

System for the continuous preparation of a food product extruded from a protein-rich and water-rich material

Abstract

5

The invention relates to a system (1) comprising a protein-rich and water-rich raw material, a sleeve (10) within which at least one screw (20) is driven so as to subject the raw material to a thermomechanical treatment, and a die (30). The die (30) comprises a tubular outer casing (31) having a frusto-conical lower face (33) which diverges downstream, this outer casing (31) being
10 fixedly connected to the sleeve (10) such that the material (4) exiting the sleeve is pushed through the die by the screw or screws (20). The die also comprises an internal member (32) mounted so as to rotate coaxially relative to the casing and including both an upstream part (32A) which extends at least partially inside the casing and has a frusto-conical outer face (34) that diverges downstream and a downstream part (32B) which extends outside the casing and is coupled to a drive (36) for
15 rotating the member. The casing and/or the upstream part of the member are thermally regulated. The frusto-conical inner face of the casing and the frusto-conical outer face of the member define a channel (35) therebetween, in which channel the material (5) flows such that, when the material is pushed through the die, the material advances in the channel from the upstream end (35A) to the downstream end (35B) of the channel, via which the material exits to the outside of the casing. The
20 sleeve (10) comprises, at the downstream end thereof, an end plate (13) which internally defines a through-bore (15) which is coaxial to the die and channels the material pushed out of the sleeve by the screw or screws. A diffuser (17) which fixedly connects the end plate to the outer casing defines a distribution chamber (17A) that connects the bore of the end plate to the upstream end of the channel, this distribution chamber being shaped so as to distribute the material exiting the sleeve
25 around the central axis of the die in the upstream end of the channel.

Fig. 4