

300	PARTICLE PRECESSION RESONANCE	334	..With separate pickup
301	..Using a magnetometer	335	...Employing multiple frequencies
302	..To determine direction	336	...To detect transient signals
303	..Using well logging device	337	...To detect return wave signals
304	..Using optical pumping or sensing device	338	...Within a borehole
305	..Having particular optical cell structure	339	....By induction logging
306	..Determine fluid flow rate	340	.....To measure susceptibility
307	..Using a nuclear resonance spectrometer system	341	.....To measure dielectric constant
308	..Including a test sample and control sample	342	.....Using a toroidal coil
309	..To obtain localized resonance within a sample	343	.....Using angularly spaced coils
310	..By scanning sample frequency spectrum	344	..With radiant energy or nonconductive-type receiver
311	..With signal decoupling	345	..By magnetic means
312	..By spectrum storage and analysis	346	..Within a borehole
313	..Including polarizing magnetic field/radio frequency tuning	347	..Using electrode arrays, circuits, structure, or supports
314	..With conditioning of transmitter signal	348	..For detecting naturally occurring fields, currents, or potentials
315	..With sample resonant frequency and temperature interdependence	349	...Of the telluric type
316	..Using an electron resonance spectrometer system	350	...Including magneto-telluric type
317	..Including a test sample and control sample	351	...Within a borehole
318	..Spectrometer components	352	...Combined with artificial source measurement
319	..Polarizing field magnet	353	...With fluid movement or pressure variation
320	..With homogeneity control	354	..Coupled to artificial current source
321	..Sample holder structure	355	...Within a borehole
322	..Electronic circuit elements	356	...While drilling
323	OF GEOPHYSICAL SURFACE OR SUBSURFACE IN SITU	357	...Including separate pickup of generated fields or potentials
324	..Including borehole fluid investigation	358	...With three electrodes
325	..To determine fluid entry	359	...With nonelectrode pickup means
326	..For small object detection or location	360	...Using a pulse-type current source
327	..Using oscillator coupled search head	361	....With mechanical current reversing means
328	...Of the beat frequency type	362	.....To measure induced polarization
329	..Using movable transmitter and receiver	363	....By varying the path of current flow
330	..By aerial survey	364	.....Using frequency variation
331	..For magnetic field detection	365	....Offshore
332	..With radiant energy or nonconductive-type transmitter	366	....For well logging
333	..Within a borehole	367	....Using a pad member
		368	....Cased borehole
		369	....While drilling

370	.....Using surface current electrodes	404	.Cathode-ray tube
371	.....Using plural fields	405	.Vacuum tube
372	.....Between spaced boreholes	406	..Plural tubes in the testing circuit
373	.....Using current focussing means	407	..Testing circuit for diverse-type tube
374	.....Including a pad member	408	..Circuit for making diverse test
375	.....Including plural current focussing arrays	409	..Testing discharge space characteristic (e.g., emission)
376	OF SUBSURFACE CORE SAMPLE	410	...With application of current or potential to the discharge control means
377	.For magnetic properties	411	....Pulsating or alternating current or potential for the discharge control means
378	INTERNAL-COMBUSTION ENGINE IGNITION SYSTEM OR DEVICE	412	.....Pulsating or alternating current for the anode
379	.With analysis of displayed waveform	413	..Shock testing
380	.Electronic ignition system	414	.Electric lamp
381	..With magnetically controlled circuit	415	ELECTROMECHANICAL SWITCHING DEVICE
382	..With capacitor discharge circuit	416	.Voltage regulator
383	.By simulating or substituting for a component under test	417	.Thermostat switch
384	.Using plural tests in a conventional ignition system	418	.Relay
385	.Distributor	419	..Reed switch
386	..Dwell (i.e., cam angle)	420	..To evaluate contact chatter
387	..Condenser	421	..To evaluate contact resistance
388	.Coil	422	..To evaluate contact sequence of operation
389	.Magneto	423	..To evaluate contact response time
390	.Low or high tension lead	424	.Circuit breaker
391	.Ignition timing	425	ELECTROLYTE PROPERTIES
392	..Using a pulse signal technique	426	.Using a battery testing device
393	.In situ testing of spark plug	427	..To determine ampere-hour charge capacity
394	..With cathode-ray tube display	428	...Including an integrating device
395	..Using an illuminating device to indicate spark plug condition	429	..To determine load/no-load voltage
396	..With an air gap in series with spark plug to indicate spark plug condition	430	..To determine internal battery impedance
397	..By shorting the plug to ground to indicate spark plug condition	431	..With temperature compensation of measured condition
398	..With air gap in ground circuit	432	..To determine battery electrolyte condition
399	..Wherein a measured electric quantity indicates spark plug condition	433	..To compare battery voltage with a reference voltage
400	.Spark plug removed or tested in a test fixture	434	..To determine plural cell condition
401	..Using a pressure chamber	435	..Having particular meter scale or indicator
402	.Apparatus for coupling a measuring instrument to an ignition system		
403	ELECTRIC LAMP OR DISCHARGE DEVICE		

436	..Including oscillator in measurement circuit	204	.Fluid material examination
437	..Including probe structure	205	.Permanent magnet testing
438	.Using a pH determining device	206	.Movable random length material measurement
439	.Using a conductivity determining device	207.11	.Displacement
440	..Which includes a dropping mercury cell	207.12	..Compensation for measurement
441	..Which includes a temperature responsive element	207.13	..Having particular sensor means
442	..Which includes an oscillator	207.14	...Diverse sensors
443	..Having a bridge circuit	207.15	...Inductive
444	..Which includes current and voltage electrodes	207.16	....Electrically energized
445	..Having inductance probe structure	207.17	.....Separate pick-up
446	..Having conductance probe structure	207.18	....Differential type (e.g., LVDT)
447	...With movable or adjustable electrode	207.19	....Differential bridge circuit
448	...With concentric electrodes	207.2	...Hall effect
449	...With axially arranged electrodes	207.21	...Magnetoiresistive
450	..Which includes particular cell container structure	207.22	..Having particular sensed object
451	A MATERIAL PROPERTY USING THERMOELECTRIC PHENOMENON	207.23	..Plural measurements (e.g., linear and rotary)
452	A MATERIAL PROPERTY USING ELECTROSTATIC PHENOMENON	207.24	..Linear
453	.In a liquid	207.25	..Rotary
454	.Frictionally induced	207.26	..Approach or retreat
455	.Corona induced	209	.Stress in material measurement
456	.For flaw detection	210	.Magnetic information storage element testing
457	ELECTROSTATIC FIELD	211	..Memory core storage element testing
458	.Using modulation-type electrometer	212	..Dynamic information element testing
459	USING IONIZATION EFFECTS	213	.Magnetic recording medium on magnetized object records object field
460	.For monitoring pressure	214	.By paramagnetic particles
461	..Using a radioactive substance	215	..With pattern enhancing additive
462	..Using thermionic emissions	216	..Flaw testing
463	..Using a magnetic field	217	.Railroad rail flaw testing
464	.For analysis of gas, vapor, or particles of matter	218	..Rail joint cutout
465	..Using electronegative gas sensor	219	.Magnetic sensor within material
466	..Using a filter	220	..Sensor supported, positioned, or moved within pipe
467	..Using test material desorption	221	...Borehole pipe testing
468	..Using thermal ionization	222	.Hysteresis or eddy current loss testing
469	..Using a radioactive substance	223	.Hysteresis loop curve display or recording
470	..Using thermionic emission	224	.With temperature control of material or element of test circuit
200	MAGNETIC	225	.With compensation for test variable
201	.Susceptibility	226	.Combined
202	.Calibration	227	.Plural tests
203	.Curie point determination	228	.With means to create magnetic field to test material

229	..Thickness measuring	503	.In vehicle wiring
230	...Layer or layered material	504	..With trailer
231	..With backing member	505	..Combined with window glass
232	..Plural magnetic fields in material	506	.Combined with a flashlight
233	..With phase sensitive element	507	..With fuse testing attachment
234	..Electrically energized nonforce type sensor	508	.With electric power receptacle for line wire testing
235	...Noncoil type	509	.Of ground fault indication
236	...Oscillator type	510	..Of electrically operated apparatus (power tool, appliance, machine, etc.)
237	...Material flaw testing	511	.Of electrically operated apparatus (power tool, appliance, machine, etc.)
238	..Material flaw testing	512	.For fault location
239	..Induced voltage-type sensor	513	..Where component moves while under test
240	..Material flaw testing	514	...By exposing component to liquid or gas while under test
241	...Opposed induced voltage sensors	515	...Using a particular sensing electrode
242	....Plural sensors	516	....Metal chain
243	...Plural sensors	517	....Wire bristles
244	.Magnetometers	518	....Metal pellets or beads
244.1	..Optical	519	..By capacitance measuring
245	..Plural sensor axis misalignment correction	520	..By frequency sensitive or responsive detection
246	..With means to align field sensor with magnetic field sensed	521	..By phase sensitive or responsive detection
247	..Nonparallel plural magnetic sensors	522	..By voltage or current measuring
248	..Superconductive magnetometers	523	...Of an applied test signal
249	..Thin film magnetometers	524	...Polarity responsive
250	..Electronic tube or microwave magnetometers	525	..By resistance or impedance measuring
251	..Hall plate magnetometers	526	...Using a bridge circuit
252	..Semiconductor type solid-state or magnetoresistive magnetometers	527	..By applying a test signal
253	..Saturable core magnetometers	528	...Tracing test signal to fault location
254	...Second harmonic type	529	...Using a magnetic field sensor
255	...Peak voltage type	530	...Using an electric field sensor
256	..Energized movable sensing coil magnetometers	531	...At fault site
257	..Moving coil magnetometer	532	...Using time measuring
258	..Fixed coil magnetometer	533	...Of reflected test signal
259	..Movable magnet or magnetic member interacts with magnetic field	534	..By reflection technique
260	.Magnetic field detection devices	535	..By time measuring
261	..With support for article	536	..By spark or arc discharge
262	.Magnetic test structure elements	537	.Of individual circuit component or element
263	.Current through test material forms test magnetic field	750	..System sensing fields adjacent device under test (DUT)
500	FAULT DETECTING IN ELECTRIC CIRCUITS AND OF ELECTRIC COMPONENTS	751	...Using electron beam probe
501	.Using radiant energy	752	...Using light probe
502	.In an ignitor or detonator	753	...Using electro-optic device

754	..With probe elements	601	.Calibration
755	...Internal of or on support for device under test (DUT)	602	.With auxiliary means to condition stimulus/response signals
756	...Contact confirmation		
757	...Probe contact enhancement	603	..For excitation
758	...Probe alignment or positioning	604	...Including marker signal generator circuit
759	...With recording of test results on DUT	605	..For response signal evaluation or processing
760	...With temperature control		
761	...Pin	606	...Including a signal comparison circuit
762	...Cantilever		
763	..DUT including test circuit	607	...Including a conversion (e.g., A->D or D-> A) process
764	..With identification of DUT		
765	..Test of semiconductor device	608	...Including a ratiometric function
766	..With barrier layer		
767	....Diode	609	..For sensing
768	....Bipolar transistor	610	...Including a bridge circuit
769	....Field effect transistor	611	...Including a remote type circuit
770	..Liquid crystal device test		
771	..Power supply test	612	.Parameter related to the reproduction or fidelity of a signal affected by a circuit under test
772	..Motor or generator fault tests		
538	..Electrical connectors	613	..Noise
539	..Multiconductor cable	614	...Signal to noise ratio or noise figure
540	...With sequencer		
541	...For insulation fault	615	..Transfer function type characteristics
542	...Having a light or sound indicator	616	...Gain or attenuation
543	..Single conductor cable	617	...Response time or phase delay
544	...For insulation fault	618	...Transient response or transient recovery time (e.g., damping)
545	..Armature or rotor	619	...Selective type characteristics
546	..Winding or coil	620	..Distortion
547	...Transformer	621	...Envelope delay
548	..Capacitor	622	...Phase
549	..Resistor	623	...Harmonic
550	..Fuse	624	...Intermodulation
551	..Insulation	625	...Dissymmetry or asymmetry
552	...Bushing	626	...Nonlinearity
553	...Oil	627	..Shielding effectiveness (SE)
554	...Sheet material	628	...Circuit interference (e.g., crosstalk) measurement
555	..Instruments and devices for fault testing	629	.Distributive type parameters
556	..Having a lamp or light indicator	630	..Plural diverse parameters
557	FOR INSULATION FAULT OF NONCIRCUIT ELEMENTS	631	..Using wave polarization (e.g., field rotation)
558	.Where element moves while under test	632	..Using particular field coupling type (e.g., fringing field)
559	.Where a moving sensing electrode scans a stationary element under test	633	..Using resonant frequency
600	IMPEDANCE, ADMITTANCE OR OTHER QUANTITIES REPRESENTATIVE OF ELECTRICAL STIMULUS/RESPONSE RELATIONSHIPS	634	...To determine water content
		635	...To determine dimension (e.g., distance or thickness)
		636	...With a resonant cavity

637	..Using transmitted or reflected microwaves	671	....To determine dimension (e.g., dielectric thickness)
638	...Scattering type parameters (e.g., complex reflection coefficient)	672	....By comparison or difference circuit
639	...Where energy is transmitted through a test substance	673	.....Including a bridge circuit
640	....To determine water content	674	....By frequency signal response, change or processing circuit
641	....To determine insertion loss	675	.....Including a tuned or resonant circuit
642	..Where energy is reflected (e.g., reflectometry)	676	..With pulse signal processing circuit
643	....To determine water content	677	...Including R/C time constant circuit
644	....To determine dimension (e.g., distance or thickness)	678	...Including charge or discharge cycle circuit
645	....Having standing wave pattern	679	..With comparison or difference circuit
646	....To determine reflection coefficient	680	....Including a bridge circuit
647	..Using a comparison or difference circuit	681	..With frequency signal response, change or processing circuit
648	...With a bridge circuit	682	...Including a tuned or resonant circuit
649	..Lumped type parameters	683	...With phase signal processing circuit
650	..Using phasor or vector analysis	684	...With compensation means
651	...With a bridge circuit	685	....For temperature variation
652	..Of a resonant circuit	686	..With a capacitive sensing means
653	..For figure of merit or Q value	687	....Having fringing field coupling
654	..Using inductive type measurement	688	....Including a guard or ground electrode
655	...Including a tuned or resonant circuit	689	....To determine water content
656	...Including a comparison or difference circuit	690	....Including a probe type structure
657	....Using a bridge circuit	691	..Using resistance or conductance measurement
658	..Using capacitive type measurement	692	..With living organism condition determination using conductivity effects
659	...With loss characteristic evaluation	693	..With object or substance characteristic determination using conductivity effects
660	..With variable electrode area	694	....To determine water content
661	..With variable distance between capacitor electrodes	695	....Where the object moves while under test
662	....To determine dimension (e.g., thickness or distance)	696	....With a probe structure
663	..Where a material or object forms part of the dielectric being measured	697	....For interface
664	....To determine water content	698	....To determine oil qualities
665	.....By comparison or difference circuit	699	....To determine dimension (e.g., distance or thickness)
666	.....Including a bridge circuit	700	.....Including corrosion or erosion
667	.....By frequency signal response, change or processing circuit		
668	.....Including a tuned or resonant circuit		
669	.....With compensation means		
670	.....For temperature variations		

701	....Where the object moves while under test	162	.With acceleration measuring means
702	...With radiant energy effects	163	.Including speed analog electrical signal generator
703	....Including heating		
704	...With ratio determination	164	..Eddy current generator type (e.g., tachometer)
705	...With comparison or difference circuit	165	..With direction indicator
706	....Including a bridge circuit	166	.Including speed-related frequency generator
707	...With frequency response, change or processing circuit	167	..Including rotating magnetic field actuated indicator
708	....Including a tuned or resonant circuit	168	..Including periodic switch
709	...With phase signal processing circuit	169	...In ignition system
710	...With pulse signal processing circuit	170	....High voltage speed signal type
711	....Including R/C time constant circuit	171	...With extent-of-travel indicator
712	....Including a digital or logic circuit	172	..Including synchronized recording medium
713	...With voltage or current signal evaluation	173	..Including magnetic detector
714	....Including a potentiometer	174	...Permanent magnet type
715	....Including a particular probing technique (e.g., four point probe)	175	..Including radiant energy detector
716	.....To determine dimension (e.g., distance or thickness)	176	.Including object displacement varied variable circuit impedance
717	.....To determine material composition	177	.Including motor current or voltage sensor
718	.....To detect a flaw or defect	178	.Including "event" sensing means
719	...With semiconductor or IC materials quality determination using conductivity effects	179	..Magnetic field sensor
		180	..Mechanically actuated switch
720	...With compensation means	71.1	DETERMINING NONELECTRIC PROPERTIES BY MEASURING ELECTRIC PROPERTIES
721	....For temperature variation	71.2	.Erosion
722	...Device or apparatus determines conductivity effects	71.3	.Beam of atomic particles
723	....Potentiometer	71.4	.Particle counting
724	....Using a probe type structure	71.5	.Semiconductors for nonelectrical property
725	.Using a particular bridge circuit	71.6	.Superconductors
726	.Transformer testing (e.g., ratio)	72	TESTING POTENTIAL IN SPECIFIC ENVIRONMENT (E.G., LIGHTNING STROKE)
727	.Piezoelectric crystal testing (e.g., frequency, resistance)	72.5	.Voltage probe
66	CONDUCTOR IDENTIFICATION OR LOCATION (E.G., PHASE IDENTIFICATION)	73.1	PLURAL, AUTOMATICALLY SEQUENTIAL TESTS
67	.Inaccessible (at test point) conductor (e.g., buried in wall)	74	TESTING AND CALIBRATING ELECTRIC METERS (E.G., WATT-HOUR METERS)
160	ELECTRICAL SPEED MEASURING	75	.By stroboscopic means
161	.Speed comparing means	76.11	MEASURING, TESTING, OR SENSING ELECTRICITY, PER SE
		76.12	.Analysis of complex waves
		76.13	..Amplitude distribution

76.14	...Radiometer (e.g., microwave, etc.)	76.64	.....Plural
76.15	...With sampler	76.65	....With space discharge device
76.16	...With counter	76.66	...With capacitive energy storage
76.17	...With integrator	76.67	....With space discharge device
76.18	...With slope detector	76.68	...With filtering
76.19	..Frequency spectrum analyzer	76.69	...Current output proportional to frequency
76.21	...By Fourier analysis	76.71	...Nulling circuit
76.22	...Real-time spectrum analyzer	76.72	...Qualitative output
76.23	...With mixer	76.73	...With saturable device
76.24	...With sampler	76.74	...Deviation measurement
76.25	...With slope detector	76.75	..Having inductive sensing
76.26	...Scanning-panoramic receiver	76.76	..With space discharge device
76.27	....With particular sweep circuit	76.77	.Phase comparison (e.g., between cyclic pulse voltage and sinusoidal current, etc.)
77.11	...Nonscanning		
76.28	....Digital filter	76.78	..Quadrature sensing
76.29	....With filtering	76.79	..Feedback control, electrical
76.31	.....Parallel filters	76.81	..Feedback control, mechanical
76.32	.....With space discharge device	76.82	..Digital output
76.33	....Correlation	76.83	..Analog output
76.34	.....With space discharge device	84	..With waveguide (e.g., coaxial cable)
76.35	...With delay line	85	..With frequency conversion
76.36	...With optics	86	..Polyphase (e.g., phase angle, phase rotation or sequence)
76.37	.....Bragg cell	87	..With nonlinear device (e.g., saturable reactor, rectifier), discharge device (e.g., gas tube) or lamp
76.38	..With sampler	88	...Cathode ray
76.39	.Frequency of cyclic current or voltage (e.g., cyclic counting etc.)	89	...Space discharge control means (e.g., grid)
76.41	..Frequency comparison, (e.g., heterodyne, etc.)	90	..Electrodynamometer instrument
76.42	...With sampler	91	..Synchroscope type
76.43	...With plural mixers	92	.Fluid (e.g., thermal expansion)
76.44	...With filtering	93	..Conductive field (e.g., mercury)
76.45	....Bandpass	94	...Electrolytic
76.46	....Plural	95	.With waveguide or long line
76.47	...Digital output	96	.Using radiant energy
76.48	....With counter	97	..Light beam type (e.g., mirror galvanometer, parallax-free scale)
76.49	..Tuned mechanical resonator (e.g., reed, piezocrystal, etc.)	98	.Balancing (e.g., known/unknown voltage comparison, bridge, rebalancing)
76.51	..By tuning (e.g., to resonance, etc.)	99 R	..Automatic
76.52	..By phase comparison	100	...With recording
76.53	...With phase lock	99 D	...Digital voltmeters
76.54	...With delay line	101	.Non-rebalancing bridge
76.55	...Digital output	102	.Transient or portion of cyclic
76.56	....With microwave frequency detection		
76.57	....With tone detection		
76.58	....With sampler		
76.59	....With multiplexing		
76.61	....With memory		
76.62	....With counter		
76.63	.....Using register		

103 R	.Demand, excess, maximum or minimum (e.g., separate meters for positive and negative power, peak voltmeter)	131	.Suppressed zero
104	..Thermal (e.g., actuation)	132	.Nonlinear (e.g., Thyrite)
103 P	..Peak voltmeters	133	.Nonquantitative (e.g., hot-line indicator, polarity tester)
105	.Thermal (e.g., compensation)	134	.With commutator or reversing or pulsating switch (e.g., D.C. watt-hour meter)
106	..Actuation	135	..Oscillating
107	.Polyphase	136	.With rolling wheel or ball (e.g., transmission, integrating)
108	..Positive, negative or zero sequence	137	.Eddy current rotor (e.g., A.C. integrating wattmeter)
109	.Electrostatic attraction or piezoelectric	138	..With phase adjustment
110	.Meter protection or fraud combatting	139	.Motor-driven, time-controlled or oscillating (e.g., ratchet)
111	.With storage means for voltage or current (e.g., condenser banks)	140 R	.Plural inputs (e.g., summation, ratio)
112	..Tape, sheet (e.g., disk) or wire (e.g., magnetic) storage	141	..Voltamperes (real or reactive)
113	.Recording	142	..Watts
114	.Plural meters (e.g., plural movements in one case)	140 D	..Ratio
115	.Plural ranges, scales or registration rates	143	.Plural active motor elements (e.g., for two crossed pointers)
116	..With register (e.g., discount type, demand penalty)	144	.With electromagnetic field (e.g., dynamometer)
117 R	.Magnetic saturation (e.g., in field or in amplifier)	145	..Solenoid plunger type
117 H	..Hall effect	146	..With permanent magnet (e.g., field, vane)
118	.Modulator/demodulator	147	..Soft iron vane
119	.With rectifier (e.g., A.C. to D.C.)	149	.With probe, prod or terminals
120	.With voltage or current conversion (e.g., D.C. to A.C., 60 to 1000)	150	.Eccentrically pivoted coil
121 R	.Cathode ray (e.g., magic eye)	151 R	.With permanent magnet
121 E	..Magic eye indicators	152	..Drag magnet
122	.Gaseous discharge (e.g., spark gap voltmeter)	151 A	..Permanent magnet core
123 R	.With amplifier or space discharge device	153	.With register
124	..Inverted amplifier	154 R	.With rotor (e.g., filar suspension, zero set, balancing)
123 C	..Feedback amplifiers	155	..With pivot (e.g., internal friction compensation, anticreep)
125	.Inertia control, instrument damping and vibration damping	154 PB	..Pointer and bearing details
126	.With coupling means (e.g., attenuator, shunt)	156	.Casings
127	..Transformer (e.g., split core admits conductor carrying unknown current)	157	.Combined
128	..Selective filter	158.1	MISCELLANEOUS
129	.Polepiece (e.g., split) admits nonunitary input conductor		
130	.Self-calibration		
			<u>CROSS-REFERENCE ART COLLECTIONS</u>
		800	DIVINING RODS

324 - 10

CLASS 324 ELECTRICITY: MEASURING AND TESTING

FOREIGN ART COLLECTIONS

FOR 000 **CLASS-RELATED FOREIGN DOCUMENTS**