

(19)
(12)

(KR)
(B1)

(51) 。 Int. Cl.⁷
A61M 15/00

(45)
(11)
(24)

2003 09 29
10-0400063
2003 09 19

(21)	10-2003-7008880 ()	(65)	0000-00000000
(22)	2003 06 30	(43)	0000 00 00
(62)	1997-0701806		
	: 1997 03 20		2000 09 15
	2003 06 30		
(86)	PCT/US1995/11655	(87)	WO 1996/09085
(86)	1995 09 15	(87)	1996 03 28

[illegible]

(30)	08/309,691	1994	09	21	(US)
	08/487,184	1995	06	07	(US)

(73)

94070	150
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(72)	94002	2803	
	94061		1135
	94546	#305	21103
	94025	#1	965
	94063		149
	94019		324

(74)

•

(54)

(12)

(14)

가

가

가

(22)

(26)가

1

1

2 1
1/4

3

4a 2
4b 4a 4b-4b
4c 4a 4b-4b
5 가

6

가

7

8 7

9 7

10 7 9 가 3 가

11a 10 가
11b 가

12a 12c , 7 9

13

14 13 180 ° ,

15

13

16

15

17 16

18 16

19 16

20

13

20a 13

21 13

22 13 , 가

23 13

가

24 23

가

25 23

,

26
27 13
28 27
29 27
< >
11 :
12 :
14 :
16 :
18 :
20 : 가
40 :

(肺) 가
(丸劑;pills), (elixir)
(消化管;digestive tract) 가
(proteolytic enzyme) 가
(皮下注射;subcutaneous injection)
(systemic drug delivery)
(insulin)
(mal), (鼻腔內; intranasal), (直腸內; intrarectal), (膣內; intravaginal) (經皮; transdermal) (肺)
(齒槽; alveolar)
(MDI) (liquid nebulizers),
(lyophilized or spray-dried powders)
() 가
가 1 가
가
가 가 가 (手持式)
가 가 가
1 μ m 5 μ m 가 20psig 150psig 2M ℓ 25M ℓ 가
(丸塊; bolus)

3,921,637

467172 ((blister pack)
(), WO 91/02558 , WO 93/09832 , WO 94/08522 , 4,627,432 , 4,811,731
, 5,035,237 , 5,048,514 , 4,446,862 3,425,600
, 4,338,931 , 3,991,761 , 4,249,526 , 4,069,819 , 4,995,385 ,
4,889,114 4,884,565 , 469814 . WO 90/07351
(loose powder reservoir)가

1983 3 14-16 Aber
deen Proving Ground
" (Dry Dispersion with Sonic Velocity Nozzles)", Witham and Gates

가 4,807,814
가 (Pittman and Mason)(1986) C4 C-41 C51
(2)
SU 628930 () 가
SU 1003926 () 가 가
(Bubrik and Zhelonkina) "
(Ejector Feeders for Pneumatic Transport Systems)"(1978)
Zholab and Koval(1979) 6 13-16 가
Powder Technology 302-313 Bohnet(1984) "가 /"
가
1988 3 , Powder and Bulk Engineering Fox and Westawag(1988) 33-36
가
NL 7712041 () 가
EP 347 779 가
EP 490 797 가
3,994,421 가
J. Aerosol med. 7 49-75 Byron and Patton(1994)

1

가

가

80%, 90%) (70%,
(bulk)" ()
1 μ m 5 μ m

가

1

2

1 가 , (fluidization air) (formulations) 가 (流入端) () 가 (流出端) 2 가 가 (70%, 80%, 90%) 가 (20 psig, 14.7 psig 20 150 psig 40 80 psig 15 psig, (S T P) 4Mℓ 15Mℓ 가 2Mℓ 25Mℓ (吸氣) (negative) 1:2 1:4(가 :) (S T P) (plu me capture chamber) / 가 가 가 5, 10, 20 (流入端) 가 (流出端) " " 가 (enclosure) , (가) 가 (가 , 2 가 ((" (plume)" 가 (jets) (ejector tubes) 가 가 " 가 (, 가) (, (carriage) (,)

가

가 , / 가 가

2

(displacement air)

(dispersion station)

가

(內腔; lumen)

12.5 ° 65 °

가

90% , (80%,

가 , (가) 2

가 , 가 () 가

(throat) 0.5mm² (A₁) 0.05mm² 0.3mm² , 가 ()

(mixing volume) 0.6mm² (A₂) 0.6mm² 11mm² 0.5mm 3mm

(A₃) 10mm² (A₄) 15mm²

(diffuser tube)

가 , 0.5cm 5cm 2 ° 10 °

() 4 가 가 가 가

(flow-directing member),

가

가 가 가 가

가 가 , 가 가

(valve poppet)

가

(toggle link) 가

(linkage)

가 (r

etracted position) (charged position)

가

가

(rack)

(pawl)

가

가

가

[illegible]

가

가 , 가

가 , 가

가 , 가

(10) 1 , (14) 가 (12) 가 (metal foil)

(laminate) (12) 가 1mg 20mg, 2 mg 10mg " "

가 1 (22) (single dosage package) (14) (40)(2) 가 , (14)

) (10) 가

가

(10) (11) , 가 가 (14) (40)(2) (16) (18) roximal end) (11) 가 가 2 (20) (14) (近位端;p

(12) (14) (16) (11) (22) (12) (22) (

(14) (14) (16)) (12) , (22) (22)

(22) , (12) 가 (11) , (22)

1 , (24) (12) 가 가 1 (22)가

(26) (12) (24) 가 (92)(3) (14) (12)

, (22) (14) (11) 가 , (14)

(16) (14) 가 (24) (10, 11a, 11b). (12) 가

가 (20) (12) 가 가 가 . 가

(14) (18) (18) , (40) , 가 가 (40)

가 (60) (14) (18) (sonic flow) 150 psig , 가 15psig 40psig 80psig 가 (12) (STP

) 2Mℓ 25Mℓ가 , 4Mℓ 15Mℓ가 가 (14) S T P 2Mℓ 100Mℓ가 , 4Mℓ 60Mℓ (14)
 가 가 가 (14) (18) 2
 가 (20) , , 가 WO 90/07351 가
 , 가 , 2
 가 (10) (14) (18)
 (30) (30) (遠位端; distal end) (32)
 , (14) (internal volume) (30)
 50Mℓ 1000Mℓ , 100Mℓ 750Mℓ ,
 () , 07/910,048
 7 9 , ,
 , (34) , (30) (32)
 , (36) , 2 ,
 (14) 가 가 , (30)
 가 (20) (12) (30)
 (32) , 가 (alveolar r
 egion)
 2 (14) (14) (16)
 (40) , (30) (12)
 (44) (同軸管) (42)
 (40) (內腔)(46) (16) (18)
 가 (14)
 (20) , (46) (A2)(4a) 가 (1
 4) (52) 가 (annular plenum)(52) (50)
 가 (54) 가 (40) (46)
 , 가 (54) (46)
 가 (18) (58)
 (46) (18) (A2)(4a) 0.5mm² 10mm², 1mm² 4mm²
 , (46)(4a) (A4) (A₂) , 0.6mm² 15mm²
 , (46) (A₂)
 4a , () (A₃) (L₂) 가 (60) (40) ()
 18) (A₃) (A₂)
 (A₃) 0.6mm² 11mm² (L₂) ()
 (60) 1 5 , 0.5mm 2mm , 4b
 가 (54)(4b) 3 , 4 , (54')가 4c
 , 6 ()
 (가)
 5 , 가 (72) (70) (1) (2) ,
 , () , (72) "
 , 12.5 ° 65 ° , 25 ° 40 ° .
 5 가 (72) 6 (82)
 (80) () 가 ()
 , (82) 가 (A₂)
 (80) (W) 0.005mm 0.1mm .
 2 (14) (12) (92) (90)(3) (40)
 (16) , (16) (92) (90) (12)
 , 7 10 가 , (90)

(90) (40) 가
 (94)(6) (90) (가) (30)
 (14) (96) (44) (30)
 " " (96) (98) (44) (95)가
 (12) (44) (30)
 (12) (32) (14) (40) (16) (80%,
 90%) (94)
 (46)
 (100) 7 9 (100) (14)
 100) 1 (14)
 (100) (102), 가 (104), (106), (108),
 (110), 가 (112) (106) (104)
 (114) (106) (14)
 (100) (114) (116) (116) (14)
 (118) (116) (118) (14)
 8 가 (104) (120)
 100mm² 1 10 5mm² 150mm² 40mm²
 (120) 8 가
 (120) 가
 가 가 가 가
 (120) (102) (122)(9)
 (124) (126) (120)
 " (chase)"
 (108) (128) (126) (110)
 (126) 9 가 (102) 가 (100)
 (102) (108) (106) (11
 4) (102)(7) (130) (114) 9
 (114) 가 (14)
 (106) 10 11a 9 (100)
 (140) 7 9 가 (140)
 (144) 11a (144) 4
 (146) (104) (146)
 (144) (本管; host tube)
 (150) (152) (150) (140)
 (100) 가 (112) 1 가 10
 11b 2 가
 (153)가 (151) (151)
 가

12a 12c , 7 9 (100) (R)가 12a 가 (112) (106)
) (104) . 가 (112) (R) 가 (204) 가 (112) (200) (lid flap)
 (R)가 , 가 12b , (114) .
 (210) (106) , (R) , (120)
 (120) (202) 가 ,
 (106) 가 , 가 (212)
 , 12c , (120)
 (126) , 가 (110)가 , 가 (126) (128)
 , (120) , (R)
 13 , (300) (300) (302)
 (302) 가 (304) (302) 가 (100)
 (306)가 . (306) 7 9 (300) (33
) , (306) (302) 가 , (342)(20)
 8) (340) (304) (304)가 (302) (304)가
 (20) (14) (304) (306) (304) 가 가
 , (302) (304) (304) (304)
 (308, 310) (308, 310) (302) (312, 314)
 (308, 310) 가 (316, 318) (304)
 (322) (324) (320) (308, 310) (304)
) (322) (308) (304)가 ,
 (310) (304)가 V (308, 310) (304)
 304) (322) (326, 328) . V (326, 328)
 (304) 가 가
 , (204)
 (310) (304) (302)
 (304) (302)
 (304) (304)
 , (304)
 , (308) (304) (308)
 (302) (304)
 (304) (304)가
 (304) (302)
 (331) (330)(14)가 (304)
 (fire button)(418)(21)
 , (320) (320) (324)
 (302) (302) (304)가 , (302)
 20) (302) (320)가 (302) (304) (3
) (302) , (302) (320) (324)
 (320) (320) (320) (320)
 가 , (322) (302)
 (335)가 (302)
 (320)
 (320)
 5,342,889 , 5,348,995 , 4,719,263

14 , (304)가 , (330)
 (304) (304) (330) (344) (344)
 (304) 가 (304)
 (306) (344)가 (330) (346)
 (304) 가 (346) (304) 가
 (bleed valve)
 (344) , "1 (吹氣)(puff)" 가 가
 (304) 50Mℓ 750Mℓ 100Mℓ 250Mℓ
 가 (304) "P₁ V₁ = P₂ V₂, T = "
 (Boyles' law) 가 (net gas)
 가 , 210Mℓ 8Mℓ 가 0.6 psi 가
 (346) 8Mℓ 가 가 , 0.6 psi
 가 (thin mylar) (petal), (plate)
 (346)

15 , (302) (306)가 (302)
) (306) (348) (348) (306)
 (keyed portion)(352) (350) (306)가 (306)가
 (348) , (306) (348) , (354)가 (354)
 (356) , (354) (354)가 (354)
 (306) , (354) (306) (302)
 , (354) (306) (348)
)

16 17 , (342) (106) 17
 가 62) , (364) , (366), (358) , 가 (360) , (3
 (306) 7 9 (368) (306)
 (100) (306) (370) (372) (100)
 (100) (370) (362) (370)가 (342)
 , (342) (372)가 (372)가 (306)
 372) 가
 21, 23 24 가 (372)
 가 가
 18 19 가 , (342) (378) 가 (376) (3
 80) (374) , (342) (376) (306)
 (382) (380)
 (376) 19 , (370) (372)가 (376)
 (342)가 . (306)가 .) (372) (370)
 (342)가 , (376) (184) , (362)
 , 12a 12c (100) (370) (372)가 (376) (306)
 (342) (368) (374) (342)
 가 (340) (342)
 20 20a , (374) (375)가 (377)(21) (342) (3
 80) (374) (340) (382) (386) , (442)(22)가 (374)
 가 (374) , (382) (386) (342) 가 (3
 (368) (19) (386) (382) (304)
 40) , (380) (380) (302) , (380) (342)가
 가 (300) (304)가 , (386) (342) (342)
 가 (300) , (386) (342) 가
 , (300)

21 , 27 (336) (338) (388) (300) 가 21 (3
 90) , 가 (338)가 (392)가 (388) (388) (338) 25 (3
 26 가 (338)가 (302) (388) (388)가 (25), (3
 392) (390) (388)가 (302) (388) (390)
 (388) (390) 가 21 가 (396) 가
 (394) (394) (388) (338)가 ,
 (390) (394) " (duck bill)" (390) (390)
 (394)가 가 (398)(21 25) (400) (306)
 , (384) (400) (400) 가 19 (402)
 , 가 (400) (400) (306) (306)
 가 (402) , , (306)
 306) (302) , , (404)
 (400) 가 (400) 21 24 , (390)
 (406) , 27 29 (398) (390) 가 (398)
 가 (400) (406) , (390) (390)
 가 가 (400)가 , (398) (390)
 " (1) (full stroke)" 가 (400) (300)
 (388) (338)가 (302) (400) (390)
 , (336) (410) (408)(22) (404)
 410) (valve reset link)(414) (412) (21 24). 21 (4
 24 가 (414) (416) , (416)
 416) (418) (338)가 (302) (414)가 (412)
 25 26 가 (408) (420) , (414) (422)
 (412) (左側端) (338) (338)가 (418)
 (416) (416) (416) (406) (452)
 (302) , (404) (388) (392)
 (29), (338)가 (302) (414) (412)
 , (416) (400) , (304) (38
 8) (390) 가 (390) (416) (400)가
 (400)가 , (300) (416) (400) (338)가
 , (338) (338)가 (302) (410) (426) (inter
 lock pawl)(424)(22) (338)가 (422) (416)
 (424) (410) (426) , (416) (400)
 (338) (416) (424) (426) 가 (33
 8) (425) , (306) (342)
 , (400)가 (306) (302)
 가 22 25 , (302) (338) (336
) (432) (302) (430) (338) (392,
 408) (434) (392, 408, 430, 434) (338) (302)
 4- (400)가 , (338) (302)
 , (338)가 (302) (302)
 38) (390) , 가 (302) (3
 , (338)가 (302) 가 ,

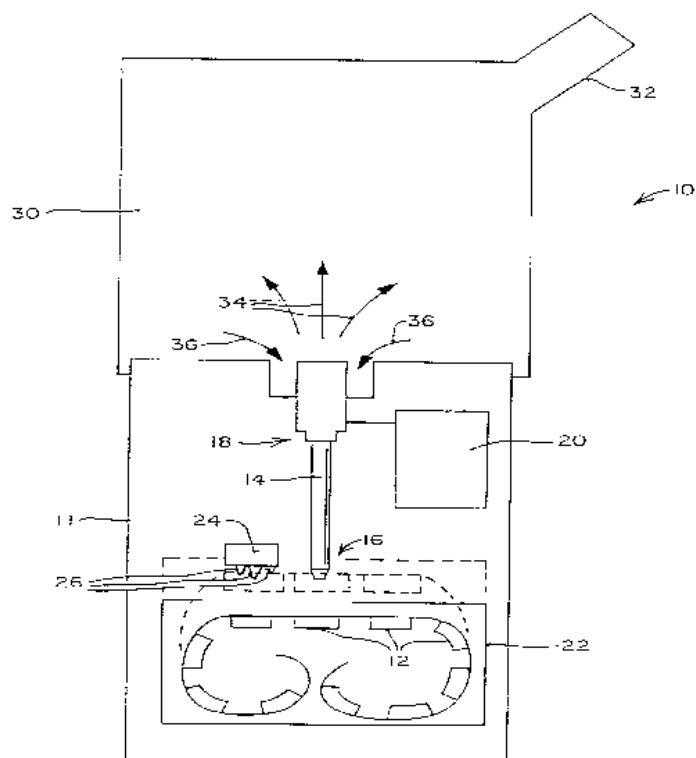
22 가
 (436) 23 가 , (300) (340) (342)
 (440) (370) (372)가 (342) (436)
 (342) (442) (442) (444) (a thumb toggle)(438)
 (436) (342) (442) (438) (340)
) (342)가 (438) (440) (438)
 (306) (442) 25 가 (438) (3
 06)가 (342) (444)가 (342) (306) (438)
 (368) (444)가 (342) (436) (442)
 (442) (342)가 (306) (442)
 (306) (342) (442) (342) (380)
 38) (444)
 (340) (342) (340)
 27 29 (400) (400)
 (448) (450) (446) (390) (400)
 (398) (448) (402) (450) (
 306)
 28 (400)가 (406) O - ((452)
 (406) (diaphragm)(456) (450)
 (454) (398) (454) (406)
 (450) (29) (398) (454)
 가 (454) 가 (452) (406)
 (400) (406) (452) 120 psi 80 psi
 (400) (418) (416)
 (406) (452) (406) (452)
 (457) (457) (454)
) (418) (457) (454)
 (406) (452) 가 (450)
 (390) (398) 가 (450)
 (454) (306) (400) " (snap)"
 가 (306) 가 가
 가 (302) (300) 가
 PAL (300) 가 EPROM , PROM ,
 (304) (304) (336) 가

1

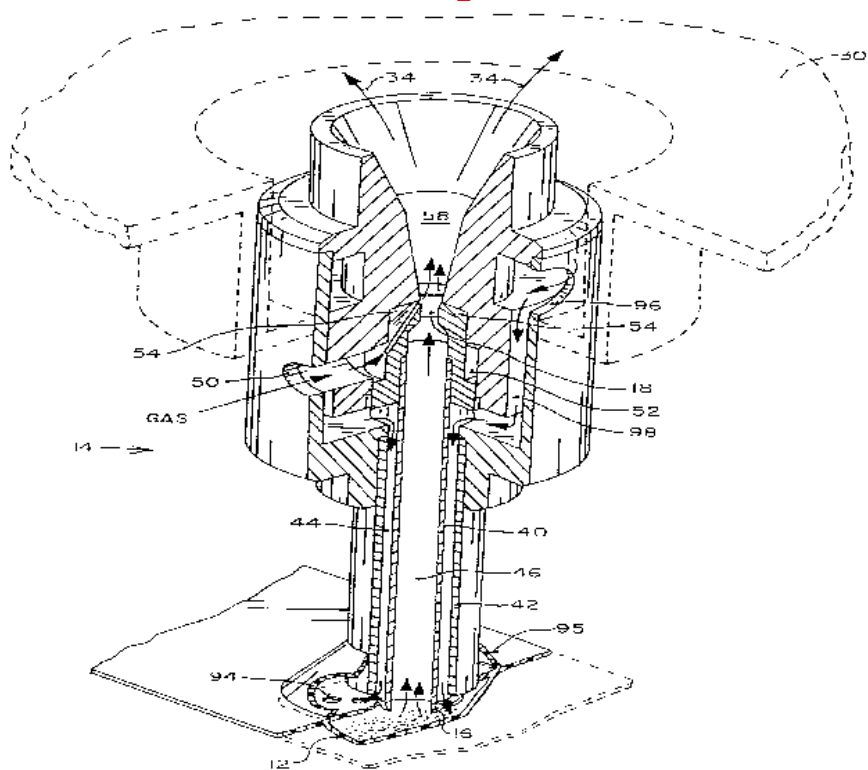
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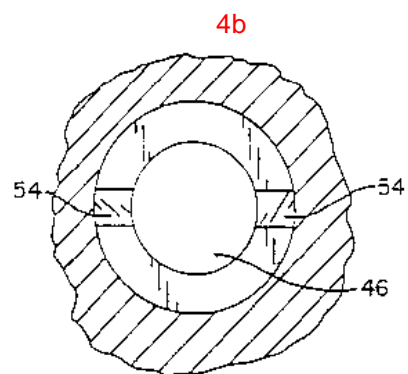
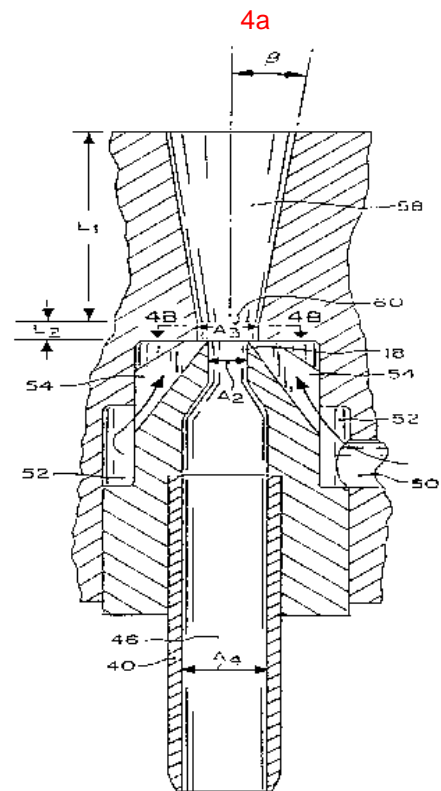
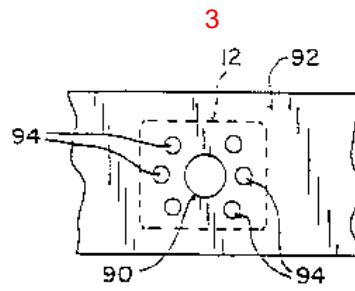
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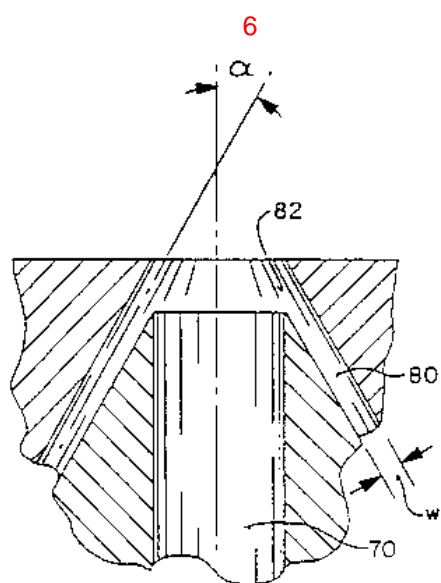
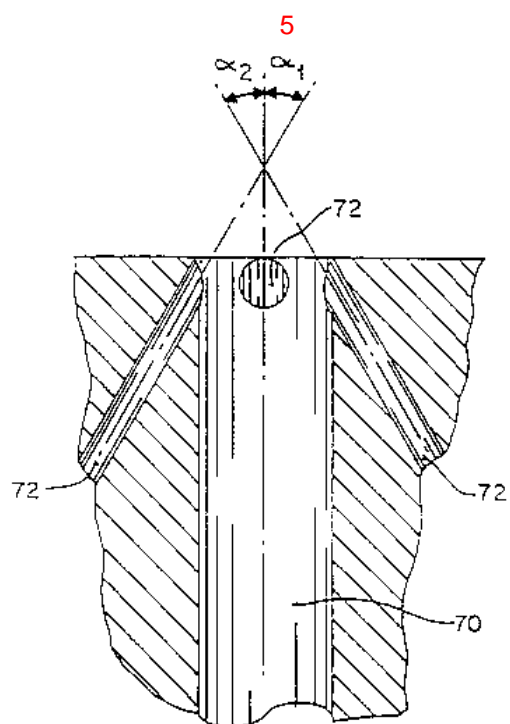
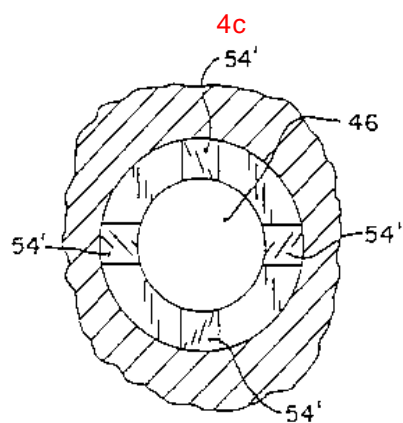
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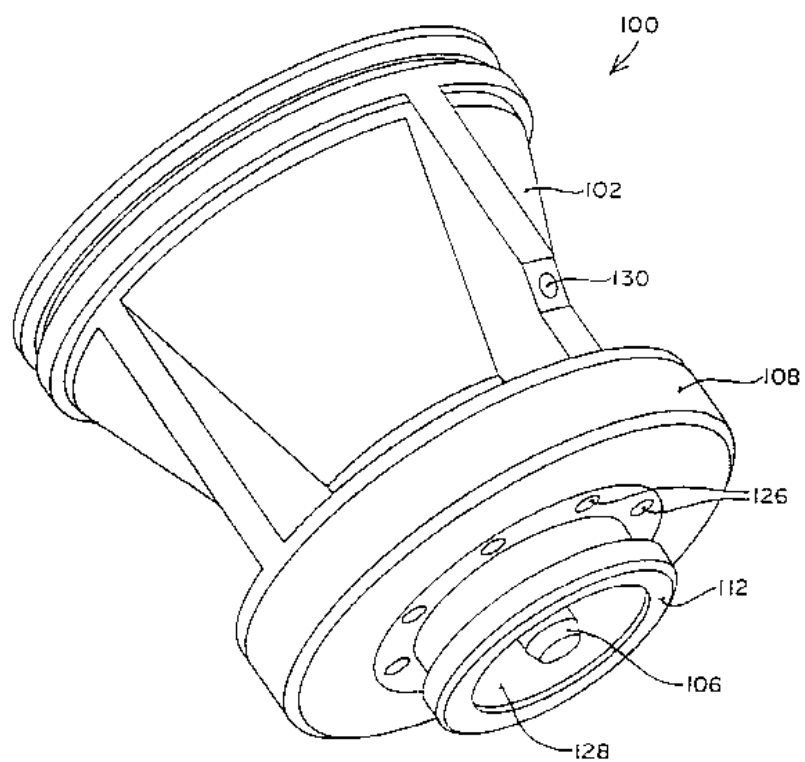
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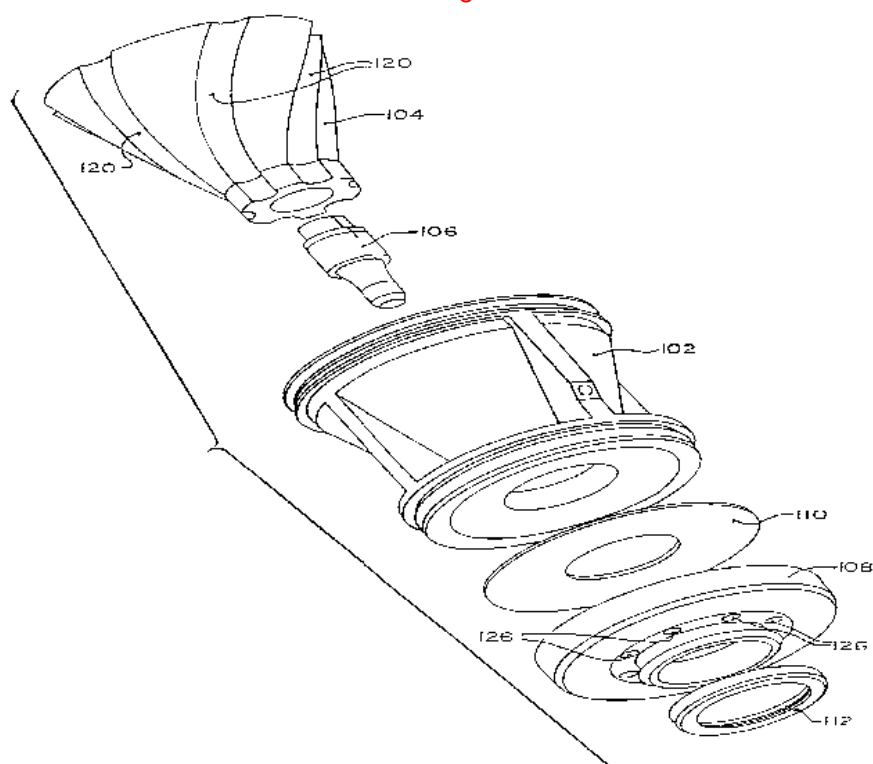




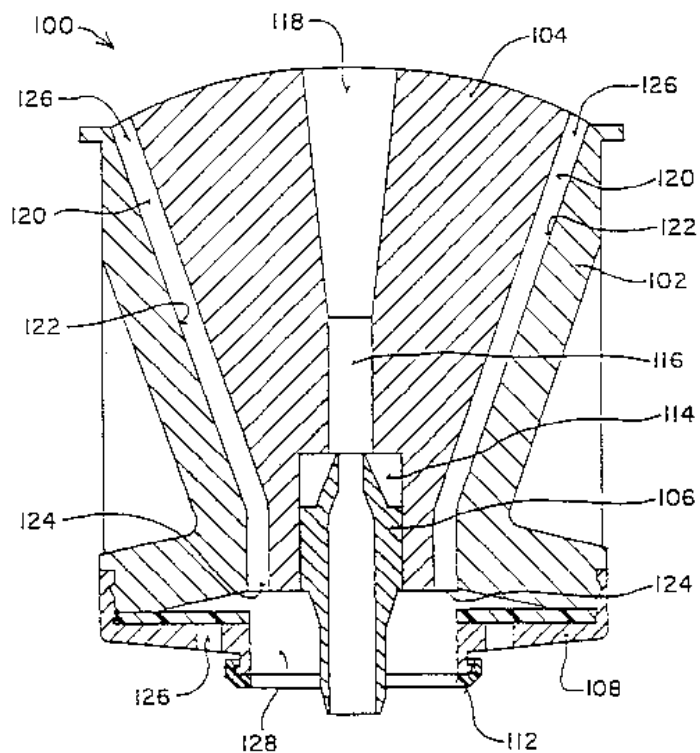
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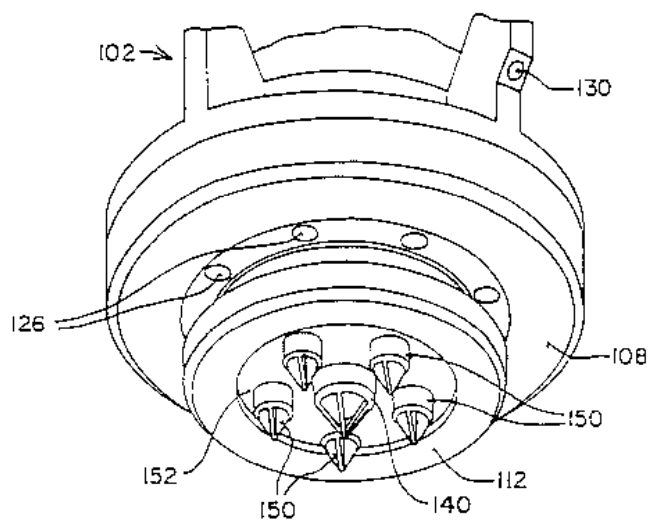
8



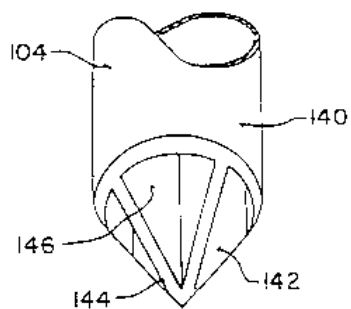
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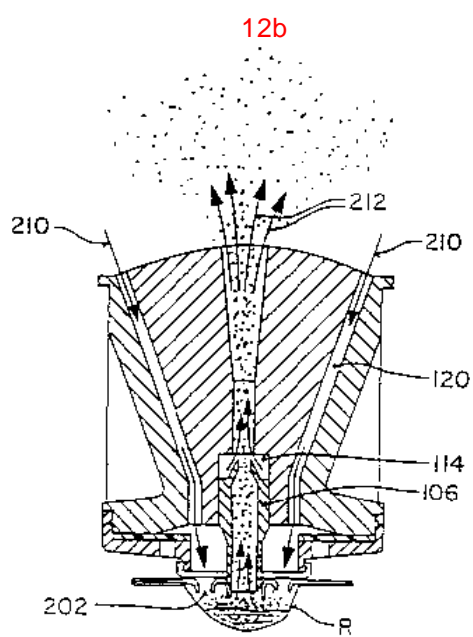
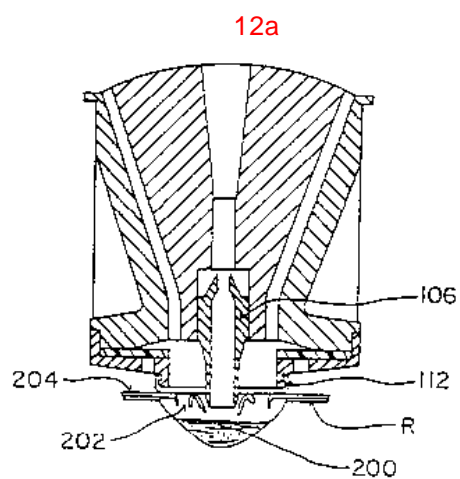
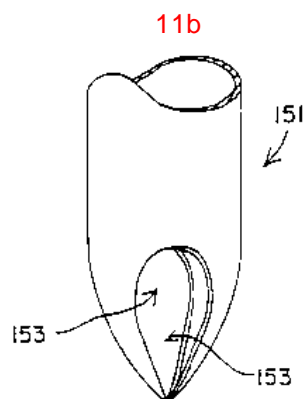


10

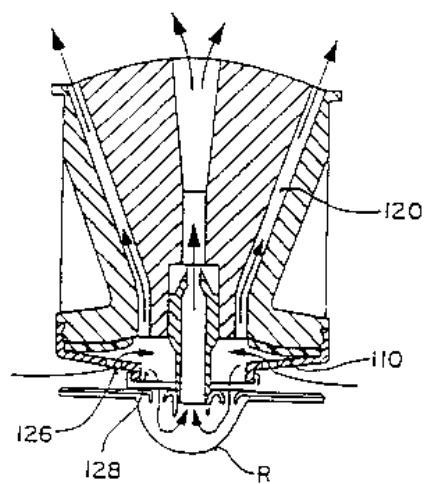


11a

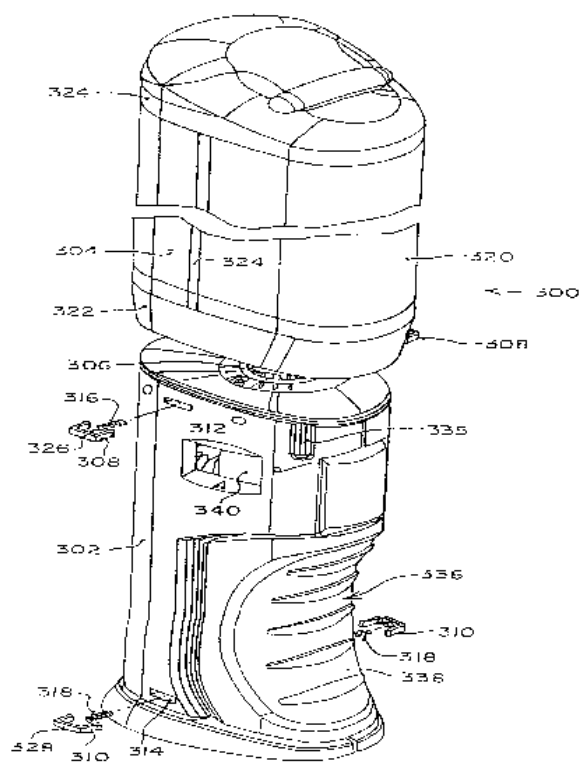




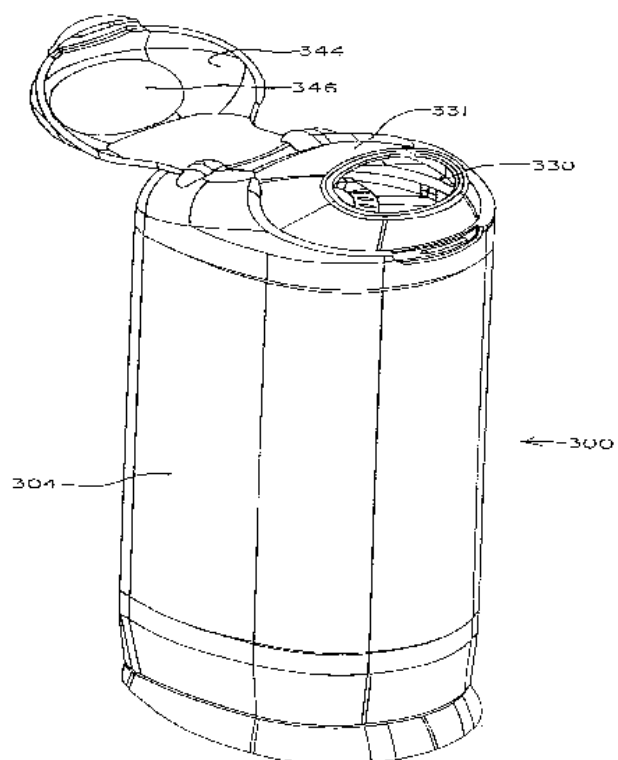
12c



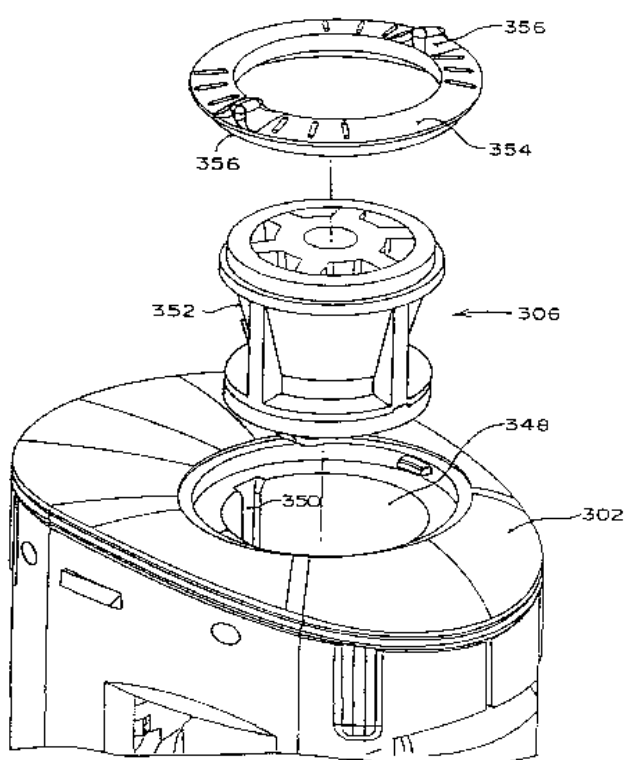
13

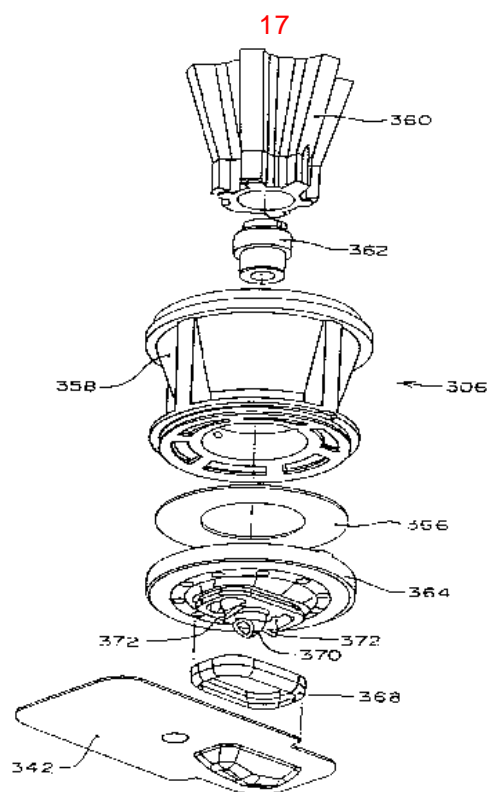
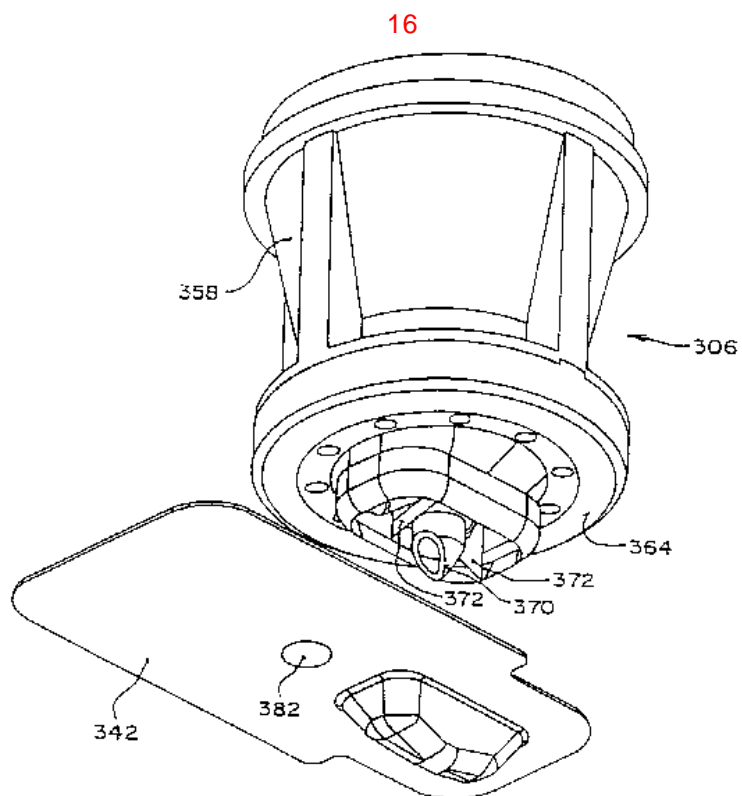


14

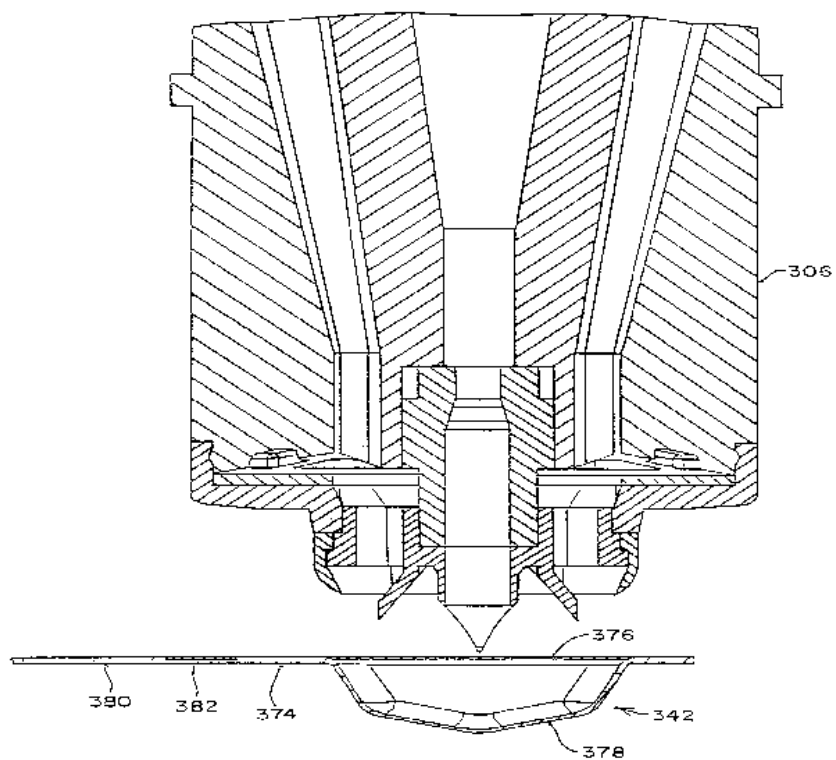


15

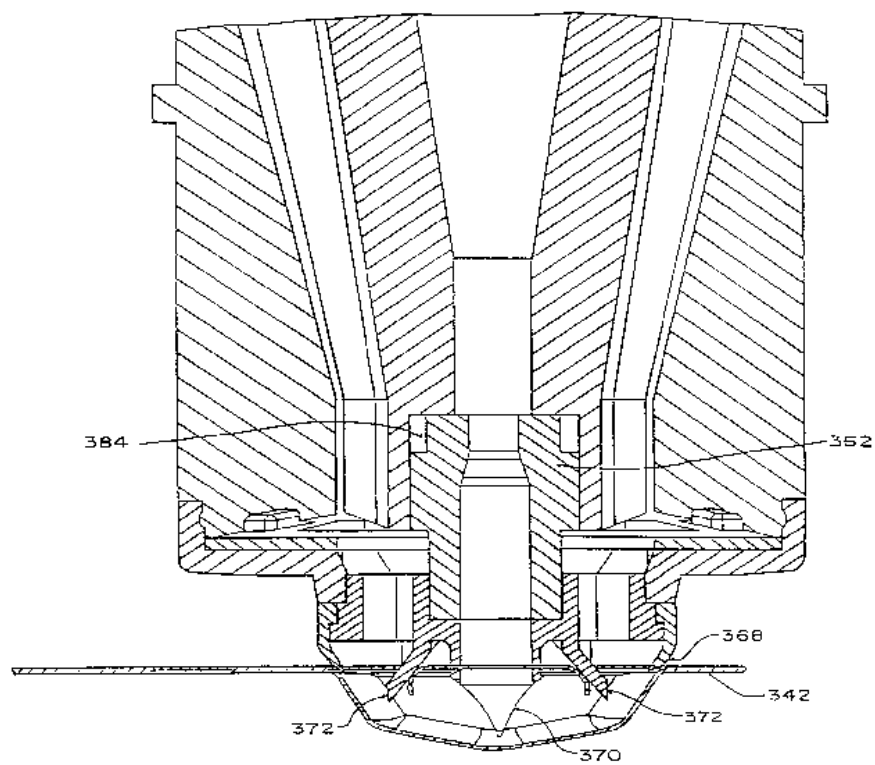




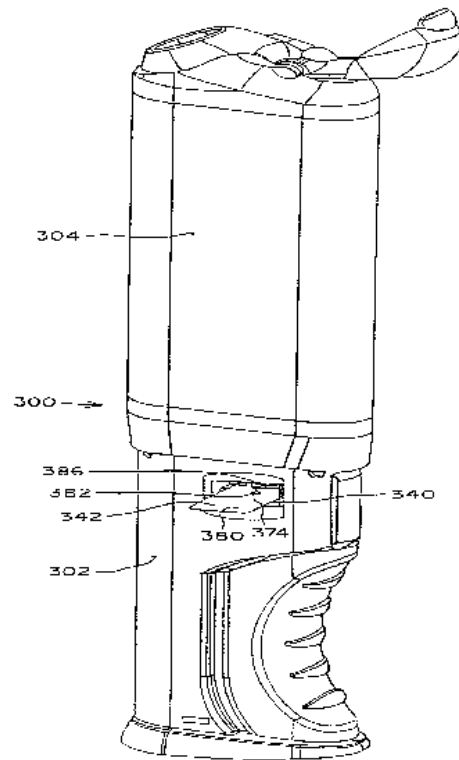
18



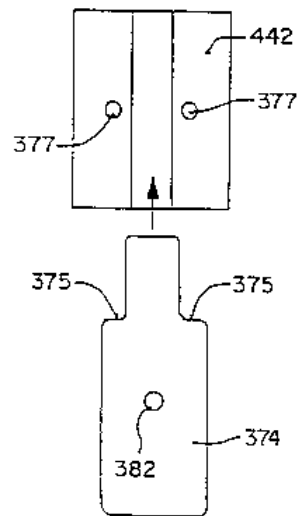
19



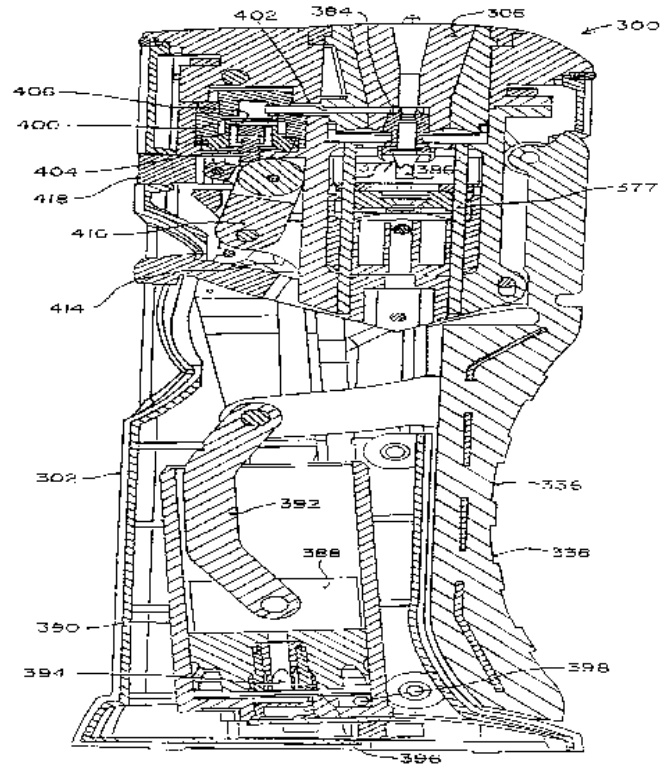
20



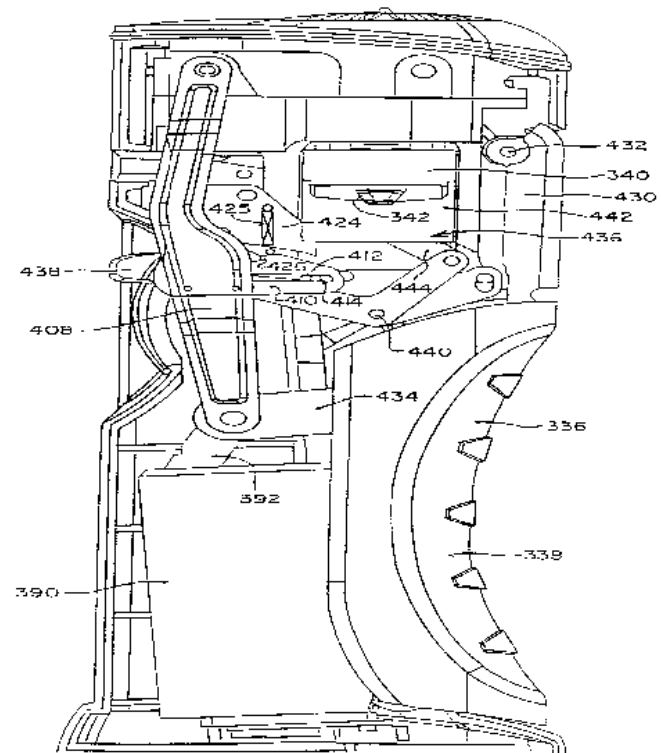
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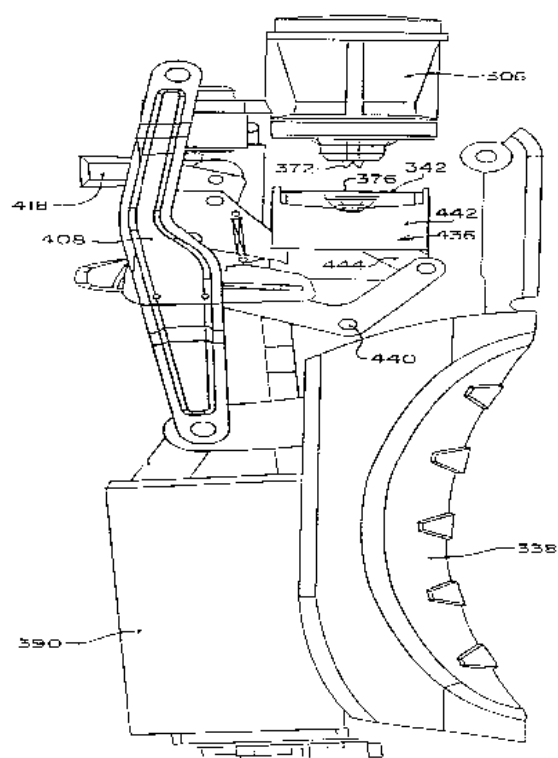
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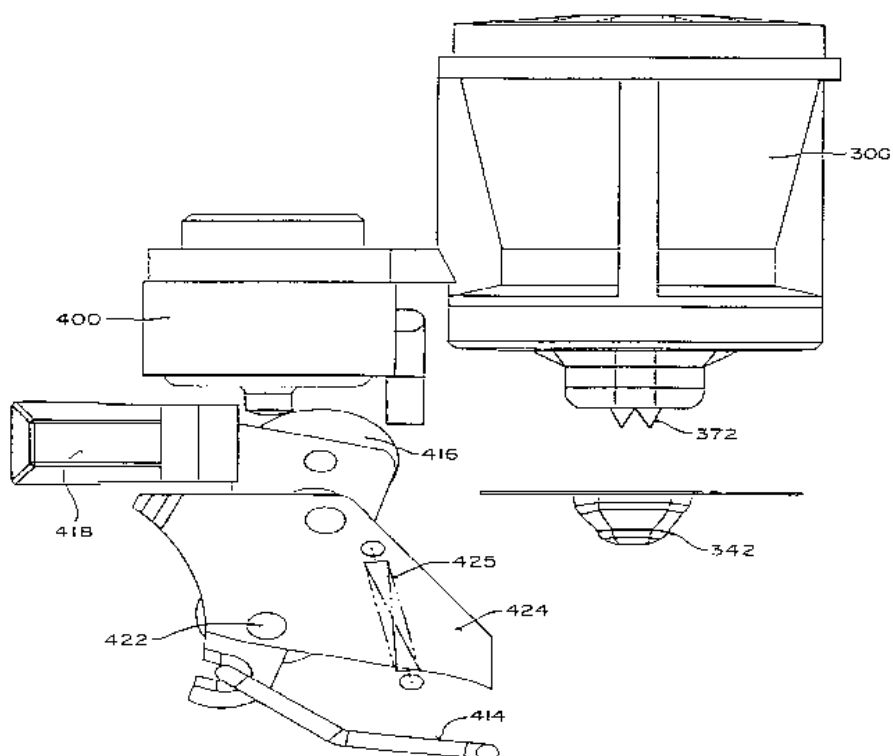
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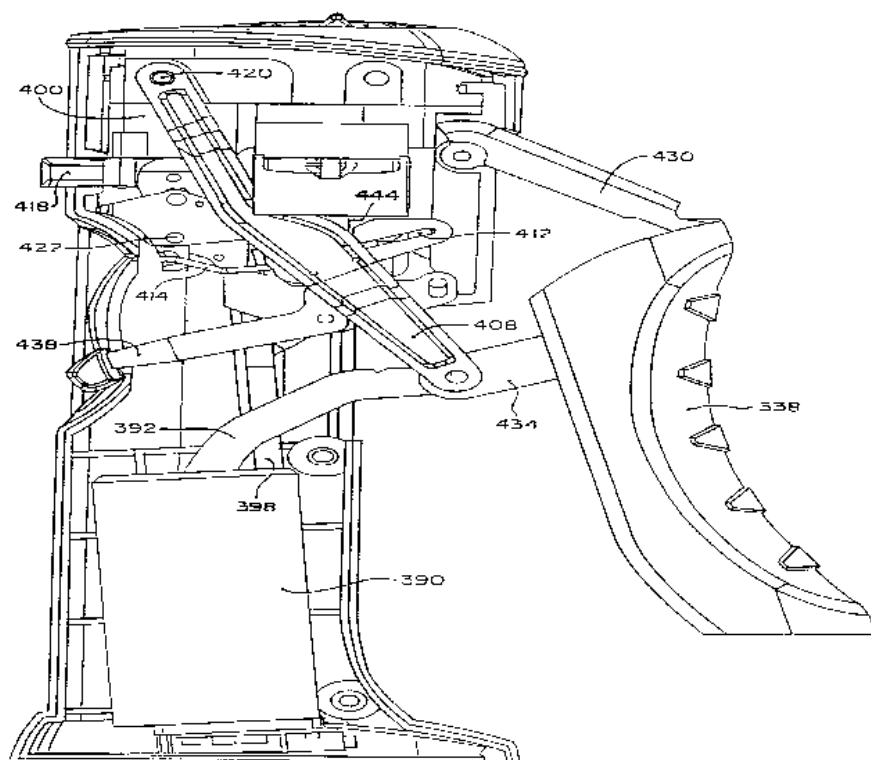
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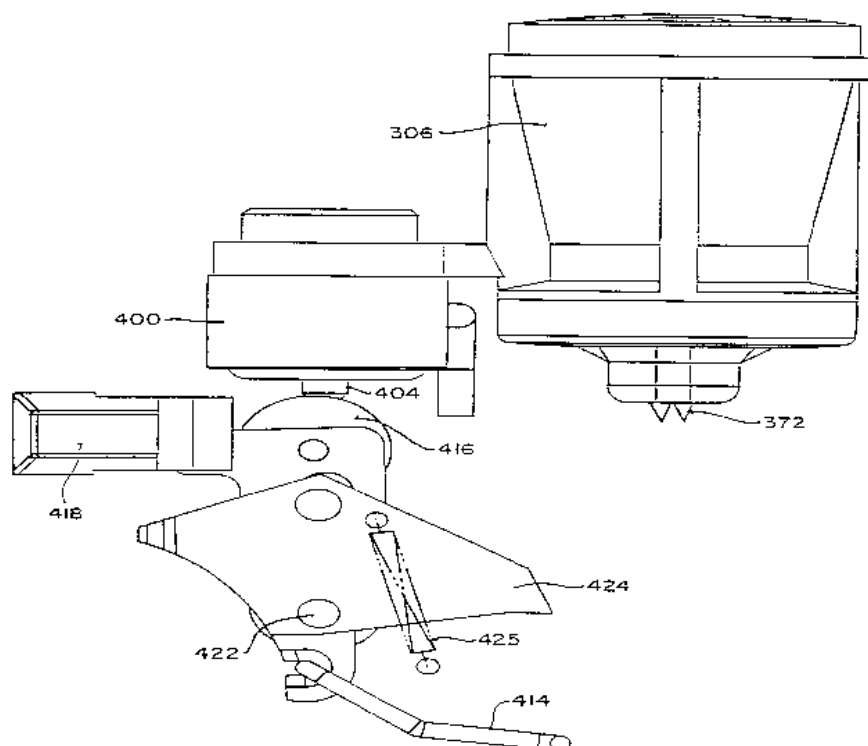
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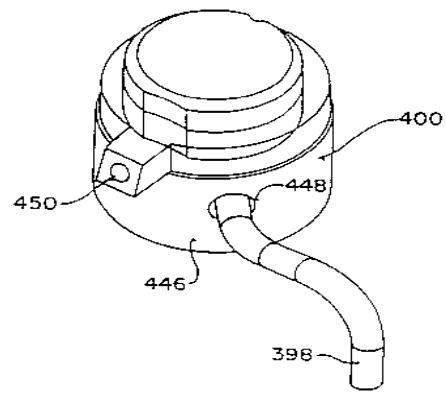
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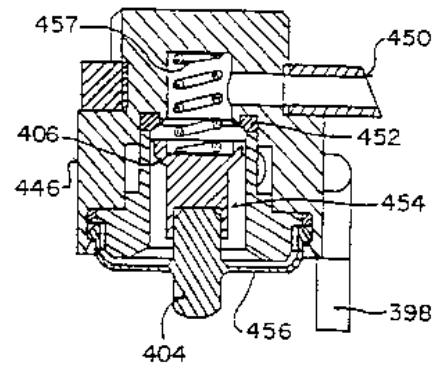
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