**SPRING WHEELS**

1. With lubrication
2. Spring enclosure
3. Cylinder and piston
4. Deformable ground engaging part
5. With plural spring types
6. With rubber spring
7. With pneumatic spring
8. Annular
9. With air tanks
10. With leaf spring
11. End secured
12. With coil spring
13. Radial
14. Cylinder and piston supported
15. Encircled rod supported
16. Spring encircling rigid annulus
17. With nonresilient overload stop
18. Convertible to rigid wheel
19. With flexible annular support
20. Lateral thrust or tension
21. Combined spring and friction
22. Coil springs
23. Double thrust
24. With coil springs
25. Rod encircling
26. With balls
27. Combined spring and friction
28. With plural spring types
29. Rubber and pneumatic
30. Rubber and leaf
31. Rubber and coil
32. Annular rubber
33. Pneumatic and leaf
34. Pneumatic and coil
35. Annular pneumatic
36. Leaf and coil
37. Center secured leaf
38. End secured leaf
39. Rubber spring
40. In shear
41. Cylindrical
42. Transverse
43. Blocks or balls
44. With drive
45. With separate annulus guide
46. Annular
47. Rigid annulus enclosing
48. Plural
49. With separate annulus guide
50. Combined drive
51. With drive
52. Pneumatic spring
53. Link connected
54. Cylinder and piston
55. Annular
56. Rigid annulus enclosing
57. Plural
58. With separate annulus guide
59. Combined drive
60. Spring
61. Links
62. Radial
63. Studs or lugs
64. Through bolts
65. Anti-creep
66. With drive
67. Anti-creep
68. Leaf spring
69. With braces
70. Link connected
71. Variously arranged
72. Cylindrical units
73. Transverse
74. Straight, radial or tangential
75. Center secured
76. With separate annulus guide
77. Combined drive
78. Reversely curved
79. End secured
80. Single end
81. With separate annulus guide
82. Combined drive
83. Oppositely curved pairs
84. Reversely curved springs
85. Arcuate
86. Coil spring
87. Link connected
88. Variously arranged
89. Tangential and radial
90. Diagonal
91. Circumferential
92. Tangential
93. Transverse
94. Center secured
95. Concentric with wheel axis
96. Radial
97. Tandem, interposed bearing
98. Telescoping cylinder supported
99. Cylinder and piston supported
100. With separate drive
101. Double acting
102. Encircled rod supported
103.
CLASS 152 RESILIENT TIRES AND WHEELS

152 - 2

104 ...With independent annulus guide and drive
105 ...With separate annulus guide
106 ...Combined drive
107 ...Spring
108 ...Links
109 ...Radial
110 ...Studs or lugs
111 ...Through bolts
112 ...With separate drive

TIRES, RESILIENT

153 ...Emergency
153.1 ...With electrical conducting means
154 ...With cooling devices
154.1 ...With wear indicating feature
155 ...Cushion and pneumatic combined
156 ...Metallic spring cushion
157 ...Enclosed cushion
158 ...Internal buffers
159 ...Superimposed
160 ...Plungers
161 ...Edge-secured cushion
162 ...Guide flanges
163 ...Radial stops
164 ...Bolts or studs
165 ...Integral
166 ...With removable inner tube
166.1 ...Armored
167 ...Anti-skid
168 ...Radial filaments and laminations
169 ...Secured into casing
170 ...Detachable
171 ...Linked mat
172 ...Tire secured
173 ...With circumferential band
174 ...Bound to felly
175 ...Tire secured
176 ...Inlaid tread
177 ...With securing rings
178 ...Sectional
179 ...Tire secured
180 ...Wholly metallic
181 ...Bound to felly
182 ...Tire secured
183 ...Corner-connected sections
184 ...With securing rings
185 ...External
185.1 ...Track for single wheel
186 ...Bound to felly
187 ...Tire secured
188 ...Inlaid tread
189 ...With securing rings
190 ...Sectional
191 ...Tire secured
192 ...Single tube tires internal
193 ...Metal
194 ...Plates
195 ...Inner tube construction
196 ...Casing construction
197 ...Embedded
198 ...Metal
199 ...Plates
200 ...Annular
201 ...Linked mat
202 ...Woven
203 ...Interliners
204 ...Cotton, fabric, or rubber
205 ...Metal
206 ...Scale armor
207 ...Annular
208 ...Anti-skid devices
209.1 ...Tread
209.2 ...For controlling noise by varying design cycle (e.g., specified pitch ratio, pitch sequence, etc.)
209.3 ...Having varying tread characteristic (e.g., groove depth, groove angle, etc.) other than design cycle
209.4 ...Containing randomly dispersed short fibers or anti-skid granules
209.5 ...Having tread sections (e.g., base-cap, etc.) containing different specified physiochemical properties (e.g., hysteresis, modulus, hardness, etc.) or compositions
209.6 ...Including retread or precured tread section
209.7 ...Including foam section
209.8 ...Having asymmetric tread pattern
209.9 ...Characterized by different groove widths
209.11 ...For sidewall-running tires (e.g., unicycle, motorcycle, bicycle, etc.)
209.12 ...Containing lugs having or appearing to have net to gross ratios of less than 35 percent (e.g., farm equipment, tractor tire, etc.)
<table>
<thead>
<tr>
<th>Line</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>209.13</td>
<td>Having circumferential rib at or crossing equatorial plane</td>
</tr>
<tr>
<td>209.14</td>
<td>Having tire tread profile defined by diverse radii of curvature</td>
</tr>
<tr>
<td>209.15</td>
<td>Characterized by shape of upper surface of tread element (e.g., block with upper convex surface, etc.)</td>
</tr>
<tr>
<td>209.16</td>
<td>Having specified tread shoulder structure</td>
</tr>
<tr>
<td>209.17</td>
<td>Having isolated holes or suction cups</td>
</tr>
<tr>
<td>209.18</td>
<td>Having groove or sipe with specified dimension or structure therewithin</td>
</tr>
<tr>
<td>209.19</td>
<td>Protrusion from bottom and spaced from both walls (e.g., pebble ejector, etc.)</td>
</tr>
<tr>
<td>209.21</td>
<td>Protrusion from wall and spaced from the opposite wall</td>
</tr>
<tr>
<td>209.22</td>
<td>Protrusion bridging between walls (e.g., tie bar, etc.)</td>
</tr>
<tr>
<td>209.23</td>
<td>Both walls inclined in same direction</td>
</tr>
<tr>
<td>209.24</td>
<td>Having angle of inclination of one wall different from that of opposite wall</td>
</tr>
<tr>
<td>209.25</td>
<td>Having grooves or sipes with different specified depths</td>
</tr>
<tr>
<td>209.26</td>
<td>Having circumferential groove width at least 10% per cent of tread width</td>
</tr>
<tr>
<td>209.27</td>
<td>Having continuous circumferential narrow width groove (i.e., less than 5mm.)</td>
</tr>
<tr>
<td>209.28</td>
<td>Having directional two dimensional pattern (e.g., &quot;v&quot; shaped, etc.)</td>
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<tr>
<td>210</td>
<td>With embedded anti-skid elements</td>
</tr>
<tr>
<td>211</td>
<td>Flush with tread</td>
</tr>
<tr>
<td>212</td>
<td>Radial filaments and laminations</td>
</tr>
<tr>
<td>213 R</td>
<td>Applying and removing devices</td>
</tr>
<tr>
<td>214</td>
<td>Vehicle carried</td>
</tr>
<tr>
<td>215</td>
<td>Running board carried</td>
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<tr>
<td>216</td>
<td>Wheel carried</td>
</tr>
<tr>
<td>213 A</td>
<td>Annular securing means</td>
</tr>
<tr>
<td>217</td>
<td>Tighteners</td>
</tr>
<tr>
<td>218</td>
<td>Radial</td>
</tr>
<tr>
<td>219</td>
<td>Circumferential</td>
</tr>
<tr>
<td>220</td>
<td>Plural tire</td>
</tr>
<tr>
<td>221</td>
<td>Flexible straps or cords</td>
</tr>
<tr>
<td>222</td>
<td>With metal anti-skid</td>
</tr>
<tr>
<td>223</td>
<td>Combined cross chains and plates or bars</td>
</tr>
<tr>
<td>224</td>
<td>Superimposed</td>
</tr>
<tr>
<td>225 R</td>
<td>Plate or bar type</td>
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<tr>
<td>226</td>
<td>With traction lugs</td>
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<tr>
<td>227</td>
<td>Flanges</td>
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<tr>
<td>228</td>
<td>Integral</td>
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<tr>
<td>229</td>
<td>Calks</td>
</tr>
<tr>
<td>230</td>
<td>Integral</td>
</tr>
<tr>
<td>225 C</td>
<td>Cross chain type</td>
</tr>
<tr>
<td>231</td>
<td>Clamps</td>
</tr>
<tr>
<td>232</td>
<td>Independent sections</td>
</tr>
<tr>
<td>233</td>
<td>Securing devices</td>
</tr>
<tr>
<td>234</td>
<td>Felly and spoke</td>
</tr>
<tr>
<td>235</td>
<td>Spoke clamped</td>
</tr>
<tr>
<td>236</td>
<td>Felly</td>
</tr>
<tr>
<td>237</td>
<td>Bound to felly</td>
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<tr>
<td>238</td>
<td>Spoke</td>
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<tr>
<td>239</td>
<td>Annular</td>
</tr>
<tr>
<td>240</td>
<td>With side anti-skid elements</td>
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<tr>
<td>241</td>
<td>Securing devices</td>
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<tr>
<td>242</td>
<td>Securing rings</td>
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<tr>
<td>243</td>
<td>Modified links</td>
</tr>
<tr>
<td>244</td>
<td>Solid</td>
</tr>
<tr>
<td>245</td>
<td>With protectors</td>
</tr>
<tr>
<td>246</td>
<td>Cushion</td>
</tr>
<tr>
<td>247</td>
<td>Metallic springs</td>
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<td>248</td>
<td>Tubular</td>
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<tr>
<td>249</td>
<td>Integral</td>
</tr>
<tr>
<td>250</td>
<td>Woven</td>
</tr>
<tr>
<td>251</td>
<td>Wheel encircling band</td>
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<tr>
<td>252</td>
<td>With supporting spring</td>
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<tr>
<td>253</td>
<td>Leaf</td>
</tr>
<tr>
<td>254</td>
<td>Circumferentially extending</td>
</tr>
<tr>
<td>255</td>
<td>Center secured</td>
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<tr>
<td>256</td>
<td>End secured</td>
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<tr>
<td>257</td>
<td>Single end</td>
</tr>
<tr>
<td>258</td>
<td>Transverse</td>
</tr>
<tr>
<td>259</td>
<td>Enclosed</td>
</tr>
<tr>
<td>260</td>
<td>Rim secured</td>
</tr>
<tr>
<td>261</td>
<td>Coil</td>
</tr>
<tr>
<td>262</td>
<td>Radial</td>
</tr>
<tr>
<td>263</td>
<td>Enclosed</td>
</tr>
<tr>
<td>264</td>
<td>Annular guide flange</td>
</tr>
<tr>
<td>265</td>
<td>Integral enclosure</td>
</tr>
<tr>
<td>266</td>
<td>Arcuate interior surface</td>
</tr>
<tr>
<td>267</td>
<td>Enclosed</td>
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<tr>
<td>268</td>
<td>Integral enclosure</td>
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<td>273</td>
<td>End secured</td>
</tr>
<tr>
<td>274</td>
<td>Single end</td>
</tr>
</tbody>
</table>
CLASS 152 RESILIENT TIRES AND WHEELS

275 . Transverse
276 . Embedded
277 . Enclosed
278 .... Rim secured
279 .... Retaining ring secured
280 .... Rim secured
281 .... Rim flange engagement
282 .... Radial securing means
283 .... Retaining ring secured
284 ... Coil
285 . Circumferential
286 . Embedded
287 . Enclosed
288 . Arcuate interior surface
289 . Radial
290 . Sectional tire units
291 .... With plungers
292 .... With plungers
293 .... Enclosed
294 .... Annular guide flange
295 .... Sectional tread
296 .... Integral enclosure
297 .... With nonmetallic band
298 .... Arcuate interior surface
299 .... With nonmetallic band
300 . Sectional
301 . Annular
302 . Superimposed
303 . Superimposed
304 . With apertured external binders
305 . Radial bolt secured
306 . Abutting sections
307 .... With annular internal binders
308 . Interfitting
309 .Indented at joints
310 . Casing enclosed core
311 . Separate core
312 . Removable
313 . Sponge rubber
314 . With core compression
315 . Superimposed rings
316 . Sectional transversely
317 . Balls
318 . Integral structure
319 .... Recessed
320 . Chambered
321 . Perforated
322 . Chambered
323 . Integral
324 . With recesses
325 . Chambered
326 . With perforations
327 . Chambered
328 . Multiple
329 . Annular
450 . Pneumatic tire or inner tube
451 . Tire cord reinforcement materials, per se
452 . Cordless tires (e.g., cast tires, etc.)
453 . Tire characterized by closed annular transverse cross section
454 . Tire characterized by the dimension or profile of the cross sectional shape
455 . Asymmetric tire
456 . Asymmetry due to cross sectional profile
457 . Tire foldable in storage or nonuse condition (e.g., collapsible space-saving tire, etc.)
458 . Tire reinforcement material characterized by short length fibers or the like
331.1 . Multiple chamber
332.1 . Cylinder and piston
333.1 . Transverse walls
334.1 . Mutually free walls
335.1 . Interfitting
336.1 . Balls
337.1 . With simultaneous inflating means
338.1 . With simultaneous inflating means
339.1 . Annular chambers
340.1 . Mutually free walls
341.1 . With simultaneous inflating means
342.1 . With simultaneous inflating means
343.1 . Sectional casings
344.1 . Circumferential
345.1 . Rigid inner sections
500 . With means restricting relative movement between tire and inner tube (e.g., anti-creep feature, etc.)
501 . With means to protect inner tube from rim
502 . Automatic sealing of punctures (e.g., self-healing, etc.)
503 . Using flowable coating or composition
504 . On inner surface of tubeless tire

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505 .....Sealant in plural layers or plural pockets
506 ....Within or part of construction of inflating inner tube
507 .....Sealant in plural layers or plural pockets
508 ...By compression
509 ...With reinflating means
510 ..Tire characterized by its air impervious liner or inner tube
511 ...Inner tube
512 ....With reinforcement element
513 ..With means to protect tire from rim
514 ..Means other than rim closing the tire opening
515 ...Positive casing closure
516 ..With means enabling restricted operation in damaged or deflated condition
517 ...With sidewall insert to facilitate load support in emergency
518 ...Utilizing additional inflatable supports which become load bearing in emergency
519 ....Inflated or expanded in emergency only
520 ...Utilizing additional noninflatable supports which become load supporting in emergency
521 ...Internal lubricating or cooling
522 ...Means facilitating folding between sidewall portions (e.g., run flat sidewalls, etc.)
523 ..Arrangement of grooves or ribs in sidewall
524 ..Having annular inlay or cover on sidewalls (e.g., white sidewalls, etc.)
525 ....Characterized by chemical composition or physical properties of external sidewall materials
526 ....Characterized by belt or breaker structure
527 ...Physical structure of reinforcing cords
528 ...Folded ply structure
529 ....Utilizing two or more cord materials
530 ...Consisting of only one ply
531 ...Utilizing at least one ply the cords of which run circumferentially (zero degree belt)
532 ...With cushioning or other special rubber ply layer
533 ...Reinforcing plies made up from wound narrow ribbons
534 ...Structure where each bias angle reinforcing cord ply has no opposingly angled ply
535 ...Structure made up of two or more sets of plies wherein the reinforcing cords in one set lie in a different angular position relative to those in other sets
536 ...Structure using multiple reinforcing elements made of differing materials
537 ...Breaker or belt characterized by the chemical composition or physical properties of elastomer or the like
538 ...Breaker or belt characterized by its dimensions or curvature relative to the carcass or any other part of the tire
539 ..Characterized by the structure of the bead portion of the tire
540 ...Structure of inextensible reinforcing member
541 ...Apex or filler strip
542 ...Flipper strips
543 ...Chafer or sealing strips
544 ...Bead contour for engagement with mounting rims (e.g., lips, ribs, or grooves, etc.)
545 ...Multiple bead cores at each terminal edge or tire supporting surface
546 ...Bead characterized by the radial extent of apex, flipper or chafer into tire sidewall
547 ...Bead characterized by the chemical composition and or physical properties of elastomers or the like
548 ...Characterized by the carcass, carcass material, or physical arrangement of the carcass materials

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Cushion means inward of outermost carcass ply.

Carcass ply extends from at least one bead region without being folded about bead rings.

Carcass ply only folded about one bead ring.

Carcass ply turnup structure around bead rings.

Folded from outside to inside of bead core.

Characterized by the extent of the fold up into the sidewall of the tire relative to the other tire dimensions.

Sidewall stiffening or reinforcing means other than main carcass plies or foldups thereof about beads.

Physical structure of reinforcing cords.

With two or more differing cord materials.

Carcass characterized by the reinforcing cords of each carcass ply being arranged substantially parallel.

Reinforcing cords run in opposite directions in successive carcass ply (i.e., bias plies).

Reinforcing cords of at least one carcass ply extend transversely across the tire from bead to bead (i.e., radial ply).

Combined with a bias angled ply.

Cords curve from bead to bead in plural planes (e.g., S-shaped cord paths, etc.)

Reinforcing cord of a carcass ply arranged in a crossing relationship within the ply (e.g., woven, braided or knitted plies, etc.).

Carcass characterized by the chemical composition or physical properties of the elastomers or the like.

Adhesion promoter: rubber to rubber or reinforcement to rubber.

Patches

Mechanically secured
DIGESTS

DIG 1   PEBBLE EJECTORS
DIG 2   STATIC DISCHARGE
DIG 3   SLITS IN THREADS
DIG 4   CRACK RESISTANT
DIG 5   WATER FILLED
DIG 6   PEG LEG
DIG 7   RUBBER VALVES
DIG 8   CLAMPS
DIG 9   BEAD TO RIM SEAL
DIG 10  SPLIT RIM SEAL
DIG 11  TUBELESS VALVES
DIG 12  WHITE SIDEWALLS
DIG 13  VALVES STEM GUARDS
DIG 14  FABRICS
DIG 15  OVERLAP
DIG 16  AIR IMPERMEABLE LINER
DIG 17  GROOVED RIM
DIG 18  HUB TIRES
DIG 19  SANDWICH BREAKERS
DIG 20  RIMS FOR INVERTED BEAD TIRES

CROSS-REFERENCE ART COLLECTIONS

900 TREAD PATTERN HAVING NO BLOCKS
AND HAVING CIRCUMFERENTIAL
RIBS DEFINED BY ZIG-ZAG
CIRCUMFERENTIAL GROOVES

901 TREAD PATTERN HAVING NO BLOCKS
AND HAVING CIRCUMFERENTIAL
RIBS DEFINED BY LINEAR
CIRCUMFERENTIAL GROOVES HAVING
STRAIGHT EDGES

902 NON-DIRECTIONAL TREAD PATTERN
HAVING NO CIRCUMFERENTIAL RIB
AND HAVING BLOCKS DEFINED BY
CIRCUMFERENTIAL GROOVES AND
TRANSVERSE GROOVES

903 NON-DIRECTIONAL TREAD PATTERN
HAVING NON-CIRCUMFERENTIAL
TRANSVERSE GROOVE FOLLOWING
SMOOTH CURVED PATH

904 SPECIFIED TREAD PATTERN FOR FRONT
TIRED AND REAR TIRE

905 TREAD COMPOSITION

FOREIGN ART COLLECTIONS

FOR 000 CLASS-RELATED FOREIGN DOCUMENTS