



(72)

94063	2877
94403	1715
94083	4840
95033	23360
46038	10731
94539	40231

(74)

:

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(54)

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1 . 1 가 , 2

16

1999 4 16 09/293,630

( ) ( )

가 (coronary artery bypass grafting;CABG)

(blockage)

가  
 " (beating heart)" " - (off - pump)" (coronary artery by  
 pass;OPCAB)  
 가 가

(heart manipulation),

가

가

가

가

가

1 2 가 1 2 1 2 1 2  
 가 1 2 가 1 2 (foot)  
 1 2 가 가 1 2

2 가 , 1 2  
가 ,  
/

가 (bag),

가 (rack) , 1 2  
1 2 가 1 1 가 2 , 2  
1 2 가 (非外傷) (retract) . 1 1  
2 3 (stabilizer) 가 3 , 1  
(foot) .

가 가  
(mount) , 1  
1 가 2 2 가 2 , 1 가 1 ,  
(ball - in - socket) , 1 2 (spherical)  
1 , 2 2 , 1 2 , 1 2

1 , 2 , 1 2 . 1 2 . 1  
2 , 30% .





33

34

35

36

37 36

38 36

39 36

40 36

41

42 41

43 41

(retractor) (sternotomy) (thorocotomy)

가 가

가

3

, CO<sub>2</sub>

(foot) 가

가 (anastomosis)

가

가

가

가

가

가  
가

가  
가

가

가      가

가

가      CO<sub>2</sub>  
가

가

(22),      1      (24)      (26) 가      (20)      1      (24)      (26)      (3  
2)      (28,29) 가 ,      (28,29)      (24,26)      (24)      (26)      (3  
    (34, 36)      (30)      (37)      (24)      (26)      (26)

가      (24)      (22)      가      (38)      (40)      (38)  
가      ,      (22)      (      )      (      )  
가      ,      가      (26)      (40)      (24)      (24)  
2      (22)      (44)      (46)      가      (22)      가      (42)  
    (24)      가      (26)      (28,29)

2 ,      (22)      (50)      (48)  
(40)      (48)      (52)(가      )      (40)  
가      (26)      (42)      (48)      ,      2  
(row)      (50)

1 ,      1      (52)      (24)      ,      2      (54)      가      (26)      (24,26)  
    ,      1      2      (52,54)

가 3 (24) 가 (26)  
 (22) 1 2 (52,54) (24)  
 가 (26) (58) 가 (56)  
 가 (52,54) (55,57)

(22) (24) 가 (26) 1 2 (52,54)  
 가 가  
 (22) 가 (24,26)  
 가 (22) (38) 가 (22) (24,26)  
 가 (52,54) 가

3 (62: stay) (24) 가 (26)  
 (60)가 (62) (24,26) (37) (66)  
 (60) (64) 4a 4b (61)  
 (66) (64) (66)  
 (67) (61) (65) (leaf) (63) (620) (65)  
 (69) (66) (63) (67) (69) (63)  
 가 (66) (71)가 (66) 가 (71)

1 (70) (72) (22) (28,29) (70)  
 5 8 (70) (76) (79) (80)  
 74 (anastomosis) (80) (82) (76) 가 (80)  
 4) 1 5cm (8)  
 (86) (86) (84)  
 (82) (92) (88) (84)  
 (84) 가 (90)  
 (knurling), 가 (Dacron gauze),  
 (foot)

4) (80) (74) , (89) 7 , (7  
 (93) 가 (89) (82) (97) (95)  
 (74) (74) (103) (101)  
 가 (99) (89) (101) (89) (105)  
 , (99) (89) (97) , ,  
 (80)

(70) (80) 가 , (80)  
 가 가 , 가 (70)  
 , (80)  
 가 , 5,807,243  
 가

(72) (28, 29) (90) , (90)  
 (92) , (92) 가 (94) (90) 7  
 , (28, 29) (22) (96) (96) (24, 26)  
 (30) (22) (42) (proje  
 cting lips) (90) (90) (102)가 (28, 29) (104)  
 (90) (100) (106) (90) 가 , (108)  
 , (102) (109) 가  
 (104) 가 ( 8) (28, 29) (22)  
 (104) (104) (102)가 (104)  
 , (90)가 (28, 29) (22)  
 (110) (90) (102) (104)

9 , (92) , (92)  
 (112) , (118) , (112) (116) 가 (90)  
 (114) , (120) , (118) (114)  
 (114) (118)  
 (122)가 (114) , (118) (118)  
 가 (124) , (122) (124) (118) (  
 114) 가 (118)

10 , (94) (70) (74) ,  
 (92) , (94)  
 (134) 가 , (94) (130) (132) (132)  
 (130) (138) 가 가 (132) (136)  
 , (136) (140) 가  
 (130) (148)가 (138) (140) (144) 가 ,  
 (146) 가 (148) (92) (118)

152) , (150) (151) 가 . (152) (151) , ( (132)가 (130) (143) (74)가 (154) (151) 가 (152) (152)가 (74) (70)가 가 .

· , (94) (70) 가 (156) (130) (158) 가 , (92) (118) (160) (160) , (92) (130, 132) (130) (146) 가 , (148) (130) (156) (94) , (152) , (148) (130)가 가 (160) .

16 19 , (200)가 (20) (200) (20)

(200) 가 (204) (foot)(202) (202) (206) (210) .가 (204) (204) (208)가 (206) (228) , (204) (206) (206) (208) (208) 가 (206) (204) (204) 가 (204) .

17) (200) (212) 가 , ( 16 (18) 가 (212) (207) (205) , (200) (20), (204) , (228) (202) (204) (21) 2) , (212)

16 18 , (208) (214) (213) (214) , (214) (214) (212) (216,218) , (215) , (216,218) 1 2 (212) (204) (212)가 , (214) (208) , (204) (204)



(228) 1 (238; first tooth) (236; tapered surface) (mating)  
 (234) (208) 가 , (234, 236)  
 (228) 1 (238) (228)가 ,  
 (228) (208) 가 (234) 1 (230)  
 20 60 , 34 45 , 40 (240)  
 (234, 236) (204) , (228)가

20 , (204) (241; locking mechanism) (22; retractor)  
 가 (241) (208) (208) (208)가  
 가 , (208) (228) 1 (238) (205)  
 1 (238) 2 (243) (rail) (trapping) 22 24  
 , (205)가 (240) 1 (238) 2 (243)가 (20  
 0; stabilizer) (20)

25 28 , (202; foot) (204) 가 가  
 (202) (248; distal housing) (246) (242; pin)  
 (248) (250; distal link) (252)가 (242) (  
 256; circumferential recess) (242), (252) (246) (202)  
 , 가 (202)

(242) (204) (208) (248)  
 66), (266) (264) (208) 가 , (242) (2  
 (248) (246) (268) (252) (clamping) (266)  
 (208) (246) (264) (266)  
 가 (248) (270) 가 (272)가 (248)  
 가 (274) (248) (266) (alignment)  
 ge and clamp). (246) (wed  
 가 , (208) (212)가  
 , (202) (204)

(202) (250) (208) (262) (260)  
 ?? (258) , (258)  
 (heart) (208) / (250) (262)  
 70 110 , 90 , (258) (202; 28a 2  
 7b ) (263; bottom surface) (260) (202)  
 (258) 1 2 (263, 265) 가 (259)  
 . 1 2 (263, 265)  
 , (258) (263, 265) (261) 0.50  
 8cm(0.20 in), 1.016cm(0.4 in) , (204) (202)  
 (242) 27 28  
 (202)

가 (202) . (242) (263)  
 0.127 cm(0.050 in), 0.254 cm(0.100 in) (202) (raised)  
 part)

29 35 , (280; suction foot) . (280)  
 (280) (281; suction lumen) . (280) (  
 281) (282) . (281) (284) (280) (28  
 3) (204) . (280) (200)  
 (242) . , (280)

(280) (286) 가 (2  
 85; malleable frame) . 가 , (285) 300  
 (Series) (280)  
 (285; 31 32) (290) 가 (287; flexible tip)  
 (290) (286) , (290) (285)  
 . , (288, 289) 33 35 . 35  
 (288, 289)

, (280) , (280)  
 , 가 가 , (280) (280) (2  
 80)가 . , (280) (suction stabilization) ,  
 (280)

(287) . (287)  
 , / . (280)  
 , (287) (280)가 ,  
 (amount of retraction) / 가 .

, , 가 가  
 (287) (280) (292) . (292)  
 , (280) (280)

(290)가 (281) (287) (282)  
 (281) (287) (287) , , V- , (282)  
 (287) 가 ,  
 가 . (287) (290) 0.25 (

6.35mm), (285) 0.50 (12.7mm) (290)가

36 40 (300)가 (300)  
가 (204) (20)

36 40

2 (300) 1 (304) 2 (306) (302) 1 (304)  
2 (306) 가 , 2 (306)

(300)

1 (304) /

(302)

(302)

가 (305) (302)

(302) 가 (312) (314) (314)  
(312) (314) (312)  
(316) 5 15 , 9 (310)

(314)

1 2 (304,306), 1 (304)  
(310) 1 (304) (310) 2 (306)  
30%, 50% 가  
(302)

(314) (314) /  
(310) (314) (312)  
가 (314) (312)  
/ (314)

(314)

(314) 가

(320) (312) (320) , (320)  
가 (312) (316) (320)

(320) (302)

2 (306) (322) 가 , 가  
(322) 0.200 1 (304) 2 (306) (32  
2) (326) (324) 2 (306) (3  
22) (330) (328)

(332) 1 2 (304,306) (332) (330)  
 (332) (332) 5 - 20 , 10 가  
 (302) (336) (336) (302) 가 (334),  
 (306) (20) ,

41 - 43 (302A)가 ,  
 (302A) 1 2 (304A,306A) (300)  
 2 (302) , (302) (302) (30) (30)  
 2) (305) (305) (338) 50  
 90 , 60 80 ,가 70 (302A)

(302,302A) 가  
 (302,302A)가 (302,30  
 2A) 가 (302) 27  
 28 , (305)  
 (302)

(20) 11 1  
 2 (52,54) (24) 가 (26) 가 (26)  
 (52,54) (24) (24) (40)가 가  
 (26) (24) , 1 2 (52,54)  
 , ( 11 )  
 (66) , 가 , (37) (62)  
 , (62)

(70) (72) (28, 29)  
 (22) , (104)가 (72)  
 (84) (70) (foot;80)가 (epicardium) (84)  
 , (70) (124) (152) (70)  
 ,

12a 12b (70) 가 , (70)  
 (80) (164) (164) (80)  
 (164)가 (70) (164)  
 (164)

(166) 가 , (silastic)  
 (168) 가 . (168)  
 in , 가 , 0.010 0.030in, 0.10 0.20  
 (sling) , 가  
 (168)  
 (164) (80) (172) 2 (170) 가  
 (170) (172) (170) (174) 가 (164)  
 (170) , .  
 13 (70) 가 (176) CO<sub>2</sub>  
 가 (70) 가  
 (176) (178) , 2  
 (178) (180) (178)  
 (182, 184) (182) CO<sub>2</sub> 가 (184)  
 (misting)  
 (182, 184) (178)  
 (70) (78) 가 (186) (178)  
 (80) (84) , (176) (180)가  
 14a 14c (heart retractor)  
 (188) (192) (194) (190) 가 (192)  
 가 (Dacron) (196) (192)  
 1 3in, 가 가 2 4in (188)  
 (70) (72) (28, 29) (22)  
 , (188)  
 가 (20)  
 15a 15b (200)  
 가 (Forgaty Clamp) 가 (203) 가  
 (202) (202) (206) (204)  
 가 , (209)가 (208) 가 (208)  
 (209)가 (210) 가 , (209)  
 가 가 (malleable r  
 od:212)가 (202) (214) (202)  
 (214) (20) (28, 29) (22) (7  
 2) (214) (72)  
 가 , (214) (90)  
 (216) 가 , (28, 29) (22) (216) (

220)가 (222) (218) 가 . (224) (220)  
(228) (28, 29) (22) (214) (

가 가 , , 가  
가 가 , , 가  
" , " 가  
" , " 가  
" , " 가

(57)

1.

;

, 1 2 (foot) ,

1 2

, 1 2 가 , 1

2 , (epicardial surface) .

2.

1 , 1 2 30% .

3.

1 , 1 2 , .

4.

;

1 ,

가

5.

4 , 1 가 1 2 .

6.

4 , 1 가 2 가 .

7.

;

1 ,

,

.

8.

7 , 가 , .

9.

;

;

가 .

10.

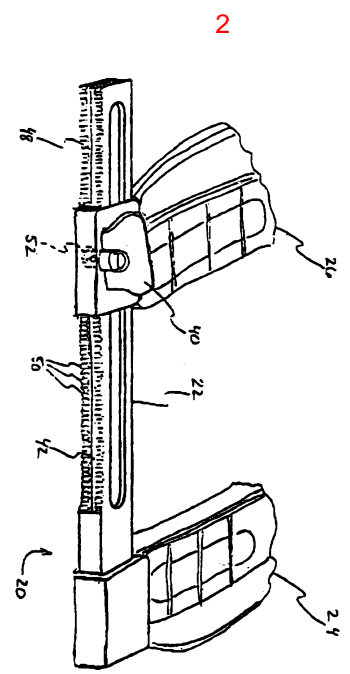
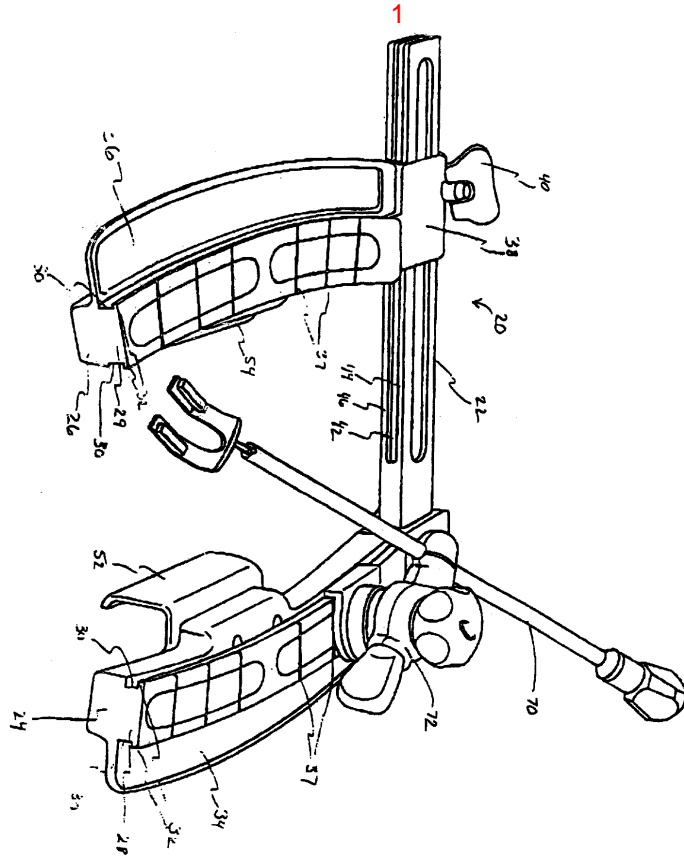
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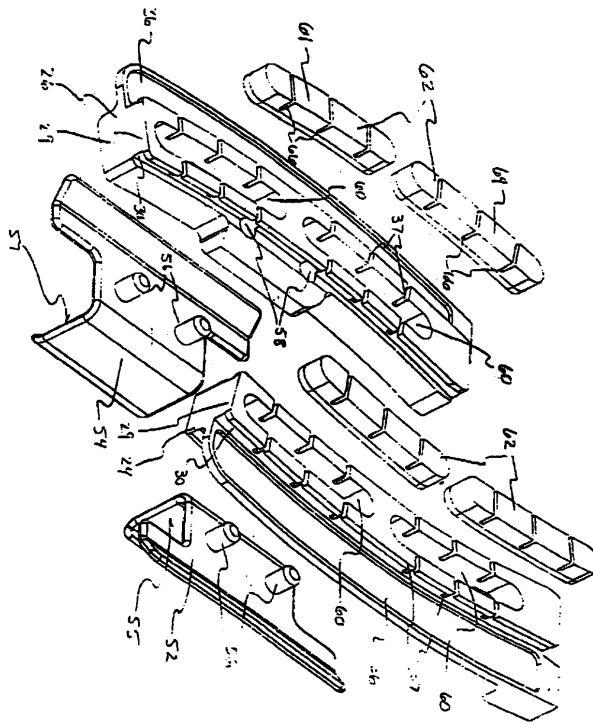
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,

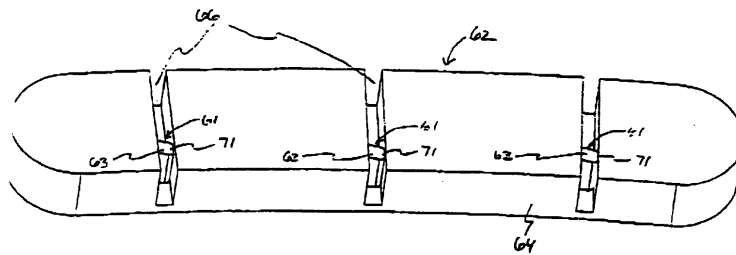
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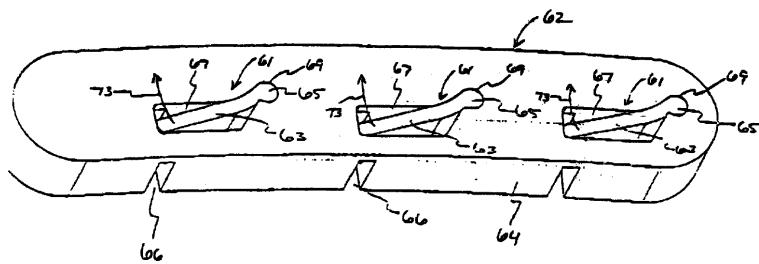
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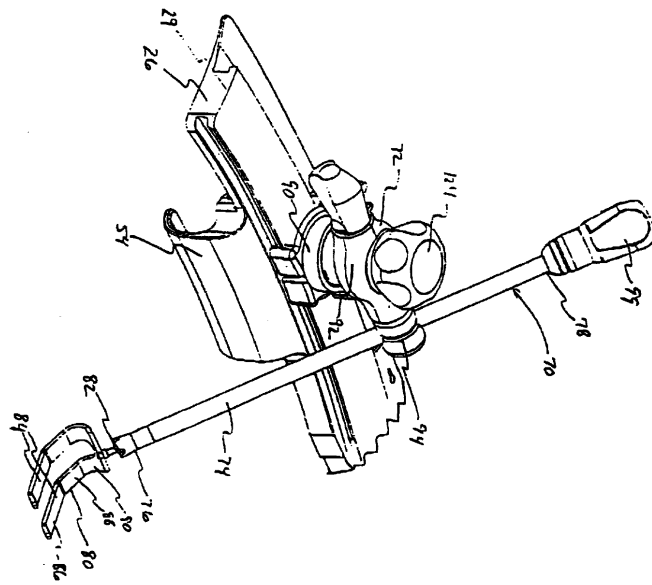
4a



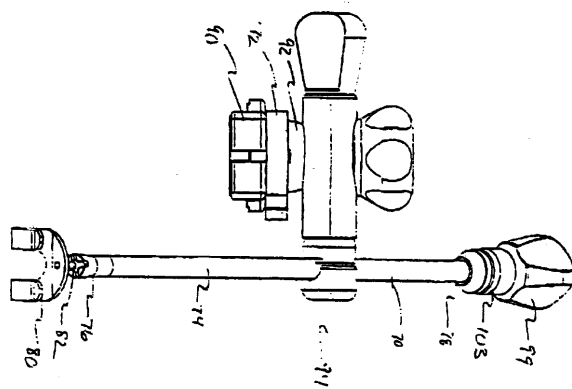
4b



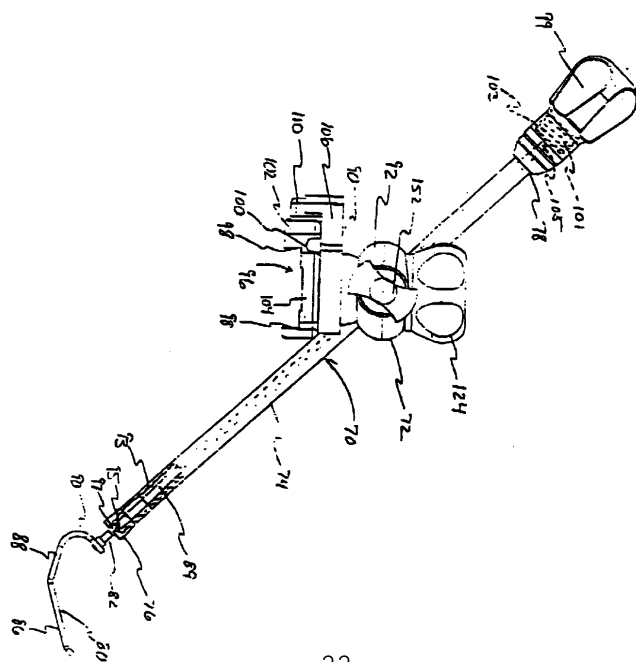
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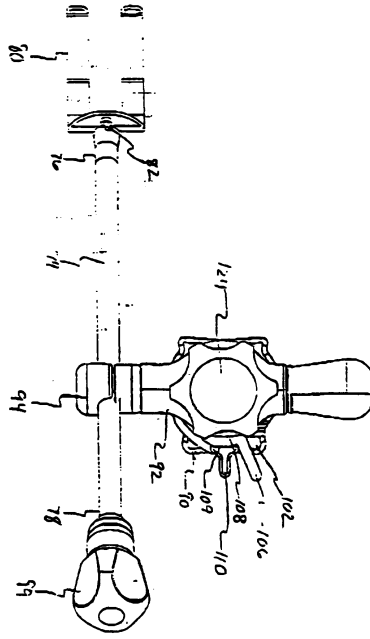
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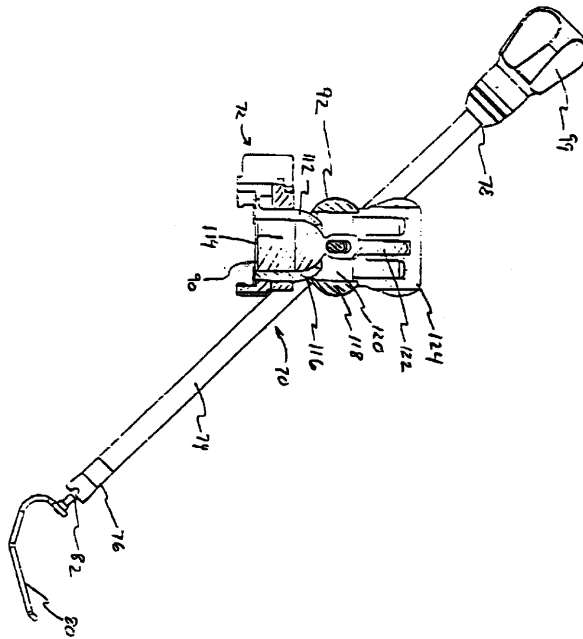
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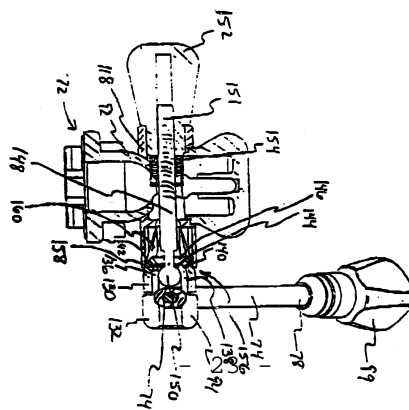
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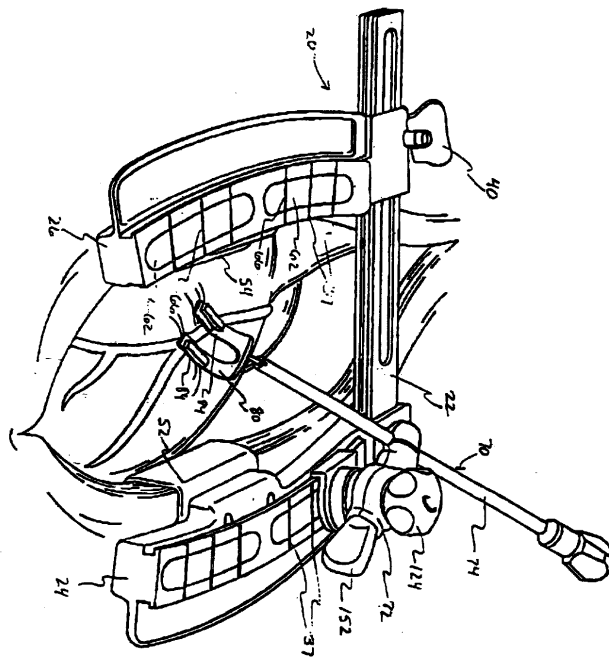
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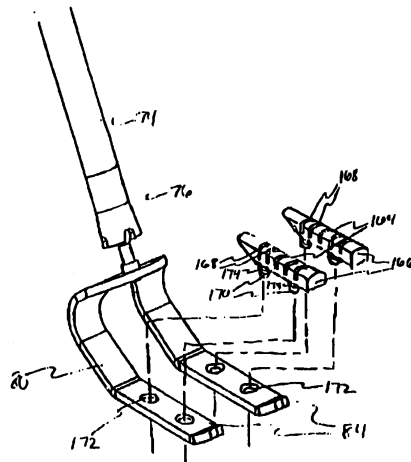
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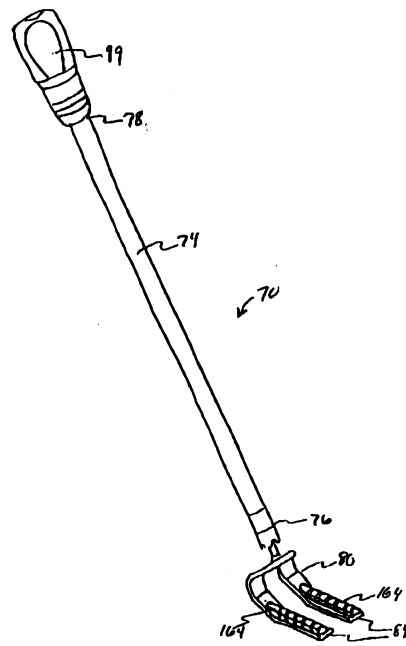
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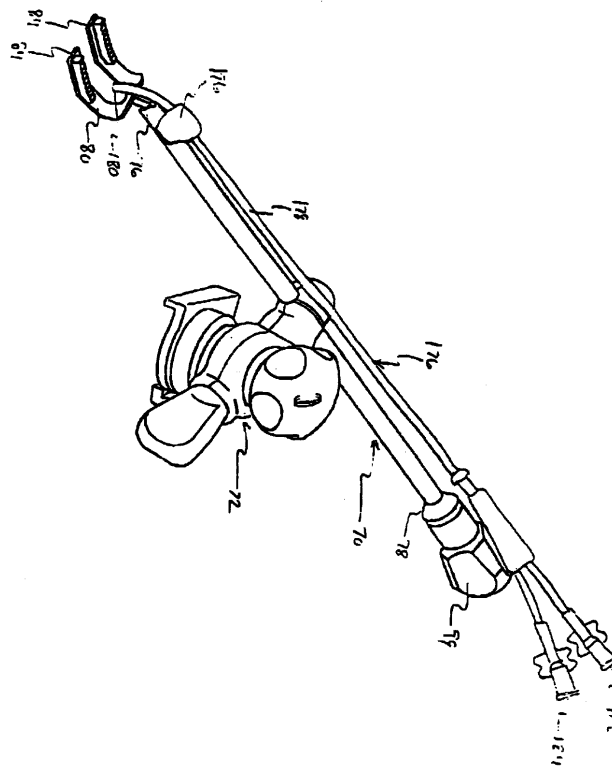
12a



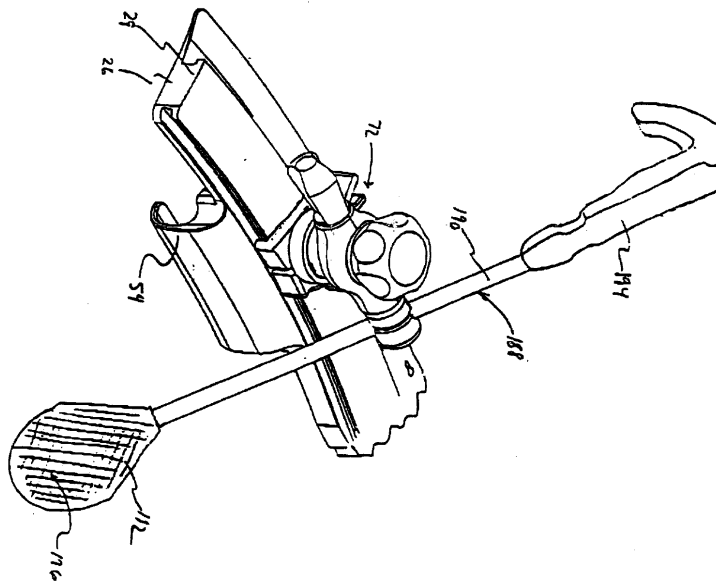
12b



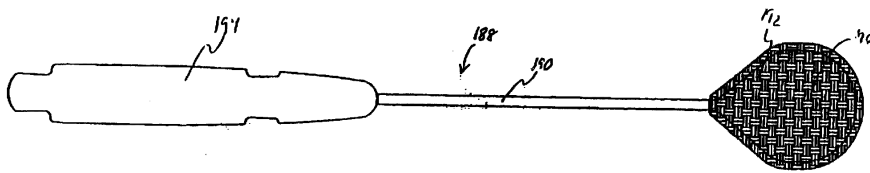
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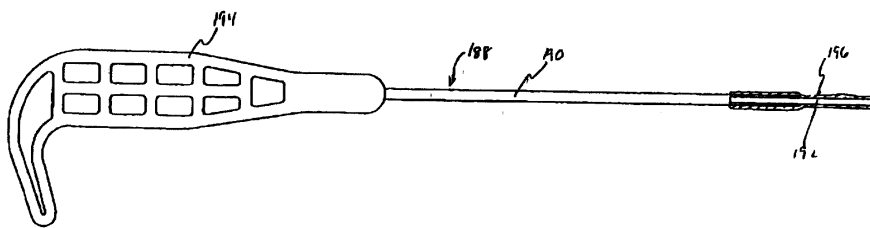
14a



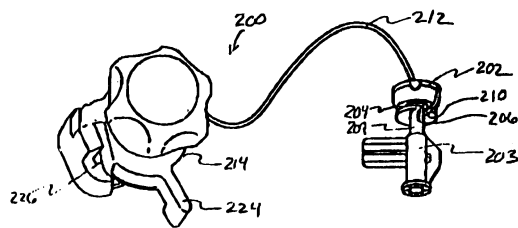
14b



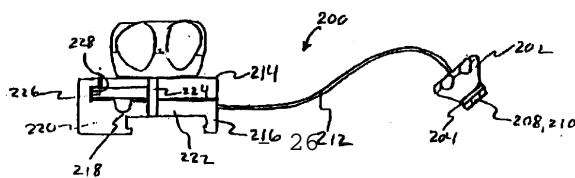
14c



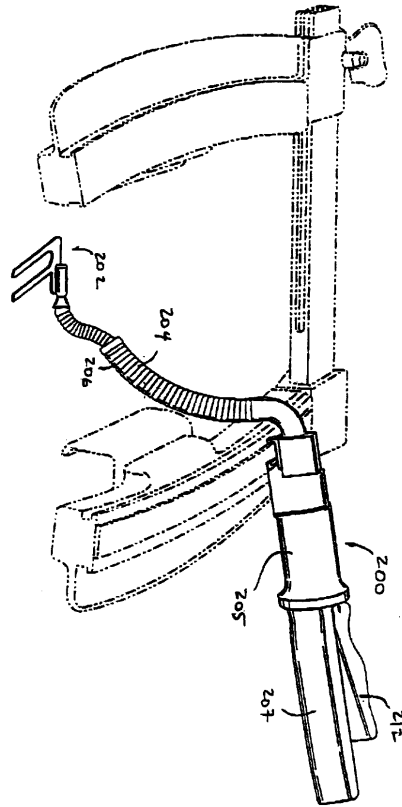
15a



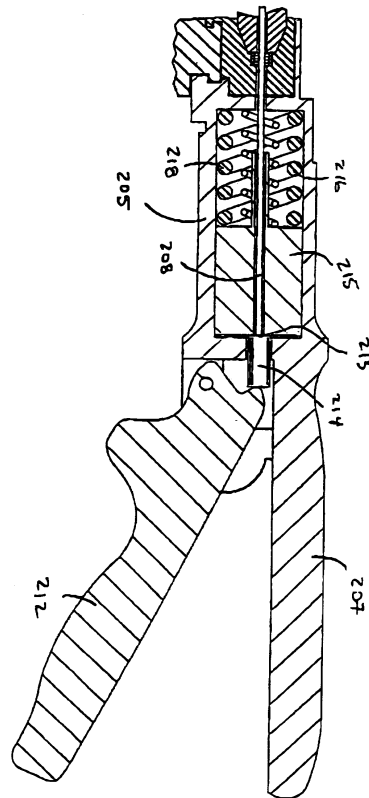
15b



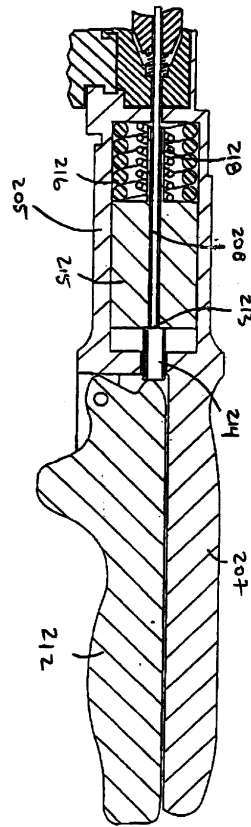
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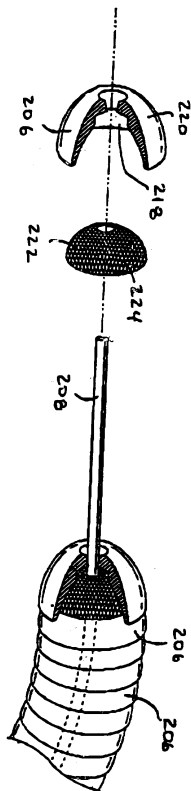
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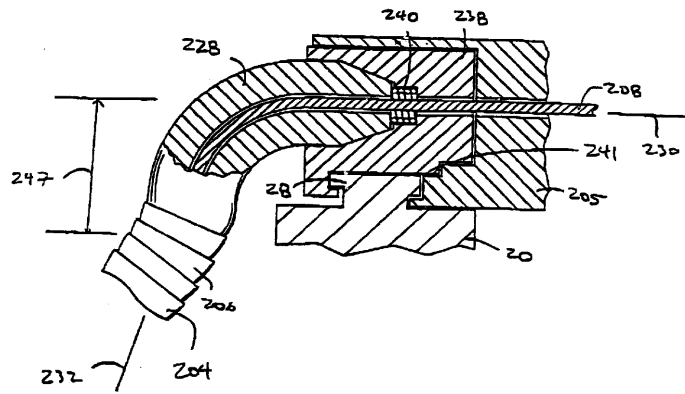
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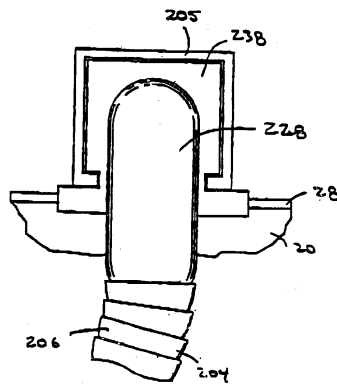
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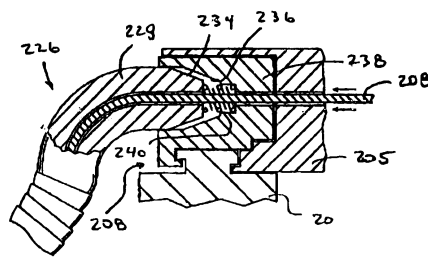
20a



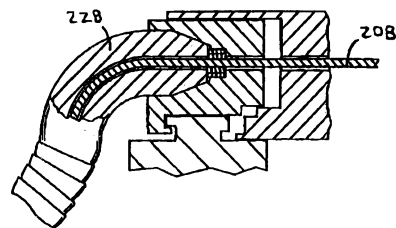
20b



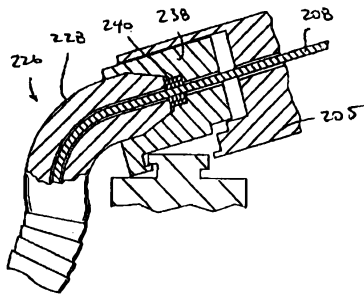
21



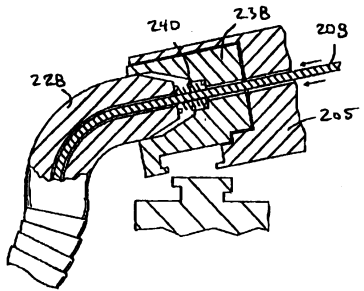
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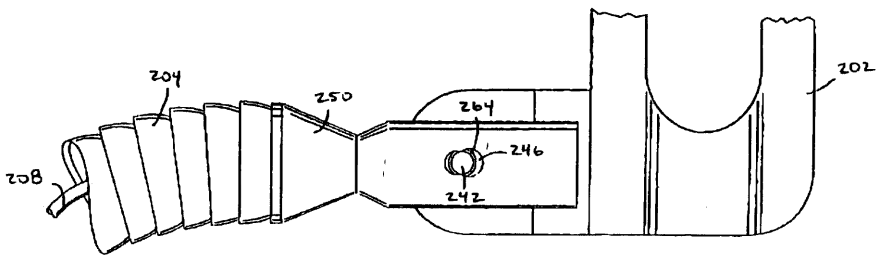
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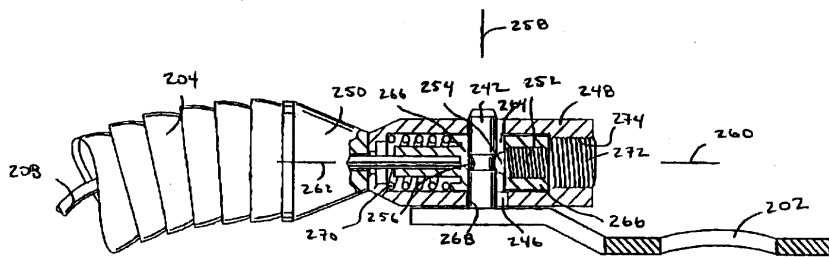
24



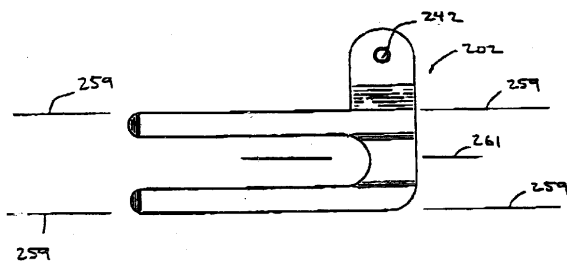
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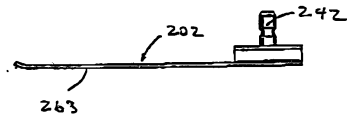
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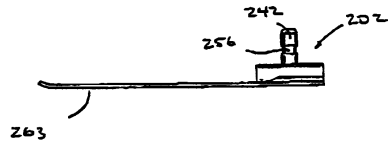
27a



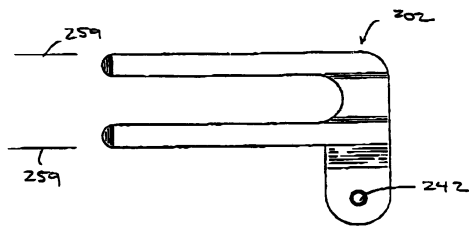
27b



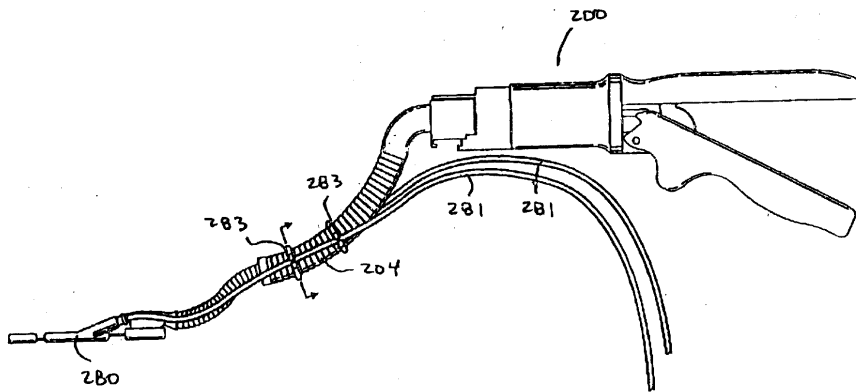
28a



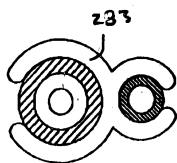
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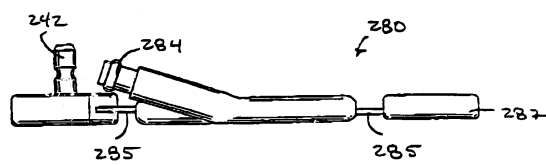
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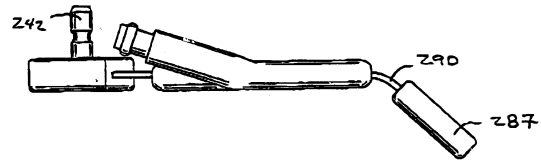
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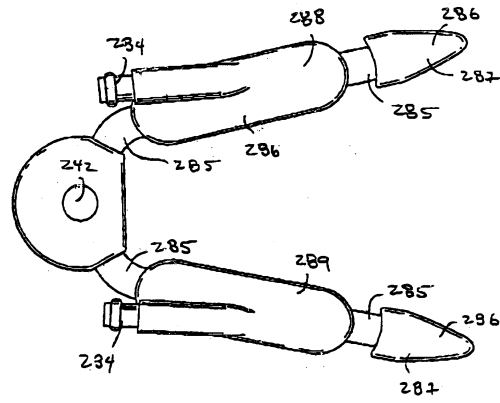
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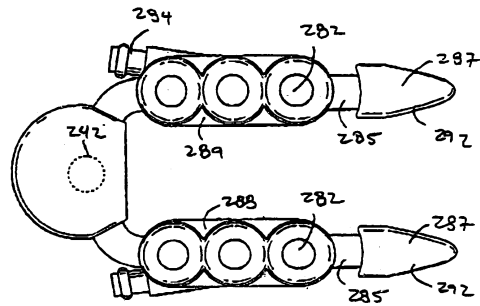
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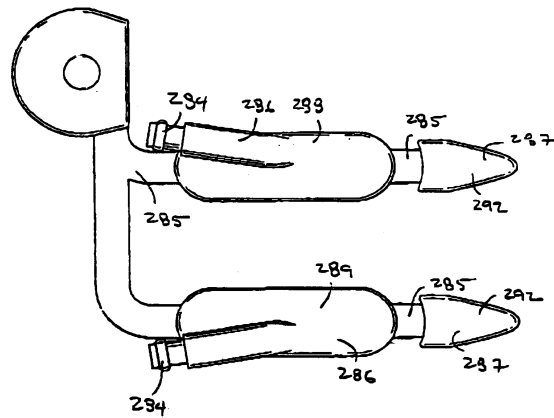
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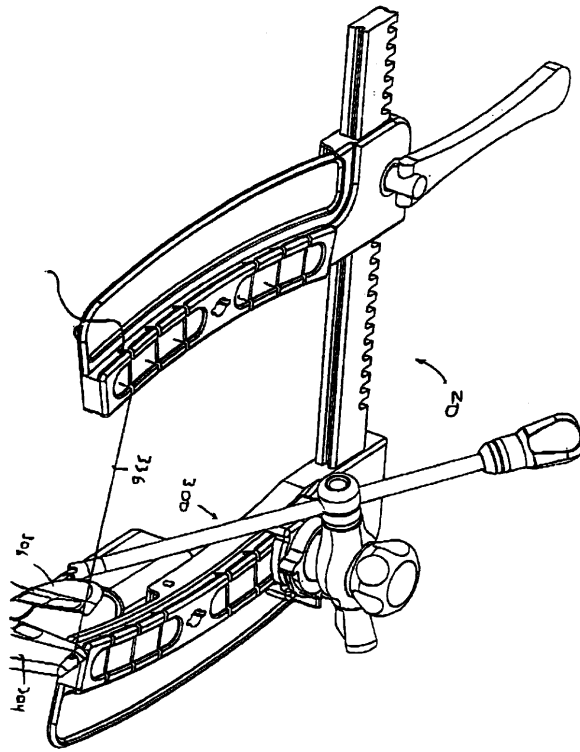
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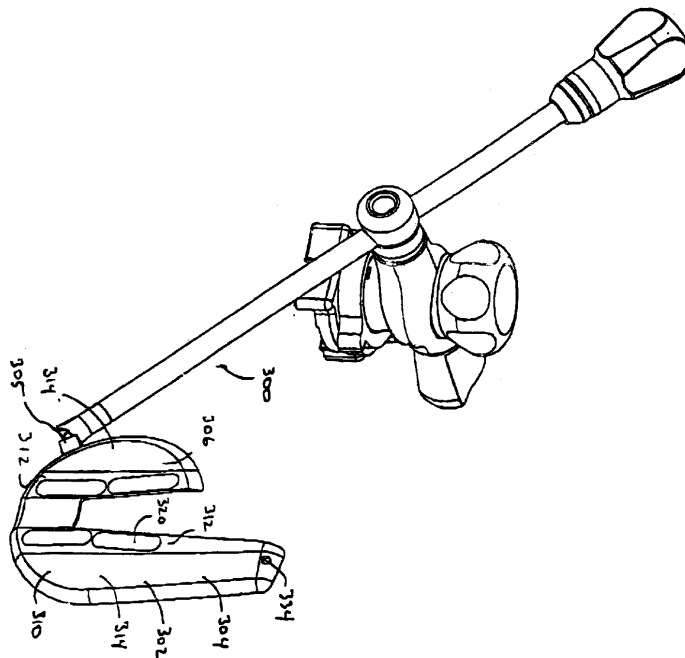
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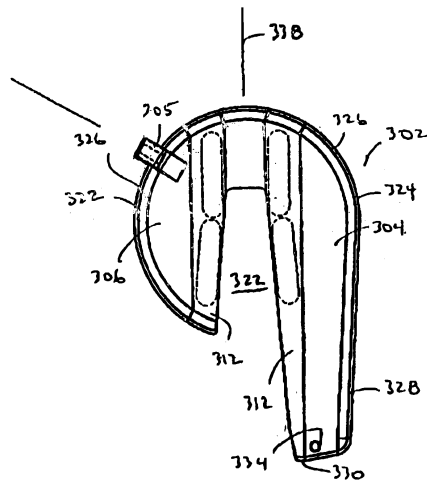
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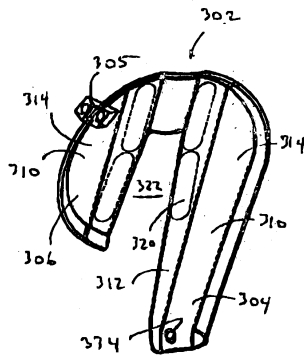
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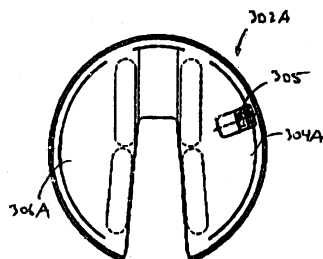
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41



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