[0065] **FIG. 21**(*a*) is a SEM photograph of a plan view of the inner structure of the fine channel used for Examples 4 and 7 and **FIG. 21**(*b*) is a diagram showing the inner structure of the fine channel used for Examples 4 and 7; and

[0066] **FIG. 22**(*a*) is a diagram showing the inner structure of the fine channel used for Examples 8, 9 and 10 and **FIG. 22**(*b*) shows the structure of the fine channel device used for Examples 7, 8, 9 and 10.

[0067] In the following, preferred embodiments of the fine channel device of the present invention will be described in detail with reference to the drawings.

[0068] In the present invention, a plurality of partition walls are provided with intervals in the fine channel. With respect to the positional relation between a partition wall and the inlet channels and between a partition wall and the branch portion of the outlet channels, partition walls **22** may be formed at positions apart from the confluent portion **37** and the branch portion **4** as shown in **FIG. 8**(*a*). However, it is preferable as shown in **FIG. 8**(*b*) that the partition wall formed closest to the branch portion of the fine channel is connected to the branch portion. With such, two adjacent flows of fluid can be separated smoothly without causing mutual contamination of the two kinds of fluid. As an embodiment of the arrangement of the partition walls, there is at least one absent location of partition wall except the vicinity **42** of the confluent portion **37** and the vicinity **43** of the branch portion **4** of the fine channel. In a preferable embodiment, longer partition walls are formed in the vicinity of the confluent portion and the branch portion in **FIG. 8**(*c*), or partition walls are formed so as to continue from the confluent portion and the branch portion as shown in **FIG. 8**(*d*). Thus, by providing a partition wall in the vicinity of the confluent portion, the mixing between adjacent flows of fluid by mutual contact can be minimized, and by providing a partition wall in the vicinity of the branch portion, the mutual contamination between adjacent flows of fluid caused by separating suddenly the adjacent flows of fluid can be minimized. The arrangement that there is at least one absent location of partition wall except the vicinity of the branch portion of the outlet channels means that at least two partition walls are formed with an interval in a flowing direction of fluid.

[0069] The formation of the partition walls can be carried out at the same time of shaping the fine channel by using a technique of etching, mechanically processing, molding or the like without using a large number of processes as used in a channel modification method. Accordingly, the time and cost for preparing the fine channel can substantially be reduced in comparison with the channel modification method. In particular, when the fine channel device of the present invention is prepared by molding a resin, ceramics or glass, the maximum effect of reducing the time and cost for preparing the fine channel can be obtained. Further, since the above-mentioned advantages and effects can be obtained by the specified shape of the fine channel formed in the fine channel device of the present invention, the fine channel device with the fine channel providing prolonged services, i.e., a semipermanent service life can be realized, in comparison with the fine channel by the channel modification method.

[0070] The plurality of partition walls may have the same length or different length in a flowing direction of fluid. Further, distances between adjacent partition walls may be the same or different in a flowing direction of fluid. Further, it is desirable that as shown in **FIG. 7**, when a channel **19** has a shape other than the straight portion, a portion of a partition wall **22** extends continuously from the vicinity of a portion **41** originating a non-straight portion of fine channel to the vicinity **41** of a portion ending the non-straight portion of fine channel. Here, the vicinity means a distance of, preferably, 5,000 μm or less, however, it should not be limited thereto. For example, when two kinds of fluid are supplied to a curved fine channel, a kind of fluid flowing an inner side of the curved fine channel is forced to push the other kind of fluid flowing at an outer side due to a centrifugal force applicable to the fluid. As a result, the fluid flowing an inner side is contaminated with the fluid flowing an outer side in the curved fine channel. However, such phenomenon of contamination of fluid can be prevented by constituting the partition walls as described above.

[0071] **FIG. 6**(*a*) shows an arrangement of partition walls as an embodiment of the present invention, based on the above-mentioned way of thinking. A plurality of partition walls **22** are formed with intervals in a flowing direction of fluid **27** in the fine channel **19** at or the vicinity of a fluid boundary **3** formed by at least two laminar flows of fluid. The height **24** of each partition walls is not more than the depth **17** of the fine channel. Accordingly, adjacent flows of fluid contact mutually at an absent portion of partition wall and they are separated from each other at a partition wall. Thus, by forming a plurality of partition walls with intervals in a flowing direction of fluid, the contact and separation of fluid are repeated. Accordingly, a positional variation of the fluid boundary due to a change of flow rate per time caused by a liquid supply pump can be minimized, and a wrap-around phenomenon **15** in **FIG. 3**(*c*) due to a difference of affinity between the inner wall of the fine channel and the supplied fluid can be prevented, and each flow of fluid can be discharged through each outlet port of fine channel without causing the mixing of fluid. Accordingly, the mixing or a chemical reaction of fluid or solvent extraction by the diffusion of molecules between adjacent flows of fluid in mutually contact in the fine channel can be stopped completely at the fluid outlet ports. Further, it is possible to reuse again the fluid supplied once to the fine channel.

[0072] Positions of the partition walls with respect to a width direction of the fine channel are not in particular limited, and the positions may be changed depending on an amount of fluid to be supplied, a flow rate or natures of solution such as viscosity. It is considered that the position of the fluid boundary changes gradually in a flowing direction of fluid due to changes of viscosities of adjacent flows of fluid during operations of the mixing or a chemical reaction of fluid or solvent extraction. Even in this case, the change of viscosities can previously be estimated by using simulation or the like, and according to the simulation, partition walls can be formed according to the estimated position of fluid boundary. On the other hand, when partition walls are formed at or near the center with respect to a width direction of the fine channel, and when two kinds of fluid having different viscosities are supplied, the fluid boundary can be determined at or near the partition walls if these kinds of fluid are supplied flow rates in inverse proportion to the viscosities of fluid from Formula 7. Although the thickness **23** of the partition walls **22** is not in particular limited, it is preferable that it is about 3-10% of the width of the fine