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⑰ **A liquid mixing extractor.**

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EP 0 150 738 B1

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Courier Press, Leamington Spa, England.

Description

The invention relates to a liquid mixing extractor according to the preamble of claim 1.

Such a liquid mixing extractor is known from EP—A—57 465. After use of this extractor, mixed liquid, like an adhesive material, remains in the nozzle so that this nozzle cannot be used again, since the remaining material clogs up the nozzle.

It is the object of the invention to provide a liquid mixing extractor of the aforesaid kind, which can be easily cleaned and repeatedly used.

This object is achieved by the features in the characterizing part of claim 1. After use, the two sections of the mixing part can be opened so as to easily remove remaining liquid or adhesive so that the extractor with the nozzle can be used again.

Examples of the invention will be described in more detail in connection with the drawings.

Fig. 1 as a plan view of an embodiment of the invention;

Fig. 2 is a side view of the same;

Fig. 3A, Fig. 3B, Fig. 3C and Fig. 3D show shapes of end portions of agitating bars, respectively;

Figs. 4 and 5 show mechanisms for reciprocating agitating bars;

Fig. 6 shows an agitating bar with a screw;

Figs. 7 and 8 show mechanisms for mixing the agents with heating devices;

Figs. 9 and 10 show a mechanism for mixing the agents with a zigzag plate;

Fig. 11 shows a cross sectional view of the product made through the above mechanism;

Fig. 12 shows another agitating bar rotation mechanism;

Fig. 13 shows the other agitating bar rotation mechanism; and,

Fig. 14 shows the mixing nozzle.

The liquid mixing extractor is equipped with a plurality of cylinders in parallel, and the front ends of these cylinders are united into one body at a mixing nozzle having an agitating function, whereby a plurality of the liquid agents are pressed out in complete mixture.

Figs. 1 to 3 illustrate an embodiment where the liquid agents are agitated and mixed by an agitating bar to be rotated by a motor. The cylinders 1, 1 herein are double into which double pistons 2, 2 are inserted from the rear side of the shown mixing extractor, and are connected via a thumb plate 3.

At the front end of the cylinders, a mixing nozzle 4 is provided. As seen in Figs. 6 and 8, the nozzle 4 communicates with flow passages from the cylinders. The agitating bar 6 goes into the mixing nozzle 4 at its end portion. As end portions of the agitating bars, various kinds will be assumed, and Figs. 3A to D show some examples thereof.

Fig. 3A shows that lots of bar like projections 7 are radially extended from the agitating bar 6. Fig. 3B shows that plate like projections 8 are substituted for the bar like ones 7. Fig. 3C show that the agitating bar 6 is formed in wave. Fig. 3D shows

that the agitating bar 6 is formed in crank shape.

The motor 5 has a power source of a cell 9, and it is preferable that the motor 5 and the cell 9 are, as seen in Fig. 2, positioned above the cylinders 1, 1.

Figs. 4 and 5 illustrate mechanisms of reciprocating the agitating bar 6. Fig. 4 shows a cam 10 to be rotated by a motor 11. As the cam 10, such as a cylindrical cam is preferable. The agitating bar 6 is secured by mounting on a coil spring 12 between the cylinders 1, 1. Therefore, the agitating bar 6 is pushed in accompany of rotation of the cam 10 and returned by the coil spring 12, so that it is reciprocated laterally.

Fig. 5 shows that a magnet 13 or an iron piece is secured on the agitating bar 6 and held between a couple of magnets, 14, 15, and either plus or minus of the magnets 14, 15 is successively broken, so that the agitating bar 6 is moved. The end points of the agitating bar 6 of Figs. 4 and 5 are shaped in the same as said above.

Fig. 6 shows an embodiment having a screw 17 to be rotated by the motor 16 at a junction of the mixing nozzle 4.

Fig. 7 shows an embodiment covered with a heater 18 around an outer circumference of the mixing nozzle 4. This heater 18 heats the liquids flowing within the mixing nozzle 4. The mixing nozzle 4 is preferably made of such as copper or the like of high heat conductivity. The heater 18 may be made of a resistor as nichrome wire. If a ceramic heater is used, a desired temperature may be easily obtained without a control circuit. When the liquid agents are heated for mixture, the viscosity is lowered so that the fluidity is increased and workability is heightened such as mixture, defoam and coating. In addition, since a chemical reaction is accelerated, time for solidification is saved.

Fig. 8 shows an embodiment positioning a spiral heater 19 of a cartridge type in a junction of the mixing nozzle 4. The adhesive within the mixing nozzle 4 is heated by the heater 19 and follows the spiral. The heating effect is as said above.

Fig. 9 shows an embodiment comprising a zigzag plate 20 to be positioned at a junction of the mixing nozzle 4. Fig. 10 illustrates mixing thereby. When the liquid agents are supplied at both sides A and B of the zigzag plate 20, the liquid agents are partitioned by the zigzag 20 as seen in Fig. 11 and taken out in lamination.

Fig. 12 shows an embodiment rotating the agitating bar 6 by pushing a piston 2. The cylinder 1 is provided with a flange 22 defined with a female screw 21 into which a screw shaft 23 is screwed, the screw shaft 23 being held with a thumb plate 3 at its rear side and provided with a driving gear 24 at its front end to be geared with a gear 25 fixed to the agitating bar 6 pivoted on the cylinder 1. The end point of the agitating bar 6 is as mentioned above and positioned within the mixing nozzle 4. When the piston 2 is pushed, the screw shaft 23 is pushed, but since the screw shaft 23 is in mesh with the female screw 21, it is

rotated. Then the agitating bar 6 is rotated, since the driving gear 24 engages the gear 25.

Fig. 13 shows an embodiment having a handle 26 on the cylinder 1. The handle 26 and the agitating bar 6 are connected via bevel gears 27, 28. If the handle 26 is rotated, the agitating bar 6 is driven.

Fig. 14 shows the mixing part of the nozzle 4 which is divided into two longitudinal sections, and each of them is provided with weirs 29 in obliquity. The adhesives change the flowing direction by means of the weirs 29, and are agitated and mixed. The remaining adhesive solidified after use is easily removed by opening the mixing part.

In each of the above mentioned embodiments, the adhesive is charged into the cartridge and set in the cylinder 1, or it is directly poured into the cylinder.

The agitating and mixing mechanism is furnished in the mixing nozzle, and a plurality of the liquid agents may be exactly agitated and mixed.

Preferred embodiments are a device, wherein the agitating bar is moved reciprocally by means of plus or minus function of a magnet.

a device wherein agitation is effected by the agitating bar rotated in accompany of pressing of a piston.

a device wherein the mixing nozzle is provided with a heater.

a device wherein the heater encircles the mixing nozzle therearound.

a device wherein the heater is a spiral heater of a cartridge type extending toward the mixing nozzle.

a device wherein a zigzag plate is provided within the mixing nozzle.

a device wherein a position of providing mixing elements of the mixing nozzle is openable.

a device wherein the agitating bar is provided at its front end with a screw to be rotated by a motor.

Claims

1. A liquid mixing extractor, having a nozzle (4) in which mixing elements (29) are provided, characterized in that the nozzle (4) is provided with an openable mixing part divided into longitudinal sections, each section being provided with weirs (29) which are arranged obliquely with respect to the longitudinal axis of the nozzle.

2. A liquid mixing extractor according to claim 1, wherein a plurality of cylinders in parallel is provided, the front ends of which are united into one body within the nozzle (4).

3. A liquid mixing extractor according to claim 2, wherein agitation of the contents of the nozzle (4) is effected by an agitating bar (6) rotated by a motor (5).

4. A liquid mixing extractor according to claim 3, wherein the agitating bar (6) is provided with a plurality of bar-like projections (7) extending radially with respect to a rotating shaft.

5. A liquid mixing extractor according to claim

3, wherein a motor (5) is positioned above the cylinders provided in parallel.

6. A liquid mixing extractor according to claim 5, wherein the motor (5) is positioned between the cylinders provided in parallel.

Patentansprüche

1. Misch- und Abgabegerät für Flüssigkeiten mit einer Düse (4), in der Mischelemente (29) angeordnet sind, dadurch gekennzeichnet, daß die Düse (4) mit einem zu öffnenden Mischabschnitt versehen ist, der in zwei Längsabschnitte unterteilt ist, wobei jeder Längsabschnitt mit Wehrelementen (29) versehen ist, die schräg bezüglich der Längsachse der Düse angeordnet sind.

2. Misch- und Abgabegerät für Flüssigkeiten nach Anspruch 1, wobei eine Anzahl von Zylindern parallel zueinander vorgesehen ist, deren vordere Enden zu einem Körper innerhalb der Düse (4) vereinigt sind.

3. Misch- und Abgabegerät für Flüssigkeiten nach Anspruch 2, wobei eine Verrührung des Inhalts der Düse (4) durch eine Rührstange (6) bewirkt wird, die durch einen Motor (5) in Drehung versetzt wird.

4. Misch- und Abgabegerät für Flüssigkeiten nach Anspruch 3, wobei die Rührstange (6) mit einer Anzahl von stangenähnlichen Vorsprüngen (7) versehen ist, die sich radial bezüglich einer Drehwelle erstrecken.

5. Misch- und Abgabegerät für Flüssigkeiten nach Anspruch 3, wobei ein Motor (5) über den parallel zueinander liegenden Zylindern angeordnet ist.

6. Misch- und Abgabegerät für Flüssigkeiten nach Anspruch 5, wobei der Motor (5) zwischen den parallel zueinander liegenden Zylindern angeordnet ist.

Revendications

1. Extracteur-mélangeur de liquide, comportant une buse (4) dans laquelle sont prévus de organes de mélange (29), caractérisé en ce que la buse (4) est pourvue d'une partie mélangeuse pouvant être ouverte et divisée en sections longitudinales, chaque section étant pourvue de chicanes (29) disposées en oblique par rapport à l'axe longitudinal de la buse.

2. Extracteur-mélangeur de liquide selon la revendication 1, caractérise en ce que sont prévus plusieurs cylindres en parallèle, dont les extrémités frontales se rejoignent pour constituer un corps à l'intérieur de la buse (4).

3. Extracteur-mélangeur de liquide selon la revendication 2, caractérisé en ce qu'il comporte une barre agitatrice (6) entraînée en rotation par un moteur (5) pour produire l'agitation du contenu de la buse (4).

4. Extracteur-mélangeur de liquide selon la revendication 3, caractérisé en ce que la barre agitatrice (6) est pourvu de plusieurs saillies (7) en forme de barres s'étendant radialement par rapport à un axe rotatif.

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5. Extracteur-mélangeur de liquide selon la revendication 3, caractérise en ce que le moteur (5) est disposé au-dessus des cylindres disposés en parallèle.

6. Extracteur-mélangeur de liquide selon la revendication 5, caractérisé en ce que moteur (5) est disposé entre les cylindres disposés en parallèle.

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4

FIG. 1

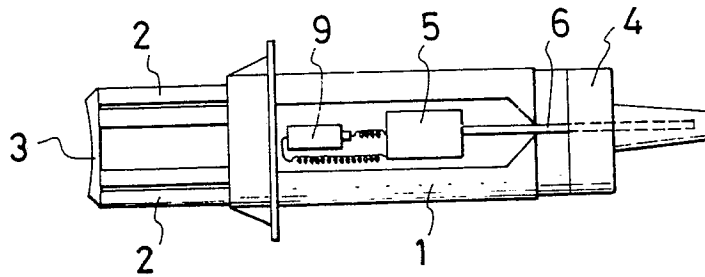


FIG. 2

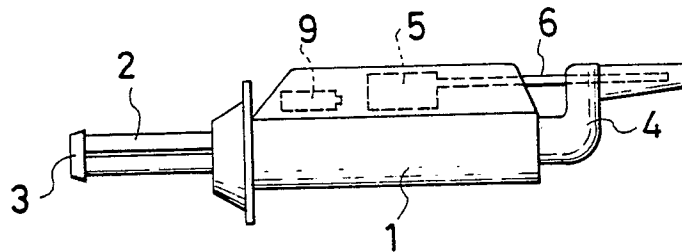


FIG. 3A

FIG. 3B

FIG. 3C

FIG. 3D

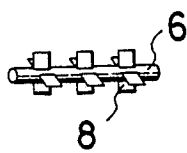
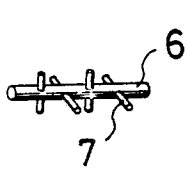


FIG. 4

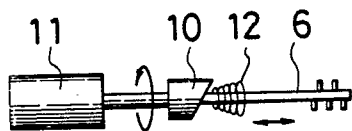


FIG. 5

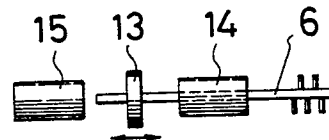


FIG. 6

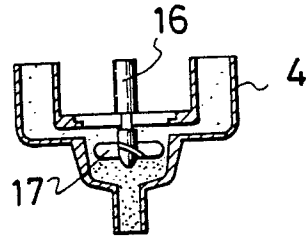


FIG. 7

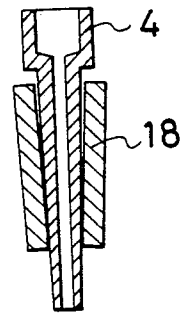


FIG. 8

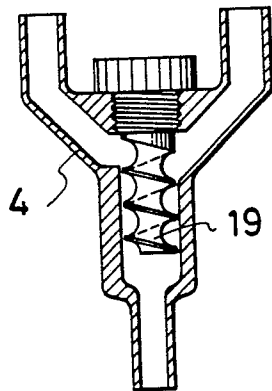


FIG. 9

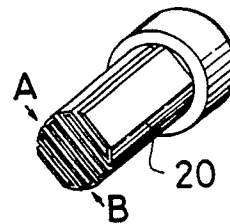


FIG. 10

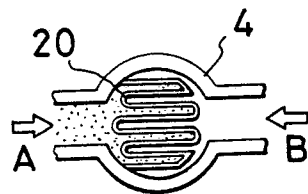


FIG. 11



FIG.12

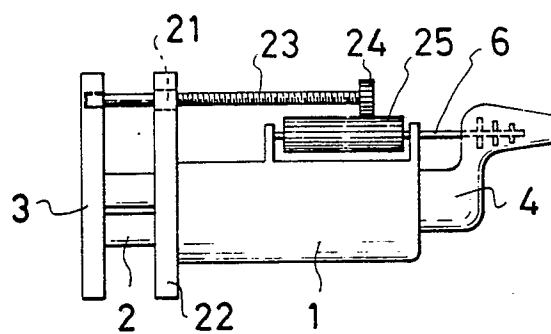


FIG.13

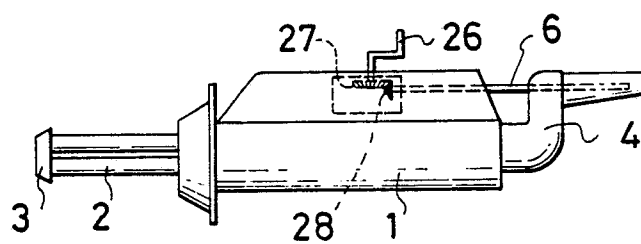


FIG.14

