

FRENCH REPUBLIC

11 **Publication No.: 2 420 415**  
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PARIS

**A1**

**INVENTION PATENT  
APPLICATION**

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**No. 78 08358**

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54 **Manufacturing procedure by extrusion of thermoplastic pieces.**

51 International Classification (Int. Cl.<sup>2</sup>). **B 29 C 17/07.**

22 Date filed: ..... March 22, 1978, 3:48 p.m.

33 32 31 Priority claimed:

41 Date application made available to  
the public ..... B.O.P.I. [Official Intellectual Property  
Journal] – “Lists” no. 42 of 10/19/1979.

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This invention relates to the manufacturing of thermoplastic pieces by extrusion.

This manufacturing is carried out either by blowing of a parison in a closed mold and cutting of the obtained mold piece, or by application of a sheet against the surface of a cavity in the intended form by suction.

These known procedures require several repeat and finishing operations, which are often complex to carry out and difficult to operate on an industrial level, particularly when the pieces to be obtained are of complex shapes, with an undulating contour on several planes.

The invention relates specifically to avoiding these finishing and repeat operations, and for this purpose, its object is a manufacturing procedure in which plastic is extruded in the form of a tubular element; this element is split into two in a longitudinal direction so as to form two sheet elements situated on both sides of the median plane of said tubular element and, after cutting them following the desired contour, these two sheet elements are applied simultaneously against the wall of two mold cavities arranged on both sides of said median plane.

These sheet elements may be applied against the mold cavity walls by blowing or by suction.

In addition, the object of the invention is a device for implementing the procedure established above, said device comprising, at the exit point of an extruder head, a tubular extrusion die, a fixed piece arranged under the die and intended to split the parison-tube exiting said die lengthwise in two, at least one mold half arranged on both sides of the vertical separation plane of the parison-tube, one central piece with an axis situated in said plane and provided with openings whose edges form knives, arranged opposite the openings of the mold halves and with forms that complement these, means for clamping the mold halves against said central piece in order to cut the separate sheet elements inserted between said piece and the mold halves, and means for applying said elements against the mold-half cavity walls.

In an advantageous embodiment, the central piece is drilled right through, in other words, an internal passage inside the piece joins together the openings facing the mold halves and a blast nozzle emerges into this internal passage in order to apply, by blowing, the sheet elements against the mold-half cavities.

Solely for illustration and by no means exhaustive, the attached drawing shows two embodiments of devices for implementing the procedure according to the invention, on which drawing:

Figure 1 is a schematic elevation and partial cut-away view of one of these embodiments;

Figure 2 is a detail perspective view of part of the device from figure 1, and

Figure 3 is a view, similar to that of fig. 2, of the second embodiment.

In the example represented in figures 1 and 2, the device is associated with a head extruder 1 whose die 3 is provided with a punch 2 for the extrusion of a tubular element or parison 5.

Under the punch 2 is arranged a V-shaped cutting component 4, the edge of which is directed upward and which is therefore intended to separate the parison 5 diametrically into two sheets 6, 6'. Under the section 4, one central piece or shape 8 is arranged and two mold halves 7, 7' with cavities 9, 9' are arranged on both sides of this piece 8. The lateral faces 10, 10' of the shape 8 correspond respectively to the mold parting surfaces 11, 11' of the mold halves 7, 7'. Further, the piece 8 is hollowed out in 13 according to the sections 12, 12' which correspond to the cavity sections 9, 9' on the mold parting surfaces 11, 11'. In the hollow part 13 of the piece 8, a tube 14 emerges, connected to a source of air or other compressed gas. The mold halves 7, 7' are fixed respectively on the press platens 15, 15'.

The implementation of the device just described is derived directly from the preceding.

The plastic extruded in tube form 5 through the air-gap of the punch 2 of the die 3 is separated in the longitudinal direction into two sheets 6, 6' by the section 4 forming a knife.

The sheets 6, 6' formed in this way are moved apart and guided by this section 4 and are inserted between the central shape 8 and

the cavities 9, 9' of the molds 7, 7'. These molds are then moved together until their parting surfaces 11, 11' come into contact with the faces 10, 10' of the piece 8. The sheets 6, 6' are thus sandwiched between these walls. By means of the tube 14, the sheets are blown and pressurized during a cooling cycle.

After venting and opening of the molds, the pieces come out finished, and the waste is removed manually.

In the embodiment example shown in fig. 3, the same pieces are found, bearing the same reference numbers as on the device of figs. 1 and 2, and the operation is identical. What distinguishes the two devices shown is simply the shape of the edges 11, 11' of the cavities and, consequently, that of the sections 10, 10' corresponding to the central piece 8.

It can be seen that the mobility of the cutting means of the parison enables the use of a mechanical or electronic control system for the purpose of varying the thickness of the sheets during their extrusion.

In the central piece, it is possible to incorporate static or dynamic tools or pieces making it possible to lay inserts or make openings with complicated shapes.

Further, it is possible, in the case of manufacturing of pieces comprising an over-depth, to assemble a counterform on the central piece to stamp the thermoplastic, thus preventing thinning of the wall of the piece in this place, which is a phenomenon that often occurs in standard blowing-extrusion.

CLAIMS

1. - Manufacturing procedure by extrusion of thermoplastic pieces, characterized by the fact that plastic is extruded in the form of a tubular element, this element is split into two in the longitudinal direction so as to form two sheet elements situated on both sides of the median plane of said tubular element and, after cutting them along the desired contour, these two sheet elements are applied simultaneously against the mold cavities wall arranged on both sides of the median plane.

2. Device for implementation of the procedure according to claim 1, characterized by the fact that it comprises, at the exit point of the extruder, a tubular extrusion die, a fixed piece arranged under the die and intended to split the parison-tube exiting said die lengthwise into two, at least one mold half arranged on both sides of the vertical separation plane of the parison-tube, one central axis piece situated in said plane and provided with openings whose edges form knives, arranged opposite the openings of the mold halves and with shapes that complement these, means for clamping the mold halves against said central piece in order to cut the separate sheet elements inserted between said piece and the mold halves, and means for applying said elements against the mold-half cavity walls.

3. Device according to claim 1, in which the central piece is drilled right through, in other words, an internal passage inside the piece joins together the openings facing the mold halves and a blast nozzle emerges into this internal passage in order to apply, by blowing, the sheet elements against the mold-half cavities.

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