2 BIECTROMAGNETICALLY ACTUATED SWITCHES 3 JUTIFIZING magnetostrictive elements 4 Radio frequency switch (e.g., 7 r. 8 witch) 5 Juvith coaxial components 6 Automatic circuit-interrupting devices (e.g., circuit-protective devices) 7 Jessponsive to plural diverse circuit conditions (e.g., voltage and current) 8 Juvith coaxial switchs 10 Juvith auxiliary switch means (e.g., for energizing coil) 11 Juvith shunting contacts 12 Juvith divert connected contact separating means (e.g., magnetic with thermal) 13 Juvith divert connected contact separating means 14 Juvith switch condition (e.g., direction, phase angle or amplitude) 17 Jeural latch or combined latch operating means for single latch 18 Jesponsive to predetermined or alarm means 19 Jezon current 20 Juvith auxiling contents 21 Juvith diverse to predetermined or alarm means 22 Juvith diverse-type actuating means (e.g., magnetic combined with disabling means (for contact-actuator) 23 Jezon devices (e.g., cannot be manually reclosed while overload exists) 24 Juvith diverse-type actuating means (e.g., magnetic and thermal) 25 Juvith diverse-type actuating means (e.g., magnetic means undesirable motion prevention means with disabling means (for contact-actuator) 26 Jessponsive to predetermined or contacts and thermal) 27 Jessponsive to predetermined or contact actuator) 28 Jessponsive to predetermined or contact actuator) 29 Jessponsive (under, over or no voltage) 20 Jessponsive (under, over or no voltage) 21 Juvith diverse-type actuating means (e.g., magnetic and thermal) 22 Jessponsive (under, over or no voltage) 23 Jessponsive (under, over or no voltage) 24 Jessponsive (under, over or no voltage) 25 Jessponsive (under, over or no voltage) 26 Jessponsive (under, over or no voltage) 27 Jessponsive (under, over or no voltage) 28 Jessponsive (under, over or no voltage) 29 Jessponsive (under, over or no voltage) 20 Jessponsive (under, over or no voltage) 21 Jessponsive (under, over or no voltage) 22 Jessponsive (under, over or no v	1	COMBINED DIVERSE SWITCHES (E.G., MANUAL-ACTUATED AND ART TYPE)	27	Automatic combined with manual
Section Sect	2	ELECTROMAGNETICALLY ACTUATED	28	
R switch R switch R switch Swith coaxial components with coaxial components Automatic circuit interrupting devices (e.g., circuit-protective devices) Responsive to plural diverse circuit conditions (e.g., woltage and current separating means (e.g., represented consisting means (e.g., represented consisting means (e.g., for energizing coil) with direct connected contact separating means (e.g., hlowon or blowoff) with contact biasing, holding or pressure control means (e.g., hlowon or blowoff) weeponsive to predetermined or ahnormal current condition (e.g., direction, phase angle or amplitude) Zero current Responsive to predetermined or ahnormal current condition (e.g., direction, phase angle or amplitude) Zero current With direrse-type actuating means (e.g., magnetic and thermal) With disabling means (for contact-actuator) With disabling means (for contact-actuator) With dividual latch or crip means or incal the component of perating means (e.g., mintervals) or different duration (e.g., different duration (e.g., first reset occurs) intervals or fixed intervals of fifferent duration (e.g., first reset occurs) intervals or fixed intervals of fifferent duration (e.g., first reset occurs) intervals or fixed intervals of fixed intervals or fixed int	3	5 5		Mechanical motor-controlled
Automatic circuit-interrupting devices (e.g., circuit- protective devices) 7	4			Thermally actuated
devices (e.g., circuit- protective devices) 7	5	With coaxial components	32	
7 Responsive to plural diverse circuit conditions (e.g., voltage and current) 8 Multipole or polyphase 9With individual latch or trip means in each leg 10With common latch or trip means in each leg 11Plural switches 12With shunting contacts 13With direct connected contact separating means 14With direct connected contact separating means 15With contact biasing, holding or pressure control means 16Magnetic or electrodynamic (e.g., blowon or blowoff) 17With switch condition signalling, indicating or alarm means 18Responsive to predetermined or abnormal current condition (e.g., direction, phase angle or amplitude) 19Zero current 20Voltage responsive (under, over or no voltage) 21With latch or trip means 22Plural latch or combined latch operating means (e.g., magnetic flux winding directly in series with main contacts 23With altch or trip means 24With diverse-type actuating means (e.g., magnetic and thermal) 24Trip-free (i.e., cannot be manually reclosed while overload exists) 25With disabling means (for contact-actuator) 27With digabling means (for contact-actuator) 28With digabling means (for contact-actuator) 39With direvals of different duration (e.g., first reset occurs) 30 different duration (e.g., first reset occurs) 34With lockout 34With lockout 35Plural trips or combined operating means for single trip (e.g., magnetic with thermal) 36With thermal element comprising magnetic flux source 37With time delay (e.g., thermal) 38With time delay (e.g., thermal) 39With diaplicating or proportional to degree of overload condition 40With adjusting or calibrating means 41With direvals of time trates occurs) 42With diplicating or directly in series with main contacts 44With diplicating or directly in series with main contacts 45With adjusting or calibrating means 46With contact beauting directly in series with main contacts 47With diplicating or delication means 48W	6	devices (e.g., circuit-	33	given number of reclosures)
9With individual latch or trip means in each leg 10With common latch or trip means in each leg 11With common latch or trip means 12With switches 13With auxiliary switch means 14With direct connected contact separating means 15With contact biasing, holding or pressure control means 16Magnetic or electrodynamic (e.g., blown or blowoff) 17With switch condition signalling, indicating or alarm means 18Responsive to predetermined or abnormal current condition (e.g., direction, phase angle or amplitude) 19Zero current 20With latch or trip means 21With latch or trip means 22Plural trips or combined operating means for single latch operating means for single latch 23With diverse-type actuating means (e.g., magnetic and thermal) 24Trip-free (i.e., cannot be manually reclosed while overload exists) 25With disabling means (for contact-actuator) 27With disabling means (for contact-actuator) 28With individual latch or trip means in each leg intervals) 39With common structural element comprising magnetic flux source 30With time delay (e.g., thermal) 30With time delay (e.g., thermal) 31With time delay (e.g., thermal) 32With adjusting or calibrating means contacts 33With ermal) 34With adjusting or calibrating means (e.g., magnetic and thermal) 35With operating means (for contact-actuator) 36With operating means for single latch or proportional to degree of overload condition 38With time delay (e.g., thermal) 39With time delay (e.g., with time delay (e.g., with contacts or proportional to degree of overload condition 40With adjusting or calibrating means 41With adjusting or calibrating means 42With diverse-type actuating means 43With contact rebound or other undesirable motion prevention means 44Including ambient temperature compensating means 45With contact rebound or other undesirable motion prevention means 46With contact rebound or citient to complete the prevention means 47		<pre>Responsive to plural diverse circuit conditions (e.g., voltage and current)</pre>		intervals or fixed intervals of different duration (e.g.,
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means 11 .Plural switches 12With shunting contacts 13With auxiliary switch means	10	With common latch or trip		
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13With snunting contacts 14With direct connected contact separating means 15With contact biasing, holding or pressure control means 16Magnetic or electrodynamic (e.g., blowon or blowoff) 17With switch condition signalling, indicating or alarm means 18Responsive to predetermined or abnormal current condition (e.g., direction, phase angle or amplitude) 19Zero current or no voltage) 21With latch or trip means 22Plural latch or combined latch operating means (e.g., magnetic and thermal) 23With disabling means (for contact-actuator) 24Trip-free (i.e., cannot be manually reclosed while overload exists) 25With disabling means (for contact-actuator) 36With thermal) 37With thermal element comprising magnetic flux source omprising magnetic flux source omprising magnetic flux source omproportional to degree of overload condition 40Responsive to or proportional to degree of overload condition 41With magnetic flux winding directly in series with main contacts With adjusting or calibrating means 42With dispatch means 43With contact rebound or other undesirable motion prevention means 44Trip-free (i.e., cannot be manually reclosed while overload exists) 45With contact rebound or other undesirable motion prevention means 46With adjusting conductive liquid (e.g., mercury) 47With contact rebound or other undesirable motion prevention means 48With contact rebound or other undesirable motion prevention means 49With contact rebound or other undesirable motion prevention means 49With liquid-displacement means	11	Plural switches		
13With auxiliary switch means	12	With shunting contacts		
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15With contact biasing, holding or pressure control means 16Magnetic or electrodynamic (e.g., blown or blowoff) 17With switch condition signalling, indicating or alarm means 18Responsive to predetermined or abnormal current condition (e.g., direction, phase angle or amplitude) 19Zero current or no voltage) 20Voltage responsive (under, over or no voltage) 21With latch or trip means coperating means for single latch operating means for single latch 23With diverse-type actuating means (e.g., magnetic and thermal) 24Trip-free (i.e., cannot be manually reclosed while overload exists) 25With disabling means (for contact-actuator) 28With lightly first time delay (e.g., magnetic solution)Mith time delay (e.g., magnetic solution)Mith time delay (e.g., with time delay (e.g., wagnetic solution)With time delay (e.g., thermal) 26With time delay (e.g., thermal) 27With time delay (e.g., with time delay (e.g., thermal) 28With time delay (e.g., thermal) 29With dimenal (e.g., magnetic flux winding directly in series with main contacts 20With adjusting or calibrating means 21With adjusting or calibrating means 22With contact repound or other undesirable motion prevention means 23With contact rebound or other undesirable motion prevention means 24Trip-free (i.e., cannot be means (e.g., magnetic and thermal) 25With disabling means (for completion means		separating means	37	
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(e.g., blowon or blowoff) . With switch condition signalling, indicating or alarm means . Responsive to predetermined or abnormal current condition (e.g., direction, phase angle or amplitude) 19 Zero current	16	-		
signalling, indicating or alarm means 18	-	(e.g., blowon or blowoff)	39	
18Responsive to predetermined or abnormal current condition (e.g., direction, phase angle or amplitude) 19Zero current 20Voltage responsive (under, over or no voltage) 21With latch or trip means 22Plural latch or combined latch operating means for single latch 23With diverse-type actuating means (e.g., magnetic and thermal) 24Trip-free (i.e., cannot be manually reclosed while overload exists) 25With disabling means (for contact-actuator) 26With disabling means (for contact-actuator) 27With magnetic flux winding directly in series with main contacts With adjusting or calibrating means With adjusting or calibrating means With regulating, adjusting or calibrating means With contact rebound or other undesirable motion prevention means With liquid-displacement means		signalling, indicating or alarm means	40	proportional to degree of
19Zero current 20Voltage responsive (under, over or no voltage) 21With latch or trip means 22Plural latch or combined latch operating means for single latch 23With diverse-type actuating means (e.g., magnetic and thermal) 24Trip-free (i.e., cannot be manually reclosed while overload exists) 25With disabling means (for contact-actuator) 42With adjusting or calibrating means 43With adjusting or calibrating means 44Thermal 45With regulating, adjusting or calibrating means 46With contact rebound or other undesirable motion prevention means 47With contact rebound or other undesirable motion prevention means 48Comprising three or more electrodes or circuit-completion means	18	abnormal current condition (e.g., direction, phase angle	41	With magnetic flux winding directly in series with main
19Zero current 20Voltage responsive (under, over or no voltage) 21With latch or trip means 22Plural latch or combined latch operating means for single latch 23With diverse-type actuating means (e.g., magnetic and thermal) 24Trip-free (i.e., cannot be manually reclosed while overload exists) 25With disabling means (for contact-actuator) 26With disablagement means (for contact-actuator) 27With disablagement means (index)With liquid-displacement means (index)With liquid-displacement means (index)With liquid-displacement means (index)		-	42	With adjusting or calibrating
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21With latch or trip means 22Plural latch or combined latch		_		
22Plural latch or combined latch operating means for single latch 23With diverse-type actuating means (e.g., magnetic and thermal) 24Trip-free (i.e., cannot be manually reclosed while overload exists) 25With disabling means (for contact-actuator) 26With regulating, adjusting or calibrating means 27With contact rebound or other undesirable motion prevention means 28With contact rebound or other undesirable motion prevention means 29Comprising three or more electrodes or circuit-completion means		-		_
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means (e.g., magnetic and thermal) 24Trip-free (i.e., cannot be manually reclosed while overload exists) 25With disabling means (for contact-actuator) 47Utilizing conductive liquid (e.g., mercury) 48Comprising three or more electrodes or circuit-completion means	2.2		46	With contact rebound or other
24Trip-free (i.e., cannot be manually reclosed while overload exists) 25With disabling means (for contact-actuator) 47 .Utilizing conductive liquid (e.g., mercury)Comprising three or more electrodes or circuit-completion means	23	means (e.g., magnetic and		
overload exists) 25With disabling means (for contact-actuator) 48Comprising three or more electrodes or circuit-completion means 49 With liquid-displacement means	24	Trip-free (i.e., cannot be	47	(e.g., mercury)
contact-actuator) 49 With liquid-displacement means	n E	overload exists)	48	
contact-actuator) 49 With liquid-displacement means	Z 3			completion means
	26		49	

335 - 2 $\,$ CLASS 335 ELECTRICITY: MAGNETICALLY OPERATED SWITCHES, MAGNETS, AND ELECTROMAGNETS

50	Comprising plural	84	Magnetic structure (e.g.,
	interconnected liquid containers	85	saturable)
51	Magnetic	86	Pole structure
			With adjusting means
52	Piston or plunger	87	.Periodic (e.g., vibrators)
53	Combined with timing or delay means	88	Plural periodic switches or with plural pairs of contacts
54	Tiltable or rotating liquid chamber	89	Selectively, alternately, or
55	Armature structure	90	consecutively actuated
56	Comprising freely movable	90	With vibrating or oscillating
30	floating slug or mass		<pre>element damping, frequency adjusting or vibration control</pre>
57	Contact or electrode structure	91	
58		91	Actuating magnet structure or material
	Mercury or mercury wetted	92	Plural magnets
59	.Retarded or delayed type		
60	Plural sets of contacts	93	Vibratory reed or other
	alternately, consecutively or	0.4	periodic contact actuator
C1	selectively opened or closed	94	Tuned or resonant at a
61	With pneumatic delay means	0.5	particular frequency
60	(e.g., dashpot, etc.)	95	Armature
62	With hydraulic delay means	96	Adjustable
63	With magnetic or	97	Contact arrangement or
	electromagnetically actuated		composition
<i>C</i> 1	delay means	98	Adjustable contacts
64	With mechanical delay means	99	.Alternating or fluctuating
65	Motor or motor-controlled		current type
	(e.g., clockwork)	100	Induction or eddy current
66	Electrothermal delay means		(e.g., vane or closed
67	Adjustable or regulatable		conductive loop)
68	.With motor	101	Preselected or synchronous
69	Reversible or oscillatable		frequency responsive
70	Frequency-responsive or	102	Polyphase
	synchronous	103	With plural magnetic-actuating
71	Contact actuating structure		structures
72	Plural contacts	104	With chatter, bounce or
73	Eccentric or cam		vibration-prevention means
74	Including brake, clutch or detent	105	With damping or adjustment means
75	Magnetically actuated	106	.Multiple contact type
76	Comprising energy storage	107	Contacts-selectively,
	means (e.g., wound spring)		sequentially, alternately, or
77	With locking, latch or tripping		intermittently actuated
	structure	108	Automatic telephone type
78	.Polarity-responsive	109	Plural or multidirection
79	Storage or memory type (e.g.,		mechanical selector motions
, ,	bistable)	110	With motion-conversion means
80	Armature structure	111	Selector structure
81	Freely movable within coil or	112	Crossbar type
01	magnetic field between poles	113	With holding, locking or
82	Floating (i.e., no fixed		latching means
02	pivot)	114	Rotary selector motion
83	Contact structure of	115	Reciprocating selector motion
0.5	composition		(e.g., sliding)
	COMPOSICION		(3.3., 5114119)

116	With reset or selector- restoring means	151	.Vacuum or hermetically sealed type (e.g., reed switch)
117	With operational mode-varying	152	Plural
,	means	153	With permanent magnet structure
118	Motor-driven	154	Armature, contact or contact-
119	Plural armatures	134	actuating means (e.g., sealed
120	With interlocking or		reed)
120	mechanical connection	155	.With predetermined current or
121	Contact-actuation means	133	voltage value-responsive
			actuator
122	With rotary or compound	156	
	motion device (e.g., rack and	130	.With protective means for switch
100	pinion)	157	or contacts
123	Pawl and ratchet	137	.With operation-inhibiting means
124	Armature structure	4.50	(shock resistant)
125	Rotary armature	158	From open position
126	Reciprocating or linearly	159	.Plural independently operable
	sliding		switches
127	Simultaneously actuated	160	Interlocking
128	By pivotal or rockable	161	With cooperative-actuating
	armature		means
129	Movable contacts or slidable	162	With unitary housing, support
	card bar or comb		or flux path
130	Movable contacts on circular	163	With unitary or common magnetic
	card or comb structure		flux source
131	By reciprocating armature	164	.Manually or gravity-operated
132	With adjustable, replaceable or		latch with electromagnetic
-	interchangeable structural		trip
	features	165	.Contact-actuating means unitary
133	Contact structure or		with latch or trip
100	arrangement	166	.With latch- or trip-reset means
134	Grid or coordinate	167	.Latching means
135	In pile or stack	168	With positive lock (against
136	With plural magnet or coil		movement)
130	means	169	Plural or with auxiliary latch
137		170	Magnetically operated
	Of diverse type	171	Including spring-biasing or
138	.Step-by-step type (e.g., closure	1 / 1	energy-storage means
	responsive to predetermined	172	91
120	number of control pulses		.Tripping means
139	With timing or indexing means	173	Plural diverse (e.g., manual
1.10	(e.g., clock mechanism)	1 17 4	plus electromagnet)
140	Ratchet and pawl-type actuator	174	Magnetically operated
141	.With electrothermal-actuating	175	Utilizing hammer or other
	means (e.g., expansible wire)		impacting means
142	Fusible element	176	With adjusting or regulating
143	Independently operative		means
144	With armature positioning or	177	.Plural magnets or flux sources
	adjusting	178	Of diverse electrical
145	Bimetallic element		characteristics
146	Thermomagnetic (e.g., device	179	Of diverse magnetic
	whose magnetic permeability		characteristics (e.g.,
	changes with temperature)		permanent plus electromagnet)
147	.Electrodynamically actuated	180	With common core or single
148	Moving coil type		armature
149	Plural coils	181	Pivoted armature
150	With reset or restoring means		

335 - 4 CLASS 335 ELECTRICITY: MAGNETICALLY OPERATED SWITCHES, MAGNETS, AND ELECTROMAGNETS

182	Magnetic fields opposing	213	With coil structure
	(e.g., differential)	214	With electric or magnetic-
183	Magnetic fields or torques		shielding means
	acting alternately in opposite	215	.Magnetostrictive-type device
	directions	216	.Superconductive type
184	With plural reciprocating	217	.Temperature-responsive type
	armatures aligned or rigidly		(e.g., temp. compensation
	connected		means)
185	.Contact-actuating means	218	With time-delay means
186	Plural or combined (e.g.,	219	.Combined with diverse-type art
	manual with other)		device
187	Unitary with armature	220	.With magneto-mechanical motive
188	Snap-action		device (e.g., electromagnet
189	Mechanical linkage		with armature)
190	Including cam, roller or	221	Frequency-responsive type
	eccentric means	222	With relatively movable coil
191	Compound motion device (e.g.,		and permanent magnet (e.g.,
	toggle)		D'Arsonval type) position on
192	With biasing means (open or		the cathode ray tube)
	closed)	223	With relatively movable
193	With vibration-, bounce- or		conductors (e.g., dynamometer)
	chatter-prevention means	224	Induced current-type movable
194	With pressure-maintaining or		conductor (e.g., eddy current
	adjusting means		member)
195	Magnetic or electrodynamic	225	Rotating disk
	force	226	Short-circuited winding
196	.Contact composition or structure	227	Saturable magnetic type
197	Adjustable or readily	228	With motion-conversion means
	detachable		(e.g., reciprocating to rotary
198	Convertible from normally open		motion)
	to normally closed and vice	229	With permanent magnet
	versa	230	Polarized electromagnet
199	Printed circuit	231	Varying alternating current
200	Pivoted or relatively movable		amplitude responsive
	independently of the armature	232	With plural armatures
201	.With arc-suppression or	233	With armature-locking means
	extinguishing means	234	With reversible magnetic
202	.With housing or support means		flux-type movement (e.g.,
203	.With armature structure		bistable type)
204	.Through conductor type (i.e.,	235	With vibrating reed or spring
	conductor field actuates		bar-type armature
	armature)	236	With a shunt path for magnetic
205	PERMANENT MAGNET-ACTUATED		flux
	SWITCHES	237	Adjustable
206	.Plural switches	238	With auxiliary armature-
207	.Plural magnets		movement control means (e.g.,
208	.Thermomagnetic		manual)
209	MAGNETS AND ELECTROMAGNETS	239	With time delay armature-
210	.Electron or ion beam deflecting		movement control means
	type	240	Dashpot type
211	With magnetic shunt	241	Auxiliary control coil
212	With adjustable magnetic	242	With plural armatures
	element (e.g., to change the		selectively retarded
	air gap, or its position on	243	Alternating current type
	the cathode ray tube)		

244	Flux phase displacement or varying means	272	Rotating disk or cylindrical armature
245	Shading coil	273	With armature-adjusting means
246	Plural winding type		(e.g., means to adjust the
247	With chatter- or noise-		relative distance between core
24/	preventing means		and armature)
240	1 3	274	With armature-biasing means or
248	Spring or cushion-type	2/4	bias-adjustment means
0.40	vibration absorber	275	-
249	Special armature construction	275	Hinge joint type armature-
	or mounting means (e.g., to		mounting means
	assure positive seating of	276	Pivot support type armature-
	armature)		mounting means
250	Coil construction or mounting	277	With shock absorption,
	means		vibration or bounce-preventing
251	With plunger-type armature		means
252	With vibrating armature	278	With casing or enclosure
253	With armature latch means	279	Armature shape, structure or
	(e.g., means to retain		material
	armature in open or closed	280	Balls, filings or granular
	position		material
254	With latch-control winding	281	Core or pole shape, structure
255	With plunger-type armature	201	or material
256	Plural coils controlling a	282	Coil shape, structure or
230	single armature	202	material
257	9	202	
257	With shock-absorbing means	283	.Blade sharpening or conditioning
	(e.g., means to absorb the	0.04	type magnets
0.50	shock of armature or plunger)	284	.For magnetizing or demagnetizing
258	With armature stroke	285	.Work or object holding type
	adjustment	286	With workpiece to magnet
259	Plural plungers		adapted or fixture (e.g., to
260	With sealed enclosure (e.g.,		bridge flux)
	dust or moistureproof)	287	Angularly adjustable fixture
261	Armature structure or material	288	Rotary-type magnetic chuck
262	With centering or aligning or		(permanent or electromagnet
	guiding means		type)
263	With plunger rotation	289	Electromagnet type (e.g.,
	preventing means (e.g., means		electromagnetic chuck)
	to prevent undesired rotation	290	With circuit control means
	of the plunger during	291	Lifting or attracting type
	movement)		(e.g., for lifting pigiron or
264	Sectional plunger		pulling hairpins)
265	Plural armatures actuated by	292	Hermetically sealed or
200	single electromagnetic coil	2,72	moisture-proofed
266	Plural coils or magnets control	293	Hand-held type
200	armature movement	294	
267			With outer casing or housing
	With plural armatures	295	With magnetic-hold control
268	Coils or magnets being		means (e.g., means to control
	separately or selectively	006	the hold strength)
0.60	controllable	296	.Magnet structure or material
269	With dynamically balanced	297	Core structure
	armature	298	Movable or adjustable cores
270	Armature-mounting means	299	Coil structure or material
271	With armature bounce or	300	With cooling means
	vibration-preventing means	301	With electric- or magnetic-
			shielding means

335 - 6 CLASS 335 ELECTRICITY: MAGNETICALLY OPERATED SWITCHES, MAGNETS, AND ELECTROMAGNETS

302	Permanent magnets
303	Enclosed in flexible plastic
	cloth or tape
304	With flux leakage-reducing
	means
305	Magnetic plug type (e.g.,
	crankcase plug)
306	Plural magnets

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