

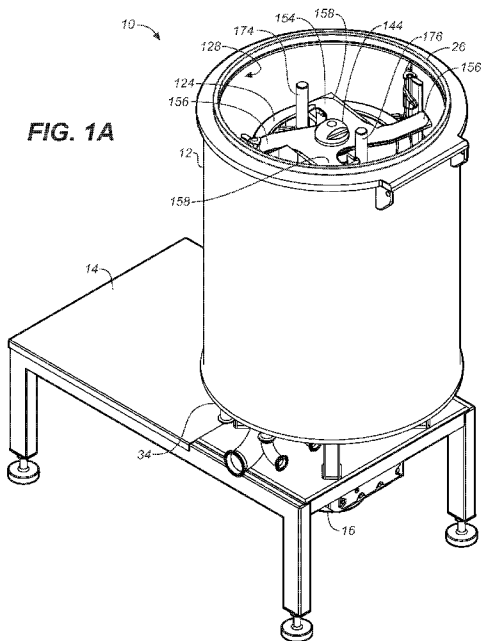


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[Continued on next page]

(54) Title: MULTI-SURFACE HEAT EXCHANGE WITH VACUUM CAPABILITY AND MAGNETIC SCRAPERS

(57) Abstract: A multi-surface scraped surface heat exchanger for heating or cooling of liquids or slurries having a series of three or more concentric tubes that provide four or more heat transfer surfaces, three of which are independently temperature and flow controllable. Slurry products are cooled or heated across all of the surfaces in line or in parallel. Scrapers are mounted on a rotor assembly and are magnetically or spring tensioned to increase surface engagement and may be contoured to enhance folding and mixing of product.



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A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - B01F 15/06 (2012.01)

USPC - 165/94

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC(8) - B01F 15/06; F28D 11/00, 11/02, 11/04; F28F 5/00 (2012.01)

USPC - 126/357.1; 165/46, 51, 81, 92, 94, 222

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

PatBase, Google Patents

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|--|---------------------------------------|
| X | US 2003/0042007 A1 (SANDU et al) 06 March 2003 (06.03.2003) entire document | 1-6, 8, 10, 19, 22, 23, 25 |
| Y | | 7, 9, 11-14, 16-18, 20, 21, 24, 26-28 |
| Y | US 3,424,234 A (LAING) 28 January 1969 (28.01.1969) entire document | 7 |
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| A | US 4,176,969 A (WALLACE et al) 04 December 1979 (04.12.1979) entire document | 15 |

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04 June 2012

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