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(54) **VACUUM CYLINDER WITH RECESSED PORTIONS FOR HOLDING ARTICLES FOR PRINTING**

2,249,939 A	7/1941	Branan
2,459,538 A	1/1949	Robbins
2,920,556 A	1/1960	Medert et al.
2,974,838 A	3/1961	Parham
3,794,314 A	2/1974	Coburn et al.
4,303,459 A	12/1981	Kleber
4,561,642 A	12/1985	Parque
4,590,854 A	5/1986	Anderson
4,619,384 A	10/1986	Chu et al.
4,846,483 A	7/1989	Sorensen

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(52) **U.S. Cl.**

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(58) **Field of Classification Search**

None
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

701,841 A 6/1902 Chandler
1,830,638 A 11/1931 Butz

FOREIGN PATENT DOCUMENTS

CN	201703004 U	1/2011
CN	105073432 A	11/2015

(Continued)

OTHER PUBLICATIONS

International Search Report and Written Opinion mailed Sep. 1, 2014 in PCT/US2014/032798.

(Continued)

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(57) **ABSTRACT**

A customization system for an article of equipment includes a printing system for printing a graphic onto the article. The customization system also includes a cylinder for holding the article for printing a graphic upon the article. The cylinder can include one or more recesses in the outer surface of the cylinder to accommodate the article. A partial vacuum applied to the article when disposed within the recess through ports in the bottom surface of the recess holds the article in place within the recess while the cylinder rotates during printing. A gasket can be included between the recess in the cylinder and the article to provide an airtight seal to hold the article in place.

21 Claims, 8 Drawing Sheets

