



US00RE40284E

(19) **United States**  
(12) **Reissued Patent**  
**Thomas et al.**

(10) **Patent Number: US RE40,284 E**  
(45) **Date of Reissued Patent: \*May 6, 2008**

5  
(54) **METHODS OF MAKING AND FILLING A  
FILL-THROUGH-THE-TOP PACKAGE**  
(75) Inventors: **Toby R. Thomas**, Pleasant Prairie, WI  
(US); **Samuel D. Aversa**, Canandaigua,  
NY (US); **John D. Athans**, Victor, NY  
(US)

2,064,432 A 12/1936 Keidel  
2,506,311 A 5/1950 Moore  
2,560,535 A 7/1951 Allen  
2,848,031 A 8/1958 Svee et al.  
2,898,027 A 8/1959 Scholle  
2,978,769 A 4/1961 Harrah  
2,994,469 A 8/1961 Troup et al.  
3,054,434 A 9/1962 Ausnit et al.

(73) Assignee: **Pactiv Corporation**, Lake Forest, IL  
(US)

(Continued)

(\*) Notice: This patent is subject to a terminal dis-  
claimer.

FOREIGN PATENT DOCUMENTS

(21) Appl. No.: **11/591,408**

(22) Filed: **Nov. 1, 2006**

EP 0 109 793 5/1984  
EP 0 276 554 8/1988  
EP 0 302 144 2/1989  
EP 0 239 319 9/1990  
EP 0 374 539 8/1993  
EP 0 939 034 A1 9/1999  
EP 0 978 450 A1 2/2000  
EP 1 026 077 A2 8/2000  
FR 1 350 126 12/1963

**Related U.S. Patent Documents**

Reissue of:

(64) Patent No.: **6,279,298**  
Issued: **Aug. 28, 2001**  
Appl. No.: **09/422,510**  
Filed: **Oct. 21, 1999**

(Continued)

U.S. Applications:

(60) Continuation of application No. 10/647,819, filed on Aug.  
25, 2003, now Pat. No. Re. 39,505, which is a division of  
application No. 09/373,312, filed on Aug. 12, 1999, now Pat.  
No. 6,071,011.

*Primary Examiner*—John Sipos  
(74) *Attorney, Agent, or Firm*—Nixon Peabody LLP

(51) **Int. Cl.**  
**B65B 1/04** (2006.01)  
**B65B 61/18** (2006.01)

(57) **ABSTRACT**

A fill-through-the-top reclosable package includes first and second opposing body panels joined to each other along a pair of sides and a bottom bridging the pair of sides. The package is provided with a reclosable fastener extending along a package top disposed opposite the bottom. The fastener includes first and second opposing tracks. The first track includes a male profile, while the second track includes a female profile adapted to releasably interlock with the male profile. To provide tamper evidence, the first and second tracks may be joined to each other along an area of weakness. When making the package, the first track is first attached to the first panel, the package is filled with a product via a fill opening between the second track and the second panel, and then the second track is attached to the second panel.

(52) **U.S. Cl.** ..... **53/412**; 53/459; 53/469;  
53/133.4; 53/139.2; 53/284.7; 53/562; 53/570;  
493/213

(58) **Field of Classification Search** ..... 53/412,  
53/133.4, 139.2

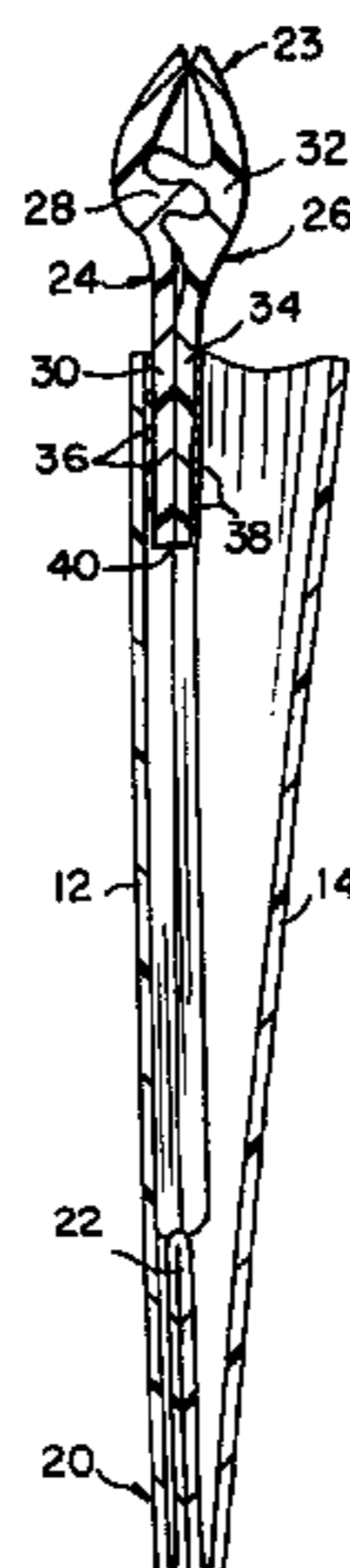
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

1,992,152 A 2/1935 Yeates

**2 Claims, 8 Drawing Sheets**



# US RE40,284 E

Page 2

U.S. PATENT DOCUMENTS					
3,104,798 A	9/1963	Stone	4,189,809 A	2/1980	Sotos
3,172,443 A	3/1965	Ausnit	4,191,230 A	3/1980	Ausnit
3,181,583 A	5/1965	Lingenfelter	4,196,030 A	4/1980	Ausnit
3,198,228 A	8/1965	Naito	4,212,337 A	7/1980	Kamp
3,226,787 A	1/1966	Ausnit	4,235,653 A	11/1980	Ausnit
3,256,981 A	6/1966	Kurtz	4,240,241 A	12/1980	Sanborn, Jr.
3,259,951 A	7/1966	Zimmerman	4,241,865 A	12/1980	Ferrell
3,262,634 A	7/1966	Goodwin	4,246,288 A	1/1981	Sanborn, Jr.
3,282,493 A	11/1966	Kamins et al.	4,249,982 A	2/1981	Ausnit
3,313,471 A	4/1967	Dickard et al.	4,252,238 A	2/1981	Spiegelberg et al.
3,325,084 A	6/1967	Ausnit	4,277,241 A	7/1981	Schulze
3,326,399 A	6/1967	Ausnit	4,279,677 A	7/1981	Takahashi
3,338,285 A	8/1967	Jaster	4,285,376 A	8/1981	Ausnit
3,339,606 A	9/1967	Kugler	4,295,919 A	10/1981	Sutrina et al.
3,368,740 A	2/1968	Rohde	4,309,233 A	1/1982	Akashi
3,371,696 A	3/1968	Ausnit	4,341,575 A	7/1982	Herz
3,381,592 A	5/1968	Ravel	4,355,494 A	10/1982	Tilman
3,387,640 A	6/1968	Butler	4,363,345 A	12/1982	Scheibner
3,416,986 A	12/1968	Carley	4,372,793 A	2/1983	Herz
3,417,675 A	12/1968	Ausnit	4,379,806 A	4/1983	Korpman
3,425,469 A	2/1969	Ausnit	4,415,386 A	11/1983	Ferrell et al.
3,426,396 A	2/1969	Laguerre	4,419,159 A	12/1983	Herrington
3,437,258 A	4/1969	Kugler	4,428,477 A	1/1984	Cristofolo
3,456,867 A	7/1969	Repko	4,428,788 A	1/1984	Kamp
3,460,337 A	8/1969	Field	4,430,070 A	2/1984	Ausnit
3,462,068 A	8/1969	Suominen	4,437,293 A	3/1984	Sanborn, Jr.
3,471,005 A	10/1969	Sexstone	4,446,088 A	5/1984	Daines
3,473,589 A	10/1969	Gotz	4,490,959 A	1/1985	Lems
3,532,571 A	10/1970	Ausnit	4,497,678 A	2/1985	Nussbaum
3,535,409 A	10/1970	Rohde	4,498,939 A	2/1985	Johnson
3,543,343 A	12/1970	Staller et al.	4,514,962 A	5/1985	Ausnit
3,565,147 A	2/1971	Ausnit	4,515,647 A	5/1985	Behr
RE27,174 E	9/1971	Ausnit	4,517,788 A	5/1985	Scheffers
3,608,439 A	9/1971	Ausnit	4,518,087 A	5/1985	Goglio
3,613,524 A	10/1971	Behr	4,522,305 A	6/1985	Jacobsson
3,619,395 A	11/1971	Skendzic	4,528,224 A	7/1985	Ausnit
3,625,270 A	12/1971	Skendzic	4,540,537 A	9/1985	Kamp
3,633,642 A	1/1972	Slegel	4,555,282 A	11/1985	Yano
3,640,381 A	2/1972	Kanada et al.	4,561,109 A	12/1985	Herrington
3,655,503 A	4/1972	Stanley et al.	4,563,319 A	1/1986	Ausnit et al.
3,679,511 A	7/1972	Ausnit	4,573,203 A	2/1986	Peppiatt
3,701,191 A	10/1972	Laguerre	4,581,006 A	4/1986	Hugues et al.
3,701,192 A	10/1972	Laguerre	4,582,549 A	4/1986	Ferrell
3,711,011 A	1/1973	Kugler	4,584,201 A	4/1986	Boston
3,722,672 A	3/1973	Ebata	4,586,319 A	5/1986	Ausnit
3,738,567 A	6/1973	Ruda	4,589,145 A	5/1986	Van Erden et al.
3,744,211 A	7/1973	Titchenal et al.	4,601,694 A	7/1986	Ausnit
3,746,215 A	7/1973	Ausnit et al.	4,602,405 A	7/1986	Sturman et al.
3,780,781 A	12/1973	Uramoto	4,612,153 A	9/1986	Mangla
3,785,111 A	1/1974	Pike	4,615,083 A	10/1986	Mayerhofer
3,790,992 A	2/1974	Herz	4,617,683 A	10/1986	Christoff
3,815,317 A	6/1974	Toss	4,620,320 A	10/1986	Sullivan
3,817,017 A	6/1974	Titchenal	4,638,913 A	1/1987	Howe, Jr.
3,818,963 A	6/1974	Whitman	4,646,511 A	3/1987	Boeckmann et al.
3,827,472 A	8/1974	Uramoto	4,651,504 A	3/1987	Bentsen
3,839,128 A	10/1974	Arai	4,652,496 A	3/1987	Yasufuku et al.
3,868,891 A	3/1975	Parish	4,654,878 A	3/1987	Lems
3,903,571 A	9/1975	Howell	4,655,862 A	4/1987	Christoff et al.
3,909,887 A	10/1975	Yoshida	4,656,075 A	4/1987	Mudge
3,948,705 A	4/1976	Ausnit	4,663,915 A	5/1987	Van Erden et al.
3,953,661 A	4/1976	Gulley	4,664,649 A	5/1987	Johnson et al.
3,988,184 A	10/1976	Howard	4,665,552 A	5/1987	Lems et al.
3,991,801 A	11/1976	Ausnit	4,665,557 A	5/1987	Kamp
4,003,972 A	1/1977	Herz	4,666,536 A	5/1987	Van Erden et al.
4,094,729 A	6/1978	Boccia	4,673,383 A	6/1987	Bentsen
4,101,355 A	7/1978	Ausnit	4,682,366 A	7/1987	Ausnit et al.
4,112,990 A	9/1978	Anderson	4,691,372 A	9/1987	Van Erden
4,118,166 A	10/1978	Bartrum	4,698,118 A	10/1987	Takahashi et al.
4,153,090 A	5/1979	Rifkin	4,703,518 A	10/1987	Ausnit
4,189,050 A	2/1980	Jensen et al.	4,709,398 A	11/1987	Ausnit
			4,709,533 A	12/1987	Ausnit

# US RE40,284 E

Page 3

4,710,157 A	12/1987	Posey	5,063,644 A	11/1991	Herrington et al.
4,713,839 A	12/1987	Peppiatt	5,065,899 A	11/1991	Tilman
4,736,450 A	4/1988	Van Erden et al.	5,066,444 A	11/1991	Behr
4,736,451 A	4/1988	Ausnit	5,067,208 A	11/1991	Herrington et al.
4,744,674 A	5/1988	Nocek	5,067,822 A	11/1991	Wirth et al.
4,755,247 A	7/1988	Mudge	5,070,583 A	12/1991	Herrington
4,755,248 A	7/1988	Geiger et al.	5,071,689 A	12/1991	Tilman
4,782,951 A	11/1988	Griesbach et al.	5,072,571 A	12/1991	Boeckmann
4,786,190 A	11/1988	Van Erden et al.	5,085,031 A	2/1992	McDonald
4,787,880 A	11/1988	Ausnit	5,088,971 A	2/1992	Herrington
4,790,126 A	12/1988	Boeckmann	5,092,684 A	3/1992	Weeks
4,791,710 A	12/1988	Nocek et al.	5,092,831 A	3/1992	James et al.
4,792,240 A	12/1988	Ausnit	5,096,516 A	3/1992	McDonald et al.
4,807,300 A	2/1989	Ausnit et al.	5,100,246 A	3/1992	La Pierre et al.
4,812,074 A	3/1989	Ausnit et al.	5,105,603 A	4/1992	Natterer
4,817,188 A	3/1989	Van Erden	5,107,658 A	4/1992	Hustad et al.
4,832,505 A	5/1989	Ausnit et al.	5,111,643 A	5/1992	Hobock
4,835,835 A	6/1989	Gould	5,112,138 A	5/1992	Peppiatt
4,840,012 A	6/1989	Boeckmann	5,116,301 A	5/1992	Robinson et al.
4,840,611 A	6/1989	Van Erden et al.	5,121,997 A	6/1992	La Pierre et al.
4,844,759 A	7/1989	Boeckmann	5,127,208 A	7/1992	Custer et al.
4,846,585 A	7/1989	Boeckmann et al.	5,129,734 A	7/1992	Van Erden
4,848,064 A	7/1989	Lems et al.	5,131,121 A	7/1992	Herrington et al.
4,850,178 A	7/1989	Ausnit	5,147,272 A	9/1992	Richison et al.
4,855,168 A	8/1989	Imaizumi	5,152,613 A	10/1992	Herrington, Jr.
4,863,285 A	9/1989	Claxton	5,161,286 A	11/1992	Herrington, Jr. et al.
4,875,587 A	10/1989	Lulham et al.	5,167,608 A	12/1992	Steffens, Jr. et al.
4,876,842 A	10/1989	Ausnit	5,179,816 A	1/1993	Wojnicki
4,877,336 A	10/1989	Peppiatt	5,186,543 A	2/1993	Cochran
4,878,987 A	11/1989	Van Erden	5,188,461 A	2/1993	Sorensen
4,889,731 A	12/1989	Williams, Jr.	5,189,764 A	3/1993	Herrington et al.
4,890,935 A	1/1990	Ausnit et al.	5,198,055 A	3/1993	Wirth et al.
4,892,414 A	1/1990	Ausnit	5,209,574 A	5/1993	Tilman
4,892,512 A	1/1990	Branson	5,211,482 A	5/1993	Tilman
4,894,975 A	1/1990	Ausnit	5,224,779 A	7/1993	Thompson et al.
4,895,198 A	1/1990	Samuelson	5,247,781 A	9/1993	Runge
4,902,140 A	2/1990	Branson	5,254,073 A	10/1993	Richison et al.
4,909,017 A	3/1990	McMahon et al.	5,259,904 A	11/1993	Ausnit
4,923,309 A	5/1990	Van Erden	5,273,511 A	12/1993	Boeckman
4,924,655 A	5/1990	Posey	5,283,932 A	2/1994	Richardson et al.
4,925,316 A	5/1990	Van Erden et al.	RE34,554 E	3/1994	Ausnit
4,925,318 A	5/1990	Sorensen	5,301,394 A	4/1994	Richardson et al.
4,929,225 A	5/1990	Ausnit et al.	5,301,395 A	4/1994	Richardson et al.
4,941,307 A	7/1990	Wojcik	5,322,579 A	6/1994	Van Erden
4,944,409 A	7/1990	Busche et al.	5,334,127 A	8/1994	Bruno et al.
4,945,714 A	8/1990	Bodolay et al.	5,366,294 A	11/1994	Wirth et al.
4,947,525 A	8/1990	Van Erden	5,383,989 A	1/1995	McMahon
4,969,309 A	11/1990	Schwarz et al.	5,391,136 A	2/1995	Makowka
4,969,967 A	11/1990	Sorensen et al.	5,400,565 A	3/1995	Terminella et al.
4,971,454 A	11/1990	Branson et al.	5,400,568 A	3/1995	Kanemitsu et al.
4,974,395 A	12/1990	McMahon	RE34,905 E	4/1995	Ausnit
4,993,212 A	2/1991	Veoukas	RE34,906 E	4/1995	Tamaki et al.
5,005,707 A	4/1991	Hustad et al.	5,403,094 A	4/1995	Tomic
5,007,142 A	4/1991	Herrington	5,405,478 A	4/1995	Richardson et al.
5,007,143 A	4/1991	Herrington	5,405,629 A	4/1995	Marnocha et al.
5,010,627 A	4/1991	Herrington et al.	5,412,924 A	5/1995	Ausnit
5,014,498 A	5/1991	McMahon	5,415,904 A	5/1995	Takubo et al.
5,017,021 A	5/1991	Simonsen et al.	5,425,216 A	6/1995	Ausnit
5,020,194 A	6/1991	Herrington et al.	5,425,825 A	6/1995	Rasko et al.
5,022,530 A	6/1991	Zieke	5,426,830 A	6/1995	Richardson et al.
5,023,122 A	6/1991	Boeckmann et al.	5,431,760 A	7/1995	Donovan
5,024,537 A	6/1991	Tilman	5,435,864 A	7/1995	Machacek et al.
5,027,584 A	7/1991	McMahon et al.	5,442,837 A	8/1995	Morgan
5,033,868 A	7/1991	Peppiatt	5,442,838 A	8/1995	Richardson et al.
5,035,517 A	7/1991	Edelman	5,448,807 A	9/1995	Herrington et al.
RE33,674 E	8/1991	Uramoto	5,448,808 A	9/1995	Gross
5,036,643 A	8/1991	Bodolay	5,456,928 A	10/1995	Hustad et al.
5,042,224 A	8/1991	McMahon	5,461,845 A	10/1995	Yeager
5,046,300 A	9/1991	Custer et al.	5,470,156 A	11/1995	May
5,063,069 A	11/1991	Van Erden et al.	5,482,375 A	1/1996	Richardson et al.
5,063,639 A	11/1991	Boeckmann et al.	5,486,051 A	1/1996	May

# US RE40,284 E

5,489,252 A	2/1996	May	6,000,197 A	12/1999	Ausnit
5,492,411 A	2/1996	May	6,017,412 A	1/2000	Van Erden et al.
5,505,037 A	4/1996	Terminella et al.	6,044,621 A	4/2000	Malin et al.
5,509,735 A	4/1996	May	6,088,998 A	7/2000	Malin et al.
5,511,884 A	4/1996	Bruno et al.	6,131,369 A	10/2000	Ausnit
5,513,915 A	5/1996	May	6,131,374 A	10/2000	Bois
5,519,982 A	5/1996	Herber et al.	6,138,436 A	10/2000	Malin et al.
5,525,363 A	6/1996	Herber et al.	6,138,439 A	10/2000	McMahon et al.
5,542,902 A	8/1996	Richison et al.	6,148,588 A *	11/2000	Thomas et al. .... 53/412
5,551,127 A	9/1996	May	6,161,271 A	12/2000	Schreiter
5,551,208 A	9/1996	Van Erden	6,212,857 B1	4/2001	Van Erden
5,552,202 A	9/1996	May	6,216,423 B1	4/2001	Thieman
5,557,907 A	9/1996	Malin et al.	6,279,298 B1	8/2001	Thomas et al.
5,558,613 A	9/1996	Tilman et al.	6,286,189 B1	9/2001	Provan et al.
5,561,966 A	10/1996	English	6,286,999 B1	9/2001	Cappel et al.
5,564,259 A	10/1996	Stolmeier	6,289,561 B1	9/2001	Provan et al.
5,573,614 A	11/1996	Tilman et al.	6,292,986 B1	9/2001	Provan et al.
5,582,853 A	12/1996	Marnocha et al.	6,293,896 B1	9/2001	Buchman
5,592,802 A	1/1997	Malin et al.	6,327,754 B1	12/2001	Belmont et al.
5,613,934 A	3/1997	May	6,347,437 B2	2/2002	Provan et al.
5,622,431 A	4/1997	Simonsen	6,360,513 B1	3/2002	Strand et al.
5,625,927 A	5/1997	Chu	6,363,692 B2	4/2002	Thieman
5,628,566 A	5/1997	Schreiter	6,412,254 B1	7/2002	Tilman et al.
5,638,586 A	6/1997	Malin et al.	6,419,391 B2	7/2002	Thomas
5,647,671 A	7/1997	May	6,427,421 B1 *	8/2002	Belmont et al. .... 53/412
5,664,299 A	9/1997	Porchia et al.	6,439,770 B2	8/2002	Catchman
5,669,715 A	9/1997	Dobreski et al.	6,470,551 B1	10/2002	Provan et al.
5,681,115 A	10/1997	Diederich et al.	6,499,272 B2	12/2002	Thieman
5,682,730 A	11/1997	Dobreski	RE39,505 E *	3/2007	Thomas et al. .... 53/412
5,704,192 A	1/1998	Jostler et al.			
5,711,751 A	1/1998	Harmanoglu			
5,713,669 A	2/1998	Thomas et al.			
5,725,312 A	3/1998	May			
5,769,772 A	6/1998	Wiley			
5,775,812 A	7/1998	St. Phillips et al.			
5,776,045 A	7/1998	Bodolay et al.			
5,782,733 A	7/1998	Yeager			
5,788,378 A	8/1998	Thomas			
5,823,933 A	10/1998	Yeager			
5,833,791 A	11/1998	Bryniarski et al.			
5,873,969 A	2/1999	Keith et al.			
5,906,438 A	5/1999	Laudenberg			
5,911,508 A	6/1999	Dobreski et al.			
5,924,173 A	7/1999	Dobreski et al.			
5,938,337 A	8/1999	Provan et al.			
5,956,924 A	9/1999	Thieman			
5,964,532 A	10/1999	St. Phillips et al.			

## FOREIGN PATENT DOCUMENTS

FR	2 613 326	10/1988
GB	1 546 433	5/1979
GB	2 080 412	2/1982
GB	2 085 519	4/1982
GB	2 130 173	5/1984
GB	2 268 721	1/1994
GB	2 268 731	1/1994
JP	57 105248	12/1980
WO	WO 95/29604	11/1995
WO	WO 95/35046	12/1995
WO	WO 95/35047	12/1995
WO	WO 95/35048	12/1995
WO	WO 99/24325	5/1999

\* cited by examiner

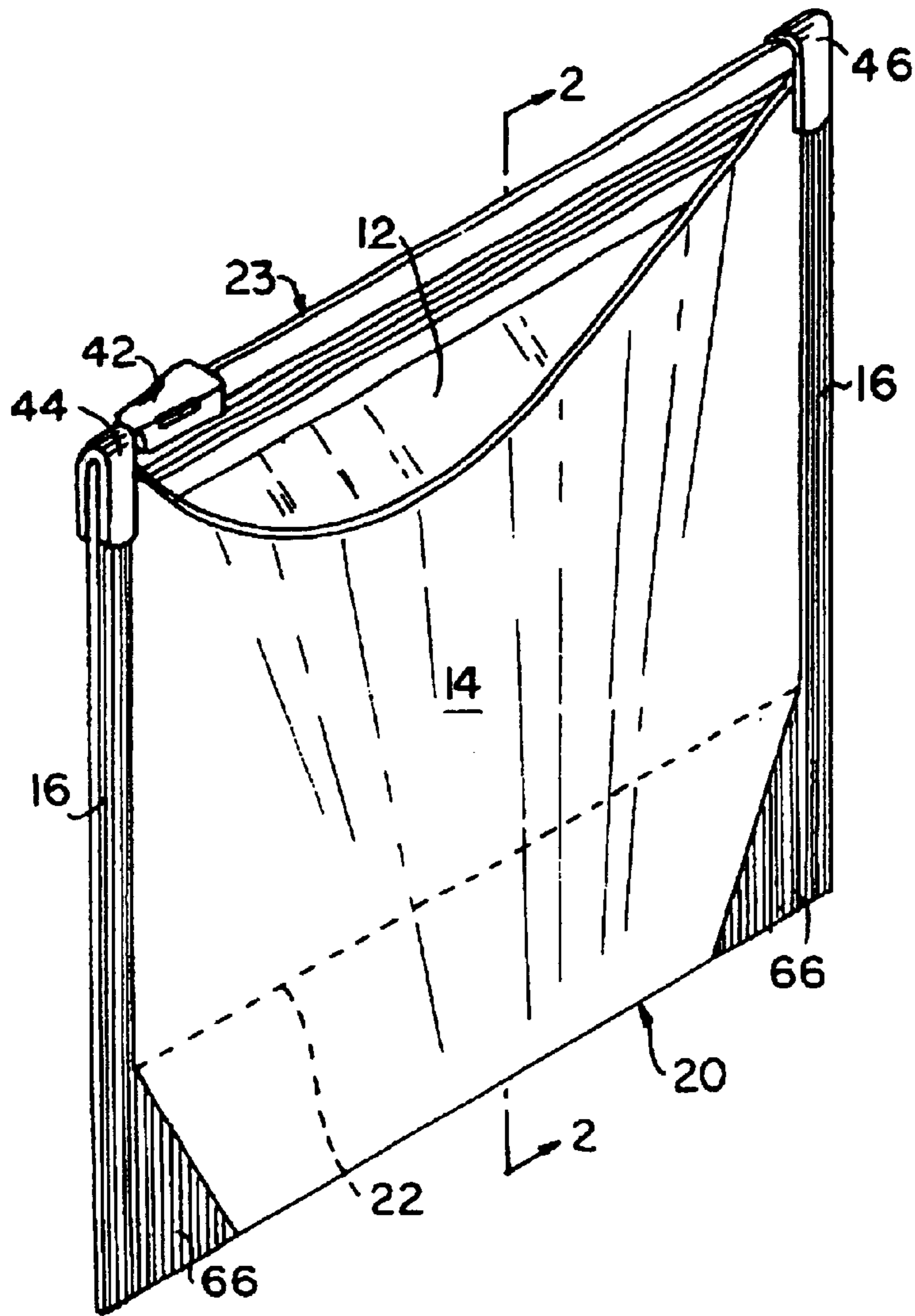


FIG. 1

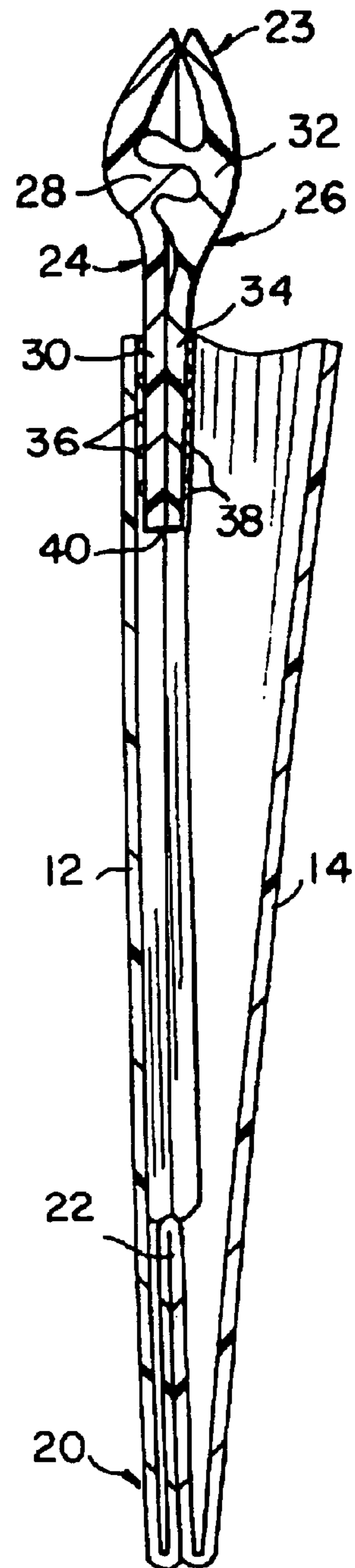


FIG. 2

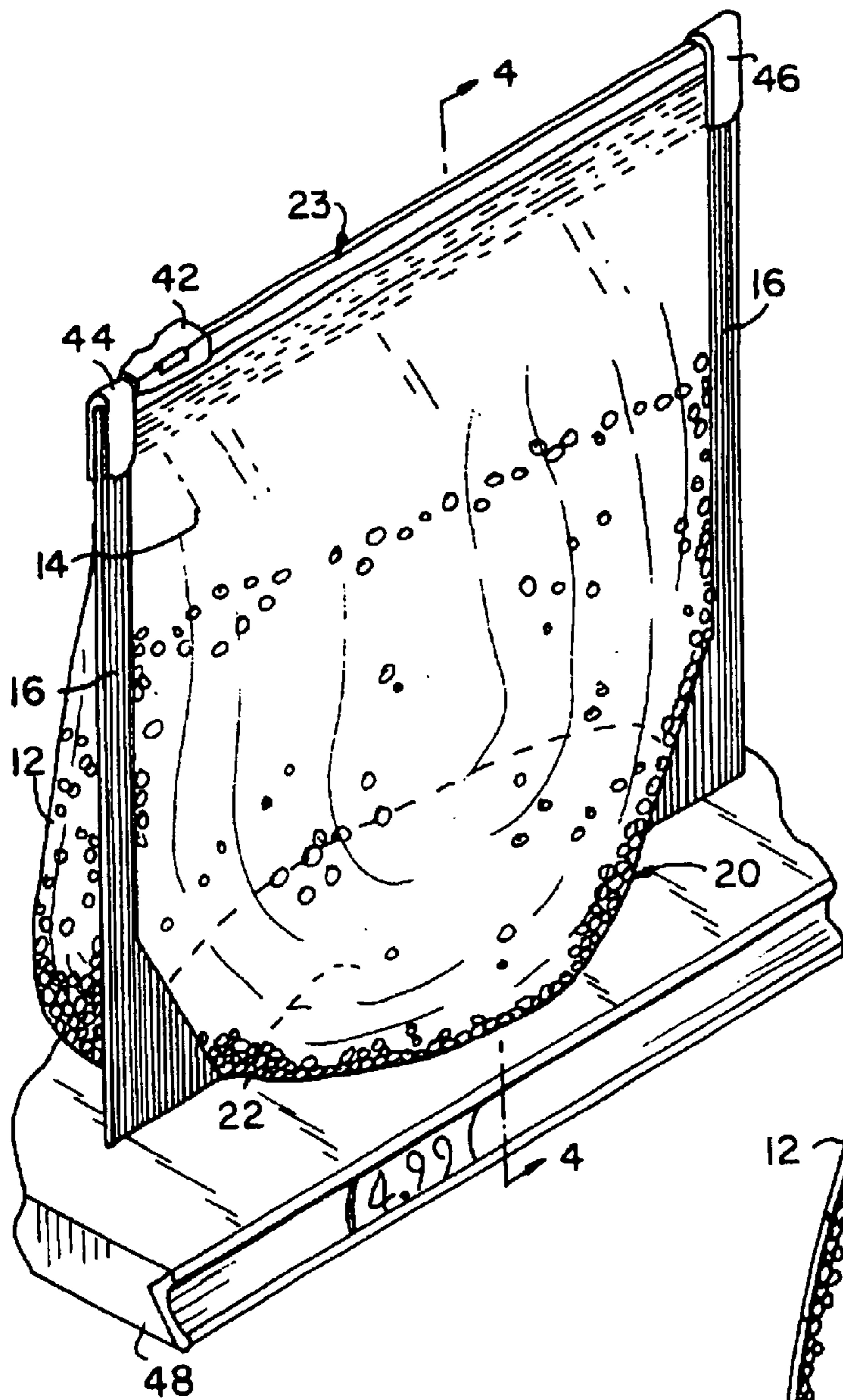


FIG. 3

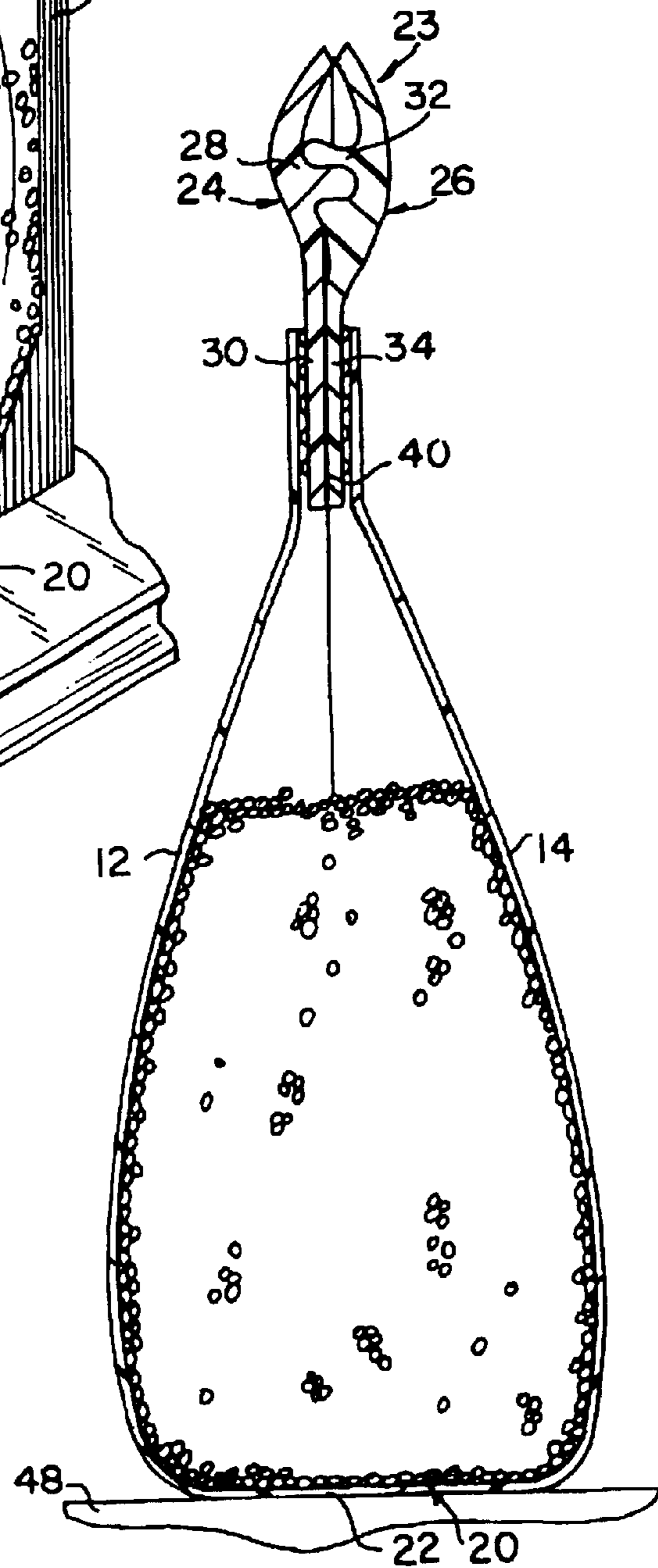


FIG. 4

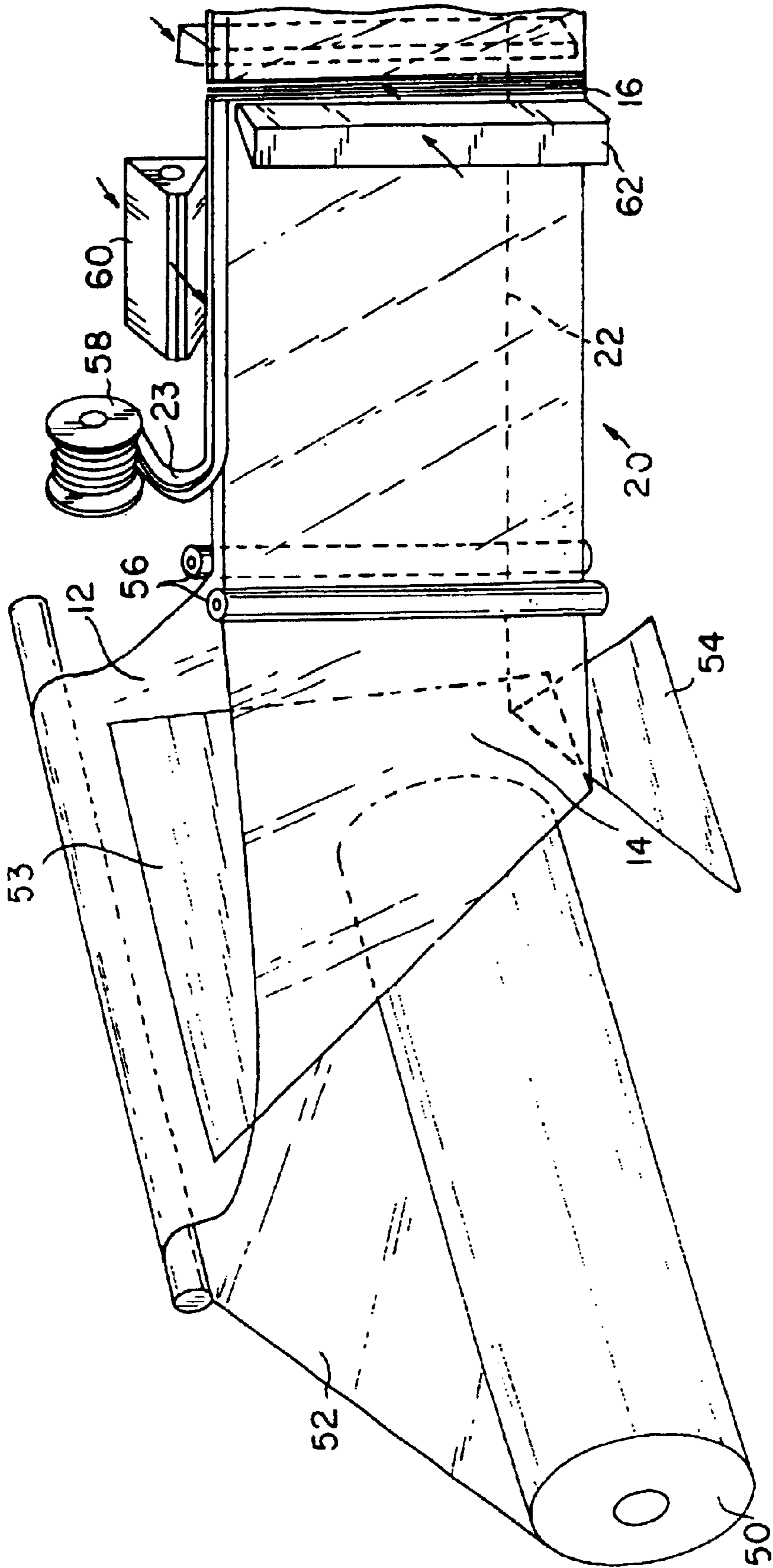


FIG. 5A

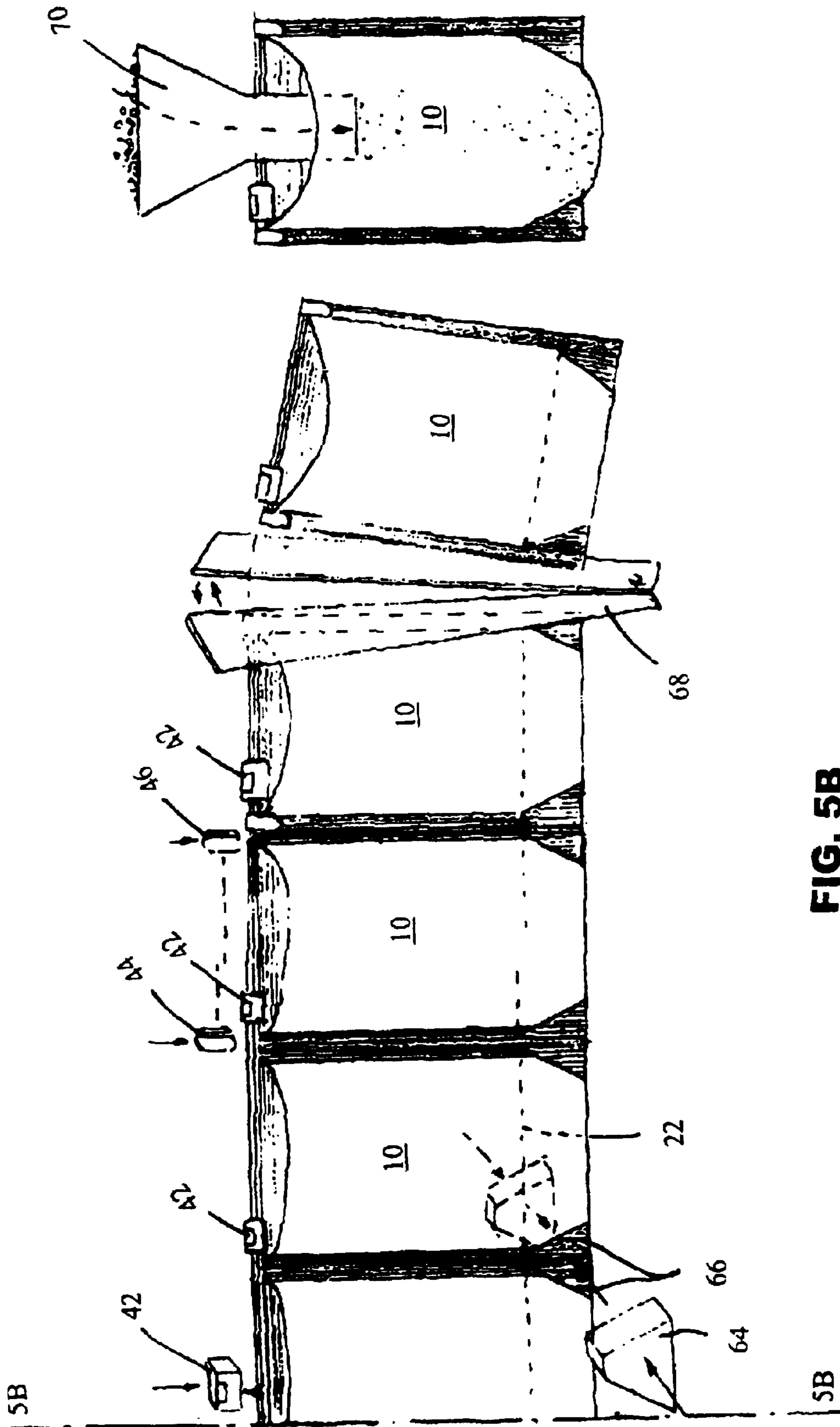


FIG. 5B





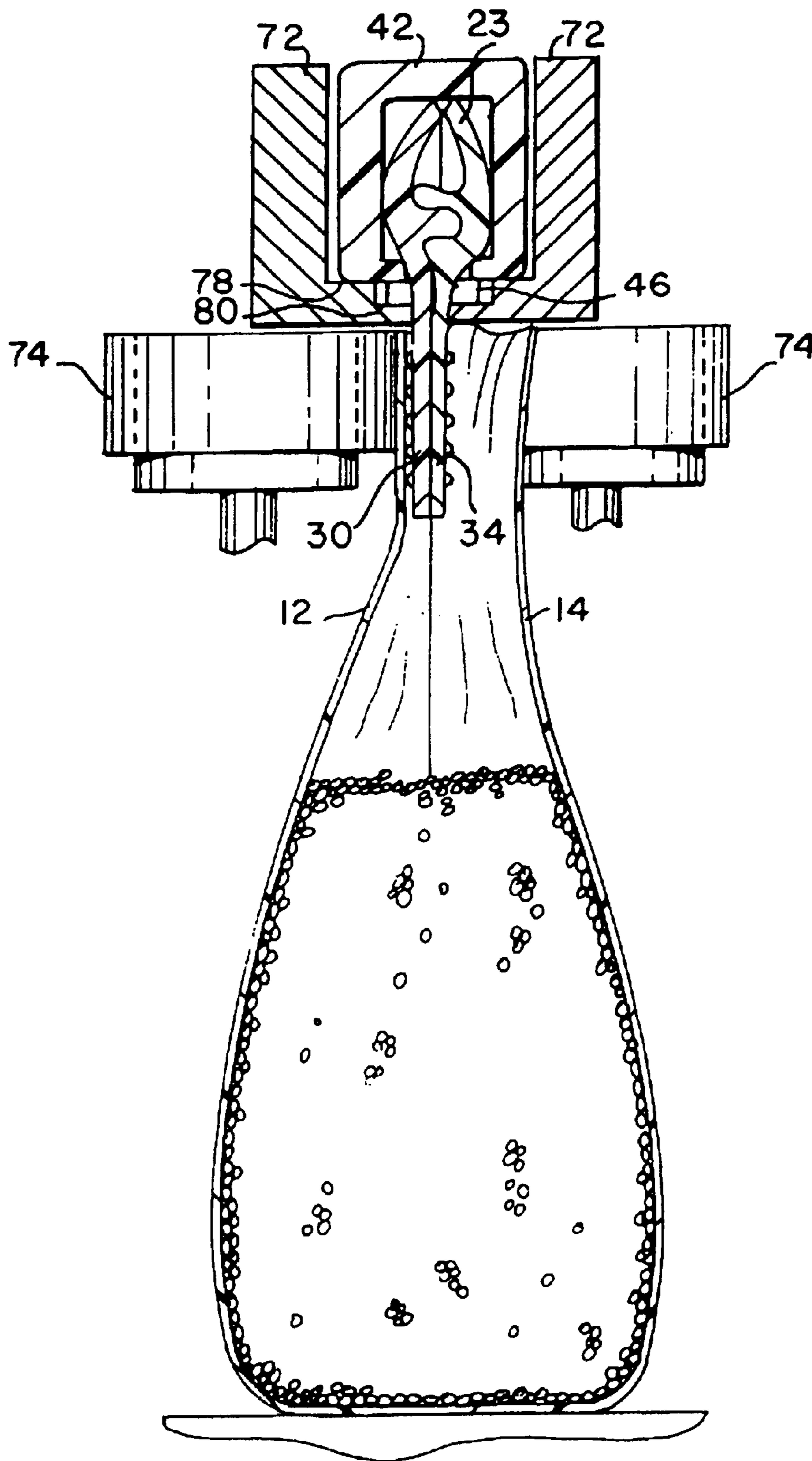


FIG. 7

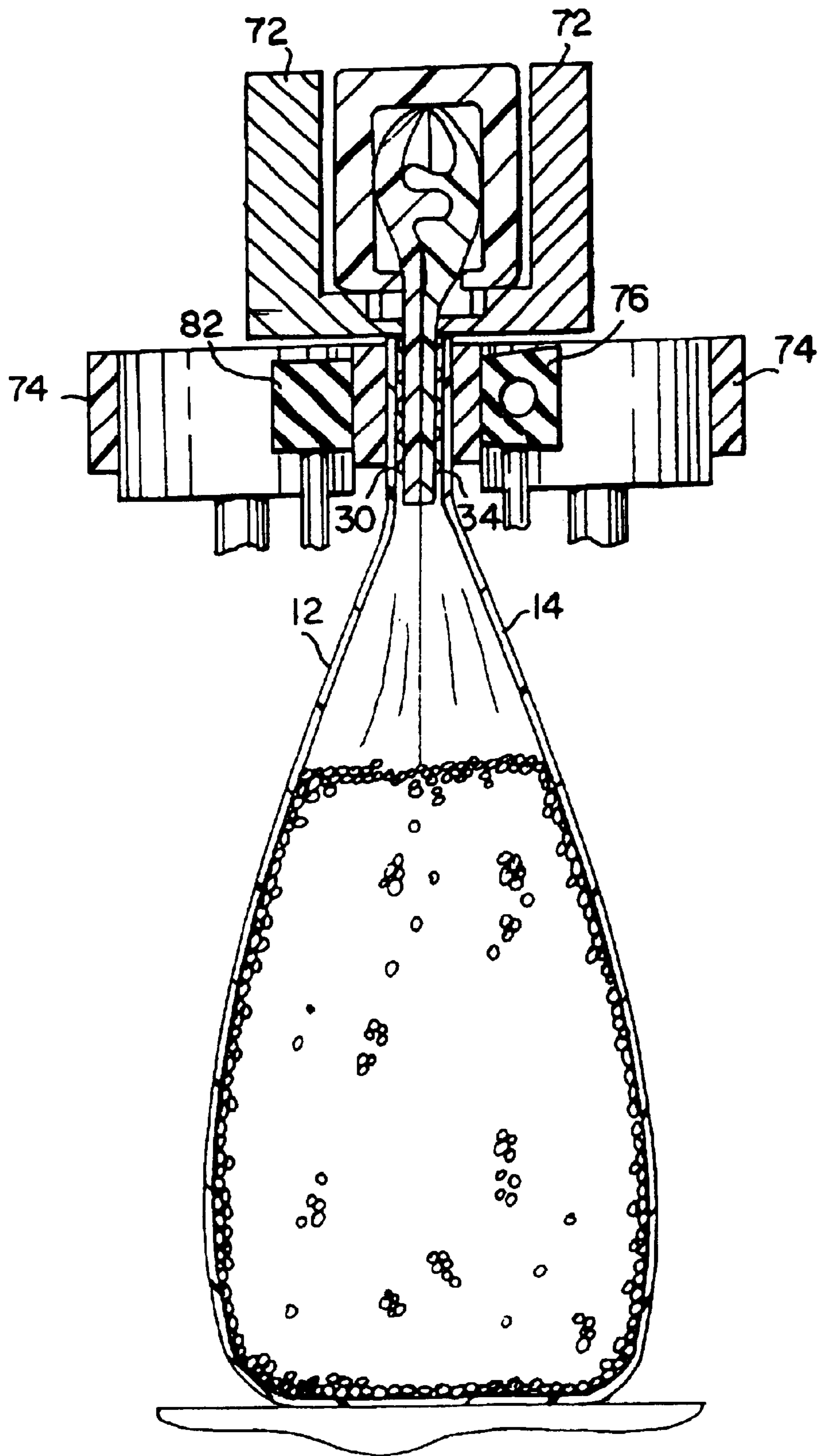
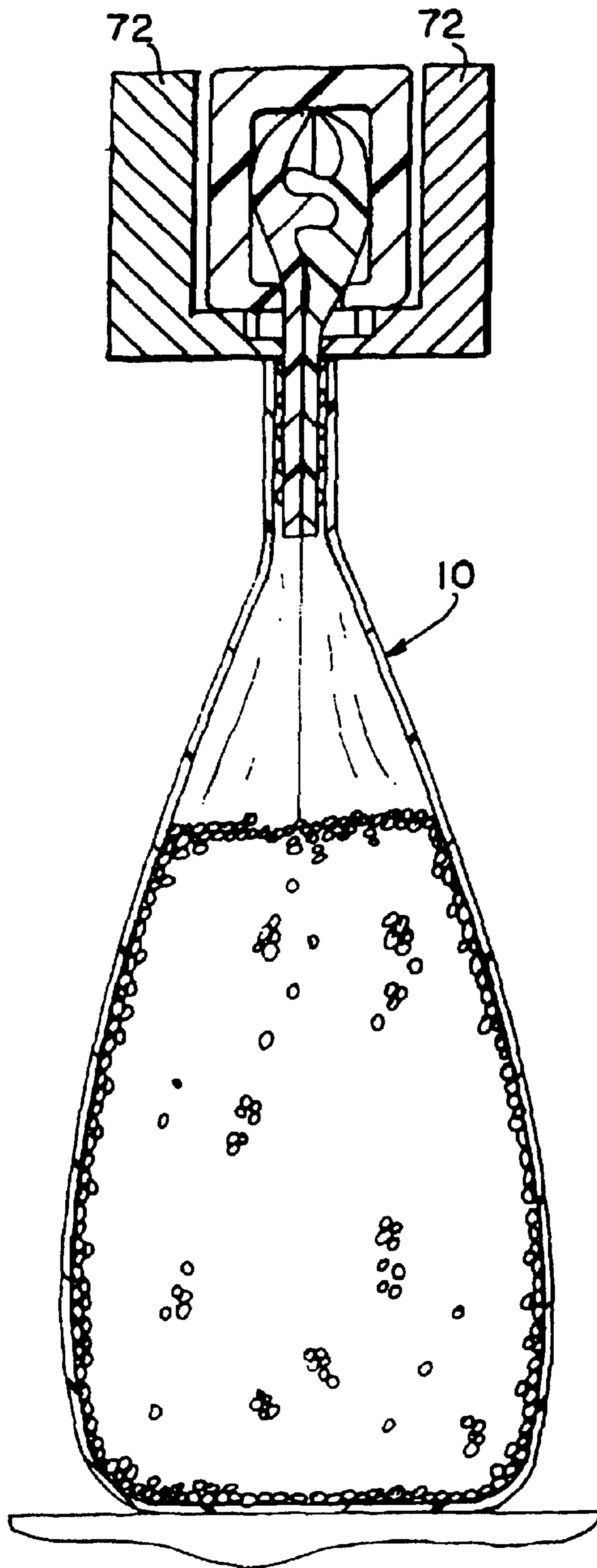


FIG. 8



**FIG. 9**

## METHODS OF MAKING AND FILLING A FILL-THROUGH-THE-TOP PACKAGE

**Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates the additions made by reissue.**

### RELATED APPLICATION

*More than one reissue application has been filed for the reissue of U.S. Pat. No. 6,279,298; the reissue applications include the present application, which is a continuation of U.S. patent application Ser. No. 10/647,819, filed Aug. 25, 2003, now issued as U.S. Pat. No. Re. 39,505, which is a reissue of U.S. Pat. No. 6,279,298; U.S. Pat. No. 6,279,298 is a divisional of U.S. application Ser. No. 09/373,212, filed on Aug. 12, 1999, now issued as U.S. Pat. No. 6,071,011, and all of the aforementioned U.S. patents and patent applications are hereby incorporated by reference in their entirety.*

### FIELD OF THE INVENTION

The present invention generally relates to packages to be filled with a product on a form, fill, and seal machine and, more particularly, to a reclosable package filled through its top on a form, fill, and seal machine.

### BACKGROUND OF THE INVENTION

A typically reclosable package includes first and second opposing panels joined to each other along a pair of sides and a bottom bridging the pair of sides. A reclosable fastener extends along a package top disposed opposite the bottom. The fastener generally includes first and second opposing tracks. The first track includes a male profile, while the second track includes a female profile adapted to releasably interlock with the male profile. The first and second tracks are thermally fused to, or integrally formed with, the respective first and second panels. To open and close the fastener, the package may be provided with a slider mounted to the fastener.

If reclosable packages of the foregoing type are to be prepackaged with a product and then sold in a store, the packages are typically prepared on a horizontal or vertical form, fill, and seal machine. In the form, fill, and seal machine, the package is first formed into the shape of a pouch having a fill opening at either the top or the bottom. If the fill opening is disposed at the bottom, then the top is sealed prior to filling the package. Similarly, if the fill opening is disposed at the top, then the bottom is sealed prior to filling the package. Next, the package filled with the product via the fill opening. Finally, the fill opening is sealed shut to fully enclose the product within the package. If the product delivered to the package includes food, then the fill opening is typically provided at the package bottom and a tamper-evident feature is provided along the top. The tamper-evident feature indicates to a consumer whether or not the package has been tampered with prior to purchase.

Some reclosable packages include a gusset along the bottom which expands in response to filling the package with a product. The gusset is advantageous because it increases the volume of product that can be contained in the package and, when the gusset expands, it allows the package to stand up on a store shelf. The stand-up package obviates the use of additional features such as headers with holes for hanging the package from a hook or post. The bottom gusset,

however, makes it less practical to provide a fill opening at the bottom because most of the product resides in the gusset.

### SUMMARY OF THE INVENTION

In accordance with one aspect of the present invention, a fill-through-the-top reclosable package includes first and second opposing body panels joined to each other along a pair of sides and a bottom bridging the pair of sides. The bottom optionally includes a gusset. The package is provided with a reclosable fastener extending along a package top disclosed opposite the bottom. The fastener includes first and second opposing tracks. The first track includes a male profile, while the second track includes a female profile adapted to releasably interlock with the male profile. To provide tamper evidence, the first and second tracks are joined to each other along an area of weakness. The first and second tracks are optionally provided with respective first and second fins joined to each other along the aforementioned area of weakness to effectively create a single fin comprised of the first and second fins. To open and close the fastener, the package is optionally provided with a slider mounted to the fastener.

The package is convertible between a pre-filled condition and a post-filled condition. In the pre-filled condition, the first track is connected to the first panel, but the second track is only connected to the second panel along the sides thereby creating a fill opening between the second track and the second panel in a region between the sides. After the package is filled with a product via the fill opening, the package is converted to the post-filled condition. In the post-filled condition, the second track is connected to the second panel to seal the fill opening.

In accordance with another aspect of the present invention, a method of making a reclosable package includes the following sequence of steps:

- (a) supplying a web of plastic material;
- (b) supplying a reclosable fastener including first and second opposing tracks, the first track including a male profile, the second track including a female profile adapted to releasably interlock with the male profile, the first and second tracks being joined to each other along an area of weakness;
- (c) folding the web to provide first and second opposing panels;
- (d) attaching the first track to the first panel;
- (e) sealing the web such that the first and second panels are joined to each other along a pair of sides and a bottom bridging the pair of sides;
- (f) filling the package with a product via a fill opening between the second track and the second panel; and
- (g) attaching the second track to the second panel to seal the fill opening.

In accordance with yet another aspect of the present invention, another method of making a reclosable package includes the following sequence of steps:

- (a) supplying a web of plastic material in a longitudinal direction;
- (b) supplying a reclosable fastener including first and second opposing tracks, the first track including a male profile, the second track including a female profile adapted to releasably interlock with the male profile;
- (c) folding the web along one or more longitudinal folds to provide first and second opposing panels, the longitudinal folds creating a bottom of the package;
- (d) attaching the first track to the first panel;

3

- (e) sealing the web along a pair of sides, the bottom bridging the pair of sides;
- (f) filling the package with a product via a fill opening between the second track and the second panel; and
- (g) attaching the second track to the second panel to seal the fill opening.

In accordance with a further aspect of the present invention, there is provided an apparatus for performing the above methods.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Other objects and advantages of the invention will become apparent upon reading the following detailed description and upon reference to the drawings in which:

FIG. 1 is an isometric view of a reclosable plastic bag in a pre-filled condition embodying the present invention;

FIG. 2 is a sectional view taken generally along line 2—2 in FIG. 1;

FIG. 3 is an isometric view of the reclosable plastic bag in a post-filled condition;

FIG. 4 is a sectional view taken generally along line 4—4 in FIG. 3;

FIGS. 5a and 5b are a diagrammatic representation of a method and apparatus for making and filling the reclosable plastic bag;

FIG. 6 is a diagrammatic representation of a method and apparatus for sealing the reclosable plastic bag;

FIG. 7 is a sectional view taken generally along line 7—7 in FIG. 6;

FIG. 8 is a sectional view taken generally along line 8—8 in FIG. 6; and

FIG. 9 is a sectional view taken generally along line 9—9 in FIG. 6.

While the invention is susceptible to various modifications and alternative forms, a specific embodiment thereof has been shown by way of example in the drawings and will herein be described in detail. It should be understood, however, that it is not intended to limit the invention to the particular forms disclosed, but on the contrary, the intention is to cover all modifications, equivalents, and alternatives falling within the spirit and scope of the invention as defined by the appended claims.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Turning now to the drawings, FIGS. 1 and 3 depict a fill-through-the-top reclosable package 10, and FIGS. 2 and 4 depict a top portion of the package 10. Referring to FIGS. 1 through 4, the package 10 includes first and second opposing body panels 12 and 14 joined to each other along a pair of sides 16 and a bottom 20 bridging the pair of sides 16. The bottom 20 optionally includes a gusset 22.

The package 10 is provided with a reclosable fastener 23 extending along a package top disposed opposite the gusset bottom 20. The fastener 23 includes first and second opposing tracks 24 and 26. The first track 24 includes a rib-type male profile 28 and a first fin 30 extending downward from the male profile 28, while the second track 26 includes a groove-type female profile 32 and a second fin 34 extending downward from the female profile 32. The male and female profiles 28 and 32 are adapted to interlock with each other. The first track 24 includes a plurality of narrow first sealant ribs 36 on an outer surface of the first fin 30 to facilitate connecting the first fin 30 to the first panel 12, and the

4

second track 26 includes a plurality of narrow second sealant ribs 38 on an outer surface of the second fin 34 to facilitate connecting the second fin 34 to the second panel 14. To provide tamper evidence, lowermost ends of the first and second fins 30 and 34 are joined to each other along a line of weakness 40 to effectively create a single fin comprised of the first and second fins 30 and 34. The line of weakness 40 may be a scored line, a perforated line, a thinned die line, or a tear strip. In an alternative embodiment, the first and second tracks 24 and 26 do not include the respective depending fins 30 and 34, and tamper evidence is provided by joining the lowermost ends of the profiles 28 and 34 instead of the lowermost ends of the fins.

To open and close the fastener 23, the package 10 is optionally provided with a slider 42 mounted to the fastener 23. The slider 42 disengages the profiles 28 and 32 in response to movement along the fastener 23 in an opening direction and engages the profiles 28 and 32 in response to movement along the fastener 23 in a closing direction. To accommodate the slider 42 and make it difficult to open the fastener 23 without using the slider 42, the fastener 23 is preferably free of pull flanges extending upwardly from the male and female profiles 28 and 32. To stop movement of the slider 42 near the sides 16 of the package 10 and thereby prevent the slider 42 from sliding off the end of the fastener 23, a pair of end terminations 44 and 46 are mounted to the fastener 23 near the respective sides 16 of the package 10. The end termination 44 stops movement of the slider 42 in the opening direction, while the end termination 46 stops movement of the slider 42 in the closing direction. The end terminations 44 and 46 may be a separate element attached to the fastener 23, as shown in FIGS. 1 and 3, or may be integrally formed with the fastener 23. Examples of end terminations are disclosed in U.S. Pat. No. 5,088,971 to Herrington, U.S. Pat. No. 5,131,121 to Herrington et al., U.S. Pat. No. 5,161,286 to Herrington et al., U.S. Pat. No. 5,405,478 to Richardson et al., U.S. Pat. No. 5,442,837 to Morgan, U.S. Pat. No. 5,448,807 to Herrington, U.S. Pat. No. 5,482,375 to Richardson et al., and U.S. Pat. No. 5,924,173 to Dobreski et al., which are incorporated herein by reference in their entireties.

The package 10 is convertible between a pre-filled condition and a post-filled condition. In the pre-filled condition shown in FIGS. 1 and 2, the first fin 30 is connected to the first panel 12, but the second fin 34 is not connected to the second panel 14, except along the sides 16, thereby creating a fill opening between the second fin 34 and the second panel 14. After the package 10 is filled with a product via the fill opening, the package 10 is converted to the post-filled condition shown in FIGS. 3 and 4. In the post-filled condition, the second fin 34 is connected to the second panel 14 to seal the fill opening. If the bottom 20 includes the gusset 22, the gusset 22 expands in response to filling the package 10 with the product. The gusset 22 is advantageous because it increases the volume of product that can be contained in the package 10 and, when the gusset 22 expands, it allows the package 10 to stand up on a store shelf 48. The stand-up package 10 obviates the use of additional features such as headers with holes for hanging the package from a hook or post.

In accordance with another aspect of the present invention, there is provided a method and apparatus for making and filling the reclosable package 10. The method and apparatus are illustrated in FIGS. 5a-b, 6, 7, 8, and 9. Referring first to FIGS. 5a and 5b, a core 50 supplies a web 52 of plastic material. A folder 53 folds the web 52 to provide first and second opposing panels 12 and 14 joined

5

along a bottom 20 having one or more fold lines. The folder 53 optionally includes a gusset point 54 that creates a gusset 22. The folded web 52 is conveyed between a pair of rollers 56 that bring the first and second panels 12 and 14 in close proximity to each other. A spool 58 supplies a reclosable fastener 23 having the structure discussed above. The fastener 23 is fed between the upper portions of the first and second panels 12 and 14.

A sealer 60 seals the first fin 30 (see FIGS. 1 and 2) to the first panel 12 in the machine direction, i.e., the direction of movement of the web 52. The sealer 60 may be a stationary convective (hot air) sealer that does not contact the web 52, a reciprocating heated bar sealer that intermittently contacts the web 52, or a band sealer comprising a heated band that moves with the web 52 until the seal is made. The first sealant ribs 36 (see FIGS. 1 and 2) on the outer surface of the first fin 30 facilitate this attachment between the first fin 30 and the first panel 12. At this time, the second fin 34 remains disconnected from the second panel 14. Another reciprocating heated bar sealer 62 seals the first and second panels 12 and 14 to each other in the transverse direction. The side seals 16 are generated by the sealer 62 at bad width distances apart to create individual packages 10. If the bottom 20 includes a gusset 22, a heated bar sealer 64 creates a pair of angle seals 66 along the gusset 22 on opposite sides of each side seal 16. The first and second panels 12 and 14 are attached to each other at the angle seals 66.

If the packages 10 are provided with respective sliders 42, the sliders 42 are mounted to the fastener 23 at bag width distances apart either before the fastener 23 is attached to the web 52 or after the fastener 23 is attached to the web 52. FIG. 5b depicts the sliders 42 as being installed after the fastener 23 is attached to the web 52 and after the formation of the side seals 16. To stop movement of the slider 42 near the sides 16 of each package 10, a pair of end terminations 44 and 46 are mounted to the fastener 23 on opposite sides of each side seal 16.

The sliders 42 may be installed using various techniques. For example, the slider 42 may have hinged wings that fold and snap permanently in place to attach the slider 42 to the fastener 23. Further details concerning such a hinged slider may be obtained from U.S. Pat. Nos. 5,010,627, 5,063,644, and 5,070,583 to Herrington, which are incorporated herein by reference in their entireties. In an alternative embodiment the slider 42 may have a pair of side walls that are temporarily flexed away from each other as the slider 42 is mounted on the fastener 23 and then returned to their original position after the slider 42 is mounted. In another alternative embodiment, prior to the formation of the side seals, the fastener 23 is cut apart at a location where a side seal is to be generated, the ends formed by the cutter are moved laterally relative to each other to expose the ends, and the slider 42 is threaded onto one of the exposed ends. Further details concerning this technique of inserting a slider through a split fastener may be obtained from U.S. Pat. No. 5,431,760 to Donovan, which is incorporated herein by reference in its entirety. In yet another alternative embodiment, prior to the formation of the side seals, the fastener 23 is notched at a location where a side seal is to be generated and the slider 42 is threaded onto the fastener 23 via the notch. The notch is sized to accommodate the slider 42. Further details concerning this technique of inserting a slider onto a notched fastener may be obtained from U.S. application Ser. No. 09/307,937 to Provan et al. entitled "Zipper and Zipper Arrangements and Methods of Manufacturing the Same", filed May 10, 1999, and incorporated herein by reference in its entirety.

6

After forming the side seals 16 and installing such optional components as a slider 42 and end terminations 44 and 46, a cutter 68 separates the packages 10 from each other at the side seals 16. Each package 10 is then placed beneath a fill tube 70 having a spout that is inserted into a fill opening between the second fin 34 and the second panel 14 (see FIGS. 1 and 2). The fill tube 70 conveys a predetermined amount of product to the interior of the package 10. The gusset 22 expands in response to filling the package 10 with the product.

FIG. 6 illustrates a method and apparatus for sealing the filled packages 10 so that they are ready for shipment to and display at a store. The apparatus includes a pair of spaced, profiled guides 72, a pair of moving members 74, a reciprocating heated bar sealer 76, and a stationary backing plate 82. The profiled guides 72 are shaped in cross-section to support each package by either the fastener 23, the slider 42, and/or the end terminations 44 and 46. As best shown in FIG. 7, the illustrated guides 72 include respective first steps 78 for engaging the respective lower shoulders of the slider 42 and respective second steps 80 of engaging the lower sides of the end terminations 44 and 46. The opposing inner vertical faces of the guides 72 below the second steps 80 are spaced sufficiently apart to allow the fins 30 and 34 to fit therebetween, but sufficiently close to minimize the amount of air in the package head space above the product in the filled package. Each filled package 10 may be manually placed between the guides 72 or automatically fed into the guides 72 by conventional conveying equipment. The guides 72 are preferably made of a low-friction, rigid material such as hard anodized aluminum or ultra high density polyethylene.

The moving members 74 are disposed on opposite sides of the package 10 beneath the respective guides 72. The moving members 74 continuously or intermittently convey the packages 10 supported by the guides 72 to the sealer 76. Each moving member 74 is preferably a Teflon-coated glass-cloth belt encompassing a pair of spaced pulleys. As shown in FIGS. 6 and 8, the reciprocating heated bar sealer 76 is disposed within one of the conveyor belts, while the backing plate 82 is disposed within the other of the conveyor belts. When a package 10 is disposed between the sealer 76 and the backing plate 82, the sealer 76 presses the package 10 against the backing plate 82 (with the belts disposed therebetween) to attach the second fin 34 to the second panel 14 in the region between the sides 16, thereby sealing the fill opening of the filled package 10 (see FIG. 8). The backing plate 82 is optionally cooled with chilled water or cool air as such pressure is applied by the sealer 76. Additional cooling bars are optionally located within the moving members 74 downstream from the sealer 76 and the backing plate 82. Instead of the heated bar sealer 76, the apparatus for sealing the filled packages may include a heated band of metal, such as steel, lining the inner surface of the belt of each moving member 74 and moving with the belt. The heated bands inside the respective belts seal the second fin 34 to the second panel 14 as the belts convey the associated package 10 through the guides 72. Once the fill opening is sealed, the package 10 is ready for shipment to and display at a store. The fully sealed package 10 is shown in FIG. 9.

The package 10 may be composed of various plastic polymers, copolymers, coextrusions and/or laminations. The panels 12 and 14 are preferably comprised of mono-layer or multi-layer combinations of: polyethylene (high, medium, low, linear low, and/or ultra low density polymers including metallocene); polypropylene (oriented and/or biaxially oriented); ethylene vinyl acetate; nylon (oriented and/or

biaxially oriented); polyethylene terephthalate (oriented and/or biaxially oriented); polyvinyl chloride; ethylene vinyl alcohol (EVOH); polyvinylidene chloride (PVDC); polyvinyl alcohol (PVOH); polystyrene; foil and/or metalization; and paper. The slider **42** and end terminations **44** and **46** are preferably comprised of mono-material, blends, alloys, and/or co-polymers of: polyethylene (high, medium, low, linear low, and/or ultra low density polymers); polypropylene (oriented and/or biaxially oriented); ethylene vinyl acetate; nylon (oriented and/or biaxially oriented); thermoplastic polyesters; polycarbonate; acrylics; and/or polystyrene. The profiles **12** and **14** and the fins **30** and **34** are preferably comprised of mono-layer, blends, alloys, coextrusions, laminations and/or coatings of: polyethylene (high, medium, low, linear low, and/or ultra low density polymers including metallocene); polypropylene (oriented and/or biaxially oriented); ethylene vinyl acetate; nylon (oriented and/or biaxially oriented); polyethylene terephthalate (oriented and/or biaxially oriented); polyvinyl chloride; ethylene vinyl alcohol (EVOH); polyvinylidene chloride (PVDC); polyvinyl alcohol (PVOH); polystyrene; foil and/or metalization; and paper. The sealant ribs **36** and **38** are preferably comprised of mono-material, blends, and/or coextrusions of: polyethylene (low, linear low, and/or ultra low density polymers including metallocene); ethylene vinyl acetate, adhesive or low melting temperature sealant.

While the present invention has been described with reference to one or more particular embodiments, those skilled in the art will recognize that many changes may be made thereto without departing from the spirit and scope of the present invention. Each of these embodiments and obvious variations thereof is contemplated as falling within the spirit and scope of the claimed invention, which is set forth in the following claims.

What is claimed is:

**[1.** A method of filling a package, made from a continuous web of material comprising:

providing a plurality of interconnected packages made from said web, each package including first and second opposing body panels joined along a pair of sides and a bottom bridging the sides, the package including a fastener attached to the first body panel along a mouth portion of the package disposed opposite the bottom, the fastener initially being at least partially unattached to the second body panel while the fastener is attached to the first body panel.

separating each package from said plurality of interconnected packages;

filling the separated package with a product via a fill opening between the fastener and the second body panel; and

attaching the fastener to the second body panel of the filled package to seal the fill opening.]

**[2.** The method of claim **1**, wherein the fastener includes first and second interlocking profiles and first and second fins extending from the respective profiles, the first and second fins being joined along the breakable area of weakness, the first fin being attached to the first body panel, the second fin being at least partially unattached to the second body panel while the fastener is attached to the first body panel.]

**[3.** The method of claim **2**, wherein the fill opening in the step of filling the package is between the second fin and the second body panel.]

**[4.** The method of claim **3**, wherein the step of attaching the fastener to the second body panel includes attaching the second fin to the second body panel.]

**[5.** The method of claim **1** further including the step of sealing said first and second body panels above said fastener.]

**[6.** A method of making and filling a package, comprising: providing a package including first and second opposing body panels;

attaching a fastener to the first body panel along a mouth portion of the package;

attaching said first and second panels to each other to form a pair of sides and a bottom bridging the sides opposite the fastener;

filling the package with a product via a fill opening between the fastener and the second body panel; and

attaching the fastener to the second body panel to seal the fill opening.]

**[7.** The method of claim **6**, wherein the fastener includes first and second interlocking profiles and first and second fins extending from the respective profiles, the fill opening in the step of filling the package being between the second fin and the second body panel, wherein the step of attaching the fastener to the first body panel includes attaching the first fin to the first body panel, and wherein the step of attaching the fastener to the second body panel includes attaching the second fin to the second body panel.]

**[8.** The method of claim **7**, wherein the first and second fins are joined to each other along the breakable area of weakness.]

**[9.** A method of making and filling packages, comprising: providing a plastic web and a fastener in a longitudinal direction;

folding the web to provide first and second opposing panels joined along a longitudinal bottom;

attaching the fastener to an inner surface of the first panel near a longitudinal edge thereof opposite the longitudinal bottom;

sealing the first and second panels to each other at spaced seals transverse to the longitudinal direction to form the packages;

filling each package with a product via a fill opening between the fastener and the second panel; and

attaching the fastener to an inner surface of the second panel to seal the fill opening.]

**[10.** The method of claim **9**, wherein said bottom includes a gusset.]

**[11.** A method of filling a package made from a continuous web of material, comprising:

providing a plurality of interconnected packages made from said web, each package including two panels defining a mouth portion and a reclosable fastener that is useful for opening and closing said mouth portion after said package is filled, said fastener having a final attachment position on said two panels and being attached to said two panels along only a portion of said final attachment position so as to define an unattached segment and an attached segment of said fastener, said unattached segment and the adjacent one of said two panels define a fill opening therebetween;

filling said package with a product through said fill opening; and

separating each package from said plurality of interconnected packages;

attaching said unattached segment of said fastener to said panels along the entirety of said final attachment position.]



9

[12. The method of claim 11, wherein said package includes a bottom with a gusset.]

[13. The method of claim 11, wherein said fastener includes a first interlocking profile with a first fin and second interlocking profile with a second fin.]

[14. The method of claim 13, wherein said first and second fins are joined along a breakable area of weakness.]

[15. The method of claim 13, wherein, during said providing step, said first fin is attached to a first one of said two panels along said final attachment position and said second fin is at least partially unattached to a second one of said two panels along said final attachment position, said second fin and said second panel defining said fill opening.]

[16. The method of claim 14, wherein said second fin is entirely unattached to said second one of said two body panels along said final attachment position.]

17. A method of making and filling a package comprising:  
supplying a web of plastic material in a longitudinal direction,

forming first and second opposing body panels from the web, the first and second body panels joined along a longitudinal bottom;

supplying a reclosable fastener including a first profile and a second profile adapted to releasably interlock with the first profile, the fastener further including first and second fins extending from the respective profiles and a breakable area of weakness providing a tamper-evident feature;

attaching a slider for opening and closing the first and second profiles to the fastener;

attaching the first fin to an inner surface of the first panel opposite the longitudinal bottom;

10

sealing the first and second panels to each other at spaced seals transverse to the longitudinal direction to form individual packages;

creating a pair of end terminations for stopping movement of the slider near the spaced seals;

filling the individual package with a product via a fill opening between the second profile and the second panel and opposite the bottom; and

attaching the second fin to an inner surface of the second panel to seal the fill opening.

18. A method of filling a package made from a continuous web of material, comprising:

providing a plurality of interconnected packages made from said web, each package including first and second opposing body panels joined along a pair of sides and a bottom bridging the sides,

separating each package from said plurality of interconnected packages;

attaching a fastener to the first body panel along a mouth portion of the package disposed opposite the bottom, the fastener initially being at least partially unattached to the second body panel while the fastener is attached to the first body panel;

filling the separated package with a product via a fill opening between the fastener and the second body panel; and

attaching the fastener to the second body panel of the filled package to seal the fill opening.

\* \* \* \* \*