



Europäisches Patentamt  
European Patent Office  
Office européen des brevets

(11) Publication number:

**0 023 288**  
**A3**

(12)

## EUROPEAN PATENT APPLICATION

(21) Application number: 80103859.7

(51) Int. Cl.<sup>3</sup>: **B 31 D 5/00**

(22) Date of filing: 07.07.80

(30) Priority: 06.07.79 US 55659  
06.07.79 US 55232  
06.07.79 US 55234  
06.07.79 US 55231  
06.07.79 US 55233  
06.07.79 US 55247

(43) Date of publication of application:  
04.02.81 Bulletin 81/5

(88) Date of deferred publication of search report: 01.04.81

(84) Designated Contracting States:  
BE DE FR GB IT

(71) Applicant: **PHILLIPS PETROLEUM COMPANY**  
5th and Keeler  
Bartlesville Oklahoma 74004(US)

(72) Inventor: **Eddy, William Robert**  
4705 N.W. 82nd Street  
Kansas City, Missouri(US)

(72) Inventor: **Tylor, Raymond Charles**  
6256 N. Broadway  
Kansas City, Missouri(US)

(72) Inventor: **Young, Jerry Wayne**  
807 Citidel Drive  
Weston, Missouri(US)

(74) Representative: **Altenburg, Udo, Dipl.-Phys. et al,**  
Patent- und Rechtsanwälte Pagenberg - Dost -  
Altenburg Galileiplatz 1  
D-8000 München 80(DE)

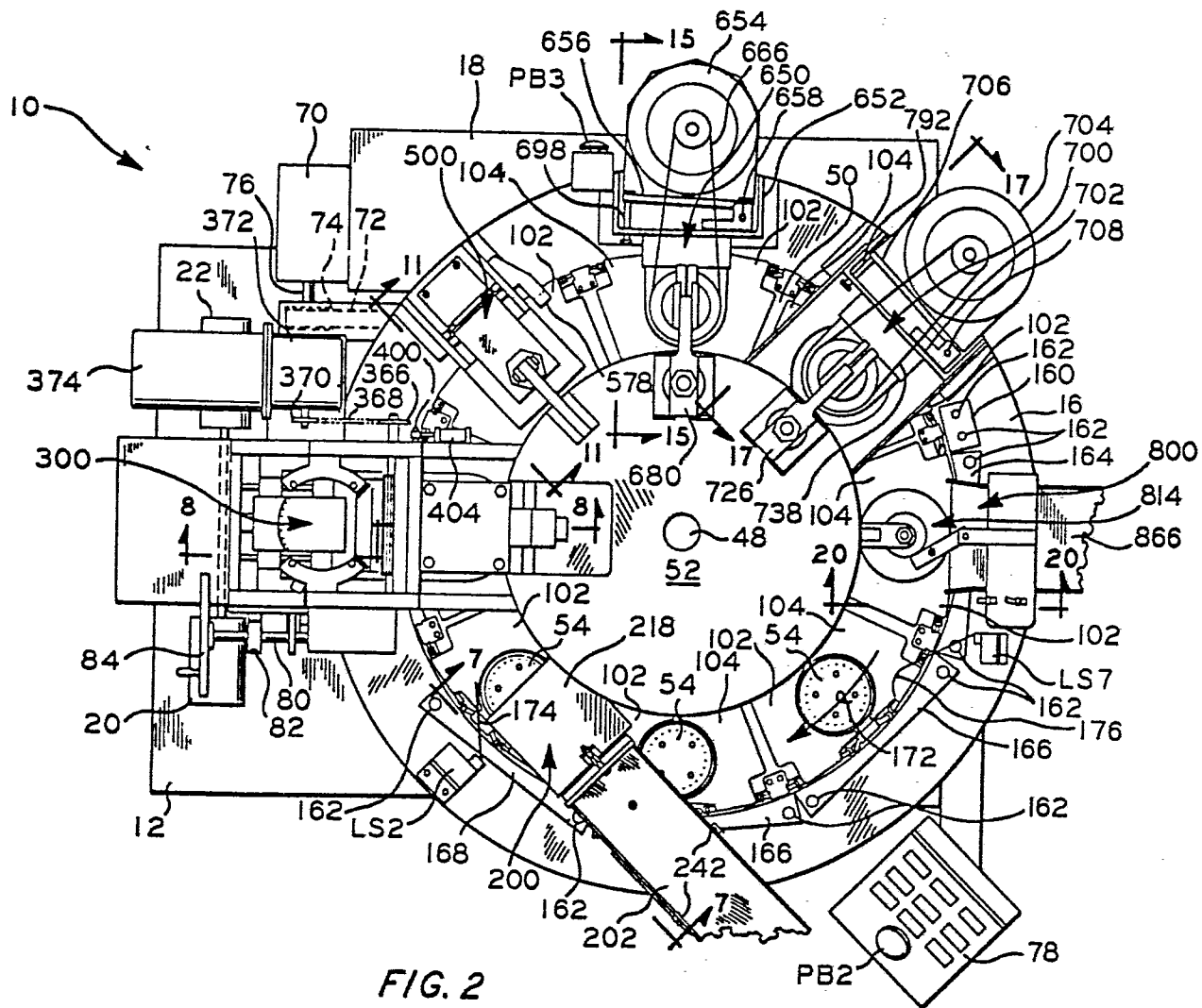
(54) **Apparatus for assembling ring-type closures.**

(57) An improved multi-station machine 10 is disclosed for assembling ring-type closures from generally cylindrical paperboard cylinders and generally circular paperboard discs. The machine employs a rotatable dial plate 50, carrying eight mandrels 54 and an improved ring clamping system (102, 104), which dial plate is incrementally rotated by an automatic indexer assembly 24 relative to the various operating stations which consist of a ring feed station 200, a disc feed station 300, and adhesive dispensing station 500, a curling station 650, a grooving station 700 and a closure ejecting station 800. Means are provided for controlling the operation of the various stations so that they operate in substantial synchronism with one another and with the rotatable dial plate 50. The improved disc feed station 300 automatically feeds the lowermost disc from a stack of discs to a position over a ring on the dial plate and simultaneously forms a peripheral skirt on the disc and positions it in an open end of the ring. The adhesive dispensing station 500 employs a pair of tube pumps 562 to dispense adhesive and lubricant on partially assembled ring-type closures. The grooving station 700 automatically forms a peripheral groove and a corresponding radially inwardly extending rib in the cylindrical wall

of an assembled ring-type closure. The closure ejecting station 800 provides vacuum means 814 for withdrawing a completed closure 896 from a mandrel 54 on the dial plate 50 and pressurized air means 888 for assisting in the automatic removal of the closure from the mandrel and for automatically propelling the thus removed closure from the machine. The ring feed station 200 provides means for preventing the introduction of rings onto the dial plate 50 in response to an indication of insufficient discs at the disc feed station 300. Control means are provided for manually indexing the dial plate 50 as well as prevention of disc feed, and adhesive and lubricant dispensing if an appropriate ring is not present on the dial plate 50, as well as control means for preventing ring feed if sufficient discs are not available at the disc feed station 300. Various other control features are disclosed for the prevention of operator injury, material waste and machine jamming.

./...

EP 0 023 288 A3





European Patent  
Office

# EUROPEAN SEARCH REPORT

0023288

Application number

EP 80 10 3859

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl.)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
	<u>US - A - 3 103 857</u> (GEISLER) * Complete patent * --	1-4,8, 12,22, 23,29- 32,39, 55-58, 61,65, 66	B 31 D 5/00
	<u>US - A - 2 097 196</u> (LA BOMBARD) * Page 2, column 2, lines 19-73; figures 6-8 * --	9	TECHNICAL FIELDS SEARCHED (Int. Cl.)
	<u>US - A - 3 633 469</u> (PHILLIPS PETRO- LEUM) * Complete patent * --	22	B 31 D B 31 B
	<u>US - A - 3 311 031</u> (SEVISON) * Column 11, line 55 - column 13, line 31; figures 15-18 * --	68,69, 71,75, 77	
A	<u>DE - C - 626 472</u> (UHLIG)		
A	<u>US - A - 2 256 124</u> (MOELLER) ----		CATEGORY OF CITED DOCUMENTS
			X: particularly relevant A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention E: conflicting application D: document cited in the application L: citation for other reasons
			&: member of the same patent family, corresponding document
The present search report has been drawn up for all claims			
Place of search	Date of completion of the search	Examiner	
The Hague	12-01-1981	CLAEYS	