

[54] SOAP PLODDER NOZZLE PLATE ASSEMBLY

[75] Inventor: Charles F. Fischer, Jersey City, N.J.
 [73] Assignee: Colgate-Palmolive Company, New York, N.Y.
 [22] Filed: Mar. 19, 1973
 [21] Appl. No.: 342,775

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 308,954, Nov. 24, 1972.
 [52] U.S. Cl. 425/467, 425/380
 [51] Int. Cl. B29f 3/04
 [58] Field of Search 425/461, 466, 467, 380, 425/191, 192, 199, 188, 468, 470, 378, 379

References Cited

UNITED STATES PATENTS

2,332,829 10/1943 Parsons et al. 425/378 UX

2,713,188 7/1955 Garvey 425/378 X
 3,108,326 10/1963 Thiel 425/192

Primary Examiner—R. Spencer Annear
 Assistant Examiner—Mark Rosenbaum
 Attorney, Agent, or Firm—Herbert S. Sylvester, Esq.;
 Murray M. Grill, Esq.; Kenneth A. Koch, Esq.

[57] ABSTRACT

A soap plodder nozzle plate assembly for obtaining a striated soap extrusion showing stripe definition without requiring trimming through a soap plodder having an extrusion outlet through which a mass of soap is extruded. The assembly includes a nozzle plate for final shaping the mass of soap and a nozzle plate holder. The nozzle plate has a sharply inwardly tapering aperture of lesser dimension than that of said extrusion outlet.

4 Claims, 2 Drawing Figures

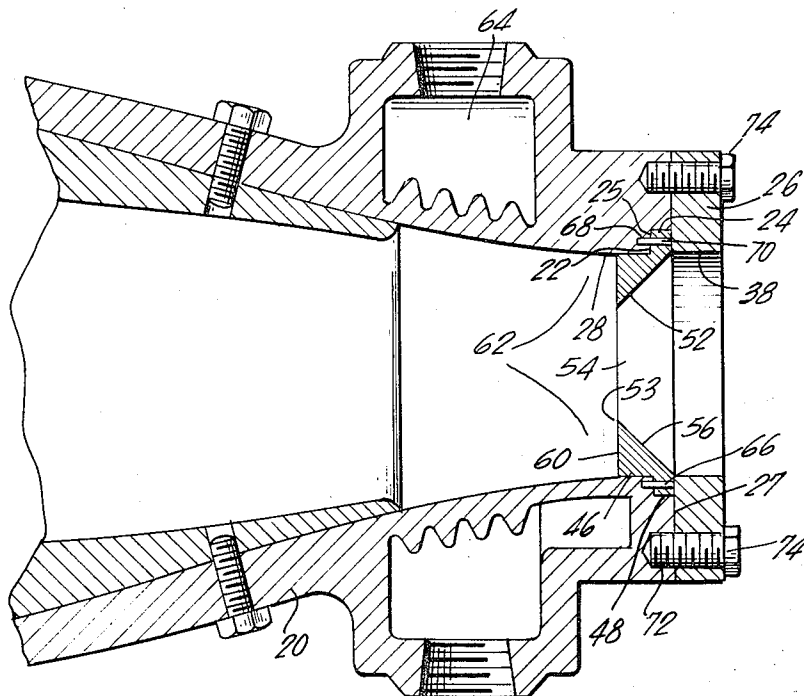


FIG. 1

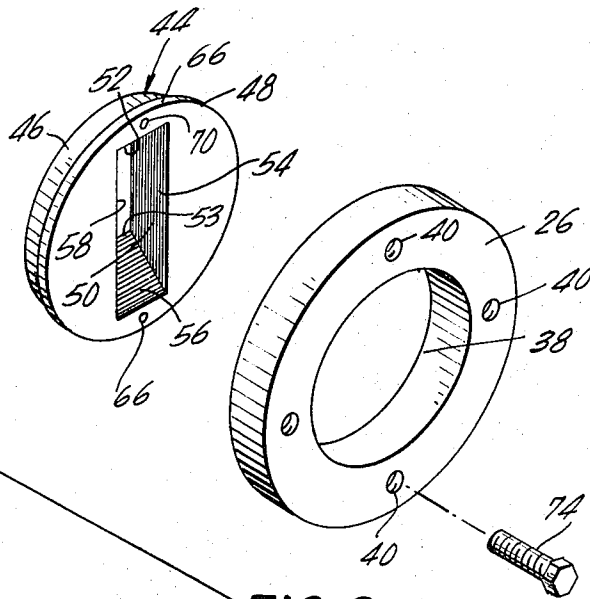
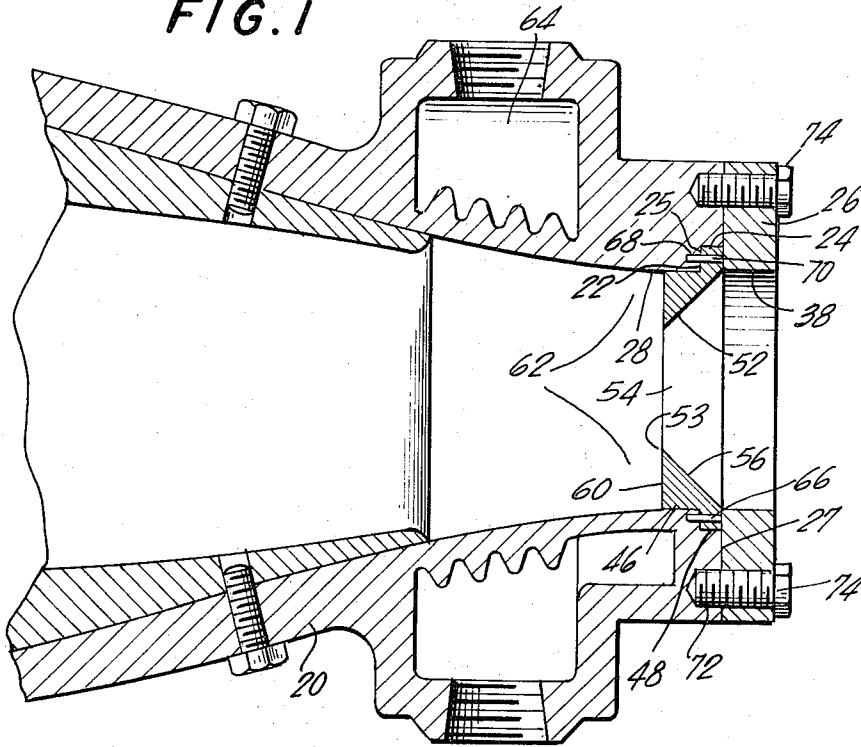


FIG. 2

SOAP PLODDER NOZZLE PLATE ASSEMBLY RELATED APPLICATION

This application is a continuation in part of an application for patent of Charles F. Fischer for Means For High Speed Trimming of SOAP Extrusions, Ser. No. 308,954 filed Nov. 24, 1972.

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to an apparatus for processing soap. More particularly, the invention relates to a soap plodder Nozzle Plate assembly for soap extrusions especially those of striated bar soap to obtain an improved surface finish on high speed extrusions without requiring trimming.

2. Description of the Prior Art

Attempts have been made in the past to provide for the trimming of striated soap extrusions by directly attaching trimming means to the soap plodder housing such as is disclosed in the Austrian Pat. No. 95,947. However, when soap is directly extruded from the housing against the wire trimming means, not only is a large amount of the soap mass cut off and either wasted or subjected to additional treatment, but it has been found that high-speed finishing of bar extrusions is not possible.

The above identified co-pending application provides for a wire trimmer assembly wherein a nozzle plate is detachably held inwardly of a wire cutting head. While such an arrangement allows for high-speed trimming, such requires careful adjustment of each wire to provide for sizing of the shaped extrusions into exact width and thickness to attain a finished bar and requires maintenance, service and replacement of the trimming wires which can cause delays.

SUMMARY OF THE INVENTION

The present invention overcomes the disadvantages of the prior art in connection with soap extrusions whereby striated soap extrusions wherein the striations have a clear stripe definition can be obtained directly upon the extrusion thereof.

The invention includes a soap plodder nozzle plate assembly including a nozzle plate for final shaping of the mass of soap as it is extruded and a nozzle plate holder. The nozzle plate has an aperture which inwardly tapers preferably at 45 degree angle and is of less size than the size of the extrusion outlet of the soap plodder to which it is attached.

It is therefore the primary object of this invention to provide a soap plodder nozzle plate assembly which eliminates the need for subsequent trimming of striated soap extrusions thereby allowing for higher speed and more economical production of striated soap bars.

These, together with the various ancillary objects and features of the invention which will become apparent as the following description proceeds, are attained by this soap plodder nozzle plate assembly, a preferred embodiment of which is illustrated in the accompanying drawing, by way of example only, wherein:

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a longitudinal sectional view through a portion of a plodder housing illustrating an embodiment of the present invention; and

FIG. 2 is an exploded perspective view of the various parts of the nozzle plate assembly.

DETAILED DESCRIPTION OF THE INVENTION

With continuing reference to the accompanying drawing, wherein like reference numerals designate similar parts throughout the various views, reference numeral 20 is used to generally designate a plodder housing in which a mass of soap is levigated and then extruded. The housing 20 terminates in an outlet 22 which is counterbored at 24 forming a shoulder 25.

A nozzle plate holder 26 is provided, which has a central bore 38 therethrough of the said diameter as that of the extrusion outlet 28 of the soap plodder housing 20. The nozzle plate holder 26 includes a plurality of annularly spaced bolt holes 40 which extend therethrough.

A nozzle plate 44 is provided which includes a barrel portion 46 which fits within the outlet 28 and a flange portion 48 which lies flush against the shoulder 25 and with the flange portion 44 being of greater diameter than the outlet 28 thereby filling the counterbore 24 and lying flush with the outer surface of the housing 20. The barrel portion 46 and the flange 48 have an inner configuration forming a die 50 which is preferably rectangular or of any other suitable configuration for finally and cleanly shaping the mass of soap being extruded.

Each of the four sides 52, 54 56 and 58, of the nozzle plate defining the die 50 are inwardly and rearwardly tapered at an angle of 45° which has been found to be optimum. The angle at which the die is tapered can provide satisfactory results only from 30° to 60°. Lesser angles will not provide clear stripe definition while larger angles will so weaken the die as to provide for too short an operative life.

The die 50 is of considerably lesser dimension than the size of the outlet 28 forming a buffer shoulder 60 at the inner face of the nozzle plate so that extruded soap masses will be packed adjacent the general areas indicated at 62 and pre-shape the mass of soap as it is being extruded. The frictional heat is accounted for by the provision of a surrounding coolant chamber 64 in the extruder housing 20.

The flange 48 may be provided with guide holes 66 therein for alignment with guide recesses 68 in the housing 20 which open into the shoulder 25. Pins 70 are employed to properly align the nozzle plate 44.

The housing 20 is provided with a plurality of threaded recesses 72 therein for alignment with bolt holes 40 so that bolts 74 may be employed to secure the nozzle plate holder 26 in position to hold the nozzle plate in its desired position.

In operation the soap plodder is charged with soap chips and the necessary dye is injected into the soap mass. The resulting extrusions through the die 50 will show clear striations on the surface of the extrusion and soap bars pressed or cut from these extrusions will provide for good stripe definition. This is because the sharp 45° angle of the die 50 gives unexpectedly sharp definition to the striations.

Further, the ratio of the open area of the outlet 28 and bore 38 to the narrowest opening of the die 50 is preferably in the order of 2.76 to 1 prevents any smearing effect during extrusion to reduce the definition of the striations. It has been found that a ratio wherein the

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area of the outlet 28 to the die 50 of at least 2 to 1 is necessary to obtain good results.

A latitude of modification, substitution and change is intended in the foregoing disclosure, and in some instances, some features of the present invention may be employed without a corresponding use of other features.

I claim:

1. A nozzle plate assembly for a soap plodder for producing striated soap extrusions that includes a housing having a discharge end provided with an outlet, said nozzle plate assembly comprising,

- a. a nozzle plate adjacent said outlet having an inner and outer face,
- b. said nozzle plate having an extrusion opening extending between said inner and outer face and communicating with said housing,
- c. said extrusion opening being larger in dimensions at said outer face than at said inner face and being

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defined by walls that are axially diverging from said inner surface to said outer face at an angle from about 30° to about 60° and,

d. securing means for fastening said nozzle plate to said housing,

e. the area of said extrusion opening at said outer face being at least twice the area of said extrusion opening at said inner face.

2. A nozzle plate assembly according to claim 1 wherein said walls diverge at an angle of 45°.

3. A nozzle plate assembly according to claim 1 wherein the area of said outlet is in the order of 2.76 times that of said extrusion opening at said inner face.

4. A nozzle plate assembly according to claim 1 wherein said securing means includes a nozzle plate holder adjacent the outer surface of said nozzle plate, said nozzle plate holder having a bore therethrough communicating with said extrusion opening.

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