

1/16

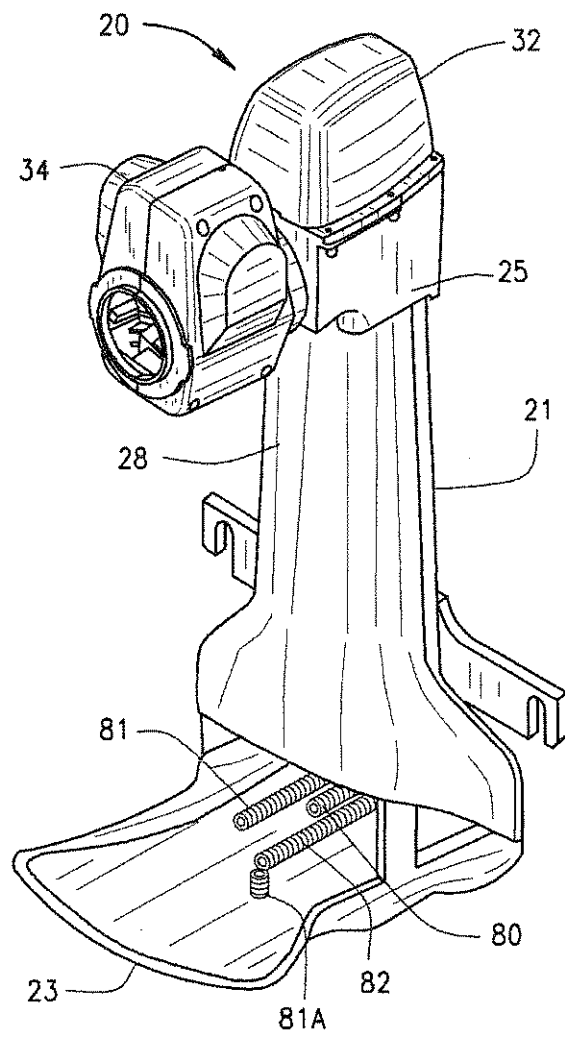


FIG. 1

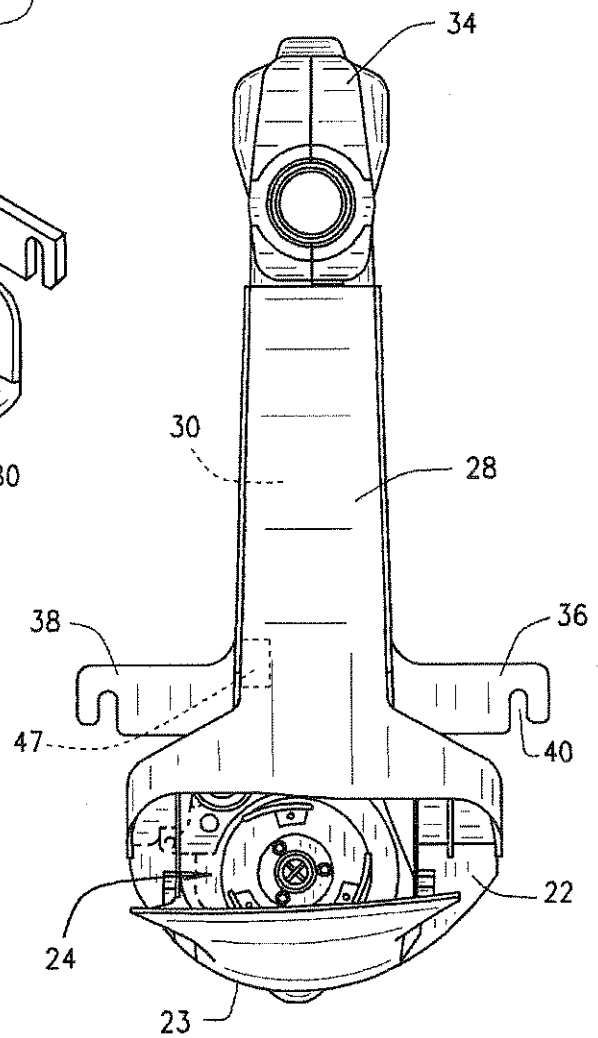


FIG. 2

2/16

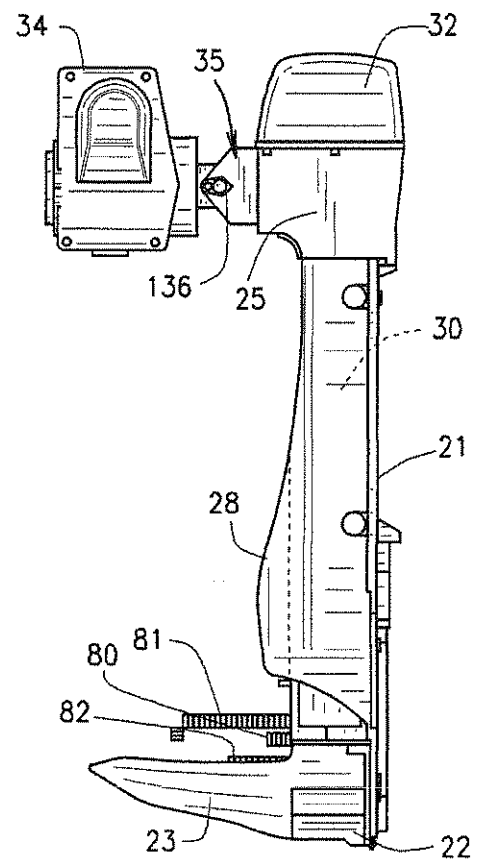


FIG. 3

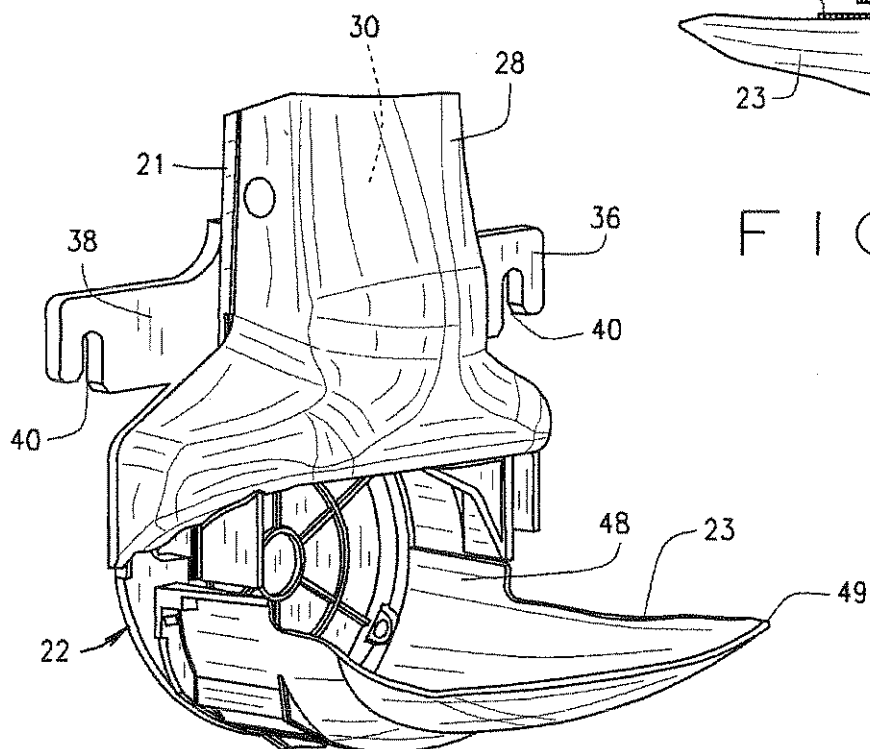


FIG. 4

3/16

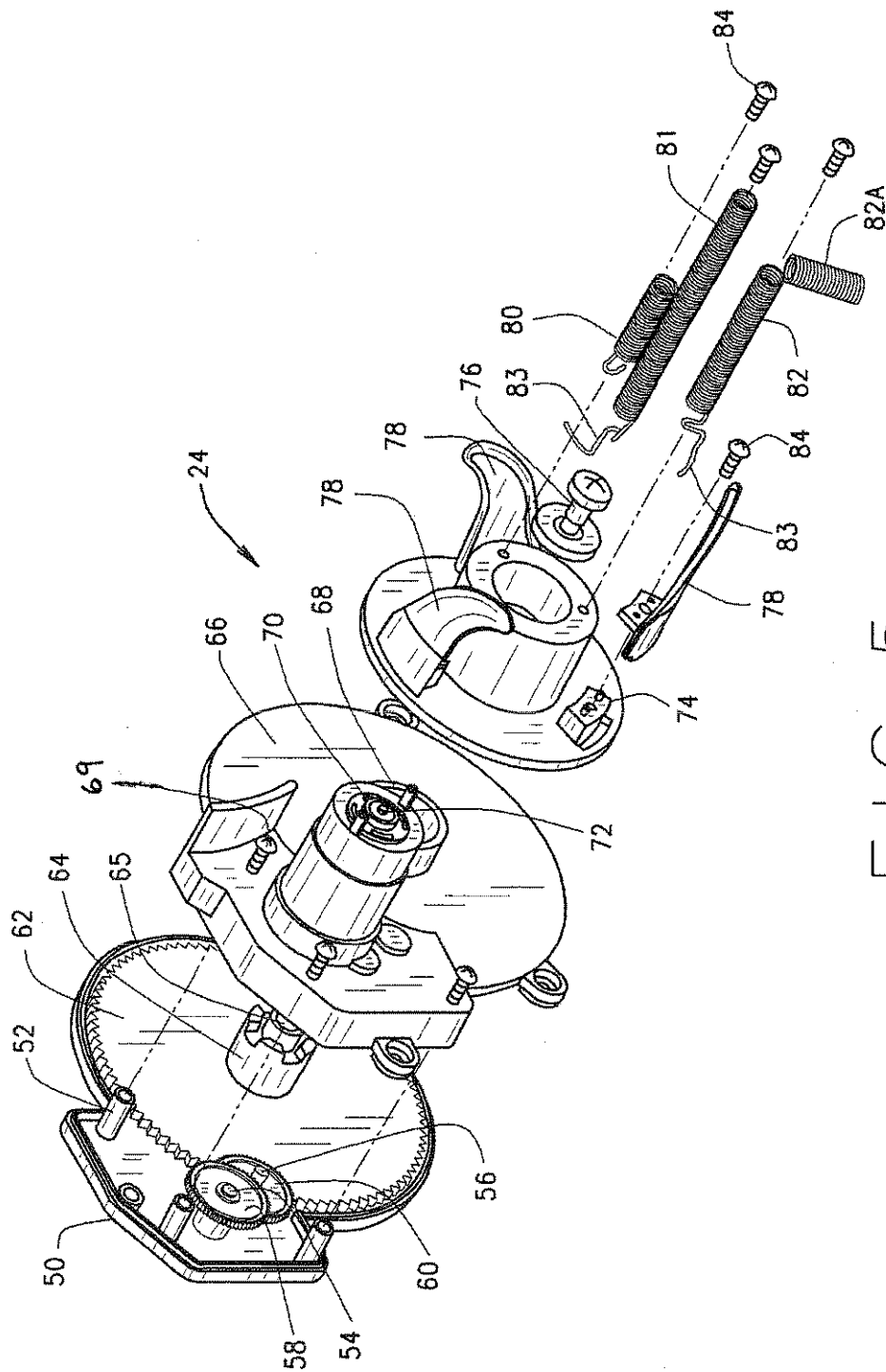


FIG. 5

4/16

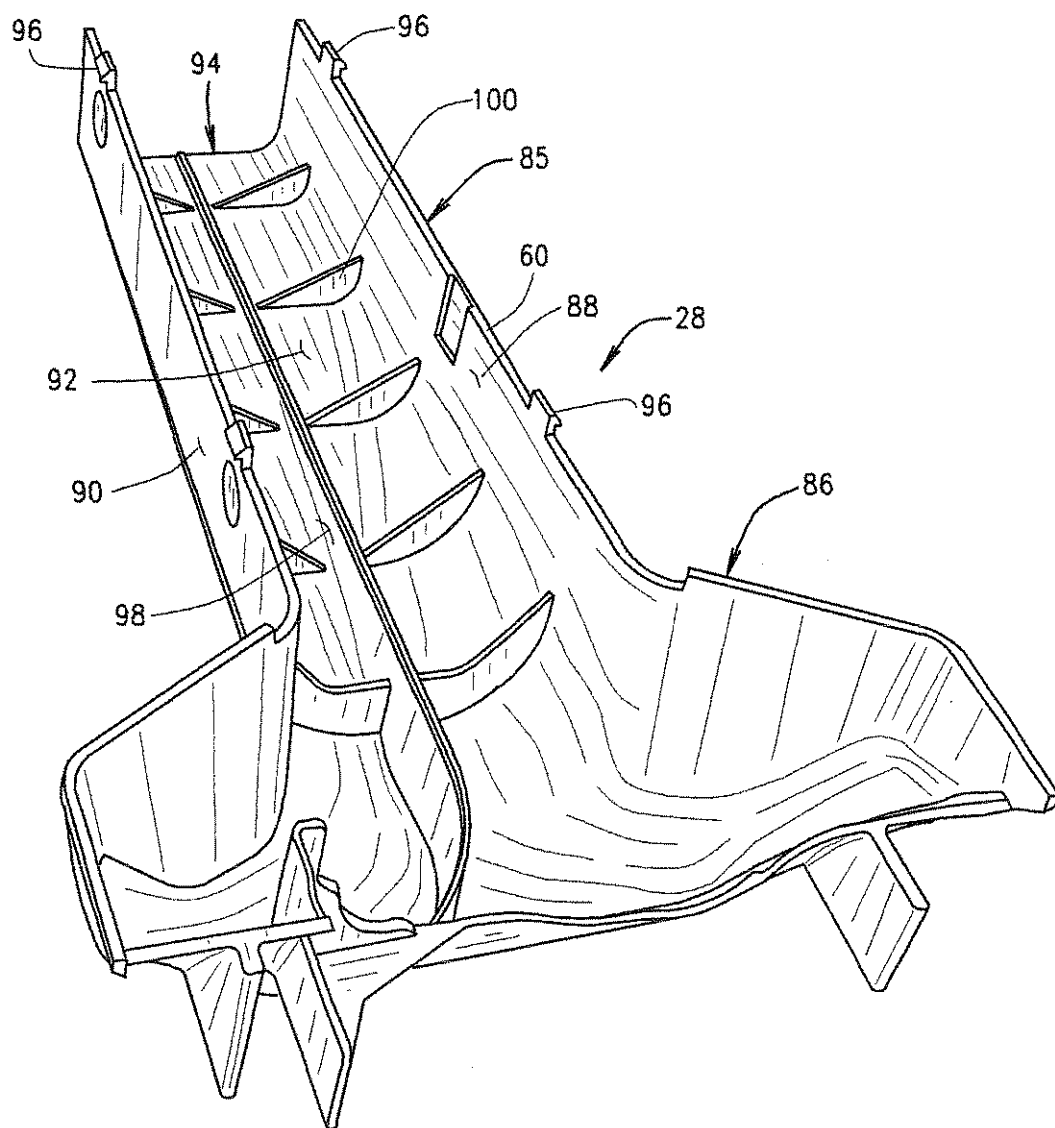


FIG. 6

5/16

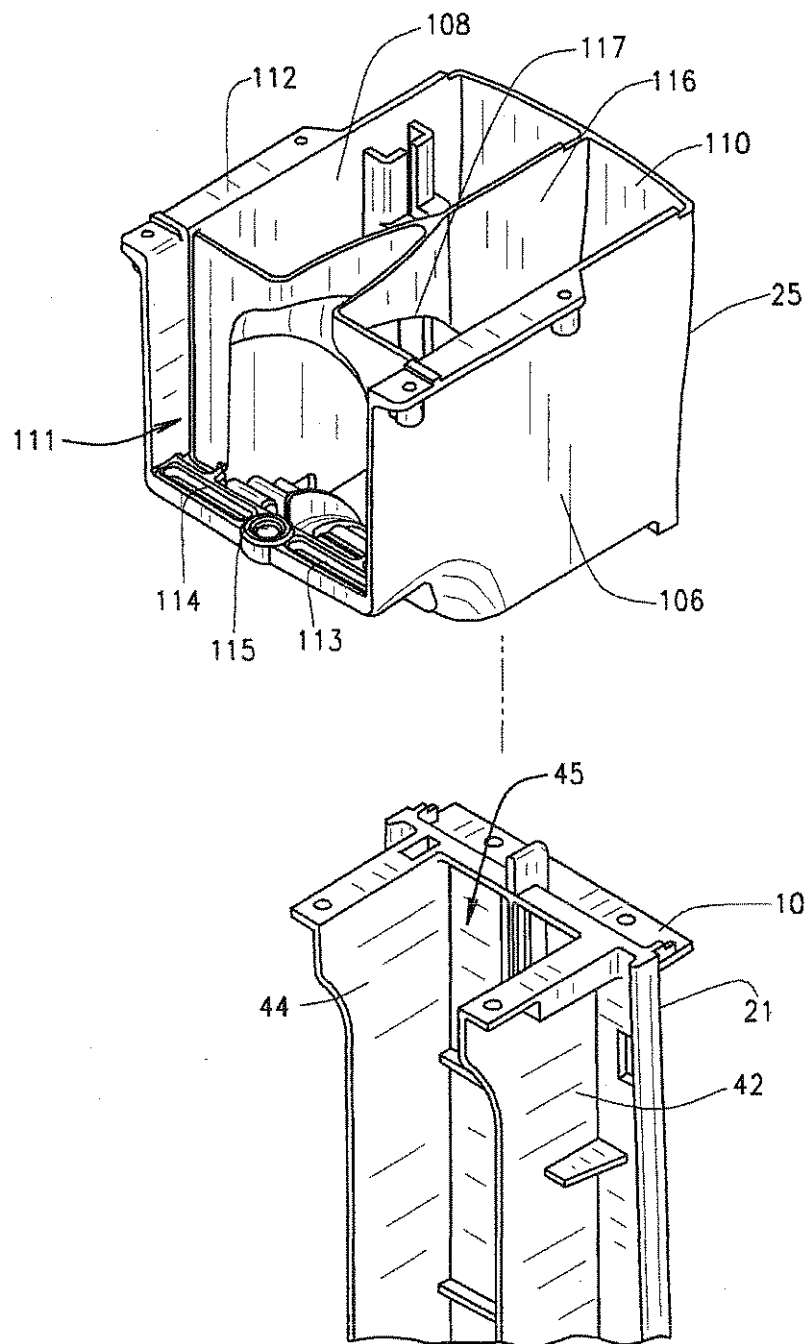


FIG. 7

6/16

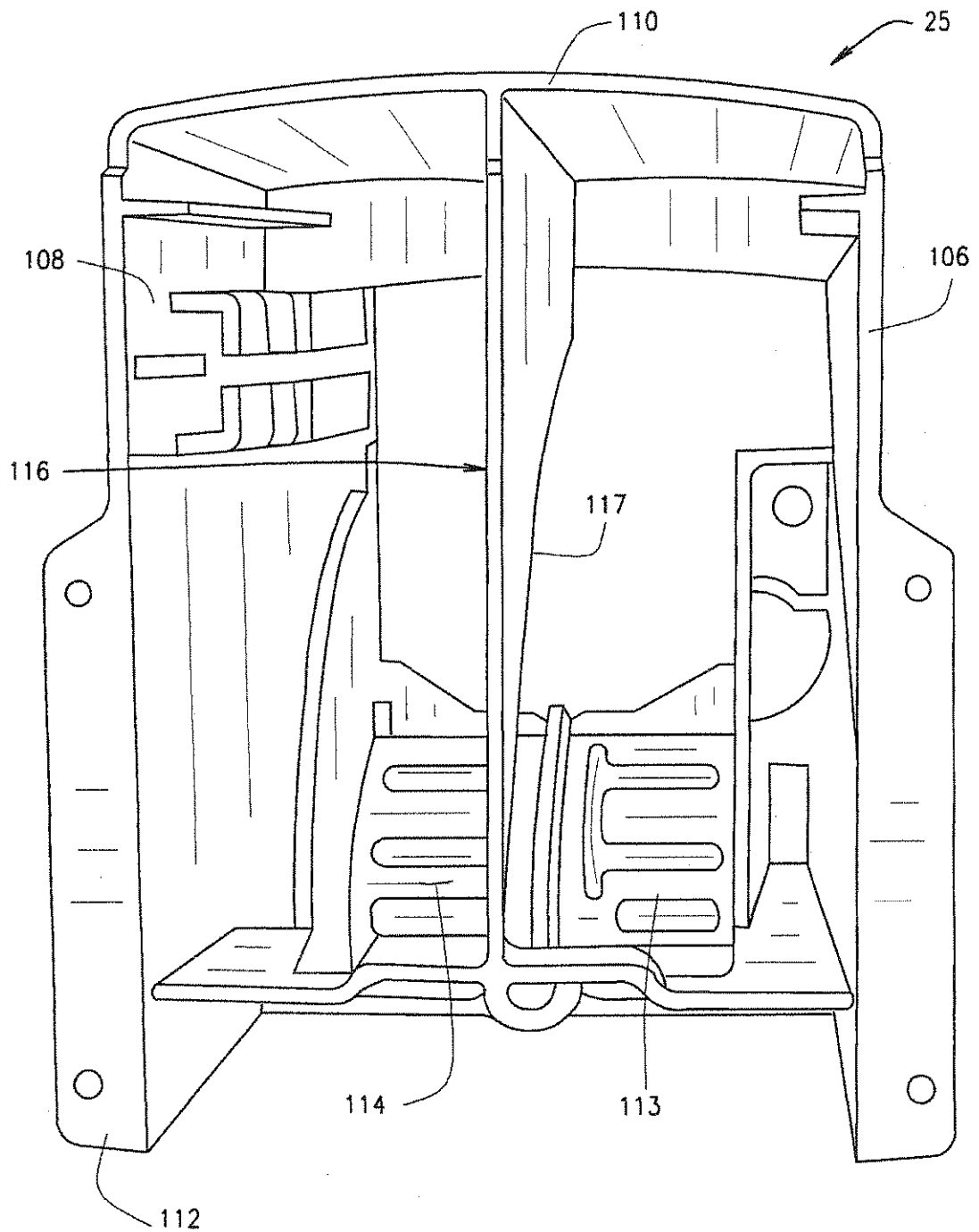


FIG. 8

7/16

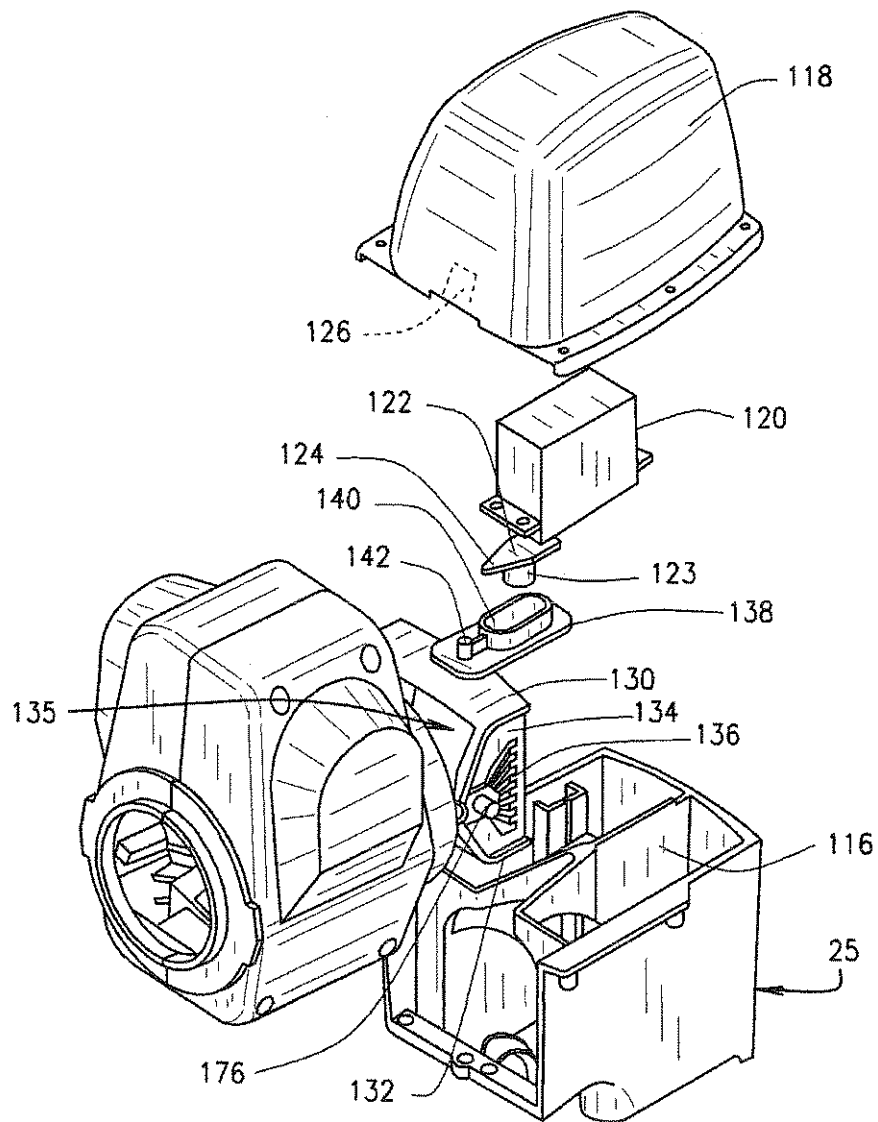


FIG. 9

8/16

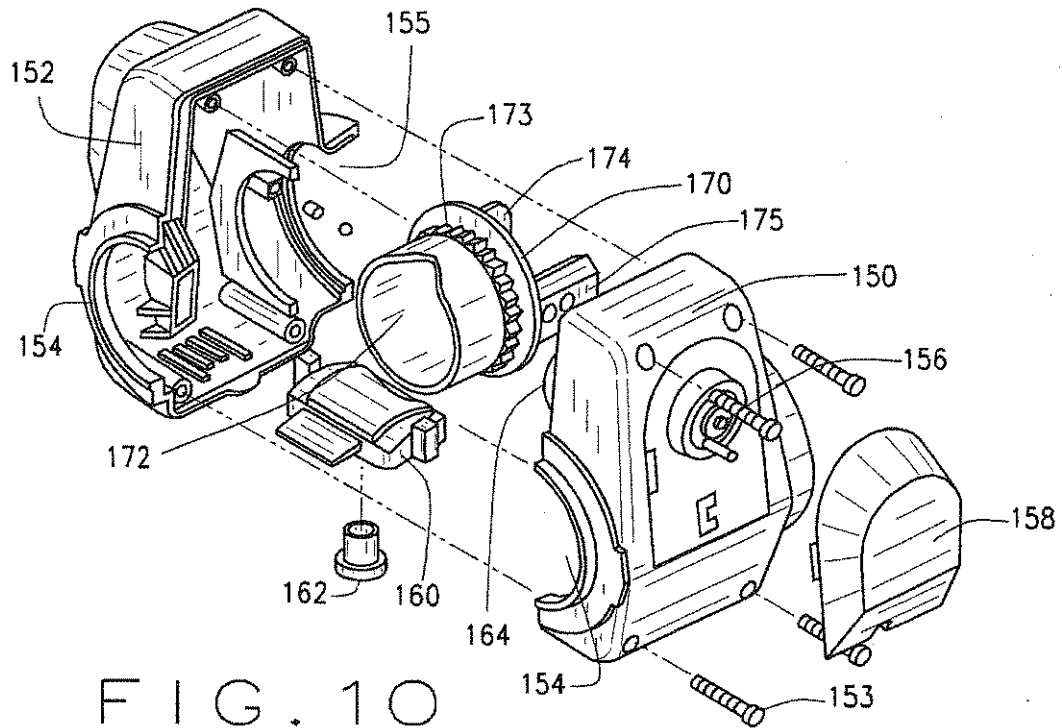


FIG. 10

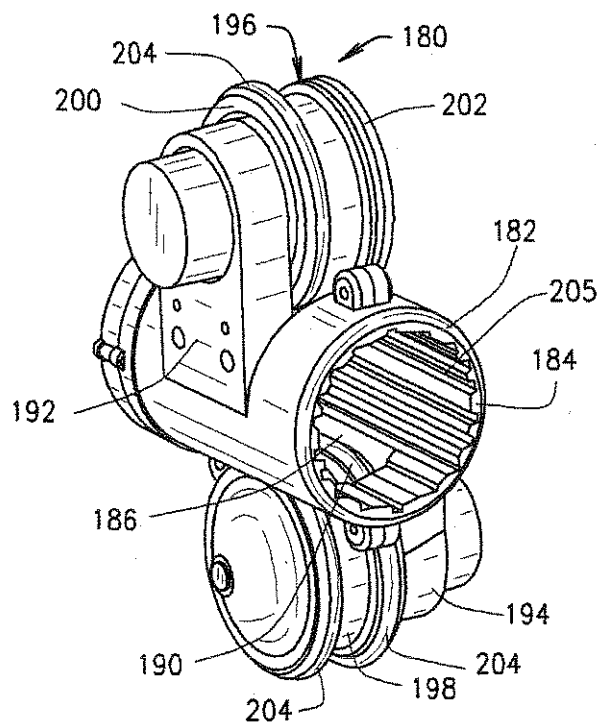


FIG. 11A

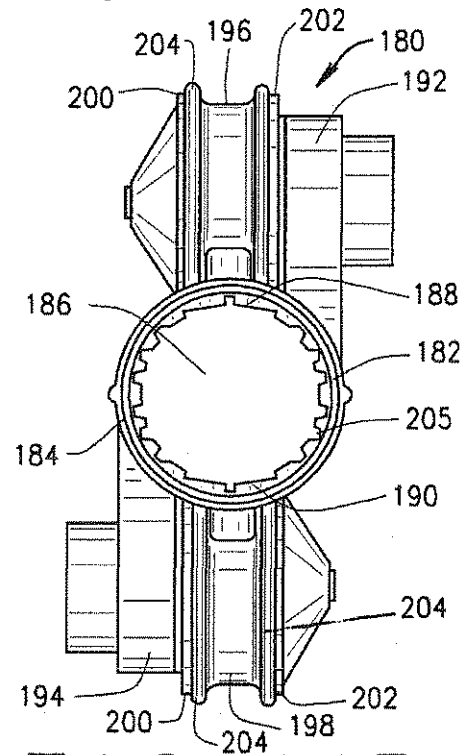


FIG. 11B

9/16

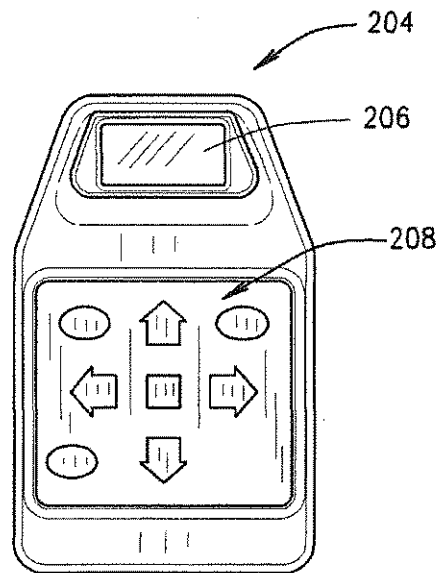


FIG. 12

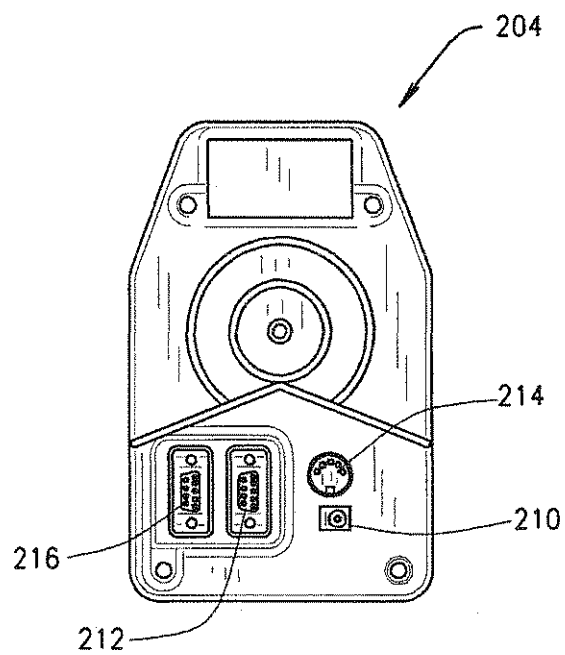


FIG. 13

10/16

MENU ITEM/ BUTTON	VALUE	EXPLANATION
MAIN MENU		
NORMAL		NORMAL MENU IS USED BY PLAYER WANTING TO CONTROL ROBOT BY MANUALLY SETTING EACH CONTROL
DRILL		DRILL MENU ALLOWS THE USER TO SELECT FROM A NUMBER OF PRE-PROGRAMMED DRILLS (PATTERNS) AND PERMITS THE USER TO ADJUST THE SPEED AND FREQUENCY OF THE SHOTS UP OR DOWN FROM THE PRE-SET LEVEL
PC		THE PC MENU IS USED WHEN THE USER HAS THE CONTROLLER HOOKED UP TO A COMPUTER. SOFTWARE ON THE COMPUTER ALLOWS USERS TO DESIGN THEIR OWN DRILLS AND SAVE/SHARE THEIR DRILL FILES.
SETUP		SETUP MENU IS FOR SELECTING USER PREFERENCES AND FOR CALIBRATING HARDWARE.
NORMAL MENU		
BALL SPEED	00~30	CONTROLS THE SPEED OF THE BALL SPEED MOTOR
L POSITION	00~20	SETS THE LEFTMOST POSITION WHERE THE BALL WILL BE DELIVERED. CHANGING L POSITION CAUSES R POSITION TO CHANGE TO SAME VALUE.
R POSITION	00~20	SETS THE RIGHTMOST POSITION WHERE THE BALL WILL BE DELIVERED. IF SET THE SAME AS L POSITION, THEN BALL WILL BE DELIVERED TO ONLY ONE SPOT.
WAIT	00.3 ^s ~50.00 sec	SETS THE AMOUNT OF TIME (INTERVALS) BETWEEN SUBSEQUENT SHOTS IN SECONDS.
COUNT	0000~9990	LIMITS THE NUMBER OF SHOTS THAT WILL BE DELIVERED BEFORE BALL DELIVERY IS STOPPED. CHANGING COUNT WILL ALSO CHANGE TIME. IF COUNT IS SET TO 0, THEN COUNT IS IGNORED
TIME	0:00:00 ~ 9:59:59	SETS THE AMOUNT OF TIME THE ROBOT WILL DELIVER BALLS BEFORE IT STOPS. CHANGING TIME WILL ALSO CHANGE COUNT. IF TIME IS 0, THEN TIME IS IGNORED.

FIG. 14A

11/16

MENU ITEM/ BUTTON	VALUE	EXPLANATION
OSC RANDOM	ON, OFF	PROVIDES RANDOMNESS IN BALL PLACEMENT. IF ON. BALLS ARE PLACED RANDOMLY BETWEEN THE L POSITION AND R POSITION.
SPEED RANDOM	00~10	VARIES BALL SPEED BY RANDOMLY ADDING THE VALUE TO BALL SPEED. E.G., BALL SPEED SET AT 15 AND SPD RANDOM SET AT 3. SPEED OF BALL WILL RANDOMLY VARY AMONG 15, 16, 17, AND 18.
WAIT RANDOM	0.00~1.00	PROVIDES FOR RANDOMLY INCREASING THE WAIT BETWEEN SHOTS IN INTERVALS OF 0.05 SECONDS. VALUE IS ADDED TO WAIT. E.G., WAIT IS 1.00 AND WAIT RANDOM IS 0.10. THE WAIT BETWEEN SHOTS WILL VARY AMONG 1.00, 1.05, AND 1.10 SECONDS.
DRILL MENU		
DRILL #	01~64	SELECTS DRILL'S ID #. DRILLS DESCRIBED IN OWNER'S MANUAL. THERE ARE 64 FACTORY DEFAULT DRILLS. FIRST 32 (#'S 1-32) CANNOT BE CHANGED, SECOND 32 (#'S 33-64) CAN BE OVERWRITTEN BY USING A COMPUTER AND THE PROVIDED SOFTWARE (ROBO-SOFT).
SPIN	TOP, BACK, R SIDE, L SIDE, TOP/RIGHT, TOP/ LEFT, BACK/ RIGHT, BACK/ LEFT	THESE 2 SETTINGS ARE DETERMINED WHEN DRILL # IS SELECTED AND ARE PROVIDED SO USER CAN SET THESE MANUALLY ON THE ROBOT HEAD. THESE SETTINGS CANNOT BE CHANGED FROM THE CONTROL BOX-YOU MUST USE ROBO-SOFT TO OVERWRITE THE DRILL SETTINGS.
HEAD ANGLE	01~13	
WAIT ADJUST	100%~+900%	ADJUSTS WAIT TO GO SLOWER (PLUS VALUES) OR FASTER (MINUS VALUES) THAN THE PRE-SET VALUE.
SPEED ADJUST	-9~+9-	ADJUSTS BALL SPEED TO GO SLOWER (MINUS VALUES) OR FASTER (PLUS VALUES) THEN THE PRE-SET VALUE.
# OF REPS	0000~9999	SETS THE NUMBER OF REPITITIONS OF EACH PATTERN. E.G., IF DRILL #1 CONSISTS OF 3 SHOTS, AND THE # OF REPS IS 5, THEN 5 REPETITIONS OF PATTERN 1 WILL BE DELIVERED (15 SHOTS TOTAL). OF # OF REPS IS 0, THEN # OF REPS IS IGNORED.

FIG. 14B

12/16

MENU ITEM/ BUTTON	VALUE	EXPLANATION
TIME	0:00:00~ 9:59:59	SHOWS THE AMOUNT OF TIME FOR RUNNING THE THE NUMBER OF REPETITIONS SET UNDER THE # OF REPS. CAN ALSO BE MANUALLY CHANGED TO A CERTAIN AMOUNT OF TIME AND THE # OF REPS WILL CHANGE ACCORDINGLY. IF TIME IS 0, THEN TIME IS IGNORED.
PC		
PC MODE	NONE	USED WHEN THE CONTROLLER IS HOOKED UP TO A COMPUTER AND THE COMPUTER IS CONTROLLING THE ROBOT. ALSO USED WHEN USER IS PROGRAMMING THE USER DEFINABLE DRILLS (#'S 33-64) THAT APPEAR IN THE DRILL MENU.
MAKE CONNECTION TO PC		
RUN ROBO-SOFT		
SETUP		
CONTRAST	00~30	ALLOWS THE USER TO ADJUST THE CONTRAST OF THE SCREEN FOR VARIOUS LIGHTING SITUATIONS AND AGE OF THE SCREEN. A VALUE OF 0 IS VERY LIGHT AND A VALUE OF 30 IS VERY DARK. DEFAULT = 15.
HAND	LEFT, RIGHT	ALLOWS THE USER TO INPUT THEIR DOMINANT HAND SO THAT FOREHAND/BACKHAND PLACEMENTS IN DRILLS ARE CORRECT. DEFAULT = RIGHTY. DOES NOT AFFECT NORMAL MODE.
LANGUAGE	EN, DE, FR, ES, CN, JP	ALLOWS THE USER TO SELECT THE LANGUAGE FOR THE DISPLAY. 6 LANGUAGES ARE SUPPORTED - ENGLISH, GERMAN, FRENCH, SPANISH, CHINESE, AND JAPANESE. DEFAULT = EN.
OSC CALIB	00~50	ADJUSTS SERVO SO POSITION SETTING OF 10 CORRELATES WITH THE CENTERLINE OF THE TABLE. WHEN 10 SETTING IS CORRECT, OTHER POSITION VALUES ARE CORRECT. DEFAULT = 25. SET TO TOPSPIN AND HEAD ANGLE 8, THEN PRESS TEST TO THROW 5 BALLS TO CHECK LANDING SPOTS.
SENSOR CALIB	00~20	ADJUSTS BALL SENSOR THAT COUNTS EACH BALL AS IT IS THROWN. DEFAULT = 10. SET TO BACKSPIN AND HEAD ANGLE TO 7, THEN PRESS TEST. BALLS WILL BE THROWN INTO THE TABLE'S NET AND WILL ROLL BACK INTO THE ROBOT'S NET. WATCH FOR MISSED OR DOUBLE THROWS.

FIG. 14C

13/16

MENU ITEM/ BUTTON	VALUE	EXPLANATION
ALARM CALIB	00~20	ADJUSTS SENSITIVITY OF BALL JAM ALARM, WHICH SHUTS OFF POWER TO THE BALL FEED MOTOR WHEN RESISTANCE IS DETECTED OVER A PRE-SET VALUE. MAY ALLOW ROBOT TO BE USED WITH DIRTY OR NEW BALLS OR BE SET FOR INCREASED SENSITIVITY FOR ADDED SAFETY. DEFAULT = 10.
SPEED CALIB	00~20	USED TO CALIBRATE BALL SPEED TO A 6 INCH SQUARE TARGET POSITIONED AT THE CENTER ENDLINE. TARGET SUPPLIED IN OWNER'S MANUAL. SET TO TOPSPIN WITH HEAD ANGLE 8, THEN PRESS TEST TO THROW 5 BALLS AT BALL SPEED 18. ALL BALLS SHOULD LAND ON TARGET. DEFAULT = 10.
LANGUAGE SELECTION MENU		
RELEASE BUTTON	NONE	ALTERNATIVE WAY TO SELECT LANGUAGE IF USER CANNOT READ THE MENUS. HOLD MENU BUTTON DOWN UNTIL DISPLAY STARTS BLINKING. THEN HOLD UP BUTTON DOWN UNTIL CORRECT LANGUAGE APPEARS, THEN RELEASE BUTTON. LANGUAGE CHANGES EVERY 2 SECONDS.
WHEN YOU SEE		
YOUR LANGUAGE		
BALL UNLOADING MENU		
BALL UNLOADING		HOLD MENU BUTTON DOWN UNTIL DISPLAY STARTS BLINKING. THEN PRESS DOWN BUTTON TO ACTIVATE THIS FEATURE. WAIT IS SET TO MINIMUM AND BALL SPEED TO 1. USER PLACES A TRAY UNDER THE HEAD AND IT WILL TAKE ONLY A MINUTE OR TWO FOR THE ROBOT TO FILL THE TRAY WITH BALLS. USER THEN PRESSES THE STOP OR MENU BUTTON TO STOP BALL UNLOADING
PLACE TRAY UNDER		
ROBOT HEAD		

FIG. 14D

14/16

MENU ITEM/ BUTTON	VALUE	EXPLANATION
FACTORY DEFAULT RESTORATION MENU		
RESTORING FACTORY DEFAULTS	NONE	HOLD MENU BUTTON DOWN UNTIL DISPLAY STARTS BLINKING. THEN PRESS THE MINUS BUTTON TO SEE THESE MESSAGES. RESTORE ALL SETTINGS TO FACTORY DEFAULT VALUES.
FOLLOWED BY FACTOR DEFAULTS RESTORED	NONE	
SYSTEM TEST MENU		
TESTING SYSTEM GIVE ERROR #'S TO TECHNICIAN	WILL GENERATE A SERIES OF NUMBERS	
BUTTONS		
POWER (ORANGE)	NONE	TURNS CONTROLLER ON AND OFF.
TEST (YELLOW)	NONE	WHEN IN NORMAL MODE, IF PRESSED AND QUICKLY RELEASED, THROWS OUT ONE BALL. IF PRESSED AND HELD, NUMBER ON SCREEN ADVANCES UNTIL RELEASED. WHEN IN DRILL MODE, PRESSING BUTTON SHOWS A DRILL PREVIEW THAT INDICATES PLACEMENT OF EACH BALL IN A DRILL. ALSO USED IN CALIBRATION MODES (SEE ABOVE).
STOP/START (RED/GREEN)	NONE	STARTS AND MANUALLY STOPS DELIVERY OF BALLS.
MENU/OK (WHITE)	NONE	ALLOWS ACCESS TO THE MAIN MENU AND PERMITS USERS TO ENTER A SELECTED VALUE.
UP (GRAY)	NONE	SCROLLS UP ONE LINE ON THE MENU WITH EACH PRESS.
DOWN (GRAY)	NONE	SCROLLS DOWN ONE LINE IN THE MENU WITH EACH PRESS.

FIG. 14E

15/16

MENU ITEM/ BUTTON	VALUE	EXPLANATION
MINUS (-) (GRAY)	NONE	QUICK PRESS DECREASES VALUE BY ONE UNIT. PRESS AND HOLDING DECREASES VALUE BY MULTIPLE UNITS.
PLUS (+) (GRAY)	NONE	QUICK PRESS INCREASES VALUE BY ONE UNIT. PRESS AND HOLDING INCREASES VALUE BY MULTIPLE UNITS.
ALERTS		
WRONG VOLTAGE	NONE	DISPLAYS WHENEVER AN INCORRECT OR FAULTY TRANSFORMER IS PLUGGED INTO UNIT. ALERT IS TRIGGERED WHENEVER INCOMING VOLTAGE IS LESS THAN 14.5V OR MORE THAN 15.5V.
CHECK		
TRANSFORMER		
BALL JAM ALARM	NONE	DISPLAYS WHENEVER RESISTANCE OF BALL FEED MOTOR GOES OVER A PRE-DETERMINED SAFETY LEVEL. TYPICALLY CAUSED BY A BROKEN OR OVERSIZED BALL OR FOREIGN OBJECT JAMMED INSIDE BALL CHANNEL OR BALL PICKUP MECHANISM. ALSO ACTIVATES IF CONNECTOR CABLE IS NOT PLUGGED IN SECURELY.
CHECK BALL		
CHANNEL		

FIG. 14F

16/16

[illegible]

5167