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P. C. J. BIJL
CYLINDRICAL OBJECT MANUFACTURED
BY THE EXTRUSION PROCESS
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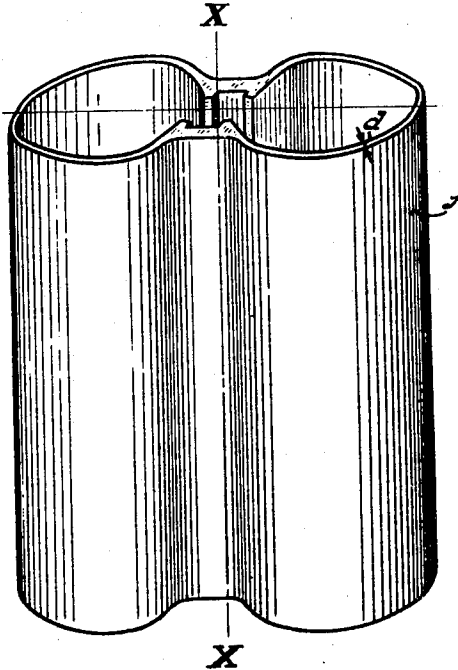


Fig. 1

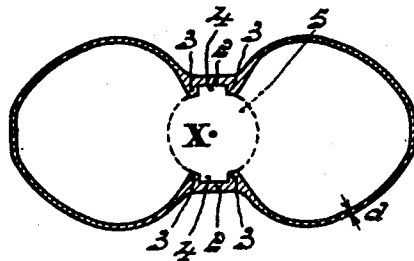


Fig. 2

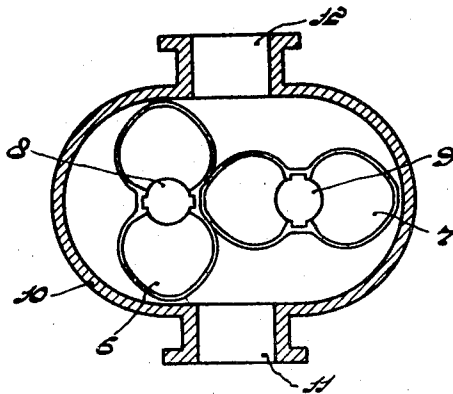


Fig. 3

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CYLINDRICAL OBJECT MANUFACTURED BY
THE EXTRUSION PROCESSPieter Cornelis Jacob Bijl, Eindhoven, Nether-
lands, assignor to Hartford National Bank and
Trust Company, Hartford, Conn., as trusteeApplication February 5, 1947, Serial No. 726,672
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3 Claims. (Cl. 103-126)

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It is known to manufacture objects from a blank by the extrusion process with the aid of a plunger and a die. If the blank consists of a metal or an alloy whose deformation resistance is small, this may be a cold process, during which the blank does not require any preheating. As a rule, this cold process may be carried out with blanks from zinc, aluminum and similar metals and alloys readily capable of being deformed at room temperature. If, on the other hand, the deformation resistance is high, for example higher than 15 kgs./mm.², the blank to be utilized must be preheated to such a temperature that the deformation resistance has sufficiently decreased. In either case a suitable lubrication of the blank and of the extrusion tool must be provided.

Applicant has found that, if the object to be manufactured includes wall parts which are more adjacent to the centre axis of the body than other parts, those parts which are most proximate to the axis of the object sometimes have a tendency during deformation to rise to a higher level than other parts of the wall which are more remote from this axis. Consequently, the finished object has to be subjected to an after-treatment and this involves a comparatively high loss of material, since in this case the height of the various parts of the wall will be equalised by removing pieces from those parts of the wall which have risen most strongly during the extrusion operation. When the differences in rise between the various parts of the wall become very great there sometimes occur, in addition, cracks in the objects in question with the result that completely useless products are obtained.

The present invention purports to provide means whereby this drawback is met.

The cylindrical object according to the invention manufactured by the extrusion process exhibits the characteristic of having wall parts which have a greater thickness than the other parts and which are located at a distance from the centre line of the body, which is smaller than the distance between the other wall parts of the object and the centre line. By proceeding in this manner the tendency of the wall parts more adjacent to the centre axis, which consists in rising more strongly during the extrusion operation than the other wall parts, is suppressed by giving these wall parts a greater thickness and it appears that no cracks occur in the walls of the object.

An advantageous use of the object according to the invention is obtained if such an object must be fastened on the shaft. According to the invention, in this case the shaft, by means of one

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or more keys, can engage corresponding key paths provided in this object and bounded by those parts of the wall which have a greater thickness than the other parts.

In order that the invention may be clearly understood and readily carried into effect, it will now be described more fully with reference to the accompanying drawing.

Fig. 1 is a perspective view of a form of construction of the object according to the invention, which in this case is shaped in the form of a cylindrical pump blade. The object is constituted by an envelope 1 which has two substantially cylindrical portions and a pair of opposed walls defining a channel connecting the spaces within the cylindrical portions and which is closed at its bottom by the base (not visible in Fig. 1). The body is manufactured by the extrusion process from a blank of aluminum. The wall thickness d of the object is throughout the same except in the vicinity of the centre line X—X of the object. The centre line X—X is determined by the two planes of symmetry of the object which are at right angles to each other. As can be seen more particularly from Fig. 2, which is a sectional view of the object, the wall thickness about the parts 2 is materially greater than that of the wall parts, which are more remote from the centre line. On the inside of the envelope 1 on each side of the parts 2 there are provided four ribs 3 which extend throughout the length of the object and which, jointly with the wall on the inside of the object, constitute keyways which are engaged by the keys 4 provided on the shaft 5 shown in dotted line. It is thus possible to obtain an efficient and simple mode of fastening of the object shown on a shaft.

Fig. 3 shows a pump in which the movable parts are constituted by two bodies 6 and 7 shaped in accordance with the invention, which are secured to shafts 8 and 9 passed through the housing of the pump in the manner illustrated in Fig. 2. The outer surfaces of the bodies 6 and 7 are so shaped that upon a rotation of the shafts 8 and 9 the outer surfaces of the said bodies invariably keep in contact with each other throughout the height of these bodies. The pump housing is indicated by 10, the suction aperture by 11 and the discharge opening of the pump by 12.

What I claim is:

1. An extruded article comprising a tubular member having a longitudinal axis, said member comprising a plurality of substantially cylindrical portions each having open sides, said substantially cylindrical portions being arranged

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substantially parallel to said longitudinal axis and on opposite sides thereof, and a central connecting portion comprising a pair of opposed walls extending parallel to said axis and integrally connected with said substantially cylindrical portions in the region of said open sides thereof, whereby a channel is defined between said opposed walls which intercommunicates the spaces defined within said substantially cylindrical portions, said opposed walls having a cross-section in a plane perpendicular to said axis of greater thickness than the cross-section of said substantially cylindrical portions in said plane.

2. An extruded article comprising a tubular member having a longitudinal axis, said member comprising a pair of substantially cylindrical portions each having open sides, said substantially cylindrical portions being arranged substantially parallel to said longitudinal axis and on opposite sides thereof, and a central connecting portion comprising a pair of opposed walls extending parallel to said axis and integrally connected with said substantially cylindrical portions in the region of said open sides thereof, whereby a channel is defined between said opposed walls which intercommunicates the spaces defined within said substantially cylindrical portions, said opposed walls having a cross-section in a plane perpendicular to said axis of greater thickness than the cross-section of said substantially cylindrical portions in said plane, and at least one of said opposed walls having a keyway formed in the interior surface thereof.

3. An extruded article comprising a tubular member having a longitudinal axis, said member comprising a pair of substantially cylindrical portions each having open sides, said substantially cylindrical portions being arranged substantially parallel to said longitudinal axis and on opposite sides thereof, and a central connecting portion comprising a pair of opposed walls extending parallel to said axis and inte-

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grally connected with said substantially cylindrical portions in the region of said open sides thereof, whereby a channel is defined between said opposed walls which intercommunicates the spaces defined within said substantially cylindrical portions, said opposed walls having a cross-section in a plane perpendicular to said axis of greater thickness than the cross-section of said substantially cylindrical portions in said plane, and said opposed walls each having at least one keyway formed in the interior surface thereof, respectively, and extending substantially parallel to said axis.

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