United States Patent

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[33] **Sweden**
[31] **9887**

[54] **MEANS FOR HYDROSTATIC EXTRUSION**
2 Claims, 6 Drawing Figs.

[52] **U.S. Cl.** **72/467,** 72/253
[51] **Int. Cl.** **B21c 3/00,** B21c 23/00
[50] **Field of Search** 72/253, 264, 273, 467

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ABSTRACT: A die for band extrusion having a calibrating part, a conical inlet channel and an intermediate chisel-shaped part.

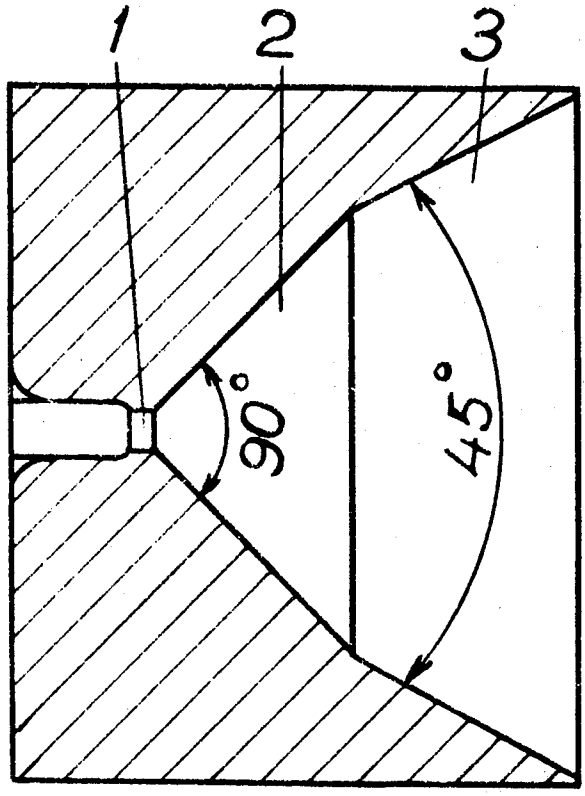


Fig. 1

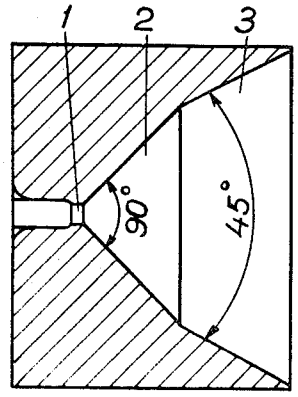


Fig. 4

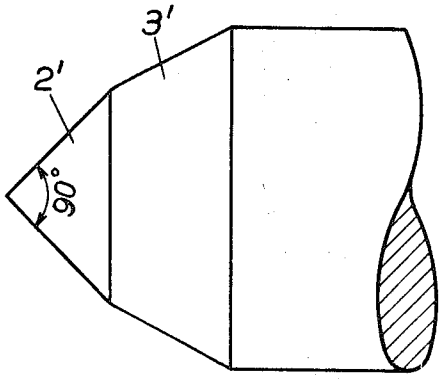


Fig. 2

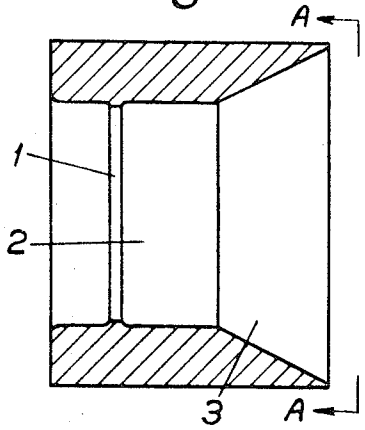


Fig. 5

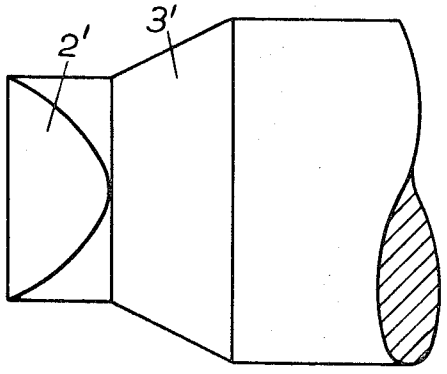


Fig. 3

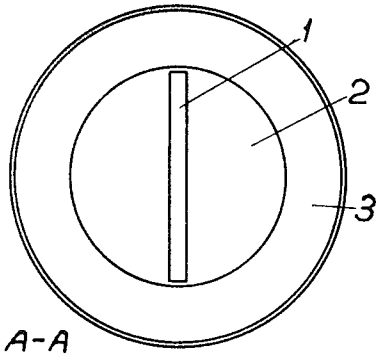
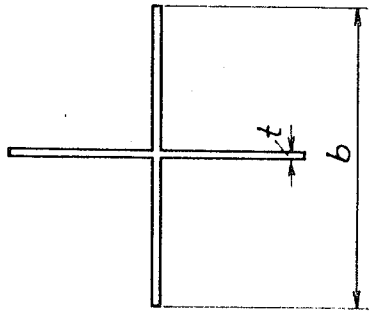


Fig. 6



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MEANS FOR HYDROSTATIC EXTRUSION

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a means for hydrostatic extrusion intended for manufacturing a tape or bar, the cross section of which has at least one part the length of which is greater than its breadth, which means comprises a pressure chamber and a die arranged to form a part of the internal limiting surface of the pressure chamber with the inlet side of the die directed upwardly.

2. The Prior Art

The die in known arrangements for hydrostatic extrusion is shaped with a circularly symmetrical inlet part directly above the calibrated part of the die.

SUMMARY OF THE INVENTION

A die according to the invention has a part of the inlet section chisel shaped. It has been found that, for example, copper and aluminum tape can be extruded in this way with considerably greater width/thickness ratio than is possible to achieve with known arrangements for hydrostatic extrusion. The favorable effect of the object of the invention involves, among other things, that the additional pressure at the start of an extrusion process is negligible. Furthermore, uneven distribution of lubricating medium is prevented and corresponding surface defects on the extruded tape are avoided.

A device according to the invention is characterized in that the die is shaped with a relatively short calibrating part seen in the direction of pressure, that is, of its longitudinal axis, and a chisel-shaped inlet channel lying at the entrance to the calibrating part, the smallest cross section of which substantially coincides with the opening in said calibrating part and the innermost cross section of which substantially coincides with the outermost cross section of an adjacent conical inlet part.

According to a preferred embodiment of the invention the apex angle of the chisel shape is chosen greater than the apex angle of the conical part.

BRIEF DESCRIPTION OF THE DRAWINGS

A device according to the invention will be described in the following with reference to the accompanying schematical drawings where

FIG. 1 shows an axial section of the die included in the device,

FIG. 2 the same die in an axial section perpendicular to the section of FIG. 1, and

FIG. 3 an end view seen in the direction indicated by arrows in FIG. 2.

FIGS. 4 and 5 show side views of the nose of the billet in two directions perpendicular to each other, FIG. 4 corresponding to FIG. 1 and FIG. 5 corresponding to FIG. 2.

FIG. 6 shows an example of a cross section which differs from rectangular shape and which, with a die having similarly shaped calibrating parts, can be extruded with the help of an arrangement according to the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

In the drawings, 1 designates the calibrating part of the die which is intended to shape a tape having a rectangular cross section. The inlet part of the die is designed with a chisel-shaped part 2 (that is, a part having divergent plane walls) having an apex angle of 90° and a conical part 3 inside this, the apex angle of which is 45°. The corresponding parts of the nose of the billet are designated 2′ and 3′. When this is shaped it must be ensured that good contact is obtained between the conical parts of the billet and the die so that effective sealing is obtained when the extrusion is initiated. The chisel-shaped billet part is shaped so that it does not prevent contact between the parts 3 and 3′, but otherwise so that it fills the die as far as possible.

The principle of the chisel-shaped inlet can also be used for sections other than those having rectangular cross section. A means according to the invention is, for example, well suited for extrusion of an aluminum section having a cross section according to FIG. 6. The die in this case has a conical inlet which is connected to an "X-chisel-shaped" part and the nose of the billet is shaped accordingly. The thickness t may, for example be 0.5 mm. and the dimension b 30 mm.

I claim:

1. Die for hydrostatic extrusion intended for manufacturing a tape or bar the cross section of which has at least one part the length of which is greater than its breadth, the die having an inlet side and an outlet side, the inlet side of the die being directed into the pressure chamber, in which the die is shaped with a relatively short calibrating part seen in the direction of its horizontal axis, a chisel-shaped inlet channel lying on the side of the calibrating part remote from the outlet side the smallest cross section of which substantially coincides with the opening in said calibrating part and an adjacent right circular conical inlet, the innermost cross section of said chisel-shaped inlet channel substantially coinciding with the outermost cross section of said conical inlet.

2. Means as claimed in claim 1, the apex angle of said chisel-shaped inlet channel being greater than the apex angle of said conical part.