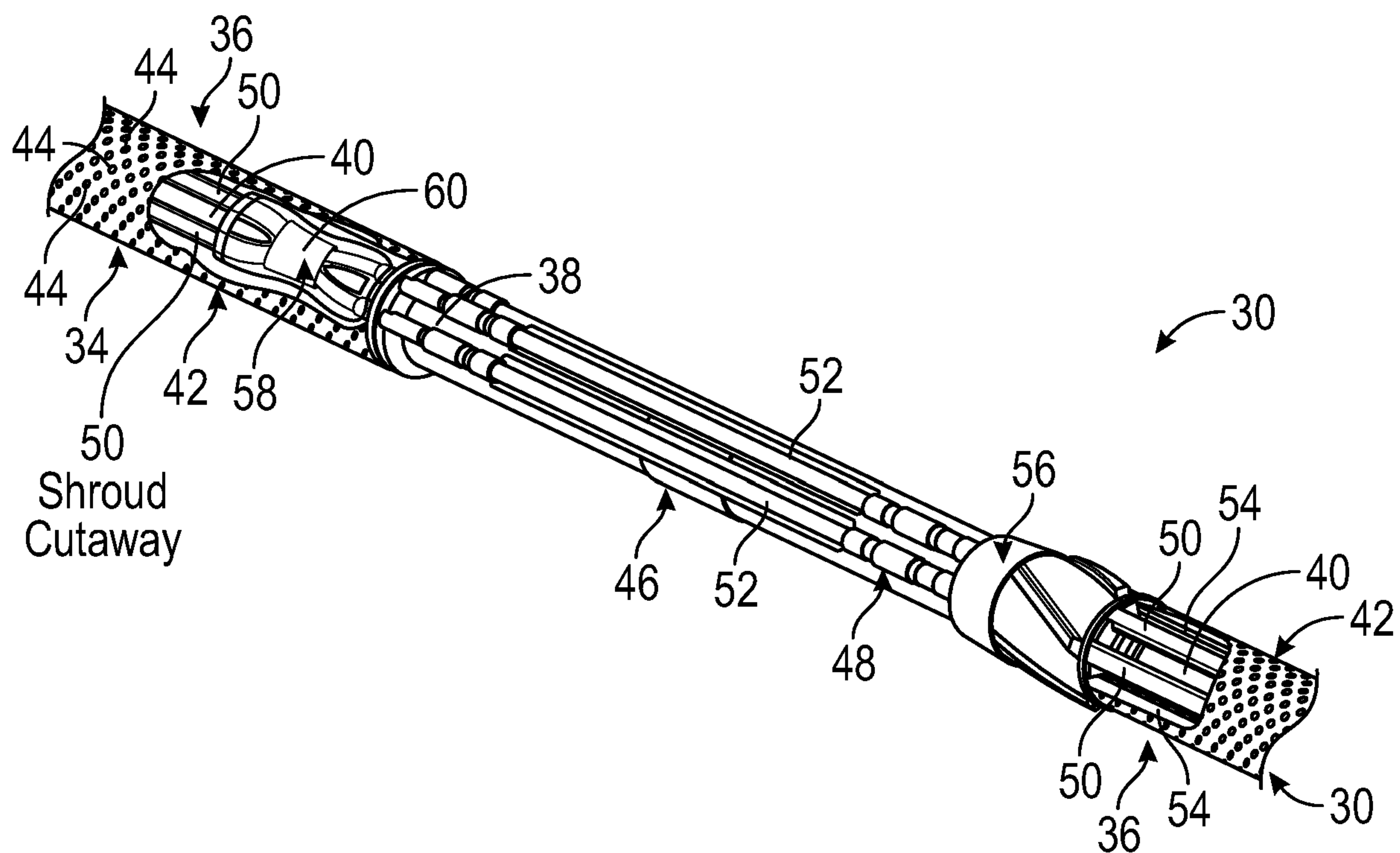


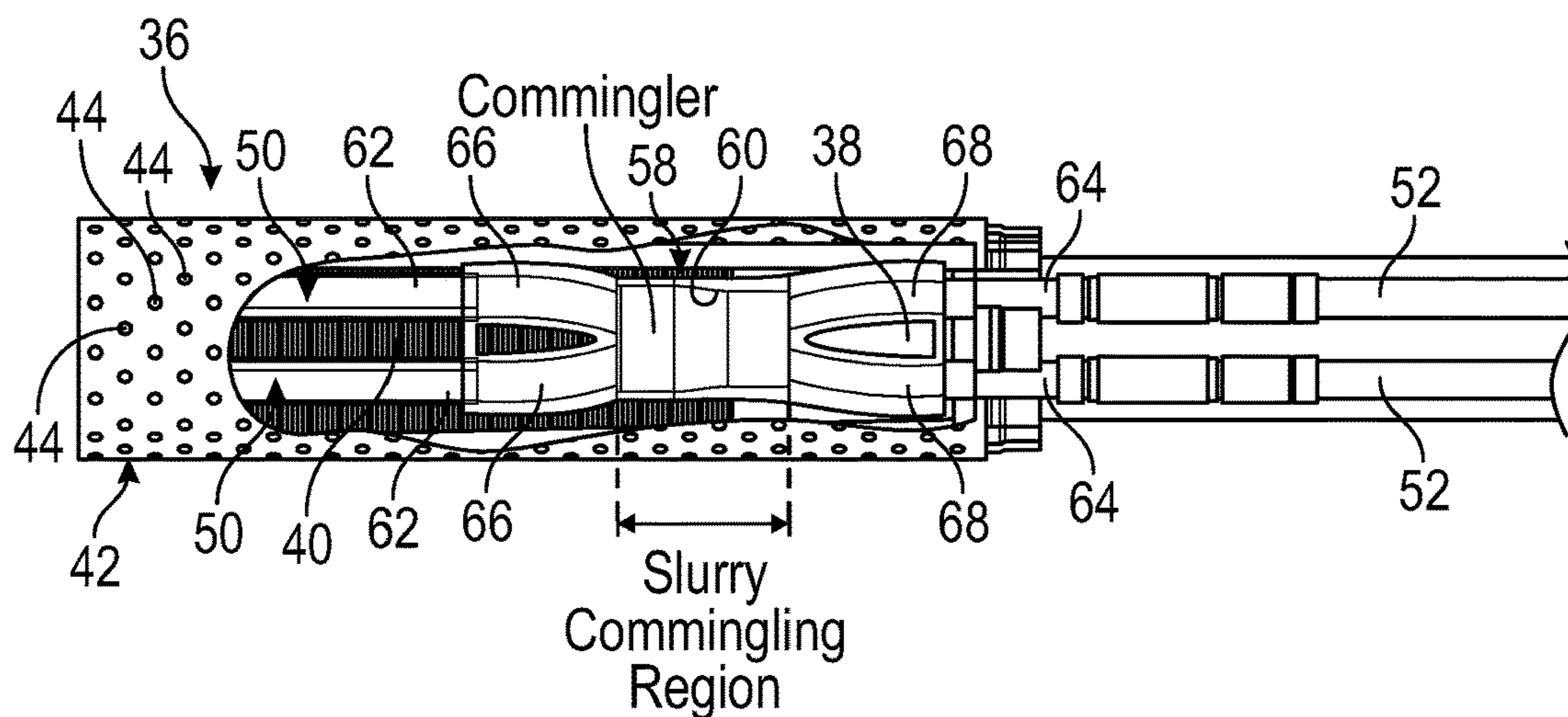
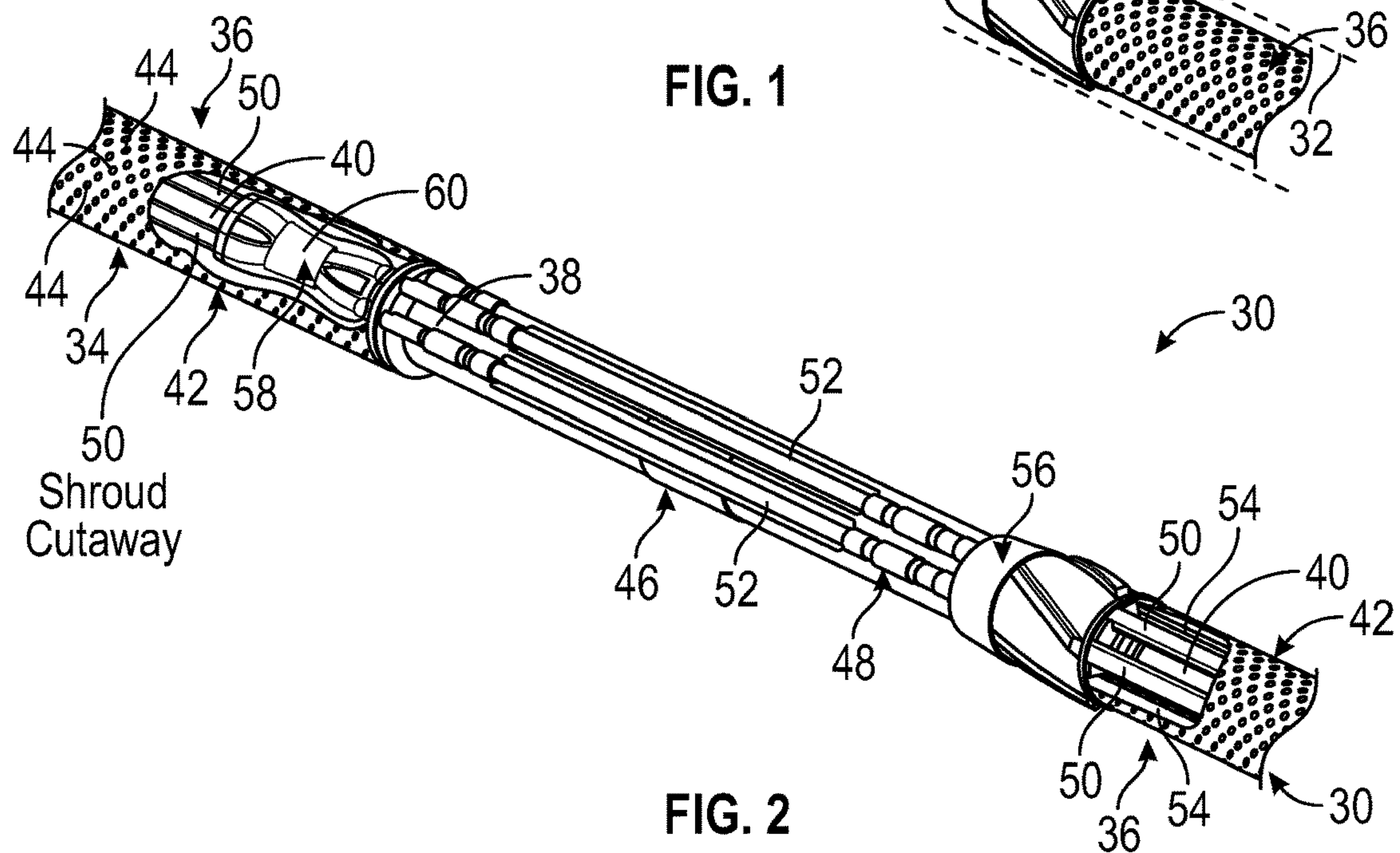
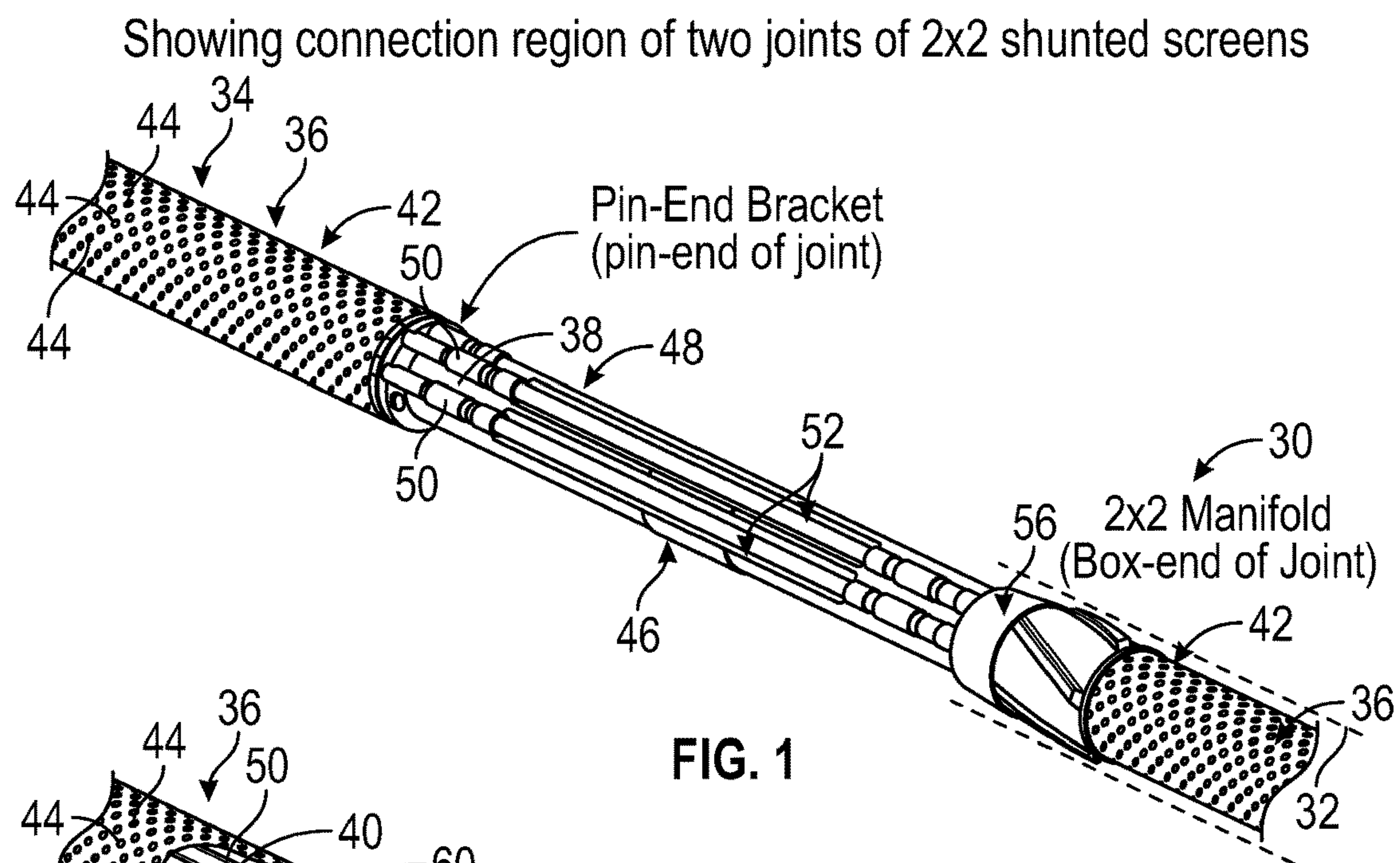


US 20210002987A1

(19) **United States**(12) **Patent Application Publication**
Langlais et al.(10) **Pub. No.: US 2021/0002987 A1**(43) **Pub. Date: Jan. 7, 2021**(54) **COMMINGLING FLOW BETWEEN
TRANSPORT TUBES OF A
MULTI-TRANSPORT TUBE SHUNT SYSTEM**(52) **U.S. Cl.**
CPC *E21B 43/04* (2013.01); *E21B 43/08*
(2013.01); *E21B 17/02* (2013.01)(71) Applicant: **Schlumberger Technology
Corporation**, Sugar Land, TX (US)(72) Inventors: **Michael Dean Langlais**, Houston, TX
(US); **Amrendra Kumar**, Houston, TX
(US)(21) Appl. No.: **16/928,043**(22) Filed: **Jul. 14, 2020****Related U.S. Application Data**(60) Provisional application No. 62/826,235, filed on Mar.
29, 2019.**Publication Classification**(51) **Int. Cl.**
E21B 43/04 (2006.01)
E21B 17/02 (2006.01)
E21B 43/08 (2006.01)(57) **ABSTRACT**

A technique facilitates gravel packing along a borehole. According to an embodiment, a shunt system is positioned along a sand screen system. The shunt system comprises a plurality of transport tubes and a plurality of packing tubes. A manifold is coupled to the plurality of transport tubes and to the plurality of packing tubes at a corresponding sand screen joint of the sand screen system. The manifold serves to separate a portion of the gravel slurry flowing through the plurality of transport tubes and to direct the portion into the corresponding packing tubes. Additionally, a commingler is positioned along the plurality of transport tubes at a location separate from the manifold. The commingler has an internal chamber where gravel slurry is received from uphole transport tube sections and is commingled before flowing into downhole transport tube sections.





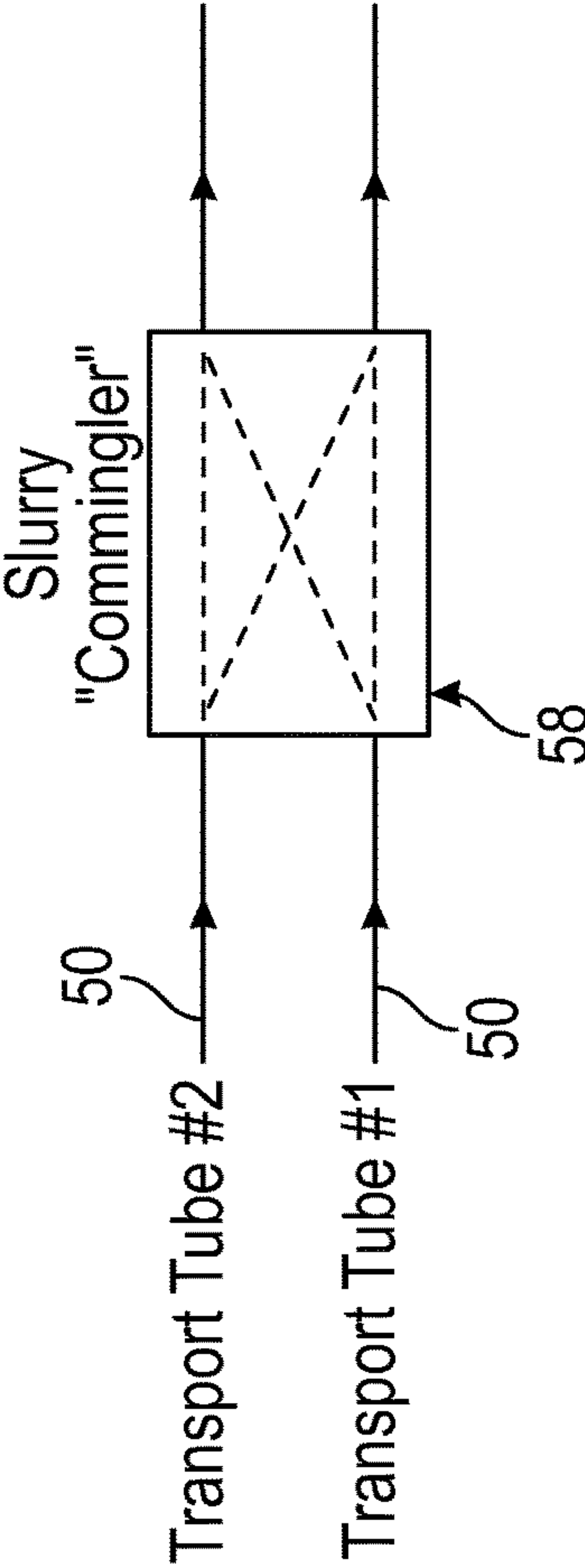
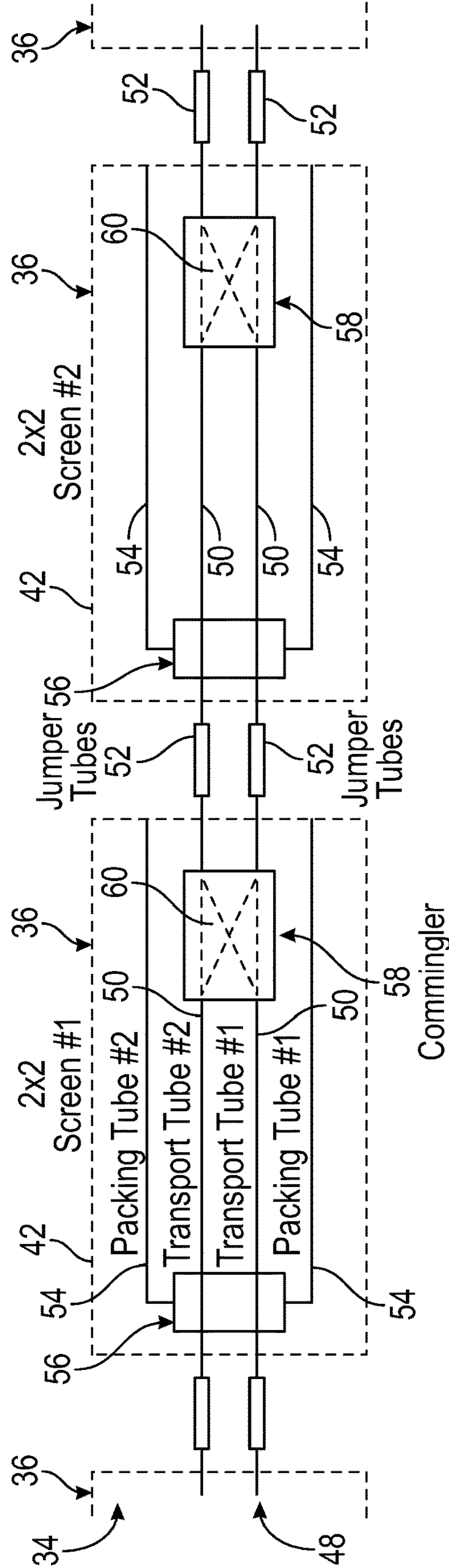


FIG. 4

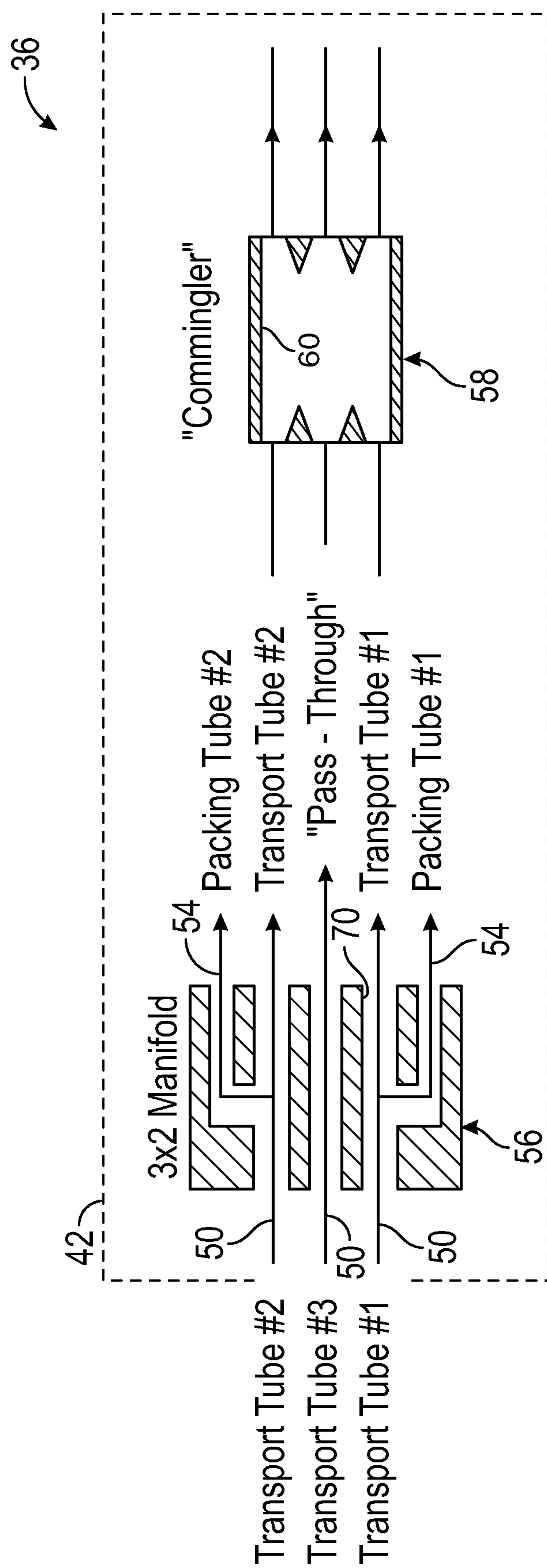
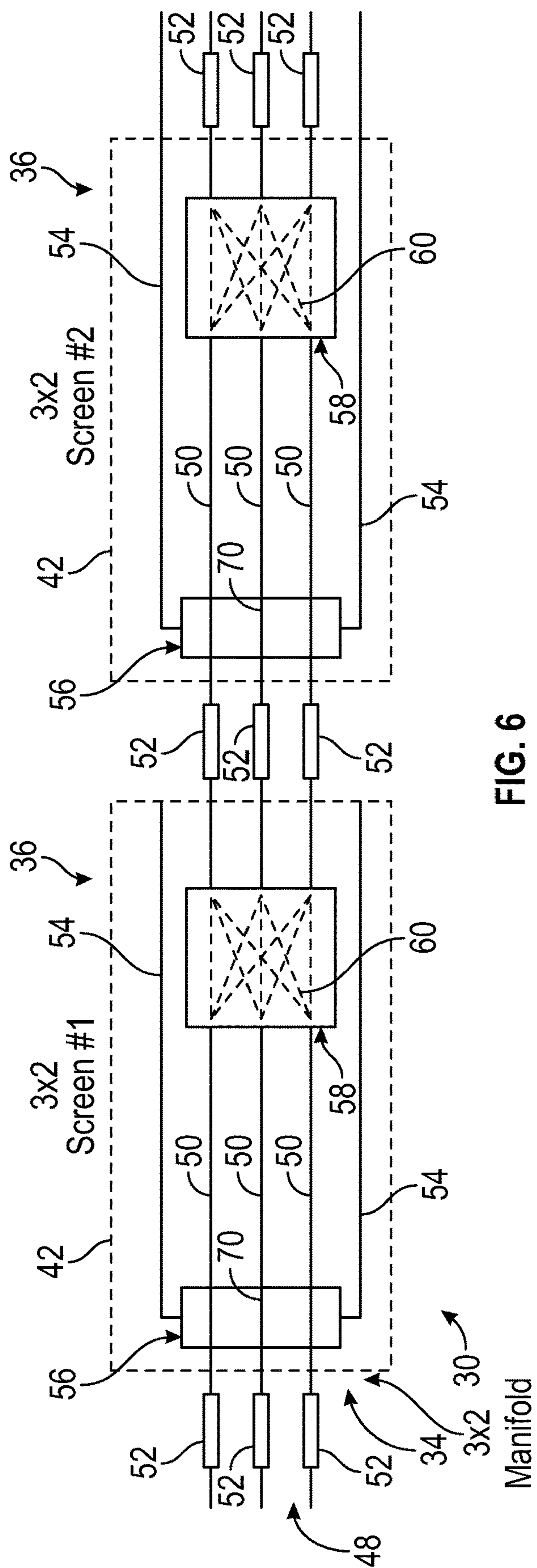


FIG. 5



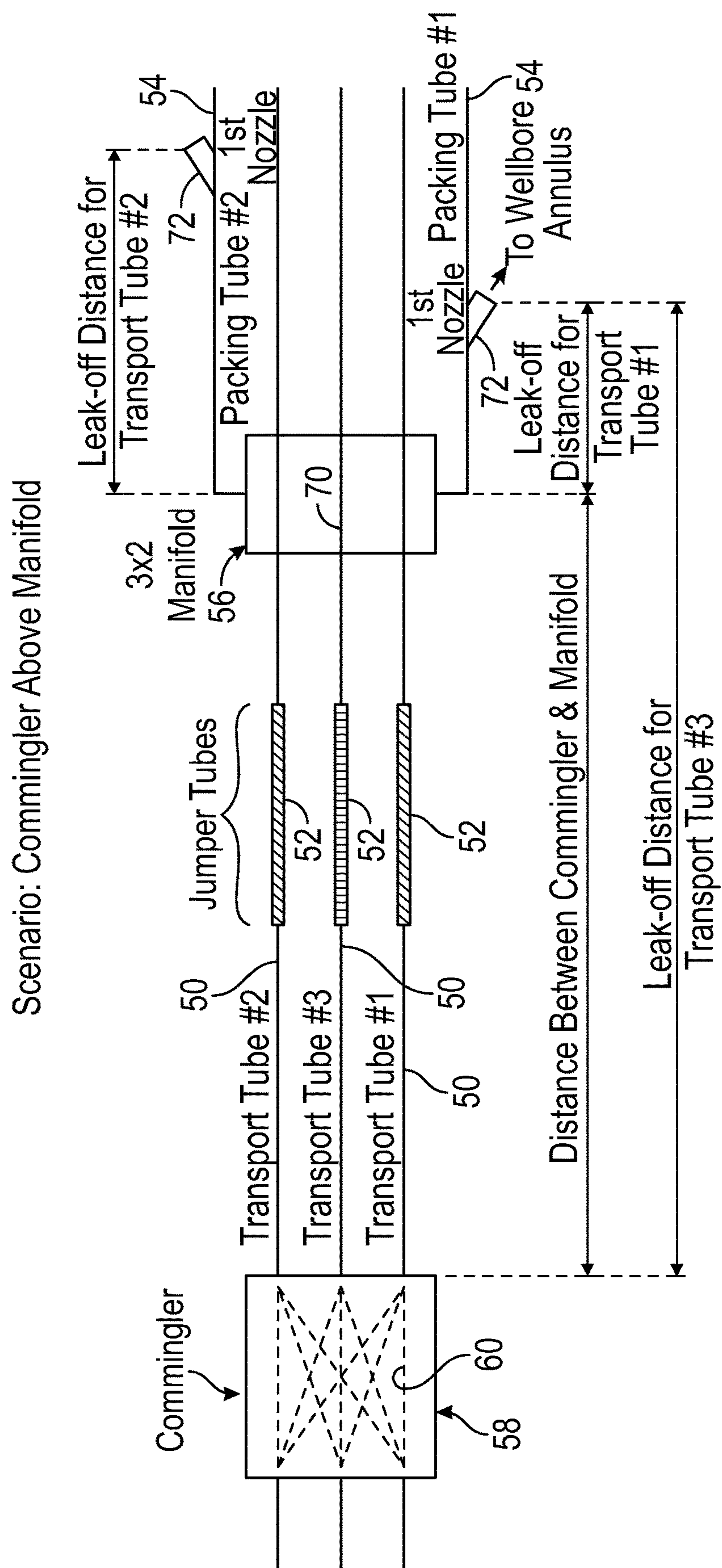
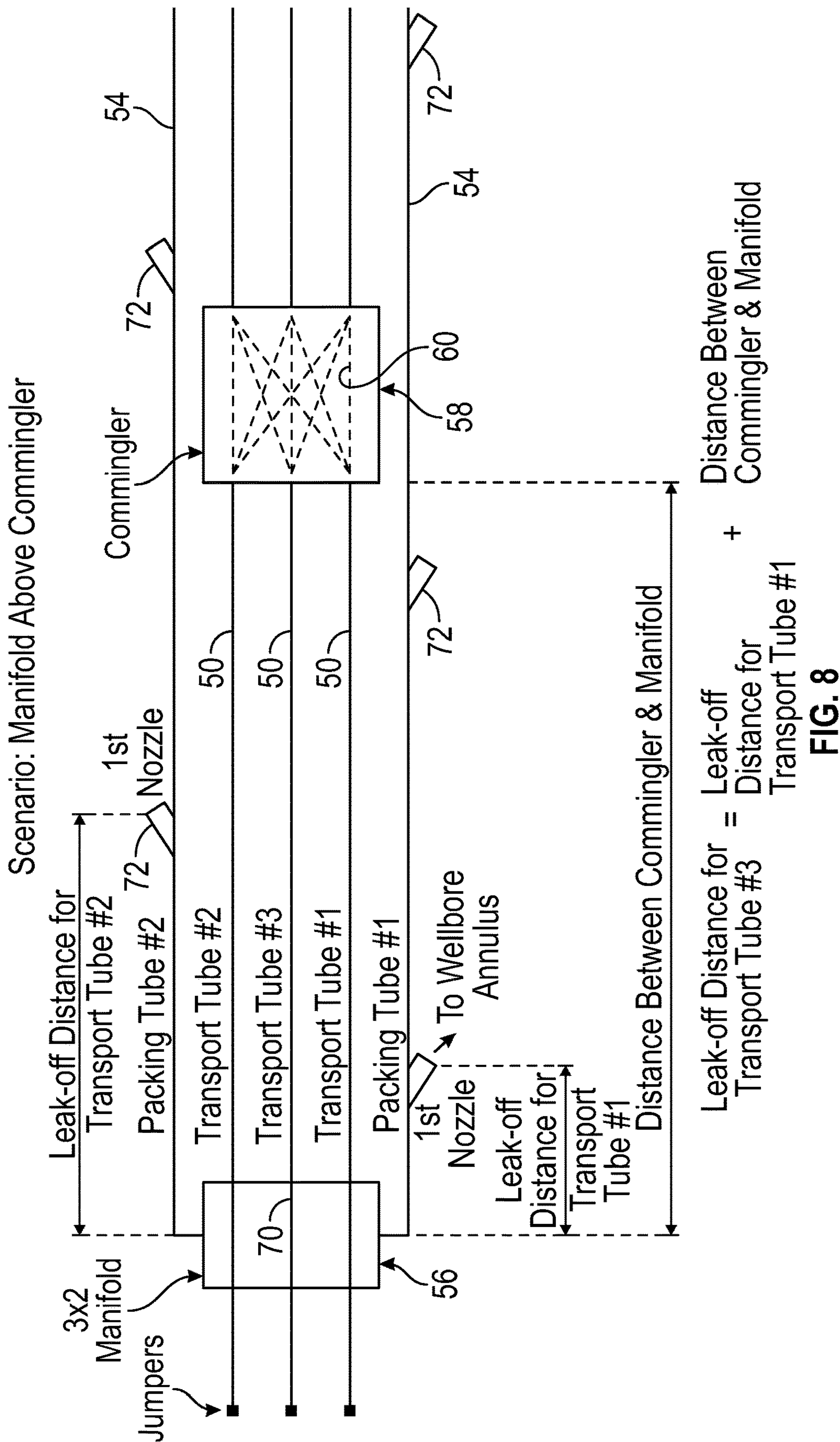


FIG. 7



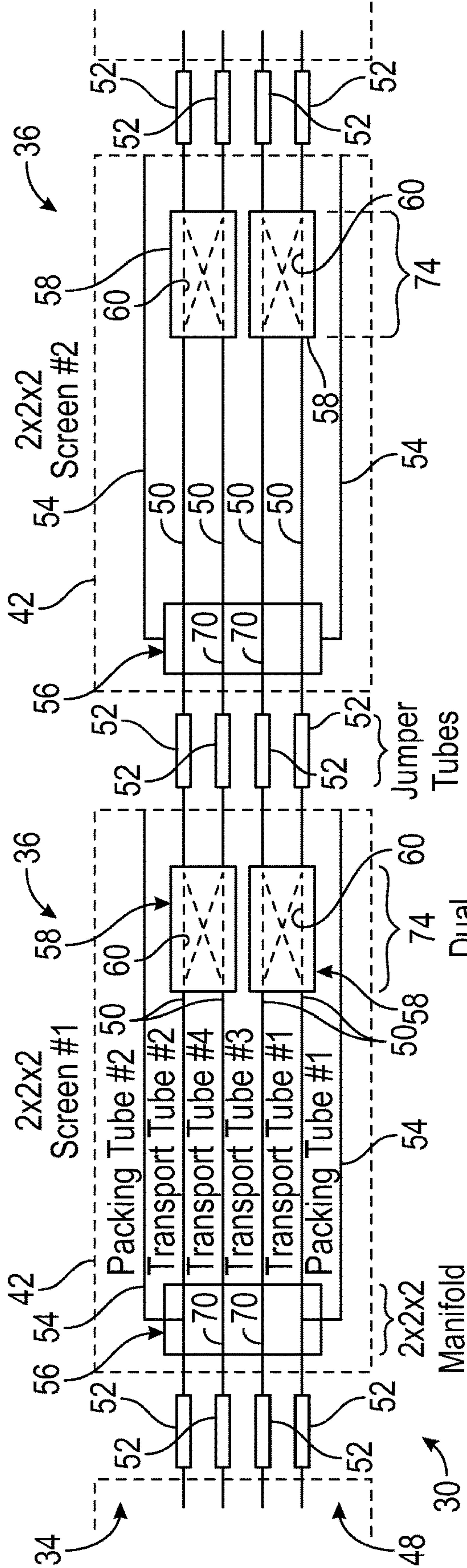


FIG. 9

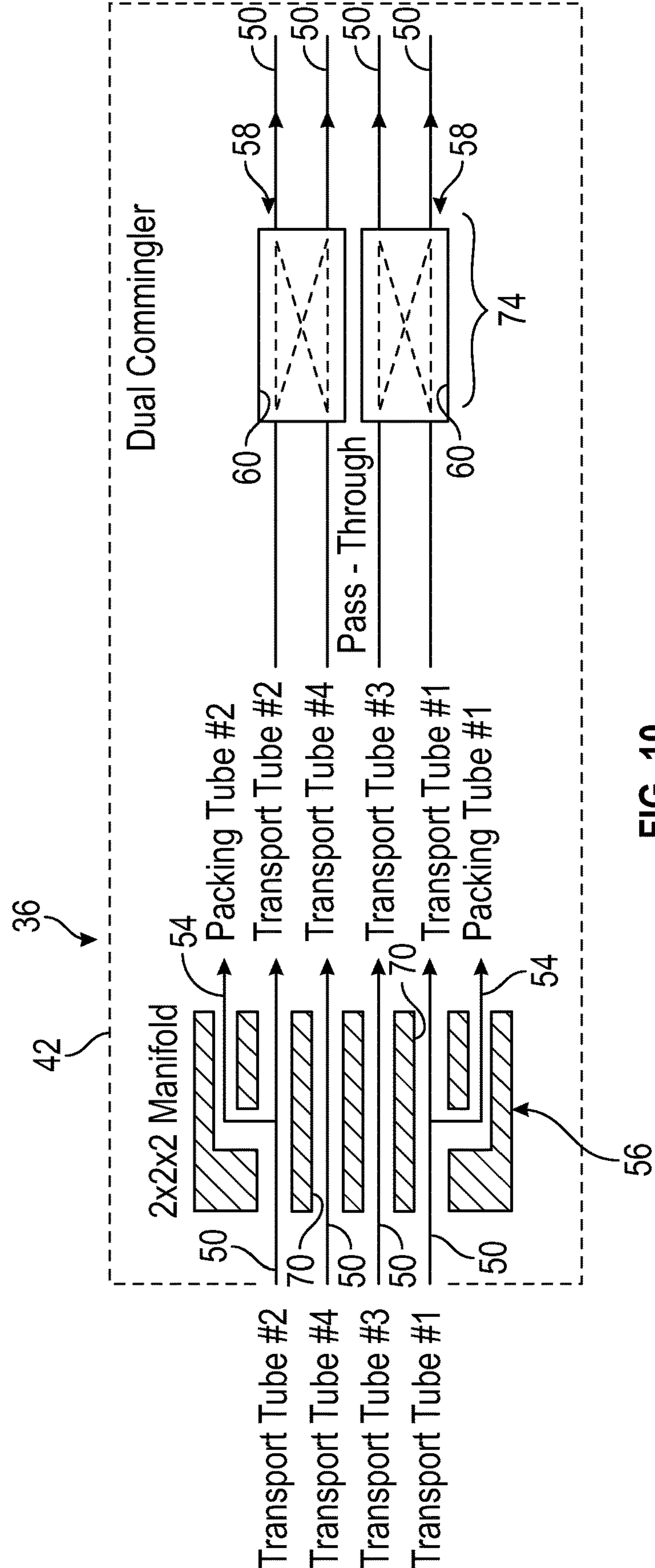


FIG. 10

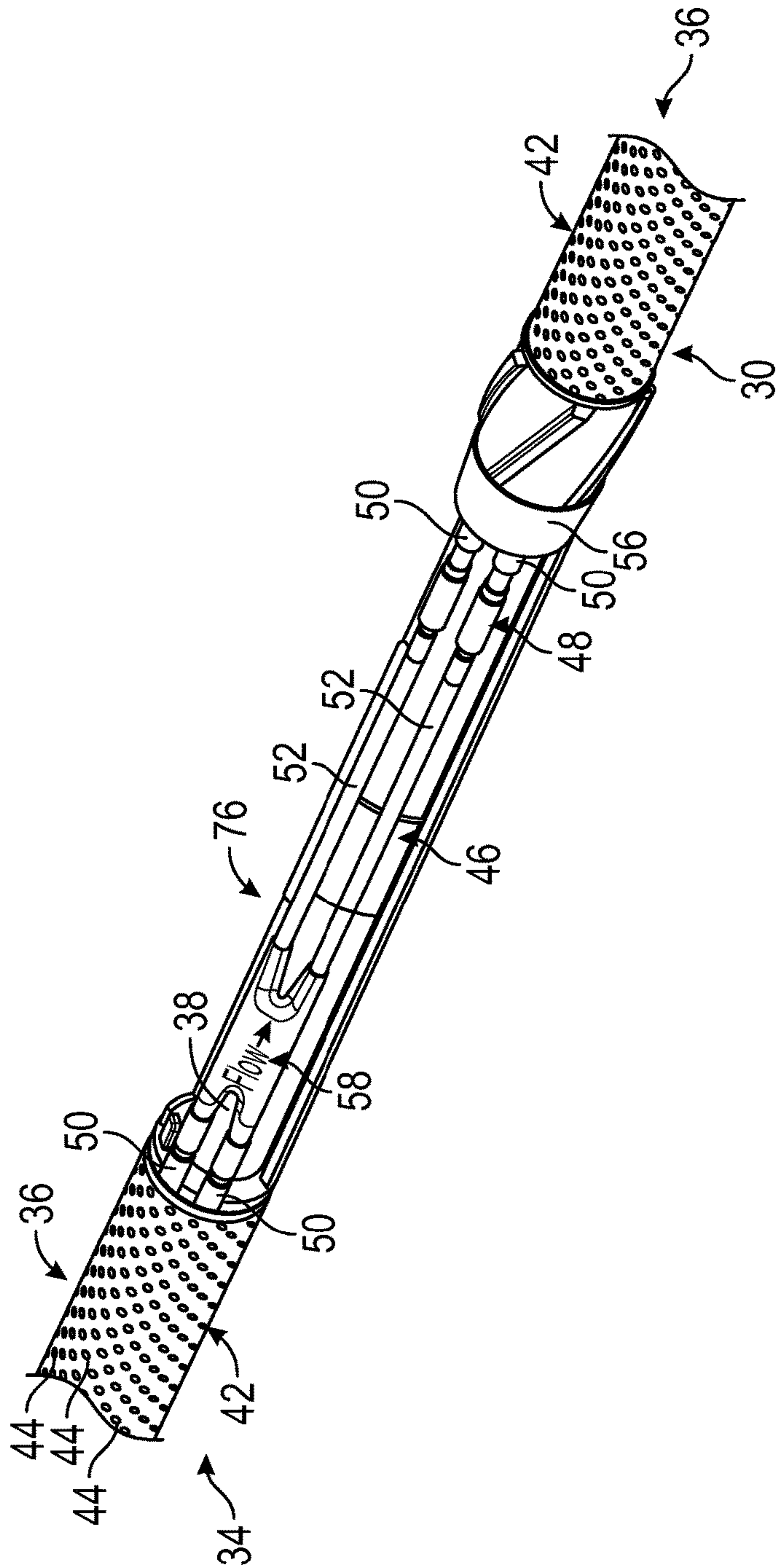


FIG. 11A

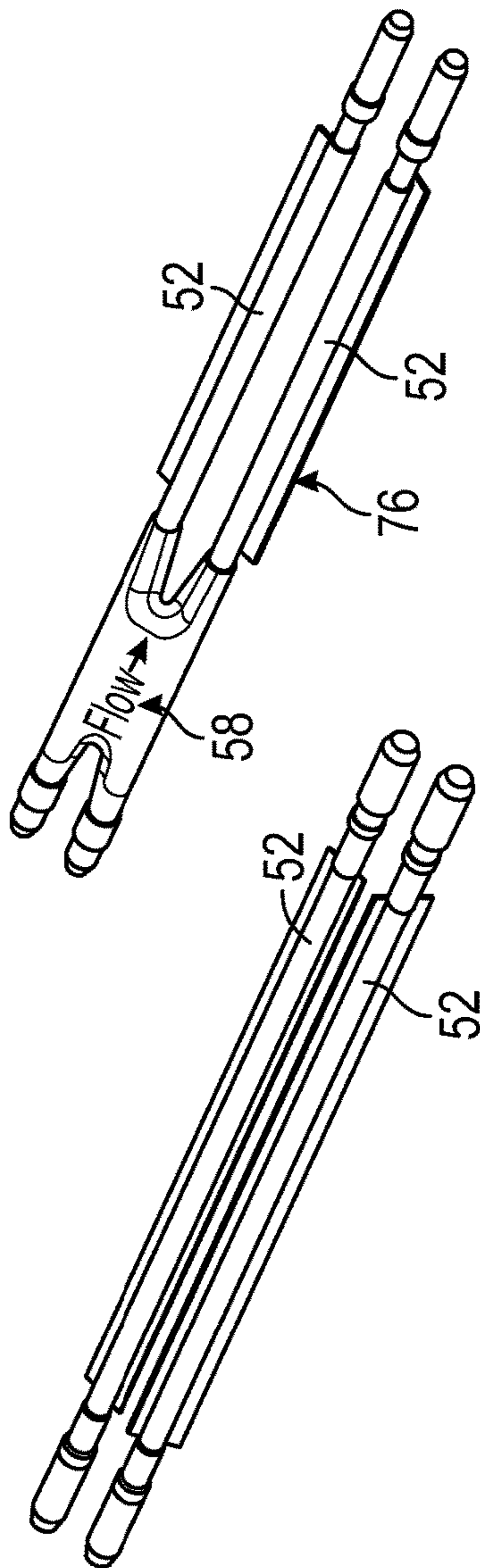


FIG. 11B

COMMINGLING FLOW BETWEEN TRANSPORT TUBES OF A MULTI-TRANSPORT TUBE SHUNT SYSTEM

CROSS-REFERENCE TO RELATED APPLICATION

[0001] The present document is based on and claims priority to U.S. Provisional Patent Application Ser. No. 62/826,235, filed Mar. 29, 2019, which is incorporated herein by reference in its entirety.

BACKGROUND

[0002] Gravel packs are used in wells for removing particulates from inflowing hydrocarbon fluids. Generally, a completion having a plurality of sand screen joints is deployed downhole in a wellbore and a gravel pack is formed around the completion. In some applications, shunt systems are used to facilitate distribution of the gravel pack. As an example, an open hole shunted gravel pack screen system may be configured with two transport tubes and two packing tubes in a 2×2 shunt system. Such a system effectively has two independent gravel packing systems in which each transport tube operates independently of the other and each transport tube has a dedicated packing tube along each screen joint. However, if one of the independent transport tubes becomes inoperable, the functionality of half the system is lost, and this increases the risk of an incomplete gravel pack.

[0003] Attempts have been made to limit this risk by commingling the transport slurry where the slurry is exposed to both the transport tubes and packing tubes along each sand screen joint. Such systems utilize concentric shunt systems having annular commingling volumes, which accommodate this mixing at the interface between transport tubes and packing tubes. However, the commingling of slurry at this interface between transport tubes and packing tubes may be undesirable in a variety of applications.

SUMMARY

[0004] In general, a system and methodology are provided for facilitating gravel packing along a borehole. According to an embodiment, a shunt system is positioned along a sand screen system. The shunt system comprises a plurality of transport tubes and a plurality of packing tubes. A manifold is coupled to the plurality of transport tubes and to the plurality of packing tubes at a corresponding sand screen joint of the sand screen system. The manifold serves to separate a portion of the gravel slurry flowing through the plurality of transport tubes and to direct the portion into the corresponding packing tubes. Additionally, a commingler is positioned along the plurality of transport tubes at a location separate from the manifold. The commingler has an internal chamber where gravel slurry is received from uphole transport tube sections and is commingled before flowing into downhole transport tube sections.

[0005] However, many modifications are possible without materially departing from the teachings of this disclosure. Accordingly, such modifications are intended to be included within the scope of this disclosure as defined in the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] Certain embodiments of the disclosure will hereafter be described with reference to the accompanying

drawings, wherein like reference numerals denote like elements. It should be understood, however, that the accompanying figures illustrate the various implementations described herein and are not meant to limit the scope of various technologies described herein, and:

[0007] FIG. 1 is an orthogonal view of a well system having a sand screen system combined with a shunt system, according to an embodiment of the disclosure;

[0008] FIG. 2 is an illustration similar to that of FIG. 1 but showing cutaway portions, according to an embodiment of the disclosure;

[0009] FIG. 3 is an illustration of a portion of the well system showing an example of a commingler disposed along transport tubes, according to an embodiment of the disclosure;

[0010] FIG. 4 is a schematic illustration of a sand screen system having a plurality of sand screen joints combined with an example of a shunt system, according to an embodiment of the disclosure;

[0011] FIG. 5 is a schematic illustration of an example of a manifold combined with a commingler, according to an embodiment of the disclosure;

[0012] FIG. 6 is a schematic illustration of a sand screen system having a plurality of sand screen joints combined with another example of a shunt system, according to an embodiment of the disclosure;

[0013] FIG. 7 is a schematic illustration of another example of a shunt system, according to an embodiment of the disclosure;

[0014] FIG. 8 is a schematic illustration of another example of a shunt system, according to an embodiment of the disclosure;

[0015] FIG. 9 is a schematic illustration of a sand screen system having a plurality of sand screen joints combined with another example of a shunt system, according to an embodiment of the disclosure;

[0016] FIG. 10 is a schematic illustration of an example of a manifold combined with a dual commingler, according to an embodiment of the disclosure;

[0017] FIG. 11A is an orthogonal view of a well system having a sand screen system combined with a shunt system, according to another embodiment of the disclosure; and

[0018] FIG. 11B is a comparison of jumper tubes shown in the system of FIG. 1 and a conjoined commingled jumper shown in the system of FIG. 11A, according to one or more embodiments of the present disclosure.

DETAILED DESCRIPTION

[0019] In the following description, numerous details are set forth to provide an understanding of some embodiments of the present disclosure. However, it will be understood by those of ordinary skill in the art that the system and/or methodology may be practiced without these details and that numerous variations or modifications from the described embodiments may be possible.

[0020] The disclosure herein generally involves a system and methodology to facilitate formation of gravel packs in wellbores and thus the subsequent improved production of well fluids. According to an embodiment, a system and methodology are provided for facilitating gravel packing along a borehole. A sand screen system may be constructed with a plurality of sand screen joints having screens or filters for filtering inflowing production fluid during production of

the well fluids. To facilitate the gravel packing operation, a shunt system is positioned along the sand screen system.

[0021] The shunt system may comprise a plurality of transport tubes and a plurality of packing tubes. A manifold is coupled to the plurality of transport tubes and to the plurality of packing tubes at a corresponding sand screen joint of the sand screen system. The manifold serves to separate a portion of the gravel slurry flowing through the plurality of transport tubes and to direct the portion into the corresponding packing tubes. In some embodiments, a manifold may be positioned along each sand screen joint such that the corresponding packing tubes are able to ensure proper gravel packing along the annulus surrounding each sand screen joint. Additionally, a commingler is positioned along the plurality of transport tubes at a location separate from the manifold. The commingler has an internal chamber where gravel slurry is received from uphole transport tube sections and is commingled before flowing into downhole transport tube sections. By way of example, at least one commingler may be positioned along each sand screen joint. In some embodiments, the manifold and the commingler are positioned at opposite ends of each sand screen joint.

[0022] In various applications, the commingler is positioned to commingle gravel slurry received from two or more transport tube sections without interfacing with the packing tubes. The commingler(s) may be used with a variety of shunt systems to facilitate commingling of the gravel slurry at a location separate from the manifold. By way of example, the commingler(s) may be used with 2×2 shunt systems, 3×2 shunt systems, 4×2 shunt systems, or other configurations of shunt systems. The overall configuration enables a reduction of pumping pressures and a reduction in carrier fluid leak-off during gravel packing operations.

[0023] Referring generally to FIGS. 1 and 2, an embodiment of a well system 30 is illustrated. The well system 30 may be deployed in a variety of boreholes 32, e.g. wellbores. According to the illustrated embodiment, the well system 30 comprises a sand screen system 34 having a plurality of sand screen joints 36. Depending on the application, the sand screen joints 36 may be constructed in a variety of configurations. By way of example, each sand screen joint 36 may comprise a base pipe 38 having appropriate perforations and/or inflow control devices through which production fluid may flow to an interior of the base pipe 38 during production operations. It should be noted that the perforations and/or inflow control devices also may be used to facilitate the return of carrier fluid from the gravel slurry during gravel packing operations.

[0024] Each sand screen joint 36 also may comprise a filter 40, e.g. a sand screen, positioned around each base pipe 38 to filter particulates from the inflowing well fluids before the well fluids pass through the perforations/inflow control devices of the base pipe 38. In some embodiments, a shroud 42 may be positioned around the filter 40 along each sand screen joint 36. Each shroud 42 also contains perforations 44 to accommodate fluid flow therethrough. Sequential sand screen joints 36 may be connected together via a suitable coupler 46, e.g. a box and pin end style connection.

[0025] In the embodiment illustrated, the well system 30 further comprises a shunt system 48 positioned along the sand screen system 34. By way of example, the shunt system 48 may comprise a plurality of transport tubes 50 routed along each sand screen joint 36. The transport tubes 50 of

sequential sand screen joints 36 may be coupled together in fluid communication via, for example, jumper tubes 52. At least portions of the shunt system 48 may be located radially between each filter 40 and each corresponding shroud 42.

[0026] The shunt system 48 also comprises a plurality of packing tubes 54 which may be disposed along, for example, each sand screen joint 36 to deliver a portion of the gravel slurry to the annulus surrounding the corresponding sand screen joint 36. As a gravel slurry is flowed along the transport tubes 50, a portion of that gravel slurry may be directed from the transport tubes 50 and into the corresponding packing tubes 54 via a manifold 56.

[0027] With additional reference to FIG. 3, the shunt system 48 further comprises a commingler 58 positioned along the plurality of transport tubes 50 at a location separate from the manifold 56. The commingler 58 has an internal chamber 60 where gravel slurry received from uphole transport tube sections 62 (of the plurality of transport tubes 50) is commingled before flowing into downhole transport tube sections 64 (of the plurality of transport tubes 50). The internal chamber 60 is placed in fluid communication with uphole transport tube sections 62 via inlets 66 and with downhole transport tube sections 64 via outlets 68. The internal chamber 60 provides a cavity for bringing together flow of gravel slurry from the two or more transport tubes 50 and for mixing the gravel slurry flows before redistributing the gravel slurry downstream through the commingler outlets 68. By way of example, the commingler 58 and the internal chamber 60 may be positioned on one side of the sand screen joint 36 rather than being constructed as an annular volume encircling the sand screen joint 36.

[0028] Depending on the application, the commingler 58 may be positioned at a variety of locations along the corresponding sand screen joint 36. In the example illustrated, however, the commingler 58 is positioned generally on the pin-end of the corresponding sand screen joint 36. As further illustrated schematically in FIG. 4, the commingler 58 may be positioned at the pin-end of each sand screen joint 36 so as to deliver commingled gravel slurry to the next sequential manifold 56 located on the next sequential sand screen joint 36.

[0029] In this example, the shunt system 48 comprises at least one manifold 56 and at least one commingler 58 located along each corresponding sand screen joint 36. The packing tubes 54 extend from the corresponding manifold 56 and are routed along the corresponding sand screen joint 36 to ensure delivery of gravel slurry along the surrounding annulus. As further illustrated in FIG. 5, each manifold 56 serves to separate a portion of the gravel slurry into the corresponding packing tubes 54 while directing the remainder of the gravel slurry downstream to the next sequential commingler 58.

[0030] It should be noted that addition of the commingler 58 enables the addition of one or more transport tubes 50 so as to reduce the pumping pressure utilized for a given gravel pack distance. As further illustrated in FIG. 5, the additional or secondary transport tube 50 (or additional tubes 50) is not coupled with a packing tube 54 but instead directly passes through the manifold 56 via a pass through 70. In this example, the three transport tubes 50 direct their gravel slurry into the next sequential commingler 58 for commingling within internal chamber 60.

[0031] By adding one secondary transport tube 50, as illustrated in FIGS. 5 and 6, the shunt system 48 may be

considered a 3×2 shunt system while the addition of two secondary transport tubes **50** to the 2×2 system may be considered a 4×2 shunt system. Other numbers of additional transport tubes **50** also can be added according to the parameters of a given system and/or application. In addition to reducing pumping pressure, the additional transport tubes **50** in combination with the location of the commingler **58** can greatly reduce leak-off of carrier fluid during a gravel packing operation.

[0032] Gravel slurry is generally a combination of proppant and carrier fluid; and leak-off refers to the loss of carrier fluid to the wellbore annulus without a corresponding loss of proppant. The result is an undesirable increase in proppant concentration within the gravel slurry. Leak-off occurs where nozzles **72** of the packing tubes **54** communicate to the wellbore annulus (see FIG. 7).

[0033] In a 2×2 shunt system, the distance from the manifold **56** to the first packing tube nozzle **72** is the shortest distance for leak-off. Once the annulus is gravel packed around a given sand screen joint **36**, the proppant will pack the inside of the corresponding packing tubes **54** back to the manifold **56**, thus creating resistance to leak-off. However, there is a limit to the distance downstream of the manifold **56** that the first packing tube nozzle **72** can be placed to achieve a desired gravel pack between the first packing tube nozzle **72** and the next closest nozzle **72** of the previous uphole sand screen joint **36**. The leak-off distance for the additional transport tube(s) **50** (e.g. the middle transport tube **50** labeled transport tube #3 in FIG. 7) is equivalent to the distance between the first packing tube nozzle **72** and the manifold **56** plus the distance from the manifold **56** to the corresponding commingler **58**.

[0034] It should be noted the corresponding commingler **58** may be located above the manifold **56** on, for example, the next sequential uphole sand screen joint **36**, as illustrated in FIG. 7. In other embodiments, however, the manifold **56** may be located above the corresponding commingler **58**, as illustrated in FIG. 8. Accordingly, the maximum leak-off distance achievable is one half the length of a sand screen joint **36** plus the distance to the first packing tube nozzle **72**. It should be noted that throughout this description the term “above” refers to a relative position uphole and the term “below” refers to a relative position downhole. In one or more embodiments of the present disclosure, the proximity of the commingler **58** to the manifold **56** may exhibit maximum leak-off performance if the commingler **58** is located approximately midway between two manifolds **56** of adjacent screen joints **36**.

[0035] According to an example, a sand screen joint **36** may be 38 feet in length and a first nozzle distance may be 6 feet. In this scenario, a maximum leak-off distance for the middle transport tube **50** (tube #3) would be $38/2+6=25$ feet. This increased leak-off resistance for the additional/secondary transport tubes greatly improves the system reliability especially for extended reach gravel packs, e.g. gravel packs greater than 6000 feet or even greater than 10000 feet. It should be noted the distances and sizes used in this example are provided merely for purposes of explanation and the actual distances and sizes can vary substantially.

[0036] Referring generally to FIGS. 9 and 10, another embodiment of well system **30** is illustrated. In this embodiment, the shunt system **48** is structured as a 2×2×2 shunt system, which is accomplished by installing two commingling volumes in the form of a dual commingler **74** having

two comminglers **58**. The dual commingler **74** may be located at a distance upstream or downstream of a corresponding manifold **56**, e.g. at some distance away from the interface between the transport tubes **50** and the packing tubes **54**.

[0037] The embodiment further utilizes an additional (secondary) transport tube **50** alongside each of the transport tubes **50** that would exist in a 2×2 shunt system configuration. The dual commingler **74** creates two independent gravel pack pathways and provides a secondary transport tube **50** to each primary transport tube **50**. In the illustrated arrangement, the secondary transport tube **50** has a sufficiently long leak-off path to eliminate leak-off concern, thus providing an especially useful configuration for use in extended reach gravel pack applications.

[0038] In the example illustrated, each primary transport tube **50** is coupled with a corresponding packing tube **54** while each secondary transport tube **50** passes through the manifold **56** to the corresponding commingler **58** of the dual commingler **74**. In other words, each primary transport tube **50** and its corresponding secondary transport tube **50** is placed in fluid communication with one of the comminglers **58** of the dual commingler **74** as illustrated. The secondary transport tubes **50** effectively provide additional transport tubes with long leak-off distances to ensure that two transport tubes **50** always communicate to a toe of the well.

[0039] Each commingler **58** receives gravel slurry flow from one of the primary and one of the secondary transport tubes **50** and redistributes the gravel slurry downstream into the same two transport tubes **50**. Effectively, each commingler **58** of the dual commingler **74** contributes to reducing pumping pressure during gravel packing through the shunt system **48** while homogenizing the gravel slurry in the corresponding, e.g. partnered, transport tubes **50**. If plugging occurs in a primary transport tube **50**, each commingler **58** is able to help reestablish flow of gravel slurry downstream of the plug in the blocked transport tube **50**.

[0040] Depending on the parameters of a given well application, the components and configuration of the sand screen system **34** may vary. For example, the sand screen system **34** may utilize different numbers of sand screen joints **36** connected sequentially along various types of boreholes, e.g. horizontal or otherwise deviated wellbores. Each sand screen joint **36** may utilize different types of filters, flow control devices, shrouds, and/or other components. Similarly, the shunt system **48** may comprise transport tubes **50** and packing tubes **54** of various sizes and numbers. The manifolds **56** and comminglers **58** also may be utilized along the shunt system **48** in various patterns and arrangements. The size and configuration of each manifold **56** and each commingler **58** also may vary according to the parameters of a given gravel packing and/or production operation. In some well applications, the manifold **56** and/or commingler **58** may be located on various other components such as on an intermediate pup joint located between sand screen joints. Additionally, shunt system components may be located on some sand screen joints, e.g. every other sand screen joint. For example, a commingler or comminglers **58** may be spaced out along the shunt system **48**, e.g. placed on every other sand screen joint **36**.

[0041] Referring now to FIG. 11A, an orthogonal view of a well system **30** having a sand screen system **34** combined with a shunt system **48**, according to one or more embodiments of the present disclosure is shown. As specifically

shown in FIG. 11A, the commingler 58 may be integrated into a conjoined commingled jumper 76 of the shunt system 48, according to one or more embodiments of the present disclosure. As shown in FIG. 11A, transport tubes 50 of sequential sand screen joints 36 may be coupled together in fluid communication via the conjoined commingled jumper 76, which includes a commingler 58, as previously described, integrated with two jumper tubes 52, according to one or more embodiments of the present disclosure. Further, for the sake of clarity, FIG. 11B shows a comparison of a pair of jumper tubes 52 and the conjoined commingled jumper 76, according to one or more embodiments of the present disclosure. As previously described, the pair of jumper tubes 52 may be implemented in embodiments of the present disclosure where the commingler 58 is built into the screen joint 36, and the conjoined commingled jumper 76 may be implemented in embodiments of the present disclosure where the commingler 58 is built into the jumper tubes 52. Advantageously, building the commingler 58 into the jumper tubes 52 via the conjoined commingled jumper 76 in accordance with one or more embodiments of the present disclosure provides a more affordable assembly than building the commingler 58 into the screen joint 36. Further, one or more embodiments of the present disclosure that include a conjoined commingled jumper 76 in the sand screen system 34 enjoy a smaller footprint over embodiments of the present disclosure that include a commingler 58 built into the screen joint 36. This smaller footprint may translate into more preferable storage and inventory management logistics.

[0042] Moreover, a commingler 58 may be sporadically placed in the sand screen system 34 in one or more embodiments of the present disclosure. For example, one or more sand screen joints 36 of the sand screen system 34 may not be associated with a commingler 58 at all (either in the sand screen joint 36 itself or in the associated jumper tubes 52) in one or more embodiments of the present disclosure. Indeed, one or more comminglers 58 may be spaced along the well system 30 at every sand screen joint 36, every couple of joints 36, every few joints 36, every several joints 36, every 10 joints 36, every 20 joints 36, or one commingler 58 may be positioned per zone within the completion, or several comminglers 58 may be positioned within each zone of the completion, or any number of sporadic placements. All such embodiments are contemplated and are within the scope of the present disclosure.

[0043] Although a few embodiments of the disclosure have been described in detail above, those of ordinary skill in the art will readily appreciate that many modifications are possible without materially departing from the teachings of this disclosure. Accordingly, such modifications are intended to be included within the scope of this disclosure as defined in the claims.

What is claimed is:

1. A system for use in a well, comprising:
 - a sand screen system having a plurality of sand screen joints; and
 - a shunt system positioned along the sand screen system, the shunt system comprising:
 - a plurality of transport tubes;
 - a plurality of packing tubes;
 - a plurality of jumper tubes, which fluidly couple transport tubes of sequential sand screen joints of the plurality of sand screen joints together;

- a manifold coupled to the plurality of transport tubes and to the plurality of packing tubes to separate a portion of a gravel slurry flowing through the plurality of transport tubes into the plurality of packing tubes; and
 - a commingler positioned along the plurality of transport tubes or the plurality of jumper tubes at a location separate from the manifold, the commingler having an internal chamber where gravel slurry, received from uphole transport tubes sections of the plurality of transport tubes, is commingled before flowing into downhole transport tubes sections of the plurality of transport tubes.
2. The system as recited in claim 1, wherein the commingler is located uphole relative to the manifold.
 3. The system as recited in claim 1, wherein the manifold is located uphole relative to the commingler.
 4. The system as recited in claim 1, wherein the commingler is positioned along the plurality of transport tubes, and is located on a first sand screen joint of the plurality of sand screen joints, and the manifold is located on a second sand screen joint of the plurality of sand screen joints.
 5. The system as recited in claim 1, wherein the manifold comprises a plurality of manifolds with at least one manifold positioned on each sand screen joint.
 6. The system as recited in claim 5, wherein the commingler comprises a plurality of comminglers with at least one commingler positioned on at least one sand screen joint.
 7. The system as recited in claim 6, wherein a dual commingler is positioned along at least one sand screen joint.
 8. The system as recited in claim 1, wherein the shunt system further comprises a secondary transport tube which passes through the manifold.
 9. The system as recited in claim 1, wherein the shunt system further comprises a plurality of secondary transport tubes which pass through the manifold.
 10. The system as recited in claim 1, wherein the commingler is positioned along the plurality of jumper tubes in a conjoined commingled jumper.
 11. A method, comprising:
 - positioning a shunt system along a sand screen system;
 - deploying the shunt system and the sand screen system into a borehole;
 - depositing a gravel slurry along the sand screen system via a plurality of packing tubes coupled with a plurality of gravel slurry transport tubes via a manifold; and
 - commingling gravel slurry, flowing through the plurality of gravel slurry transport tubes, within a commingler located along the sand screen system at a position separated from the manifold.
 12. The method as recited in claim 11, wherein commingling comprises commingling gravel slurry received from two gravel slurry transport tubes.
 13. The method as recited in claim 11, further comprising providing the sand screen system with a plurality of sand screen joints connected sequentially.
 14. The method as recited in claim 13, wherein positioning comprises positioning at least one manifold along each sand screen joint, and at least one commingler along at least one sand screen joint.
 15. The method as recited in claim 14, further comprising:
 - providing the shunt system with additional transport tubes at each sand screen joint; and
 - passing the additional transport

tubes through the manifold at each sand screen joint without placing the additional transport tubes in fluid communication with the packing tubes.

16. The method as recited in claim **15**, wherein positioning comprises positioning two comminglers at each sand screen joint and connecting at least one gravel slurry transport tube and at least one additional transport tube to each commingler of the two comminglers.

17. The method as recited in claim **11**, further comprising arranging the shunt system as a 2×2 shunt system.

18. The method as recited in claim **11**, further comprising arranging the shunt system as a 3×2 shunt system.

19. The method as recited in claim **11**, further comprising arranging the shunt system as a 4×2 shunt system.

20. The method as recited in claim **11**, further comprising: providing the sand screen system with a plurality of sand screen joints connected sequentially; and

providing the sand screen system with a plurality of jumper tubes, which fluidly couple the transport tubes of sequential sand screen joints together,

wherein positioning comprises positioning at least one commingler along the plurality of jumper tubes in a conjoined commingled jumper.

21. A system, comprising:

a shunt system for use in facilitating gravel packing of a wellbore, the shunt system comprising:

a plurality of transport tubes;

a plurality of packing tubes;

a manifold coupled to the plurality of transport tubes and to the plurality of packing tubes to provide an interface for separating a portion of a gravel slurry flowing through the plurality of transport tubes into the plurality of packing tubes; and

a commingler separated from the manifold and coupled with the plurality of transport tubes to provide commingling of gravel slurry, flowing along the plurality of transport tubes, independently of the interface for separating the portion of gravel slurry into the plurality of packing tubes.

* * * * *