

Description

This invention relates to melt dispensers of the kind known as hot-melt guns, according to the preamble of claim 1.

Various proposals have been made to provide apparatus for melting and dispensing thermoplastic material supplied in the form of a rod. Such apparatus is usually provided with a melt body having a melt chamber in which thermoplastic material is melted, an inlet for the rod of thermoplastic material and an outlet comprising an orifice for dispensing and applying melted material, and means for heating the melt body so that thermoplastic material fed as a rod into the melt chamber may be dispensed and applied in molten condition from the orifice. Such apparatus finds use in various fields of application, commonly in the form of applicators for hot-melt adhesives and sealants and especially in hand-held glue guns having provision for feeding a rod of adhesive, known as a glue stick, to the melt body.

The present invention is concerned with an improved melt body for melting solid rods of thermoplastic material, and dispensing and applying the resulting hot-melt materials and apparatus incorporating such melt bodies.

Increasing the rate of heating and melting of thermoplastic material in a melting chamber by giving a portion of the melting chamber a cross-sectional shape defined by an undulatory perimeter, (so that, for example, that portion of the chamber is substantially W- or V-shaped in cross-section) to increase the melting chamber surface in contact with the thermoplastic material is disclosed in GB Patent Specification 1402648. Attempts have been made to achieve enhanced delivery of melted material, for example, by use of so called by-pass channels as disclosed in GB Patent Specification 1562926. Even with such improved melt chambers, delivery of about 17g of melt per 60 seconds is the maximum delivery level achieved for continual feed of rod to the melt chamber which is significantly lower than that required for many modern industrial uses.

A hot-melt gun is proposed in EP 0 116 400 comprising prior art within the terms of Article 54(3)EPC and disclosing a melt chamber with a tapering section reducing towards the outlet and provided with uniform ribs or fin elements along the length of the chamber.

If increased feed pressure is applied to the solid rod entering the melt chamber, in an attempt to increase the rate of melt delivered from usual forms of melt chamber, e.g. as disclosed in GB 1402648 and GB 1562926, although there is a tendency for the material to be passed through the melt chamber quickly, the heating of at least portions of the material is reduced so that the difficulty of extruding the melt is increased and the ability to form good bonds may also be reduced. In other words, the material is inconsistently heated, and thus delivered at inconsistent temperatures which may lead to defective bonds

or indeed in extreme cases for non-melted material to be forced through the outlet with consequent risk of damage to the outlet itself and also to flow control valves, if present.

Application of hot-melt materials e.g. adhesives, on a scale and with a frequency required for industrial use requires a suitably strong and reliable apparatus capable of delivering comparatively large amounts of melt in bonding condition and at a uniform condition, on demand, as and when required. Important features in relation to these requirements include the rate at which solid material may be converted into melted material and the consistency with which melt may be extruded at acceptably uniform temperatures. It is also important that the apparatus be comparatively inexpensive to manufacture and also, in the case of hand-held apparatus, that the equipment should be of comparatively light weight and easy to wield.

It is an object of the invention to provide a melt body for a hot-melt gun having improved melting capability.

It is also an object of the invention to provide a hot-melt gun including a melt body having improved melting capability.

According to the present invention, a melt body for a hot-melt gun comprises a melt-chamber for melting thermoplastic composition supplied in the form of a solid rod, an inlet adapted to feed said rod into the melt chamber, means for supplying heat to the melt-chamber to melt thermoplastic composition introduced therein, and an outlet from which molten composition may be expelled from the melt chamber and dispensed therefrom and wherein the passage through the melt chamber is of reducing section characterised in that, plate-like fin elements disposed along the whole length of the chamber are of progressively increasing depth in the direction towards the outlet, said fin elements being so shaped and located that the inwardly disposed edge surfaces thereof define a free passage having a cross section reducing progressively towards the outlet and the end portions of the fin elements adjacent the outlet join together and cooperate to define a series of exit slots spaced about an axis of the passage.

Preferably the means for supplying heat to the melt chamber are electrically operated.

The inlet preferably has a cross-section similar to the cross-section of a rod of thermoplastic composition which is to be fed into the chamber. The inlet is thus preferably circular, and also the wall surface of the chamber is preferably at least substantially circular.

The fin elements of a melt body according to the invention protrude from a wall surface of the chamber into the melt chamber. Fin elements preferably have a plate-like structure having a substantially triangular configuration. The fin elements preferably comprise three major elements of similar shape and size spatially disposed with angles of 120° between adjacent major elements and which have portions of their

larger ends joined together at the outlet, which is to say that the major elements are preferably arranged as a tripod directed towards the outlet of the melt chamber to separate the melt chamber into three sub-chambers and so that inner edge surfaces of the major elements define the tapering passage of progressively reducing cross section. The passage may thus be cone-shaped, or more preferably is shaped as a pyramid of triangular section. The passage is preferably disposed centrally in the chamber and narrows to a neck located adjacent the outlet. The fin elements preferably also comprise sub-elements disposed in pairs between adjacent major elements, which also have their larger ends joined together at the outlet end. Preferably each sub-element is disposed parallel to the adjacent major element. Preferably the fin elements also comprise singular elements located on the wall surface of the melt chamber, equidistant from adjacent major elements. The joins between the major elements and the joins between the sub-elements preferably extend over a comparatively short length of the melt chamber, thus providing a short outlet having a series of exit slots disposed about the axis of the melt chamber.

The width of the slots, i.e. the spacing between the fin elements, are an important feature of the invention. The width of the slots is preferably substantially uniform and is selected in relation to the melt viscosity of compositions intended to be dispensed, because the ability of melted composition to flow through narrow slots is dependent upon the viscosity of the melted material being brought to a value which is characteristic of each formulation to be dispensed. Thus the width of the slots may be selected so that composition cannot escape from the chamber through the slots until the composition has been heated enough to reduce the melt viscosity to a desired value. This desired value may be chosen bearing in mind that in order to produce adhesive bonds consistently acceptable value it is desirable to achieve a melt viscosity of adhesive dispensed which is sufficient to allow adequate flow of adhesive from the nozzle as well as adequate wetting of the surfaces to which the melted adhesive material is applied. Thus appropriate selection of dimensions of the slots can ensure that melted composition is consistently dispensed at a required viscosity, and by appropriate distribution of the fin elements within the chamber quick and effective heating of material within the chamber can be achieved.

A melt body according to the invention may comprise at least one housing for receiving electrically operated heating means. We have found that good temperature control of glue-gun melt chambers generally can be achieved by use of a PTC heater. By PTC heater is meant an element with Positive Temperature Coefficient, i.e. an element which heats up when electric current is passed through it until it reaches a specific temperature, at which specific temperature electric current passing through it can no longer

increase due to increase of the resistance. Such heaters can be used which respond rapidly to changing temperatures and provide efficient use of electricity for heating purposes. A most efficient usage of PTC heaters for heating a melt body having a chamber of generally circular cross-section can be achieved by using three cylindrical PTC heaters distributed uniformly about the chamber. Preferably PTC heaters as disclosed in GB Patent Specification 1540482 are used and which are designed to ensure that the melt body is heated to a temperature of the order of 225°C. This enables acceptable uniform heat distribution to be achieved, as well as slim characteristics of the melt chamber if this is desired.

A melt body according to the invention is preferably provided with nozzle means through which molten composition from the outlet may be applied to a workpiece. Preferably the melt body has a threaded bore coaxial with the melt chamber into which a suitable nozzle member is threaded. Preferably the nozzle member contains a spring loaded ball valve, which is arranged to be opened by pressure of melted material as a rod is fed into the melt chamber.

A melt body according to the invention is preferably formed with an outer surface at the inlet onto which a flexible inlet tube may be secured. Preferably the inlet tube is shaped so as to be capable of forming a seal with the surface of rod fed through it. Preferably the tube is of circular cross-section and is provided with an interior lip portion through which a rod may be pushed when fed to the melt chamber.

A melt body according to the invention is capable of melting thermoplastic materials such as hot-melt adhesives and the like supplied in the form of a solid rod in a comparatively rapid manner, and of delivering the melted composition in a homogenous condition having uniformly-good temperature characteristics. It is believed that these desirable and advantageous characteristics are attributable primarily to the shaping and distribution of the fin elements and the spacing between them. Thus, the fin elements serve to convey heat of the melt body into required areas of the melt chamber without obstructing movement of unmelted portions of the rod into the tapering passage, and thus bring about good heat distribution in the melt chamber. Also, the proximity of the fin elements ensures that passage of melted material under pressure between the fin elements and through the slots cannot occur unless the material is adequately heated. The position of the fin elements makes it impossible to force the tip of the unmelted rod directly into the nozzle. A further advantage of melt chambers according to the invention, is that all axes of hollow portions of the body (i.e. the melt chamber and housings) can be readily arranged to be parallel, simplifying manufacture and permitting manufacture e.g. by a single step casting procedure from heat conductive metal alloy using a core which can be removed from the cast melt body in a simple operation.

A hot-melt gun according to the invention has the advantages of quick start-up and flow of melt at controlled temperature, achieved by use of our improved melt chamber.

A hot-melt gun according to the invention or including a melt body according to the invention is preferably provided with feeding means for feeding a solid rod of thermoplastic or hot-melt material, under the control of an operator, into the melt chamber.

The construction and operation of a feeding means preferred for use in a hot-melt gun according to the present invention is described in detail in our copending application No. 8419302.

The electrical circuitry of a hot-melt gun according to the invention may incorporate means for illuminating coloured indicator lights mounted on the body of the gun when the circuitry is connected with a source of electricity, and when the melt body has been heated sufficiently for optimum melt dispensing conditions.

A hot-melt gun according to the invention may also incorporate a resilient mouthpiece through which rod may be supplied to the feeding means.

A preferred hot-melt gun according to the invention can be used to dispense molten adhesive material in bond-forming condition at a desired temperature and with a constitution and consistency suitable for production of adhesive bonds of consistent quality. The indicator lights provide an indication to the operator of the condition of heating of the melt chamber. The preferred feed mechanism of application No. 8419302 permits rapid feed of rod to the melt chamber with comparatively low effort, and the melt body of the present invention permits rapid melting of the rod and heating of the composition to a temperature and viscosity in which it may be caused to flow from the outlet of the melt chamber as more rod is delivered through the inlet of the melt chamber by the feeding means.

Preferred embodiments of the invention will now be described by way of example with reference to the accompanying drawings in which:-

Figure 1 is a side view of a glue gun including a melt body according to the invention, part in section, part broken away;

Figure 2 is an end view of the melt body shown in Figure 1 viewed from an outlet end of the melt body;

Figure 3 is a view in section of the melt body indicated in Figure 1, taken on the line III-III of Figure 2 and viewed in the direction of the arrows; and

Figure 4 is a view in section of the melt body, taken on the line IV-IV of Figure 3 and viewed in the direction of the arrows.

The exemplified glue gun is intended for use with solid rods of adhesive composition of circular cross-section and comprises a gun body having two parts 10, 12; the part 12 of the body is broken away in Figure 1 to show feeding means 14, and other parts of the apparatus. The hot-melt (or glue) gun has a melt body 16 containing a melt chamber 17, electrically operated heating means

for heating the melt chamber so as to melt rods of thermoplastic material introduced therein, and a nozzle 18 through which molten material may be expelled from the melt chamber.

The melt body 16 is of a heat conductive alloy and is formed with a generally cylindrical melt chamber 17 (Figures 2, 3 and 4) in which rods of solid composition fed to the chamber are melted. The chamber 17 has a circular inlet 19 through which a rod enters the chamber, and an outlet 21 from which melted material may be dispensed and applied. Fin elements 23 are disposed lengthwise within the chamber 17 and extend from a location adjacent the inlet to the outlet. The fin elements 23 protrude from a wall surface of the chamber into a cavity of the melt chamber, extending in directions parallel to the axis of the melt chamber and increasing in size towards the outlet. The fin elements comprise major fin elements 27 and sub elements 35, each of which fin elements is a plate-like structure having a substantially triangular configuration (see Figures 3 and 4). The fin elements comprise three major elements 27 of similar shape and size equally disposed spatially with angles of 120° between adjacent major elements and which have portions of their larger ends joined together at the outlet 21. The major elements 27 are thus arranged as a tripod within the melt chamber which is directed towards the outlet 21 of the melt chamber so that the melt chamber is divided into three sub-chambers and so that inner edge surfaces 29 of the major elements 27 define a substantially pyramid shaped passage 31 centrally disposed in the chamber and which narrows to a neck 33 located adjacent the outlet 21. The fin elements also comprise six sub elements 35 disposed in pairs at 120° to each other between adjacent major elements, which also have their larger ends joined together at the outlet 21. Each sub element is disposed parallel to the adjacent major element. Inner edge surfaces of the sub elements 35 also define the tapering, substantially pyramid shaped passage 31. The fin elements also comprise singular elements 37 located on the wall surface of the melt chamber equidistant from adjacent major elements. The singular elements are substantially triangular in both the widthwise and lengthwise direction and increase in size progressively towards the outlet 21. The joins between the major elements 27 and between the sub elements 35 extend over a comparatively short length of the melt chamber, thus providing a short outlet 21 having a series of exit slots 24 (see Figure 2) bounded by the fin elements and disposed about the axis of the melt chamber. The slots are arranged about the axis of the melt chamber and about the axis of the pyramid passage, and there is no exit slot located on the axis of the melt chamber.

The melt body and exemplified hot-melt gun are intended for use with rods of hot-melt adhesive of 11.5 mm diameter $\pm$ 0.2 mm and which have a melt viscosity of about 10 pascal seconds at 180°C and not more than about 50

pascal seconds at 150°C, for example Bostik Thermogrip 9951 (melt viscosity 46 pascal seconds at 150°C), Bostik Thermogrip 9990 (melt viscosity 40 pascal seconds at 150°C). The spacing between the fin elements at the outlet is such that the slots 24 and 35 are approximately 1 mm wide and the slots 17 are about 1.8 mm wide. With these dimensions we have found that, irrespective of feeding force applied, Bostik Thermogrip 9951, and Bostik Thermogrip 9990 cannot be extruded through the outlet slots unless heated to a temperature of about 150°C. However, when such temperatures are reached, it is possible to dispense from the exemplified gun amounts of melt of the order of 20 to 24 g/60 seconds during continuous feeding of rod to the melt chamber.

The melt body comprises three housings 39 each having a bore having an axis parallel to the axis of the melt chamber for receiving electrically operated heating means in the form of cylindrical self regulating heaters 45 (Figure 1) comprising three PTC resistors distributed symmetrically about the chamber. The heaters 45 are of a kind substantially as described in GB Patent Specification 1540482 and are constructed and arranged so that the melt body may be heated to a maximum temperature of about 225°C. Suitable uniform distribution of the heaters is achieved in the melt body shown together with desirable slim characteristics of the melt body. Webs 41 and 43 formed between pairs of the housings serve to strengthen the melt body. Locating bosses 55 (Figure 2) formed on the melt body co-operate with sockets formed in the body parts 10 and 12.

The melt body has a threaded bore 47 coaxial with the melt chamber into which the nozzle 18 is threaded. The nozzle member contains a spring loaded ball valve (not shown) which is arranged to be opened by pressure of melted material when a rod of thermoplastic (hot-melt) material is fed into the melt chamber.

An outer surface of the melt body at the inlet is formed to provide a tube 25 onto which a flexible inlet tube 22 is secured (Figure 1). The inlet tube 22 is formed from resilient heat resistant material and has a flange 28 at its forward end and is maintained in place on the tube by a bell shaped sleeve 26. The inlet tube 22 has an inlet passage coaxial with the melt chamber in the melt body through which a rod 54 of hot-melt material, for example an adhesive or sealant, may be introduced into the inlet end of the melt chamber. The inlet tube 22 is of circular cross section and is formed with an inner lip portion 32, so that as well as guiding the rod of hot-melt material into the melt chamber, the tube forms a seal with the surface of the rod, thus limiting escape of molten hot-melt material from the inlet when the rod is fed into the chamber.

A locating ring 19 of resilient heat resistant material encircles a portion of the melt body adjacent the nozzle and is received in co-operating recesses formed in the body portions 10 and 12. The sleeve 26 is formed with a locating ring 27 which is received in co-operating grooves formed

in the body portions 10 and 12. The melt body is thus mounted in the body portions 10 and 12 at its outlet and inlet ends by means of the rings 19 and 27 and at a mid portion by means of the bosses 55.

A resilient mouthpiece in the form of a guide collar 30 is mounted in the body of the gun at the rear and has a guide opening therethrough coaxial with the melt chamber to guide a solid rod of hot-melt material and maintain the rod in alignment with the melt chamber as it is supplied to the feeding means. The inlet tube 22, guide collar 30 and ring 19 are conveniently made of silicone rubber.

The parts 10, 12 of the gun body are moulded of tough, reinforced plastics material. The two parts 10, 12 of the body are secured together by fastenings included screws (not shown).

The feeding means 14 of the exemplified glue gun is described in our copending application No. 8419302 and comprises a carriage arranged to move in a direction parallel to the axis of the melt chamber.

As a rod of thermoplastic (hot-melt) material is fed to the melt chamber, it is supported on the carriage with the axis of the rod parallel to, and preferably coincident with, the axis of the melt chamber. In operation, as the rod 54 is urged into the melt chamber by the feeding means 14, heat supplied to the melt body 16 by the heating element melts the material of the rod 54 and the molten material is dispensed through the nozzle 18 under pressure applied by the feeding means 14 to the rod 54. Relaxation of pressure on the trigger 50 stops feed of rod 54 into the melt chamber and thus molten material ceases to be dispensed through the nozzle 18.

The apparatus includes electrical circuitry for connecting the heaters to a source of electricity. The circuitry incorporates means for illuminating two coloured neon indicator lamps 53 mounted on the body of the gun. One of the lights is arranged to be illuminated when the circuitry is connected with a source of electricity, and the other of the lights is arranged to be illuminated (due to operation of a PTC sensor in co-operation with the switching point of the neon lamp) when the melt body has been heated to 180°C, which is regarded as sufficient for optimum melt dispensing conditions for many glue sticks.

When it is desired to use the exemplified glue gun apparatus, the circuitry is connected to an electrical power source, and a rod 54 of hot-melt adhesive of circular section is pushed into the apparatus through the guide collar 30, and into the inlet of the melt chamber. Operation of the trigger when material in the melt chamber is melted (i.e. indicator lights have been illuminated) brings about feeding of the rod as described above. As rod is fed into the melt chamber, its leading end and outer surface are first softened and melted, leaving a substantially cone-like solid residue which during continued feeding is forced onto the inner edge surfaces of the fin elements. Thus, the melt chamber walls

and the fin elements transfer heat to the composition. As progressively more rod is fed into the melt chamber, it serves to force heat softened or melted material before it between the fin elements and through the slots of the outlet and ultimately from the nozzle. As the material is forced between the fin elements heat transfer from the fin elements continues and the material is further heated.

Claims

1. A melt body for a hot-melt gun comprising a melt-chamber for melting thermoplastic composition supplied in the form of a solid rod, an inlet (19) adapted to feed said rod into the melt chamber (17), means for supplying heat to the melt-chamber to melt thermoplastic composition introduced therein, and an outlet (21) from which molten composition may be expelled from the melt chamber (17) and dispensed therefrom and wherein the passage through the melt chamber is of reducing section characterised in that, plate-like fin elements (23, 27, 35) disposed along the whole length of the chamber (17) are of progressively increasing depth in the direction towards the outlet, said fin elements being so shaped and located that the inwardly disposed edge surfaces (29) thereof define a free passage (31) having a cross section reducing progressively towards the outlet (21) and the end portions of the fin elements (27, 35) adjacent the outlet (21) join together and cooperate to define a series of exit slots (24) spaced about an axis of the passage (31).

2. A melt body according to claim 1, wherein the means (45) supplying heat to the melt chamber are electrically operated.

3. A melt body according to claim 1 or 2, wherein the slots (24) are of a size such that material of viscosity greater than 50 pascal seconds at 150°C does not readily flow through the slots.

4. A melt body according to any one of the preceding claims, wherein the fin elements comprise three major elements (27) of similar triangular configuration, the elements of which are spaced apart by 120° one from the next.

5. A melt body according to claim 4, wherein the fin elements (23) comprise sub elements (35) arranged in pairs between adjacent major elements (27) and parallel thereto.

6. A melt body according to either one of claims 4 or 5, wherein each fin element (23) is of triangular configuration.

7. A melt body according to any one of the preceding claims, wherein the inlet (19) is circular and the chamber (17) is substantially cylindrical.

8. A melt body according to any one of the preceding claims, comprising three housings uniformly disposed about the chamber, each housing containing a PTC heater.

9. A melt body according to any one of the preceding claims, comprising a resilient inlet tube (22) secured to the melt body (16) at the inlet (19) thereof.

10. A hot-melt gun including a melt body according to any one of the preceding claims.

Patentansprüche

1. Schmelzkörper für ein Abgabegerät von geschmolzenem Material, mit einer Schmelzkammer, um eine thermoplastische Zusammensetzung, die in der Form einer festen Stange zugeführt ist, zu schmelzen, mit einem Einlaß, durch welchen die Stange in die Schmelzkammer einföhrbar ist, mit einer Einrichtung zum Zuföhren von Wärme zu der Schmelzkammer, um die thermoplastische Zusammensetzung dort zu schmelzen, und mit einem Ausgang, durch den das geschmolzene Material aus der Schmelzkammer ausgetragen und verteilt werden kann, wobei der Durchgang durch die Schmelzkammer einen sich verringernden Querschnitt aufweist, dadurch gekennzeichnet, daß plattenähnliche Flossenelemente (23, 27, 35) längs der gesamten Länge der Schmelzkammer (17) vorgesehen sind und in Richtung zum Ausgang (21) progressiv zunehmende Tiefe aufweisen, daß die Flossenelemente so geformt und angeordnet sind, daß ihre innenliegenden Randflächen (29) einen freien Durchgang (31) begrenzen, welcher einen sich zum Ausgang (21) progressiv veringernden Querschnitt aufweist, und daß die Endabschnitte der Flossenelemente (27, 35) neben dem Ausgang (21) sich vereinigen und so zusammenwirken, daß sie eine Reihe von Austrittsschlitzten (24) begrenzen, die um eine Achse des Durchganges (31) im Abstand angeordnet sind.

2. Schmelzkörper nach Anspruch 1, dadurch gekennzeichnet, daß die die Schmelzkammer (17) mit Wärme versorgende Einrichtung (45) elektrisch betreibbar ist.

3. Schmelzkörper nach einem der Ansprüche 1 bis 2, dadurch gekennzeichnet, daß die Schlitzte (24) eine derartige Größe aufweisen, daß ein Material mit einer Viskosität grösser als 50 Pas bei 150°C nicht leicht durch die Schlitzte strömt.

4. Schmelzkörper nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß die Flossenelemente drei Hauptelemente (27) ähnlicher dreieckförmigen Ausbildung aufweisen, und daß diese Elemente um 120° voneinander im Abstand angeordnet sind.

5. Schmelzkörper nach Anspruch 4, dadurch gekennzeichnet, daß die Flossenelemente (23) Sekundärelemente (35) umfassen, die zwischen benachbarten Hauptelementen (27) in Paaren und parallel zu ihnen vorgesehen sind.

6. Schmelzkörper nach einem der Ansprüche 4 bis 5, dadurch gekennzeichnet, daß jedes Flosselement (23) eine dreieckförmige Ausbildung aufweist.

7. Schmelzkörper nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß der Eingang (19) kreisförmig und die Kammer (17) im wesentlichen zylindrisch ausgebildet sind.

8. Schmelzkörper nach einem der vorhergehenden Ansprüche, gekennzeichnet durch drei Gehäuse, die gleichmäßig um die Kammer herum angeordnet sind, wobei jedes Gehäuse eine PTC-Heizvorrichtung enthält.

9. Schmelzkörper nach einem der vorhergehenden



and the fin elements transfer heat to the composition. As progressively more rod is fed into the melt chamber, it serves to force heat softened or melted material before it between the fin elements and through the slots of the outlet and ultimately from the nozzle. As the material is forced between the fin elements heat transfer from the fin elements continues and the material is further heated.

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2. A melt body according to claim 1, wherein the means (45) supplying heat to the melt chamber are electrically operated.

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9. Schmelzkörper nach einem der vorhergehenden

Ansprüche, dadurch gekennzeichnet, daß ein nachgiebiges Einlaßrohr (22) an dem Eingang (19) des Schmelzkörpers (16) befestigt ist.

10. Pistole zum Abgeben einer Heißschmelze, dadurch gekennzeichnet, daß sie einen Schmelzkörper nach einem der vorhergehenden Ansprüche umfaßt.

Revendications

1. Corps de fusion pour pistolet à matière thermofusible comprenant une chambre de fusion permettant de faire fondre une composition thermoplastique fournie sous la forme d'une tige solide, une entrée (19) agencée de façon à faire avancer cette tige dans la chambre de fusion (17), des moyens permettant de fournir de la chaleur à cette chambre de fusion de façon à faire fondre la composition thermoplastique qui y est introduite et une sortie (21) à partir de laquelle la composition fondue peut être expulsée de la chambre de fusion (17) et être distribuée à partir de celle-ci, tandis que le passage traversant la chambre de fusion est de section réduite, caractérisé en ce que des éléments-ailettes en forme de plaquettes (23, 27, 35) disposés sur toute la longueur de la chambre (17) ont une hauteur croissant de manière progressive en direction de la sortie, ces éléments-ailettes étant conformés et situés de façon telle que leurs surfaces de bord disposées vers l'intérieur (29) délimitent un passage libre (31) offrant une section transversale diminuant de manière progressive vers la sortie (21) et que les parties extrêmes de ces éléments-ailettes (27, 35) se réunissent entre elles à proximité de la sortie (21) et coopèrent pour constituer une série de fentes de sortie (24) réparties autour d'un axe du passage (31).

2. Corps de fusion suivant la revendication 1,

dans lequel les moyens (45) fournissant de la chaleur à la chambre de fusion sont alimentés par l'énergie électrique.

3. Corps de fusion suivant la revendication 1 ou 2, dans lequel les fentes (24) sont d'une taille telle qu'une matière de viscosité supérieure à 50 Pascals secondes à 150°C ne s'écoule pas facilement à travers ces fentes.

4. Corps de fusion suivant l'une quelconque des revendications précédentes, dans lequel les éléments-ailettes comprennent trois éléments principaux (27) à configuration triangulaire identique, dont les éléments sont séparés chacun du suivant de 120°.

5. Corps de fusion suivant la revendication 4, dans lequel les éléments-ailettes (23) comprennent des éléments secondaires (35) qui sont disposés par paires entre des éléments principaux (27) adjacents et sont parallèles à ceux-ci.

6. Corps de fusion suivant l'une quelconque des revendications 4 et 5, dans lequel chaque élément-ailette (23) a une configuration triangulaire.

7. Corps de fusion suivant l'une quelconque des revendications précédentes, dans lequel l'entrée (19) est circulaire et la chambre (17) est sensiblement cylindrique.

8. Corps de fusion suivant l'une quelconque des revendications précédentes, comprenant trois logements disposés de manière uniforme autour de la chambre, chaque logement contenant un élément de chauffage CPT.

9. Corps de fusion suivant l'une quelconque des revendications précédentes, comprenant un tube d'entrée (22) élastique fixé sur le corps de fusion (16) à l'entrée (19) de celui-ci.

10. Pistolet à matière thermofusible comprenant un corps de fusion suivant l'une quelconque des revendications précédentes.

