

Description

The invention relates to an injection mould for manufacturing disc-shaped plastic articles with a central hole, which mould comprises:

a first mould part;

a second mould part displaceable relative to the first mould part by means of first displacing means;

which two mould parts are displaceable between a closed first position, in which they together partially bound a mould cavity corresponding to the shape of an article to be manufactured, and an open second position in which a formed article can be taken out;

a third mould part which, in the closed position of the first and second mould parts, extends through the mould cavity defined thereby and has a shape in the region of this mould cavity which corresponds to the shape of the central hole, which third mould part is axially displaceable by means of second displacing means by means of a guide sleeve forming part of the first mould part between a first position, in which it partially forms a bounding of the mould cavity, and a second retracted position; and

which third mould part bounds a channel that is connectable at the free outside end to an injection nozzle of an injection moulding device, and at the other side debouches with an injection inlet into the region of the mould cavity in the first position of the first and the second mould parts and the first position of the third mould part, and in the second position of the third mould part debouches blind against the inner wall of the guide sleeve;

heating means for keeping plastic present in the channel in the plastic state.

Such an injection mould is known from EP-A-0 075 043.

According to these prior art reference the third mould part has, in the region of the mould cavity during moving of the third mould part from its first to its second position, a cylindrical shape. Due to that shape during displacement of the third mould part the cylindrical outer wall of this third mould part is in mechanical contact with the inner wall of the central hole of the formed article during the third mould parts' displacement. This may be disadvantageous for the correct and accurate shape of the central hole.

In view of the above disadvantage of the prior art, the invention provides an injection mould of the type mentioned in the preamble, which is, according to the proposal of the invention, characterized by the third mould part having a releasing form in the region of the mould cavity during moving of the third mould part from the first to the second position.

Existing moulds have an ejector for ejecting the central sprue of a formed article after it has been punched out. Use can be made of this existing configuration within the framework of the invention. For this purpose the invention provides a mould of the said type having the feature that the second displacing means comprise an ejector extending through the second mould part.

A very good quality of the plastic article is assured with an embodiment in which the injection inlet comprises a plurality of arranged ordered injection inlet openings.

A completely homogenous inflow pattern of the heated plastic into the moulded cavity is assured with an embodiment with the feature that the injection inlet is embodied as an injection inlet opening extending around the entire periphery of the third mould part.

It is important to ensure that in the retracted, non-operational state of the third mould part the plastic present in the channel does not cool. To that end the device preferably displays the characteristic that the third mould part comprises a first heating element.

For the best possible flow pattern and a homogenous heating of the plastic in the third mould part the special feature can be added that the third mould part is elongate in its moving direction, that the channel extends in lengthwise direction and has the form of a cylinder jacket over a portion of considerable length to the injection inlet, and that the first heating element is situated inside this cylinder jacket.

Easy manufacture of the third mould part is ensured with an embodiment with the characteristic that the cylinder jacket-like portion of the channel is bounded by an outer sleeve and an inner sleeve, which sleeves are held in their relative positions by spacers.

In a further variant the device has the feature that in the first mould part a second heating element is accommodated surrounding the third mould part.

In order not to heat the first mould part unnecessarily in this embodiment and to concentrate the available heat as much as possible on the third mould part the device can display the feature that the second heating element is thermally insulated from the first mould part.

For removing a formed plastic article use can be made of openings debouching on one of the flat walls of the mould cavity for passage of pressurized gas for removing a formed article in the second position of the first and the second mould parts. In this context attention is drawn to the fact that it is usual to use a separate insert, generally designated as a stamper, on which the information is present in negative form. This stamper, a nickel

disc, is fixedly held, by per se known means on a flat end wall of the disc-shaped mould cavity. The blow out openings as described above debouch on the other wall of the mould cavity.

For improving the flow properties of the channel still further the device can have the feature in a particular embodiment that the walls of the channel are provided with a heat resistant anti-stick layer.

The invention will now be elucidated with reference to the annexed drawing, in which :

figure 1 shows partially in cross-section and partially in broken away perspective a view of an injection mould according to the invention in the phase wherein plastic is injected for forming a disc-shaped information carrier;

figure 2 shows a following operating position of the mould according to figure 1, wherein the third mould part is situated in a retracted position;

figure 3 shows the phase wherein the mould is opened for taking out a formed plastic article;

figure 4 shows a cross-sectional view through the central heating element according to the preceding figures; and

figure 5 is a partially broken away perspective view of the cylinder jacket-like heating element according to the figures 1-3.

The figures show an injection mould 1 for manufacturing a disc-shaped information carrier 2 with a central hole 3. The mould 1 comprises a first mould part 4, a second mould part 5 displaceable relative to this first mould part 4 by means of first displacing means (not shown) which two mould parts 4, 5 are displaceable between a closed first position in figure 1 wherein they together partially bound a disc-shaped mould cavity 6 corresponding to the shape of the information carrier 2 to be manufactured, and an open second position shown in figure 3 wherein the formed information carrier 2 can be taken out; a third mould part 7 which in the closed position according to figure 1 extends through the mould cavity 6 defined by the mould parts 4, 5 and in the region of the mould cavity 6 has a shape which corresponds to the shape of the central hole 3, which third mould part 7 is axially displaceable with the mould parts 4, 5 by means of an ejector 8 by means of a guide sleeve 9 forming part of the first mould part 4 between the first position shown in figure 1, in which it partially forms a bounding of the mould cavity 6, and the second retracted position shown in figure 2, which third mould part bounds a cylinder jacket-like channel 10 that is connectable at the free outside end 11 to the injection nozzle 12 of an injection moulding device and at the other side debouches with an annular injection inlet opening 13 into the region of the mould cavity 6 in the first position shown in figure 1 of the first and the second mould parts 4,

5 and the first position of the third mould part 7, and in the second position of the third mould part 7 debouches blind against the inside wall of the guide sleeve 9, as is shown in figure 2; and heating means to be described hereinafter for keeping the plastic present in the channel 10 in the plastic state.

The cylinder jacket-like channel 10 is bounded by a cylinder-shaped core 14 in which is received an elongate heating element 15 and a sleeve 16 extending therearound. The core 14 and the sleeve 16 are held at a mutual distance by means of spacers 17. At the top the core 14 has a central coaxial bore 18 which, by means of borings 19, can transport the plastic coming from the injection nozzle 12 via the free end 11 and the channel 10 to the annular injection inlet openings 13 for injection into the mould cavity 6.

Under the injection inlet opening 13 the core 14, and therewith the outside wall of the third mould part 7, has a very slightly conical tapering shape, which serves for easy release of a formed information carrier. In the figures the conical shape is depicted somewhat exaggeratedly for the sake of clarity.

An access opening 21 closable by means of a threaded plug 20 serves for admitting the central heating element 15.

Placed in a space 22 around the third mould part 7 is a cylinder jacket-like heating element 23, which can generate its heat to the third mould part 7 via the guide sleeve 9 for keeping the plastic present therein in the plastic state. The heating element 23 and the guide sleeve 9 are supported on the underside by means of a wear-resistant carrier ring 24 of heat insulating, non-fibrous material, for example a ceramic material, titanium or plastic. At the top side the guide sleeve is carried by a wear-resistant, pressure-resistant guide ring 25.

A heating element 27 is likewise placed around a connecting block 26 between the core 14 and the injection nozzle 12.

Connecting wires of the various heating elements are generally designated with 28. These are connected to a suitable power supply.

In this embodiment a stamper 29 is situated on the flat wall of the mould cavity 6 which forms part of the second mould part 5. This is held in position by known means not shown here. Such means can be based on underpressure, magnetic forces or take a mechanical form. For removing a formed plastic article openings for blowing in air 30 are present, which are connected via lines 31 to selectively energizable compressed air means (not drawn).

Shown in the drawing are various constructional details such as a ring 32 which is connected

by means of bolts 33 to the first mould part 4 and serves for positioning of the guide and carrier ring 25.

The first mould part 1 is displaceable relative to the injection nozzle 12. A carrier ring 34 is slidably guided in the frame part 35 for this purpose.

In the situation shown in figure 1 the mould 4, 5, 7 is in its operational state for injecting plastic into the mould cavity 6.

In the situation shown in figure 2 the third mould part 7 is moved to a retracted position by actuating the ejector 8, wherein the injection inlet opening 13 ends blindly against the inside wall of the sleeve 16.

In the subsequent phase according to figure 3 the mould parts 4 and 5 are mutually separated so that the mould cavity 6 is accessible for removal of the formed information carrier 2.

Air 36 is blown through the openings 30 to remove this information carrier 2.

It will be apparent that all known and appropriate means can be used for the displacing means that provide the relative displacement of the various mould parts. Use can be made of pneumatic or hydraulic cylinders, while for retraction of the third mould part 7 from its position shown in figure 1 to its position shown in figure 2 the ejector 8 does not necessarily have to be used, but medium under pressure can for example be admitted into the space 37 which is bounded by the first mould part 4, the frame part 35, the displaceable carrier ring 34 and the third mould part 7 with the connecting block 26. As a result of the thereby occurring pressure force a relative movement of the carrier ring 34 takes place whereby it is moved from the position shown in figure 1, carrying with it the third mould part 7.

The inner surface of the bores 18 and 19 and the channel 10 is provided with a heat resistant coating layer which prevents the adhesion of heated plastic.

Figure 4 shows the heating element 15 in detail. This heating element comprises a cylindrical body 38 which is of ceramic material and is ground to a round shape. The body 38 is closed off on the bottom with a cured mould mass 39 consisting of Al_2O_3 .

A heating wire 40 wound in spiral shape is received internally within the body 38 and receives its power supply via wires 28. Protruding at the bottom from the sealing mass 39 is a thermocouple 41 which is connected to connecting wires 42 and serves for adjusting the power supply through the wires 28 for holding the temperature constant within determined limits.

The heating wire is embedded in Al_2O_3 .

The wires 28 are insulated by means of a temperature-resistant sheath with glass fibres.

Figure 5 shows the heating element 23. This comprises a cylinder jacket-like body 43 in which heating coils 45 mutually connected in series are received in lengthwise channels 44, which heating coils 45 receive their power supply from wires 28 which are insulated with a temperature-resistant sheath with glass fibres.

Claims

1. Injection mould (1) for manufacturing disc-shaped plastic articles (2) with a central hole (3), which mould comprises:
 - a first mould part (4);
 - a second mould part (5) displaceable relative to the first mould part (4) by means of first displacing means;
 - which two mould parts (4, 5) are displaceable between a closed first position, in which they together partially bound a mould cavity (6) corresponding to the shape of an article (2) to be manufactured, and an open second position in which a formed article (2) can be taken out;
 - a third mould part (7) which, in the closed position of the first and second mould parts (4, 5), extends through the mould cavity defined thereby and has a shape in the region of this mould cavity (6) which corresponds to the shape of the central hole (3), which third mould part (7) is axially displaceable by means of second displacing means (8) by means of a guide sleeve (9) forming part of the first mould part (4) between a first position, in which it partially forms a bounding of the mould cavity (6), and a second retracted position; and
 - which third mould part (7) bounds a channel (10) that is connectable at the free outside end (11) to an injection nozzle (12) of an injection moulding device, and at the other side debouches with an injection inlet (13) into the region of the mould cavity in the first position of the first and the second mould parts (4, 5) and the first position of the third mould part (7), and in the second position of the third mould part (7) debouches blind against the inner wall of the guide sleeve (9);
 - heating means for keeping plastic present in the channel in the plastic state,
 - characterized by
 - the third mould part (7) having a tapering form in the region of the mould cavity for releasing during moving of the third mould part (7) from the first to the second position.

by means of bolts 33 to the first mould part 4 and serves for positioning of the guide and carrier ring 25.

The first mould part 1 is displaceable relative to the injection nozzle 12. A carrier ring 34 is slidably guided in the frame part 35 for this purpose.

In the situation shown in figure 1 the mould 4, 5, 7 is in its operational state for injecting plastic into the mould cavity 6.

In the situation shown in figure 2 the third mould part 7 is moved to a retracted position by actuating the ejector 8, wherein the injection inlet opening 13 ends blindly against the inside wall of the sleeve 16.

In the subsequent phase according to figure 3 the mould parts 4 and 5 are mutually separated so that the mould cavity 6 is accessible for removal of the formed information carrier 2.

Air 36 is blown through the openings 30 to remove this information carrier 2.

It will be apparent that all known and appropriate means can be used for the displacing means that provide the relative displacement of the various mould parts. Use can be made of pneumatic or hydraulic cylinders, while for retraction of the third mould part 7 from its position shown in figure 1 to its position shown in figure 2 the ejector 8 does not necessarily have to be used, but medium under pressure can for example be admitted into the space 37 which is bounded by the first mould part 4, the frame part 35, the displaceable carrier ring 34 and the third mould part 7 with the connecting block 26. As a result of the thereby occurring pressure force a relative movement of the carrier ring 34 takes place whereby it is moved from the position shown in figure 1, carrying with it the third mould part 7.

The inner surface of the bores 18 and 19 and the channel 10 is provided with a heat resistant coating layer which prevents the adhesion of heated plastic.

Figure 4 shows the heating element 15 in detail. This heating element comprises a cylindrical body 38 which is of ceramic material and is ground to a round shape. The body 38 is closed off on the bottom with a cured mould mass 39 consisting of Al_2O_3 .

A heating wire 40 wound in spiral shape is received internally within the body 38 and receives its power supply via wires 28. Protruding at the bottom from the sealing mass 39 is a thermocouple 41 which is connected to connecting wires 42 and serves for adjusting the power supply through the wires 28 for holding the temperature constant within determined limits.

The heating wire is embedded in Al_2O_3 .

The wires 28 are insulated by means of a temperature-resistant sheath with glass fibres.

Figure 5 shows the heating element 23. This comprises a cylinder jacket-like body 43 in which heating coils 45 mutually connected in series are received in lengthwise channels 44, which heating coils 45 receive their power supply from wires 28 which are insulated with a temperature-resistant sheath with glass fibres.

Claims

1. Injection mould (1) for manufacturing disc-shaped plastic articles (2) with a central hole (3), which mould comprises:
 - a first mould part (4);
 - a second mould part (5) displaceable relative to the first mould part (4) by means of first displacing means;
 - which two mould parts (4, 5) are displaceable between a closed first position, in which they together partially bound a mould cavity (6) corresponding to the shape of an article (2) to be manufactured, and an open second position in which a formed article (2) can be taken out;
 - a third mould part (7) which, in the closed position of the first and second mould parts (4, 5), extends through the mould cavity defined thereby and has a shape in the region of this mould cavity (6) which corresponds to the shape of the central hole (3), which third mould part (7) is axially displaceable by means of second displacing means (8) by means of a guide sleeve (9) forming part of the first mould part (4) between a first position, in which it partially forms a bounding of the mould cavity (6), and a second retracted position; and
 - which third mould part (7) bounds a channel (10) that is connectable at the free outside end (11) to an injection nozzle (12) of an injection moulding device, and at the other side debouches with an injection inlet (13) into the region of the mould cavity in the first position of the first and the second mould parts (4, 5) and the first position of the third mould part (7), and in the second position of the third mould part (7) debouches blind against the inner wall of the guide sleeve (9);
 - heating means for keeping plastic present in the channel in the plastic state,
- characterized by
- the third mould part (7) having a tapering form in the region of the mould cavity for releasing during moving of the third mould part (7) from the first to the second position.



2. Injection mould as claimed in claim 1, characterized in that the second displacing means comprise an ejector (8) extending through the second mould part (5).
3. Injection mould as claimed in claim 1, characterized in that the injection inlet (13) comprises a plurality of peripherally arranged injection inlet openings.
4. Injection mould as claimed in claim 1, characterized in that the injection inlet (13) is embodied as an injection inlet opening extending around the entire periphery of the third mould part (7).
5. Injection mould as claimed in claim 1, characterized in that the third mould part (7) comprises a first heating element (23).
6. Injection mould as claimed in claim 5, characterized in that the third mould part (7) is elongate in its moving direction, that the channel (10) extends in lengthwise direction and has the form of a cylinder jacket over a portion with considerable length up to the injection inlet (13), and that the first heating element (23) is situated inside this cylinder jacket (10).
7. Injection mould as claimed in claim 6, characterized in that the cylinder jacket-like part of the channel (10) is bounded by an outer sleeve and an inner sleeve (9), which sleeves are held in their relative positions by spacers.
8. Injection mould as claimed in claim 6, characterized in that a second heating element (27) enclosing the third mould part is accommodated in the first mould part (4).
9. Injection mould as claimed in claim 8, characterized in that the second heating element (27) is thermally insulated from the first mould part.
10. Injection mould as claimed in claim 1, characterized by openings debouching on one of the flat walls of the mould cavity for passage of pressurized gas (30) for removing a formed article (2) in the second position of the first and the second mould parts (4, 5).
11. Injection mould as claimed in claim 1, characterized in that the walls of the channel (10) are provided with a heat resistant anti-stick layer.

Patentansprüche

1. Spritzgußform (1) zur Herstellung scheibenförmiger Plastikgegenstände (2), die mit einem zentralen Loch (3) versehen sind, wobei die Spritzgußform folgende Teile aufweist:
 - einen ersten Formteil (4);
 - einen zweiten Formteil (5), der relativ zu dem ersten Formteil (4) durch eine erste Verschiebevorrichtung versetzbar ist;
 - wobei die beiden Formteile (4, 5) zwischen einer ersten Schließstellung, in der sie zusammen teilweise einen Formhohlraum (6) umschließen, der der Gestalt des herzustellenden Gegenstandes (2) entspricht, und einer zweiten Öffnungsstellung verschiebbar sind, in der ein ausgeformter Gegenstand (2) entnommen werden kann;
 - einen dritten Formteil (7), der sich in Schließstellung von erstem und zweitem Formteil (4, 5) durch den hierdurch definierten Formhohlraum erstreckt und im Bereich des Formhohlraumes (6) eine Form hat, die der Form des zentralen Loches (3) entspricht, wobei der dritte Formteil (7) axial durch eine zweite Verschiebevorrichtung (8) mittels einer einen Abschnitt des ersten Formteils (4) bildenden Führungshülse (9) zwischen einer ersten Stellung, in der teilweise der Formhohlraum (6) begrenzt wird, und einer zweiten zurückgezogenen Stellung verschiebbar ist; und
 - wobei der dritte Formteil (7) einen Kanal (10) bildet, der am freien äußeren Ende (11) mit einer Einspritzdüse (12) einer Spritzgußmaschine in Verbindung steht, während das andere Ende des Kanals mit einem Einspritzeinlaß (13) im Bereich des Formhohlraumes in der ersten Stellung von erstem und zweitem Formteil (4, 5) und der ersten Stellung des dritten Formteils (7) in Verbindung steht, während in der zweiten Stellung des dritten Formteils (7) der Kanal durch die Innenwand der Führungshülse (9) abgesperrt ist;
 - Heizeinrichtungen, um das im Kanal befindliche Plastikmaterial in plastischem Zustand zu erhalten, dadurch gekennzeichnet, daß der dritte Formteil (7) im Bereich des Formhohlraumes eine sich verjüngende Gestalt besitzt, um während der Bewegung des dritten Formteils (7) aus der ersten in die zweite Stellung eine Freigabe zu bewirken.



2. Spritzgußform nach Anspruch 1,
dadurch gekennzeichnet, daß die zweite Verschiebevorrichtung einen Auswerfer (8) aufweist, der sich durch den zweiten Formteil (5) erstreckt. 5
3. Spritzgußform nach Anspruch 1,
dadurch gekennzeichnet, daß der Einspritzeinlaß (13) aus mehreren umfangsmäßig angeordneten Einspritzeinlaßöffnungen besteht. 10
4. Spritzgußform nach Anspruch 1,
dadurch gekennzeichnet, daß der Einspritzeinlaß (13) als Einspritzeinlaßöffnung ausgebildet ist, die sich über den gesamten Umfang des dritten Formteils (7) erstreckt. 15
5. Spritzgußform nach Anspruch 1,
dadurch gekennzeichnet, daß der dritte Formteil (7) ein erstes Heizelement (23) aufweist. 20
6. Spritzgußform nach Anspruch 5,
dadurch gekennzeichnet, daß der dritte Formteil (7) in seiner Bewegungsrichtung langgestreckt ist, daß sich der Kanal (10) in Längsrichtung erstreckt und über einen Abschnitt beträchtlicher Länge bis zum Einspritzeinlaß (13) die Gestalt einer Zylinderhülse aufweist, und daß das erste Heizelement (23) innerhalb dieser Zylinderhülse (10) angeordnet ist. 25 30
7. Spritzgußform nach Anspruch 6,
dadurch gekennzeichnet, daß der zylinderhülсенartige Teil des Kanals (10) durch eine äußere Hülse und eine innere Hülse (9) begrenzt ist, und daß diese Hülsen in ihrer Relativstellung durch Abstandshalter fixiert sind. 35
8. Spritzgußform nach Anspruch 6,
dadurch gekennzeichnet, daß ein zweites Heizelement (27), das den dritten Formteil umschließt, im ersten Formteil (4) angeordnet ist. 40
9. Spritzgußform nach Anspruch 8,
dadurch gekennzeichnet, daß das zweite Heizelement (27) thermisch von dem ersten Formteil isoliert ist. 45
10. Spritzgußform nach Anspruch 1,
dadurch gekennzeichnet, daß die Öffnungen sich nach einer der flachen Wände des Formhohlraumes hin öffnen, um Druckgas (30) hindurchzuleiten und einen hergestellten Gegenstand (2) in der zweiten Stellung von erstem und zweitem Formteil (4, 5) auszuwerfen. 50 55
11. Spritzgußform nach Anspruch 1,
dadurch gekennzeichnet, daß die Wände des

Kanals (10) mit einer hitzebeständigen Antihaftschicht versehen sind.

Revendications

1. Moule d'injection (1) pour la fabrication d'articles (2) en plastique en forme de disque avec un trou central (3), lequel moule comprend :
une première partie de moule (4) ;
une deuxième partie de moule (5) déplaçable par rapport à la première partie de moule (4) au moyen de premiers moyens de déplacement ;
lesquelles deux parties de moule (4, 5) sont déplaçables entre une première position fermée, dans laquelle ils délimitent mutuellement partiellement une cavité de moule (6) correspondant à la forme d'un article (2) à fabriquer, et une deuxième position ouverte dans laquelle un article formé (2) peut être retiré ;
une troisième partie de moule (7) qui, dans la position fermée des première et deuxième parties de moules (4, 5), s'étend à travers la cavité de moule définie de la sorte et a une forme dans la région de cette cavité de moule (6) qui correspond à la forme du trou central (3), laquelle troisième partie de moule (7) est déplaçable dans le sens axial au moyen de deuxièmes moyens de déplacement (8) au moyen d'un manchon de guidage (9) faisant partie de la première partie de moule (4), entre une première position, dans laquelle il forme partiellement une limite de la cavité de moule (6), et une deuxième position rétractée ; et
laquelle troisième partie de moule (7) délimite un canal (10) qui peut être relié à son extrémité extérieure libre à une buse d'injection (12) d'un dispositif de moulage par injection, qui débouche de l'autre côté par une entrée d'injection (13) dans la région de la cavité de moule dans la première position des première et deuxième parties de moule (4, 5) et dans la première position de la troisième partie de moule (7), et qui, dans la deuxième position de la troisième partie de moule (7), débouche en aveugle contre la paroi intérieure du manchon de guidage (9) ;
des moyens de chauffage pour maintenir à l'état plastique la pâte plastique présente dans le canal,
caractérisé en ce que
la troisième partie de moule (7) a une forme effilée dans la région de la cavité de moule pour se dégager pendant le déplacement de la troisième partie de moule (7) depuis sa première vers sa deuxième position.



2. Moule d'injection selon la revendication 1, caractérisé en ce que les deuxièmes moyens de déplacement comprennent un éjecteur (8) s'étendant à travers la deuxième partie de moule (5). 5
3. Moule d'injection selon la revendication 1, caractérisé en ce que l'entrée d'injection (13) comprend une pluralité d'ouvertures d'entrées d'injection disposées sur la périphérie. 10
4. Moule d'injection selon la revendication 1, caractérisé en ce que l'entrée d'injection (13) est conformée en ouverture d'entrée d'injection s'étendant autour de toute la périphérie de la troisième partie de moule (7). 15
5. Moule d'injection selon la revendication 1, caractérisé en ce que la troisième partie de moule (7) comprend un premier élément chauffant (23). 20
6. Moule d'injection selon la revendication 5, caractérisé en ce que la troisième partie de moule (7) est allongée dans sa direction de déplacement, que le canal (10) s'étend dans la direction longitudinale et a la forme d'une chemise de cylindre sur une partie de longueur considérable jusqu'à l'entrée d'injection (13), et que le premier élément chauffant (23) est situé à l'intérieur de cette chemise de cylindre (10). 25 30
7. Moule d'injection selon la revendication 6, caractérisé en ce que la partie du canal (10) en forme de chemise de cylindre est limitée par un manchon extérieur et un manchon intérieur (9), lesquels manchons sont maintenus dans leurs positions relatives par des entretoises. 35
8. Moule d'injection selon la revendication 6, caractérisé en ce qu'un deuxième élément chauffant (27) entourant la troisième partie de moule est logé dans la première partie de moule (4). 40
9. Moule d'injection selon la revendication 8, caractérisé en ce que le deuxième élément chauffant (27) est isolé thermiquement de la première partie de moule. 45
10. Moule d'injection selon la revendication 1, caractérisé par des ouvertures débouchant sur l'une des parois planes de la cavité de moulage pour faire passer un gaz sous pression (30) destiné à retirer un article (2) formé dans la deuxième position des première et deuxième parties de moule (4, 5). 50 55
11. Moule d'injection selon la revendication 1, caractérisé en ce que les parois du canal (10) sont munies d'une couche anti-adhésion résistante à la chaleur.

