

**CLASS 74, MACHINE ELEMENT OR MECHANISM****SECTION I - CLASS DEFINITION**

Mechanical combinations, contrivances, or devices constituting portions of machines, instruments and apparatus and consisting of two or more fixed and movable parts so combined that the motion of one compels a completely controlled or constrained motion of the other according to a law of operation inherent in and depending on the nature of the combination, and also the elemental parts of such machines not provided for in other machine element classes.

**SECTION II - LINES WITH OTHER CLASSES AND WITHIN THIS CLASS**

This class is intended as a generic class for mechanism and machine parts not otherwise classified. Other machine element classes subgeneric hereto are Class 384, Bearings; Class 464, Rotary Shafts, Gudgeons, Housings, and Flexible Couplings for Rotary Shafts.

This class does not include machines and instruments or apparatus claimed as such, for which see the appropriate art classes. It does not include the special tools, instruments, and subcombinations peculiar to the special arts and provided for in the classification of the art classes.

**SECTION III - REFERENCES TO OTHER CLASSES****SEE OR SEARCH CLASS:**

- 70, Locks, appropriate subclasses and particularly subclasses 174+, for machine elements combined with locks wherein the element or its associated structure is modified solely to accommodate the lock, or where the device is modified for the reception of a locking device, whether or not claimed.
- 73, Measuring and Testing, subclasses 488+ for a speed responsive device, per se.
- 92, Expansible Chamber Devices, for the line between Class 74 and Class 92, see References to Other Classes of the class definition of Class 92 under SEARCH CLASS 74.
- 123, Internal-Combustion Engines, subclasses 90.1+ and 188.1+, for valve operating mechanism.
- 173, Tool Driving or Impacting, appropriate subclass for subject matter directed to driving or

impacting a tool, when such subject matter includes combined features peculiar to tool driving, but which does not include features limiting the subject matter to a specific tool art, such as specific shape of the work contacting portion of the tool, related tools, or an opposed work support. See References to Other Classes of the Class 173 class definition for a statement of the line with Class 74.

- 187, Elevator, Industrial Lift Truck, or Stationary Lift for Vehicle, appropriate subclasses.
- 188, Brakes, appropriate subclasses and especially subclasses 105 through 108 for brake operators.
- 192, Clutches and Power-Stop Control, appropriate subclasses and especially subclasses 82+, for clutch operators.
- 193, Conveyors, Chutes, Skids, Guides, and Ways, appropriate subclasses.
- 198, Conveyors: Power-Driven, appropriate subclasses.
- 242, Winding, Tensioning, or Guiding, appropriate subclasses.
- 251, Valves and Valve Actuation, subclasses 213+ for mechanical movement valve actuators.
- 267, Spring Devices, appropriate subclasses.
- 279, Chucks or Sockets, appropriate subclasses.
- 296, Land Vehicles: Bodies and Tops, various subclasses for bodies and tops having movable components which may be actuated by mechanical means.
- 384, Bearing, appropriate subclasses, and see (1) Note above.
- 464, Rotary Shafts, Gudgeons, Housings, and Flexible Couplings for Rotary Shafts, see (1) Note supra.
- 474, Endless Belt Power Transmission Systems or Components, appropriate subclasses, and see particularly (5) Note under Lines With Other Classes in the class definition of Class 474.
- 475, Planetary Gear Transmission Systems or Components, for planetary gear transmissions.
- 476, Friction Gear Transmission Systems or Components, for friction gear transmissions.
- 477, Interrelated Power Delivery Controls, Including Engine Control, for interrelated control between an engine and a transmission.

**SUBCLASSES**

**1 MISCELLANEOUS:**

This subclass is indented under the class definition. Miscellaneous mechanisms and not provided for below.

**SEE OR SEARCH CLASS:**

343, Communications: Radio Wave Antennas, subclasses 754 and 757+ for directive antennas with scanning, sweeping or orienting of the beam, and including mechanisms for imparting spiral, rotary or rotary oscillatory motion to the antenna.

**1.5 ESCAPEMENTS:**

This subclass is indented under the class definition. Mechanisms comprising devices in which a unidirectionally biased power member, during at least a portion of its movement, imparts motion to an element which, as a result of such movement, alternately locks and releases the biased member for intermittent operation.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

526, for lever stops.  
565, for controller checks.

**SEE OR SEARCH CLASS:**

185, Motors: Spring, Weight, or Animal Powered, subclass 5, for composite weight motors which are escapement controlled and see the search notes thereunder for related search fields.

**2 AUTOMATIC OPERATION OR CONTROL (E.G., TRIPS):**

This subclass is indented under the class definition. Mechanisms for releasing or tripping portions of machines to cause other portions to automatically operate due to the expenditure of the potential energy possessed by such parts.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

584+, for automatically released yieldable pitmans and connecting rods.

**SEE OR SEARCH CLASS:**

40, Card, Picture, or Sign Exhibiting, subclass 521, for obstacle trip actuated changeable exhibitors.

56, Harvesters, subclasses 401+, for delivery trip shockers, and 432+, for tripped compressors and binders.

76, Metal Tools and Implements, Making, subclass 15 for trip actuated file cutters, and subclasses 62 and 67 for trip actuated saw setters.

89, Ordnance, subclasses 1.5+, for trip devices associated with bomb, flare, and signal dropping devices.

111, Planting, subclasses 14+, for check wire tripped drillers.

114, Ships, subclass 210, for anchor trips.

124, Mechanical Guns and Projectors, subclasses 31+, for trigger mechanism.

166, Wells, subclasses 237+ and the subclasses there noted for trip devices in wells.

169, Fire Extinguishers, appropriate subclasses.

188, Brakes, subclass 111, for trip operated vehicle brakes.

200, Electricity: Circuit Makers and Breakers, appropriate subclasses.

212, Traversing Hoists, subclass 116 for cable load suspension trips.

246, Railway Switches and Signals, subclasses 76 and 201+, for track trips, 171+, for derailment contact trips and 359+, for train energy actuated trips.

292, Closure Fasteners, subclasses 332+ for trip actuated closure fasteners.

293, Vehicle Fenders, subclasses 33, 35 and 37, for trip actuated fenders.

399, Electrophotography, subclasses 75+ for machine operations of an electrophotography device and subclasses 107+ for particular structure of the device, specifically subclasses 110+ for modular or displaceable components.

**3 Speed controlled:**

This subclass is indented under subclass 2. Mechanisms wherein the releasing or tripping is initiated by a speed responsive device.

**SEE OR SEARCH CLASS:**

73, Measuring and Testing, subclasses 535+ for a speed sensor of the centrifugal weight type.

192, Clutches and Power-Stop Control, subclass 140 for speed responsive limit stops and subclass 147 for speed

response clutch releases combined with brakes.

**3.2 Valve gear trips (e.g., steam engine 'Corliss' type):**

This subclass is indented under subclass 3. Mechanisms wherein a flow controlling valve is the released or tripped device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

2, for other automatically-operated valve gear trips not speed responsive nor otherwise classifiable in subclasses below.

**3.5 Retarded:**

This subclass is indented under subclass 2. Mechanisms preset to cause the releasing or tripping at a particular time of day or at the termination of a particular time interval following the setting.

SEE OR SEARCH CLASS:

119, Animal Husbandry, subclasses 51.14+ for feeding devices including timer controlled trips.  
 137, Fluid Handling, subclasses 624.19 and 624.22 for valves including timer controlled trips.  
 185, Motors: Spring, Weight, or Animal Powered, subclasses 27+ for a retarded trip releasing a weight motor and subclasses 37+ for a retarded trip releasing a spring motor.  
 200, Electricity: Circuit Makers and Breakers, subclasses 39+ for an electrical circuit switch controlled by a retarded latch trip.  
 368, Horology: Time Measuring Systems or Devices, subclasses 243+ for an horological device controlling the tripping of a sounding device, and in the definition of subclass 152 see the "Note".

**3.52 Plural, sequential, trip actuations:**

This subclass is indented under subclass 3.5. Mechanism preset to cause sequential tripping of a single part or tripping of several parts in sequence.

**3.54 Clock train:**

This subclass is indented under subclass 3.5. Mechanism including a clock, a clock train or similar gearing.

**3.56 Winding knob trip (e.g., alarm mechanism):**

This subclass is indented under subclass 3.54. Mechanism wherein the trip includes the winding knob of a spring powered clock train or the winding knob of a spring powered operator (e.g., alarm mechanism) under the control of the clock train.

**4 Hit and miss:**

This subclass is indented under subclass 2. Mechanism wherein the releasing or tripping is intermittent and the mechanism is intended to insure a uniform speed output.

**5 GYROSCOPES:**

This subclass is indented under the class definition. Devices defined in (1) Note, below and known as gyroscopes.

(1) Note. A conventional gyroscope is a mechanism comprising a rotor journaled to spin about one axis, the journals of the rotor being mounted in an inner gimbal or ring, the inner gimbal being journaled for oscillation in an outer gimbal which in turn is journaled for oscillation relative to a support. The outer gimbal or ring is mounted so as to pivot about an axis in its own plane determined by the support. Hence the outer gimbal possesses one degree of rotational freedom and its axis possesses none. The inner gimbal is mounted in the outer gimbal so as to pivot about an axis in its own plane which axis is always normal to the pivotal axis of the outer gimbal. Hence the inner gimbal possesses two degrees of rotational freedom and its axis possesses one. The rotor is journaled to spin about an axis which is always normal to the axis of the inner gimbal. Hence the rotor possesses three degrees of rotational freedom and its axis possesses two. The center of gravity of the rotor is thus in a fixed position. The rotor simultaneously spins about one axis and is capable of oscillating about the two other axes, and thus except for its inherent resistance

due to rotor spin, it is free to turn in any direction about the fixed point.

Some gyroscopes have mechanical equivalents substituted for one or more of the elements, e.g., the spinning rotor may be suspended in a fluid, instead of being pivotally mounted in gimbals. In some special cases, the outer gimbal (or its equivalent) may be omitted so that the rotor has only two degrees of freedom. In other cases, the center of gravity of the rotor may be offset from the axis of oscillation, and thus the center of gravity of the rotor and the center of suspension of the rotor may not coincide.

- (2) Note. This is the generic locus for gyroscopes. Every rotating body has gyroscopic action, but such devices are not placed here unless at least one axis of oscillation is present.
- (3) Note. For combinations of gyroscopes with other devices see indented subclass 5.22 and the notes thereto appended.

SEE OR SEARCH THIS CLASS, SUB-CLASS:  
5.22, and the notes thereto and see (2) Note supra.

SEE OR SEARCH CLASS:  
248, Supports, subclass 182.1 for gimbals, per se.  
310, Electrical Generator or Motor Structure, subclass 261.1 for rotors, per se.  
446, Amusement Devices: Toys, subclasses 233+ for gyroscopic toys, including gyroscopic tops.

#### 5.1 With caging or parking means:

This subclass is indented under subclass 5. Gyroscopes combined with mechanism to hold the rotor axis fixed, when the rotor is not spinning, or if spinning, when it is desired to take the gyroscope out of useful operation.

- (1) Note. The rotor axis may be positively held with respect to the gyroscope support, or it may be heavily weighed to hold the rotor axis fixed with respect to the earth.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

5.44, where the force of gravitation, acting upon a weight, and reacting against the rotor axis erects an operative gyroscope.

#### 5.12 Rotor spin and cage release type:

This subclass is indented under subclass 5.1. Devices having a mechanism to impart spin to a rotor and a further means to release the holding means after the rotor is up to speed.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

5.7, for rotor drives.

#### 5.14 And resetting means:

This subclass is indented under subclass 5.1. Devices wherein further means is provided to adjust or vary the position held. This may be done by having the means which holds the rotor axis adjustable to vary the position held, or by having the first means restrain movement in one plane and a second means to position the rotor axis in that plane.

#### 5.2 With gimbal lock preventing means:

This subclass is indented under subclass 5. Gyroscopes wherein means is provided to prevent alignment of the rotor axis with a gimbal axis.

#### 5.22 Combined:

This subclass is indented under subclass 5. Gyroscopes combined with structure other than the gyroscope, except means to control and/or drive the mechanism.

- (1) Note. The large majority of patents found here are of the stabilizing type and recite the device stabilized by name only. Where structure of the device over and above that necessary to mount the device is claimed, or where a particular relationship to the device is claimed, the patents have been classified with the device.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

5.4+, for gyroscope control.

5.37, for drives for plural gyroscopes.

5.7, for drives for single gyroscopes.

64, for inertia or centrifugally controlled rotary transmitters.

**SEE OR SEARCH CLASS:**

73, Measuring and Testing, subclasses 504.2+, for a gyroscope combined with a speed responsive device.

105, Railway Rolling Stock, subclasses 141+, for monorail type railway rolling stock combined with gyroscopes and subclasses 150+, for suspended monorail type rolling stock combined with gyroscopes.

114, Ships, subclasses 21.1 and 24, for gyroscopically controlled torpedo steering mechanism; subclass 122, for gyroscopic anti-rolling stabilizers combined with ships; and subclass 144, for gyroscopic controlled steering.

244, Aeronautics and Astronautics, subclass 79, for gyroscope actuated automatic aircraft control.

396, Photography, subclass 13 for an aerial camera which is gyroscopically stabilized.

446, Amusement Devices: Toys, subclasses 233+ for gyroscopic toys, and subclass 462 for wheeled toys having inertia-operated driving means.

475, Planetary Gear Transmission Systems or Components, for gyroscopically controlled planetary gearing.

**5.34 Multiple gyroscopes:**

This subclass is indented under subclass 5. Gyroscopes comprising two or more gyroscopes.

**5.37 With rotor drives:**

This subclass is indented under subclass 5.34. Devices having means for driving the gyroscopes.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

5.7, for drives for single gyroscopes.

**5.4 Gyroscope control:**

This subclass is indented under subclass 5. Gyroscopes having means to apply one or more forces to the rotor axis to control the movement of the rotor axis about its center of suspension.

**5.41 Erecting:**

This subclass is indented under subclass 5.4. Devices wherein one or more forces act to move the rotor axis to a given position, usually to a vertical position.

(1) Note. Where the force of the surrounding atmosphere against a plurality of vanes is used for erection, the patent will be found in this subclass.

**5.42 By plural diverse forces:**

This subclass is indented under subclass 5.41. Devices where at least two diverse forces are used for erection.

(1) Note. Pendulous gyroscopes having an additional means to erect them are here when both means are claimed, an cross-referenced to the subclasses indented hereunder for the separate means.

**5.43 By jet:**

This subclass is indented under subclass 5.41. Devices wherein the force of a fluid jet is used for erection.

**5.44 By weight:**

This subclass is indented under subclass 5.41. Devices wherein the gravitational force upon a weight is utilized for erection.

(1) Note. Pendulous gyroscopes with no other erecting controls are here.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

5.1, for weight actuated parking or caging devices.

5.42, for pendulous gyroscopes having an additional force utilized for erection.

**5.45 By friction:**

This subclass is indented under subclass 5.41. Devices wherein the application of a frictional force is utilized for erection.

(1) Note. Where the force of the surrounding atmosphere against a plurality of vanes is used for erection, the patents will be found in subclass 5.41.

- 5.46 By magnetic field:**  
This subclass is indented under subclass 5.41. Devices wherein the force of a magnetic field is utilized for erection.
- 5.47 By motor torque:**  
This subclass is indented under subclass 5.41. Devices where the torque of a prime mover constitutes the force used for erection.
- 5.5 Damping:**  
This subclass is indented under subclass 5.4. Devices having means to dampen the oscillation of the gimbals, or of the rotor axis.
- 5.6 With pick off:**  
This subclass is indented under subclass 5. Gyroscopes having a means to sense the relative position or change of position of the rotor axis, and/or its gimbals.
- (1) Note. The sensing means normally actuates or controls a signal, indicator or a control for another device.
- 5.7 With rotor drive:**  
This subclass is indented under subclass 5. Gyroscopes having means to drive the rotor.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
5.12, for rotor spin mechanism combined with cage release mechanisms.
- 5.8 Vertical gyroscopes:**  
This subclass is indented under subclass 5. Gyroscopes peculiarly constructed for operating with the spin axis in a vertical position only.
- 5.9 Horizontal gyroscopes:**  
This subclass is indented under subclass 5. Gyroscopes peculiarly constructed for operating with the spin axis in a horizontal position only.
- 5.95 Flywheel structure:**  
This subclass is indented under subclass 5. Subject matter including a motion-smoothing component generally made up of a massive disk-like member.
- 6 ENGINE STARTERS:**  
This subclass is indented under the class definition. Mechanical movements and/or gearing, combined as a unit, for initiating the starting of a machine, in which operative engagement with the machine to be started is initiated and controlled and power is applied to the gearing by some conventional means.
- (1) Note. See the Index, under “Starter” and “Starting”.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
139+, for intermittent unidirectional motion type engine starters.
- SEE OR SEARCH CLASS:  
123, Internal-Combustion Engines, subclasses 179.1+ for other starting devices for internal combustion engines.  
185, Motors: Spring, Weight, or Animal Powered, subclasses 6+, 10+, 32, and 39, for structure for winding motors of the weight and spring types.  
290, Prime-Mover Dynamo Plants, subclasses 10, 22-38, 46-68, for dynamo-electric starter-generator structure.
- 7 Automatic:**  
This subclass is indented under subclass 6. Starters in which the operative engagement with the machine to be started is automatic.
- 8 Radial meshing:**  
This subclass is indented under subclass 6. Starters in which meshing of the gears with the machine to be started takes place in a radial direction.
- 9 Cam operated:**  
This subclass is indented under subclass 6. Starters in which meshing of the gearing with the machine to be started is accomplished by a cam device other than a screw.

**10 SHAFT OPERATORS (RADIO TUNER TYPE):**

This subclass is indented under the class definition. Assemblies particularly adapted for mechanically rotating one or more shafts of electronic tuning devices into desired angular positions.

- (1) Note. The art is directed to the positioning of radio tuning shafts having indicating means and/or variable condensers associated therewith for adjustment.
- (2) Note. Electrically actuated dial operators are not here, even though claimed in combination with mechanical operators for these subclasses. They will be found in Class 192, Clutches and Power-Stop Control, subclasses 138+, and in Class 318, Electricity: Motive Power Systems, appropriate subclasses (including particularly subclasses 560+, which has the follow-up type motor controls). The line between these two classes is stated in the class definition of Class 318, Lines With Other Classes, Load Device Driven by the Motor (Including Power, Motion, Force, or Torque Transmitting Devices, Motor Systems and Power, Motion, Force, or Torque Transmitting Devices, and under the reference to Class 192 under "SEARCH CLASSES" at the end of the class (318) definition.
- (3) Note. These subclasses will take the recitation of a condenser, inductance, transformer or a radio tuner by name only when claimed in combination with shaft positioning means. Whenever significant structure of the condenser, inductance, transformer, or tuner are recited, the devices will be classified in Class 455, Telecommunications, particularly sub 150.1+ where radio tuner structure is recited. Class 334, Tuners, appropriate subclasses for radio tuner structure, per se, or Class 336, Inductor Devices, appropriate subclasses where variable transformer or inductance structure is recited. Where the operator is merely a screw gearing and the tuner is recited by name only, the search should be contin-

ued in this class (74), subclass 424.71-424.96.

- (4) Note. These subclasses will take the shaft positioning means with respect to its support in combination with indicating means to indicate the position, adjustment or movement of the shaft. And see the Search Note to the Signals and Indicators class, below.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

- 20, through 110 inclusive, for nonintermittent type mechanical movements.  
 111+, for intermittent grip type mechanical movements.  
 424.71 through 424.96, for screw gearing, and see (3) Note supra.  
 469+, for control lever and linkage systems.  
 526, for stops for levers.  
 553, for knob or dial operators.  
 640, for gearing.  
 813+, for assemblies of general utility, including turret mechanisms for metal working machines having means to index rotary members, and see the Notes thereto.

**SEE OR SEARCH CLASS:**

- 116, Signals and Indicators, 200+, provides for indicators attached to, or associated with some movable device to indicate the movement, adjustment or position of such device. Indented subclasses 241+, provides for radio tuner position indicators. Class 116 will take shaft positioning means with respect to its support (even though in the form of a mechanical movement) in combination with the indicating means when only the part of the shaft positioning means with respect to its support necessary to operate the indicator is claimed, i.e., where no structure for positioning the shaft is recited which does not operate the position indicator.
- 192, Clutches and Power-Stop Control, subclasses 138+, for power-stop limit controls and see (2) Note, supra.

- 235, Registers, appropriate subclasses for related operating devices for registers and particularly subclasses 12+, for those which are key board operated.
- 318, Electricity: Motive Power Systems, appropriate subclasses for controlled electric motor operators, particularly subclasses 560+, for servo controlled operators and see (2) Note, supra.
- 336, Inductor Devices, appropriate subclasses for variable transformer or inductance structure combined with shaft positioning means, and see (3) Note, above.
- 361, Electricity: Electrical Systems and Devices, subclasses 271+ for specific variable condenser structure.
- 403, Joints and Connections, subclasses 230+ for joints between the end of a shaft and a plate-like member.
- 455, Telecommunications, subclasses 150.1+ for radio receivers with tuners, see (3) Note.

#### 10.1 **Preselected position:**

This subclass is indented under subclass 10. Devices having interengaging means by which the rotation of the shaft may be halted at a plurality of predetermined angular positions.

#### 10.15 **Step by step:**

This subclass is indented under subclass 10.1. Devices having means interposed between a single initiator and the shaft for rotating the shaft through a series of successive predetermined positions, the rotation of the shaft being halted at each such successive position.

SEE OR SEARCH THIS CLASS, SUBCLASS:

126+, for mechanical movements for changing reciprocating motion to intermittent unidirectional motion, and particularly subclass 142 for lever actuators.

#### 10.2 **Rotatable stop and projectable abutment:**

This subclass is indented under subclass 10.1. Devices having a rotatable stop element for halting shaft movement and a movable abutment for the stop element, and means for moving the abutment into a position in which the stop element may contact the abutment.

- (1) Note. Electric motor control of the rotatable stop elements and/or the movable abutments will be found in Class 192, Clutches and Power-Stop Control, subclasses 138+, and particularly subclass 142; and the appropriate subclass of Class 318, Electricity: Motive Power Systems, subclasses 560+, for position servo control systems particularly subclass 614, friction braking at balance; see (2) Note to this class (74), subclass 10.

SEE OR SEARCH CLASS:

- 192, Clutches and Power-Stop Control, subclasses 138+, for power-stop limit controls and see (1) Note.
- 318, Electricity: Motive Power Systems, appropriate subclasses for electric motor control, and particularly subclasses 560+, for position servo control type particularly subclass 614, for friction braking at balance; and see (1) Note.

#### 10.22 **Digital dial type:**

This subclass is indented under subclass 10.1. Devices in which the shaft operator is a dial and is provided with a series of single finger-receiving openings.

SEE OR SEARCH CLASS:

- 200, Electricity: Circuit Makers and Breakers, subclass 11, for dial operated switches.
- 379, Telephonic Communications, subclass 363 for a telephone dial mechanism.

#### 10.27 **Plural operator:**

This subclass is indented under subclass 10.1. Devices having more than one operator for controlling the shaft.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 10.54, for separate operators for each of a plurality of speed drives of the nonselective type dial operators.
- 479, for plural input single output lever and linkage systems.
- 625+, for alternate manual and power operators.
- 665+, for plural input single output gearing.



- SEE OR SEARCH CLASS:  
235, Registers, appropriate subclasses for related operating devices for registers and particularly subclasses 12+, for those which are keyboard operated.  
475, Planetary Gear Transmission Systems or Components, subclasses 1+ for plural power sources for driving planetary gearing.
- 10.29 Cam and follower:**  
This subclass is indented under subclass 10.27. Devices wherein a cam and follower is interposed between the operator and the shaft.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
10.6, for nonselective cam and follower type dial operators.  
567+, for cam and/or follower structure, per se.
- 10.31 Adjustable cam:**  
This subclass is indented under subclass 10.29. Devices wherein the cam is adjustable.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
568, for adjustable cams, per se.
- 10.33 Sliding operator:**  
This subclass is indented under subclass 10.31. Devices where the cam is carried by a sliding operator.
- 10.35 Adjustable follower:**  
This subclass is indented under subclass 10.29. Devices wherein the follower is adjustable.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
569, for followers, per se.
- 10.37 Sliding operator:**  
This subclass is indented under subclass 10.35. Devices where the cam is carried by a sliding operator.
- 10.39 Rack and pinion:**  
This subclass is indented under subclass 10.27. Devices wherein a rack and pinion gearing is interposed between at least one of the operators and the shaft.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
422, for rack and pinion gearing, per se.
- 10.41 With detent or clicker:**  
This subclass is indented under subclass 10.1. Devices in which a detent or click device tends to hold the shaft in the predetermined positions.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
527+, for detents, per se.
- 10.45 Plural shafts:**  
This subclass is indented under subclass 10. Devices in which a plurality of shafts are rotated by a single operator.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
471+, for single input plural output lever and linkage systems.  
665+, for single input plural output gearing.
- SEE OR SEARCH CLASS:  
475, Planetary Gear Transmission Systems or Components, for plural outputs from planetary gearing.
- 10.5 Plural speed:**  
This subclass is indented under subclass 10. Devices in which the shaft may be rotated at a plurality of speeds.
- (1) Note. In most cases, a fast speed is used for coarse rotational adjustment and a slow speed for fine adjustment.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
325+, for interchangeably locked nonplanetary gearing.
- 10.52 Planetary:**  
This subclass is indented under subclass 10.5. Devices wherein a planetary gearing is interposed between the operator and the shaft.
- SEE OR SEARCH CLASS:  
475, Planetary Gear Transmission Systems or Components, for planetary gearing, per se.

**10.54 Separate operators:**

This subclass is indented under subclass 10.5. Devices having separate operators for each speed.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

10.52, for separate operators for planetary gearing.

665+, for plural input single output nonplanetary type gearing.

**10.6 Cam and follower:**

This subclass is indented under subclass 10. Devices wherein a cam and follower is interposed between the operator and the shaft.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

10.29+, for selective type cam and follower dial operators.

567+, for cam and/or follower structure, per se.

**10.7 Tensioned flexible operator:**

This subclass is indented under subclass 10. Devices wherein the operator includes a flexible strand operating in tension only, usually in the nature of a belt and pulley drive, although the strand may be anchored to one of the pulleys.

SEE OR SEARCH CLASS:

474, Endless Belt Power Transmission Systems or Components, appropriate subclasses for a belt and pulley drive in a power transmission.

**10.8 Gear drive:**

This subclass is indented under subclass 10. Devices wherein gearing is interposed between the operator and the shaft.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

640+, for gearing, per se.

**10.85 Worm or screw:**

This subclass is indented under subclass 10.8. Devices where the gearing is of the worm or screw type.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

424.71 through 424.96, for screw type gearing, per se.

425, for worm type gearing, per se.

**10.9 Lever and linkage drive:**

This subclass is indented under subclass 10. Devices wherein a lever and linkage system is interposed between the operator and the shaft.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

469+, for lever and linkage systems, per se.

**11 POWER TAKE-OFF:**

This subclass is indented under the class definition. Devices comprising a subordinate power transmitting assembly, additional to and driven by one of the elements of a main power line, or by the prime mover therefor.

- (1) Note. Power take offs from a prime mover for this class (74) are here unless they are made from a shaft extension of a prime mover, in which case, see this class, subclass 15.63. Take offs for engine accessory drives will be found in Class 123, Internal-Combustion Engines, subclass 198; take offs involving vehicle structure are found in Class 180, Motor Vehicles, subclasses 53.1+; and take offs for vehicle driven pumps are in Class 417, Pumps, subclasses 231+.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

15.63, and see (1) Note, supra.

16, plural driven devices actuated from a power table or stand.

640+, for gearing, per se.

665+, for plural driven devices of general application.

SEE OR SEARCH CLASS:

123, Internal-Combustion Engines, subclass 198, for take offs for engine accessories (and see (1) Note, supra).

172, Earth Working, subclasses 35+ for an earth working implement comprising an earth working tool driven by a power take-off, and subclasses 492+

- and the subclasses there noted for an earth working implement adjusted by a power take-off.
- 180, Motor Vehicles, subclasses 53.1+, for power take offs involving vehicle structure (and see (1) Note, supra).
- 408, Cutting by Use of Rotating Axially Moving Tool, subclasses 124+, for drilling machines in which the feeding movement between tool and work is effected by means actuated by the rotation of the tool spindle.
- 475, Planetary Gear Transmission Systems or Components, for gearing driving plural load devices.
- 12 Speedometer:**  
This subclass is indented under subclass 11. Assemblies, in which the auxiliary driven element is a speedometer.
- 13 Wheel take-off:**  
This subclass is indented under subclass 11. Mechanisms, in which the power is taken directly from or transmitted directly to, the wheels of a vehicle.
- SEE OR SEARCH CLASS:  
30, Cutlery, subclasses 166.3+ and 388+, for portable power saws.
- 180, Motor Vehicles, subclasses 53.1+, for power take-offs combined with vehicle structure.
- 185, Motors: Spring, Weight, or Animal Powered, subclasses 15+, for animal powered motors.
- 14 Wheel bed type:**  
This subclass is indented under subclass 13. Mechanisms, in which the mechanisms are provided with power transmitting or receiving elements which contact with and support at least one wheel of the vehicle.
- 15 Supported pulley:**  
This subclass is indented under subclass 13. Mechanisms, in which power is delivered from or to a vehicle wheel through a device attached thereto, the wheel being out of peripheral contact with any other object.
- SEE OR SEARCH CLASS:  
474, Endless Belt Power Transmission Systems or Components, appropriate subclasses for pulley structure and for pulleys used in endless belt power transmissions.
- 15.2 Plural take-off shafts:**  
This subclass is indented under subclass 11. Devices having a plurality of power take-off shafts.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
16, for plural driven devices actuated from a power table or stand.  
665+, for plural driven devices of general application.
- SEE OR SEARCH CLASS:  
192, Clutches and Power-Stop Control, subclasses 48.1+ for plural clutch-assemblages, and especially subclasses 48.8+ for such assemblages associated with three or more shafts, one of which may be a power take-off shaft.
- 15.4 With independent change speed gearing:**  
This subclass is indented under subclass 11. Devices in which independent gearing means are provided to effect a change in output speed of, and/or a forward or reverse drive for, the take-off.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
325+, for nonplanetary change speed gearing.
- SEE OR SEARCH CLASS:  
475, Planetary Gear Transmission Systems or Components, for planetary change speed gearing.
- 15.6 From shaft extension:**  
This subclass is indented under subclass 11. Devices in which either a prime mover shaft, a main power line shaft, or an auxiliary driven shaft is extended to constitute a power take-off.
- (1) Note. The so-called "power take-off shaft" to be found on some type of trac-

tors is considered to be an auxiliary driven shaft.

SEE OR SEARCH CLASS:

- 403, Joints and Connections, appropriate subclasses for shaft couplings of a nonflexible type.
- 464, Rotary Shafts, Gudgeons, Housings, and Flexible Couplings for Rotary Shafts, appropriate subclasses for a flexible coupling between a torque transmitting shaft and a driven member.

**15.63 Prime mover shaft, e.g., crank shaft:**

This subclass is indented under subclass 15.6. Devices in which a shaft in a prime mover for the power line (e.g., a crank shaft or a cam shaft) is extended to constitute a take-off.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 11, for other take-offs from prime movers, and see (1) Note to that definition for the line between these two subclasses.

SEE OR SEARCH CLASS:

- 123, Internal-Combustion Engines, subclasses 185.1+, for engine crankshaft extensions employed for engine starting and subclass 198 for engine accessories driven by a shaft extension.
- 417, Pumps, subclasses 231+, for vehicle engine driven power take-offs for pumps.

**15.66 Change speed transmission shaft:**

This subclass is indented under subclass 15.6. Devices in which a shaft in a change speed transmission is extended to constitute the take-off.

**15.69 Vehicle propeller shaft:**

This subclass is indented under subclass 15.6. Devices in which the propeller shaft of a vehicle is extended to constitute a take-off.

- (1) Note. The power take-off is normally at the differential.

**15.8 Intermediate ends of power transmitting line:**

This subclass is indented under subclass 11. Devices which are driven by a connection in the main power transmitting line and intermediate its driving and driven ends.

- (1) Note. A power transmitting line is a power path comprising, e.g., one or more clutches and/or gearing and/or brakes, having a prime mover at one end and a load at the other.

**15.82 Vehicle propulsion transmitting line:**

This subclass is indented under subclass 15.8. Devices in which the power transmitting line is used for vehicle propulsion.

**15.84 Between prime mover shaft and transmission:**

This subclass is indented under subclass 15.82. Devices in which the connection to the transmitting line is located between the prime mover output shaft and the transmission.

**15.86 Drive from transmission gear:**

This subclass is indented under subclass 15.82. Devices in which the driving connection comprises a gear in mesh with a second gear, which second gear is part of the transmission gearing.

**15.88 Between transmission and propeller shaft:**

This subclass is indented under subclass 15.82. Devices in which the driving connection to the transmitting line is located between the driven shaft of the transmission and the propeller shaft.

SEE OR SEARCH CLASS:

- 192, Clutches and Power-Stop Control, subclasses 48.1+ for plural clutch-assemblages, and especially subclasses 48.8+ for such assemblages associated with three or more shafts, one of which may be a power take-off shaft.

**16 POWER TABLES AND STANDS:**

This subclass is indented under the class definition. Portable assemblies designed to drive one or more auxiliary attachments.

- (2) Note. For stands, per se, see the search notes below.

SEE OR SEARCH CLASS:

- 15, Brushing, Scrubbing, and General Cleaning, subclasses 49.1+ for a machine having a brush as its sole type of cleaning instrument, and that is especially adapted for cleaning a floor, wall, or ceiling.
- 108, Horizontally Supported Planar Surfaces, subclasses 20+ for a power driven horizontally supported surface of general utility.
- 248, Supports, subclasses 637+ for machinery supports.
- 310, Electrical Generator or Motor Structure, subclasses 47 and 50 for portable or hand held electric motors.
- 312, Supports: Cabinet Structure, subclasses 21+, for stands per se.
- 366, Agitating, appropriate subclasses, particularly subclasses 197+ and 208+.
- 433, Dentistry, subclasses 103+ for dental engines.

**17 WASHER AND WRINGER:**

This subclass is indented under the class definition. Assemblies particularly adapted for the operation of a washing and wringing machine.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 378+, for interchangeably locked, single clutch shaft, single forward and reverse gearing.
- 385+, for interchangeably locked, pivotally supported bevel gearing.

SEE OR SEARCH CLASS:

- 68, Textiles: Fluid Treating Apparatus, subclasses 21+, for textile fluid treating apparatus combined with fluid extraction of the squeezing type.

**17.5 FULL STROKE MECHANISM:**

This subclass is indented under the class definition. Devices for compelling a reciprocating part to be actuated to its full extent before it can be returned.

SEE OR SEARCH CLASS:

- 81, Tools, subclass 313 for pliers and plural-handle wrenches with jaw-movement completion means.

**17.8 MOTION TRANSFER THROUGH IMPERFORATE FLEXIBLE SEAL:**

This subclass is indented under the class definition. Devices having an imperforate member functioning as a seal for an aperture in a partition or for a passageway, the member being flexible at least in part to permit movement with respect to the partition and being fixed to the partition or walls of the passageway, there being means contacting one side of the seal member to receive or transfer motion from or to the member, and there being relative motion between the seal member and the means at the point of contact.

- (1) Note. The seal member may include bearing surfaces or the like to minimize the effect of the relative motion on the seal.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 18+, for flexible seals pierced by a rod, which seal is fixed to its support and to the rod.

SEE OR SEARCH CLASS:

- 313, Electric Lamp and Discharge Devices, subclass 148 for electric lamp and discharge devices provided with means to transmit motion to an electrode through a movable envelope wall portion.

**18 FLEXIBLE SEALING DIAPHRAGM ATTACHED TO MOVING ROD AND TO CASING:**

This subclass is indented under the class definition. Devices in which motion is transmitted through a sealed casing by means of a flexible sealing material attached to the casing and to a moving rod which passes through the sealing material.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 566, for slot closers for levers.

## SEE OR SEARCH CLASS:

- 92, Expandible Chamber Devices, subclasses 34+ for a bellows type expandible chamber device and subclasses 96+ for a diaphragm type expandible chamber device.
- 180, Motor Vehicles, subclass 90.6 for guards for pedals and gear shift levers.
- 277, Seal for a Joint or Juncture, for a generic sealing means or process, subclasses 634+ for a static contact seal for other than an internal combustion engine, or a pipe, conduit, or cable that is a flexible sleeve, boot, or diaphragm.
- 313, Electric Lamp and Discharge Devices, subclasses 146+, for electronic tubes and electric lamps having a sealed envelope and provided with means for transmitting force from the outside of the envelope to the interior of the envelope for the purpose of moving an electrode within the envelope.
- 403, Joints and Connections, appropriate subclasses for a mere connection comprising a flexible diaphragm or bellows joining a plate or wall and a rod passing through an aperture therein.
- 464, Rotary Shafts, Gudgeons, Housings, and Flexible Couplings for Rotary Shafts, subclasses 52+ for a flexible shaft combined with a housing; and subclasses 170+ for a housing for a rotary shaft.

**18.1 Pivoting or nutating rod:**

This subclass is indented under subclass 18. Devices in which the rod pivots or nutates.

**18.2 Longitudinally reciprocating rod:**

This subclass is indented under subclass 18. Devices in which the rod reciprocates longitudinally. Mechanical Movements. Devices under the class definition other than gearing for imparting motion to one body from the motion of another body, wherein the two motions, or some intermediate motion, are of different form, type or degree.

## SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 469+, for control lever and linkage systems.
- 640+, for gearing.
- 828+, for mechanical movement having "on the fly" adjustment of the driven member.

## SEE OR SEARCH CLASS:

- 226, Advancing Material of Indeterminate Length, appropriate subclasses for methods of, and apparatus for, feeding material without utilizing the leading or trailing ends to effect movement of the material.

**20 Oscillating to reciprocating and alternating rotary:**

Mechanical Movements for converting oscillating motion to the compound motion of reciprocation and alternating rotary motion.

**21 Oscillating to reciprocating and intermittent rotary:**

Mechanical Movements for converting oscillating motion to the compound motion of reciprocation and intermittent rotary motion.

**22 Rotary to reciprocating and rotary:**

Mechanical Movements for converting rotary motion to the combined motion of reciprocation and rotary motion.

## SEE OR SEARCH CLASS:

- 241, Solid Material Comminution or Disintegration, subclass 205, for apparatus using this mechanical movement.
- 242, Winding, Tensioning, or Guiding, subclasses 241 and 242 for drive mechanisms in fishing reels that convert rotary input into both reciprocation and rotation of an output.
- 414, Material or Article Handling, subclasses 431+ for apparatus for advancing and rotating an elongated article not intended to remain associated with the apparatus (e.g., a tube to be worked on) by means adapted to engage the article between its ends.

- 23 Rotary to reciprocating and alternating rotary:**  
Mechanical Movements for converting rotary motion to the compound motion of reciprocation and alternating rotary motion.
- 24 Rotary to reciprocating and intermittent rotary:**  
Mechanical Movements for converting rotary motion to the compound motion of reciprocation and intermittent rotary motion.
- 25 Rotary to or from reciprocating or oscillating:**  
Mechanical Movements for converting rotary motion to or from reciprocating or oscillating motion.
- SEE OR SEARCH CLASS:
- 30, Cutlery, subclasses 215+, for rotary power driven multiple shearing position shears.
- 241, Solid Material Comminution or Disintegration, subclasses 262+, for apparatus using this mechanical movement.
- 242, Winding, Tensioning, or Guiding, subclasses 241+, 271+, 447.1+, and 476.7+ for drive mechanisms that convert a rotary input motion into reciprocation or oscillation of a line guide.
- 433, Dentistry, subclasses 118+ for reciprocating or oscillating dental instruments receiving rotary power.
- 26 Head motions:**  
This subclass is indented under subclass 25. Mechanisms, especially adapted for shaking screens in which the screen is not claimed as a positive element and excepting those driven by unbalanced weights.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
- 61, for screens driven by unbalanced weights.
- SEE OR SEARCH CLASS:
- 198, Conveyors: Power-Driven, subclasses 750.1+, for reciprocating conveyors using this mechanical movement.
- 209, Classifying, Separating, and Assorting Solids, for driving mechanisms in combination with the screen.
- 27 Reciprocating carriage motions:**  
This subclass is indented under subclass 25. Mechanisms for converting rotary motion to or from reciprocating or oscillating motion of a carriage in which the driven member is driven by different types of mechanism during different parts of its stroke.
- SEE OR SEARCH CLASS:
- 101, Printing, subclasses 292+, for web type presses and subclasses 316+, for other type presses having reciprocating beds for bed and platen machines.
- 28 Phonograph type:**  
This subclass is indented under subclass 27. Mechanisms, especially adapted for moving the tone arm of a phonograph across the record.
- SEE OR SEARCH CLASS:
- 369, Dynamic Information Storage or Retrieval, subclasses 215.1 through 230 for such subject matter combined with tone arm structure.
- 720, Dynamic Optical Information Storage or Retrieval, subclasses 659 through 670 for power driven transducer assembly in a dynamic optical information storage or retrieval device.
- 29 Rack and pinion type:**  
This subclass is indented under subclass 25. Mechanisms, in which the mechanism involved is a rack and pinion and cannot be classified in any of the subclasses under this subclass.
- 30 Shifting rack:**  
This subclass is indented under subclass 29. Mechanisms, in which the rack moves in and out of engagement with the pinion.
- 31 Shiftable pinion:**  
This subclass is indented under subclass 29. Mechanisms, in which the pinion moves in and out of engagement with the rack.

- 32 Segmental pinion:**  
This subclass is indented under subclass 29. Mechanisms, in which the teeth on the pinion cover less than 360 degrees of the circumference of the pinion.
- 33 Alternately rotated pinion:**  
This subclass is indented under subclass 29. Mechanisms, in which the pinion is always in mesh with the rack but its direction of rotation is alternated.
- 34 Clutchable gears:**  
This subclass is indented under subclass 29. Mechanisms, in which the pinion or pinions are constantly in mesh with the rack but are clutched and declutched to the shaft by which they are carried.
- 35 Bevel:**  
This subclass is indented under subclass 34. Mechanisms, in which the pinion or pinions are constantly in mesh with the rack but are clutched and declutched to the shaft by which they are carried, the pinions being of the bevel type.
- 36 Overcoming dead center:**  
This subclass is indented under subclass 25. Mechanisms, in which the mechanisms involved either prevents the device from stopping on dead center or has some auxiliary mechanism for throwing the device off of dead center.
- 37 Belt or chain carried member:**  
This subclass is indented under subclass 25. Mechanisms, which change the motion by means of a chain or belt.
- 38 Crank, lever, toggle, and slide:**  
This subclass is indented under subclass 25. Mechanisms, including a crank, lever, toggle, and slide.
- 39 Crank, lazy-tong, and slide:**  
This subclass is indented under subclass 25. Mechanisms, including a crank, lazy-tong, and slide.
- 40 Crank, pitman, lever, and slide:**  
This subclass is indented under subclass 25. Mechanisms, including a crank, pitman, lever, and slide.  
  
SEE OR SEARCH CLASS:  
123, Internal-Combustion Engines, subclass 78, for variable clearance, four cycle engines.
- 41 Pump jack type:**  
This subclass is indented under subclass 40. Mechanisms, including a crank, pitman, lever and slide of the pump jack type.
- 42 Crank, pitman, and lever:**  
This subclass is indented under subclass 25. Mechanisms, including a crank, pitman, and lever.  
  
SEE OR SEARCH CLASS:  
30, Cutlery, subclass 217, for multiple shearing position shears using this mechanical movement.
- 43 Multiple levers:**  
This subclass is indented under subclass 42. Mechanisms, including a crank, pitman, and a plurality of levers.
- 44 Crank, pitman, and slide:**  
This subclass is indented under subclass 25. Mechanisms, including a crank, pitman, and slide.
- 45 Crank, lever, and slide:**  
This subclass is indented under subclass 25. Mechanisms, including a crank, lever, and slide.  
  
SEE OR SEARCH CLASS:  
30, Cutlery, subclass 218, for multiple shearing position shears using this mechanical movement.
- 46 Rack connections:**  
This subclass is indented under subclass 45. Mechanisms, including a crank, lever, and slide and the connection between part of the members including a rack.



- 47 Crank and lever:**  
This subclass is indented under subclass 25. Mechanisms, including a crank and lever.
- SEE OR SEARCH CLASS:  
30, Cutlery, subclass 219, for multiple shearing position shears using this mechanical movement.
- 48 Slidable connections:**  
This subclass is indented under subclass 47. Mechanisms, including a crank and lever with a slidable connection between the crank and lever.
- 49 Crank and slide:**  
This subclass is indented under subclass 25. Mechanisms, including a crank and slide.
- SEE OR SEARCH CLASS:  
30, Cutlery, subclass 220, for multiple shearing position shears using this mechanical movement.
- 50 Slidable connections (e.g., scotch yoke):**  
This subclass is indented under subclass 49. Mechanisms, including a crank and slide with a slidable connection between the crank and slide.
- 51 Crank and multiple pitmans:**  
This subclass is indented under subclass 25. Mechanisms, including a crank and more than one pitman.
- 52 Planetary gearing and slide:**  
This subclass is indented under subclass 25. Mechanisms, including planetary gearing and a slide.
- 53 Cam, lever, and slide:**  
This subclass is indented under subclass 25. Mechanisms, including a cam, lever, and slide.
- 54 Cam and lever:**  
This subclass is indented under subclass 25. Mechanisms, including a cam and lever.
- SEE OR SEARCH CLASS:  
30, Cutlery, subclass 219, for multiple shearing position shears using this mechanical movement.
- 55 Cam and slide:**  
This subclass is indented under subclass 25. Mechanisms, including a cam and slide.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
838, for a cam and slide adjusting a stroke "on the fly".
- SEE OR SEARCH CLASS:  
30, Cutlery, subclass 220, for multiple shearing position shears using this mechanical movement.
- 56 Axial cam:**  
This subclass is indented under subclass 55. Mechanisms, including a cam and slide, the cam being of the axial type.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
839, for axial type cams adjusting a stroke "on the fly".
- 57 Grooved:**  
This subclass is indented under subclass 56. Mechanisms, including a cam and slide, the cam being of the axial type and the cam surface being in the form of a groove in the cam surface.
- 58 Multiple screw:**  
This subclass is indented under subclass 57. Mechanisms, including two axially grooved cams or screws rotating in opposite directions, one of which drives or is driven by the reciprocated or oscillated member or slide in one direction and the other in the opposite direction.
- 59 Alternately rotated screw:**  
This subclass is indented under subclass 57. Mechanisms, including an axially grooved cam connected to a slide, the cam being alternately rotated as the slide alternately changes its direction.
- 60 Wabblers type:**  
This subclass is indented under subclass 55. Mechanisms, including an axial cam and slide, the cam being of the wabblers type.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
123, for intermittent wobbler gearing.
- SEE OR SEARCH CLASS:  
91, Motors: Expansible Chamber Type, subclasses 499+ for expansible chamber motors utilizing wobbler type, axial cams and slides.  
123, Internal-Combustion Engines, subclasses 56.2+ for an internal-combustion engine which utilizes a rotary output shaft, parallel to the engine cylinders which is driven by a cam on the rotary output shaft.  
475, Planetary Gear Transmission Systems or Components, subclasses 163+ for planetary wobbler gearing.
- 61 Unbalanced weights:**  
This subclass is indented under subclass 25. Mechanisms, in which the mechanism involved makes use of unbalanced weights to produce the reciprocating or oscillating motion.
- SEE OR SEARCH CLASS:  
209, Classifying, Separating, and Assorting Solids, subclass 367, for apparatus utilizing this mechanical movement.
- 62 Trammel-pitman:**  
This subclass is indented under subclass 25. Mechanisms, in which the mechanism involved includes a cam having a plurality of intersecting slots, in which slide projections on a beam or connecting rod.
- SEE OR SEARCH CLASS:  
33, Geometrical Instruments, subclasses 30.1+, for ellipsographs.
- 63 Rotary to rotary:**  
Mechanical movements for changing rotary motion to rotary motion.
- 64 Inertia or centrifugal transmitters:**  
This subclass is indented under subclass 63. Mechanisms, in which the motion is changed by means of inertia or centrifugal means.
- SEE OR SEARCH CLASS:  
173, Tool Driving or Impacting, subclasses 93.5+ for a tool impacting device which comprises a connection adapted to rotate a tool in low torque condition and yield in overload to deliver torsional impact.
- 65 Crank, pitman, lever, and crank:**  
This subclass is indented under subclass 63. Mechanisms in which the motion is changed by means of a crank, pitman, lever, and crank.
- 66 Crank, lever, and crank:**  
This subclass is indented under subclass 63. Mechanisms, in which the motion is changed by means of a crank, lever, and crank.
- 67 Crank, pitman, and crank:**  
This subclass is indented under subclass 63. Mechanisms, in which the motion is changed by means of a crank, pitman, and crank.
- 68 Cranks, link connected:**  
This subclass is indented under subclass 63. Mechanisms, in which the motion is changed by means of cranks which are connected together by links.
- 69 Cranks, slidable connections:**  
This subclass is indented under subclass 63. Mechanisms, in which the motion is changed by cranks which are slidably connected together.
- 70 Rotary to alternating rotary:**  
Mechanical Movements for converting rotary motion to alternating rotary motion.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
318, through 324, for alternating rotary gearing.
- 71 Mangle connections:**  
This subclass is indented under subclass 70. Mechanisms, in which the motion is changed by means of a mangle and gearing and the driving member is the shiftable member.
- (1) Note. By mangle is meant a rack, wheel, or any other movable member having teeth on opposite sides, engaged by a







































































































































































