376 PROCESSES OF MANUFACTURING
FIBERS, FILAMENTS, OR PREFORMS

377 With measuring, controlling, sensing, programming, timing, indicating, or testing

378 Optical property

379 Fluid pressure

380 Molten material level

381 Winder or puller movement

382 Diameter or coating thickness

383 Temperature

384 Process of manufacturing optical fibers, waveguides, or preforms thereof

386 Planar waveguides

387 Forming lens integral with optical fiber

388 Nonoxygen halide glass (e.g., metal halide, etc.)

389 Nonoxygen chalcogenide glass containing

390 Scandium (Sc), yttrium (Y), or rare earth doped core or preform (i.e., atomic numbers 21, 39, 57-72)

391 Plasma utilized

392 Laser utilized

393 Hollow optical fibers or waveguides

394 Ion implantation

395 Sol-gel or liquid phase route utilized

396 Sonic or ultrasonic energy utilized (e.g., homogenizing, dispersing, etc.)

397 Fluorine doping

398 Germanium or boron containing

399 Incorporating dopant into porous body

400 Ion exchange utilized

401 Extruding

402 Producing bent, crimped, twisted, textured, or curled optical fibers or waveguides

403 Producing noncircular optical fibers or waveguides (e.g., particular cross section, etc.)

404 With step of casting or forming nonfiber workpiece (e.g., molding liquid preform, shaping molten glass against a forming surface, etc.)

405 Utilizing multiple crucibles or multiple feed streams of molten glass

406 Joining or bonding optical fibers, waveguides, or preforms (e.g., coupling, etc.)

407 End to end (i.e., butt end joining)

408 Side to side

409 Having plural adjacent fibers or rods sheathed (i.e., bundle) in tube or enclosure

410 By fusing preformed fibers without attenuating stock material

411 With stretching or drawing

412 Rod placed inside of tube

413 With step of vapor deposition

414 Forming optical fiber or fiber preform by soot buildup (i.e., vapor axial deposition, VAD)

415 Forming glass layers with graded or radially varying refractive index

416 Consolidation in situ (e.g., sintering, etc.)

417 Inside of tube or hollow form by soot buildup

418 Elongated material feed means within tube (e.g., reactant feed means place inside of tube, etc.)

419 With step of collapsing tube

420 Maintaining isotropic conditions inside of tube

421 Outside of tube or rod by soot buildup

422 With dehydration (e.g., OH removal, etc.)

423 Inorganic carbon, metal oxide, or inorganic nitrogen containing material deposited (e.g., elemental carbon, carbides, nitrides, etc.)

424 Inert, nonoxidizing, or reducing environment

425 Electromagnetic, magnetic, wave, or particulate energy utilized

426 Drying, dehydration, OH removal or prevention

427 Consolidating preform (e.g., sintering, etc.)
...Collapsing tube
..With etching or leaching
..With significant coating step
...Free metal or metal alloy containing coating
...Synthetic or natural resin containing coating
..With cutting or severing
..With quench cooling (e.g., forced air or cryogenic immersion, etc.)
..With fiber stretching, drawing, or pulling (e.g., from rod, etc.)
.Plasma utilized
Producing noncircular fibers (e.g., particular cross section, flat, elliptical, etc.)
Producing crimped, twisted, or curled fibers (e.g., textured, etc.)
Producing hollow fibers or tubular preforms
.Sol-gel route or ion exchange utilized
.Electromagnetic, magnetic, wave, or particulate energy utilized
.Composite fiber matrix (e.g., carbon or metal fiber with glass matrix or vice versa, etc.)
.With coating (e.g., lubricant, sizing, etc.)
.Glass (i.e., nonoptical fiber, metal oxide)
..Free metal or alloy containing
..Vapor deposition of free metal or free metal containing material
..Synthetic resin, natural resin, or asphalt coating
...Organic silicon containing (e.g., coupling agent, etc.)
...Asphalt
...Thermosetting or thermoplastic resin
....Nitrogen or phenol containing
..With severing
..With advancing, gathering, or winding continuous fiber or filament
.Formation of fiber or preform utilizing fluid blast (e.g., from molten glass, etc.)
..During slinging or rotary-centrifugal fiber distribution
..Depositing molten glass on periphery of rotating fiberizing means (e.g., disc, rotor, wheel, etc.)
..Specified composition of slinger or rotary-centrifugal fiber distributor
..Fluid blast guide, baffle, or deflector
..Centrifuge with fiberizing holes
...Adjacent combustion chamber, burner, or blower utilized
...Solid fibers comminuted by fluid blast
..Specified nozzle opening or configuration (e.g., opening size, cross section, etc.)
..Fluid discharge skirt or shield utilized
...Plural fluid blasts or jets contacting single glass stream
...Fluid blast penetrated transversely by jet (e.g., toration, etc.)
..Flame or combustible fluid blast utilized
..By slinging or rotary-centrifugal fiber distribution (i.e., without fluid blast)
..Centrifuge with fiberizing holes
..With bushing flood prevention, removal, or breakout prevention
..With chemical etching or leaching
..With removal of coating (e.g., desizing, oxidizing coating, etc.)
..With purifying or homogenizing molten glass (e.g., removing bubbles, etc.)
..With fiber drawing or pulling (e.g., attenuating, etc.)
By modifying fluid pressure (e.g., vacuum, reduced or superatmospheric pressure, etc.)

Drawing fiber from rod

Fluid assisted attenuation or directing of fiber or filament

Reeling or winding

Cutting or severing

Cooling of molten glass at forming area (e.g., cooling fins, etc.)

With charging or pretreatment of batch material (e.g., gas heating, crushing, etc.)

**FIBER MAKING APPARATUS**

With measuring, controlling, sensing, timing, inspecting, indicating, or testing means

By optical means or of optical property

Winder or puller movement (e.g., drawing sensor, etc.)

Having fiber breakout detection, compensation, or prevention means

Temperature

Fluid pressure

Molten glass level (e.g., sensor, check valve, etc.)

Diameter or coating thickness

With designated composition of dies, bushings, or nozzles

Platinum group metal containing (i.e., ruthenium (Ru), rhodium (Rh), osmium (Os), iridium (Ir), palladium (Pd), platinum (Pt))

With means to form hollow fiber or preform

With specified bushing, tip, or feeder structure

Tipless

Noncircular tip opening (e.g., elliptical, polygonal, etc.)

With cooling means for bushing (e.g., orifice plate cooling, etc.)

With heating means for bushing

With means to align preform with drawing apparatus or form multifilament fibers (e.g., gathering shoe, etc.)

With fiber splicing or coupling means (e.g., fusion splicing, end to end, side to side, etc.)

With multiple crucible or multichamber system

With cleaning means

With crimping or curling means

With means to distribute fibers across collecting surface (e.g., blower, mechanical distribution means, reciprocating, oscillating, etc.)

With assorting means

With means for heating newly formed filament, fiber, or preform

Having means to shape or modify

Electric or electromagnetic heating utilized (e.g., induction heat, etc.)

With means for cooling newly formed fiber, filament, or preform (e.g., nascent fiber, etc.)

With cooling surfaces or fins

Fluid cooling agent circulated

Gas column (e.g., generally upward gas stream, etc.)

Liquid stream or spray

Specified composition of slinger or rotary-centrifugal fiber forming means

Rotary-centrifugal fiber forming means (e.g., slinger, rotary disc, no fiberizing holes, etc.)

Having fluid blast means for contacting glass

With fluid blast guide, baffle, or deflector

Having means to pass cooling fluid through apparatus

Depositing glass on periphery of rotating fiber forming means (e.g., disc, rotor, wheel, etc.)

Centrifuge with fiberizing holes (e.g., rotor, etc.)

Having adjacent combustion chamber, burner, or blower utilized

With at least two concentric blowers or burners
CLASS 65 GLASS MANUFACTURING

524 .With fluid blast means
525 .Having specified nozzle opening
   size or nozzle cross section
526 .Having fluid discharge skirt or deflector
527 ...Torsion means utilized
528 ...Combustion or flame attenuation
529 .Having coating or treating means
530 .Having gas feeding or withdrawal means
531 ...Having soot forming flame hydrolysis burner (e.g., flame oxidation, etc.)
532 ...With means for recovery, recirculation, or elimination of excess gas feed or coating material
533 .With drawing means
534 ...Movable furnace or bushing (e.g., rotatable, reciprocating, etc.)
535 ...Pulling wheels or rolls
536 ...With severing
537 ...From rod stock
538 ...With fluid assisting means
539 .With winding means
540 .With furnace charging means

17.1 PROCESSES
17.2 ...Sol-gel or liquid phase route utilized
17.3 .With shaping of particulate material and subsequent fusing of particles
17.4 ...Including flame or gas contact
17.5 ...Employing nonoxide additive
17.6 ...With treatment subsequent to fusing
19 .Slag, utilization
20 ...Foaming of slag
21.1 .Self-supporting particle making (e.g., bead, ball, granule, etc.)
21.2 ...By molten glass comminuting
21.3 ...Spheroidizing or rounding of solid glass particles
21.4 ...Hollow or porous particle
21.5 ...With mechanical shaping or subdividing
22 ...With pore forming in situ
23 ...With destruction or delamination of transitory attached or associated separate material
24 ...Utilizing parting or lubricating layer
25.1 ...Providing a gaseous layer between glass and apparatus
25.2 ...Sheet
25.3 ...Formed from molten glass
25.4 ...Reshaping
26 ...Coating of apparatus
27 ...Repairing or cleaning of apparatus; or batch dust prevention or control
28 ...With glass reclaiming, repairing or crack run interruption
29.1 ...With program, time, or cyclic control
29.11 ...Electric computer or data processing system utilized of excess gas feed or coating material
29.12 ...With measuring, sensing, inspecting, indicating, or testing
29.13 ...Combustion chamber atmosphere
29.14 ...Diameter, width, or thickness of formed article
29.15 ...Fluid pressure
29.16 ...Batch or feed material
29.17 ...Level or flow of molten material
29.18 ...Magnetic, electromagnetic, or wave energy utilized (e.g., light, infrared, ultrasonic, etc.)
30.1 ...With chemically reactive treatment of glass preform
30.11 ...To enhance the ability to darken or change color in response to radiation exposure (e.g., photochromic)
30.12 ...To hydrate the glass
30.13 ...With metal ion penetrating into glass (i.e., ion exchange)
30.14 ...To temper or strengthen the glass
31 ...By etching or leaching
32.1 ...Operating under inert or reducing conditions
32.2 ...With bonding or sealing
32.3 ...With crystallization or photochromism or phase separation
32.4 ...With coating
32.5 ...With forming glass from molten state, with treatment of molten glass, or with drawing of glass in softened state

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33.1 Devitrifying glass or vitrifying crystalline glass (e.g., starting with or forming crystalline glass, etc.)
33.2 Electromagnetic radiation or resulting heat utilized (e.g., gamma rays, X-rays, atomic particles UV, visible, IR, actinic, laser, microwave or radio wave, etc.)
33.3 Halogen containing phase (e.g., crystalline or noncrystalline, etc.)
33.4 With coating
33.5 With fusion bonding glass to a formed part (e.g., devitrified seals, glass to metal, etc.)
33.6 Glass applied in powdered form (i.e., frit)
33.7 Alumino-silicate containing phase
33.8 Containing at least 3 percent lithium or lithium oxide (e.g., spodumene, eucryptite, petalite, etc.)
33.9 Forming product or preform from molten glass
34 With sealing off of gas evacuating opening
35 With vibrating, oscillating or agitating a preform
36 Fusion bonding of glass to a formed part
37 Lens making
38 With bonding of at least three formed parts
39 With molding or reshaping of glass to assume shape of configured lens part during bonding
40 Dielectric or joule effect heating of work
41 With annealing or tempering of glass
42 Bonding of subassembly with subsequent assembly and bonding (formed parts only)
43 By or with coating at joint interface of a formed part prior to bonding
44 With embossing or corrugating
45 With glass part forming from shapeless molten glass
46 With blowing to shape glass
47 In mold cavity
48 And bonding to part in same mold cavity
49 Bonding to metal formed part
50 Forming and bonding glass sheet to metal part
51 Contacting metal with molten glass prior to forming sheet
52 Forming of plural glass sheets
53 Forming plural sheets or sheet-like streams from same source
54 With reshaping glass preform prior to assembly or subsequent to bonding
55 Prior to assembly
56 With severing, perforating, or breaking of glass
57 Relative rotation of work and heating means
58 Of parts having opposed facing areas out of contact (e.g., building blocks)
59.1 Of glass to metal part
59.2 Maintaining cavity in glass
59.21 Glass applied in powdered form (i.e., frit) form
59.22 Named fusible bonding material employed
59.23 With firing in vacuum, in inert atmosphere, or in pumped in gas
59.24 Metal part outside of glass part
59.25 Metal part inserted through hole or into groove in glass part
59.26 Metal part forced through or into softened glass part (e.g., pinch sealing, etc.)
59.27 Metal part coaxial with and inside of glass part
59.28 Relative movement or manipulation of parts during or immediately preceding fusion
59.3 More than two parts in overlaying series (noncavity)
59.31 Metal part inserted through hole or into groove in glass part
59.32 Metal part forced through or into softened glass part (e.g., pinch sealing, etc.)
59.33 ....Relative movement or manipulation of parts during or immediately preceding fusion
59.34 ....Metal part outside of glass part
59.35 ....Metal part coaxial with and inside of glass part
59.4 ...Metal part outside of glass part
59.5 ...Glass applied in powdered (i.e., frit) form
59.6 ...Metal part coaxial with and inside of glass part
59.7 ...Metal part forced through or into softened glass part (e.g., pinch sealing, etc.)

60.1 .With coating
60.2 .Plural diverse layers
60.3 ...Organic coating
60.4 ...Free metal coating
60.5 ...Oxide coating
60.51 ...From inorganic metal salt
60.52 ...From organic metal compound
60.53 ...From inorganic oxides or hydroxides
60.6 ...Free carbon containing coating
60.7 ...Inorganic metal salt containing coating
60.8 ...Silicon containing coating
61 .With wearing away of surface material (e.g., abrading or grinding)
62 .Combined
63 .Sequentially forming, reheating, and working
64 ...Reshaping
65 ...Forming and fire polishing or product
66 ...Forming product or preform from molten glass
67 ...Converting sheet to hollow product or hollow product to sheet
68 ...Initial forming of hollow product or preform in mold cavity
69 ...With annealing or tempering
70 ...With severing of formed product
71 ...Spreading of molten glass by rotation
72 ...With charging of mold cavity
73 ...By suction from upper surface of "pool"

74 ......With sequential blowing in charged cavity
75 ......Through orifice in bottom wall of dispenser
76 ......With additional diverse shaping step
77 ......With additional forming step
78 ......Diverse
79 ......Press and blow
80 ......In separate lines
81 ......By differential gas pressure
82 ......Reshaping of hot parison in mold cavity to form hollow article
83 ......With positive cooling of product or molten glass at forming area
84 ......By direct gaseous contact
85 ......Of glass product
86 ......Drawing and simultaneously forming hollow stock from molten glass
87 ......With additional shaping, or severing, or perforating
88 ......Vertically drawing upwardly while applying fluid internally of stock
89 ......Forming hollow stock by surface filming
90 ......Sheet
91 ......With application of lateral tension to edge portion of moving sheet
92 ......With smoothing subsequent to sheet formation
93 ......With reshaping or surface deformation
94 ......Subsequent to formation
95 ......With annealing or tempering
96 ......Conveying at different rate than speed of formation
97 ......With severing or perforating
98 ......Simultaneously forming plural separate sheets
99.1 ...By or with pouring molten glass onto forming surface
99.2 ......Utilizing molten metal forming surface
99.3 ......Maintaining molten metal temperature
99.4 ......Treating or removing impurities in molten metal or glass
99.5 ......Maintaining or adjusting sheet width or thickness

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99.6  ......By nonmechanical means
100  ....Onto moving roll or platen
101  .....Through bite of rolls
102  .Reshaping or surface deformation
    of glass preform
103  ..Utilizing heat shield or heat-sink
104  ..With annealing, tempering, or
    fire-polishing
105  ..With severing or perforating
106  ..Reshaping of planar sheet
107  ...By sagging by gravity on mold
    surface
108  ..Reshaping of tubular preform,
    retaining cavity
109  ...During rotation
110  ...Utilizing vacuum or gas
    pressure
111  .Glass preform treating
112  ...With severing or preforating
113  ...By or with flame
114  ...Tempering
115  ...Differential or localized
116  ...Quenching in liquid bath
117  ..Annealing
118  ...During conveying
119  ....Annealing by direct contact
    with gaseous heat exchange
    medium
120  ..By flame
121  .Blending of separate molten
    glass streams
122  .Charging of molten glass into
    mold cavity
123  ...By gravity and severing
    subsequent to charging mold
    cavity
124  ..By suction
125  .Gathering from upper surface of
    glass pool
126  .Discharging molten glass
    downwardly through orifice
127  ...With gob shaping or treating
    subsequent to discharge
    through orifice
128  ..With temperature modification
    at orifice
129  ..Regulating or arresting of flow
    into or out of orifice
130  ...With or by differential gas
    pressure
131  ....With segregation prior to
    discharge
132  ...With segregation prior to
    discharge
133  .Severing of molten glass stream
134  .Fining or homogenizing molten
    glass
134.1  ..Subatmospheric pressure or
    vacuum utilized
134.2  ..Melt accelerator or color
    modifier utilized (e.g.,
    fining agent, etc.)
134.3  ..Oxygen enriched or nitrogen
    reduced gas utilized (i.e.,
    modified air)
134.4  ..By injecting gas below surface
    of molten glass
134.5  ..Exhaust or top gas treated or
    recycled
134.6  ..Rotating furnace or chamber
    utilized (e.g., crucible,
    etc.)
134.7  ..By melting toxic or waste
    material
134.8  ..By eliminating gaseous
    inclusions (e.g., bubbles,
    etc.)
134.9  ..Glass conditioning channel
    section utilized
135.1  ..Glass conditioning channel
    section utilized
135.2  ..By agitating
135.3  ....Mechanical stirrers utilized
135.4  ....Spiral
135.5  ..Electric furnace utilized
    (e.g., induction or radiant
    heat from electric source,
    etc.)
135.6  ....With submerged electrodes
135.7  ....Melting in separate zone of
    glass furnace
135.8  ...Directing batch feed to float
    on molten glass surface
135.9  ..By charging batch material
136.1  ...Preheating batch material
136.2  ...With or by differential gas
    pressure
136.3  ...Burner directed towards batch
    or melt
136.4  ..By cooling molten glass
137  .Cooling of molten glass
138  ELECTRONIC ENVELOPE HEADER,
    TERMINAL, OR STEM MAKING MEANS
139  ..With means inserting wire into
    glass
140  ..By press mold
141  MELT DISINTEGRATOR AND SOLIDIFIER
    INCLUDING FLUID-MELT CONTACT
    MEANS
142  PARTICULATE BEAD OR BALL MAKING
    APPARATUS (E.G., PIN HEADING)
143  ..By rolling means

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MEANS SHAPING PREFORM FROM GRANULAR MATERIAL WITH FUSION MEANS
PLURAL SOURCES FEEDING DIVERSE GLASS MELTS TO COMMON FORMING MEANS
WITH MEANS TO FEED DIVERSE MATERIAL TO GLASS WORKING MEANS
.Wire laminating means
..Sheet rolling means
...Sandwiching wire between opposed glass feeds
...Roll coating with platen
....Embedding means on roll
FUSION BONDING MEANS
..Concentric body making (e.g., vacuum bottle making, etc.)
.Glass to metal
.Electronic device making
.With article molding means
MEANS PROVIDING SPECIAL ATMOSPHERE
.WITH SIGNAL, INDICATOR, INSPECTION MEANS, REGISTER, OR RECORDER
.WITH APPARATUS SAFETY MEANS
CONTROL RESPONSIVE TO CONDITION SENSING MEANS
..Glass working fluid or treating fluid control
..Temperature or heater control
..Speed control
..Molten glass dispenser or gatherer control
WITH REJECT CATCHER, DEFLECTOR, OR HOLDER
PERFORATOR FOR ARTICLE OR PREFORM CONVERTIBLE TO DIFFERENT OPERATION
WITH POSITIVE CLEANING MEANS FOR APPARATUS
WITH MEANS PROVIDING PARTING MATERIAL
WITH APPARATUS LUBRICATING MEANS
WITH REPAIR, ASSEMBLY, OR DISASSEMBLY MEANS FOR APPARATUS
.W.To replace worn or damaged parts
..To provide alternately used parts
WITH MECHANICAL CUTTER, SCORER, OR SCRIBER FOR ARTICLE OR PREFORM
.W.With annealing means
.Running length
..Associated with article mold
.WITH AGITATOR FOR MOLten OR SOFT GLASS
..Delivery area associated
..Orifice associated
COMBINED
.WITH FLUID SUPPORT FOR ARTICLE OR PREFORM
..Gaseous support
..Means for treating or maintaining molten metal
..Including preform width maintaining or stretching mean
..Structure or composition of lining material or arrangement with shell
EXTRUSION DIE FORMER WITH UPSTREAM DISCHARGE ASSISTANT MEANS CHARGING CONTINUOUS FILM OR STRIP TO SEPARATE AND DISTINCT FORMER
..Into sheet rolling means
..With auxiliary heating or cooling means upstream of rolling means
MEANS DRAWING TUBE OR ROD STOCK FROM BATH
..Drawing vertically upward
..With product take-down means
..Means correlating air supply and bait movement
..With internal core or centering means
..Air injection means extending through bath
MEANS DRAWING SHEET FROM BATH
..With annealing or tempering means
..Means dividing and recombining melt in draw chamber
..Vertically upwardly with means bending sheet to horizontal
..With moving endless drawing or flattening table
..With coacting roll contacting surface of supply bath
..With width maintaining and/or lateral stretching means
..Stretching means
..Adjustable width maintaining means
..With pivoted lip tile
..With auxiliary heating means for draw pot or drawing chamber

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.With cooling means in drawing chamber
205 .With radiant heat reflector in draw pot or drawing chamber
206 .With skimmer
207 GOB CHARGING MEANS WITH SHAPE IMPARTING RECEPTACLE MEANS
208 .With glass treating means
209 .By fluid pressure discharge assistant means
210 .By suction gatherer mounted above supply
211 ..With means correlating movable pool-closure
212 ..Gatherer moving transversely from orbit of traveling mold (i.e., ram type)
213 ..Mold is gatherer
214 ..Parison mold
215 ....With plunger movable relative to mold
216 .....With separate, distinct blow mold
217 ......Diverse molds traveling concentric orbits
218 ......Finish mold pivotally mounted below parison's orbit
219 ....With blow means
220 .....Sequentially used, distinct molds
221 .By delivery from tank feeder
222 ..To parallel mold tables
223 ..With press means
224 ..With diverse molding
225 ..With gob guide means
226 ..With press means
227 DIVERSE DISTINCT GLASSWORKING APPARATUS
228 .Marvering means with blow means
229 .Press means with blow means
230 ..With reheating means therebetween
231 ..Blank mold encaseable in finish mold
232 ..With mold inverting means
233 ...With pneumatic charge compacting means
234 ....Settle-blow means
235 ...Neck mold inverting
236 ....With parison mold inverting
237 ...Diverse molds traveling concentric orbits
238 ...With diverse motion of mold
239 ...With movable work transfer means between orbits
240 ..Plural traveling mold carriers
241 .......With movable intermediate work transfer means
242 ..Reciprocating mold bottom
PLURAL DISTINCT GLASSWORKING APPARATUS
243 .Spaced preform reheating means with reshaping means
244 .Sheet rolling means
245 .Plural presses
246 ..Plungers sequentially coacting with same mold
247 ..With relative rotation between plunger and mold during withdrawal
248 ..Plungers oppositely disposed
249 ..Plungers oppositely disposed
250 ..Plungers orbiting above orbiting molds
251 .Fire-polishing means
ROLLING MEANS TO FORM SHEET OR STRIP
252 .With treating means
253 .With corrugating or surface imprinting means
254 .Roll coacting with planar platen
255 ..Reciprocating platen
SHEET CASTING AND RECEIVING MEANS
256 .With pot handling means
WITH MEANS ABOVE MOLD TO TAKE-OUT OR TRANSFER PRODUCT
257 BLOWING MEANS WITH BLOW MOLD
258 .With treating means
259 .Combined with vacuum means
260 .Traveling mold
261 ..With means heating and/or cooling apparatus
262 ..Mold rotary about own axis
263 ..With means heating and/or cooling apparatus
264 PREFORM RESHAPING MEANS WITH TREATING MEANS
265 GLASSWORKING OR PREFORM BY OR WITH REHEATING MEANS (E.G., FLAME SEVERING)
266 .Envelope tipping off type
267 .Heating means movable relative to work during shaping operation
268 .Work, workholder, or tool correlated burner control
269 .Planar sheet preform
270 ..With spaced preheating means
271 ..Mechanical means to reshape preform

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..Tubular type preform
...By resizing mandrel
...Means supporting and orbiting preform
...Preform supported horizontally
...Preform supported vertically
...By bending means
...By internal forming means
...By stretching means
.Fire-polishing means
.To reshape preform by flame pressure or gravity

PREFORM RESHAPING MEANS
..Sheet bending mold
..With heat shield or heat sink
..Including auxiliary movable sheet support or movable sheet guide means
...Movable mold section
..Having movable section
.Cylindrical preform
..By threading means
..By expansible mandrel
..By crimping means
..By internal and external forming means
...Both rotary driven
...Rotary internal, stationary external
..By flaring means

MEANS APPLYING PNEUMATIC PRESSURE INSIDE OF DISCRETE CHARGE (I.E., BLOW MEANS)
..With selective control means

ARTICLE FORMING MEANS UTILIZING MOLD MOTION (E.G., CENTRIFUGAL CASTING)

GOB SHAPING OR TREATING MEANS DOWNSTREAM OF GOB SEVERING MEANS

WITH GOB HANDLING MEANS

PRESS MOLDING MACHINE
..With product treating means
..Mold ring or baffle laterally and movably supported
..Plunger coacting with successively presented molds
..Relative rotation between plunger and orbiting mold
...Independent dies actuated by common plunger
..Means providing orbiting mold with diverse motion

..Mold orbiting about horizontal axis
..Vertically segmented orbiting mold
..Plural motors coaxial with plunger
..With core drawing means
..With means to rotate plunger during withdrawal
..Means reciprocating or oscillating female mold member
..With means varying plunger pressure during pressing
..With means for heating or cooling apparatus
..Selectively operated plural plungers
..Plunger penetrating superimposed mold table
..With means to adjust plunger stroke

PRODUCT OR PARISON CENTERING MEANS, OR MOLD AND/OR CORE ALIGNING MEANS

MOLTEN GLASS DISPENSING MEANS (E.G., FEEDER OR LADLE)
..Discharge orifice below melt level
..With auxiliary heating or cooling means
...At orifice
..Plural plunger-type discharge assistants or discharge orifices
..By differential gas pressure
..By reciprocating plunger-type discharge assistant
...With diverse motion
...With severing means
..Discharge lip with discharge assistant

WITH MOLTEN GLASS CHARGE CUTTING OR SCRAPING MEANS

GLASS FURNACE WITH FURNACE CHARGING MEANS

GATHERING OR DRAWING POOL TYPE FURNACE
..Supplemental heating or heat exchange means associated with pool
..With deputer, draw ring, or draw shield
..Separate and distinct means defining pool (e.g., floor-supported dam)
340  ..Movably mounted
341  ..Cascadingly connected
342  ..By bridge
343  ..Floating bridge
344  ..With deputer, draw ring, or draw shield
345  ..By suspended baffle
346  GLASS CONDITIONING CHANNEL
SECTION
347  MELTING POT OR FURNACE WITH
STRUCTURALLY DEFINED DELIVERY
OR FINING ZONE
348  PRODUCT COOLING MEANS (E.G.,
TEMPERING)
349  .With preceding reheater
350  ..Plural spaced reheaters
351  ..Plural spaced cooling means
352  DRAWING BAIT
353  .With air supply means
354  ..With heating or cooling means
355  MEANS HEATING OR COOLING
APPARATUS
356  .Internally positioned
357  MOLD WITH SEPARATING MEANS OR
CLAMPING MEANS
358  .Core drawing means
359  .With mold support or carrier
360  ..Pivoted mold sections
361  MOLD WITH SUPPORTING OR CARRYING
MEANS
362  PLUNGER
370.1  ROLLER MEANS FOR GLASSWORKING,
TEMPERING, OR ANNEALING
374.1  APPARATUS MADE OF SPECIAL
MATERIAL
374.11 .Metal-nonmetal composite
374.12 .Metallic
374.13 .Ceramic material
374.14 .Asbestos containing
374.15 .Elemental carbon containing
(e.g., graphite, charcoal, etc.)
375  MISCELLANEOUS

FOREIGN ART COLLECTIONS
FOR 000 CLASS-RELATED FOREIGN DOCUMENTS

DIGESTS
DIG 1  LENS ENVELOPE
DIG 3  CRACKED GLASS
DIG 4  ELECTRIC HEAT
DIG 5  FOIL GLASS
DIG 6  GLASS ELECTRODE
DIG 8  QUARTZ
DIG 9  TUBE
DIG 10  STEMWARE
DIG 11  ENCAPSULATING
DIG 12  REED SWITCH
DIG 13  COMPUTER CONTROL
DIG 15  NONOXYGEN CONTAINING CHALOGENIDES
DIG 16  .Optical filament or fiber
treatment with fluorine or
incorporating fluorine in
final product

CROSS-REFERENCE ART COLLECTIONS
900  DRYING, DEHYDRATION, MINIMIZING
ON GROUPS
901  LIQUID PHASE REACTION PROCESS

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