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Moussa

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(54) **THREE DIMENSIONAL PRINTING MATERIAL SYSTEM AND METHOD**

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C08J 3/28	(2006.01)
C08F 2/50	(2006.01)
C09D 133/08	(2006.01)
C09D 11/101	(2014.01)
C09D 11/107	(2014.01)
C09D 11/322	(2014.01)

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CPC *C09D 133/08* (2013.01); *B29C 67/0081* (2013.01); *C09D 11/101* (2013.01); *C09D 11/107* (2013.01); *C09D 11/322* (2013.01)

(58) **Field of Classification Search**
CPC B29C 67/0081; C09D 11/101; C09D 11/107; C09D 11/322; C09D 133/08
See application file for complete search history.

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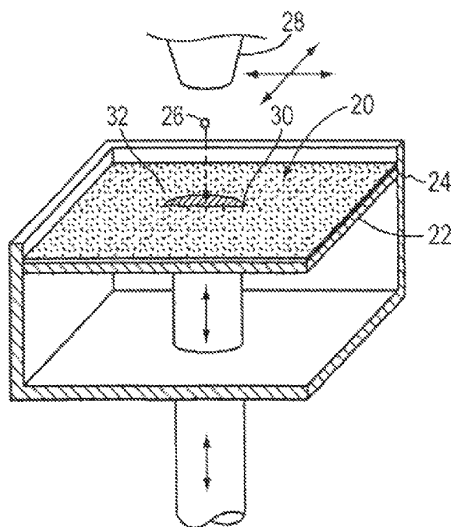
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(57) **ABSTRACT**

A materials system and methods are provided to enable the formation of articles by 3D printing. In some embodiments, a materials system includes a substantially dry particulate material that includes an insoluble filler, a soluble filler, and a transition metal catalyst. The materials system further comprises a fluid binder including a (meth)acrylate monomer, an allyl ether functional monomer and/or oligomer, and a free-radical photoinitiator.
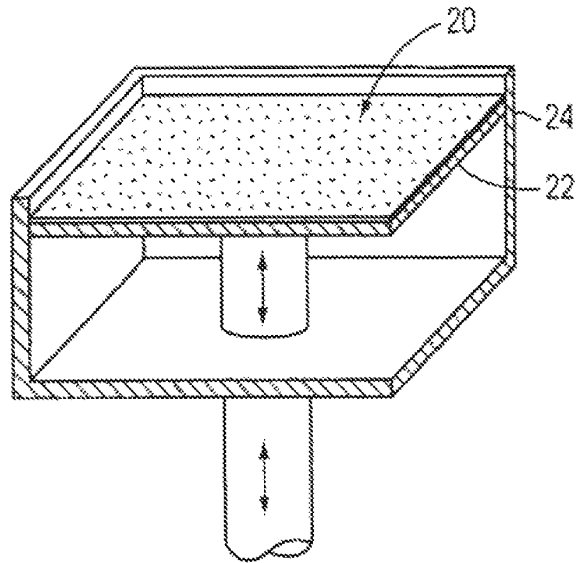
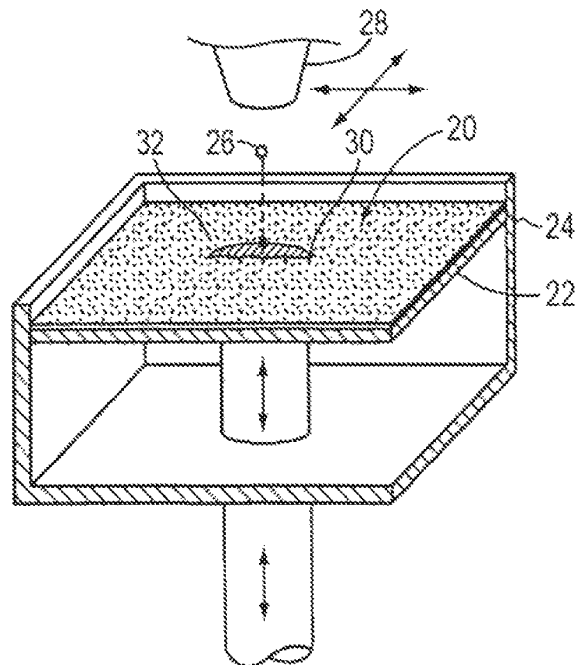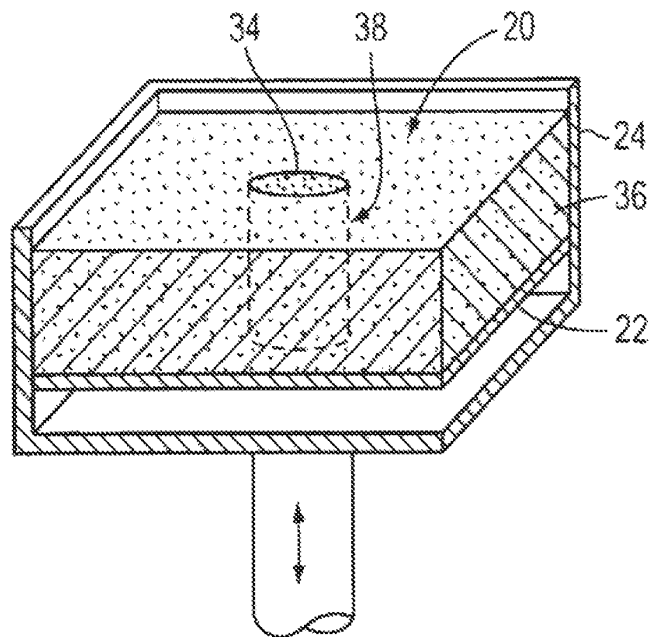**22 Claims, 22 Drawing Sheets**
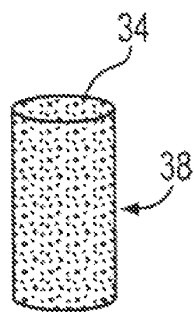
FIG. 1

FIG. 2

FIG. 3

FIG. 4

TYPICAL RESPONSE FROM THE WASHBURN METHOD

SQUARED MASS (kg²)

TIME (seconds)

FIG. 5

100 microns

FIG. 6A

DOCKET ALARM
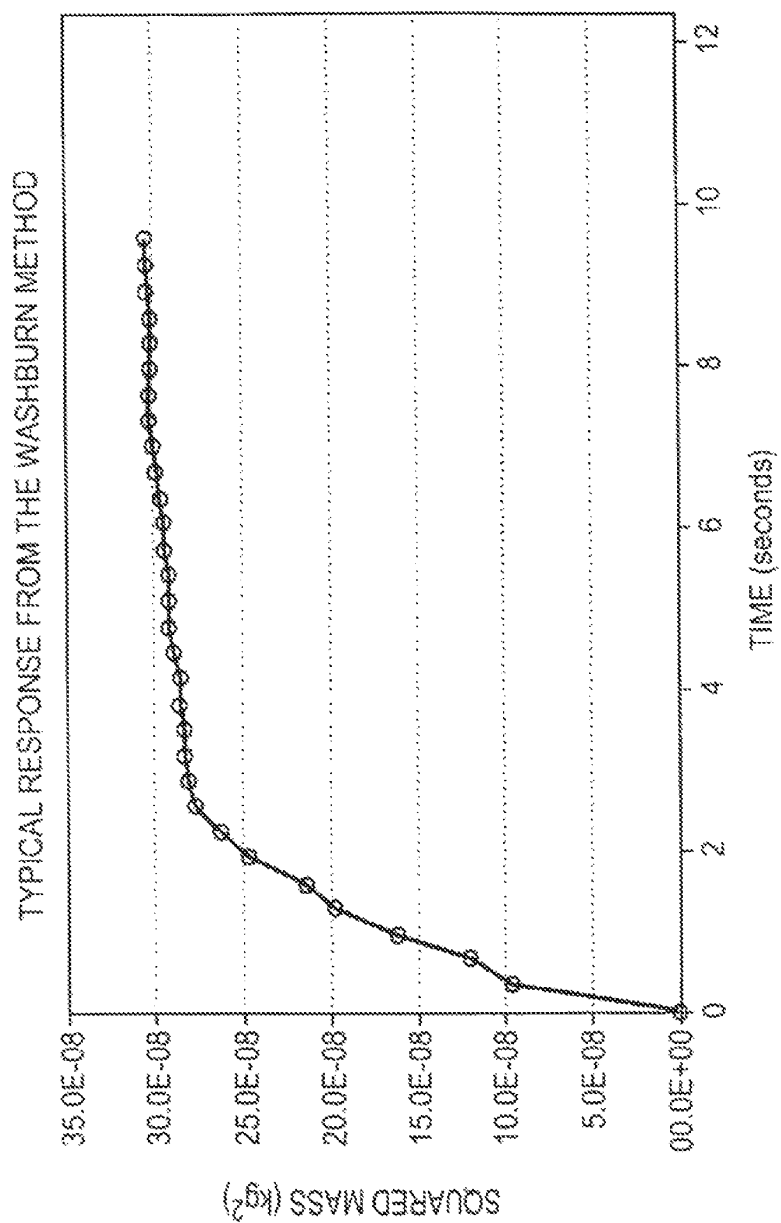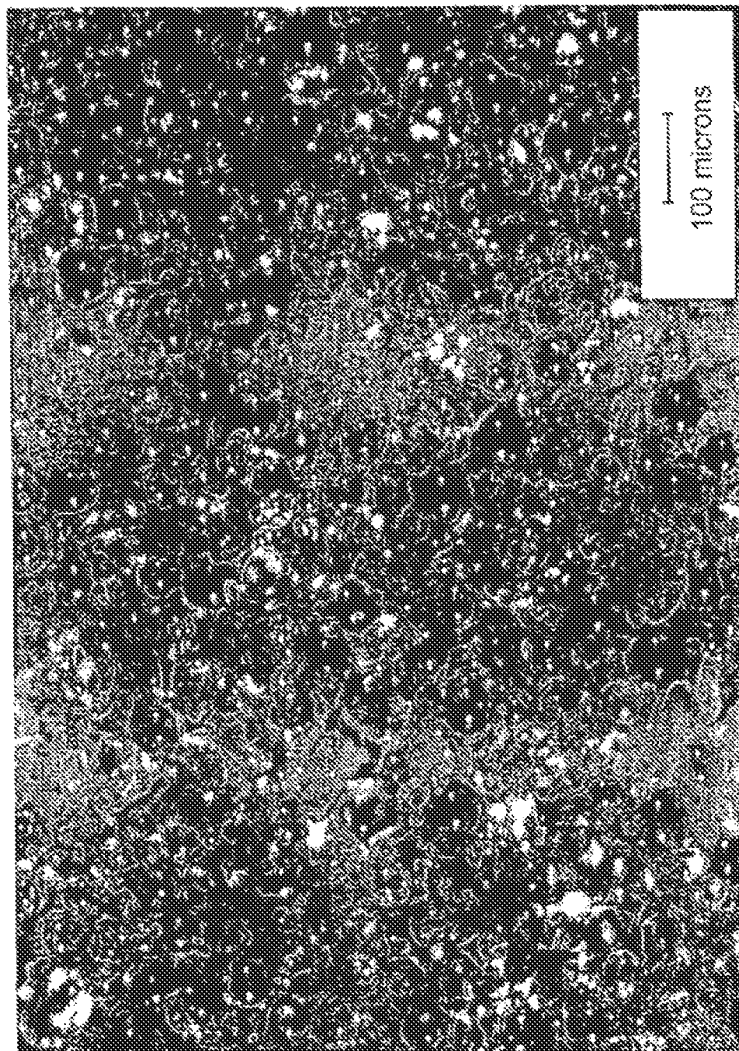
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