

1	METHOD OF OPERATION	27	.Pitch adjustment and throttle regulation with condition sensing means
2	HAVING FRANGIBLE OR FUSIBLE PART OR CONNECTION		
3	ACTUATION DIRECTLY RESPONSIVE TO MAGNETIC OR ELECTRICAL EFFECT	28	..Temperature responsive control
4	ROTARY SKIN FRICTION TYPE (E.G., MAGNUS ROTOR, ETC.)	29	..Drive engine intake air responsive control
5	WITH ILLUMINATION MEANS	30	..Electrical control or sensing means
6	DRIVEN BY PULSATING OR DIVERSE WORKING FLUID	31	WITH CONTROL MEANS RESPONSIVE TO NON-CYCLIC CONDITION SENSING, CENTRIFUGAL ACTUATION, TORQUE OR THRUST
7	WORKING MEMBER SUPPORTED ON ENDLESS FLEXIBLE CARRIER		
8	.Feathering blades	32	.Control of drive brake or clutch
9	WITH MEANS POSITIONING FLUID CURRENT DRIVEN IMPELLER RELATIVE TO FLOW DIRECTION	33	.Plural distinct impellers having related control
10	.Offset relative to flow direction	34	..Synchronizing
11	..Upstream pivotal mounting	35	.With electrical means comparing and reducing error related to preset datum
12	..Responsive to folding or feathering of flow-aligned vane	36	.Plural diverse condition responsive
13	..Horizontal deflection relative to flow-aligned vane	37	..Relative ambient condition sensing (e.g., temperature, density, wind force, etc.)
14	...With impeller brake or stop	38	..Drive engine condition excluding shaft speed or torque
15	...And responsive to transverse vane	39	.Temperature or icing condition responsive
16	...Biased to position by weight of parts	40	.Responsive to relative working fluid velocity
17	.Feathering cycle related to flow direction	41	..Natural fluid current
18	WITH GYROSCOPIC REFERENCE MEANS FOR ROTOR CONTROL	42	.Pressure or altitude responsive
19	SINGLE BLADE ROTARY IMPELLER WITH COUNTERBALANCE	43	.Responsive to condition of torque or thrust of device or driving or driven means or mechanism
20 R	DRIVE BY FLUID REACTION JET ON WORKING MEMBER	44	.Impeller rotation speed responsive
21	.Combustion chamber carried by member	45	..Valve element directly movable by centrifugal force
22	..Air-ingestion rotor tip unit	46	..Including pitch lock or adjustable stop
20 A	.Articulated or flexible connection	47	..Control by means of separate motor
23	WITH MEANS MOVING WORKING FLUID DEFLECTING WORKING MEMBER PART DURING OPERATION (E.G., AILERON, ETC.)	48	...Motor carried by impeller
24	.Cyclic movement of member or part	49	..Including reset or manual override of control
25	INTERRELATED CONTROLS FOR IMPELLER AND DRIVE MEANS	50	...Of centrifugal weight governor
26	.Pitch adjustment related to drive brake or clutch operation	51	..Centrifugal mass moved along guided or lineal path
		52	..Centrifugal mass coaxial with impeller

53	...Pivot axis parallel to rotation axis	84	BUOYANT OR INFLATABLE WORKING MEMBER
54	OPERATED BY ART DEVICE	85	FLOAT SUPPORTED
55	.Vehicular device	86	.Buoyant hub or rim
56	.Runner supported rocking device	87	RADIALLY EXTENSIBLE OR RETRACTIBLE ROTOR WORKING MEMBER
57	..Inertial actuation		
58	..Continuous impeller rotation	88	.Variable work surface or non-rigid connection
59	.Pivot supported swinging device	89	.Having pitch adjustment
60	.Integral with or directly attached to rotary device or part (e.g., flywheel, pulley, etc.)	90 R	WITH FLUID PASSAGE IN WORKING MEMBER COMMUNICATING WITH WORKING FLUID
61	WITH MEASURING, TESTING, SIGNALLING OR INSPECTION MEANS	91	.Both inlet and outlet to working fluid
62	REMOVABLE AUXILIARY ATTACHMENT TO WORK SURFACE	92	.Discharge solely at periphery normal to rotation axis
63	AMBULANT, BODY SUPPORTED OR WITH CARRYING HANDLE	90 A	.Air and watercraft propellers
64	TRANSLATORY REACTION MOTION	93 R	AMBIENT FLUID OR EXHAUST GAS DIRECTED THROUGH HUB, FAIRING OR HOUSING
65	.And concurrent rotary reaction motion	94	.Aircraft spinner or cowling
66	.Flexible or relatively movable working member or part	93 A	.Water or marine propellers
67	..Valve type	95	WITH HEATING, COOLING OR THERMAL INSULATION MEANS
68	..Complemental pivoted surfaces		
69	OPERATOR SUPPORTED MANUALLY ACTUATED TYPE	96 R	.Changing state mass within or fluid flow through working member or carrier
70 R	.Operation solely by direct hand manipulation	97 R	..Flow exhausted to working fluid
71	..Simulation or having indicia, ornamentation or combined feature	97 A	...Laminated or porous skin
		96 A	..Blade inserts
72	..Relatively movable portions	98	SUSTAINED ANCILLARY MOVEMENT OF ROTARY WORKING MEMBER (E.G., CYCLIC FEATHERING, ETC.)
73	...Arcuate planar folding of working surface		
70 A	..Fans	99	.Intermounted rotary members
74	.Fulcrum support type (e.g., oar, scull, etc.)	100	.Continuous rotor oscillation
75	.Reciprocatory pin-slot actuator	101	.Cyclic radial movement
76	.Rotary hand crank (e.g., egg beater, etc.)	102	.Responsive to carrier tilt
77	..Intermeshing or interdigitated working members	103	.Lead-lag type rotor blade movement
78	CRANK TYPE DIPPING OR STIRRING MOTION	104	..And additional correlated blade movement (e.g., pitch change, etc.)
79	OSCILLATORY REACTION MOTION	105	..Positive means effecting lead-lag movement
80	.With pendulum, counterbalance or inertial weight	106	..With movement restraining means (i.e., damping)
81	.Flexible working member	107	...Resilient bias or limit stop
82	.Relatively movable working member portions	108	.By actuator eccentric to rotation axis
83	.Compound motion (e.g., feathering, undulating, etc.)	109	..Stationary eccentric guide or track
		110	.Continuous rotation about plural axes

111	..Motion about parallel axes	145	.Self-shifting or selectively adjustable mass
112	..Responsive to fixed actuator (e.g., cam or trip, etc.)	146 R	COMBINED OR CONVERTIBLE
113	..Axial cam	146 A	.Hub lubrication or seal
114	...Selectively adjustable	147	HAVING POSITIVE MEANS FOR IMPELLER ADJUSTMENT
115	...Plural impellers	148	.Tiltable carrier (e.g., hub, etc.)
116	..Stationary cam track or guide surface	149	.Shiftable carrier support
117	..Responsive to gravity or working fluid force	150	..Rectilinear motion
118	..Having manual control or adjustment	151	.Power derived from impeller shaft
119	..Motion about parallel axes	152	..By brake application or release
120	PLURAL IMPELLERS HAVING RELATIVE MOVEMENT OR INDEPENDENT SUPPORTS	153	.Having pitch lock or adjustable stop
121	.Shiftable support	154	..Fluid motor for impeller adjustment
122	..Intersecting or interdigitated paths of operation	155	.Motor bodily rotatable with impeller hub or shaft
123	..Divergent rotation axes	156	..Fluid motor
124	..Coaxial rotation	157 R	...Coaxial with impeller shaft
125	..Individual prime mover	157 A	...Rotary fluid motor
126	..Concentric working members	157 B	...Plural blade units
127	..Concurrent adjustment	158	...Working member mounted or housed
128	..Oppositely rotating impellers	159	.Power or manual actuator on non-rotatable part
129	...Engine driven	160	..Planetary gearing connecting rotatable and non-rotatable parts
130	..Differential or independent adjustment	161	..Axially movable impeller
131	ARTICULATED, RESILIENTLY MOUNTED OR SELF-SHIFTING IMPELLER OR WORKING MEMBER	162	..Having motor
132 R	..Sectional, staged or nonrigid working member	163	..Adjustment rod through entire impeller shaft
132 A	..Flexible sheet or plate	164	..Reciprocating sleeve or collar on or rod in impeller shaft
132 B	..Windmills	165	...Reciprocated by coaxial screw
133	..Axially displaceable rotary carrier (e.g., hub, etc.)	166	...Rack-pinion connection to working member
134 R	..Nonmetallic resilient mounting	167	...Pin-slot or cam-slot connection to working member
134 A	..Aircraft rotors	168 R	...Link connection to working member
135	..Resilient bias or mount	168 A	...Turbo-machine
136	..Rotary working member pivotable solely about radial axis	169 R	HAVING CLUTCH OR BRAKE MEANS
137	...Convolute spring coaxial with impeller shaft	169 A	.Engine cooling fans
138	..With manual control means	170 R	SPECIFIC DRIVE OR TRANSMISSION MEANS
139	..Including weight bias means	171	.Impeller driven by fluid motor
140	..Including movement limit stop or damping means	172	.Alternating rotation
141	..Plural articulation	173	.Manual powered means
142	WORKING MEMBER FOLDABLE, PIVOTABLE OR COLLAPSIBLE TO NON-USE POSITION	170 HM	.Hand mixers
143	..Member movement in rotation plane		
144	WITH WEIGHT-BALANCING MEANS		

174	HAVING LUBRICATING, SEALING, PACKING OR SPECIFIC BEARING MEANS BETWEEN IMPELLER OR SHAFT AND STATIC PART	197 R	CUPPED REACTION SURFACE NORMAL TO ROTATION PLANE
175	DIVERSE IMPELLERS OR WORKING MEMBERS	197 A	.Air and water motors (natural fluid current)
176	SPIRAL BLADE OR FLOW PASSAGE (360 DEGREE)	197 B	.Pelton wheels (impulse wheels)
177	.Flow confining casing, shroud or passage	197 C	.Torque converters
178	PERIMETRIC BLADING EXTENDING AXIALLY BETWEEN ANNULAR MEMBERS (E.G., SQUIRREL CAGE TYPE, ETC.)	198 R	MULTIPLE AXIALLY SPACED WORKING MEMBERS
179	ROTOR HAVING FLOW CONFINING OR DEFLECTING WEB, SHROUD OR CONTINUOUS PASSAGE	199	.Opposed axial flow
180	.Blades projecting axially from concavo-convex annular web	200 R	.Circumferentially offset
181	.Apertured or foraminous web or shroud	200 A	..Turbo machine
182	.Radially extending web or end plate	201 R	.Differing radii
183	..Circumferentially or radially angulated or discontinuous blades or sections (e.g., stepped, etc.)	201 A	..Non-turbo machine
184	..Spaced intermediate ends of opposed axial flow impeller	198 A	.Turbo machine
185	..Circumferentially and radially continuous web or end plate	202	PROJECTING BLADE AXIS OFFSET FROM ROTATION AXIS
186 R	...Having opposed annular surface between adjacent blades	203	UNSYMMETRICAL IMPELLER OR DISSIMILAR WORKING MEMBERS
187	...Angularly spaced, axially elongated blades (i.e., squirrel cage type)	204 R	SPECIFIC WORKING MEMBER MOUNT
186 A	...Adjustable blade or part	205	.Adjustable
188	...Conical web	206	..Spring biased detent
189	.Axially extending shroud ring or casing	207	..Blade releasably clamped
190	..Vibration inhibiting or expansion-contraction structure	208	...Split impeller hub
191	..Segmental shroud	209	..Thimble or sleeve fixed on impeller blade
192	..Having radial flange	210 R	.Distally supported on radial arm
193 R	..Spaced inwardly of impeller periphery	211	..Axially extending blade
193 A	..Root platforms	210 A	..Turbo machine
194	LASHING BETWEEN WORKING MEMBERS OR EXTERNAL BRACING	212 R	.Interlocking blades
195	.Peripheral	212 A	..Turbo machine
196 R	.Connecting adjacent work surfaces	213 R	.Welded, cemented or fused
196 A	..Non-turbo machine (windmills)	213 A	..Non-turbo machine
		214 R	.Blade held between separable surfaces
		214 A	..Turbo machine
		215	.Blade received by continuous circumferential channel
		216	..Radially spaced ribs or grooves
		217	..Divided blade root
		218	..Having circumferentially extending binder
		219 R	.Blade received in well or slot
		220 R	..Having blade locking means
		221	...Resilient or deformable
		220 A	...Non-turbo machine
		219 A	..Non-turbo machine
		222	.Blade straddles carrier
		204 A	.Turbo machine
		223 R	SPECIFIC BLADE STRUCTURE (E.G., SHAPE, MATERIAL, ETC.)
		224	.Having wear liner, sheathing or insert
		225	.Having spanwise compression means

226	.Formed with main spar	
227 R	.Openwork (e.g., lattice, looped, etc.)	<u>FOREIGN ART COLLECTIONS</u>
227 A	..Propeller and non-mixers	FOR 000 CLASS-RELATED FOREIGN DOCUMENTS
228	.Tined or irregular periphery	
229 R	.Laminated, embedded member or encased material	
230	..Wire, fiber, strand or fabric	<u>DIGESTS</u>
229 A	..Turbo machine	
231 R	.Apertured or permeable	DIG 1 STALKER
231 A	..Mixers or agitators	DIG 2 FORMULAS OF CURVES, ETC.
231 B	..Slotted blade	DIG 3 SHEET METAL
232	.Hollow	DIG 4 FLUID CURRENT MOTOR AND GENERATOR
233	..Having brace means bridging cavity	DIG 5 VARIABLE CAMBER OR CHORD LENGTH
234	.Integrally shaped or blended into hub	DIG 6 SUPPORTS FOR NATURAL FLUID CURRENT MOTORS
235	.Irregular, flanged or channel forming blade surface	DIG 7 INLET AND OUTLET
236 R	..Ribbed or grooved	DIG 8 STACK OR CHIMNEY WITH FLUID MOTOR
236 A	...Concentric or circular ribs	DIG 9 SAVONIUS
237	..Angular or offset	
238	.Cantilever blade	
239	.Blade cuff or shank construction	
240	.Flexible	
241 R	.Coating, specific composition or characteristic	
241 A	..Plastic or synthetic material	
241 B	..Ceramic material	
242	.Reverse curve surface	
243	.Concave surface	
223 A	.Turbo machine	
223 B	.Radial flow devices	
244 R	SUPPORT MOUNTING, CARRIER OR FAIRING STRUCTURE	
245 R	.Spinner or fairwater cap	
245 A	..Water or marine propellers	
246	.Selectively adjustable impeller mount	
244 A	.Turbo machine	
244 B	.Water or marine propellers	
247 R	PROTECTIVE SCREEN OR GUARD	
247 A	.Water or marine propellers	
248	MISCELLANEOUS (E.G., BLADE ROOT OR ROOT BLOCK, ETC.)	

CROSS-REFERENCE ART COLLECTIONS

500	VIBRATION DAMPING FEATURES
501	FLY BRUSH TYPE IMPELLER

