

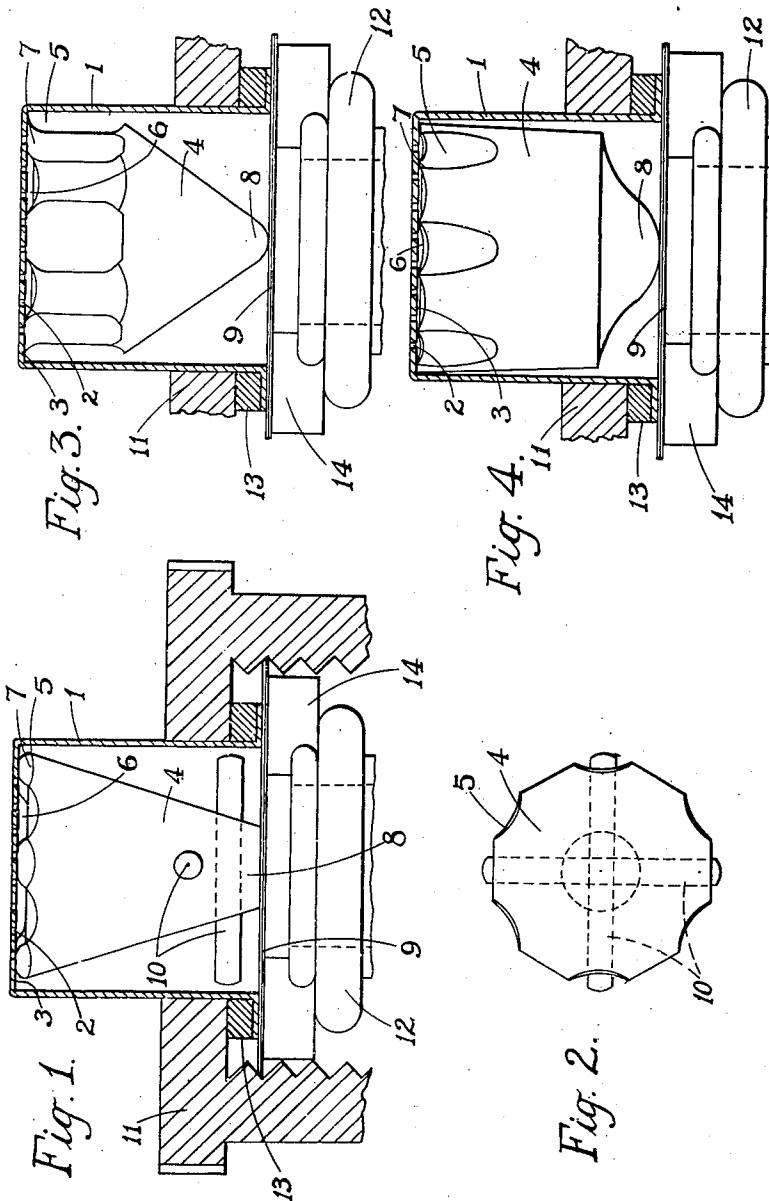
April 18, 1939.

W. H. STOKES

2,155,338

NOZZLE FOR USE IN THE MANUFACTURE AND PRODUCTION OF  
ARTIFICIAL THREADS, FILAMENTS, AND THE LIKE

Filed Dec. 7, 1937



INVENTOR  
WILLIAM HENRY STOKES

By his attorneys

Howson and Howson

## UNITED STATES PATENT OFFICE

2,155,338

NOZZLE FOR USE IN THE MANUFACTURE  
AND PRODUCTION OF ARTIFICIAL  
THREADS, FILAMENTS, AND THE LIKEWilliam Henry Stokes, Allesley, near Coventry,  
England, assignor to Courtaulds, Limited,  
London, England, a British companyApplication December 7, 1937, Serial No. 178,594  
In Great Britain December 17, 1936

8 Claims. (Cl. 18—8)

This invention relates to improved nozzles or jets for use in the production of artificial threads, filaments and the like by an extrusion process.

In the production of threads by extruding for example viscose, through minute holes in the face of a jet into a coagulant, it has been customary in the past to use a hollow cylindrical jet, the interior cross-sectional area of which is considerably greater than the sum of the areas of the holes in its face. It has been found that after extrusion has continued for some time the interior of the jet contains flocks of jelly-like material. This is probably viscose, coagulated or partially coagulated by the heat from the coagulating bath. These flocks of jelly gradually increase in size and may fill or cover up one or more of the holes with the result that the thread being formed has an insufficient number of filaments and is irregular.

The object of the present invention is to provide an improved extrusion device whereby the above-mentioned difficulties are minimised or completely avoided.

According to the invention means are provided loosely inserted inside the jet for causing the liquid being extruded to sweep across the interior of the jet from the periphery towards the centre thereof, prior to extrusion. Such means consist of a piece of resistant material, such as metal or other suitable material, the cross-sectional area of which is less than that of the interior of the jet by at least the total area of the holes in the jet face, and which is spaced apart from the face of the jet by a distance which is small compared with the length of the jet.

The metallic or other insert may be cylindrical, conical, pyramidal or the like in form, provided if necessary with ribs or recesses on its peripheral surface to enable liquid to pass between the insert and the walls of the jet.

The accompanying diagrammatic drawing illustrates jets provided with inserts according to the invention:

Figure 1 shows in elevation a jet with a conical insert:

Figure 2 shows in plan the conical insert of Figure 1:

Figure 3 shows in elevation a jet with an insert which is partly conical and partly hexagonal:

Figure 4 shows in elevation a jet with a slightly tapering substantially cylindrical insert.

In each case the insert 4 is placed in the jet 1 with its broadest end adjacent to the interior face 3 of the jet 1 in which are the extrusion holes or orifices 2. It is spaced apart from the

said interior face as at 6, by projections 7. Care is taken to provide spaces 5 between the jet walls 1 and the insert 4 through which the liquid can pass to the face of the jet. If desired, the end 8 of the insert may be arranged to support the filter 9 which is usually fitted across the jet. Additional means such as two bars 10 at right angles to each other, shown in Figures 1 and 2, may also be provided to support the filter. The jet is held in position in the holder 11 against the liquid supply tube 12 by means of the washer 13 and the ring nut 14.

The insert is spaced at such a distance from the face of the jet that continual motion of the liquid is caused. The distance must not be so small that an adequate supply of liquid is prevented from reaching the holes, nor so large that stagnation is possible.

What I claim is:

1. An improved jet for use in the production of artificial filaments, threads and the like which comprises a hollow cylindrical jet and loosely inserted therein a piece of resistant material of greater cross-sectional area at one end than the other provided at its larger end with projections to space it apart from the face of the jet and in its side walls at the widest part thereof with passages through which liquid may pass between the insert and the walls of the jet.

2. An improved jet for use in the production of artificial filaments, threads and the like which comprises a hollow cylindrical jet and loosely inserted therein a substantially conical piece of resistant material provided on its broad end with projections adapted to space it apart from the face of the jet and in its walls at the widest part thereof with projections and recesses to enable the liquid to pass between the insert and the walls of the jet.

3. An improved jet for use in the production of artificial filaments, threads and the like which comprises a hollow cylindrical jet and loosely inserted therein a piece of resistant material of partly conical and partly hexagonal shape provided at its broad end with projections adapted to space it apart from the face of the jet.

4. An improved jet for use in the production of artificial filaments, threads and the like which comprises a hollow cylindrical jet and loosely inserted therein a piece of resistant material of slightly tapering substantially cylindrical shape provided at its broad end with projections adapted to space it apart from the face of the jet and in its walls at the widest part thereof with grooves or recesses through which the liquid can pass.

5. Means for insertion into a jet for use in the production of artificial threads, filaments and the like to cause the liquid being extruded to sweep across the interior face of the jet prior to extrusion which comprises a piece of resistant material of greater cross-sectional area at one end than the other provided at its larger end with projections to space it apart from the face of the jet when it is inserted therein and in its side walls at the widest part thereof with passages through which the liquid can pass.

6. Means for insertion into a jet for use in the production of artificial threads, filaments and the like to cause the liquid being extruded to sweep across the interior face of the jet prior to extrusion, which comprises a substantially conical piece of resistant material provided on its broad end with projections adapted to space it apart from the face of the jet when it is inserted therein, and in its walls at the widest part thereof with projections or recesses to enable the liquid to pass between the insert and the walls of the jet.

7. Means for insertion into a jet for use in the production of artificial threads, filaments and the like to cause the liquid being extruded to sweep across the interior face of the jet prior to extrusion, which comprises a piece of resistant material of partly conical and partly hexagonal shape provided at its broad end with projections adapted to space it apart from the face of the jet when it is inserted therein.

8. Means for insertion into a jet for use in the production of artificial threads, filaments and the like to cause the liquid being extruded to sweep across the interior face of the jet prior to extrusion, which comprises a piece of resistant material of slightly tapering substantially cylindrical shape provided at its broad end with projections adapted to space it apart from the face of the jet when it is inserted therein and in its walls at the widest part thereof with grooves or recesses through which the liquid can pass.

WILLIAM HENRY STOKES.