(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 2 058 056 A2**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
13.05.2009 Bulletin 2009/20

(51) Int Cl.:
B05C 5/02 *(2006.01)* *B05C 5/00* *(2006.01)*

(21) Application number: **08250534.8**

(22) Date of filing: **14.02.2008**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MT NL NO PL PT RO SE SI SK TR
Designated Extension States:
AL BA MK RS

(30) Priority: **06.11.2007 ES 200702912**

(71) Applicant: **BARBERAN LATORRE, Jesus Francisco**
08860 Castelldefels Barcelona (ES)

(72) Inventor: **BARBERAN LATORRE, Jesus Francisco**
08860 Castelldefels Barcelona (ES)

(74) Representative: **Evens, Paul Jonathan et al**
Maguire Boss
24 East Street
St. Ives
Cambridgeshire PE27 5PD (GB)

(54) **Improvements to die heads with a slot outlet for applying hot-melt products**

(57) Improvements to die heads with a slot outlet for applying hot-melt products, of the type in which two dimensioning means (2 and 3) are arranged in the outlet slot (1) for the product which are capable of being moved closer together or further apart to adjust the width of the outlet, having a central passage (10) for feeding the product to the outlet and passages (11 and 12) via which the product is fed to the same outlet through each of the mechanisms (4 and 5) for displacing the dimensioning means (2 and 3), in such a way that said passages (11 and 12) move together with the dimensioning means (2 and 3), always keeping the product feed inlets within the part of the outlet selected for application.

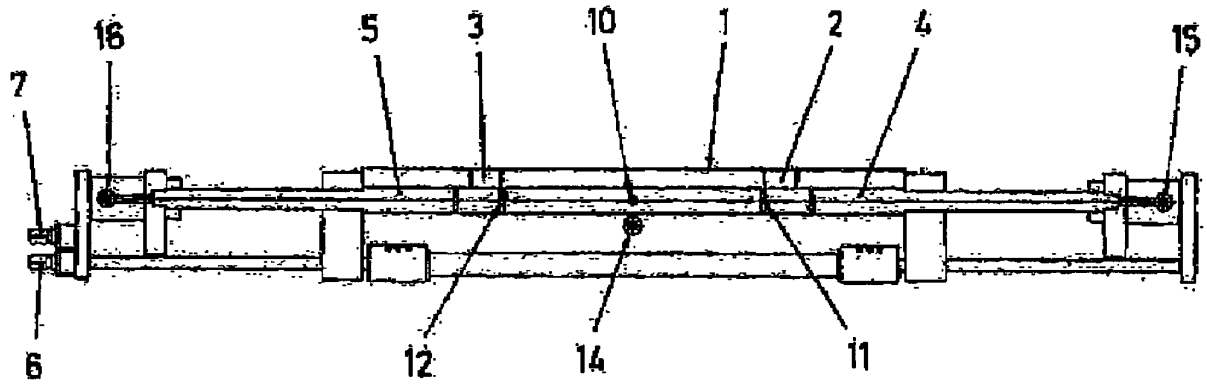

Fig. 3

EP 2 058 056 A2

Description

Field of the invention

[0001] The present invention relates to die heads for applying hot-melt adhesives or similar products and proposes a number of improvements which affect in particular adjustment of the width over which the product is applied with said die heads and opening up and closing off of the product supply.

Background of the invention

[0002] When applying coating materials using hot-melt adhesives, such as reactive polyurethane or similar products, in the event of continuous, uniform application of the product to the application material being required, use is made of die heads with lips, in which the molten product enters the die head through a flexible, heated tube from a supply unit that melts the product and pumps it towards the die head.

[0003] In this type of die head, to achieve continuous application onto the application surface the product is discharged via a slot of a length equal to the width of the surface on which the product is deposited.

[0004] So as to be able to change the width of the applied strip of product rapidly when using this method, systems are known, such as the one in patent ES 2211294 belonging to the same proprietor as the present invention, which take the form of two dimensioning means disposed within the outlet slot for the product to be applied, said dimensioning means being individually displaceable by means of a number of independent controls, the product to be applied thereby being restricted in the outlet slot to the space enclosed between the two dimensioning means, so defining the width of the applied strip.

[0005] This system, though convenient and reliable as regards adjustment of the width of the applied strip, nonetheless has the disadvantage that, with supply of the product to the outlet slot taking place via the middle zone of said slot, the larger the application widths required, the larger the number of conduits which have to be provided for supplying the product to said outlet slot, between the limiting dimensioning means, the minimum application width each time becoming larger as a function of the product supply conduits distributed over the slot, since the dimensioning means have to remain in a position further apart than the last conduits on both sides.

[0006] One way of avoiding this problem is to make the passages for supplying the product to the outlet slot mutually independent using independent valves, so as to be able to close the supply passages situated in the endmost positions as the width of the applied strip and, consequently, the distance between the dimensioning means, decreases.

[0007] This system has for its part the disadvantage of complex operation, since it is necessary to coordinate, mechanically and electrically, variation of the distance between the dimensioning means and opening or closing of the passages for supplying the product to the outlet slot. Moreover, residues of the product always remain in the passages supplying the outlet slot, which may lead to leaks behind the dimensioning means from the closed passages which are outside said dimensioning means.

Object of the invention

[0008] The invention proposes a number of improvements to the above-mentioned die heads with a slot outlet for applying hot-melt products, which make possible a rapid system for changing the application width, together with supply of the product to the outlet slot, which makes it possible to set application widths of any size in a wholly efficient way.

[0009] According to the proposed improvements, in connection with the product outlet slot one passage for supplying the product to said slot is arranged in a central position and another two passages are provided for supplying the product from the two ends through the adjustment system which the mobile dimensioning means comprise, in such a way that said end supply passages vary their position together with the dimensioning means which set the application width.

[0010] In this way, product flow from the supply passages to the outlet slot always occurs within the zone of the slot which is set as the application outlet, which makes possible satisfactory distribution of the flow of product through the outlet slot whatever the size of the application width, at the same time preventing leaks of the product behind the dimensioning means in the zones which do not correspond to the application width.

[0011] In connection with the passages for supplying the product to the outlet slot, there are additionally provided independent opening and closing valves, so allowing opening and closing of the passages at the ends as a function of the application width, in such a way that application may be effected through very small widths to large widths while product flow through the outlet slot is kept uniform.

[0012] On the other hand, the mechanisms for moving the dimensioning means for adjusting the application width, through which pass the passages for supplying the product from the ends, include heating elements which provide the temperature necessary for keeping the product fluid as it travels through said mechanisms, so enabling the die head to be fully effective in applying the product.

[0013] The improvements provided by the invention therefore result in a die head with very advantageous features, which is suitable and preferable for the indicated function of applying hot-melt products where intended.

Description of the drawings

[0014]

Figure 1 is a schematic representation of a known solution for a die head applicator for hot-melt products, for a small application width.

Figure 2 is a schematic representation of a known solution for a die head applicator for hot-melt products, for a large application width.

Figure 3 is a schematic representation of a solution for a die head applicator for hot-melt products as provided by the invention.

Figure 4 is an enlarged detail view of half of the die head of the previous figure, with the mechanism for displacing the corresponding dimensioning means shown in cross-section.

Figure 5 is a representation of the die head of Figure 3, in an arrangement for applying the product in a narrow strip.

Figure 6 is a representation of the same die head of Figure 3, in an arrangement for applying the product in a wide strip.

Detailed description of the invention

[0015] The invention relates to a number of improvements to die heads for applying hot-melt products, of the type as illustrated in Figure 1, in which the product to be applied is discharged through a slot (1), in which are arranged two dimensioning means (2 and 3), between which is defined a portion of the slot (1) through which the product is discharged, the dimensioning means (2 and 3) each being associated with displacing mechanisms (4 and 5), which are actuatable by means of respective independent controls (6 and 7) so as to set the width of the strip (8) of product applied by moving the dimensioning means (2 and 3) closer together or further apart.

[0016] Feed of the product to the slot portion (1) forming the application outlet takes place via supply passages (9), these conventionally taking the form of a single supply passage (9) situated in the middle zone of the slot (1), as in Figure 1, for applying the product in narrow strips (8), or of a plurality of supply passages (9) distributed all along the slot (1), as in Figure 2, for applying the product in wide strips (8), independent valves being used in this case to open solely those supply passages (9) which correspond to the slot portion (1) forming the product application outlet.

[0017] According to the invention (Figure 3), in connection with the outlet slot (1) for the product to be applied there is provided a passage (10) for supplying the product in the middle zone of the above-mentioned outlet slot (1) and passages (11 and 12) feeding the product from each end through the mechanisms (4 and 5) for displacing the dimensioning means (2 and 3) which set the width of the outlet for product application.

[0018] In this way, the passages (11 and 12) each define mouths for supplying the product which open in the zone of the slot (1) which defines the product application outlet, said passages (11 and 12) varying their position together with the dimensioning means (2 and 3) which establish the width of the outlet, the flow of product to be applied thereby always being confined to within the dimensions of the application width, so allowing maintenance of a constant flow through the outlet.

[0019] As Figure 4 shows, in the mechanisms (4 and 5) for displacing the dimensioning means (2 and 3) there is incorporated a heating element (13), by means of which a temperature is provided which allows the product to be kept fluid as it circulates within said mechanisms (4 and 5), so achieving a number of optimum conditions for the application process.

[0020] The passages (10, 11 and 12) through which the product is fed to the application outlet have respective independent opening and closing valves (14, 15 and 16), which allow said passages to be opened and closed as a function of the width of the strip (8) over which the product is to be applied, in such a way that for application strips (8) of small width, as in Figure 5, the end passages may be kept closed (11 and 12), with only the central passage (10) being opened, whereas for wide application strips (8), as in Figure 6, the three passages (10, 11 and 12) are kept open, allowing fully effective application in strips (8) of any width, from very narrow strips (8) just a few millimetres wide to strips (8) of a considerable width of up to several metres, with uniform flow of the product to be applied through the portion of the slot (1) which constitutes the outlet.

Claims

1. Improvements to die heads with a slot outlet for applying hot-melt products, of the type in which two dimensioning means (2 and 3) are incorporated into the outlet slot (1) for the product to be applied which are capable of being moved closer together or further apart by means of respective mechanisms (4 and 5) to set the width of the outlet as a function of the strip (8) over which the product is to be applied, **characterised in that**, in connection with the portion of the outlet slot (1) which constitutes an outlet for the product to be applied, there is provided a central passage (10) for feeding the product to said outlet and end passages (11 and 12) via which the product is fed through each of the mechanisms (4 and 5) for displacing the dimensioning means (2 and 3), which end passages (11 and 12) feeding the product vary their position together with the dimensioning means (2 and 3), keeping flow of the product always between the latter.

2. Improvements to die heads with a slot outlet for ap-

plying hot-melt products according to claim 1, **characterised in that**, in connection with the various passages (10, 11 and 12) feeding the product to the application outlet, there are provided respective independent opening and closing valves (14, 15 and 16), allowing feed of the product to the outlet to be selected as a function of the width of the strip (8) to be applied.

3. Improvements to die heads with a slot outlet for applying hot-melt products according to claim 1, **characterised in that,** on the mechanisms (4 and 5) for displacing the dimensioning means (2 and 3), there are disposed heating elements (13) for maintaining the fluidity of the product as it circulates through said mechanisms (4 and 5) to the passages (11 and 12) which open into the application outlet.

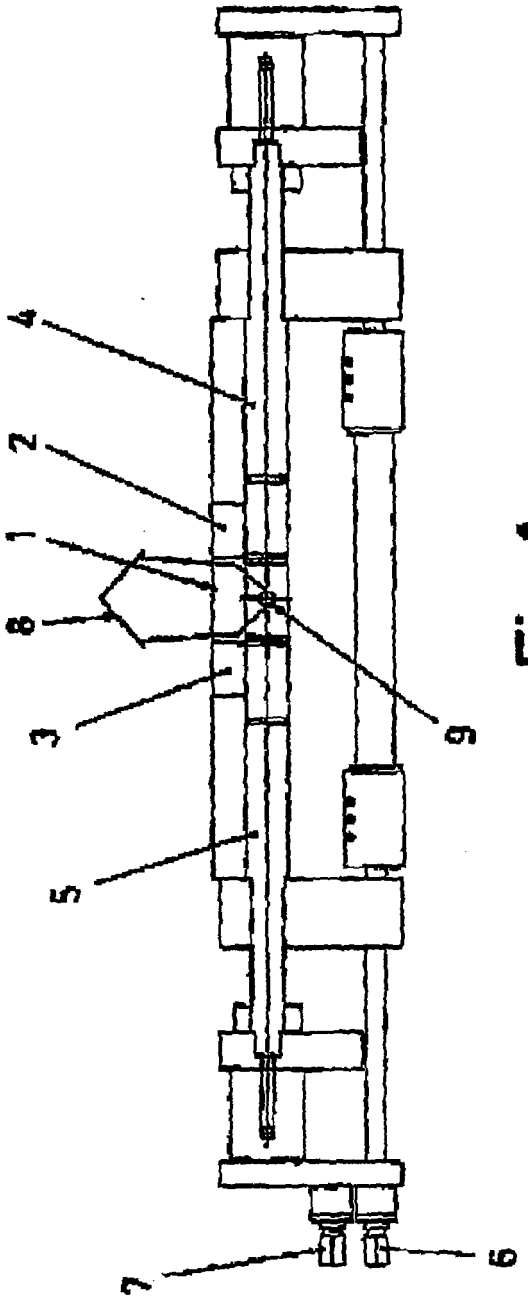

Fig.1

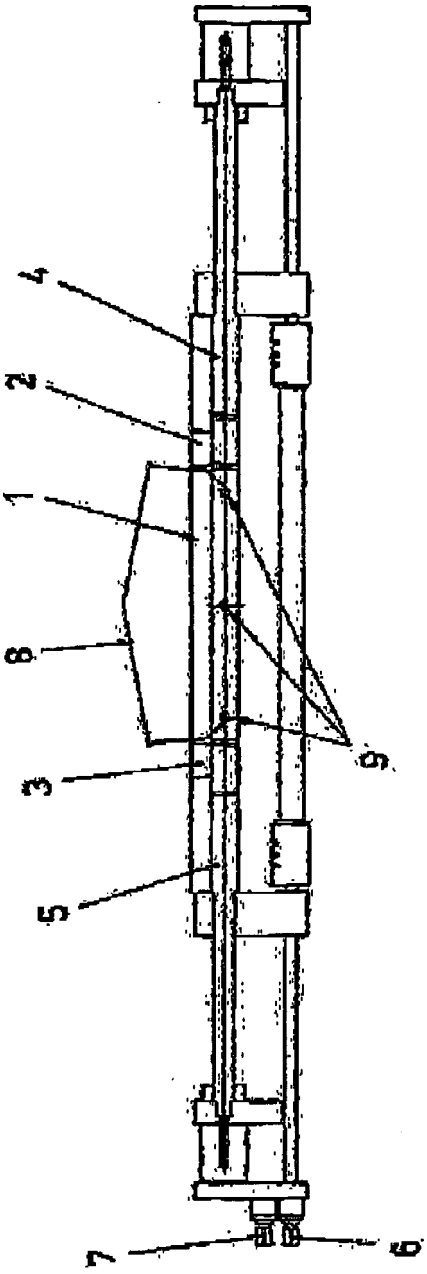

Fig.2

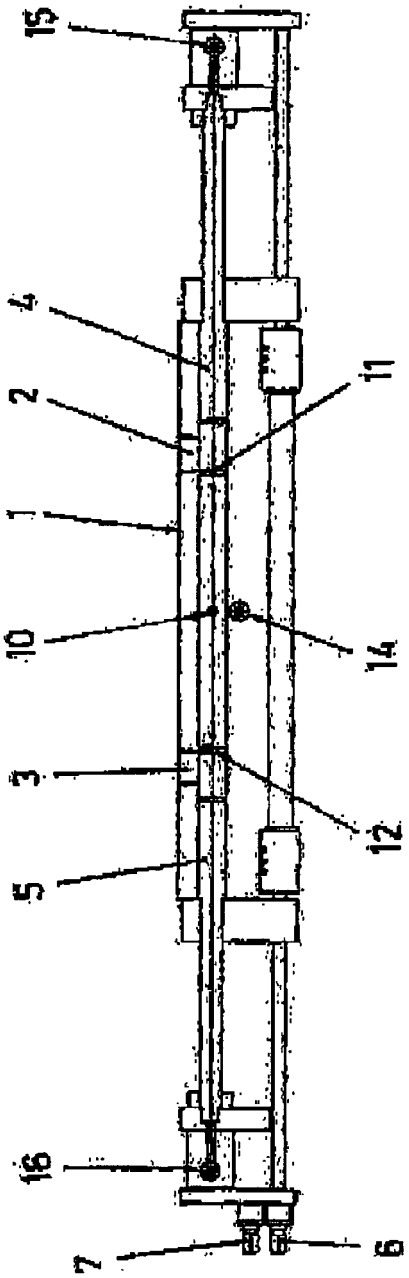

Fig. 3

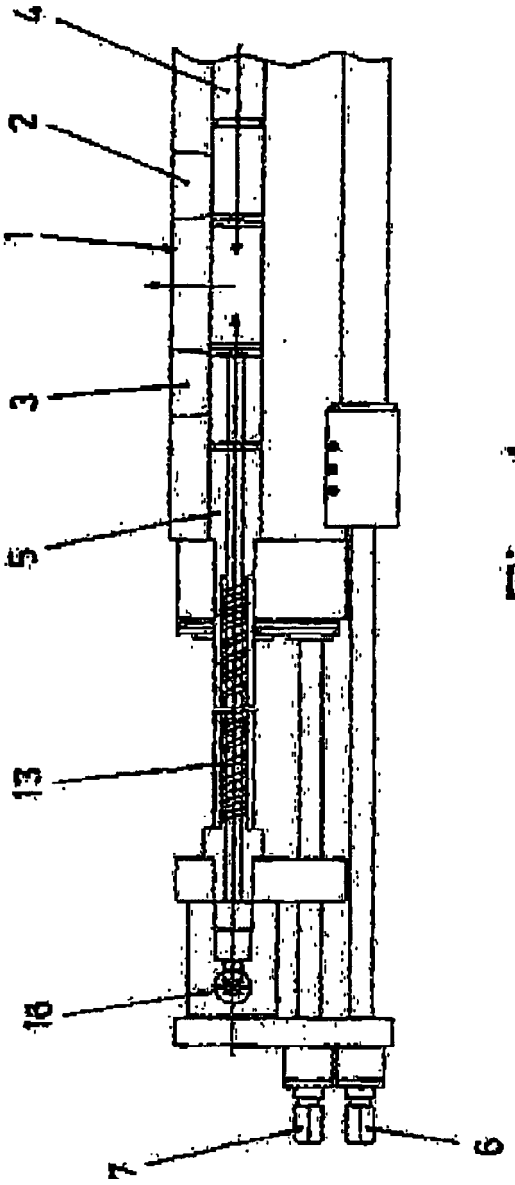

Fig. 4

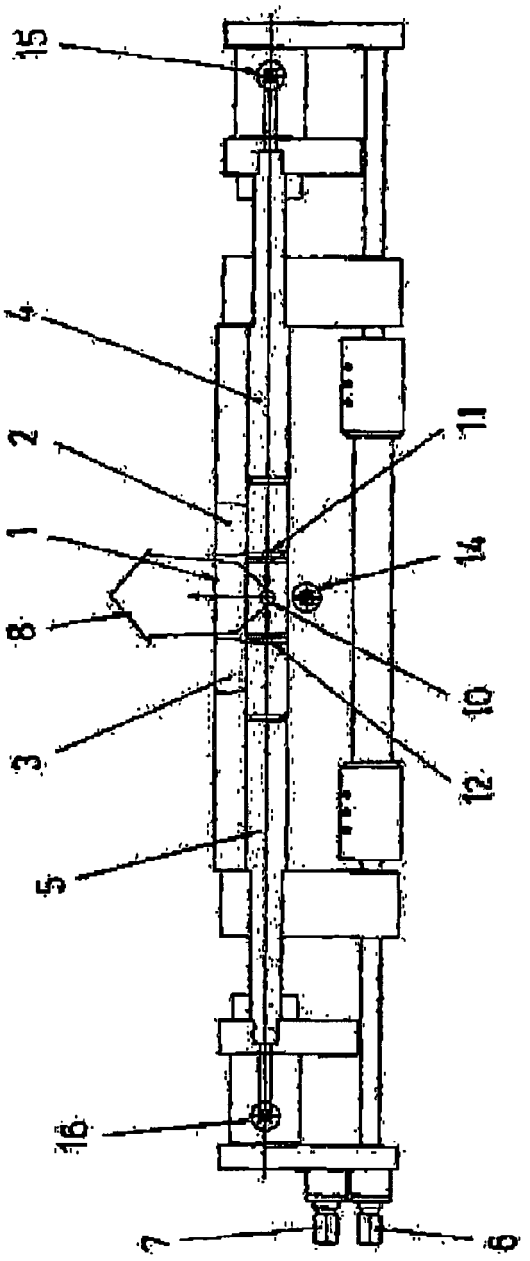

Fig. 5

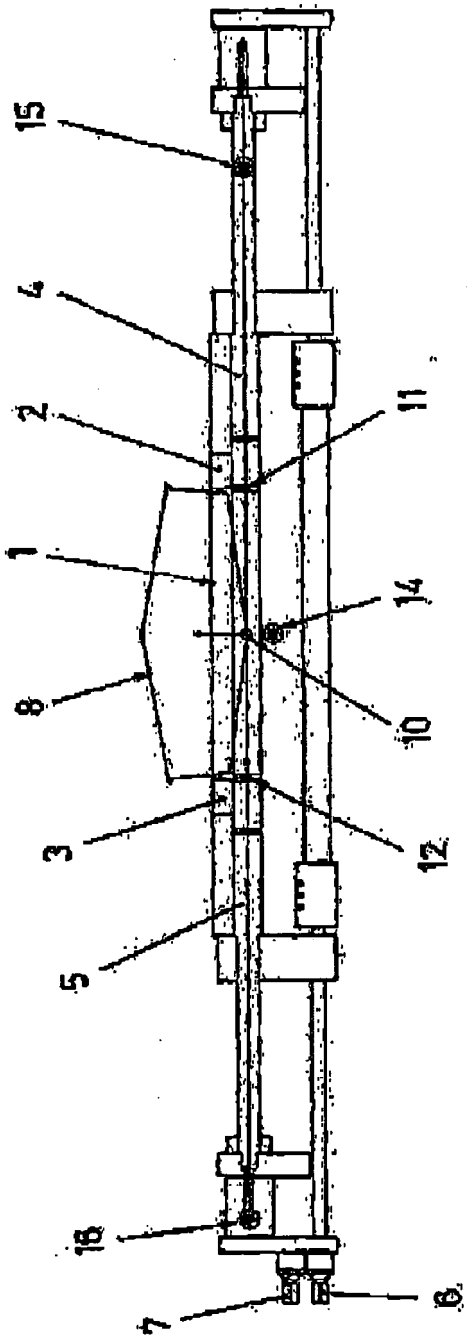

Fig.6

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- ES 2211294 **[0004]**