

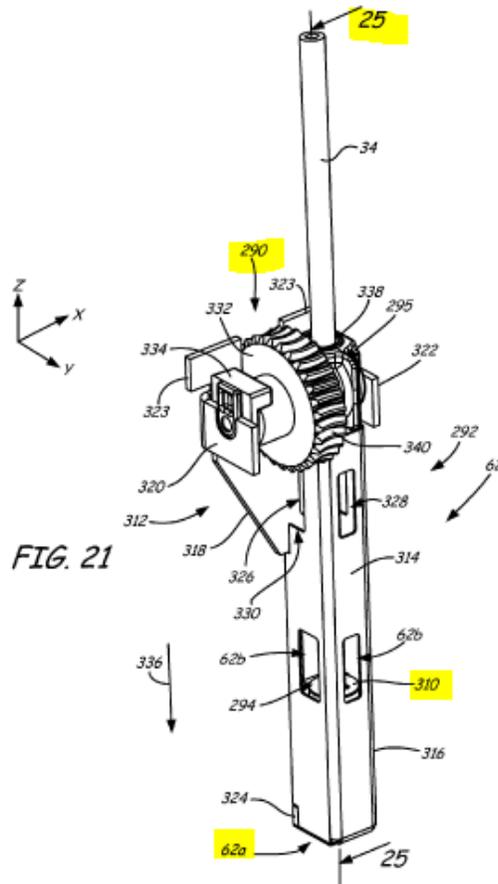
**REQUEST FOR REFERENCES
FOR PATENT APP. NO. 12/976204:
PRINT HEAD FOR USE IN FUSED DEPOSITION MODELING SYSTEM**

I. BASIC APPLICATION DATA:

- a. App Number: 12/976204
- b. Assignee: STRATASYS, INC., Eden Prairie, MN (US)
- c. Prior Art Cutoff Date: Dec. 22, 2010
- d. Availability for Challenge: Dec. 28, 2012

II. APPLICATION OVERVIEW

This patent relates to a print head for use in a fused disposition modeling (FDM) system, which includes a cartridge assembly and a liquefier pump assembly contained in the cartridge assembly. The main mechanism is illustrated in the figure below. The figure depicts a front, top perspective view of a liquefier pump assembly of the print head. A filament material can be fed into opening **25**. Drive mechanism **290** engages the filament material and drives it further down the channel. The filament reaches liquefier **310** and is liquefied. The liquefied material is then dispensed at **62a** to print an object.



III. WHY IT MATTERS:

Cartridges that can be readily swapped out are useful for printing with multiple materials and colors of plastic. The 3D printing community has been experimenting with multiple colors of plastic and multiple substrates of liquefied material for some time, and this patent threatens to squash such innovation.

IV. INDEPENDENT CLAIMS & REFERENCES NEEDED

a. Claim 1

*A print head for use in a fused deposition modeling system, the print head comprising:
a liquefier pump assembly;
a housing body; and
a housing cover configured to attach to the housing body to define a cartridge assembly,
wherein the liquefier pump assembly is retained by the cartridge assembly.*

This claim is *extremely* broad. **We need references that describe a liquefier pump assembly that is part of a cartridge-type structure, ideally in a 3D printing or other manufacturing context.**

b. Claim 8

A liquefier pump assembly for use in a print head of a fused deposition modeling system, the liquefier pump assembly comprising:

a structural component;

a drive block retained by the structural component, the drive block comprising a first opening configured to engage with a filament guide tube, a second opposing opening, and a third opening, the first and second openings being offset by a linear channel configured to receive a filament of a material, and the third opening intersecting the linear channel;

a liquefier assembly encased by the structure component, the liquefier assembly comprising an inlet coupled to the second opening of the drive block; and

a drive mechanism retained by the structural component and comprising a rotatable component extending into the channel of the drive block through the third opening, the rotatable component being configured to engage the received filament in the channel and drive the filament into the liquefier assembly.

This claim corresponds to the apparatus illustrated in the figure below. **We need references that cover a liquefier pump assembly, including a drive block (295) to feed filament into a liquefier.** The drive block should include a linear channel for the filament, with an opening for a rotating drive mechanism (346) to move the filament.

