U. S. DEPARTMENT OF COMMERCE
Patent and Trademark Office

CLASSIFICATION ORDER 1847

July 5, 2005

Project No.M6143

The following classification changes will be effected by this order:

	Class	Subclass	Art Unit	Ex'r Search Room No.
Abolished:	244	75, 78, 123, 158-163, 172, 173, 176, 199	3644	N/A
Established:	244	75.1, 78.1, 78.2, 99.1-99.9, 99.11-99.14,	3644	N/A
		123.1-123.9, 123.11-123.14,		
		158.1-158.9, 159.1-159.6, 171.1-171.9,		
		172.1-172.9, 173.1-173.3, 174,		
		199.1-199.4, 200.1, 204.1		
Position Changes:		NONE		
Indent Changes:		NONE		
Title Changes:	244	AERONAUTICS AND ASTRONAUTICS		

The following classes are also impacted by this order.
2, 5, 16, 24, 33, 40, 47, 49,52, 53, 55, 60, 73, 74, 89, 102, 109, 114, 116, 119, 123, 124, 126, 134, 137, 152, 169, 180, 181, 182, 184, 187, 188, 219, 220, 222, 235, 239, 242, 248, 250, 258, 267, 280, 294, 297, 305, 318, 340, 342, 346, 348, 356, 361, 362, 376, 383, 385, 388, 403, 404, 410, 414, 416, 434, 440, 446, 454, 455, 472, 700, 701, 702, D12

This order includes the following:

A. CLASSIFICATION MANUAL CHANGES
B. LISTING OF PRINCIPAL SOURCE OF ESTABLISHED AND DISPOSITION OF ABOLISHED
C. CHANGES TO THE U. S. – I. P. C. CONCORDANCE
D. DEFINITION CHANGES AND NEW OR ADDITIONAL DEFINITIONS

CLASSIFICATION ORDER 1847

July 5, 2005

Project No. M-6143

Project Leader: Scott Haugland

Examiner: Galen Barefoot

Editor: Varona Stevens

CLASS 244 AERONAUTICS AND ASTRONAUTICS

JULY 2005

1 R		MISCELLANEOUS
1 N		.Noise abatement
1 A		.Lightning arresters and static eliminators
1 TD		.Trailing devices
2		COMPOSITE AIRCRAFT
3		.Trains
3.1		MISSILE STABILIZATION OR TRAJECTORY CONTROL
3.11		.Remote control
3.12		..Trailing wire
3.13		..Beam rider
3.14		..Radio wave
3.15		.Automatic guidance
3.16		..Optical (includes infrared)
3.17		...Optical correlation
3.18		...Celestial navigation
3.19		..Radio wave
3.2		..Inertial
3.21		..Attitude control mechanisms
3.22		...Fluid reaction type
3.23		.Stabilized by rotation
3.24		.Externally mounted stabilizing appendage (e.g., fin)
3.25		..Removable
3.26		..Sliding
3.27		..Collapsible
3.28		...Longitudinally rotating
3.29		...Radially rotating
3.3		..Extending beyond rear of missile
* 158.1		SPACECRAFT
* 158.2		.Tethered
* 158.3		.Inflated
* 158.4		.Spacecraft formation, orbit, or interplanetary path
* 158.5		..Orbit insertion
* 158.6		..Orbital control
* 158.7		...Aerobraking
* 158.8		...Automatic
* 158.9		.Reusable or returnable
* 159.1		..With reentry shield
* 159.2		...Inflatable
* 159.3		..Having aerodynamic lifting body (e.g., Space Shuttle)
* 159.4		.Modular and assembled in space
* 159.5		..Foldable
* 159.6		..Including use of launch vehicle part
164		.Attitude control
165		..By gyroscope or flywheel
166		..By magnetic effect
167		..By gravity gradient
168		..By solar pressure
169		..By jet motor
170		..By nutation damper
171		..With attitude sensor means
* 171.1		.With propulsion
* 171.2		..Steerable mount
* 171.3		..Launch from surface to orbit
* 171.4		...Horizontal launch
* 171.5		..Without mass expulsion
* 171.6		.Having launch pad cooperating structure
* 171.7		.With shield or other protective means (e.g., meteorite shield, insulation, radiation/plasma shield)
* 171.8		..Active thermal control
* 171.9		.With special crew accommodations
* 172.1		..Emergency rescue means (e.g., escape pod)
* 172.2		.With fuel system details
* 172.3		..Fuel tank arrangement
* 172.4		.Rendezvous or docking
* 172.5		..Including satellite servicing
* 172.6		.With deployable appendage
* 172.7		.With solar panel
* 172.8		..Having solar concentrator
* 172.9		..Having launch hold down means
* 173.1		.With payload accommodation
* 173.2		..Including vibration control
* 173.3		..And payload deployment
4 R		AIRCRAFT, HEAVIER-THAN-AIR
5		.Airplanes, weight diminished by bouyant gas
6		.Airplane and helicopter sustained
7 R		..Convertible
7 A		...Rotary wing
7 B		...Tail sitters
7 C		...Tilting wing
8		.Airplane and auto-rotating wing sustained
9		.Airplane and paddle wheel sustained
10		.Airplane and cylindrical rotor sustained
11		.Airplane and beating wing sustained
12.1		.Airplane and fluid sustained
12.2		..Circular
12.3		..Dual propulsion
12.4		..Thrust tilting
12.5		..With thrust diverting
12.6		..Channel wing
13		.Airplane sustained
14		..Aerial torpedoes
15		..Fluid propelled
16		..Glider
17.11		.Helicopter or auto-rotating wing sustained, i.e., gyroplanes
17.13		..Automatic or condition responsive control
17.15		..With safety lowering device
17.17		..With landing, mooring, or nonaerial propelling or steering gear
17.19		..With auxiliary propulsion, counter-troque or steering device
17.21		...Auxiliary rotor
17.23		..Having plural lifting rotors
17.25		..Lifting rotor having lift direction varying means
17.27		..Lifting rotor supports, e.g., pylons
19		.Paddle wheel sustained
20		..Feathering
21		.Cylindrical rotor sustained
22		.Beating wing sustained
23 R		.Fluid sustained
23 A		..Lifting thrusters

AIRCRAFT, HEAVIER-THAN-AIR
.Fluid sustained
23 B ..Dual propulsion means, horizontal and vertical
23 C ..Circular configuration
23 D ..Thrust diverters
4 A .Body attached
24 AIRCRAFT, LIGHTER-THAN-AIR
25 .Airships with sustaining wings
26 .Airship and helicopter sustained
27 .Airship and paddle wheel sustained
28 .Airship and beating wing sustained
29 .Airship and fluid sustained
30 .Airships
31 .Balloons
32 ..With parachutes
33 ..Captive
34 R AIRCRAFT SUSTENTATION
35 R .Sustaining airfoils
36 ..Lifting fuselages
37 ..Lifting struts
38 ..Resiliently mounted
39 ..Rotatable
198 ..With lift modification
* 199.1 ...By vortex control outside of boundary layer
* 199.2 ....Of tip vortex
* 199.3 .....Active
* 199.4 .....Wing tip foils/fences
200 ...By characteristic of airfoil's skin
* 200.1 ....Vortex generation in boundary layer
201 ...Variable
202 ....With landing gear
203 ....Condition responsive
204 ....By controlling boundary layer
* 204.1 .....Actively controlled vortex generator
205 .....With ionic or electrostatic surface
206 .....With rotating member
207 .....With blowing
208 ......And suction
209 .....With suction
210 .....With nose slot
211 ......Having trailing edge flap
212 .....Having trailing edge flap
213 ....By flap and/or spoiler
214 .....At leading edge
215 .....At trailing edge
216 ......Variable gap type, e.g., "Fowler Flap"
217 ......Plural, relatively pivotable
218 ....Area
219 ....Camber
45 R ..Arrangement
46 ...Variable
47 ....Dihedral
48 ....Incidence
49 ....Folding
45 A ...Canard
35 A ..Compressible flow
34 A .Annular airfoils
50 AIRCRAFT PROPULSION AND STEERING ON LAND OR WATER
51 AIRCRAFT, STEERING PROPULSION
52 .Fluid
53 R AIRCRAFT POWER PLANTS
54 .Mounting
55 .Arrangement
56 ..Tilting
57 .Radiator arrangement
58 .Auxiliary
59 .High altitude
60 .Transmission of power
61 .Power plant using airship gas as fuel
53 A .Starters
53 B .Air intakes
62 AIRCRAFT PROPULSION
63 .Launching
64 .Manual
65 .Screw
66 ..Tilting
67 ..Body encircling
68 ..Elongated
69 ..Contra-propeller arrangements
70 .Paddle wheel
71 .Reciprocating propeller
72 .Beating wing
73 R .Fluid
74 ..Explosive jet
73 B ..Vacuum induced by radial flow
73 C ..Radial outward and downward flow
* 75.1 AIRCRAFT CONTROL
76 R .Automatic
* 174 ..Flutter control
175 ..Electric course control
177 ...Multiple-axis altitude stabilization
178 ....Trim control
179 ....By change in bank
180 ...By change in altitude
181 ....By change in pitch, angle of attack or flight path
182 ....By change in speed
183 ...Of aircraft on its landing course
184 ....By steering or yaw
185 .....And vertical glide path control
186 ....Vertical glide path control
187 .....With "flare-out" detection
188 .....Slope control by throttle
189 ...By remote radio signal
190 ....Of pilotless aircraft
191 ...Acceleration control
192 ...With "dead-zone" control
193 ...With "softener" circuit
194 ...Monitoring circuit or response
195 ....Self-adaptive control
196 ...Override of automatic control by human pilot
197 ....By engaging manual control system
* 78.1 ..Fluid
* 78.2 ...Fluid amplifiers
79 ..Gyroscope actuated
80 ..Gravity actuated
81 ..Operated by landing
82 ..Vane operated

AIRCRAFT CONTROL
.Automatic
..Motor torque control of flaps or tabs
..Velocity operated devices
..Gust compensators
..Steerable jets
.Pilot operated
..Control system
...Other than hand or foot actuated
...With feel
...With locking means
...With dual purpose surface structure (e.g., elevons)
...Fluid
....With electric control
...Electric
...Dual
...With variable output
...With interengaging gearing
...With cable and linkage
...Cable
..Controller
...Rudder bar and pedal
...Electrical pickup
...Three-way steering, single control
.Rudders and empennage
..Rudders universally mounted
..Elevators both front and rear
..Ailerons and other roll control devices
...Roll control spoilers
...Balanced air pressure
.Vertical fins
.Stabilizing propellers
.Stabilizing weights
..Ballast storage and release
..Ballast making
.Airship control
..Buoyancy varying
..Gas bag inflation
..Gas release
* .Fuselage
* .Wing
* .Drag
* .Flutter control
* .Trim tab
* .Specific control connection or actuator
* ..Linkage
* ..Redundant arrangements
* ..Fluid
* ...Fluid pressure source arrangement
* ...Nonlinear fluid actuator
* ..Actively deformable material (e.g., piezoelectric, shape memory, magnetostrictive, electrostrictive)
* ..Failure tolerant (e.g., jam tolerant, no-back control connection)

LANDING GEAR
.Amphibian
.Retractable
..Interconnected elements
..Strut locks
..Strut shortening
.Wheel
..Resiliently mounted
...Coil spring
...Fluid pressure
...Leaf spring
..Prerotation
..Crosswind gear
.Water landing
..Flying boat
..Emergency
.Skids
.Tail supports
.Endless track
.Inflatable

RETARDING AND RESTRAINING DEVICES
.Wheel brake arrangement
.Water brake arrangement
.Aerodynamic retarders
.Brake
.Thrust reversers
.Cable or net support
.Aerodynamic braking
.Landing platforms
.Snares
.Arresting hoods
.Friction brakes

LANDING FIELD ARRANGEMENT
.Mooring devices
..Movable
.Blast deflectors

AIRCRAFT STRUCTURE
.Load (e.g., cargo) accommodation
..Removable, load bearing, airframe section
.Passenger or crew accommodation
..Seating arrangement: berth or berthage
.Fuselage and body construction
..Sectional
..Shields and other protective devices
..Seats and safety belts
...Ejection seats
....Catapult and rocket combined
.....Catapult
.....Rocket
....Automatic sequence
.....Canopy release
.....Restraint positioning and protective devices
.....Seat separation
...Safety belts
* .Airfoil construction
* ..Inflatable
* ..Corrugated panels
* ..Honeycomb in skin panels
* ..Hollow
* ..Sparless frame construction
* ...Integral frame and skin
* ...Open truss/lattice construction
* ..Nonmetallic filler (e.g., metal skin with foam, cork, or rubber filler)
* ...Honeycomb

AIRCRAFT STRUCTURE
.Airfoil construction
*123.7 ..Box beam
*123.8 ..Main spar
*123.9 ...Tubular spar
124 ..Sectional
125 .Airship hull construction
126 .Airship skin construction
127 .Airship load attachment
128 .Airship gas cell construction and arrangement
129.1 .Details
129.2 ..Fire prevention devices
129.3 ..Windows
129.4 ..Closures
129.5 ...Door
118.3 ....Displaceable to function as ramp
129.6 ..Steps
130 ..Aerodynamic resistance reducing
131 ..Joints and connections
132 ..Skin fastening devices
133 ..Materials of construction
134 R .Ice prevention
134 A ..Flexible surfaces
134 B ..Heating fluid in airfoil
134 C ..Deicing fluid on airfoil exterior
134 D ..Electric
134 E ..Nature of surface
134 F ..Initiators and indicators
135 R .Fuel supply
135 A ..Aircraft refueling
135 B ..Flexible containers
135 C ..Fuel balancing systems
136 .Material discharging and diffusing
137.1 .Passenger or cargo loading or discharging
137.2 ..Passenger
137.3 ..Aerial cargo unloading by parachute extraction
137.4 ..Releasable, externally mounted cargo
117 A .Skin cooling
138 R SAFETY LOWERING DEVICES
139 .Entire aircraft
140 .Passenger compartment
141 ..Seat
142 .Parachutes
143 ..Garment attached
144 ..Aircraft element convertible to parachute
145 ..Canopy construction
146 ..Inflated bracing
147 ..Storage and release
148 ...Packs
149 ...Opening devices
150 ...Timing mechanism
151 R ..Harness
151 A ...Parchute harness connection
151 B ...Parachute load releasing
152 ..Control devices
138 A .Rotating vanes
153 R KITES
154 .Airplane type
155 R .Accessories
155 A ..Kite controls
153 A .Rotating

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CROSS-REFERENCE ART COLLECTIONS

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900 LIGHTWEIGHT, WINGED, AIR VEHICLE (E,G,. ULTRALIGHT or HANG GLIDER)
901 .Having delta shaped wing
902 .Having parachute type wing
903 .Powered
904 .Miscellaneous hardware or control
905 INFLATABLE EVACUATION SLIDE

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FOREIGN ART COLLECTION

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FOR 000 CLASS-RELATED FOREIGN DOCUMENTS

Any foreign patents or nonpatent literature from subclasses that have been reclassified have been transferred directly to the FOR Collection listed below. These classifications contain ONLY foreign patents or nonpatent literature. The parenthetical references in the Collection titles refer to the abolished subclasses from which these Collections were derived.

* FOR 100 AIRCRAFT CONTROL (244/75 R)
* FOR 101 .Flutter prevention (244/75 A)
* FOR 102 ..Fluid (244/78)
* FOR 103 .Airfoil construction (244/123)
* FOR 104 SPACECRAFT (244/158 R)
* FOR 105 .Exterior surface air resistance heat control (244/158 A)
* FOR 106 .Space station (244/159)
* FOR 107 .Reentry vehicle (244/160)
* FOR 108 ..Rendezvous and docking (244/161)
* FOR 109 ..Manned (244/162)
* FOR 110 ...Environmental control (244/163)
* FOR 111 ..With propulsion (244/172)
* FOR 112 ..With solar panel (244/173)
* FOR 113 ...Spaceship control (244/176)
* FOR 114 ...By vortex generator or dissipator (244/199)

Generated by: Data Control Division

Comments	Source Classification	Number Of ORs	New Classification	Number Of ORs
	244/123	345	244/13	1
			244/35 R	1
			244/36	1
			244/45 R	1
			244/131	3
			244/135 R	1
			244/123.1	2
			264/45.3	1
			269/45	1
			244/172.6	1
			244/219	1
			244/132	1
			244/124	3
			244/121	3
			244/117 R	2
	244/158 A	72	244/117 A	2
			244/159.1	2
			244/121	5
	244/158 R	429	244/39	2
			244/166	1
			244/158.2	1
			244/158.5	1
			244/158.9	1
			244/172.3	1
			244/172.6	1
			455/12.1	8
			244/173.1	1
			244/172.4	1
			244/172.2	1
			244/158.6	2
			244/158.4	4
			244/158.1	1
			244/121	1
			244/164	4
	244/159	57	244/158.1	1
			244/159.4	1
	244/160	46	244/121	1
			244/158.7	1
			244/158.9	1
	244/161	88	244/172.4	3
			244/173.1	1
			244/172.5	1
	244/162	49	244/2	1
			244/171.9	1
			244/165	1
			244/171.1	1

Generated by: Data Control Division

Comments	Source Classification	Number Of ORs	New Classification	Number Of ORs
	244/172	91	244/74	1
			244/158.2	1
			244/158.9	1
			244/171.1	1
			244/169	1
	244/173	117	244/168	1
	244/176	13	244/164	3
			244/166	1
			244/171	4
	244/199	119	244/130	2
			244/199.2	1
			244/199.4	2
			244/200.1	3
			244/204.1	1
			244/199.3	1
			244/198	1
	244/75 A	19	244/1 R	1
			244/191	3
	244/75 R	222	244/1 R	6
			244/13	1
			244/23 A	2
			244/26	1
			244/45 A	1
			244/45 R	1
			244/51	1
			244/52	7
			244/76 A	1
			244/76 B	1
			244/76 R	5
			244/80	1
			244/82	4
			244/87	5
			244/88	1
			244/90 R	1
			244/91	1
			244/105	1
			244/131	1
			244/135 R	1
			244/165	1
			244/181	1
			244/191	1
			244/194	1
			244/195	1
			244/196	3
			244/197	1
			244/204	1

Generated by: Data Control Division

Comments	Source Classification	Number Of ORs	New Classification	Number Of ORs
	244/75 R	222	244/207	1
			244/213	3
			244/215	2
			244/220	2
			244/221	1
			244/225	2
			244/228	1
			244/233	3
			244/236	1
			244/75.1	2
			244/78.1	1
			244/99.3	1
			244/99.5	1
			244/99.12	1
	244/78	186	244/76 R	5
			244/169	7
			244/78.2	1

SOURCE CLASSIFICATION(S) OF PATENTS
IN NEWLY ESTABLISHED SUBCLASSES REPORT
PROJECT: M6143

Generated by: Data Control Division

New Classification	Number Of ORs	Source Classification	Number Of ORs	Comments
244/1 R	1	244/75 A	19	
	6	244/75 R	222	
244/105	1	244/75 R	222	
244/117 A	2	244/158 A	72	
244/117 R	2	244/123	345	
244/121	1	244/158 R	429	
	1	244/160	46	
	3	244/123	345	
	5	244/158 A	72	
244/123.1	2	244/123	345	
244/124	3	244/123	345	
244/13	1	244/123	345	
	1	244/75 R	222	
244/130	2	244/199	119	
244/131	1	244/75 R	222	
	3	244/123	345	
244/132	1	244/123	345	
244/135 R	1	244/123	345	
	1	244/75 R	222	
244/158.1	1	244/158 R	429	
	1	244/159	57	
244/158.2	1	244/158 R	429	
	1	244/172	91	
244/158.4	4	244/158 R	429	
244/158.5	1	244/158 R	429	
244/158.6	2	244/158 R	429	
244/158.7	1	244/160	46	
244/158.9	1	244/158 R	429	
	1	244/160	46	
	1	244/172	91	
244/159.1	2	244/158 A	72	
244/159.4	1	244/159	57	
244/164	3	244/176	13	
	4	244/158 R	429	
244/165	1	244/162	49	
	1	244/75 R	222	
244/166	1	244/158 R	429	
	1	244/176	13	
244/168	1	244/173	117	
244/169	1	244/172	91	
	7	244/78	186	
244/171	4	244/176	13	
244/171.1	1	244/162	49	
	1	244/172	91	

SOURCE CLASSIFICATION(S) OF PATENTS
IN NEWLY ESTABLISHED SUBCLASSES REPORT
PROJECT: M6143

Generated by: Data Control Division

New Classification	Number Of ORs	Source Classification	Number Of ORs	Comments
244/171.9	1	244/162	49	
244/172.2	1	244/158 R	429	
244/172.3	1	244/158 R	429	
244/172.4	1	244/158 R	429	
	3	244/161	88	
244/172.5	1	244/161	88	
244/172.6	1	244/123	345	
	1	244/158 R	429	
244/173.1	1	244/158 R	429	
	1	244/161	88	
244/181	1	244/75 R	222	
244/191	1	244/75 R	222	
	3	244/75 A	19	
244/194	1	244/75 R	222	
244/195	1	244/75 R	222	
244/196	3	244/75 R	222	
244/197	1	244/75 R	222	
244/198	1	244/199	119	
244/199.2	1	244/199	119	
244/199.3	1	244/199	119	
244/199.4	2	244/199	119	
244/2	1	244/162	49	
244/200.1	3	244/199	119	
244/204	1	244/75 R	222	
244/204.1	1	244/199	119	
244/207	1	244/75 R	222	
244/213	3	244/75 R	222	
244/215	2	244/75 R	222	
244/219	1	244/123	345	
244/220	2	244/75 R	222	
244/221	1	244/75 R	222	
244/225	2	244/75 R	222	
244/228	1	244/75 R	222	
244/23 A	2	244/75 R	222	
244/233	3	244/75 R	222	
244/236	1	244/75 R	222	
244/26	1	244/75 R	222	
244/35 R	1	244/123	345	
244/36	1	244/123	345	
244/39	2	244/158 R	429	
244/45 A	1	244/75 R	222	
244/45 R	1	244/123	345	
	1	244/75 R	222	
244/51	1	244/75 R	222	

SOURCE CLASSIFICATION(S) OF PATENTS
IN NEWLY ESTABLISHED SUBCLASSES REPORT
PROJECT: M6143

Generated by: Data Control Division

New Classification	Number Of ORs	Source Classification	Number Of ORs	Comments
244/52	7	244/75 R	222	
244/74	1	244/172	91	
244/75.1	2	244/75 R	222	
244/76 A	1	244/75 R	222	
244/76 B	1	244/75 R	222	
244/76 R	5	244/75 R	222	
	5	244/78	186	
244/78.1	1	244/75 R	222	
244/78.2	1	244/78	186	
244/80	1	244/75 R	222	
244/82	4	244/75 R	222	
244/87	5	244/75 R	222	
244/88	1	244/75 R	222	
244/90 R	1	244/75 R	222	
244/91	1	244/75 R	222	
244/99.12	1	244/75 R	222	
244/99.3	1	244/75 R	222	
244/99.5	1	244/75 R	222	
264/45.3	1	244/123	345	
269/45	1	244/123	345	
455/12.1	8	244/158 R	429	

July 5, 2005

Project No. M-6143

C. CHANGES TO THE U. S. - I. P. C. CONCORDANCE

Class	U. S. Subclass	Subclass	I. P. C. Notation
244	75.1	B64C	13/00
		B64C	19/00
	78.1-78.2	B64C	13/36
		B64C	13/40
	99.1-99.9	B64C	13/00
		B64C	3/38
		B64C	5/10
		B64C	9/00
	123.1-123.9	B64C	1/00
		B64C	3/00
		B64C	5/00
	158.1-158.3	B64G	1/00
	158.4-158.8	B64G	1/10
	158.9-159.2	B64G	1/62
		B64G	1/14
		B64G	1/12
	159.3	B64G	1/14
	159.4-159.6	B64G	1/00
	171.1-171.5	B64G	1/40
	171.6	B64G	1/00
	171.7, 171.8	B64G	1/52
	171.9, 172.1	B64G	1/60
		B64G	1/52
	172.2, 172.3	B64G	1/00
	172.4, 172.5	B64G	1/64
	172.6	B64G	1/22
	172.7-172.9	B64G	1/44
	173.1-173.3	B64G	1/00
	174	B64C	13/00
	199.1-199.4	B64C	23/06
	200.1	B64C	21/10
	204.1	B64C	21/00

D. Changes to the Definitions (Project No. M-6143)

CLASS 52 – STATIC STRUCTURES (E.G., BUILDINGS)

Subclass 84: Under SEE OR SEARCH CLASS,

Delete :

The reference to Class 244.

Insert:

244, Aeronautics and Astronautics, subclasses 123.1 through 124 for an aircraft airfoil construction.

CLASS 60 – POWER PLANTS

Definitions Modified

Subclass 200.1: Under SEE OR SEARCH CLASS,

Delete:

The reference to Class 244

Insert:

244, Aeronautics and Astronautics, appropriate subclasses for machines adapted to be sustained by air or propelled through air, and devices such as air foils which react with the atmosphere for controlling or sustaining flight. See in particular subclasses 3.1-3.3 for an aerial missile (including a projectile) with means to stabilize or affect the trajectory or course of the missile, subclasses 7, 12.1-12.6, 14, 15, and 23 for aircraft using jet reaction devices principally to assist in vertical lift, subclass 52 for aircraft having jet reaction devices for steering and propulsion, subclasses 73 and 74 for aircraft having jet reaction propulsion means, and subclass 113 for aircraft provided with jet reaction means to retard motion and subclasses 171.1-171.5 for a spacecraft having a propulsion system that includes a power plant of the type found in this class (60) having a significant relationship to the spacecraft.

CLASS 102 – AMMUNITION AND EXPLOSIVES

Definitions Modified

Subclass 285: Under SEE OR SEARCH CLASS,

Delete:

The reference to Class 244.

Insert:

244, Aeronautics and Astronautics, subclass 74 for explosive jet aircraft propulsion; and subclasses 171.1 through 171.6 for spacecraft with propulsion.

Subclass 291: Under SEE OR SEARCH CLASS,

Delete:

The reference to Class 244.

Insert:

244, Aeronautics and Astronautics, subclasses 73-74 for devices relative to and combined with an aircraft using jets of air or other fluid for propelling aircraft; and subclasses 171.1 through 171.6 for spacecraft with propulsion propulsion.

Subclass 374: In (2)Note

Delete:

The reference to Class 244.

Insert:

(2) Note. This subclass includes "missiles" under the subclass definition with a nominally recited stabilization means (i.e., fins). For subject matter under this definition claimed in combination with specific trajectory or stabilization means, see the reference to Class 244 in the search notes below.

.

In (3)Note

Delete:

The reference to Class 244.

Insert:

(3) Note. This subclass includes an orbiting vehicle (called a satellite or space vehicle) when claimed in combination with a reaction motor for

propelling the orbiting vehicle through the atmosphere on its initial launch from the earth into space, but excludes subject matter directed exclusively to the orbiting vehicle or an orbiting vehicle claimed in combination with a nominal reaction motor. For such orbiting or space vehicles, see the reference to Class 244 in the search notes below.

Under SEE OR SEARCH CLASS

Insert:

244, Aeronautics and Astronautics, appropriate subclasses for subject matter under the definition of this class (102) in combination with specific trajectory or stabilization means for unmanned aircraft (subclass 3.1) or manned aircraft (subclasses 75.1-99.9). Search subclasses 158.1-173.3 spacecraft that orbit the earth or other celestial body and see (3) Note above.

CLASS 114 – SHIPS

Definitions Modified

Class Definition: In Section II, under SEE OR SEARCH CLASS, in the reference to Class 244

Delete:

The reference to Class 244.

Insert:

244, Aeronautics and Astronautics, subclasses 3.1-3.3 for control or stabilizing means for missiles and subclasses 75.1-99.9 for apparatus and devices for controlling aircraft generally of the manned typed. Subclasses 76-82 is the generic subclass for the automatic steering of mobile craft in two and three dimensions. See subclasses 175-197 and the classes specified in the notes thereto for the classes which provide for electrically controlled or actuated apparatus for automatically controlling the motion and/or steering of mobile craft and for a statement as to the line between the classes.

Subclass 144: Under SEE OR SEARCH CLASS, in the reference to class 244

Delete:

The reference to Class 244.

Insert:

244, Aeronautics and Astronautics, subclasses 75.1-99.9 for apparatus and devices for controlling aircraft. Subclasses 76-82 is the generic subclass for the automatic steering of mobile craft in two and three dimensions. See subclass 175 and the classes specified in the notes thereto for the classes which provide for electrically controlled or actuated apparatus for controlling the motion and/or steering of mobile devices and for a statement as to the line between the classes.

CLASS 180 – MOTOR VEHICLES

Subclass 315: Under SEE OR SEARCH CLASS, in the reference to CLASS 244

Delete:

The reference to Class 244.

Insert:

244, Aeronautics and Astronautics, subclass 75.1 and the classes specified in the notes thereto for apparatus and devices for controlling aircraft and other mobile craft. See subclass 175 and the classes specified in the notes thereto where the control is effected by electrical means, and for a statement as to the line between the classes.

CLASS 244 – AERONAUTICS And ASTRONAUTICS

Definitions Modified

In the following classes/subclasses change Class 244 title to: AERONAUTICS And ASTRONAUTICS

CLASS	SUBCLASSES	SEARCH CLASS
2	2.14	244
5	9.1	244
16	110.1	244
	221	
24	305	244
33	318	244
40	214	244
	215	
	217	
47	2	244
49	9	244
52	-1	244 (Class-Def III)
	2.11	
	84	
53	403	244
55	306	244
60	200.1	244
	201	(2)Note
	228	
	230	
	246	
	266	

Definitions Modified

In the following classes/subclasses change Class 244 title to: AERONAUTICS And ASTRONAUTICS

CLASS	SUBCLASSES	SEARCH CLASS
60	719	244
	767	
	796	
73	170.16 170.26	244
	178	
	504.02	
	504.18	
74	5.22	
	500.5	
89	1.8	244
	1.14	
	1.51	
	36.01	
	36.11	
102	-1	244 (Class Def- II)
	285	
	291	
	348	
	350	
	374	(2) Note
	386	
	384	
	387	
	398	

Definitions Modified

In the following classes/subclasses change Class 244 title to: AERONAUTICS And ASTRONAUTICS

CLASS	SUBCLASSES	SEARCH CLASS
102	405	244
	531	
109	-1	244 (Class Def- IV)
114	-1	244 (Class Def- II)
	39.18	
	39.3	
	56.1	
	102.11	
	102.22	
	102.29	
	144	
	311	
116	210	244
119	712	244
	771	
	843	
	856	
	907	
123	41.01	244
	41.43	
	41.7	

Definitions Modified

In the following classes/subclasses change Class 244 title to: AERONAUTICS And ASTRONAUTICS

CLASS	SUBCLASSES	SEARCH CLASS
124	-1	244 (Class Def- II)
126	569	244
134	-1	244 (Class Def- III)
137	351	244
	614.02	
	899	
152	-1	244 (Class Def-III)
169	53	244
180	-1	244 (Class Def-IV)
	116	
	167	
	180	
	268	
	291	
	315	
181	210	244
182	-1	244
184	6.2	244
187	-1	244 (Class Def-III)
188	272	244
219	-1	244 (Class Def-III)
	202	
	203	
	703	

Definitions Modified

In the following classes/subclasses change Class 244 title to: AERONAUTICS And ASTRONAUTICS

CLASS	SUBCLASSES	SEARCH CLASS
220	560.07	244
	560.11	
	560.02	
222	-1	244 (Class Def-III)
235	411	244
239	-1	244 (Class Def-III)
	2.1	
	14.1	
	171	
	265.11	
242	-1	244 (Class Def-IV)
	371	
	382	
248	554	
250	-1	244 (Class Def-III)
	200	
	203.1	
258	1.2	244
267	2	244
280	-1	244 (Class Def-IV)
	47.331	
	200	
	210	
	400	

In the following classes/subclasses change Class 244 title to: AERONAUTICS And ASTRONAUTICS

CLASS	SUBCLASSES	SEARCH CLASS
294	82.25	244
	82.26	
297	-1	244 (Class Def-III)
	468	
305	-1	244 (Class Def –II)
	165	
318	-1	244 (Class Def-IV)
	16	
	561	
	563	
	565	
	566	
	580	
	581	
	582	
	583	
	584	
	585	
	586	
	591	
	619	
	624	
	648	
	651	

Definitions Modified

In the following classes/subclasses change Class 244 title to: AERONAUTICS And ASTRONAUTICS

CLASS	SUBCLASSES	SEARCH CLASS
340	825	244
	946	
	947	
	963	
342	-1	244 (Class Def-II)
	62	
	63	
343	-1	244 (Class Def-III)
	700	
	704	
	705	244 (4 Note)
	706	
	707	
	877	
	887	
346	31	244
348	113	244
	117	
356	139.03	244
	139.04	
361	-1	244 (Class Def-IV)
	218	
362	470	244

Definitions Modified

In the following classes/subclasses change Class 244 title to: AERONAUTICS And ASTRONAUTICS

CLASS	SUBCLASSES	SEARCH CLASS
376	-1	244 (Class Def-IV)
383	-1	244 (Class Def-III)
	3	
385	-1	244 (Class Def -II)
388	-1	244 (Class Def-III)
403	-1	244 (Class Def-III)
404	1	244
	6	
	17	
	35	
410	-1	244 (Class Def-IV)
	93	
414	-1	244 (Class Def-IV)
	373	
	374	
	467	
416	4	244
	20	
	120	
	123	
434	30	244
440	12.5	244
446	34	244
	35	

Definitions Modified

In the following classes/subclasses change Class 244 title to: AERONAUTICS And ASTRONAUTICS

CLASS	SUBCLASSES	SEARCH CLASS
446	36	244
	49	
	50	
	52	
	56	
	61	
	62	
	63	
	225	
454	70	244
455	39	244
	96	
472	49	244
	83	
	130	
700	1	244
701	-1	244 (Class Def-IV)
	3	
	41	
	200	
	226	
702	144	244
D12	605	244

Subclass 3.1: In (3) Note

Delete:

subclasses 75+

Insert:

Subclasses 75.1-99.9

Subclass 35: Under SEE OR SEARCH THIS CLASS, SUBCLASS

Delete:

123, 124

Insert:

123.1-124

Subclass 50: In (3) Note

Delete:

(3) Note. For ordinary control devices, see this class, subclass 75, and indented subclasses.

Insert:

(3) Note. For ordinary control devices, see this class, subclasses 75.1-99.9.

Subclass 76: In the subclass definition

Delete:

This subclass is indented under subclass 75.

Insert:

This subclass is indented under subclass 75.1.

Subclass 87: In the subclass definition.

Delete:

This subclass is indented under subclass 75.

Insert:

This subclass is indented under subclass 75.1.

Subclass 91: In the subclass definition.

Delete:

This subclass is indented under subclass 75.

Insert:

This subclass is indented under subclass 75.1.

Subclass 92: In the subclass definition.

Delete:

This subclass is indented under subclass 75.

Insert:

This subclass is indented under subclass 75.1.

Subclass 93: In the subclass definition.

Delete:

This subclass is indented under subclass 75.

Insert:

This subclass is indented under subclass 75.1.

Subclass 96: In the subclass definition.

Delete:

This subclass is indented under subclass 75.

Insert:

This subclass is indented under subclass 75.1.

Delete:

The reference to (1) Note.

Insert:

SEE OR SEARCH THIS CLASS, SUBCLASS:

75.1-99.9, for general aircraft control systems.

Subclass 124: In the subclass definition.

Delete:

This subclass is indented under subclass 123.

Insert:

This subclass is indented under subclass 123.1.

Subclass 164: In the subclass definition.

Delete:

This subclass is indented under subclass 158.

Insert:

This subclass is indented under subclass 158.1.

Subclass 175: Under SEE OR SEARCH CLASS in the reference to Class 180.

Delete:

appearing in subclass 75 above.

Insert:

appearing in subclass 75.1 above.

Subclass 189: Under SEE OR SEARCH CLASS in the reference to Class 180

Delete:

appearing in subclass 75 above.

Insert:

appearing in subclass 75.1 above.

Subclass 220: In the subclass definition.

Delete:

This subclass is indented under subclass 75.

Insert:

This subclass is indented under subclass 75.1.

Definitions Established

75.1 AIRCRAFT CONTROL:

This subclass is indented under the class definition. A device or arrangement directed to and limited to the controlling of an aircraft in flight.

(1)Note. This subclass provides for control elements as distinguished from control surfaces, such as a leading edge flap, which are provided for elsewhere. See the search notes below for the location of control surfaces, per se.

SEE OR SEARCH THIS CLASS, SUBCLASS:

2 - 33, for general arrangement of control systems on aeronautical machines of a particular type.

50, 110 though 113, for aircraft steering on land or water.

51, for aircraft steering by adjustment of propelling devices.

52, for steering of fluid propelled aircraft by some modification of the fluid propelling devices.

96 -99, for control systems and devices peculiar to lighter-than-air craft.

213-217, for a control surface comprising a flap or spoiler.

SEE OR SEARCH CLASS:

60, Power Plants, appropriate subclasses for actuating devices including controls and especially subclass 528 for shape memory and piezoelectric type devices.

74, Machine Element or Mechanism, subclass 501.5 , for constant tension sustaining devices for flexible cable operators.

91, Motors: Expansible Chamber Type, appropriate subclasses for fluid servo-motors and controls therefor.

102, Ammunition and Explosives, subclass 384 for drop bombs with means for controlling the course of their flight.

114, Ships, subclasses 21.1, 23, and 24 for torpedoes with means to control the steering and/or motion of the torpedo, and subclass 25 for torpedoes with automatic means to keep the torpedo at a predetermined depth below the surface, and subclasses 144 through 172 for miscellaneous devices for controlling the direction and/or speed of a ship.

180, Motor Vehicles, subclass 167 through 169 for a motor vehicle provided with means for controlling its operation which is responsive to electromagnetic radiation, magnetic force, or sound waves received from a source, or reflected from an object or surface, which is located apart from the vehicle; and subclass 170 through 179 for a motor vehicle provided with means which is responsive to the speed of the vehicle for maintaining its speed at, or preventing it from exceeding, a particular value.

280, Land Vehicles, subclasses 263, 771 through 93.515 for miscellaneous steering mechanisms for land vehicles.

310, Electrical Generator or Motor Structure, for piezoelectric devices, per se.

318, Electricity: Motive Power Systems, appropriate subclasses for electric motor systems. See the notes in subclass 175 of Class 244 for the line between this class and Class 318.

700, Data Processing: Generic Control Systems or Specific Applications, subclasses 1 through 89 for generic data processing control systems.

701, Data Processing: Vehicles, Navigation, and Relative Location, subclass 3 through 18 for computing systems for vehicle control or vehicle condition indication and subclass 200 through 226 for computations in the application of navigation.

703, Data Processing: Structural Design, Modeling, Simulation, and Emulation, subclass 8 for mathematical simulation of a vehicle.

78.1 Fluid:

This subclass is indented under subclass 76. Subject matter in which the device or system includes a pneumatic or hydraulic system that automatically generates a control signal for controlling the aircraft.

(1) Note. This subclass does not provide for the mere use of hydraulic or pneumatic apparatus to actuate a control surface in response to an automatic signal, but a hydraulic or pneumatic apparatus that forms part of the structure responsible for the automatic operation of the control means.

78.2 Fluid amplifiers:

This subclass is indented under subclass 78.1. Subject matter in which the fluid system includes a pure fluid device for amplifying an input signal.

(1) Note. Devices known in the art as "pure fluid devices" or "fluid amplifiers" and which act to control or vary high energy flows by relatively low energy flow or fields are included here. These devices rely upon the phenomenon known as the Coanda effect which occurs when a jet of fluid is injected into a wide container and due to some disturbance in flow or shape of the container the jet stream moves to one wall or other of the container and continues to flow along that wall. As long as the flow is not otherwise disturbed the flow remains "locked" onto the wall of the container.

SEE OR SEARCH CLASS:

137, Fluid Handling, subclasses 803 through 842 for pure fluid devices, per se.

99.1 Fuselage:

This subclass is indented under subclass 75.1. Subject matter in which the device or arrangement includes a movable portion of the fuselage or means to provide specific control of air flow about the fuselage.

(1) Note. This subclass includes pivoted nose portions or devices that affect the flow about the nose.

99.11 Wing:

This subclass is indented under subclass 75.1. Subject matter in which the complete wing is moved to effect control of the entire aircraft.

(1) Note. This does not provide for the mere movement of a flap or change of angle of attack of the wing, but the longitudinal or lateral movement of the wing to effect a change in direction of flight.

99.12 Drag:

This subclass is indented under subclass 75.1. Subject matter in which the control of the aircraft is effected by the deployment of a device (e.g., a parachute) that changes the wind resistance of the aircraft to effect an in-flight control of the aircraft beyond mere braking during landing.

(1) Note. An aircraft in which deployment of a parachute from a particular location on the aircraft to pull the aircraft out of a spin condition is classified here.

99.13 Flutter control:
This subclass is indented under subclass 75.1. Subject matter in which the control of the aircraft involves (1) means for manipulating (e.g., positioning) a control element (e.g., control surface) or (2) static structure for supporting a control element, the means for manipulating or the static structure operating to prevent or limit vibration (i.e., flutter) of the control element.

99.14 Trim tab:
This subclass is indented under subclass 75.1. Subject matter including a control surface mounted on and adjustable relative to another control surface.

99.2 Specific control connection or actuator:
This subclass is indented under subclass 75.1. Subject matter including a specific connection between the device or arrangement for controlling an aircraft (e.g., pilot control, autopilot) and a controlled element (e.g., a control surface).

99.3 Linkage:
This subclass is indented under subclass 99.2. Subject matter including details of a mechanical linkage that forms a part of the connection.

(1) Note. Included in this subclass, for example, is a linkage arranged to compensate for variations in temperature with flight altitude and speed.

99.4 Redundant arrangements:
This subclass is indented under subclass 99.2. Subject matter in which the specific control connection has plural control transmission paths each capable of operation in the absence of any of the others.

99.5 Fluid:
This subclass is indented under subclass 99.2. Subject matter in which the control connection includes a fluid system (e.g., hydraulic) that transmits forces to the controlled element through a fluid.

99.6 Fluid pressure source arrangement:
This subclass is indented under subclass 99.5. Subject matter including details of an arrangement of a source of pressure for the fluid system as it relates to the structure of the aircraft.

(1) Note. For placement here, specific aircraft structure that includes part of the pressure source must be claimed or the pressure source must be specially adapted for association with an aircraft (e.g., a pressure source particularly constructed to fit within a wing).

99.7 Nonlinear fluid actuator:
This subclass is indented under subclass 99.5. Subject matter in which the fluid system includes a specific non-linear actuator having a specific relation to the aircraft.

(1) Note. For example, the control connection may include a rotary actuator that forms the hinge of a flap of a wing and moves the flap relative to the wing.

99.8 Actively deformable material (e.g., piezoelectric, shape memory, magnetostrictive, electrostrictive):
This subclass is indented under subclass 99.2. Subject matter in which the connection or actuator is formed at least in part of a material that changes its shape in response to an input (e.g., an electrical signal).

99.9 Failure tolerant (e.g., jam tolerant, no-back control connection):
This subclass is indented under subclass 99.2. Subject matter in which the control connection is constructed so as to mitigate the effect of a failure in some portion of the control system or the controlled element.

123.1 Airfoil construction:
This subclass is indented under subclass 117. Subject matter including details of the structure of an airfoil.

(1) Note. This subclass is primarily concerned with airfoil features that relate to the strength and mass of an airfoil rather than airflow characteristics.

SEE OR SEARCH THIS CLASS, SUBCLASS:

35-49, for the shape or arrangement of sustaining airfoils with relation to an aircraft or airflow related aspects of an airfoil.

131, for connections of a wing to a fuselage.

123.11 Inflatable:
This subclass is indented under subclass 123.1. Subject matter in which a substantial portion of the rigidity of the airfoil is provided by internal air pressure.

123.12 Corrugated panels:
This subclass is indented under subclass 123.1. Subject matter in which a substantial portion of the rigidity of the airfoil is provided by sheet material having alternating ridges and grooves for strength.

123.13 Honeycomb in skin panels:
This subclass is indented under subclass 123.1. Subject matter in which the outermost layer of the airfoil is formed of a structure having interconnected hollow, thin-walled, substantially parallel cells.

SEE OR SEARCH CLASS:

428, Stock Material or Miscellaneous Articles, subclass 116 for honeycomb-like structure.

123.14 Hollow:
This subclass is indented under subclass 123.1. Subject matter in which substantially all of the rigidity of the airfoil is provided by the skin and its interior is substantially open.

123.2 Sparless frame construction:
This subclass is indented under subclass 123.1. Subject matter in which the airfoil has an internal framework comprising a network of interconnected members that provides substantially all of the rigidity of the airfoil and in which none of the members alone would be capable of providing this rigidity or even providing only the vertical load supporting capacity of the airfoil.

123.3 Integral frame and skin:
This subclass is indented under subclass 123.2. Subject matter in which the internal framework is integrally formed with the outer layer of the airfoil.

123.4 Open truss/lattice construction:
This subclass is indented under subclass 123.2. Subject matter in which the internal framework comprises a plurality of members connected so as to form open areas between the members.

123.5 Non-metallic filler (e.g., metal skin with foam, cork, or rubber filler):
This subclass is indented under subclass 123.1. Subject matter in which a substantial portion of the rigidity of the airfoil is provided by a structure formed of a material other than metal substantially filling its interior.

123.6 Honeycomb:
This subclass is indented under subclass 123.5. Subject matter in which the structure that provides the rigidity has a plurality of interconnected hollow cells resembling a honeycomb.

SEE OR SEARCH CLASS:

428, Stock Material or Miscellaneous Articles, subclass 116 for honeycomb-like structure.

123.7 Box beam:
This subclass is indented under subclass 123.1. Subject matter in which substantially all of the rigidity of the airfoil is provided by a hollow beam extending along the length of the airfoil substantially from the root of the airfoil to the tip, the beam having a generally rectangular cross section and having upper and lower surfaces forming portions of the upper and lower exterior surfaces of the airfoil.

123.8 Main spar:
This subclass is indented under subclass 123.1. Subject matter in which substantially all of the rigidity of the airfoil transverse to its length (i.e., the dimension extending generally from the root to the tip of the airfoil) is provided by a beam (i.e., spar) extending along the length of the airfoil and connected to the upper and lower portions of the skin.

(1) Note. The spar need not provide all of the torsional rigidity of the airfoil for placement in this subclass.

123.9 Tubular spar:
This subclass is indented under subclass 123.8. Subject matter in which the beam (i.e., spar) is hollow.

158.1 SPACECRAFT:
This subclass is indented under the class definition. Subject matter comprising a machine or structure especially designed for travel in the upper reaches of or beyond the atmosphere of a celestial body (e.g., Earth).

(1) Note. By "upper reaches of the atmosphere" is meant the height at or beyond which the atmosphere (if any) is incapable of providing (1) lift or sustentation to a winged or other aircraft or (2) sufficient oxygen for operating the propulsion system of an aircraft.

(2) Note. A machine or structure (manned or unmanned) which is (1) disclosed as a body (i.e., satellite) which is to be placed in orbit about a celestial body (e.g., Earth) or (2) solely disclosed as a vehicle for use in outer space travel is considered proper for classification here.

(3) Note. Methods of using spacecraft are classified with the corresponding apparatus.

(4) Note. For a vehicle designed solely for travel on the surface of a planet, see the appropriate vehicle class.

SEE OR SEARCH THIS CLASS, SUBCLASS:

3.1-33, for missiles that may travel in the upper reaches of or beyond the Earth's atmosphere and see the search notes thereunder.

SEE OR SEARCH CLASS:

62, Refrigeration, especially subclass 315 for a porous wall connected to a fluid coolant supply.

102, Ammunition and Explosives, subclass 374 for a missile or payload and an attached reaction motor; and subclasses 501 through 529 for a projectile.

138, Pipes and Tubular Conduits, subclass 45 for ablating compositions in a tube or nozzle portion.

156, Adhesive Bonding and Miscellaneous Chemical Manufacture, appropriate subclasses for particular method or apparatus for making a laminated ablating surface.

165, Heat Exchange, subclass 41 for heat exchange with a vehicle feature; and subclass 61 for heating and cooling the same material.

220, Receptacles, especially subclass 2.1 for containers enclosing an electrical device; and subclasses 581 through 592 for high pressure containers.

239, Fluid Sprinkling, Spraying, and Diffusing, especially subclass 265.15 for a nozzle with ablating surface.

250, Radiant Energy, subclasses 203.1 through 203.7 for optical sensors , subclass 238 for a heat shield covering a heat-seeking detector.

252, Compositions, subclass 62 for heat-insulating compositions; and subclasses 67 through 69 for compositions involving refrigeration, heat, or energy exchange including vaporization or expansion of material.

342, Communications: Directive Radio Wave Systems and Devices (e.g., Radar, Radio Navigation), subclasses 352 through 358 for a satellite in combination with directive radio wave equipment.

343, Communications: Radio Wave Antennas, Digest 2, and subclasses 872 and 873 for missile nose cones used as a housing or covering for a radar antenna.

427, Coating Processes, appropriate subclasses.

455, Telecommunications, subclasses 12.1, 98, 427 through 430 for a satellite combined with specific communication equipment of the type provided for in that class.

501, Compositions: Ceramic, appropriate subclasses for ceramic compositions.

701, Data Processing: Vehicles, Navigation, and Relative Location, subclass 226 for mathematical computations of space craft orbits or paths. If significant vehicle structure is recited, classification is in the appropriate vehicle class.

158.2 Tethered:

This subclass is indented under subclass 158.1. Subject matter in which the spacecraft is connected by an elongate flexible member (e.g., a cable) to a mother craft or to a celestial body.

(1) Note. This subclass includes "space elevators" and "orbital skyhooks".

SEE OR SEARCH CLASS:

57, Textiles: Spinning, Twisting, and Twining, appropriate subclasses for a cable or rope, per se, formed by twisting or twining.

87, Textiles: Braiding, Netting, and Lace Making, appropriate subclasses for a cable or rope, per se, formed by braiding, knotting, or intertwisting strands.

158.3 Inflated:

This subclass is indented under subclass 158.1. Subject matter in which the spacecraft is constructed to be placed in orbit about the celestial body and to be expanded after launch by introduction of a gas into an interior portion of the spacecraft.

158.4 Spacecraft formation, orbit, or interplanetary path:

This subclass is indented under subclass 158.1. Subject matter including details of an arrangement of plural spacecrafts in orbit about a celestial body or details of a path traveled by the spacecraft in orbit or between planets.

(1) Note. Only minimal spacecraft to spacecraft communication is included here. Specific GPS systems, communication equipment, ground station, gateway, signal transfer, handoff, or other telecommunication equipment or procedures places satellite orbital arrangements in other classes. See under SEE OR SEARCH CLASS below.

SEE OR SEARCH CLASS:

342, Communications: Directive Radio Wave Systems and Devices (e.g., Radar, Radio Navigation), subclasses 352 through 358 for spacecraft orbit features combined with specific GPS or other directional radio system details appropriate for that class.

455, Telecommunications, subclasses 12.1, 98, 427, and 428 for spacecraft orbit features combined with specific communication equipment of the type provided for in that class.

158.5 Orbit insertion:

This subclass is indented under subclass 158.4. Subject matter including a process or specific means for initiating travel of the spacecraft along an orbital path from a non-orbital path or another orbital path.

(1) Note. This subclass provides for final orbit insertion only. Subject matter directed to vehicles or procedures for initial launch are classified elsewhere.

158.6 Orbital control:
This subclass is indented under subclass 158.4. Subject matter including a process or specific means for controlling the spacecraft so as to maintain an orbit or set a new orbit.

(1) Note. This subclass does not provide for satellite attitude control or for general propulsion equipment, which may be usable with orbital control means.

158.7 Aerobraking:
This subclass is indented under subclass 158.6. Subject matter including a procedure or specific means for creating an interaction between the spacecraft and the upper atmosphere of the celestial body to effect a drag force on the satellite to change its orbit.

158.8 Automatic:
This subclass is indented under subclass 158.6. Subject matter in which the process or means acts without human intervention.

158.9 Reusable or returnable:
This subclass is indented under subclass 158.1. Subject matter in which the spacecraft is intended to be launched from a celestial body and returned to it and in which the spacecraft includes specific means to ensure that it returns to the celestial body in an operable condition.

(1) Note. The term "operable" does not exclude devices requiring a limited amount of maintenance or refurbishment before being returned to use.

159.1 With reentry shield:
This subclass is indented under subclass 158.9. Subject matter in which the means to ensure includes specific means for protection of the spacecraft due to motion through the atmosphere of the celestial body.

(1) Note. In this subclass are structures to control the heating of all or part of a vehicle caused by the resistance to the vehicle moving through an atmosphere. The mere recitation of a coating or layer on the whole or a part of the surface of a vehicle is not sufficient for placement in this subclass. A heat control device claimed merely in terms of the composition or material of which it is composed is classified in an appropriate composition or material class.

159.2 Inflatable:
This subclass is indented under subclass 159.1. Subject matter in which the reentry shield is constructed to be expanded by the introduction of a gas into an interior portion of the shield.

159.3 Having aerodynamic lifting body (e.g., Space Shuttle):
This subclass is indented under subclass 158.9. Subject matter in which the spacecraft includes structure that produces aerodynamic lift that enables the spacecraft upon return to the celestial body's atmosphere to be flown as an aircraft to an appropriate landing site.

159.4 Modular and assembled in space:
This subclass is indented under subclass 158.1. Subject matter in which the spacecraft comprises a plurality of units configured to be assembled beyond the atmosphere of any celestial body.

(1) Note. This subclass includes a satellite or space station formed of modules.

159.5 Foldable:
This subclass is indented under subclass 159.4. Subject matter in which all or a significant part of the machine or structure can be reversibly and without damaging it deformed or bent into a more compact configuration.

159.6 Including use of launch vehicle part:
This subclass is indented under subclass 159.4. Subject matter in which one of the units includes a significant portion of the structure of a vehicle used to separate the spacecraft from the surface of a celestial body.

171.1 With propulsion:
This subclass is indented under subclass 158.1. Subject matter in which the spacecraft includes attached structure (i.e., propulsion means) for causing movement of the spacecraft as a whole.

(1) Note. The propulsion means may be another vehicle temporarily attached to the spacecraft.

171.2 Steerable mount:
This subclass is indented under subclass 171.1. Subject matter in which the spacecraft includes a support for attaching the propulsion means to the spacecraft that is movable relative to the spacecraft for purposes of affecting the direction of travel of the spacecraft.

171.3 Launch from surface to orbit:
This subclass is indented under subclass 171.1. Subject matter in which the propulsion means is constructed to propel the spacecraft from the surface of a celestial body to orbit.

171.4 Horizontal launch:
This subclass is indented under subclass 171.3. Subject matter in which the launch takes place in a horizontal direction.

171.5 Without mass expulsion:
This subclass is indented under subclass 171.1. Subject matter in which the propulsion means operates to move the spacecraft other than by generating a propelling force in reaction to the ejection of mass (e.g., gas, liquid, or plasma) from the propulsion means.

(1) Note. For example, the spacecraft may be propelled by use of magnetic fields or solar pressure.

171.6 Having launch pad cooperating structure:
This subclass is indented under subclass 158.1. Subject matter including specific structure to operably support the spacecraft on a launch pad.

171.7 With shield or other protective means (e.g., meteorite shield, insulation, radiation/plasma shield):
This subclass is indented under subclass 158.1. Subject matter including structure for protecting the physical structure of the spacecraft from the hazards or extreme conditions of space travel.

SEE OR SEARCH THIS CLASS, SUBCLASS:

121, for aircraft shields and other protective devices.

171.8 Active thermal control:
This subclass is indented under subclass 171.7. Subject matter including structure to actively control the temperature of the spacecraft.

SEE OR SEARCH THIS CLASS, SUBCLASS:

159.1 and 159.2, for reentry shields.

171.9 With special crew accommodations:
This subclass is indented under subclass 158.1. Subject matter including structure particularly designed to improve the convenience, efficiency, or safety with which passengers or flight personnel are carried.

SEE OR SEARCH THIS CLASS, SUBCLASS:

171.8, for control of temperature to maintain the comfort of the crew.

172.1 Emergency rescue means (e.g., escape pod):
This subclass is indented under subclass 171.9. Subject matter including specific means for the emergency return of spacecraft personnel from orbit.

(1)Note. Included in this subclass are escape pods or devices for reentry of an individual.

172.2 With fuel system details:
This subclass is indented under subclass 158.1. Subject matter including details of arrangements for storing and feeding fuel on a spacecraft or for supplying fuel to or removing fuel from it.

SEE OR SEARCH THIS CLASS, SUBCLASS:

135, for details of aircraft fuel systems.

SEE OR SEARCH CLASS:

137, Fluid Handling, appropriate subclasses for a fluid handling system which may be used for fuel, but does not include specific aeronautic structure.

141, Fluent Material Handling, With Receiver or Receiver Coacting Means, appropriate for a fluid handling system involving a receiver or receiver coating means which may be used for fuel, but does not include specific aeronautic structure.

220, Receptacles, for a container per se which may be used for fuel (e.g., as a fuel tank). See subclasses 560.01 and 560.02 for a fuel tank or other container that is puncture resistant.

172.3 Fuel tank arrangement:
This subclass is indented under subclass 172.2. Subject matter including a specific arrangement or placement of tanks within the structure of the spacecraft.

172.4 Rendezvous or docking:
This subclass is indented under subclass 158.1. Subject matter including a specific means or process for bringing the spacecraft into either proximity to or fixed engagement with complimentary means on another machine or structure while traveling in the upper reaches of or beyond the atmosphere of the celestial body.

(1)Note. A spacecraft using an arm to grasp a satellite is classified here.

172.5 Including satellite servicing:
This subclass is indented under subclass 172.4. Spacecraft structure including means for performing repair or maintenance of one of the docked structures once docking has occurred.

(1) Note. The mere transfer of crew or equipment between docked spacecraft is not sufficient to warrant placement here.

172.6 With deployable appendage:
This subclass is indented under subclass 158.1. Subject matter in which the machine or structure includes a portion that is extendable, deployable, or otherwise erectable in orbit.

(1) Note. This subclass includes various booms, antennae, etc. that are specifically a part of a spacecraft. See the search notes below for the location of an antenna or boom, per se.

SEE OR SEARCH CLASS:

52, Static Structures (e.g., Buildings), appropriate subclasses, e.g., subclasses 108-111 and 645 and 646 for extendable frameworks, booms, and other structures, per se.

343, Communications: Radio Wave Antennas, for an antenna, per se.

172.7 With solar panel:
This subclass is indented under subclass 158.1. Subject matter in which the structure or machine has a surface portion for receiving incident light and converting it to another usable form of energy.

SEE OR SEARCH CLASS:

136, Batteries: Thermoelectric and Photoelectric, subclass 244 through 251 for a photoelectric solar collector, per se.

172.8 Having solar concentrator:
This subclass is indented under subclass 172.7. Subject matter including means for concentrating the light energy to the panel.

172.9 Having launch hold down means:
This subclass is indented under subclass 172.7. Subject matter including structure to hold the solar panel securely to the spacecraft during launch, which structure is not required when the solar panel is in use.

173.1 With payload accommodation:
This subclass is indented under subclass 158.1. Subject matter in which the spacecraft includes special structure particularly designed to improve the efficiency with which cargo, or a like load, is carried.

173.2 Including vibration control:
This subclass is indented under subclass 173.1. Subject matter in which the special structure includes means to limit vibration of the payload (e.g., during launch).

173.3 And payload deployment:
This subclass is indented under subclass 173.1. Subject matter in which the spacecraft includes means for separating the payload from the spacecraft once in orbit.

174 Flutter control:
This subclass is indented under subclass 76. Subject matter in which the control system prevents or reduces vibration of a control element (e.g., a control surface) of the aircraft.

199.1 By vortex control outside of boundary layer:
This subclass is indented under subclass 198. This subclass is indented under subclass 198. Subject matter in which the airfoil comprises or includes airflow modification means designed to create or disperse a swirling air flow, this flow either circulating about the surface of the airfoil outside of the boundary layer or flowing toward or away from the surface of the airfoil to effect changes in the lift of the airfoil.

(1) Note. This subclass does not provide for devices that affect the boundary layer through the use of vortices.

(2) Note. An airfoil having special vortex-modifying shape is found here.

199.2 Of tip vortex:
This subclass is indented under subclass 199.1. Subject matter in which the airflow modification device acts upon a vortex (i.e., tip vortex) located at an outer end portion (i.e., tip) of the airfoil.

(1) Note. The tip vortex is that vortex that is formed at the wing tip when lift is generated by the wing.

(2) Note. An arrangement involving the modification of the shape or profile of the wing tip or other portions of the wing to effect tip vortex control is classified here.

199.3 Active:
This subclass is indented under subclass 199.2. Subject matter in which the airflow modification device is a jet, propeller, or other moving member located on the airfoil.

199.4 Wing tip foils/fences:
This subclass is indented under subclass 199.2. Subject matter in which the airflow modification means is a structure mounted on the tip of the airfoil.

200.1 Vortex generation in boundary layer:
This subclass is indented under subclass 200. Subject matter in which the surface of the airfoil has means to generate vortices in close proximity thereto that modifies the boundary layer flow.

(1) Note. The means to generate vortices can include various projections, tabs, depressions, etc. that alter the boundary layer by creating a vortex. This means may be retractable.

204.1 Actively controlled vortex generator:
This subclass is indented under subclass 204. Subject matter in which the means to effect a change in the boundary layer flow generates vortices in close proximity to the surface of the airfoil.

FOREIGN ART COLLECTIONS

The definitions below correspond to abolished subclasses from which these collections were formed. See the Foreign Art Collection schedule of this class for specific correspondences. [Note: The titles and definitions for *indented* art collections include all the details of the one(s) that are hierarchically superior.]

FOR 100 AIRCRAFT CONTROL:

Foreign Art Collections for devices and arrangements directed to and limited to the controlling of aircraft in flight.

FOR 101 Flutter prevention:

This foreign art collection was derived from an undefined alpha subclass. Consult the documents contained herein to clarify or interpret the title and scope of this foreign art collection.

FOR 102 Fluid:

Foreign Art Collections for **s**ystems for automatically controlling aircraft by means of hydraulic or pneumatic apparatus.

FOR 103 Airfoil construction:

Foreign Art Collections for construction of airfoil elements.

FOR 104 SPACECRAFT:

Foreign Art Collections for comprising a machine or structure especially designed for travel in the upper reaches of and/or beyond the atmosphere of a celestial body, (e.g., earth).

FOR 105 Exterior surface air resistance heat control:

This foreign art collection was derived from an undefined alpha subclass. Consult the documents contained herein to clarify or interpret the title and scope of this foreign art collection.

FOR 106 Space station:

Foreign Art Collections for apparatus wherein the machine or structure is orbitally maintained in the upper reaches of or beyond the earth's atmosphere to which other machine or structures may rendezvous and lock and subsequently be launched therefrom.

FOR 107 Reentry vehicle:

Foreign Art Collections for apparatus wherein the machine or structure is provided with control means enabling return of the machine or structure to the surface of the earth.

FOR 108 Rendezvous:

Foreign Art Collections for apparatus wherein the machine or structure includes means whereby it may be brought either into proximity to or fixed engagement with complimentary means on another machine or structure traveling in upper reaches or and/or beyond the atmosphere of a celestial body.

FOR 109 Manned:

Foreign Art Collections for apparatus wherein the machine or structure includes a life support system for a person or other living sentient being.

FOR 110 Environmental control:

Foreign Art Collections for apparatus wherein the life support system for the machine or structure comprises means for sustaining, preserving, protecting or otherwise enhancing the life or the living conditions respectively of the person or living sentient being.

FOR 111 With propulsion:

Foreign Art Collections for apparatus wherein there is provided means to cause motion of the machine or structure to which it is attached.

FOR 112 With solar panel:

Foreign Art Collections for apparatus provided with a member having a surface portion for receiving incident light, the energy of which being converted to another energy form, e.g., electrical.

FOR 113 Spaceship control:

Foreign Art Collections for system wherein the aircraft is capable of movement outside of earth's atmosphere as well as flight there within, and wherein such movement or flight is regulated by governing the direction or action of propulsive units on the aircraft.

FOR 114 By vortex generator or dissipater:

Foreign Art Collections for lift modification devices designed to create or disperse a swirling air flow, this flow either circulating about the surface of the airfoil or flowing radially therefrom.

CLASS 280 – LAND VEHICLES

Definitions Modified

Class Definition: In SECTION IV, in the reference to Class 244

Delete:

subclasses 75+

Insert:

Subclasses 75.1 through 99.9

CLASS 342 – COMMUNICATIONS: DIRECTIVE RADIO WAVE SYSTEMS AND DEVICES (E.G., RADAR, RADIO NAVIGATION)

Definitions Modified

Subclass 62: Under SEE OR SEARCH CLASS, in the reference to Class 244

Delete:

3.1+ and 158+

Insert:

3,1, 158.1-173.3

CLASS 701 – DATA PROCESSING: VEHICLES, NAVIGATION, AND RELATIVE LOCATION

Definitions Modified

Class Definition: In SECTION IV, in the reference to Class 244

Delete:

subclasses 3.1+

Insert:

Subclasses 3.1 through 3.3

Delete:

subclasses 75+

Insert:

Subclasses 75.1 through 99.9

Delete:

subclasses 158+

Insert:

subclasses 158.1 through 173.3

Subclass 3: Under SEE OR SEARCH CLASS, in the reference to Class 244

Delete:

subclasses 3.1+

Insert:

Subclasses 3.1 through 3.3

Delete:

subclasses 75+

Insert:

Subclasses 75.1 through 99.9

Delete:

subclasses 158+

Insert:

Subclasses 158.1 through 173.3

Subclass 226: Under SEE OR SEARCH CLASS, in the reference to Class 244

Delete:

subclasses 158+

Insert:

subclasses 158.1 through 173.3