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APPARATUS FOR EVAPORATING VOLATILE CONSTITUENTS FROM
PLASTIC, ELASTIC AND VISCOUS MATERIALS
Filed March 8, 1961

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FIG. 1

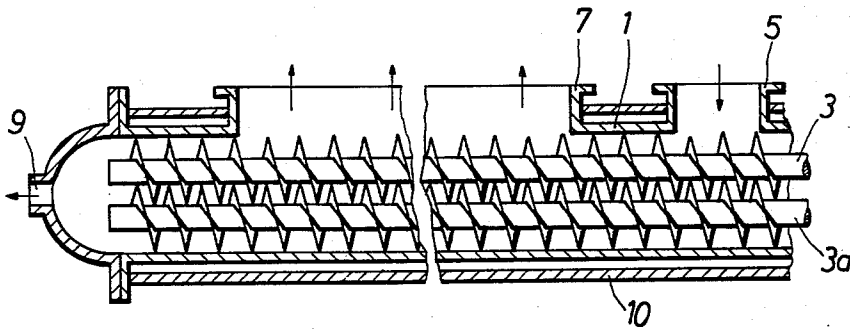
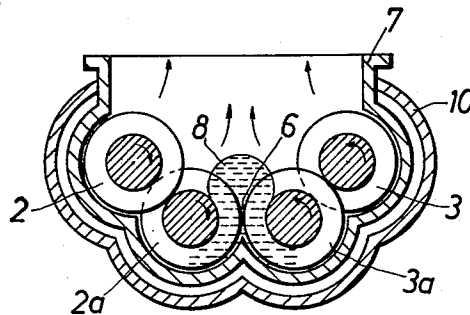


FIG. 2



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APPARATUS FOR EVAPORATING VOLATILE CON-

STITUENTS FROM PLASTIC, ELASTIC AND VIS-

COUS MATERIALS

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4 Claims. (Cl. 34-183)

The invention relates to an apparatus for evaporating volatile constituents from plastic, elastic or viscous materials, for example polymerised materials, and consists of a trough-like housing formed with evaporation apertures and comprising a plurality of interengaging conveyor worms which are capable of being heated and which are arranged on the heated internal wall of the housing.

With apparatus of this nature, the products expanding during the evaporation process are frequently forced into the evaporation apertures, the products being additionally driven by radial components. The blowing procedure occurs to an increased extent when operating under vacuum. The evaporation apertures become progressively clogged, since the product forced into them can only flow more slowly back to the conveyor worms in proportion as the said product has become stiffer due to giving off vapour or subsequent polymerisation. The sluggish return flow of components of the material produces the danger of these becoming chemically changed and impairing the quality of the final products.

It has now been found that these disadvantages are obviated if the worms are composed of pairs consisting of interengaging single worms rotating in the same direction, the said pairs in their turn being driven in an opposite direction of rotation and being arranged symmetrically of the longitudinal axis of the housing in such a way that the innermost worms of the pairs are in contact longitudinally at the outside diameter. The pairs of worms can be arranged in a horizontal plane, but they can also be in planes which form an upwardly open angle in relation to one another. The effect hereby achieved is that the composition is spread uniformly in a thin layer by the pairs of worms over the hot walls of the housing, is then drawn into the space between the two pairs of worms to form a bead which lies exposed in the evaporation shaft and is again spread towards opposite sides over the hot walls of the housing. The material is thus guided in two cycles which contact one another in the middle of the shaft.

One embodiment of the invention is shown diagrammatically and by way of example in the drawing. FIG. 1 is a longitudinal section through the evaporation device and FIG. 2 is a cross-section through this device in the direction of the line A—B. The pairs of worms 2 and 2a, and 3 and 3a respectively, revolve on the inside

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walls of a trough-like housing 1 which is provided with a heating jacket 10; the pair of worms 2 and 2a and the pair of worms 3 and 3a each run in the same direction, but the direction of the pairs is opposite to one another, as will be seen from the arrows. The material is supplied to the worms through the union 5 on the housing, is taken up by the pairs of worms in the gap 6 (FIG. 2) and is guided along the heated walls towards both sides, whereafter the volatile constituents escape upwardly through the evaporation shaft 7. During the axial conveyance of the composition, the latter is conveyed on both sides of the housing by each of the pairs of worms 2, 2a and 3, 3a with a downward inclination towards the centre between the said pairs, where a bead 8 is formed.

This bead of material is progressively drawn in between the innermost worm shafts 2a and 3a and decreases gradually in the conveying direction of the worms, corresponding to the progressive thickening of the material. The concentrate is forced out through the housing aperture 9.

We claim:

1. An evaporation apparatus comprising a housing having an inlet and outlet, a first and a second pair of worms rotatably mounted side by side in said housing, the worms of said first pair having one direction of pitch and intermeshing with each other, the worms of said second pair having an opposite pitch and intermeshing with each other the innermost worms of each pair being positioned in non-intermeshing peripheral adjacency relation, the lower portion of said housing forming a trough-shaped casing surrounding the lower portions of said worms, means for rotating said first pair of worms in one direction and said second pair of worms in the opposite direction, means for heating at least a portion of the wall of the housing adjacent said worms and means for removing vapor from the housing.

2. Apparatus according to claim 1 in which said means for rotating said worms are means for rotating the worms so that the upper surfaces of the worm pairs rotate toward each other.

3. Apparatus according to claim 1 in which said worms are substantially parallelly positioned in said housing.

4. Apparatus according to claim 1 in which said pairs of worms are positioned so that their axes lie in planes which form an upwardly open angle relative to one another.

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