

INDEX OF PATENTS

Part II, Index to Subjects of Invention

ISSUED FROM

THE UNITED STATES
PATENT OFFICE

1970



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NOTES CONCERNING USE OF THE CLASSIFICATION OF PATENTS LISTING AND RELATED REFERENCE PUBLICATIONS

In the index which follows, the subject of invention of each patent issued during 1970 is identified by the class and subclass numbers of the official U.S. Patent Office classification in which the patent was classified at the time of issue. The Index is arranged in numerical order by class numbers, which appear as bold-face entries centered in the columns, and thereunder, in similar order, by subclasses which appear in the numerals in the left hand half of the columns. There are 64,708 patent and reissue patent numbers listed in the Index. A similar listing appears for design patents, plant patents and defensive publications which are separately shown under their respective classifications.

In order to find patent numbers in the Index pertaining to a particular subject, the user must first know the class and subclass in which the Patent Office assigns inventions relating to that subject. In some instances a number of classes and subclasses may be pertinent. The process of finding this information requires the coordinated use of several other Patent Office publications usually found in collections which contain the *Index of Patents*. Each of them is considered below.

Manual of Classification: This publication is the source of the needed information as it contains the entire classification schedule showing the number and descriptive title of every class and subclass. It is, also, the key aid in the finding system as it provides a number of features aimed at assisting the user to identify his search problem and to use its content in locating the specific classification representing the subject matter of concern to him. These features include (1) listings of the class titles in alphabetical order; (2) description of the plan of the Manual; (3) discussion of the basis of classification, the scope of the classes, and the schematic arrangement of subclasses; (4) instructions on reading subclass titles and definitions; and, (5) suggestions on procedure for finding pertinent classification.

Index to Classification: This publication contains about 300 pages of subject matter headings showing for each heading the class and subclass to which it pertains. They are arranged in alphabetical order in main heading and subheading categories, the latter being indented under the main headings and sometimes further subdivided. The headings include key words and significant phrases taken from the class and subclass titles, but they are neither limited to this source nor include all of them. Many technical as well as common terms of reference to objects, arts, processes, compositions of matter, etc., not found in the classification schedule are included in the index headings so as to offer a practical and convenient aid to finding patented subject matter.

Classification Definitions: This is a series of numbered publications which supplements the *Manual of Classification* by giving detailed definitions and illustration of the kind of subject matter that can be found in each class and subclass, describing the lines of distinction among them, and containing references to other classes and subclasses having related subject matter. There is a separate Definition for each major classification, which is identified in the heading to each class in the Manual.

Use of Reference Publications

As a first step, the searcher should look in the *Index to Classification* for the term which to him best represents the subject matter of interest. If a match is not

found, he should look for terms of approximately the same meaning, for terms of either broader or narrower scope, or for terms which represent a different approach to the subject (e.g., the essential *function* or the *effect* of use or application of the art or object of concern). This requires that the user interact with the content of the Index, exercising judgment and imagination to consider alternatives or to find in the listed items some aspect of pertinency to his subject.

On finding the identifying numbers of possibly pertinent classes and subclasses in the Index, the user should refer to the *Manual of Classification* and ascertain from among the existing choices, the precise classification identity of his subject interest. Having thus determined the appropriate class and subclass, the searcher is ready to turn to the "Classification of Patents" listings to look for the corresponding numbers in its columns. The patent numbers found listed under the relevant classification provide the information needed to gain access to the patents themselves or to the extracts from them which are printed in the Official Gazette. In the latter connection, the user will find on the last page of this section a table entitled "List of Patent, Design, Plant Patent, Reissue and Defensive Publication Numbers Appearing in the Official Gazette for 1970" which will guide him to the issue of the Official Gazette containing any specific patent number. He will find listed elsewhere in this section the 18 libraries which receive all U.S. patents and maintain them for public use in numerical order and the more than 400 depository libraries which receive the Official Gazette.

When the class and subclass which the searcher has determined to represent his interest does not appear in the "Classification of Patents" listing, he may assume that no patents were issued in that classification during the year. The possibility of this being the case is indicated by the fact that patents issued in less than one-third of the total number of subclasses in the classification.

If, after following the above-described procedure in using the *Index to Classification*, the searcher fails to find a pertinent classification, he should turn to the listings which appear at the front of the *Manual of Classification*. He should consider, particularly, the listing of groups of related subjects and the listing of classes arranged in alphabetical order which, in different ways, lay the entire framework of the classification in broad focus before him. He should scan the titles which appear on these sheets and note those which would appear to contain the subject matter sought.

Whichever of these approaches is taken, the searcher is guided to the classification schedules. He should inspect them carefully, proceeding from one major coordinate subclass to another until finding one which seems most nearly pertinent. The minor subclasses therein should then be scanned to find the title which indicates inclusion of the subject matter in question. Where doubt exists as to choice among several subclasses, the user should consult the Classification Definition containing the definitions of the class under study.

CLASS TITLES ARRANGED IN CLASS NUMBER ORDER

Class	Title	Class	Title
	Plants	53	Package Making
1	No Class	54	Harness
2	Apparel	55	Gas Separation
3	Artificial Body Members	56	Harvesters
4	Baths, Closets, Sinks and Spittoons	57	Textiles, Spinning, Twisting and Twining
5	Beds	58	Horology
6	Bee Culture	59	Chain, Staple and Horseshoe Making
7	Compound Tools	60	Power Plants
8	Bleaching and Dyeing; Fluid Treatment and Chemical Modification of Textiles and Fibers	61	Hydraulic and Earth Engineering
9	Boats, Buoys and Aquatic Devices	62	Refrigeration
10	Bolt, Nail, Nut, Rivet and Screw Making	63	Jewelry
11	Books, Making	64	Machine Elements, Shafting and Flexible Shaft Couplings
12	Boot and Shoe Making	65	Glass Manufacturing
13	Electric Furnaces	66	Textiles, Knitting
14	Bridges	67	No Class
15	Brushing, Scrubbing and General Cleaning	68	Textiles, Fluid Treating Apparatus
16	Miscellaneous Hardware	69	Leather Manufactures
17	Butchering	70	Locks
18	Plastics	71	Chemistry, Fertilizers
19	Textiles, Fiber Preparation	72	Metal Deforming
20	No Class	73	Measuring and Testing
21	Preserving, Disinfecting and Sterilizing	74	Machine Elements and Mechanisms
22	No Class	75	Metallurgy
23	Chemistry	76	Metal Tools and Implements, Making
24	Buckles, Buttons, Clasps, Etc.	77	Boring and Drilling
25	Plastic Block and Earthenware Apparatus	78	No Class
26	Textiles, Cloth Finishing	79	Button Making
27	Undertaking	80	No Class
28	Textiles, Manufacturing	81	Tools
29	Metal Working	82	Turning
30	Cutlery	83	Cutting
31	Dairy	84	Music
32	Dentistry	85	Driven, Headed and Screw-Threaded Fastenings
33	Geometrical Instruments	86	Ammunition and Explosive-Charge Making
34	Drying and Gas or Vapor Contact With Solids	87	Textiles, Braiding, Netting and Lace Making
35	Education	88	Optics
36	Boots, Shoes and Leggings	89	Ordnance
37	Excavating	90	Gear Cutting, Milling and Planing
38	Textiles, Ironing or Smoothing	91	Motors, Expansible Chamber Type
39	No Class	92	Expansible Chamber Devices
40	Card, Picture and Sign Exhibiting	93	Paper Manufactures
41	No Class	94	Roads and Pavements
42	Firearms	95	Photography
43	Fishing, Trapping and Vermin Destroying	96	Photographic Chemistry, Processes and Materials
44	Fuel and Igniting Devices	97	No Class
45	No Class	98	Ventilation
46	Amusement Devices, Toys	99	Foods and Beverages
47	Plant Husbandry	100	Presses
48	Gas, Heating and Illuminating	101	Printing
49	Movable or Removable Closures	102	Ammunition and Explosive Devices
50	No Class	103	No Class
51	Abrading	104	Railways
52	Static Structures, e.g., Buildings	105	Railway Rolling Stock

Class	Title	Class	Title
106	Compositions, Coating or Plastic	163	Needle and Pin Making
107	Bread, Pastry and Confection Making	164	Metal Founding
108	Horizontally Supported Planar Surfaces	165	Heat Exchange
109	Safes, Bank Protection and Related Devices	166	Wells
110	Furnaces	167	No Class
111	Planting	168	Farriery
112	Sewing	169	Fire-Extinguishers
113	Sheet-Metal Ware, Making	170	No Class
114	Ships	171	Unearthing Plants or Buried Objects
115	Marine Propulsion	172	Earth Working
116	Signals and Indicators	173	Tool Driving or Impacting
117	Coating: Processes and Miscellaneous Products	174	Electricity, Conductors and Insulators
118	Coating Apparatus	175	Boring or Penetrating the Earth
119	Animal Husbandry	176	Nuclear Reactions and Systems
120	No Class	177	Weighing Scales
121	No Class	178	Telegraphy
122	Liquid Heaters and Vaporizers	179	Telephony
123	Internal-Combustion Engines	180	Motor Vehicles
124	Mechanical Guns and Projectors	181	Acoustics
125	Stone Working	182	Fire Escapes, Ladders, Scaffolds
126	Stoves and Furnaces	183	No Class
127	Sugar, Starch and Carbohydrates	184	Lubrication
128	Surgery	185	Motors, Spring, Weight and Animal Powered
129	No Class	186	Store Service
130	Threshing	187	Elevators
131	Tobacco	188	Brakes
132	Toilet	189	No Class
133	Coin Handling	190	Baggage
134	Cleaning and Liquid Contact With Solids	191	Electricity, Transmission to Vehicles
135	Tents, Canopies, Umbrellas and Canes	192	Clutches and Power-Stop Control
136	Batteries	193	Conveyers, Chutes, Skids, Guides and Ways
137	Fluid Handling	194	Check-Controlled Apparatus
138	Pipes and Tubular Conduits	195	Chemistry, Fermentation
139	Textiles, Weaving	196	Mineral Oils: Apparatus
140	Wireworking	197	Typewriting Machines
141	Fluent Material Handling, With Receiver or Receiver Coacting Means	198	Conveyers, Power-Driven
142	Wood Turning	199	Type Casting
143	Wood Sawing	200	Electricity, Circuit Makers and Breakers
144	Woodworking	201	Distillation: Processes, Thermolytic
145	Woodworking Tools	202	Distillation: Apparatus
146	Vegetable and Meat Cutters and Comminutors	203	Distillation: Processes, Separatory
147	Coopering	204	Chemistry, Electrical and Wave Energy
148	Metal Treatment	205	No Class
149	Explosive and Thermic Compositions or Charges	206	Special Receptacles and Packages
150	Cloth, Leather and Rubber Receptacles	207	No Class
151	Nut and Bolt Locks	208	Mineral Oils: Processes and Products
152	Resilient Tires and Wheels	209	Classifying, Separating and Assorting Solids
153	No Class	210	Liquid Purification or Separation
154	No Class	211	Supports, Racks
155	No Class	212	Traversing Hoists
156	Adhesive Bonding and Miscellaneous Chemical Manufacture	213	Railway Draft Appliances
157	Wheelwright Machines	214	Material or Article Handling
158	No Class	215	Bottles and Jars
159	Concentrating Evaporators	216	No Class
160	Closures, Partitions and Panels, Flexible and Portable	217	Wooden Receptacles
161	Stock Material and Miscellaneous Articles	218	No Class
162	Paper Making and Fiber Liberation	219	Electric Heating
		220	Metallic Receptacles
		221	Article Dispensing

Class	Title	Class	Title
222	Dispensing	281	Books, Strips and Leaves
223	Apparel Apparatus	282	Manifolding
224	Package and Article Carriers	283	Printed Matter
225	Severing by Tearing or Breaking	284	No Class
226	Advancing Material of Indeterminate-Length	285	Pipe Joints or Couplings
227	Elongated-Member-Driving Apparatus	286	No Class
228	Metal Fusion-Bonding Apparatus	287	Rod Joints or Couplings
229	Paper Receptacles	288	No Class
230	No Class	289	Knots and Knot Tying
231	Whips and Whip Apparatus	290	Prime-Mover Dynamo Plants
232	Deposit and Collection Receptacles	291	Track Sanders
233	Centrifugal-Bowl Separators	292	Closure Fasteners
234	Selective Cutting (e.g., Punching)	293	Vehicle Fenders
235	Registers	294	Handling, Hand and Hoist-Line Implements
236	Automatic Temperature and Humidity Regulation	295	Railway Wheels and Axles
237	Heating Systems	296	Land Vehicles, Bodies and Tops
238	Railways, Surface Track	297	Chairs and Seats
239	Fluid Sprinkling, Spraying and Diffusing	298	Land Vehicles, Dumping
240	Illumination	299	Mining or In Situ Disintegration of Hard Materials
241	Solid Material Comminution or Disintegration	300	Brush, Broom and Mop Making
242	Winding and Reeling	301	Land Vehicles, Wheels and Axles
243	Pneumatic Dispatch	302	Conveyers, Fluid Current
244	Aeronautics	303	Fluid-Pressure Brake and Analogous Systems
245	Wire Fabrics and Structure	304	No Class
246	Railway Switches and Signals	305	Wheel Substitutes for Land Vehicles
247	No Class	306	Tool-Handle Fastenings
248	Supports	307	Electrical Transmission or Interconnection Systems
249	Static Molds	308	Machine Elements, Bearings and Guides
250	Radiant Energy	309	No Class
251	Valves and Valve Actuation	310	Electrical Generator or Motor Structure
252	Compositions	311	No Class
253	No Class	312	Supports, Cabinet Structures
254	Pushing and Pulling Implements	313	Electric Lamp and Discharge Devices
255	No Class	314	Electric Lamp and Discharge Devices, Consumable Electrodes
256	Fences	315	Electric Lamp and Discharge Devices, Systems
257	No Class	316	Electric Lamp and Discharge Devices, Manufacture and Repair
258	Railway Mail Delivery	317	Electricity
259	Agitating	318	Electricity, Motive Power Systems
260	Chemistry, Carbon Compounds	319	No Class
261	Gas and Liquid Contact Apparatus	320	Electricity, Battery and Condenser Charging and Discharging
262	No Class	321	Electricity, Conversion Systems
263	Heating	322	Electricity, Single Generator Systems
264	Plastic and Non-Metallic Article Shaping or Treating: Processes	323	Electricity, Voltage Magnitude and Phase Control Systems
265	No Class	324	Electricity, Measuring and Testing
266	Metallurgical Apparatus	325	Modulated Carrier Wave Communication Systems
267	Spring Devices	326	No Class
268	No Class	327	No Class
269	Work Holders	328	Miscellaneous Electron Space Discharge Device Systems
270	Sheet-Material Associating or Folding	329	Demodulators and Detectors
271	Sheet Feeding or Delivering	330	Amplifiers
272	Amusement and Exercising Devices	331	Oscillators
273	Amusement Devices, Games	332	Modulators
274	Sound Recording and Reproducing	333	Wave Transmission Lines and Networks
275	No Class		
276	Type Setting		
277	Joint Packing		
278	Land Vehicles, Animal Draft Appliances		
279	Chucks or Sockets		
280	Land Vehicles		

Class	Title	Class	Title
334	Tuners	351	Optics, Eye Examining, Vision Testing and Correcting
335	Electricity, Magnetically Operated Switches, Magnets and Electromagnets	352	Optics, Motion Pictures
336	Inductor Devices	353	Optics, Image Projectors
337	Electricity, Electrothermally or Thermally Actuated Switches	355	Photocopying
338	Electrical Resistors	356	Optics, Measuring and Testing
339	Electrical Connectors	401	Coating Implements with Material Supply
340	Communications, Electrical	402	Binder Device Releasably Engaging Aperture or Notch of Sheet **
341	No Class	415	Rotary Kinetic Fluid Motors or Pumps *
342	No Class	416	Fluid Reaction Surfaces (i.e., Impellers) *
343	Communications, Radio Wave	417	Pumps **
344	No Class	418	Rotary Expandable Chamber Devices **
345	No Class	424	Drug, Bio-Affecting and Body Treating Compositions
346	Recorders	431	Combustion
347	No Class		Designs
348	No Class		Industrial Arts
349	No Class		Household, Personal and Fine Arts
350	Optics, Systems and Elements		

CLASS TITLES ARRANGED IN ALPHABETICAL ORDER

Class	Title	Class	Title
51	Abrading	215	Bottles and Jars
181	Acoustics	188	Brakes
156	Adhesive Bonding and Miscellaneous Chemical Manufacture	107	Bread, Pastry and Confection Making
226	Advancing Material of Indeterminate-Length	14	Bridges
244	Aeronautics	300	Brush, Broom and Mop Making
259	Agitating	15	Brushing, Scrubbing and General Cleaning
86	Ammunition and Explosive-Charge Making	24	Buckles, Buttons, Clasps, Etc.
102	Ammunition and Explosive Devices	17	Butchering
330	Amplifiers	79	Button Making
272	Amusement and Exercising Devices	40	Card, Picture and Sign Exhibiting
273	Amusement Devices, Games	233	Centrifugal-Bowl Separators
46	Amusement Devices, Toys	59	Chain, Staple and Horseshoe Making
119	Animal Husbandry	297	Chairs and Seats
2	Apparel	194	Check-Controlled Apparatus
223	Apparel Apparatus	23	Chemistry
221	Article Dispensing	260	Chemistry, Carbon Compounds
3	Artificial Body Members	204	Chemistry, Electrical and Wave Energy
236	Automatic Temperature and Humidity Regulation	195	Chemistry, Fermentation
190	Baggage	71	Chemistry, Fertilizers
4	Baths, Closets, Sinks and Spitoons	279	Chucks or Sockets
136	Batteries	209	Classifying, Separating and Assorting Solids
5	Beds	134	Cleaning and Liquid Contact With Solids
6	Bee Culture	292	Closure Fasteners
402	Binder Device Releasably Engaging Aperture or Notch of Sheet **	160	Closures, Partitions and Panels, Flexible and Portable
8	Bleaching and Dyeing; Fluid Treatment and Chemical Modification of Textiles and Fibers	150	Cloth, Leather and Rubber Receptacles
9	Boats, Buoys and Aquatic Devices	192	Clutches and Power-Stop Control
10	Bolt, Nail, Nut, Rivet and Screw Making	118	Coating Apparatus
11	Books, Making	401	Coating Implements with Material Supply
281	Books, Strips and Leaves	117	Coating: Processes and Miscellaneous Products
12	Boot and Shoe Making	133	Coin Handling
36	Boots, Shoes and Leggings	431	Combustion
77	Boring and Drilling	340	Communications, Electrical
175	Boring or Penetrating the Earth	343	Communications, Radio Wave
		252	Compositions
		106	Compositions, Coating or Plastic

*Class established during 1969

**Class established during 1970

Class	Title	Class	Title
7	Compound Tools	43	Fishing, Trapping and Vermin Destroying
159	Concentrating Evaporators	141	Fluent Material Handling, With Receiver or Receiver Coacting Means
193	Conveyers, Chutes, Skids, Guides and Ways	137	Fluid Handling
302	Conveyers, Fluid Current	303	Fluid-Pressure Brake and Analogous Systems
198	Conveyers, Power-Driven	416	Fluid Reaction Surfaces (i.e., Impellers) *
147	Coopering	239	Fluid Sprinkling, Spraying and Diffusing
30	Cutlery	99	Foods and Beverages
83	Cutting	44	Fuel and Igniting Devices
31	Dairy	110	Furnaces
329	Demodulators and Detectors	261	Gas and Liquid Contact Apparatus
32	Dentistry	48	Gas, Heating and Illuminating
232	Deposit and Collection Receptacles	55	Gas Separation
222	Dispensing	230	No Class
202	Distillation: Apparatus	90	Gear Cutting, Milling and Planing
203	Distillation: Processes, Separatory	33	Geometrical Instruments
201	Distillation: Processes, Thermolytic	65	Glass Manufacturing
85	Driven, Headed and Screw-Threaded Fastenings	294	Handling, Hand and Hoist-Line Implements
424	Drug, Bio-Affecting and Body Treating Compositions	54	Harness
34	Drying and Gas or Vapor Contact With Solids	56	Harvesters
172	Earth Working	165	Heat Exchange
35	Education	263	Heating
13	Electric Furnaces	237	Heating Systems
219	Electric Heating	108	Horizontally Supported Planar Surfaces
313	Electric Lamp and Discharge Devices	58	Horology
314	Electric Lamp and Discharge Devices, Consumable Electrodes	61	Hydraulic and Earth Engineering
316	Electric Lamp and Discharge Devices, Manufacture and Repair	240	Illumination
315	Electric Lamp and Discharge Devices, Systems	336	Inductor Devices
339	Electrical Connectors	123	Internal-Combustion Engines
310	Electrical Generator or Motor Structure	63	Jewelry
338	Electrical Resistors	277	Joint Packing
307	Electrical Transmission or Interconnection Systems	289	Knots and Knot Tying
317	Electricity	280	Land Vehicles
320	Electricity, Battery and Condenser Charging and Discharging	278	Land Vehicles, Animal Draft Appliances
200	Electricity, Circuit Makers and Breakers	296	Land Vehicles, Bodies and Tops
174	Electricity, Conductors and Insulators	298	Land Vehicles, Dumping
321	Electricity, Conversion Systems	301	Land Vehicles, Wheels and Axles
337	Electricity, Electrothermally or Thermally Actuated Switches	69	Leather Manufacturers
335	Electricity, Magnetically Operated Switches, Magnets and Electromagnets	122	Liquid Heaters and Vaporizers
324	Electricity, Measuring and Testing	210	Liquid Purification or Separation
318	Electricity, Motive Power Systems	70	Locks
322	Electricity, Single Generator Systems	184	Lubrication
191	Electricity, Transmission to Vehicles	74	Machine Elements and Mechanisms
323	Electricity, Voltage Magnitude and Phase Control Systems	308	Machine Elements, Bearings and Guides
187	Elevators	64	Machine Elements, Shafting and Flexible Shaft Couplings
227	Elongated-Member-Driving Apparatus	282	Manifolding
37	Excavating	115	Marine Propulsion
92	Expansible Chamber Devices	214	Material or Article Handling
149	Explosive and Thermic Compositions or Charges	73	Measuring and Testing
168	Farriery	124	Mechanical Guns and Projectors
256	Fences	72	Metal Deforming
182	Fire Escapes, Ladders, Scaffolds	164	Metal Founding
169	Fire-Extinguishers	228	Metal Fusion-Bonding Apparatus
42	Firearms	76	Metal Tools and Implements, Making
		148	Metal Treatment
		29	Metal Working
		220	Metallic Receptacles
		266	Metallurgical Apparatus
		75	Metallurgy

*Class established during 1969

Class	Title	Class	Title
196	Mineral Oils: Apparatus	246	Railway Switches and Signals
208	Mineral Oils: Processes and Products	295	Railway Wheels and Axles
299	Mining or In Situ Disintegration of Hard Materials	104	Railways
328	Miscellaneous Electron Space Discharge Device Systems	238	Railways, Surface Track
16	Miscellaneous Hardware	346	Recorders
325	Modulated Carrier Wave Communication Systems	62	Refrigeration
332	Modulators	235	Registers
180	Motor Vehicles	152	Resilient Tires and Wheels
91	Motors, Expandible Chamber Type	94	Roads and Pavements
253	No Class	287	Rod Joints or Couplings
170	No Class	418	Rotary Expandible Chamber Devices
185	Motors, Spring, Weight and Animal Powered	415	Rotary Kinetic Fluid Motors or Pumps *
49	Movable or Removable Closures	109	Safes, Bank Protection and Related Devices
84	Music	234	Selective Cutting (e.g., Punching)
163	Needle and Pin Making	225	Severing by Tearing or Breaking
176	Nuclear Reactions and Systems	112	Sewing
151	Nut and Bolt Locks	271	Sheet Feeding or Delivering
88	Optics	270	Sheet-Material Associating or Folding
351	Optics, Eye Examining, Vision Testing and Correcting	113	Sheet-Metal Ware, Making
353	Optics, Image Projectors	114	Ships
356	Optics, Measuring and Testing	116	Signals and Indicators
352	Optics, Motion Pictures	241	Solid Material Comminution or Disintegration
350	Optics, Systems and Elements	274	Sound Recording and Reproducing
89	Ordnance	206	Special Receptacles and Packages
331	Oscillators	267	Spring Devices
224	Package and Article Carriers	249	Static Molds
53	Package Making	52	Static Structures, e.g., Buildings
129	No Class	161	Stock Material and Miscellaneous Articles
162	Paper Making and Fiber Liberation	125	Stone Working
93	Paper Manufactures	186	Store Service
229	Paper Receptacles	126	Stoves and Furnaces
355	Photocopying	127	Sugar, Starch and Carbohydrates
96	Photographic Chemistry, Processes and Materials	248	Supports
95	Photography	312	Supports, Cabinet Structures
285	Pipe Joints or Couplings	211	Supports, Racks
138	Pipes and Tubular Conduits	128	Surgery
47	Plant Husbandry	178	Telegraphy
111	Planting	179	Telephony
264	Plastic and Non-Metallic Article Shaping or Treating: Processes	135	Tents, Canopies, Umbrellas and Canes
25	Plastic Block and Earthenware Apparatus	87	Textiles, Braiding, Netting and Lace Making
18	Plastics	26	Textiles, Cloth Finishing
243	Pneumatic Dispatch	19	Textiles, Fiber Preparation
60	Power Plants	68	Textiles, Fluid Treating Apparatus
21	Preserving, Disinfecting and Sterilizing	38	Textiles, Ironing or Smoothing
100	Presses	66	Textiles, Knitting
290	Prime-Mover Dynamo Plants	28	Textiles, Manufacturing
283	Printed Matter	57	Textiles, Spinning, Twisting and Twining
101	Printing	139	Textiles, Weaving
417	Pumps	130	Threshing
254	Pushing and Pulling Implements	131	Tobacco
250	Radiant Energy	132	Toilet
213	Railway Draft Appliances	173	Tool Driving or Impacting
258	Railway Mail Delivery	306	Tool-Handle Fastenings
105	Railway Rolling Stock	81	Tools
		291	Track Sanders
		212	Traversing Hoists
		334	Tuners
		82	Turning
		199	Type Casting

*Class established during 1969

Class	Title
276	Type Setting
197	Typewriting Machines
27	Undertaking
171	Unearthing Plants or Buried Objects
251	Valves and Valve Actuation
146	Vegetable and Meat Cutters and Comminutors
293	Vehicle Fenders
98	Ventilation
333	Wave Transmission Lines and Networks
177	Weighing Scales
166	Wells
305	Wheel Substitutes for Land Vehicles
157	Wheelwright Machines
231	Whips and Whip Apparatus
242	Winding and Reeling

Class	Title
245	Wire Fabrics and Structure
140	Wireworking
143	Wood Sawing
142	Wood Turning
217	Wooden Receptacles
144	Woodworking
145	Woodworking Tools
269	Work Holders

Classes Established During 1970

417	Pumps (3/70)
418	Rotary Expansible Chamber Devices (3/70)

Classes Abolished During 1970

103	Pumps (3/70)
230	Gas Pumps and Fans (3/70)

1970

CLASSIFICATION OF PATENTS

ORIGINAL CLASSIFICATION

Class 2	102 : 3,530,508	351,4790	40 : 3,487,476	3505,693	3541,618	3546,724
2 : 3,496,572	109 : 3,488,776	311 : 3,487,474	41 : 3,501,780	180 : 3,541,616	3550,165	3547,481
3,497,872	113 : 3,508,279	3503,078	3516,094	185 : 3,512,187	3547,879	3,497,883
3,500,472	114 : 3,490,072	321 : 3,501,774	42 : 3,505,688	3528,111	111 : 3,543,310	355 : 3,526,912
3,504,377	2521,301	3501,775	3510,884	3528,112	113 : 3,499,175	
3,509,579	128 : 3,520,001		48 : 3,546,714	3545,013	118 : 3,543,311	
3,514,784	124 : 3,533,108	Class 3	67 : 3,518,703	3545,016	122 : 3,550,166	Class 6
3,528,106	130 : 3,540,061	1 : 3,488,779	3538,519	187 : 3,548,422	128 : 3,526,909	6 : 3,526,913
3,550,159	143 : 3,504,378	3,491,376	3546,715	190 : 3,509,586	131 : 3,513,490	12 : 3,523,314
3,528,106	146 : 3,487,471	3,491,377	76 : 3,504,381	191 : 3,499,977	136 : 3,550,167	3,535,721
3,492,672	149 : 3,538,510	3,503,079	77 : 3,499,173	3510,885	137 : 3,550,168	
3,493,972	150 : 3,506,978	3,505,686	3520,008	196 : 3,504,383	141 : 3,540,066	Class 7
3,505,677	3,526,004	3,506,982	100 : 3,497,878	203 : 3,496,280	147 : 3,517,397	1 : 3,504,388
3,514,785	3,538,511	3,508,281	3505,689	206 : 3,497,878	176 : 3,510,887	3,531,908
3,516,091	153 : 3,513,483	3,509,582	3,523,306	211 : 3,496,281	186 : 3,526,910	5.3 : 3,525,107
3,523,301	3,517,395	3,510,883	3,524,204	208 : 3,497,878	191 : 3,491,384	14.1 : 3,522,617
3,534,406	157 : 3,500,476	3,512,183	3,541,614	213 : 3,496,282	200 : 3,506,986	3,534,523
3,534,407	159 : 3,501,773	3,512,184	102 : 3,500,480	207 : 3,506,987	201 : 3,537,114	3,546,726
3,534,408	3,508,280	3,513,484	110 : 3,512,185	215 : 3,548,424	208 : 3,506,987	25 : 3,495,284
3,537,107	161 : 3,490,074	3,513,485	3,533,109	217 : 3,491,382	209 : 3,501,786	709.3 : 3,501,981
5 : 3,514,786	3,496,578	3,513,486	3,537,109	218 : 3,496,282	247 : 3,537,115	
3 : 3,496,272	3,500,477	3,514,791	112 : 3,503,080	222 : 3,538,520	299 : 3,548,425	Class 8
3,497,873	3,504,379	3,518,702	3,513,488	228 : 3,504,384	310 : 3,497,881	2 : 3,518,038
3,497,874	3,548,413	3,521,302	3,535,714	317 : 3,535,718	317 : 3,535,719	3 : 3,496,926
3,500,473	168 : 3,541,609	3,524,202	3,546,716	319 : 3,530,515	320 : 3,521,308	3,545,909
3,500,474	169 : 3,548,414	3,526,006	113 : 3,514,793	321 : 3,518,706	321 : 3,518,706	4 : 3,496,927
3,500,475	171.3 : 3,491,374	3,528,109	3,546,717	322 : 3,516,097	322 : 3,516,097	3,529,920
3,501,772	3,548,415	3,534,409	116 : 3,506,690	325 : 3,506,988	325 : 3,506,988	3,532,454
3,510,879	172 : 3,506,979	3,534,410	116 : 3,493,974	327 : 3,491,385	327 : 3,491,385	6 : 3,494,714
3,513,481	3,512,180	3,534,411	116 : 3,493,974	328 : 3,512,191	328 : 3,512,191	7 : 3,512,914
3,513,482	3,518,701	3,538,514	131 : 3,496,578	329 : 3,512,191	329 : 3,512,191	8 : 3,494,715
3,514,787	174 : 3,525,103	3,541,612	3,542,613	330 : 3,512,191	330 : 3,512,191	10.1 : 3,488,138
3,516,092	3,529,308	3,545,008	3,546,717	331 : 3,506,989	331 : 3,506,989	2 : 3,506,389
3,529,306	175 : 3,510,881	3,546,710	134 : 3,496,277	332 : 3,506,989	332 : 3,506,989	3,516,778
3,538,508	179 : 3,546,709	3,546,711	141 : 3,501,781	333 : 3,548,426	333 : 3,548,426	12 : 3,549,304
3,548,409	180 : 3,496,574	3,548,417	142 : 3,496,278	334 : 3,501,787	334 : 3,501,787	17 : 3,504,996
3,548,410	3,548,416	3,548,418	145 : 3,493,975	335 : 3,512,191	335 : 3,512,191	3,512,916
4 : 3,506,678	183 : 3,487,472	3,550,162	149 : 3,500,481	336 : 3,512,191	336 : 3,512,191	3,527,556
5 : 3,535,706	185 : 3,506,682	3,551,181	150 : 3,488,781	337 : 3,510,888	337 : 3,510,888	3,531,237
6 : 3,487,470	196 : 3,488,777	3,551,181	3,506,691	338 : 3,508,284	338 : 3,508,284	3,536,437
3,491,371	3,512,181	3,551,181	3,523,306	339 : 3,508,285	339 : 3,508,285	18 : 3,501,259
3,496,273	197 : 3,550,160	3,551,181	3,523,306	340 : 3,514,796	340 : 3,514,796	3,508,854
3,543,306	198 : 3,496,578	3,551,181	3,523,306	341 : 3,530,487	341 : 3,530,487	3,511,590
3,548,411	3,506,688	3,551,181	3,523,306	342 : 3,523,306	342 : 3,523,306	19 : 3,523,097
8 : 3,490,071	3,514,789	3,551,181	3,523,306	343 : 3,510,889	343 : 3,510,889	3,551,087
3,517,392	3,550,161	3,551,181	3,523,306	344 : 3,518,707	344 : 3,518,707	21 : 3,494,716
3,538,707	199 : 3,504,280	3,551,181	3,523,306	345 : 3,512,191	345 : 3,512,191	3,504,997
3,540,058	200 : 3,523,303	3,551,181	3,523,306	346 : 3,512,191	346 : 3,512,191	3,507,604
9 : 3,488,772	203 : 3,541,610	3,551,181	3,523,306	347 : 3,513,492	347 : 3,513,492	3,536,438
3,491,372	209 : 3,505,684	3,551,181	3,523,306	348 : 3,506,695	348 : 3,506,695	3,545,910
10 : 3,548,412	3,506,980	3,551,181	3,523,306	349 : 3,508,285	349 : 3,508,285	25 : 3,489,502
12 : 3,538,509	3,506,980	3,551,181	3,523,306	350 : 3,512,191	350 : 3,512,191	3,502,423
13 : 3,506,679	3,530,509	3,551,181	3,523,306	351 : 3,512,191	351 : 3,512,191	3,510,242
14 : 3,506,680	3,535,710	3,551,181	3,523,306	352 : 3,512,191	352 : 3,512,191	3,520,648
3,517,393	3,541,611	3,551,181	3,523,306	353 : 3,512,191	353 : 3,512,191	26 : 3,533,722
3,530,506	221 : 3,500,478	3,551,181	3,523,306	354 : 3,512,191	354 : 3,512,191	31 : 3,494,717
15 : 3,541,608	3,505,685	3,551,181	3,523,306	355 : 3,512,191	355 : 3,512,191	3,504,997
18 : 3,540,059	224 : 3,488,778	3,551,181	3,523,306	356 : 3,512,191	356 : 3,512,191	3,507,604
19 : 3,528,107	3,490,075	3,551,181	3,523,306	357 : 3,512,191	357 : 3,512,191	3,536,438
20 : 3,535,708	3,495,275	3,551,181	3,523,306	358 : 3,512,191	358 : 3,512,191	3,545,910
22 : 3,533,106	3,491,375	3,551,181	3,523,306	359 : 3,512,191	359 : 3,512,191	25 : 3,489,502
49 : 3,488,773	3,496,576	3,551,181	3,523,306	360 : 3,512,191	360 : 3,512,191	3,502,423
3,540,060	227 : 3,538,512	3,551,181	3,523,306	361 : 3,512,191	361 : 3,512,191	3,510,242
51 : 3,517,394	239 : 3,490,076	3,551,181	3,523,306	362 : 3,512,191	362 : 3,512,191	3,520,648
3,535,709	3,492,674	3,551,181	3,523,306	363 : 3,512,191	363 : 3,512,191	26 : 3,533,722
65 : 3,509,580	3,497,875	3,551,181	3,523,306	364 : 3,512,191	364 : 3,512,191	31 : 3,494,717
66 : 3,491,373	3,503,077	3,551,181	3,523,306	365 : 3,512,191	365 : 3,512,191	3,504,998
67 : 3,512,179	3,510,882	3,551,181	3,523,306	366 : 3,512,191	366 : 3,512,191	3,499,721
68 : 3,488,774	240 : 3,487,473	3,551,181	3,523,306	367 : 3,512,191	367 : 3,512,191	3,508,855
3,503,076	3,492,675	3,551,181	3,523,306	368 : 3,512,191	368 : 3,512,191	3,516,779
3,510,880	3,499,172	3,551,181	3,523,306	369 : 3,512,191	369 : 3,512,191	3,493,316
69.5 : 3,523,302	3,509,581	3,551,181	3,523,306	370 : 3,512,191	370 : 3,512,191	3,507,605
71 : 3,530,507	243 : 3,490,077	3,551,181	3,523,306	371 : 3,512,191	371 : 3,512,191	3,512,917
74 : 3,492,673	3,492,676	3,551,181	3,523,306	372 : 3,512,191	372 : 3,512,191	3,508,855
3,493,973	3,500,479	3,551,181	3,523,306	373 : 3,512,191	373 : 3,512,191	3,516,779
83 : 3,516,093	3,523,304	3,551,181	3,523,306	374 : 3,512,191	374 : 3,512,191	3,493,316
84 : 3,505,681	3,530,510	3,551,181	3,523,306	375 : 3,512,191	375 : 3,512,191	3,507,605
87 : 3,514,788	3,531,906	3,551,181	3,523,306	376 : 3,512,191	376 : 3,512,191	3,503,697
88 : 3,522,612	244 : 3,525,104	3,551,181	3,523,306	377 : 3,512,191	377 : 3,512,191	3,507,606
89 : 3,546,708	252 : 3,537,108	3,551,181	3,523,306	378 : 3,512,191	378 : 3,512,191	3,510,243
93 : 3,533,107	256 : 3,531,907	3,551,181	3,523,306	379 : 3,512,191	379 : 3,512,191	41 : 3,503,698
94 : 3,528,108	269 : 3,538,513	3,551,181	3,523,306	380 : 3,512,191	380 : 3,512,191	3,508,856
3,529,307	279 : 3,492,677	3,551,181	3,523,306	381 : 3,512,191	381 : 3,512,191	3,518,039
96 : 3,495,274	3,512,182	3,551,181	3,523,306	382 : 3,512,191	382 : 3,512,191	3,529,921
98 : 3,488,775		3,551,181	3,523,306	383 : 3,512,191	383 : 3,512,191	3,536,439

Class 8—Con.		3,489,503	3,524,206	3,514,799	3,524,004	3,500,488	160 : 3,503,088
		3,502,701	3,531,238	3,533,115	3,526,699	3,501,794	3,503,089
		3,505,002	3,506,991	3,488,784	3,509,261	3,506,995	3,505,700
		3,549,306	3,510,249		3,530,222	3,510,898	3,534,425
		3,551,088	3,515,506		3,517,107	3,510,899	168 : 3,535,727
42 : 3,492,078		3,518,042	3,533,731		3,520,979	3,516,105	171 : 3,533,123
		3,518,043	3,537,811	1 : 3,548,431	3,530,223	3,517,403	179 : 3,490,087
		3,496,735	3,521,996		3,491,192	3,520,013	180 : 3,526,919
		3,515,506	3,521,996		3,501,680	3,522,619	3,535,728
		3,529,761	3,526,474		3,514,519	3,523,320	182 : 3,533,124
		3,533,723	3,532,456		3,548,002	3,526,012	183 : 3,529,314
		3,539,288	3,542,503		3,536,818	3,528,119	3,533,125
		3,547,572	3,549,308		3,510,563	3,540,069	3,545,026
44 : 3,516,790		3,545,913	3,487,483		3,506,770	3,541,627	3,546,731
		3,502,424	3,491,288		3,506,771	3,543,319	198 : 3,492,684
45 : 3,502,425		3,529,925	3,493,982		3,518,351	3,546,728	209 : 3,517,406
		3,508,859	3,499,177		3,525,796	3,548,437	3,520,016
46 : 3,515,504		3,488,139	3,500,493		3,529,068	3,550,176	3,533,126
54 : 3,494,718		3,488,182	3,530,518		3,538,231	3,524,208	210 : 3,550,177
		3,504,999	3,530,519		3,504,093	3,533,119	215 : 3,501,798
		3,521,989	3,537,117		3,539,698	3,535,726	3,517,407
		3,529,922	3,493,319		3,544,691	3,538,530	216 : 3,526,016
		3,535,072	3,494,720		3,520,980	3,512,201	220 : 3,492,685
2 : 3,497,309		3,505,008	3,497,885		3,531,574	3,512,202	227 : 3,526,014
		3,496,736	3,506,391		3,513,496	3,518,711	228 : 3,528,076
		3,522,749	3,506,392		3,493,983	3,543,320	3,528,120
62 : 3,510,244		3,507,610	3,497,886		3,496,583	3,522,355	229 : 3,512,203
		3,519,377	3,497,887		3,543,317	3,551,578	3,520,017
74 : 3,490,859		3,519,382	3,531,809		3,516,101	3,488,426	3,525,113
		3,496,860	3,543,314		3,534,420	3,496,019	3,533,123
77 : 3,529,923		3,535,073	3,487,485		3,545,022	3,497,602	42 : 3,517,404
93 : 3,503,699		3,536,441	3,487,486		3,497,603	3,518,712	49 : 3,535,729
94.12 : 3,526,473		3,540,836	3,487,486		3,504,094	3,533,120	50 : 3,533,120
		3,547,574	3,487,783		3,506,460	3,543,321	55 : 3,533,121
16 : 3,508,887		3,549,309	3,497,888		3,522,356	3,504,390	56 : 3,504,390
17 : 3,521,990		3,490,862	3,500,494		3,522,357	3,529,069	60 : 3,545,026
21 : 3,510,245		3,496,739	3,510,892		3,529,069	3,539,694	74 : 3,513,497
24 : 3,512,918		3,528,763	3,517,399		3,546,348	3,548,437	76 : 3,500,489
26 : 3,493,318		3,549,310	3,517,400		3,549,773	3,497,897	77 : 3,497,897
		3,519,378	3,542,429		3,501,792	3,501,795	237 : 3,531,816
27 : 3,541,089		3,495,930	3,510,893		3,512,199	3,510,900	244 : 3,537,122
100 : 3,507,607		3,497,310	3,516,096		3,536,725	3,491,388	246 : 3,516,107
		3,512,919	3,498,740		3,497,891	3,498,987	250.01 : 3,513,499
		3,527,557	3,516,782		3,537,119	3,542,932	3,548,440
108 : 3,521,991		3,519,383	3,517,401		3,490,086	3,543,321	3,548,441
		3,544,261	3,520,008		3,496,584	3,497,892	3,503,090
		3,547,573	3,534,418		3,501,793	3,521,316	3,531,817
111 : 3,514,247		3,523,750	3,529,313		3,521,316	3,492,683	3,543,322
		3,519,379	3,510,894		3,492,684	3,495,286	3,540,490
		3,521,992	3,542,505		3,491,389	3,540,068	3,517,405
114.5 : 3,498,737		3,518,044	3,521,994		3,516,102	3,520,014	3,520,014
		3,506,000	3,512,195		3,510,898	3,531,812	98 : 3,497,898
115.5 : 3,492,079		3,496,931	3,512,196		3,536,527	3,510,901	100 : 3,506,701
		3,507,608	3,516,098		3,543,316	3,546,730	102 : 3,506,701
		3,508,858	3,516,100		3,499,179	3,505,699	104 : 3,505,699
		3,514,248	3,538,524		3,522,618	3,510,902	.01 : 3,510,902
		3,518,040	3,541,623		3,523,318	3,496,588	.06 : 3,496,588
		3,539,286	3,543,315		3,548,484	3,506,290	3,506,290
		3,539,287	3,543,315		3,496,585	3,522,111	3,522,111
		3,542,502	3,543,315		3,493,984	3,530,523	3,530,523
		3,544,262	3,543,315		3,497,893	3,531,813	3,531,813
		3,545,911	3,543,315		3,500,486	3,538,531	3,538,531
		3,549,306	3,543,315		3,516,103	3,541,622	3,541,622
6 : 3,501,260		3,549,307	3,543,315		3,521,316	3,543,323	3,543,323
		3,503,700	3,543,315		3,524,207	3,543,324	3,543,324
		3,521,993	3,543,315		3,526,011	3,548,438	3,548,438
		3,533,725	3,543,315		3,528,118	3,496,587	3,496,587
		3,536,440	3,543,315		3,530,488	3,520,015	3,520,015
		3,540,835	3,543,315		3,533,118	3,550,177	3,550,177
		3,548,427	3,543,315		3,537,120	3,497,899	3,497,899
7 : 3,492,080		3,497,311	3,543,315		3,541,625	3,534,423	3,534,423
		3,506,390	3,543,315		3,543,318	3,496,589	3,496,589
		3,507,609	3,543,315		3,546,729	3,497,900	3,497,900
		3,512,920	3,543,315		3,491,394	3,526,917	3,526,917
		3,516,781	3,543,315		3,548,433	3,491,396	3,491,396
		3,518,041	3,543,315		3,537,330	3,496,590	3,496,590
		3,521,994	3,543,315			3,534,424	3,534,424
116 : 3,488,140		3,494,719	3,543,315			3,540,071	3,540,071
		3,496,738	3,543,315			3,487,491	3,487,491
		3,502,426	3,543,315			3,531,814	3,531,814
		3,511,591	3,543,315			3,488,790	3,488,790
		3,519,380	3,543,315			3,491,397	3,491,397
		3,523,762	3,543,315			3,501,796	3,501,796
		3,529,924	3,543,315			3,514,802	3,514,802
		3,533,726	3,543,315			3,495,289	3,495,289
2 : 3,490,861		3,540,835	3,543,315			3,497,901	3,497,901
		3,492,081	3,543,315			3,524,209	3,524,209
		3,506,001	3,543,315			3,526,918	3,526,918
		3,510,246	3,543,315			3,529,019	3,529,019
		3,510,247	3,543,315			3,531,818	3,531,818
		3,510,248	3,543,315			3,533,127	3,533,127
		3,512,921	3,543,315			3,535,728	3,535,728
		3,512,922	3,543,315			3,538,532	3,538,532
		3,519,381	3,543,315			3,541,630	3,541,630
		3,527,558	3,543,315			3,543,325	3,543,325
		3,533,728	3,543,315			3,545,029	3,545,029
		3,535,722	3,543,315			3,547,993	3,547,993
		3,537,808	3,543,315			3,550,494	3,550,494
		3,542,504	3,543,315			3,551,591	3,551,591
		3,545,912	3,543,315			3,551,798	3,551,798
3 : 3,488,701		3,506,990	3,543,315				

Class 15—Con.	121 : 3,487,496	3,512,213	3,545,039	3,496,603	3,545,045	33 : 3,526,021
	3,550,181	3,543,329	3,550,196	3,496,604	3,548,456	34 : 3,529,325
321 : Re 26,950	124 : 3,524,215	3,526,923	3,487,501	3,497,914	3,524,220	35 : 3,530,540
	3,488,793	3,526,924	3,488,801	3,499,186	3,487,507	3,538,560
	3,505,704	3,530,531	3,488,802	3,499,187	3,520,029	3,550,210
	3,510,906	3,535,735	3,488,803	3,500,500	3,521,327	3,550,211
	3,524,216	3,550,189	3,488,804	3,501,097	3,541,642	36 : 3,490,099
323 : 3,508,291	3,526,922	3,550,190	3,488,805	3,503,096	3,541,643	3,496,609
	3,530,529	3,487,500	3,490,096	3,504,399	3,543,336	3,510,916
	3,550,182	3,525,119	3,491,404	3,504,400	3,516,121	3,530,541
	3,546,735	3,546,075	3,492,090	3,512,215	3,520,025	3,543,337
325 : 3,516,110	129 : 3,501,799	3,493,995	3,513,503	3,516,120	3,541,644	3,546,748
327 : 3,490,099	136 : 3,499,183	3,496,598	3,516,121	3,518,721	3,489,998	39 : 3,496,612
	3,524,211	3,496,597	3,518,722	3,518,722	3,495,301	3,528,135
	3,524,212	3,496,598	3,521,325	3,521,325	3,496,607	3,550,212
	3,530,527	3,496,599	3,522,828	3,522,828	3,497,916	41 : 3,496,610
330 : 3,525,118	140 : 3,508,294	3,496,600	3,523,331	3,523,331	3,499,188	42 : 3,498,810
339 : 3,506,996	141 : 3,521,319	3,500,497	3,524,222	3,524,222	3,501,098	3,496,611
	3,499,181	3,501,098	3,525,124	3,525,124	3,503,098	3,499,190
	3,506,996	3,548,794	3,526,925	3,526,925	3,504,400	3,500,502
340 : 3,493,989	144 : 3,488,794	3,503,096	3,528,131	3,528,131	3,507,007	3,509,608
	3,506,708	3,540,076	3,529,321	3,529,321	3,507,008	3,509,609
	3,535,731	3,525,120	3,530,534	3,530,534	3,509,609	3,509,610
	3,540,073	3,541,634	3,535,736	3,535,736	3,510,913	3,510,912
	3,541,631	3,541,636	3,538,545	3,538,545	3,513,505	3,514,814
341 : 3,537,124		3,538,546	3,540,078	3,540,078	3,516,122	3,522,632
344 : 3,513,500	153 : 3,545,039	3,540,079	3,543,333	3,543,333	3,517,415	3,523,333
345 : 3,510,905	3,545,032	3,543,334	3,545,042	3,545,042	3,525,126	3,526,932
346 : 3,512,206	3,546,736	3,545,043	3,546,741	3,546,741	3,528,132	3,534,443
351 : 3,491,999	158 : 3,514,807	3,546,742	3,548,457	3,548,457	3,530,537	3,541,646
353 : 3,534,429	163 : 3,545,033	3,548,458	3,550,203	3,550,203	3,530,538	3,543,338
354 : 3,524,213	3,545,032	3,550,204	3,551,411	3,551,411	3,533,185	43 : 3,497,919
361 : 3,512,207	168 : 3,514,807	3,551,412	3,552,821	3,552,821	3,535,737	3,505,708
368 : 3,512,208	169 : 3,545,033	3,553,131	3,553,132	3,553,132	3,537,137	44 : 3,546,749
	3,512,211	3,553,133	3,554,457	3,554,457	3,538,546	47 : 3,522,633
	3,523,323	3,554,458	3,556,021	3,556,021	3,540,079	3,550,213
	3,524,433	3,556,022	3,557,131	3,557,131	3,543,339	
	3,541,633	3,557,132	3,558,457	3,558,457	3,545,043	
	3,548,446	3,558,458	3,560,203	3,560,203	3,546,746	
375 : 3,550,183	169 : 3,497,906	3,560,204	3,561,411	3,561,411	3,548,457	
385 : 3,531,819	171 : 3,497,907	3,561,412	3,562,821	3,562,821	3,548,458	
394 : 3,520,018	3,497,907	3,562,822	3,564,457	3,564,457	3,548,459	
402 : 3,520,012	180 : 3,496,596	3,564,458	3,566,021	3,566,021	3,501,809	25 : 3,493,999
423 : 3,509,591	3,496,596	3,566,022	3,567,131	3,567,131	3,507,099	37 : 3,500,504
481 : 3,522,821	3,545,034	3,567,132	3,568,457	3,568,457	3,522,631	6 : 3,522,634
483 : 3,496,292	3,550,186	3,568,458	3,570,203	3,570,203	3,541,646	2 : Re 26,807
	3,550,187	3,569,996	3,571,411	3,571,411	3,546,747	23 : 3,523,334
	3,512,212	3,569,997	3,572,821	3,572,821	3,548,459	26 : 3,537,142
	3,518,716	3,570,000	3,574,457	3,574,457	3,550,203	90 : 3,537,143
	3,518,719	3,571,411	3,576,021	3,576,021	3,550,206	81 : 3,531,831
	3,526,925	3,572,822	3,578,457	3,578,457	3,551,411	83 : 3,538,551
	3,526,926	3,579,913	3,580,203	3,580,203	3,551,911	96 : 3,534,444
	3,538,545	3,581,822	3,582,821	3,582,821	3,552,822	98 : 3,550,214
	3,538,546	3,583,131	3,584,457	3,584,457	3,554,000	102 : 3,528,136
	3,547,909	3,585,541	3,586,021	3,586,021	3,556,021	105 : 3,512,217
	3,521,320	3,587,131	3,588,457	3,588,457	3,558,457	106 : 3,530,542
		3,589,913	3,590,203	3,590,203	3,560,203	107 : 3,520,025
		3,591,411	3,593,131	3,593,131	3,562,821	144.5 : 3,518,726
		3,595,541	3,597,913	3,597,913	3,565,021	80 : 3,537,143
		3,599,913	3,602,021	3,602,021	3,567,131	91 : 3,531,831
		3,604,457	3,606,021	3,606,021	3,568,457	82 : 3,538,551
		3,608,457	3,610,203	3,610,203	3,569,996	95 : 3,544,444
		3,612,821	3,616,021	3,616,021	3,571,411	98 : 3,550,214
		3,616,022	3,619,913	3,619,913	3,573,131	102 : 3,494,000
		3,620,021	3,624,457	3,624,457	3,575,021	105 : 3,512,217
		3,624,458	3,628,457	3,628,457	3,577,131	144.5 : 3,518,726
		3,628,459	3,632,821	3,632,821	3,579,913	80 : 3,537,143
		3,632,822	3,636,021	3,636,021	3,581,821	91 : 3,531,831
		3,636,022	3,640,203	3,640,203	3,583,131	83 : 3,538,551
		3,640,204	3,644,457	3,644,457	3,585,541	96 : 3,534,444
		3,644,458	3,648,457	3,648,457	3,587,131	98 : 3,550,214
		3,648,459	3,652,821	3,652,821	3,589,913	102 : 3,494,000
		3,652,822	3,656,021	3,656,021	3,591,411	105 : 3,512,217
		3,656,022	3,660,203	3,660,203	3,593,131	144.5 : 3,518,726
		3,660,204	3,664,457	3,664,457	3,595,541	80 : 3,537,143
		3,664,458	3,668,457	3,668,457	3,597,913	91 : 3,531,831
		3,668,459	3,672,821	3,672,821	3,599,913	83 : 3,538,551
		3,672,822	3,676,021	3,676,021	3,601,821	96 : 3,534,444
		3,676,022	3,680,203	3,680,203	3,603,131	98 : 3,550,214
		3,680,204	3,684,457	3,684,457	3,605,541	102 : 3,494,000
		3,684,458	3,688,457	3,688,457	3,607,913	105 : 3,512,217
		3,688,459	3,692,821	3,692,821	3,609,913	144.5 : 3,518,726
		3,692,822	3,696,021	3,696,021	3,612,821	80 : 3,537,143
		3,696,022	3,699,913	3,699,913	3,614,457	91 : 3,531,831
		3,700,021	3,704,457	3,704,457	3,616,021	83 : 3,538,551
		3,704,458	3,708,457	3,708,457	3,618,457	96 : 3,534,444
		3,708,459	3,712,821	3,712,821	3,620,021	98 : 3,550,214
		3,712,822	3,716,021	3,716,021	3,622,821	102 : 3,494,000
		3,716,022	3,720,203	3,720,203	3,624,457	105 : 3,512,217
		3,720,204	3,724,457	3,724,457	3,626,821	144.5 : 3,518,726
		3,724,458	3,728,457	3,728,457	3,628,457	80 : 3,537,143
		3,728,459	3,732,821	3,732,821	3,630,541	91 : 3,531,831
		3,732,822	3,736,021	3,736,021	3,632,821	83 : 3,538,551
		3,736,022	3,740,203	3,740,203	3,634,457	96 : 3,534,444
		3,740,204	3,744,457	3,744,457	3,636,021	98 : 3,550,214
		3,744,458	3,748,457	3,748,457	3,638,457	102 : 3,494,000
		3,748,459	3,752,821	3,752,821	3,640,203	105 : 3,512,217
		3,752,822	3,756,021	3,756,021	3,642,821	144.5 : 3,518,726
		3,756,022	3,760,203	3,760,203	3,644,457	80 : 3,537,143
		3,760,204	3,764,457	3,764,457	3,646,021	91 : 3,531,831
		3,764,458	3,768,457	3,768,457	3,648,457	83 : 3,538,551
		3,768,459	3,772,821	3,772,821	3,650,203	96 : 3,534,444
		3,772,822	3,776,021	3,776,021	3,652,821	98 : 3,550,214
		3,776,022	3,780,203	3,780,203	3,654,457	102 : 3,494,000
		3,780,204	3,784,457	3,784,457	3,656,021	105 : 3,512,217
		3,784,458	3,788,457	3,788,457	3,658,457	144.5 : 3,518,726
		3,788,459	3,792,821	3,792,821	3,660,203	80 : 3,537,143
		3,792,822	3,796,021	3,796,021	3,662,821	91 : 3,531,831
		3,796,022	3,800,203	3,800,203	3,664,457	83 : 3,538,551
		3,800,204	3,804,457	3,804,457	3,666,021	96 : 3,534,444
		3,804,458	3,808,457	3,808,457	3,668,457	98 : 3,550,214
		3,808,459	3,812,821	3,812,821	3,670,203	102 : 3,494,000
		3,812,822	3,816,021	3,816,021	3,672,821	105 : 3,512,217
		3,816,022	3,820,203	3,820,203	3,674,457	144.5 : 3,518,726
		3,820,204	3,824,457	3,824,457	3,676,021	80 : 3,537,143
		3,824,458	3,828,457	3,828,457	3,678,457	91 : 3,531,831
		3,828,459	3,832,821	3,832,821	3,680,203	83 : 3,538,551
		3,832,822	3,836,021	3,836,021	3,682,821	96 : 3,534,444
		3,836,022	3,840,203	3,840,203	3,684,457	98 : 3,550,214
		3,840,204	3,844,457	3,844,457	3,686,021	102 : 3,494,000
		3,844,458	3,848,457	3,848,457	3,688,457	105 : 3,512,217
		3,848,459	3,852,821	3,852,821	3,690,203	144.5 : 3,518,726
		3,852,822	3,856,021	3,856,021	3,692,821	80 : 3,537,143
		3,856,022	3,860,203	3,860,203	3,694,457	91 : 3,531,831
		3,860,204	3,864,457	3,864,457	3,696,021	83 : 3,538,551
		3,864,458	3,868,457	3,868,457	3,698,457	96 : 3,534,444
		3,868,459	3,872,821	3,872,821	3,699,913	98 : 3,550,214
		3,872,822	3,876,021	3,876,021	3,701,411	102 : 3,494,000
		3,876,022	3,880,203	3,880,203	3,703,131	105 : 3,512,217
		3,880,204	3,884,457	3,884,457	3,705,541	144.5 : 3,518,726
		3,884,458	3,888,457	3,888,457	3,707,913	80 : 3,537,143
		3,888,459	3,892,821	3,892,821	3,710,203	91 : 3,531,831
		3,892,822	3,896,021	3,896,021	3,712,821	83 : 3,538,551
		3,896,022	3,900,203	3,900,203	3,714,457	96 : 3,534,444
		3,900,204				

Class 21	3,510,254	97 : 3,490,867	3,523,752	3,542,514	3,492,094	3,503,712
2 : 3,493,323	3,514,252	3,493,334	3,523,758	3,549,323	3,492,095	3,507,621
3,495,932	3,515,509	3,493,335	3,529,931	3,549,324	3,492,096	3,511,612
5 : 3,501,261	3,519,385	3,505,011	3,537,918	3,549,325	3,493,345	3,512,938
3,514,251	3,524,723	3,526,476	3,489,515	3,506,401	3,493,346	3,529,936
7 : 3,508,861	3,489,508	3,549,318	3,506,396	3,524,725	3,494,741	3,531,258
3,524,719	3,501,263	3,551,099	3,542,510	3,551,103	3,494,744	3,535,085
3,529,928	3,523,008	3,518,050	3,502,433	3,488,150	3,495,943	3,547,589
7 : 3,539,289	3,499,725	3,540,842	3,492,092	3,493,343	3,497,319	3,488,156
53 : 3,518,046	3,547,579	3,514,254	3,493,240	3,540,847	3,497,320	3,489,520
3,547,576	42 : 3,499,724	3,492,087	3,494,736	3,551,104	3,498,751	3,489,521
54 : 3,494,722	49 : 3,549,314	3,495,937	3,494,736	Re 26,941	3,502,435	3,489,524
3,494,723	50 : 3,493,326	3,514,255	3,499,729	3,494,738	3,503,709	3,489,525
3,494,724	3,494,730	3,525,585	3,506,397	3,495,939	3,504,376	3,490,875
3,551,090	3,497,313	3,533,736	3,506,398	3,507,616	3,505,019	3,490,876
56 : 3,494,725	3,497,314	3,547,580	3,507,614	3,520,556	3,505,021	3,497,322
58 : 3,490,863	3,503,705	3,493,336	3,511,604	3,525,589	3,505,021	3,499,733
3,493,324	3,518,049	3,503,706	3,522,003	3,488,152	3,506,402	3,501,273
3,494,726	3,520,661	3,508,865	3,522,004	3,494,739	3,506,403	3,502,436
3,549,312	3,525,583	3,520,652	3,523,754	3,545,925	3,506,404	3,502,437
60.5 : 3,507,611	3,551,094	3,520,653	3,527,562	3,551,106	3,507,617	3,505,023
3,518,047	51 : 3,494,731	3,531,242	3,528,771	3,488,151	3,507,618	3,505,024
3,528,764	3,494,732	3,533,737	3,528,772	3,488,153	3,507,619	3,506,405
3,531,239	3,516,784	3,537,814	3,529,932	3,497,318	3,508,875	3,508,878
3,549,313	3,519,386	3,488,145	3,532,461	3,499,732	3,508,876	3,508,879
61 : 3,494,727	3,528,765	3,489,510	3,540,843	3,508,871	3,508,877	3,508,880
3,505,006	3,540,839	3,506,012	3,544,269	3,508,872	3,510,260	3,510,262
3,521,999	3,549,315	3,511,600	3,519,388	3,508,874	3,511,607	3,510,263
3,540,837	52 : 3,493,327	3,519,387	3,490,868	3,516,791	3,511,611	3,511,608
3,547,577	3,501,264	3,539,291	3,525,586	3,528,774	3,512,936	3,520,660
74 : 3,510,252	3,506,393	3,508,866	3,525,587	3,529,934	3,514,262	3,523,011
78 : 3,505,007	3,510,255	3,511,601	3,536,446	3,531,248	3,515,516	3,524,726
87 : 3,512,924	3,512,926	3,528,769	3,542,511	3,532,465	3,515,517	3,525,591
3,547,578	53 : 3,511,598	3,532,458	3,549,320	3,533,743	3,516,794	3,525,592
3,508,703	3,540,840	3,533,738	3,506,399	3,535,081	3,516,795	3,527,569
3,537,812	3,542,507	3,537,815	3,523,755	3,536,447	3,519,390	3,527,570
91 : 3,498,505	55 : 3,515,510	3,508,867	3,489,516	3,539,295	3,520,657	3,528,787
3,498,742	56 : 3,493,328	3,518,061	3,498,341	3,541,582	3,520,658	3,529,937
3,508,703	3,510,256	3,528,768	3,501,269	3,547,584	3,522,008	3,532,469
92 : 3,488,141	59 : 3,549,316	3,488,146	3,503,707	3,503,708	3,523,756	3,533,751
3,511,592	61 : 3,551,095	3,492,089	3,506,400	3,531,249	3,524,727	3,535,086
93 : 3,488,142	63 : 3,493,329	3,515,511	3,511,606	3,532,463	3,526,479	3,535,087
3,511,593	3,498,744	3,532,459	3,527,563	3,495,940	3,527,566	3,536,450
102 : 3,507,612	3,508,863	3,535,075	3,540,844	3,522,006	3,527,567	3,536,451
3,551,091	3,523,751	3,537,816	3,501,270	3,540,848	3,528,775	3,539,300
119 : 3,551,092	3,528,766	3,542,509	3,502,434	3,490,869	3,528,776	3,542,517
	3,531,240	3,545,921	3,511,606	3,490,870	3,529,937	3,542,518
Class 23	3,551,096	113 : 3,492,090	3,531,244	3,494,740	3,529,938	3,542,519
2 : 3,489,506	65 : 3,505,009	3,510,258	3,494,737	3,498,750	3,528,777	3,544,272
3,489,507	71 : 3,511,599	3,516,786	3,512,932	3,512,934	3,528,778	3,544,273
3,492,083	75 : 3,497,315	3,531,243	3,542,512	3,514,259	3,531,252	3,544,274
3,493,325	77 : 3,501,265	3,493,337	3,544,270	3,522,005	3,531,253	3,544,275
3,495,933	78 : 3,499,726	3,512,929	3,545,922	3,523,010	3,531,254	3,545,932
3,498,743	79 : 3,499,727	3,524,724	3,531,245	3,532,466	3,531,255	3,545,933
3,499,722	85 : 3,495,935	3,536,445	3,551,101	3,539,296	3,533,744	3,545,934
3,502,427	3,502,430	3,489,511	3,551,102	3,527,564	3,533,745	3,545,935
3,502,428	3,505,010	3,499,728	3,531,246	3,501,272	3,533,746	3,545,936
3,503,704	3,508,864	3,510,259	3,539,292	3,512,935	3,533,747	3,547,580
3,505,008	86 : 3,544,267	3,489,512	3,498,748	3,490,871	3,533,748	3,549,228
3,507,613	87 : Re 26,942	3,508,868	3,539,293	3,505,016	3,536,448	3,551,110
3,510,253	3,488,143	3,489,513	3,547,582	3,505,017	3,536,449	3,551,111
3,511,594	3,488,144	3,505,013	3,549,321	3,511,606	3,537,820	3,549,229
3,511,596	3,492,085	3,511,602	3,506,396	3,512,932	3,537,821	3,497,323
3,512,925	3,495,936	3,547,581	3,520,655	3,505,018	3,537,822	3,502,438
3,518,048	3,497,316	3,549,319	3,525,588	3,515,514	3,539,299	3,507,622
3,519,384	3,527,561	3,533,739	3,526,478	3,518,055	3,540,845	3,507,623
3,520,649	3,533,733	3,511,100	3,527,565	3,526,478	3,540,846	3,510,261
3,522,000	3,533,734	3,514,256	3,488,148	3,532,467	3,540,849	3,512,939
3,524,720	3,536,443	3,489,514	3,493,342	3,535,082	3,540,850	3,519,392
3,524,721	3,539,290	3,505,014	3,499,730	3,549,322	3,542,515	3,522,010
3,528,457	3,542,508	3,532,460	3,501,271	3,514,260	3,544,271	3,535,088
3,533,732	88 : 3,488,702	3,488,147	3,512,933	3,514,261	3,545,927	3,539,301
3,535,074	3,490,866	3,494,733	3,518,052	3,529,935	3,545,928	3,539,302
3,540,838	3,492,086	3,497,317	3,518,053	3,539,297	3,547,586	3,544,273
3,544,263	3,493,330	3,516,787	3,518,054	3,539,298	3,549,226	3,544,278
3,544,264	3,493,331	3,520,654	3,519,389	3,545,926	3,551,107	3,545,936
3,545,915	3,506,394	3,545,923	3,526,477	3,516,792	3,551,109	3,549,229
3,545,916	3,506,395	3,493,338	3,528,773	3,522,007	3,488,155	3,493,347
3,545,917	3,512,927	3,512,930	3,529,933	3,525,590	3,489,523	3,502,440
3,545,918	3,514,253	3,529,930	3,531,247	3,542,520	3,495,944	3,506,406
3,551,093	3,525,584	3,533,740	3,532,462	3,544,274	3,503,711	3,526,481
3 : 3,490,865	3,529,929	3,528,770	3,533,742	3,515,515	3,505,022	3,527,572
3,524,722	3,549,317	3,514,257	3,535,077	3,531,250	3,512,937	3,536,451
4 : 3,497,312	3,551,098	3,516,788	3,540,846	3,547,585	3,518,058	3,545,937
3,499,723	89 : 3,489,509	3,493,339	3,549,322	3,551,108	3,518,059	3,547,591
3,502,429	3,498,745	3,501,266	3,498,749	3,495,942	3,519,391	3,488,158
3,511,595	3,510,257	3,516,789	3,505,015	3,516,793	3,522,009	3,511,613
3,516,783	3,527,560	3,535,076	3,507,615	3,516,796	3,528,779	3,512,940
15 : 3,492,084	3,528,767	3,544,268	3,508,870	3,518,056	3,531,256	3,522,011
3,522,001	3,533,735	3,516,790	3,514,258	3,531,251	3,531,257	3,525,593
16 : Re 26,982	3,536,444	3,498,747	3,537,819	3,535,083	3,533,750	3,536,452
19 : 3,511,597	3,537,813	3,493,340	3,542,513	3,547,583	3,535,084	3,540,852
20 : 3,494,728	90 : 3,493,332	3,501,268	3,545,924	3,495,941	3,537,823	3,549,230
3,520,650	91 : 3,493,333	3,511,603	3,489,517	3,532,468	3,540,851	3,551,112
3,494,729	3,512,928	3,512,931	3,492,093	3,533,748	3,542,516	3,499,731
3,501,262	3,516,785	3,537,817	3,495,938	3,488,154	3,545,930	3,502,441
3,508,862	3,531,241	3,502,431	3,537,817	3,489,518	3,545,931	3,523,012
3,515,508	3,540,841	3,502,432	3,532,464	3,489,519	3,547,587	3,512,941
3,544,265	92 : 3,523,009	3,502,432	3,535,078	3,489,522	3,547,588	3,497,324
22 : 3,495,934	3,545,920	3,522,002	3,535,080	3,490,873	3,549,327	3,501,274
				3,490,874	3,497,321	3,523,757