description, some elements or parameters may be indexed, such as a first element and a second element. In this case, unless stated otherwise, this indexation is only meant to differentiate and name elements which are similar but not identical. No idea of priority should be inferred from such indexation, as these terms may be switched without betraying the invention. Additionally, this indexation does not imply any order in mounting or use of the elements of the invention.

[0012] A heat exchanger, particularly, a condenser is disclosed in accordance with an embodiment of the present invention. The heat exchanger includes a first manifold, a second manifold and a receiver drier. The first manifold and the second manifold are connected by tubes configured to provide at least a first pass and a second pass of a heat exchange fluid. The receiver drier is connected to the second manifold and is providing fluid connection between the first pass and the second pass, wherein the second manifold is connected to the receiver drier through a channel. The channel receives fluid from the first pass through a first hole and a second hole configured on the second manifold. The first hole and the second hole are distant from each other. The channel further supplies the receiver drier with fluid through a first opening of the receiver drier which is closer to the first hole than the second hole.

[0013] Further, the channel supplies the fluid received in the receiver drier to the second pass through a second opening that is in fluid connection with third hole but is in fluid isolation from the second hole within the channel.

[0014] Specifically, the channel includes a first aperture which is aligned and in fluid connection with first hole and the first opening, a second aperture which is aligned and in fluid connection with a third hole and the second opening and an intermediate aperture that is in fluid connection with the second hole.

[0015] More specifically, the first aperture and the second aperture are through apertures, whereas the intermediate aperture is a blind aperture.

[0016] Preferably, at least one of the first hole and the second hole is either one of oval shaped and any other oblong shaped hole.

[0017] Generally, the at least one intermediate aperture is comparatively larger than the first aperture.

[0018] Particularly, the at least one intermediate aperture is at least 1.5 times larger than the first aperture.

[0019] Also, the second hole is larger than the first hole.

[0020] Generally, the channel is integrally formed with the receiver drier.

[0021] Alternatively, the channel is detachably mounted on the receiver drier.

[0022] Generally, the channel is connected to the second manifold by crimping operation.

[0023] Further, the channel includes a first sealing element, a second sealing element and a third sealing element, wherein the first sealing element and the second sealing element close ends of the channel, whereas the third sealing element configures fluid isolation between the second opening of the receiver drier and the second hole of the second manifold.

[0024] A receiver drier configured on a heat exchanger is disclosed in accordance with an embodiment of the present invention. The receiver drier includes a tubular casing and a channel. The tubular casing is connected to a second manifold of the heat exchanger and provides fluid connection between the first pass and the second pass. The channel forms fluid connection between the second manifold and the tubular casing, wherein the channel receives fluid from the first pass through a first hole and a second hole configured on the manifold, the first hole and the second hole being distant from each other. The channel further supplies the tubular casing with fluid through a first opening of the tubular casing which is closer to the first hole than the second hole. The channel still further supplies the fluid received in tubular casing to the second pass through a second opening that is in fluid connection with third hole but is in fluid isolation from the second hole.

[0025] Other characteristics, details and advantages of the invention can be inferred from the description of the invention hereunder. A more complete appreciation of the invention and many of the attendant advantages thereof will be readily obtained as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying figures, wherein:

FIG. 1 illustrates a conventional heat exchanger, particularly, a condenser configured with a receiver drier in accordance with prior art;

FIG. 2 illustrates a heat exchanger, particularly, a condenser configured with a receiver drier in accordance with an embodiment of the present invention;

FIG. 3a illustrates an isometric view of the receiver drier of the **FIG. 2** depicted along with a channel;

FIG.3b illustrates another isometric view of the receiver drier of **FIG. 3a.**

[0026] It must be noted that the figures disclose the invention in a detailed enough way to be implemented, said figures helping to better define the invention if needs be. The invention should however not be limited to the embodiment disclosed in the description.

[0027] Although the present invention is explained in the forthcoming description with example of a receiver drier for a condenser, wherein the receiver drier is configured with a channel disposed between the receiver drier and a second manifold of the condenser for manipulating pressure difference across different sections of a condenser core for achieving uniform distribution of the refrigerant throughout the condenser core. Such configuration of channel disposed between the condenser and the receiver drier imparts compact configuration to the condenser and is capable of uniformly distributing the refrigerant throughout the condenser core, thereby preventing formation of dead zones in the condenser core and enhancing efficiency and performance of the condenser. However, the present invention is applicable for any heat exchanger, not limited to condenser alone, wherein uniform flow of heat exchange fluid through the heat exchanger is required to enhance efficiency and performance the heat exchanger without requiring any external jumper lines that increases overall size of the heat exchanger.

[0028] Referring to **FIG. 2** a heat exchanger, particularly, a condenser **100** in accordance with an embodiment of the present invention is illustrated. The condenser **100** includes a first manifold **30a** and a second manifold **30b** connected by a plurality of tubes **10** configured to provide at least a first pass **10a** and a second pass **10b.** Specifically, the pair of manifolds **30a, 30b** is connected to respective collector plates **20a, 20b.** The first manifold **30a** receives refrigerant in vapor phase from an inlet **70.** The pair of manifolds **30a, 30b** in conjunction with the respective collector plates **20a, 20b** either distributes heat exchange fluid, particularly, the refrigerant to or collects heat exchange fluid, particularly, the condensed refrigerant from the tubes **10** of the condenser **100.** More specifically, at least a portion of the first manifold **30a** of the pair of manifolds **30a, 30b** distributes the refrigerant vapor received thereby to the first pass **10a.** The refrigerant vapors flows through the first pass **10a** in a flow direction depicted by arrows "A". Similarly, at least a portion of the second manifold **30b** collects refrigerant condensed by passing the refrigerant vapor through the first pass **10a.**

[0029] The condenser **100** includes a receiver drier **40.** The receiver drier **40** includes a tubular casing **42.** The tubular casing **42** is having a tubular configuration closed and sealed at both ends thereof. The tubular casing **42** receives a filter and a desiccant material therein. The filter trap debris that may have entered inside fluid lines of an air conditioning system of which the condenser **100** is a part of, whereas the desiccant absorbs any incompressible moisture that may have entered inside the air conditioning system. Accordingly, the receiver drier **40** not only acts as a temporary storage for refrigerant (and oil) but also prevents moisture and/or debris from reaching critical elements of the air conditioning system, particularly the compressor, thereby preventing any detrimental impact to performance or damage to the critical elements of the air conditioning system. The receiver drier **40** further includes a channel **50** extending along at least a portion of length of the tubular casing **42** such that the channel **50** is disposed between the second manifold **30b** and the receiver drier **40** of the condenser **100.**

[0030] The receiver drier **40** is connected to the second manifold **30b** and provides fluid connection between the first pass **10a** and the second pass **10b.** More specifically, the second manifold **30b** is in fluid connection with the receiver drier **40** through the channel **50** at two locations, configured with apertures for ingress and egress of the refrigerant from the receiver drier **50.** Generally, the channel **50** is integrally formed with the receiver drier **40.** Alternatively, the channel **50** is detachably mounted on the receiver drier **40.** The channel **50** is connected to the second manifold **30b** by crimping operation. However, the present invention is neither limited to any particular configuration of connection between the channel **50** and the receiver drier **40** nor limited to any particular configuration of the connection between the channel **50** and the second manifold **30b.**

[0031] The second manifold **30b** includes a first hole **32a,** a second hole **32b** and a third hole **32c.** The tubular casing **42** includes a first opening **42a** and a second opening **42b.** The channel **50** includes a first aperture **50a,** a second aperture **50b** and an intermediate aperture **50c** as illustrated in **FIG. 3a** and **FIG. 3b.** At least one of the first hole **32a** and the second hole **32b** is either one of oval shaped and any other oblong shaped hole. In one example, the first hole **32a** and the second hole **32b** are oval shaped apertures or any other oblong shaped apertures, such that the oval or oblong shape of the second hole **32b** enhances fluid flow rate through the second hole **32b** and fluid flow through second hole **32b** is more than fluid flow through first hole **32a.** In another example, the second hole **32b** is oval shaped while the first hole **30a** is circular shaped so that the fluid flow through second hole **32b** is more than fluid flow through first hole **32a.** However, the present invention is not limited to any particular shape or configuration of the first hole **32a** and the second hole **32b,** as long as fluid flow through second hole **32b** is more than fluid flow through first hole **32a.** Generally, the first aperture **50a** is configured near bottom end of the channel **50,** the second aperture **50b** is configured near top end of the channel **50,** whereas the at least one intermediate aperture **50c** is disposed between the first aperture **50a** and the second aperture **50b** and at proximity to the second aperture **50b.** Further, the inlet **70** is configured on the first manifold **30a** and is aligned to or close to alignment with the first hole **32a** of the second manifold **30b.** Such positioning of the inlet **70** with respect to the first hole **32a** creates back pressure and also contributes to achieve uniform distribution of the refrigerant in the first pass **10a.** Further, such positioning prevents formation of dead zones within the core of the condenser **100** and enhances heat exchange at the first pass **10a** of the condenser **100** to improve efficiency and performance of the condenser **100.**

[0032] The first aperture **50a** is aligned and in fluid connection with the first hole **32a** and the first opening **42a,** the second aperture **50b** is aligned and in fluid connection with the third hole **32c** and the second opening **42b** and the at least one intermediate aperture **50c** is in fluid connection with the second hole **32b** only. More specifically, the first aperture **50a** and the second aperture **50b** are through apertures, whereas the at least one intermediate aperture **50c** is a blind aperture that is open towards and in fluid communication with the second manifold **30b** but closed at the receiver drier **40** side. The at least one intermediate aperture **50c** is comparatively larger than the first aperture **50a.** The at least one intermediate aperture **50c** is at least 1.5 times larger than the first aperture **50a.** Also, the second hole **32b** is larger than the first hole

32a. The second hole **32b** is at least 1.5 times larger than the first hole **32a.** With such configuration, the condensed refrigerant received by the channel **50** through the at least one intermediate aperture **50c** from the first pass **10a.** The condensed refrigerant is not passed to the receiver drier **40** but is collected at the bottom of the channel **50** to build back pressure. The back pressure so created cause uniform distribution of the refrigerant in the first pass **10a,** thereby preventing formation of dead zones within core of the condenser **100** and enhancing heat exchange at the first pass **10a** of the condenser **100** to improve efficiency and performance of the condenser **100.**

[0033] The channel **50** includes a first sealing element **52a,** a second sealing element **52b** and a third sealing element **52c.** The first sealing element **52a** and the second sealing element **52b** closes ends of the channel **50.** The third sealing element **52c** configures fluid isolation between the second opening **42b** and the second hole **32b.** The sealing elements **52a, 52b, 52c** disposed inside the channel **50** divide interior of the channel **50** into a first compartment **50d** and a second compartment **50e.** The first compartment **50d** supplies condensed refrigerant from the receiver drier **40** to the second pass **10b** or the tubes configuring sub-cooling section of the condenser **100** via the second aperture **50b** and a second portion **30d** of the second manifold **30b.** The second compartment **50e** receives condensed refrigerant from the first pass **10a** or the tubes configuring the condensing section of the condenser **100** via a first portion **30c** of the second manifold **30b,** the at least one intermediate aperture **50c** and the first aperture **50a.**

[0034] The channel **50** receives fluid, particularly, condensed refrigerant from the first pass **10a** through the first hole **32a** and the second hole **32b.** The first hole **32a** and the second hole **32b** are distant from each other. The channel **50** further supplies the condensed fluid, particularly, condensed refrigerant to the receiver drier **40** through the first opening **42a** which is closer to the first hole **32a** than the second hole **32b.** Specifically, the first aperture **50a** configures fluid communication between the first portion **30c** of the second manifold **30b** corresponding to the first pass **10a,** particularly, the tubes configuring the condensing section of the condenser **100** and the receiver drier **40.** More specifically, the refrigerant that is condensed after passing through the first pass **10a** or the tubes configuring the condensing section of the condenser **100** along with uncondensed vapor refrigerant, moisture and debris, if any, enters the receiver drier **40** through the first aperture **50a** aligned and in fluid connection with the first hole **32a** and the first opening **42a.** The receiver drier **40** removes moisture, debris, if any from the condensed refrigerant received thereby and the condensed refrigerant flows through the receiver drier **40** along flow direction depicted by arrows "B".

[0035] The channel **50** further supplies the condensed fluid, particularly, condensed refrigerant from which moisture and debris are removed by passing through the receiver drier **40** to the second pass **10b,** through the second opening **42b** that is in fluid connection with the third hole **32c** but is in fluid isolation from the second hole **32b.** Specifically, the second aperture **50b** configures fluid communication between the receiver drier **40** and the second portion **30d** of the second manifold **30b.** More specifically, the condensed refrigerant with moisture, debris, if any removed therefrom egresses through the second aperture **50b** that is aligned to the third hole **32c** and the second opening **42b** to enter the second portion **30d** of the second manifold **30b.** The second manifold **30b** distributes the condensed refrigerant to the second pass **10b** for sub-cooling of the condensed refrigerant. The condensed refrigerant flows through the second pass **10b** along the flow direction depicted by arrow "C" and gets sub-cooled. The sub-cooled refrigerant is received in the first manifold **30a** and egresses the first manifold **30a** through the outlet **60.**

[0036] The at least one intermediate aperture **50c** is disposed upstream of the third sealing element **52c.** The third sealing element **52c** defines the first compartment **50d** of the channel **50** that is in fluid communication with the second portion **30d** of the second manifold **30b.** The second portion **30d** receives and distributes condensed refrigerant that had passed through the receiver drier **40** to the second pass **10b** or the tubes configuring the sub-cooling section of the condenser **100.** Specifically, the at least one intermediate aperture **50c** configures fluid communication between the first portion **30c** of the second manifold **30b** and the channel **50.** The refrigerant, that is condensed after passing through the first pass **10a** or the tubes configuring the condensing section of the condenser **100** along with uncondensed refrigerant vapor, debris and moisture, if any ingresses the channel **50** via the at least one intermediate aperture **50c,** flows through the channel **50** along direction depicted by arrow "D" to be collected to build back-pressure. The at least one intermediate aperture **50c** along with back-pressure so created manipulates pressure difference across different sections of the core of the condenser **100** for achieving uniform distribution of the refrigerant throughout the core. Further, such configuration of the channel **50** disposed between the second manifold **30b** and the receiver drier **40** imparts compact configuration to the condenser **100** and is capable of uniformly distributing the refrigerant throughout the core of the condenser **100,** thereby preventing formation of dead zones in the core of the condenser **100** and enhancing efficiency and performance of the condenser **100.**

[0037] Also is disclosed a receiver drier **40** in accordance with an embodiment of the present invention. The receiver drier **40** is part of a heat exchanger, particularly a condenser **100** and includes a tubular casing **42** and a channel **50.** The tubular casing **42** is connected to a second manifold **30b** of the condenser **100** and provides fluid connection between a first pass **10a** and a second pass **10b.** The channel **50** forms fluid connection between the second manifold **30b** and the tubular casing

42. The channel **50** receives fluid, particularly, condensed refrigerant from the first pass **10a** through a first hole **32a** and a second hole **32b.** The first hole **32a** and the second hole **32b** are distant from each other. The channel **50** further supplies the condensed fluid, particularly, condensed refrigerant received thereby to the receiver drier **40** through a first opening **42a** which is closer to the first hole **32a** than the second hole **32b.** The channel **50** still further supplies the condensed fluid, particularly, condensed refrigerant from which moisture and debris are removed by passing through the receiver drier **40** to the second pass **10b** through a second opening **42b** that is in fluid connection with third hole **32c** but is in fluid isolation from the second hole **32b.**

[0038] Several modifications and improvement might be applied by the person skilled in the art to the heat exchanger 100 as defined above,_and such modifications and improvements will still be considered within the scope and ambit of the present invention, as long as the heat exchanger, heat exchanger comprises a first manifold, a second manifold and a receiver drier. The first manifold and the second manifold are connected by tubes configured to provide at least a first pass and a second pass of a heat exchange fluid. The receiver drier is connected to the second manifold and is providing fluid connection between the first pass and the second pass, wherein the second manifold is connected to the receiver drier through a channel. The channel receives fluid from the first pass through a first hole and a second hole configured on the second manifold. The first hole and the second hole are distant from each other. The channel further supplies the receiver drier with fluid through a first opening of the receiver drier which is closer to the first hole than the second hole.

[0039] Obviously, numerous modifications and variations of the present invention are possible in light of the above teachings. It is therefore to be understood that the invention may be practiced otherwise than as specifically described herein.

[0040] In any case, the invention should not be limited to the embodiments specifically described in this document, as other embodiments might exist. The invention shall spread to any equivalent means and any technically operating combination of means.

Claims

1. A heat exchanger (100) comprising:

    - a first manifold (30a) and a second manifold (30b) connected by a plurality of tubes (10) configured to provide at least a first pass (10a) and a second pass (10b) of a heat exchange fluid;
    - a receiver drier (40) connected to the second manifold (30b) and providing fluid connection between the first pass (10a) and the second pass (10b), wherein the second manifold (30b) is connected to the receiver drier (40) through a channel (50);

    wherein the channel (50) is adapted to receive fluid from the first pass (10a) through a first hole (32a) and a second hole (32b) configured on the second manifold (30b) which are distant from each other, the channel (50) being further adapted to supply the receiver drier (40) with the fluid through a first opening (42a) of the receiver drier (40) which is closer to the first hole (32a) than the second hole (32b).

2. The heat exchanger (100) as claimed in claim 1, wherein the channel (50) is further adapted to supply the fluid passed through the receiver drier (40) to the second pass (10b) through a second opening (42b) that is in fluid connection with a third hole (32c) but is in fluid isolation from the second hole (32b) within the channel (50).

3. The heat exchanger (100) as claimed in any of the previous claim, wherein the channel (50) comprises a first aperture (50a) which is aligned and in fluid connection with the first hole (32a) and the first opening (42a), a second aperture (50b) which is aligned and in fluid connection with the third hole (32c) and the second opening (42b) and at least one intermediate aperture (50c) that is in fluid connection with the second hole (32b).

4. The heat exchanger (100) as claimed in the previous claim, wherein the first aperture (50a) and the second aperture (50b) are through apertures, whereas the at least one intermediate aperture (50c) is a blind aperture.

5. The heat exchanger (100) as claimed in any one of the preceding claims, wherein at least one of the first hole (32a) and the second hole (32b) is either one of oval shaped and any other oblong shaped hole.

6. The heat exchanger (100) as claimed in the claim 3, wherein the at least one intermediate aperture (50c) is comparatively larger than the first aperture (50a).

7. The heat exchanger (100) as claimed in claim 3, wherein the at least one intermediate aperture (50c) is at least 1.5 times larger than the first aperture (50a).

8. The heat exchanger (100) as claimed in any of the preceding claims, wherein the channel (50) is integrally formed with the receiver drier (40).

9. The heat exchanger (100) as claimed in any of the preceding claims, wherein the channel (50) is detachably mounted on the receiver drier (40).

10. The heat exchanger (100) as claimed in any of the preceding claims, wherein the channel (50) is connected to the second manifold (30b) by crimping operation.

11. The heat exchanger (100) as claimed in any of the preceding claims, wherein the channel (50) comprising a first sealing element (52a), a second sealing element (52b) and a third sealing element (52c), wherein the first sealing element (52a) and the second sealing element (52b) are adapted to close ends of the channel (50) whereas the third sealing element (52c) is adapted to configure fluid isolation between the second opening (42b) of the receiver drier (40) and the second hole (32b) of the second manifold (30b).

12. A receiver drier (40) configured on a heat exchanger (100), the receiver drier (40) comprising:

- a tubular casing (42) connected to a second manifold (30b) of the heat exchanger (100) and providing fluid connection between a first pass (10a) and a second pass (10b) of the heat exchanger (100); and
- a channel (50) adapted to form fluid connection between the second manifold (30b) and the tubular casing (42), wherein the channel (50) adapted to receive fluid from the first pass (10a) through a first hole (32a) and a second hole (32b) configured on the manifold (30b), the first hole (32a) and the second hole (32b) being distant from each other, the channel (50) further adapted to supply the tubular casing (42) with fluid through a first opening (42a) of the tubular casing (42) which is closer to the first hole (32a) than the second hole (32b), the channel (50) still further adapted to supply the fluid passed through the receiver drier (40) to the second pass (10b) through a second opening (42b) that is in fluid connection with a third hole (32c) but is in fluid isolation from the second hole (32b).

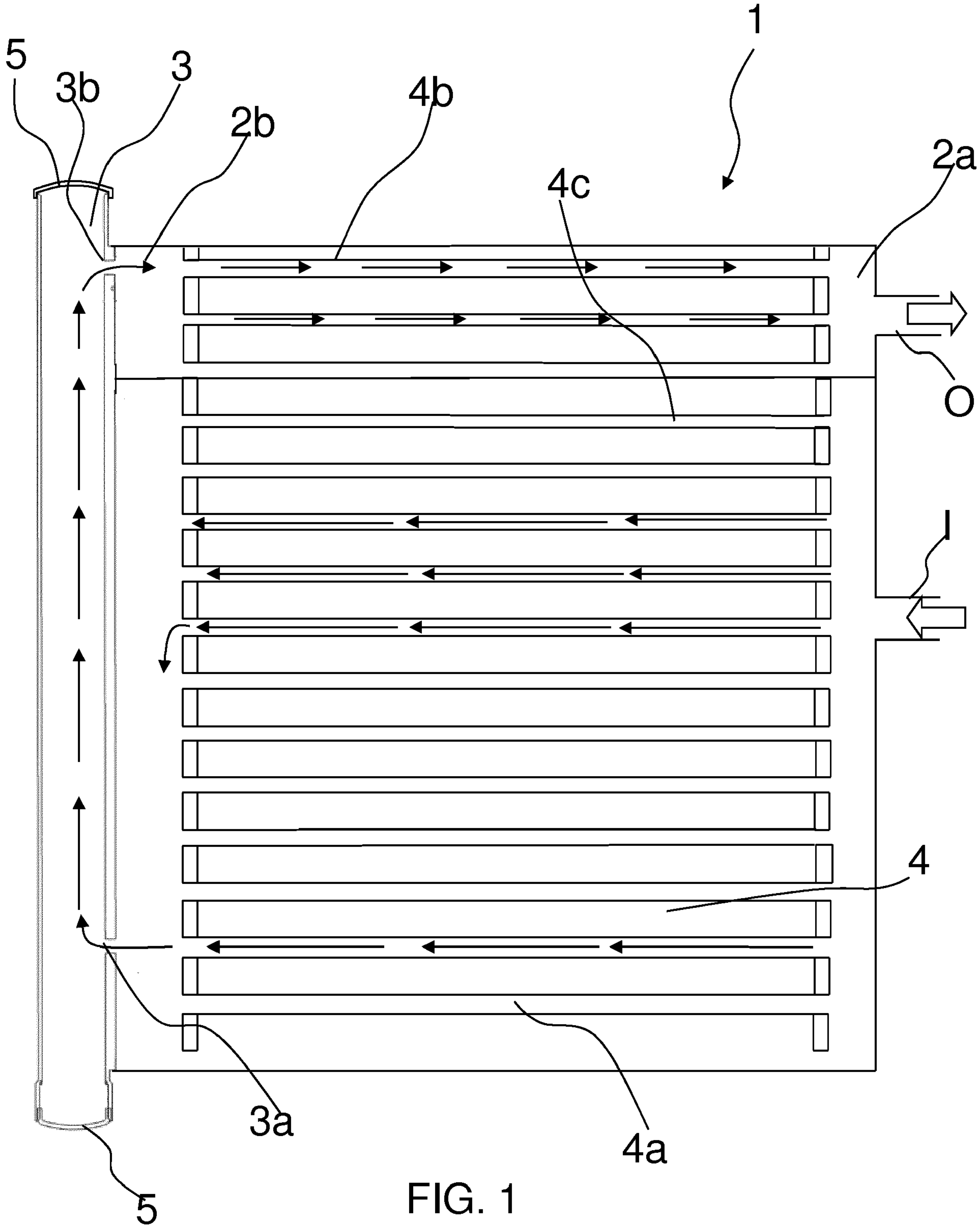
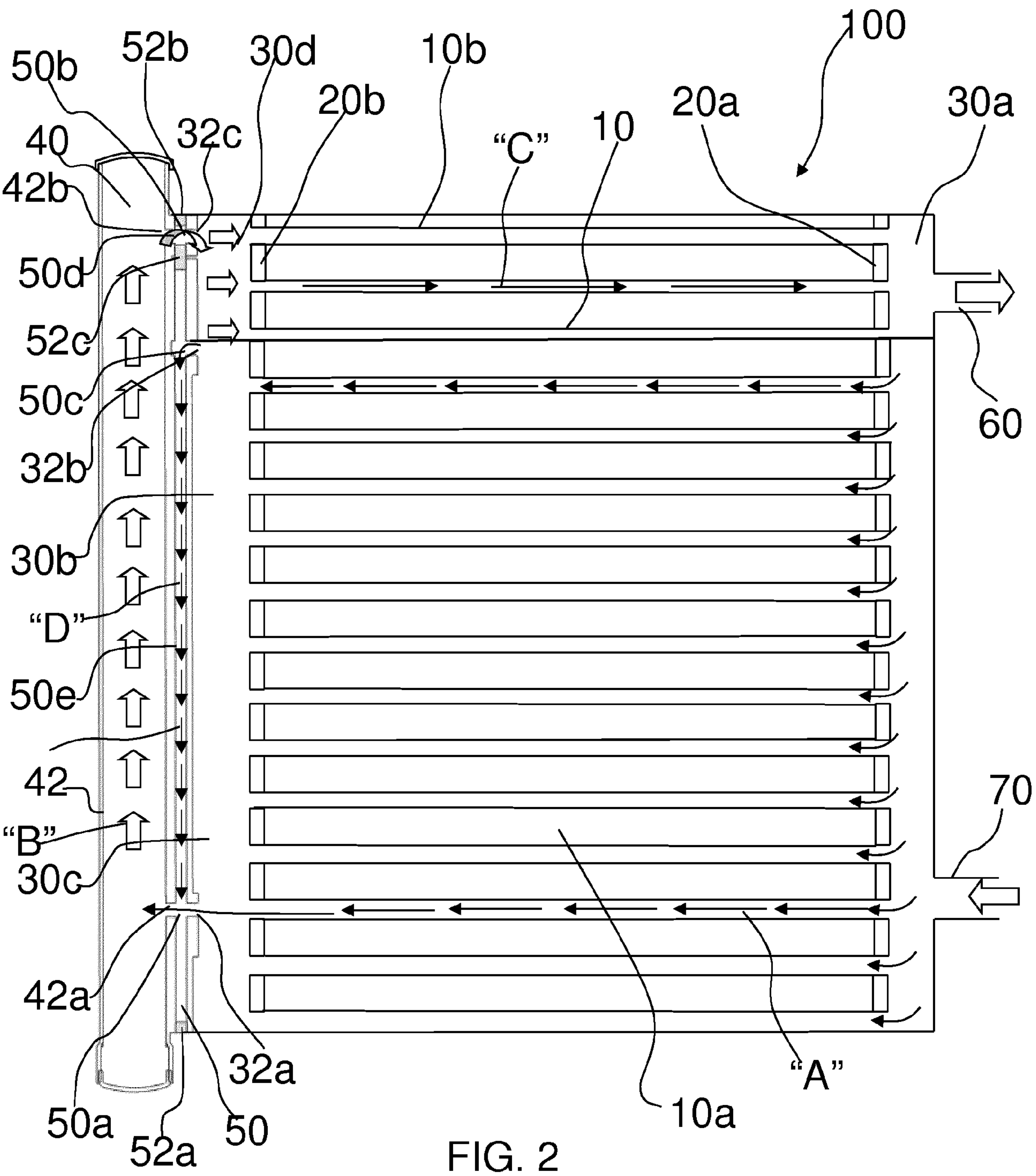


FIG. 1

(PRIOR ART)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50b
52b
30d
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20b
20a
30a
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"C"
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42b
50d
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50c
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32b
30b
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50e
42
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"B"
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10a
52a
50

FIG. 2

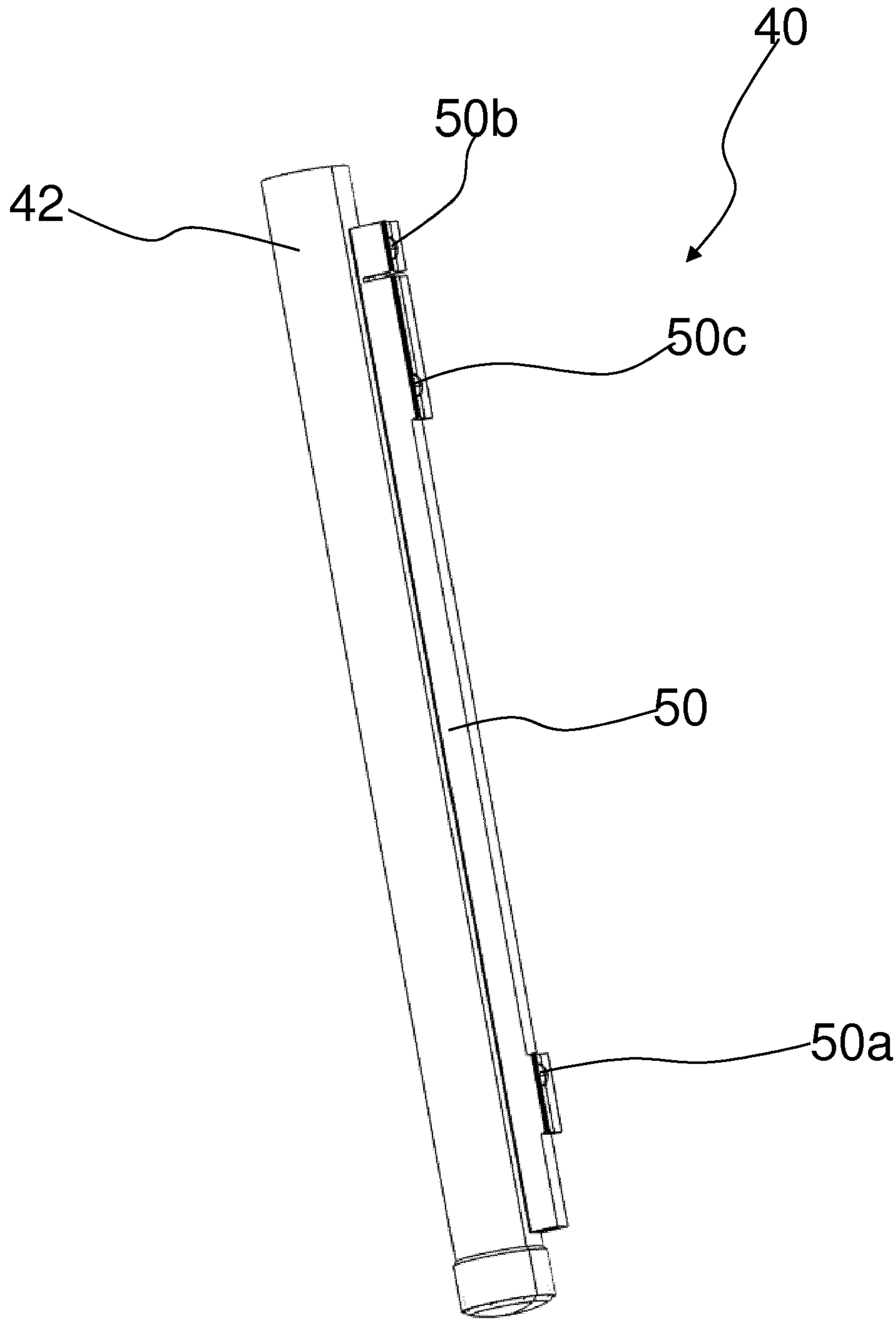

FIG. 3a

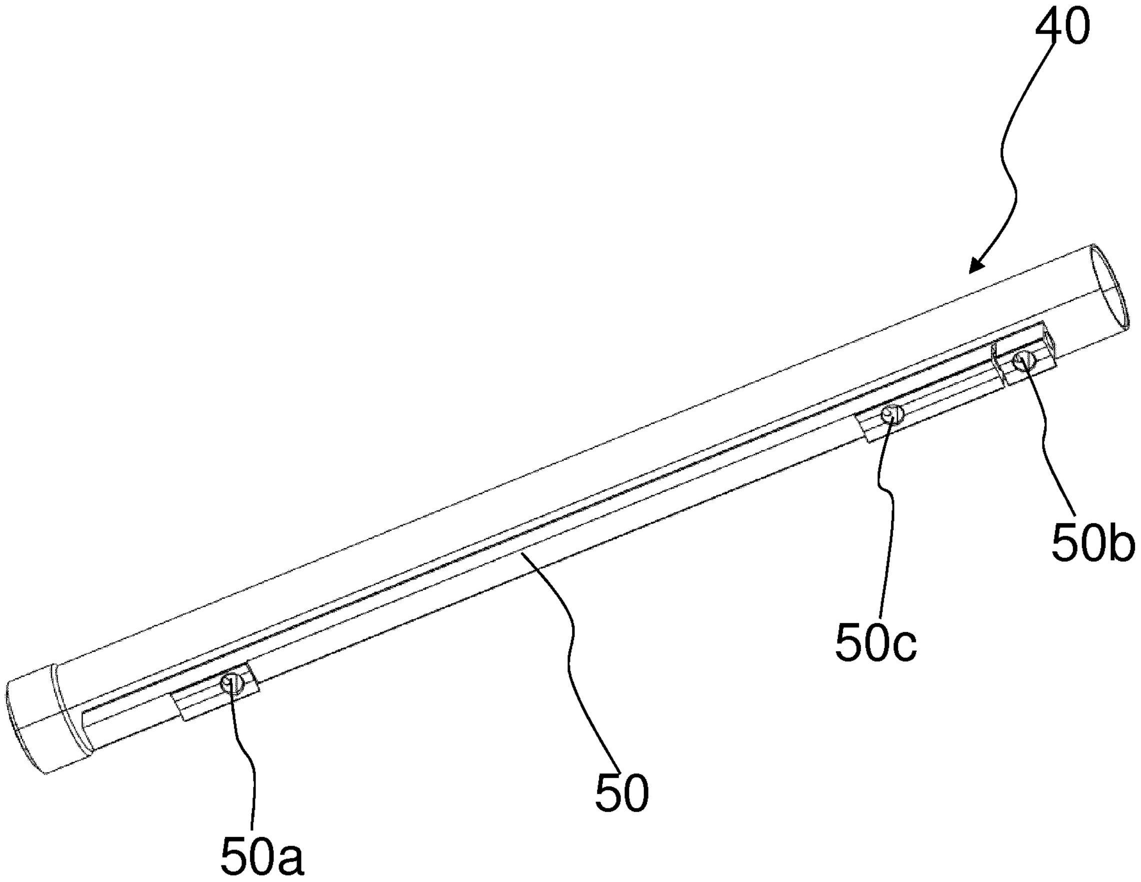

FIG. 3b

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EUROPEAN SEARCH REPORT

Application Number
EP 19 20 4285

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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TECHNICAL FIELDS SEARCHED (IPC)

F28D
F25B

The present search report has been drawn up for all claims

1

Place of search	Date of completion of the search	Examiner
Munich	26 March 2020	Mellado Ramirez, J

CATEGORY OF CITED DOCUMENTS

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