INDEX.

ILLUSTRATIONS.

A

Aiming stand, universal..... 383
Air engine, McKinley 342
Anchor for stovepipes..... 372
Aqueduct, Harlem River..... 367
Architectural designs..... 215
Armor for vessels..... 201
Art in the garden.....263, 329, 375
Art Gallery, Layton..... 23
Artist's residence..... 263
Axle box grinding machine..... 135

B

Balance, spring..... 258
Barometer exhibition..... 244
Barrack, portable..... 399
Barrel head, novel..... 226
Basin, wash, Reid's..... 386
Bayonets, testing 179
Bed, folding..... 130
Bed, spring, and fire escape..... 226
Bedstead, adjustable.....114, 269
Bellows, Campbell's..... 98
Belt, machinery, Babcock's..... 244
Bicycle leg..... 120
Bicycle, treadle for..... 105
Bill file..... 370
Billiard cue tip..... 277
Birds in Japan..... 393
Boats, torpedo, construction..... 275
Bob-sleigh, improved..... 130
Boiler, boat, compact..... 211
Boiler feeder, new 408
Boiler furnace, Backus 323
Boiler, steam, Cooper's..... 275
Bottle and stopper, improved..... 120
Brace, ratchet, who invented?... 312
Bracket, shingling..... 386
Brickwork 99
Bridge, Harlem River..... 143
Bridge, Hawkesbury River..... 279
Brushing machine..... 162
Buck, water..... 407
Buggy-top support..... 130
Bulkhead doors..... 388
Bullfrog, the 103
Burners, gas, automatic..... 34
Burners, gas, Sherman's..... 370
Butchers, feathered..... 71

C

Cable grip..... 116
Caligraph, the..... 150
Can handle, new 178
Cane, an extensible 355
Capitals, artistic..... 215
Car coupling, Chappell's 323
Car coupling, Gray's..... 307
Car coupling, Harrington's..... 194
Car coupling, improved..... 275
Car door lock..... 355
Carding buttons 83
Carriage, steam 22
Carriages, steam, new..... 185
Carriage, steam, Palmer's..... 151
Carriages, old 327
Cathedral of Granada 167
Cattle, pygmy 249
Chairs, rocking..... 242
Chariot, Scythian..... 327
Chemical vegetation..... 361
Chimney and ventilator..... 306
Chucking machine..... 387
Churn, improved 146
Clamp, floor, McRae's..... 386
Clamp, keying..... 242
Clock, a novel..... 38
Closet for sleeping cars 51
Clothes drier, automatic 244
Clothes drier, Bogle's..... 98
Club House, St. Louis..... 295
Color contrast 361
Comets, two new 305
Concrete building 329
Concrete machine..... 278
Converter, Clapp-Griffiths..... 196
Cooker, Aladdin..... 310
Coop, hen, impromptu..... 210
Corn cultivator 306
Corn planters 210
Counter, mechanical..... 195
Coupling, car, Chappell's..... 323
Coupling, car, Gray's..... 307
Coupling, car, Harrington's..... 194
Coupling, car, improved..... 275
Coupling, car, Westover's 210
Coupling, wagon, new..... 290
Cover for jars..... 163
Cow milker, Roth's 146
Crab, oyster..... 151
Crane, sixty ton..... 39
Crate, for fruits..... 274
Crib, adjustable..... 259
Crusher and stamp mill..... 294
Cuff adjuster, improved 162
Cut-out, automatic, belts 291
Cut-out, Hoven's 291
Cyclometer, Hoyt's..... 243
Cylinder, hydraulic..... 20

D

Dam, Davis Island..... 207
Damper regulator..... 136
Dashboard attachment..... 370
Desk, Pohl's..... 162
Dilatancy..... 345
Discharger, automatic..... 4
Disinfecter, steam 227
Diving bell, Hersent's..... 375
Doors, bulkhead..... 388
Drawbridge machinery..... 1
Drawing room, an ornate..... 375
Drier for grain, etc 18
Drill, Johnson's 312
Drill, Packer's 312
Drilling machine, radial..... 134
Dust pan, Shaw's..... 340
Dyeing apparatus, Wood's 390

E

Electric Works, Brush 303
Electricity at Salpetriere..... 9
Electro-magnets..... 102
Elephant, hairy..... 407
Elephant, sacred 41
Elevator, water, Davis'..... 386
Ellipsograph, novel 200
Engine, air, McKinley..... 342
Engine and boiler, Lovegrove ... 243
Engine and Boiler, small..... 278
Engine, automatic..... 198
Engine, condensing 86
Engine, flour mill..... 8
Engine, rotary, Roots'..... 217
Engines, expansion 326
Engineers of Mersey Tunnel..... 164
Etna, Mt., eruption of 358
Exhibition, Edinburgh..... 199

F

Fans, whittled..... 73
Farm gate, Wilson's..... 338
Farm locomotive 118
Fastening for packages..... 50
Feed app., shingle machine 322
Feeding stand for poultry..... 402
Feeder, boiler, McGehee's..... 403
Fence posts, Hicks'..... 4
Fire damp apparatus..... 47
Fire escape, Ilse's 274
Fire escape, new..... 226
Fire escape, Rose's..... 4
Fire escape, Wetmore's..... 98
Fish hook, Lie's..... 84
Flour mill engines..... 8
Fly, fluttering..... 356
Furnace, boiler, Backus..... 323
Furnace for fine coal..... 355
Furnace for plumbers..... 322
Furnace, melting, glass..... 183
Furnaces, feeding coal to..... 66
Furniture, library..... 246

G

Garden, art in the..... 375
Gas apparatus 66
Gas burner, automatic..... 34
Gas burner, self-closing..... 370
Gas, natural, use of..... 127
Gas well, natural..... 233
Gasometer, Johnson's..... 226
Gate, end, for wagons 242
Gate, farm, Wilson's 338
Gauge, glass cutting..... 163
Gauge, pressure..... 306
Gear for vehicles..... 34
Glass cutting gauge..... 163
Glass, window, manufacture..... 175
Governor valve..... 386
Grain, separator 4
Grate, stove, Baily's 339
Grinder, tool, improved..... 402
Grille, window 263
Grip, cable..... 116
Grotto of Marie de Medici..... 263
Gun, naval, ten inch 166
Gunpowder, prismatic..... 406

H

Hammer, steam, radial..... 134
Hammer, welding, James' 19
Hand tool, Krayer's..... 338
Handle for cans..... 178
Hay loader, Spilman's..... 355
Hay stacker, Loseman's 322
Hen coop, impromptu..... 210
Honey extractor..... 82
Hook, bale and box..... 293
Hop press 162
Horse detacher..... 356, 387
Horse power, Graybill's..... 339
Hose, steam, Cowen's..... 104
Hospital, field..... 399
House, summer, design for 182
Houses, New Guinea..... 152
Hydraulic cylinder..... 20
Hydraulic machinery..... 1

I

Ice cutting machine..... 322
Ice formation, curious.....55, 310
Ice machine, Jarman..... 5
Ice spicules 341
Inhalers, device for 226
Insect destroyer, Manning's 19
Ironclad Duguesclin 383
Iron, meteoric..... 89
Iron, sad, improved 210
Ironing board..... 98
Ironingtable..... 210

J

Jar cover, new 163

K

Keg, convertible..... 242
Knife, table, improved..... 372

L

Ladder, fire escape 4
Lambs, feeding..... 281
Land roller, Twick's. 274
Lathe, pipe cutting..... 198
Lathe, screw cutting..... 179
Lemurs 343
Leveling apparatus, boiler..... 290
Library, decorations of..... 246
Life preserver, Badia's 342
Lightning arrester, Belt's..... 291
Lightning arrester, Hoven's..... 291
Lock, car door..... 355
Locks, keyless..... 227
Locomotive, central power 388
Locomotive, farm..... 118
Loom, principle of..... 99
Loom shuttle, Shand's..... 339
Lumber drier, Duke's..... 114
Lycopodium experiments..... 393

M

Machine, wood wool..... 406
Marble sawing machine..... 84
Marsh, O. C..... 279
Match trick, simple..... 376
Micro-audiphone..... 66
Milker, cow, Roth's..... 146
Mill, Du Bose's..... 5
Mill, Sturtevant..... 295
Milling and slotting machine..... 67
Milling machine..... 54
Milling machine, improved..... 134
Mining, novel feature..... 255
Moon, photograph of the..... 231
Motor, Burry's..... 5
Mug, shaving, new..... 370
Muffler for steam valves..... 402
Museum, American..... 238

N

Neck yoke attachment..... 146
Needles, floating 377
Newspaper stand and file 338
Night sky 3, 81, 145, 209, 273, 353
Nitro-glycerine shell..... 131

O

Oil cup, adjustable 274
Oil cup, Slanker's..... 258
Oil testing machine 149
Organs, old..... 103
Oven, annealing..... 183
Oyster Crab..... 151
Oxen, pygmy..... 249

P

Packing box, Beach's..... 50
Packing for steam pipe joint..... 19
Parasol holder..... 162
Peacock, argus 313
Pianofortes, old..... 103
Piers of Tay Viaduct..... 15
Pinch-bar, lever..... 306
Pipe cutting lathe..... 198
Piston packing, metallic..... 50
Piston packing, rubber..... 306
Planing machine.....118, 354
Plate bending machine..... 22
Plates, dry, gelatino-bromide..... 247
Platform gear, Holman's..... 387
Plow and cultivator..... 114
Plow, Hodgson's..... 18
Plow, snow, new..... 178
Plow, snow, Poitras'..... 194
Pneumatic action for organs..... 356
Posts, base for..... 258
Poultry, feeding standfor..... 402
Press, copying..... 290
Press, gunpowder..... 406
Press, hay and cotton..... 323
Press, hop..... 162
Press, printing, home made..... 276
Press, punching, power..... 403
Printing press, home made..... 276
Propeller, screw..... 136
Pruning implement..... 178
Pulley, expanding..... 82
Pulverizer, Howland's..... 291
Pump, steam, Empire..... 54
Pumps, Roots' 217
Pumping engine, Brooklyn..... 223
Punching press, power..... 403
Purifier, middlings 34

Q

Quilting frame, Davis'..... 147

R

Railroad accidents, remarkable.. 81
Railway, cable, New York..... 63
Railway, inclined plane..... 111
Railway safety switch..... 231
Railway telegraphy..... 119
Roadrunner, California..... 55
Rods, vibrating, observation..... 180

S

Sad iron, improved..... 210
Safe, Marvin's..... 95
Sash fastener, Gibbon's 258
Sash, window, improved..... 323
Saucepan and cover..... 84
Saw, Clemson's..... 136
Saw mills, Moore's..... 355
Saw, stone, wire..... 147
Saw tooth, Wilson's..... 178
Sawing machine..... 130
Sawing machine, marble..... 84
Screw forging machine 262
Screw propeller..... 136
Sediola, Italian..... 327
Separator, grain..... 4
Sewer tunneling machine 390
Shell, nitro-glycerine..... 131
Ship Duguesclin..... 383
Shutter worker, Naylor's..... 371
Shuttle, loom, Shand's..... 339
Skid, spiked..... 259
Sky, night.....3, 81, 145, 209, 273, 353
Slotting machine..... 135
Smoke, condensation of..... 255
Smoke condensing apparatus..... 260
Smoke conductor, Rundle's..... 194
Smoking machine 57
Snow plow, new..... 178
Snow plow, Poitras'..... 194
Soot indicator..... 51
Speed indicator, Herden's..... 309
Sphinx, Egyptian..... 359
Spring, lumber wagon..... 274
Spring, vehicle..... 18
Square, Sergeant's..... 4
Staircase and banister..... 215
Stamp, counting house..... 146
Stand, aiming, universal..... 383
Steam boiler, Cadiat's..... 211
Steam boiler, Cooper's..... 275
Steam, by friction..... 69
Steam carriage..... 22
Steam carriage, new..... 185
Steam disinfecter..... 227
Steam engine, Webb's..... 307
Steam pump, Empire..... 54
Steam valves, muffler for..... 402
Steamer, for the Nile 168
Steamer La Bourgogne..... 271
Steel process, Clapp-Griffiths..... 191
Stone channeling machine..... 115
Stone saw, wire..... 147
Stone steps, High Bridge..... 351
Stop motion, new..... 383
Stove grate, Baily's..... 339
Stove, Taylor's..... 243
Strainer and cut-off..... 82
Summer house, design for..... 182
Switch for dovetailing machine.. 50
Switch, safety, railway..... 231
Swords, cavalry, testing..... 179

T

Table, ironing..... 210
Tea kettle, Ford's 372
Testing machine..... 374
Telegraph inst., learner's..... 180
Telegraphy, railway..... 119
Telephones, early 335
Termes flavipes 71
Thorn clipper, Bravo's..... 178
Tilbury, Dutch 327
Time calculator 326
Tintoretto's house..... 263
Tire and tire bolts, Hitt's..... 323
Toads, tree..... 264
Tool grinder, improved..... 402
Tooth for saws, new..... 178
Top, traveling..... 88
Torpedo boats, construction of... 275
Tower, observatory..... 87
Track clearer..... 386
Transformers, electrical..... 181
Trap, spring..... 82
Treadle for bicycles..... 105
Trellis for garden crops..... 114
Trick, match, simple..... 276
Trough, watering, Boles'..... 18
Truck, hand, Caldwell's..... 402
Truck, hand, Smith's..... 402
Truss and supporter..... 260
Tunnel, Big Bend 79
Tunnel, Mersey..... 159
Tunneling machine, sewer..... 390
Turf cutter, Mineo's..... 322
Tympan, Squier's..... 339
Type and overlay..... 290

V

Valve for wash basins 146
Valve, governor..... 386
Valves, steam, muffler for..... 402
Vaporizing device 226
Vegetation, chemical..... 361
Vehicle, gear 34
Vehicle, spring..... 18
Vehicle wheel..... 18
Ventilator, Briggs'..... 291
Vessels, armor for..... 201
Viaduct, Tay, new..... 15

W

Wagon coupling, new..... 290
Wagon dumping 19
Wagons, end gate for..... 242
Washing machine..... 194
Watch protector..... 370
Water, aerated, apparatus..... 35
Water buck..... 407
Water elevator, Davis'..... 386
Water, how to carry in a sieve.. 311
Water, spheroidal state..... 404
Water works, automatic..... 178
Well, gas, natural 233
Well system, driven..... 223
Whales and whaling 24
Wheel shaping machine..... 259
Wheel, vehicle..... 18
Window glass manufacture..... 175
Window grille..... 263
Window head, stone 99
Window sash, improved..... 323
Wine, strong, tears of..... 377
Wood sawing machine..... 130
Wood wool..... 406
Wool, wood..... 406
Workshop of Jas. Watt..... 391
Wrench, Gales'..... 34
Wrench and drill..... 371

Y

Yacht, Atlantic..... 319

MISCELLANY.

Figures preceded by a *star (*) refer to illustrated articles.

A

Academy, French, prizes..... 165
Academy of sciences..... 272
Academy of sciences, national.. 328
Acid, carbonic, and steam..... 232
Acid, carbonic, in fires..... 96
Acid, carbonic, liquid 34, 227
Acid, sulphuric, uses of..... 16
Advertising in Italy..... 33
Aerolite, a great 341
Aerolite hoax, an..... 384
Aiming stand, universal.....*383
Air engine, McKinley.....*342
Air of sea 249
Alcohol, fatal effects..... 176
Alcohol in bushel of corn 102
Alcoholism, effects of 200
Alum, Arizona 357
Aluminum bronze..... 328
Aluminum in Ohio..... 377
Aluminum, iron and steel..... 113
Aluminum, manufacture..... 362
Amblystoma vs. axolotl 87
Anchor for stove pipes *372
Animals, markings of..... 376
Ants, capture by Mexicans..... 168
Ants, longevity of 151
Anvil noise, to prevent..... 309
Anvils, noiseless..... 246
Aqueduct, Harlem River.....*367
Architects..... 116
Architects, clients, and builders. 83
Architectural designs..... *215
Architectural work, zinc..... 233
Armor for vessels *201
Art Gallery, Layton..... *23
Art in the garden.....*263, *329
Art in the household..... 375
Ash sifter, home made 309
Astronomical notes.....7, 201
Astronomical photography *280
Atmography..... 357
Audubon, Society, the 344
Aurora sounds..... 375
Awards for workmen..... 225

B

Bacillus of consumption 213
Bacon, F. W..... 98
Bacteriotherapy 233
Bagasse, utilization of..... 211
Ballifere, J. R., death of..... 8
Baking powders, nutritious 305
Balance, error in the 149
Balance, spring *268
Balloon, new..... 371
Balloon photographs..... 289
Balloon voyage..... 401
Balloons, electric light on 16
Balloons, navigable..... 57
Bank, savings, curious 164
Barometer as health guide..... 57
Barometers, floral 152
Barbados..... 278
Barrack, portable..... *399
Barrel head, novel..... *226
Basin, wash, Reid's *386
Batbing in warm water..... 130
Batrachians, philogeny of..... 328
Bayonets, British..... 101
Bayonets, testing..... *179
Beams, cast iron..... 368
Bed, folding..... *130
Bed, spring..... *226
Beds, damp 130
Bedsteads, adjustable.....*114, *269
Beer brewing, New York..... 99
Bellows, Campbell's..... *98
Belt carries fire through a mill,... 321
Belt, machinery, Babcock's.....*244
Belts, leather, tests for..... 323
Bible, wrong use of 116
Bicycle leg *120
Bill file..... *370
Billiard cue tip..... *277
Birds, American, protection..... 128
Birds killed by electric light..... 344
Birds' nests in Japan..... *393
Birds, our native..... 249
Birds, protection of 344
Blasting, cartridges for 105
Blasting coal with lime..... 82
Bleaching, electric, cost 370
Bleaching without chlorine..... 299
Blind slat adjuster..... *371
Blind, Venetian..... *194
Blindness, tobacco 329
Blow, force of..... 325
Blowing machinery..... *208
Boats, life, steam..... 360
Boats, ships'..... 362
Boats, torpedo, construction.....*275
Boats, torpedo, submarine..... 166
Bob-sleigh, improved *130
Boiler, boat, compact *211
Boiler explosion 88
Boiler explosions, steam 385
Boiler feeder, new..... *408
Boiler furnace, Backus'..... *323
Boiler, instantaneous..... 136
Boiler, keep it clean 54
Boiler, steam, care of..... 20
Boiler, steam, Cooper's..... *275
Boilers, dangerous 37
Boilers in tow boats..... 165
Boilers, keeping clean 181
Bones, cattle..... 274
Boots, squeaky 57
Borax, test for..... 388
Boring, the deepest..... 405
Bottle and stopper, improved.... *120
Bottle, wash, laboratory..... 2
Boy, don't undervalue..... 290
Boyer, Director-General..... 377
Brace, ratchet, who invented?... *312
Bracket, shingling..... *386
Brain, Gambetta's..... 289
Brasswork, frosting..... 222
Brick, enameled..... 360
Brick, new kind of..... 96
Bricks, New York 181
Brick wall *99
Bridge, Harlem River..... *143
Bridge, Hawkesbury River..... *279
Bridges, American 129
Bronze, aluminum..... 328
Brushing machine..... *162
Buck, water..... *407
Buggy-top support..... *130
Bugs, an invasion of 376
Bulkhead doors..... *388
Bullfrog, the..... *103
Burmah..... *41
Burner, gas, Sherman's *370
Burns, nitric acid..... 340
Butchers, feathered..... *71
Butter, making, art of 147
Butter cup, petals of..... 376
Butterflies, deception by 118
Butterflies, longevity of..... 180

C

Cable, anti-induction..... 69
Cable grips..... 83
Cactuses, spines in 151
California birds and gold..... 101
Caligraphy..... *150
Camellia, fluid extract..... 176
Camera, a cheap 276
Camera, novel..... 369
Cameras, detective..... 17
Can handle, new *178
Canal, Panama..... 67, 374
Canal, ship, new..... 9
Canal, Suez, electric light on..... 73
Canal transportation, deep water 337
Canal, Panama, condition of..... 288
Canal, Panama, report on..... 336
Candle grease, to remove 274
Cane, an extensible *355
Capital, idle, too much..... 176
Car Builders' Association..... 89, 369
Car coupler, Gray's..... *307
Car couplers..... 400
Car coupling, Chappell's..... *323
Car coupling, Harrington's..... *194
Car coupling, improved..... *275
Car coupling, Westover's..... *210
Car couplings, trial..... 18
Car door lock..... *355
Car, railway, photo..... 405
Car seats, improved 89
Car starters..... 8
Car wheels, inaccuracies..... 87
Car wheels, new process..... 304
Cars, coal, a mile of..... 325
Cars drawn by electricity..... 193
Cars for Transcaspian Railway.. 51
Cars, repairs of, by contract..... 280
Cars, street electric..... 376
Carding buttons..... *83
Carmine, purifying..... 41
Carriage, steam..... *22
Carriages, steam, new..... *185
Carriage, steam, Palmer's..... *151
Carriages, importation of..... 168
Carriages, old..... *327
Cartridges for blasting 105
Castings, influence of oxygen..... 82
Castings, wrought iron..... 88
Cattle bones..... 274
Cattle, deborning..... 313
Cathedral of Granada..... *166
Cattle, pygmy..... *249
Cellar walls, damp 385
Cell wall markings..... 133
Cement for cast iron..... 81
Chairs, rocking..... *242
Channel ways of N. Y. Harbor... 37
Channel ways, improve the..... 2
Chariot, Scythian..... *327
Cheese, digestibility of 100
Chemical vegetation..... *361
Chemical phenomenon..... 258
Chemistry, relations of gov'ment 184
Chimney and ventilator..... *306
Chimneys, tall 201
Chimneys, three 194
Chloral, danger of..... 165
Chlorophyl and eosine plates..... 401
Cholera..... 51
Cholesterine fat..... 184
Chucking machine..... *387
Churn, improved..... *146
Cities, liability of..... 181
Civil Engineers, Society of..... 65
City of New York, prospect..... 243
Clays, American, and uses..... 321
Clamp, floor, McRae's..... *386
Clamp, keying..... *242
Climate, modifying the..... 344
Clock, a novel..... *38
Closet for sleeping cars..... *51
Clothes drier, automatic..... *244
Clothes drier, Bogle's..... *98
Club house, St. Louis..... *295
Coal, blasting with lime..... 162
Coal breaker, the largest..... 313
Coal gas, calorific power of..... 359
Coal, how it made "bad lands"... 208
Coal mines, firing in..... 120
Coal mines, safety in..... 48
Coal, sulphur in..... 336
Coal tar, sugar from..... 216
Coast survey..... 240
Cocaine, artificial..... 201, 263
Cocaine for killing animalcules... 133
Cocaine in seasickness..... 135
Coffee eating habit..... 307
Cold air machines, new use for.. 176
Colliery manager, the..... 213
Collision at sea.....245, 336, 374
Color contrast *361
Color perception of the eye..... 377
Color, traces, detection of..... 260
Colors, complementary..... 136
Colors, harmony of 389
Colors, mineral, manufacture of. 345
Comet, Brooks'.....341, 369, 373
Comet, Brooks' new..... 37
Comet, Brooks' No. 3..... 353
Comet, Fabry's..... 195
Comet, new..... 7
Comet, how captured..... 72
Comets Fabry and Barnard..... 289
Comet s the May..... 305
Comets, two new..... *305
Commerce, inter-state..... 256
Concrete as a fireproof material. 276
Concrete, cheap..... 296
Concrete construction..... *329
Concrete machine..... *278
Compound, fire proofing..... 403
Construction, slow burning..... 353
Consumption, bacillus of..... 213
Consumption preservative..... 217
Contract with municipality..... 181
Cooker, Aladdin..... *310
Coop, hen, impromptu..... *210
Corn, oil, etc., from..... 387
Copper, combustion of..... 182
Copper, drop forged..... 137
Cork, mechanical properties..... 311
Corn cultivator..... *306
Corn planters..... *210
Corona of the sun.....7, 20
Cotton bales, sheet iron covering. 351
Cotton batting for water pipes.. 96
Cotton harvester, U. S..... 163
Cough, whooping, cure of..... 392
Counter, mechanical..... *195
Couplers, car..... 400
Coupling, car, Chappell's *323
Coupling, car, Gray's..... *307
Coupling, car, Harrington's..... *194
Coupling, car, improved..... *275
Coupling, car, Westover's..... *210
Coupling, wagon, new..... *290
Couplings, car, trial..... 18
Cover for jars..... *163
Cow milker, Roth's *146
Cow stall, upholstering..... 118
Cow with five legs..... 245
Crab oyster *151
Crane, mining..... *355
Crane, sixty ton *39
Crank defended..... 100
Crate for fruits..... *274
Cream tartar 82
Crib, adjustable *259
Crusher and stamp mill..... *294
Crystal balls, manufacture..... 261
Cuff adjuster, improved..... *162
Curions request..... 210
Currents of the Atlantic..... 228
Customers, unprofitable 338
Cut out, automatic, Belt's..... *291
Cut out, Hoven's..... *291
Cyclometer, Hoyt's..... *243

D

Dam, Davis Island..... *207
Damaskeening process..... 279
Damper regulator..... *136
Dash board attachment..... *370
Deafness, apparatus to relieve.. 65
Death, sudden, causes..... 114
Decisions, law, recent..... 181
Decision, trade mark..201, 243, 351, 356, 241
Defense, national..... 321
Desk, Pohl's *162
Developer, Beach's..... 257
Developer, improved..... 345
Developer, soda and ammonia... 198
Diabetes, treatment of..... 57
Diamond, remarkable..... 198
Diastase, origin of..... 327
Dilatancy.....229, *345
Dinner, cheap, movement..... 261
Diphtheria..... 392
Discharger, automatic..... *4
Disease, the tongue in..... 320
Discipline..... 146
Disinfecter, steam..... *227
Disinfection of rooms..... 261
Diving bell, Hersent's..... *371
Dog bite, treatment..... 88
Dome of Lick Observatory..... 405
Doors, bulkhead..... *388
Draper, Jno. C..... 3
Draughtsmen, hints to..... 209
Draw bridge machinery..... *6
Drawing room, an ornate *375
Drawings, bleaching..... 87
Drier for grain, etc..... *18
Drill, Johnson's..... *312
Drill, Packer's..... *312
Drills, electro-magnetic..... 197
Drills, manure, trial of..... 373
Drinks, hot, influence of..... 180
Drum making..... 241
Drummers, tax on..... 184
Du Bois, John..... 373
Dust pan, Shaw's..... *340
Dyeing apparatus, Wood's *390
Dynamite shells, firing..... 101
Dynamo, a large..... 257

E

Earth, axial change of..... 114
Earth closets..... 215
Earth in the stable..... 35
Earth's past..... 213
Easel, enlarging, new 118
Echoes at sea..... 244
Eclipse of sun..... 7
Education..... 258
Education, industrial..... 260
Eels, paste, for study..... 213
Eggs by weight..... 362
Eight hour movements..... 212
Eight hour system..... 195
Electrical apparatus..... 81
Electrical surgery..... 185
Electrical swords..... 87
Electric bleaching, cost..... 370
Electric house lighting..... 160
Electric light, birds killed by... 344
Electric light in the British Navy 180
Electric light on balloons..... 16
Electric lighting, profit..... 401
Electric pendula, propulsion..... 261
Electric railway, Van Depoele... 7
Electric street cars..... 376
Electric works, Brush..... *303
Electricity at Salpetriere..... *9
Electricity, cars drawn by..... 193
Electricity, industrial..... 320
Electricity, production of..... 291
Electricity, steering by..... 64
Electro-magnetic drills..... 197
Electro-magnets..... *102
Elephant, sacred..... *41
Elevator, a large..... 23
Elevator, water, Davis'..... *386
Ellipsograph, novel..... *200
Elephant, a hairy..... *408
Embalming..... 200
Emulsion, gelatino-bromide..... 257
Energy, distribution of..... *131
Engine, air, McKinley..... *342
Engine and boiler, Lovegrove.... *243
Engine and boiler, small..... *278
Engine, automatic..... *198
Engine, condensing..... *86
Engine, flour mill..... *8
Engine, gas, Otto..... 84
Engine, Gaskill..... 193
Engine, high speed..... 197
Engine, rotary, Roots'..... *217
Engines, expansion..... *326
Engines, how "killed"..... 392
Engineers, civil, convention..... 401
Engineers, locomotive..... 339
Engineers, Mining, Institute..... 129
Engineering, marine..... 311
Engineering societies..... 276
Engineering, steam..... 66
Engraving, wax process for..... 403
Enlargements, uniform..... 212
Eosine and chlorophyl plates.... 401
Epithelioma..... 67
Etna, eruption of..... *358
Eucalyptus, leavesof..... 376
Evening occupations..... 36
Excavation, submarine..... *371
Excavations at Pompeii..... 408
Exhibition, American, London.. 80
Exhibition, American, 1889..... 176
Exhibition, Edinburgh..... *199
Expansion by amalgamation..... 293
Explosions, steam boiler..... 385
Explosives, heat and pressure..... 56
Exposition, Louisville 354
Exposition, Indust., Minneap.... 162
Eyes, using one's..... 324

F

Fabrics, fireproof..... 231
Factories, heating, method of.... 32
Fall of 250 feet, a..... 4
Fans, whittled..... *73
Farcy and glanders..... 313
Farmer, not so bad for..... 389
Farm gate, Wilson's..... *338
Farm house, to clean a..... 405
Farm, locomotive..... *118
Farm, willow, Georgia..... 145
Fastening for packages..... *50
Fat, cholesterine..... 184
Fauna, deep water..... 281
Feed app., shingle machine..... *322
Feeder, boiler, McGehee's..... *403
Feeding stand for poultry..... *402
Fence post, Hicks'..... *4
Ferment, gum..... 200
Fever, scarlet 391
Fever, yellow, experimental..... 241
Fever, yellow, protection 387
Fibers, improved treatment..... 33
Filter, patent, English..... 199
Fingers, circulation in..... 120
Fire banked sixteen months..... 197
Fire damp apparatus..... *47
Fire damp, use for..... 291
Fire dankers from steam pipes.. 17
Fire escape, Ilse's..... *274
Fire escape, new..... *226
Fire escape, Rose's..... *4
Fire escape, Wetmore's..... *98
Fire escapes..... 406
Fire from steam pipes..33, 69, 117, 165, 199, 229
Fires, origin of..... 182
Fireproof composition..... 279
Fireproof construction..... 67
Fireproof material, concrete as.. 276
Fireproofing compound..... 408
Firing in coal mines..... 120
Fish, age of..... 281
Fish, frozen 177, 227
Fish hook, Lie's..... *84
Fish killed by water..... 249
Fish, poisonous.....7, 181
Fish preserving process..... 197
Fishes, musical..... 387
Fishes, temperature affect..... 129
Fishers, Gloucester..... 352
Fishing with dynamite..... 310
Flint walls..... 373

© 1886 SCIENTIFIC AMERICAN, INC

Flooring, glass ... 57
Flour mill engine ... *8
Fluids, properties of ... 296
Fly, fluttering ... *356
Flying Dutchman, the ... 389
Fog, legal ... 245
Fossil wood of the West ... 35
Foundation, deepest ... *279
Foundations, tubular, sinking ... 166
French Academy prizes ... 165
Frilling, remedy for ... 357
Frost bite, treatment ... 41
Frosting brass work ... 232
Fuel, calorific power ... 387
Fuel, consumption of engine ... 195
Fuel, economy of ... 240
Fuel of the future ... 133
Fuel, peat, Russian ... 37
Fuel used at the mint ... 9
Fuels, liquid, injectors for ... 263
Furnace, boiler, Backus ... *323
Furnace, electric, Cowles ... 328
Furnaces, feeding coal to ... *66
Furnace for fine coal ... *355
Furnace for plumbers ... *324
Furniture, library ... *246

G

Gaining and achieving ... 376
Galveston harbor ... 336
Game within arctic circle ... 197
Garden paths, laying out ... *329
Gardening, ornamental ... *375
Gas apparatus ... *66
Gas burner, automatic ... *34
Gas burner, self closing ... *370
Gas, coal, calorific power ... 359
Gas engine, Otto ... 84
Gas holder, a large ... 289
Gas, hydrogen ... 194
Gas light, powerful ... 197
Gas managers, education ... 236
Gas, natural ... 233, 306
Gas, natural, explosion ... 215
Gas, natural, transporting ... 403
Gas, natural, use of ... *127
Gas, oxygen, apparatus for ... 335
Gas system, regenerative ... 370
Gas transportation ... 259
Gas well, cost of drilling ... 391
Gas well natural ... *233
Gas well, remarkable ... 98
Gas wells fired by lightning ... 372
Gases, sp. grav. balance for ... 217
Gasometer, Johnson's ... *226
Gate, road, for wagons ... *242
Gate, farm, Wilson's ... *338
Gauge, glass cutting ... *168
Gauge, pressure ... *206
Gear for vehicles ... *34
Gelatine, purifying ... 129
Germanium, new metal ... 229
Ghosts and haunted houses ... 312
Gilding watch plates (13) ... 347
Glass cutting gauge ... *168
Glass floorings ... 57
Glass, impermeability ... 200
Glass, window, manufacture ... *175
Glanders and farcy ... 313
Gloucester fishers ... 352
Gold, Alaska ... 197
Gold and silver in the arts ... 274
Gold, dissemination ... 69
Goods, sale of ... 181
Government by snap of finger ... 257
Governor valve ... *336
Granite slab, enormous ... 2
Grasshopper, Kansas ... 21
Grate stove, Baily's ... *339
Greely, Lieutenant ... 32
Grille, window ... *363
Grinder, tool, improved ... *402
Grips, cable ... 83
Grips, railway ... 259
Grotto of Marie de Medici ... *263
Gum, chewing, fattening ... 227
Gum, ferment ... 200
Gun, Ericsson ... 35, 64
Gun, great, casting a ... 242
Gun, Mefford ... 372
Gun, naval, ten inch ... *166
Gun, steel wire ... 403
Gunpowder, prismatic ... *406
Guns, cast iron ... 372
Guns, foundations for ... 320
Guns worked by steam, etc ... 105
Gunnery, high science ... 53
Gutta percha ... 248

H

Hammer, welding, James' ... *19
Hand tool, Krayer's ... *338
Hands, care of the ... 342
Hands, to clean the ... 322
Handle for cans, new ... *178
Hardware, production of ... 154
Harvester, cotton, U. S. ... 163
Hay loader, Spilman's ... *355
Hay stacker, Soseman's ... *322
Health, the nation's ... 310
Hearing, improvement of ... 52
Heat, loss of ... 208
Heat from incandescent lamps ... 181
Heat, of various lamps ... 276
Heating factories, method ... 32
Heliogravure, mezzotint ... 357
Heliotypegravure ... 357
Hen coop, impromptu ... *210
High Bridge, stone steps at ... *351
Hoe, R. M., death of ... 384
Holes, bore, deep ... 405
Honey extractor ... *32
Honor to whom honor is due ... 168
Hook, bale and box ... *293
Hook, fish, Lie's ... *84
Hop press ... *162
Horse, balky, how to disappoint ... 340
Horse detacher ... *356, *387
Horse owners, hints to ... 260
Horse power, Grabill's ... *339
Horse sense illustrated ... 168
Horse, substitute for ... 16
Horses of the world ... 390
Horses, shying ... 180
Horse, fire, loss by acids ... 372
Hose steam, Cowen's ... *104
Hospital, field ... *399
House bill 4,458 ... 357
House, farm, how to clean ... 405
House, how a wise man built a ... 177
House lighting, electric ... 160
House, summer, design for ... *182
Houses New Guinea ... *125
How she converted him ... 195
Hughes, Prof., honors to ... 68
Human body, development ... 244
Hydraulic machinery ... *6
Hydrogen gas ... 194
Hydrophobia, cure of ... 40
Hydrophobia, prevalence of ... 3
Hydrogen, weight of ... 64
Hygiene, museum of ... 137
Hygiene of old age ... 392
Hypnone ... 257

I

Ice cutting machine ... *322
Ice formation, curious ... *55, *310
Ice formation, regular ... 17
Ice house, cheap ... 129
Ice in the sick room ... 354
Ice machine, Jarman ... *5
Ice Palace, St. Paul ... 113
Ice spicules ... *341
Ills, imaginary ... 369
Illumination, lighthouse ... 241
Illumination, peculiar ... 177
Industrial education ... 260
Industrial Exp., Minneapolis ... 162
Industrial notes ... 279
Inhalers, device for ... *226
Injector, Gresham's ... 184
Injectors, air ... 263
Ink, marking ... 117
Ink, red, in printing ... 280
Ink, waterproof ... 193
Inoculation for consumption ... 217
Institute, Stevens ... 97
Insurance ... 181
Insurance Company, thrifty ... 136
Insect destroyer, Manning's ... *19
Insomnia in the aged ... 228
Inventions, agricultural ... 10, 25, 42, 58, 74, 90, 106, 120, 138, 153, 186, 202, 218, 234, 250, 265, 297, 330, 346, 378
Inventions, engineering ... 10, 25, 42, 58, 74, 90, 106, 120, 138, 153, 169, 186, 202, 218, 234, 250, 265, 282, 297, 314, 330, 346, 363, 378, 394, 409
Inventions, India calling for our ... 210
Inventions, mechanical ... 25, 330, 378
Inventions, miscellaneous ... 10, 25, 42, 58, 74, 90, 106, 120, 138, 153, 169, 186, 202, 218, 234, 250, 265, 282, 297, 314, 330, 346, 363, 378, 394, 409
Inventions, notable ... 288
Inventions wanted ... 272
Inventor, another, gone ... 358
Inventors, laboratory for ... 49
Invention, new, reward for ... 388
Inventors, opportunity for ... 101
Inventors, unsuccessful ... 160
Inventors, youthful ... 84
Iodaldehyd ... 135
Iron and steel, aluminum ... 113
Iron and steel corrosion ... 324
Ironclad Duguesclin ... *383
Iron, magnetic quantities ... 273
Iron mast, taking down ... 233
Iron, meteoric ... *89
Iron mountain, Swedish ... 324
Iron, sad, improved ... *210
Ironclad, peppering an ... 341
Ironing board, new ... *98
Ironing table ... *210
I's, dot your ... 40

J

Jar cover ... *163
Joint, rust ... 404
Journalism, old fashioned ... 115

K

Keg, convertible ... *242
Kilauea, extinction of ... 271
Knife, table, improved ... *372
Knowledge, gateway of ... 7

L

Ladder, fire escape ... *4
Lake Michigan, length ... 403
Lambs, feeding ... *281
Lamp, magnesium ... 209
Lamps, heat from ... 181
Lamps, heat of ... 276
Lands, Floridan, reclaimed ... 245
Lanoline ... 184
Land roller, Twick's ... *274
Lantern condensers ... 51
Lantern lide apparatus ... 357
Lantern lides, making ... 186
Larder, waste in the ... 53
Lathe, pipe cutting ... *198
Lathe, screw cutting ... *179
Laws as to party walls ... 401
Law decisions, recent ... 181
Laws, patent, benefit ... 400
Lead pencil marks, removal ... 129
Lead shot, analysis of ... 261
Leather, artificial ... 19
Lectures, Sibley College ... 49, 64
Legislation, Congressional ... 368
Legislation, obnoxious ... 368
Lemurs ... *343
Leveling app. for builders ... *290
Library, decorations of ... *246
Library, national ... 375
Licenses for small steamboats ... 224
Licorice cultivation ... 242
Life, mistakes of ... 278
Life preserver, Badia's ... *342
Life, price of ... 232
Lifeboats, steam ... 360
Light at bottom of sea ... 181
Light at deep sea depths ... 245
Light, electric, in the Brit. Navy ... 180
Light, electric, on balloons ... 16
Light, gas, powerful ... 197
Lighting, electric, profit ... 401
Lights, colored, tableau ... 36
Lighthouse, Eddystone ... 385
Lighthouse illumination ... 241
Lighting streets, cost of ... 195
Lightning arrester, Belt's ... *291
Lightning arrester, Hoven's ... *291
Lightning rods, directions for ... 193
Lightning stroke, remarkable ... 5
Lime cartridges ... 50
Lime for blasting coal ... 162
Lithographic stones, artificial ... 199
Lock, car door ... *355
Locks, keyless ... *227
Locomotive, central power ... *388
Locomotive, cost to run a ... 241
Locomotive engineers ... 339
Locomotive, farm ... *118
Locomotive works, Clyde ... *134
Loiseau, E. F., death of ... 358
Loom, power, history of ... 261
Loom, principle of ... *99
Loom, shuttle, Shand's ... *339
Looms, American ... 213
Lumber drier, Duke's ... *114
Lycopodium, experiments with ... *393

M

Machine, wood wool ... *406
Machinery and its possibilities ... 408
Machinery, accidents from ... 211
Magenta, how made ... 293
Magnesium, decline in price ... 357
Magnesium lamp ... 209
Magnesium light in photography ... 34, 177
Magnesium, revolution in ... 369
Magnetism, restoration ... 229
Man, remarkable ... 373
Manufacturers, duty of ... 295
Manufacturers and machinery ... *67
Marble sawing machine ... *84
Marsh, Prof. O. C. ... *279
Mast, iron, taking down ... 233
Match trick, simple ... *276
Meals, resting after ... 356
Mechanics, amateur ... 49
Medal of honor ... 383
Medical shop, dollar ... 7
Memory, to strengthen ... 116
Men, young, bring up ... 120
Metal, new, germanium ... 229
Metals, impurities of ... 161
Metals, properties of ... 296
Metals, rare ... 260
Meteorite, a Texan ... 309
Meteors, November ... 7
Meteors, velocity of ... 281
Mice, singing ... 376
Micro-audiphone ... *86
Microscopic, use of word ... 138
Microscope venders, tricks of ... 165
Microscopical notes ... 133
Milk factories, central ... 40
Milk, frozen, in fevers ... 371
Milker, cow, Roth's ... *146
Mill, Du Bose's ... *5
Milling and slotting machine ... *67
Milling machine ... *54
Mills, American ... 213
Mining precautions ... 325
Mining, novel feature in ... *255
Mind cures ... 32, 101
Mineral ultramarine ... 401
Mines, coal, firing in ... 120
Mining industries, our ... 21
Minutes worth saving ... 105
Mitis, new process ... 88
Monogram, how to design ... 258
Moon and us ... 84
More scared than hurt ... 336
Mosquitoes in Mexico ... 130
Motor, Burry's ... *5
Moulds, paraffine ... 119
Muffler for steam valves ... *402
Mug, shaving, new ... *370
Museum, American ... *288, 272
Museum, National ... 228
Museum of hygiene ... 137

N

Natural history in Philadelphia ... 340
Natural history notes ... 151, 281, 376
Navigation, aerial ... 260
Navy, British, electric light in ... 180
Navy, merchant, of world ... 185
Nebula, new, discovery ... 182
Neck yoke attachment ... *146
Needles, floating ... *377
Negative, how to intensify ... 328
Negative, reproduction of ... 357
Nerve force and coloration ... 48
Newspaper stand and file ... 338
Newspapers, American ... 375
Nickelizing process ... 280
Night sky ... *3, *81, *145, *209, *273, *353
Nitrogen, absorption of ... 51
Nitrogen, combustion of ... 182
Nitro-glycerine shells ... *131
Noises, mysterious ... 339

O

Obelisk, Central Park ... 310
Obesity, treatment of ... 4
Observatory, Luck, dome ... 405
Ocean bottom, how lighted ... 72
Oil cup, adjustable ... *274
Oil cup, Slanker's ... *258
Oil, etc., from corn ... 389
Oil, removal of ... 386
Oil stains, removal of ... 258
Oil testing machine ... *149
Oil well, ocean ... 263
Oils, lubricating ... *211
Old age, hygiene of ... 392
Old age, premature, how to avoid ... 296
Orange, Osage, for silkworms ... 387
Orange trees ... 373
Ordnance supplies ... 391
Oregon disaster, the ... 337
Oregon, sinking of ... 192
Organs, old ... *103
Organs, pneumatic action for ... *356
Orthochromatic plates ... 401
Oxygen gas apparatus ... 385
Oyster crab ... *151
Oysters, enemies of ... 281
Ozokerite ties ... 338
Ozone and pneumonia ... 368

P

Packing box, black's ... *50
Packing for steam pipe joint ... *19
Pain, seat and origin of ... 112
Paint, black, dead ... 46
Paint, finish and polish ... 144
Paint, iron ... 279
Paint to preserve ties ... 197
Paintings, copying ... 49
Palace of Jeypore ... 233
Palace, ice, St. Paul ... 113
Paper for wrapping up silver ... 195
Paperpipes ... 112
Paper, rendering tough ... 87
Paper, sand, use of ... 185
Paper, transparent ... 102
Paper, waterproof ... 133
Paper, waterproofing ... 105, 136
Parallactic apparatus ... *230
Parasol holder ... *162
Paste gels for study ... 213
Pasteur, report by ... 324
Pasteur's discoveries ... 54
Pasteur's work ... 388
Patent bills before Congress ... 208
Patent, fortune for a ... 114
Patent law, Canadian ... 21
Patent laws, benefits ... 400
Patent nullification bill, another ... 352
Patent Office business of 1885 ... 145
Patent register, ruined by ... 72
Patent system, our ... 280
Patents, decisions relating to ... 152, 161, 225, 392
Patents, English, 1885 ... 85
Patents, extension of ... 304
Patents, Japanese ... 5
Patents, State interference ... 304
Peacock, argus ... *313
Peat fuel, Russian ... 87
Pendula, electric, propulsion ... 261
Petrifaction of organic bodies ... 54
Petroleum, frozen, for steamers ... 276
Petroleum in Denver ... 386
Petroleum in New Mexico ... 233
Petroleum pipes, cleaning ... 355
Photo-printing ... 73
Photographers' association ... 369
Photographic car ... 405
Photographic notes ... 17, 33, 49, 64, 84, 97, 113, 129, 168, 177, 193, 212, 257, 289, 357, 369, 385, 401
Photographing a tiger ... 100
Photographs, balloon ... 289
Photographs, exhibit of ... 65, 289
Photographs, spectacle ... 113
Photography, astronomical ... *230
Photography by lightning ... 327
Photography, subaqueous ... 243
Phylloxera, preventive of ... 359
Pianoforte, Metzdorff ... 149
Pianofortes, old ... *103
Pictures, colored, photographing ... 177
Pigeons, care of ... 34
Pigments under various lights ... 249
Pinch bar lever ... *306
Pipes, paper ... 112
Piston packing, metallic ... *50
Piston packing, rubber ... *306
Pitch, dialyzed ... 231
Planing machine ... *118, *354
Plant lice, nectar ... 152
Plant roots, influence electricity ... 281
Plate bending machine ... *22
Plate, developed, appearance ... 33
Plates, dry, coating, etc ... 97
Plates, gelatino-bromide ... *247
Plates, orthochromatic ... 401
Plates, photo, packing ... 97
Plates, sensitive, backing ... 33
Platform gear ... *387
Plating without electricity ... 258
Plow and cultivator ... *114
Plowhodgson's ... *18
Plow, snow ... *178
Plow, snow, Poitras' ... *194
Plow, snow, remarkable ... 144
Pneumatic action for organs ... *356
Pneumonia ... 161
Pneumonia and ozone ... 368
Pneumonia, epidemic of ... 65
Poisoning from squill ... 294
Polariscope, use of ... 193
Pompeii, excavations at ... 408
Pont Neuf, accident to ... 177
Post, fence, Hicks' ... *4
Post, parcels, English ... 274
Posts, base for ... 258
Postage rates, increase ... 248
Postage stamp, inventor of ... 295
Potato, origin of ... 377
Poultry breeding in France ... 146
Poultry, feeding stand for ... *402
Preserving compound ... 403
Press, copying ... *290
Press, gunpowder ... *406
Press, hay and cotton ... *323
Press, hop ... *162
Press, printing ... 373
Press, printing, home made ... *276
Press, punching, power ... *403
Price of life ... 232
Printing, luminous ... 225
Printing press, home made ... *276
Prints, glazing ... 385
Prints, to prevent curling ... 17
Prizes of French Academy ... 165
Propeller, screw ... *136
Proportion, rectangular ... 293
Pruning implement ... *178
Public domain, exhaustion ... 112
Pulley, expanding ... *82
Pulverizer, Howland's ... *291
Pump, steam, Empire ... *54
Pumps, chat about ... 340
Pumps, Roots' ... *217
Pumping engines, Brooklyn ... *223
Punching press, power ... *403
Purifier, middlings ... *34
Push or being pushed ... 55

Q

Question of the day, great ... 312
Quicksilver product, 1885 ... 177
Quilting frame, Davis' ... *147

R

Rabbit plague in Australia ... 97
Railroad accident, remarkable ... *31
Railroad hands, medical atten ... 226
Railroad tie plantations ... 209
Rails, machine to saw ... 405
Railway, an underground ... 320
Railway, cable, N. Y. ... *63
Railway car, photo ... 405
Railway, city, Paris ... 281
Railway, electric, Van Depoele ... 7
Railway, inclined plane ... *111
Railway, La Guayra ... 137
Railway monopolies ... 370
Railway practice in Italy ... 198
Railway, ship, Pacific ... 56
Railway, ship, Tehuantepec ... 85, 136, 224, 276
Railway telegraphy ... *119
Railways in China ... 240
Railways, introduction of ... 241
Rainfall, diminished ... 181
Rainfall, our average ... 96
Rattlesnakes ... 148
Rectangular proportion ... 293
Refrigerating machine ... *5
Reservoir construction ... 102
Resin as mounting medium ... 133
Rheumatism, treatment ... 405
Rifle ranges, safety devices for ... 246
Rifle, Remington ... 292
Right and left handed ... 37, 137
Right of way ... 181
Roadrunner, California ... *55
Roads, to improve ... 244
Rocks, classification of ... 328
Rods, vibrating, observation ... 130
Rust joint ... 404
Rust, to prevent ... 245

S

Saccharine substances ... 264
Sad iron, improved ... *210
Safe, Marvin ... *95
Sandpaper, use of ... 185
Sash, window, improved ... *323
Sash fastener, Gibbons' ... *258
Saucepan and cover ... *84
Savings bank, curious ... 164
Saw, Clemson's ... *136
Saw mill, Moore's ... *355
Saw, rail ... 405
Saw, stone, wire ... *147
Saw tooth, Wilson's ... *178
Saw without teeth ... 290
Sawing machine ... *130
Sawing machine, marble ... *84
Scarlet fever ... 391
School slates ... 246
Sciatica, relief of ... 88
Scorpion, the Mexican ... 360
Screen for lantern pictures ... 212
Screw forging machine ... *262
Sea, perils of the ... 181
Sea, signals at ... 256
Sea, wonders of the ... 152
Sea weed, gigantic ... 281
Selenium, new source of ... 101
Selenium plates, electrical ... 3
Separator, wheat ... *4
Sewage process ... 264
Sewer tunneling machine ... *390
Sewing machine, Singer ... 165
Shad, transportation of ... 355
Shafting, loss of power in ... 201
Shell, nitroglycerine ... *131
Shellac ... 324
Shellac varnish, clear ... 305
Ship canal, new ... 9
Ship Duguesclin ... *383
Ship railway, Pacific ... 56
Ship railway, Tehuantepec ... 224, 276
Ship railway trains ... 21
Ships' boats ... 362
Ships' signals ... 18
Ships, steel ... 185
Ships, war, motive power ... 228
Shipwreck, curious ... 146
Shoes, French ... 278
Shop common sense ... 224
Shot, lead, analysis ... 161
Shovels, boiler iron ... 307
Shows, traveling Japanese ... 199
Shutters, adjusting ... *371
Shuttle, loom, Shand's ... *339
Signaling, balls for ... 102
Sign least sea ... 256
Signals, ships' ... 18
Silk weaving, power loom ... 241
Silver and gold in the arts ... 274
Silver, paper for wrapping up ... 195
Silver stains, removal of ... 233
Silver stains, to remove ... 5
Skid, spiked ... *259
Sky, night ... *3, *81, *145, *209, *273, *353
Slag, generating steam by ... 402
Slag, table ware from ... 201
Slate for roofing ... 246
Sleigh, bob, improved ... *130
Smoke, condensation ... 389
Smoke, condensation of ... *255
Smoke conductors ... *194
Smoke, to avoid ... 130
Smoking machine ... *57
Snow, melting by steam ... 64
Snow plow ... *178
Snow plow, Poitras' ... *194
Snow plow, remarkable ... 144
Snow, red ... 151
Snow, removal by steam ... 48
Soda in California ... 55, 185
Soda lakes, Wyoming ... 233
Soda water, what is it? ... 373
Sodium, cheap ... 16
Solder, separation from old zinc ... 2
Soot indicator ... *51
Sore throat, cure for ... 17
Speed, high, on the ocean ... 9
Speed indicator, Herden's ... *309
Sphinx, Egyptian ... *359
Spontaneous combustion ... 69
Spring, lumber wagon ... *274
Spring, vehicle ... *18
Sprinkler, automatic ... 248
Square, Seargeant's ... *4
Stable, earth in the ... 35
Stammering, to cure ... 21, 53
Stamp, counting house ... *146
Stand, aiming, universal ... *363
Statue of Liberty ... 259
Steam boiler, care of ... 20
Steam boiler, Cooper's ... *275
Steam boiler, Cadiat's ... *211
Steam boiler explosions ... 385
Steam by friction ... *70
Steam carriage ... *22
Steam carriages, new ... *185
Steam craft, fastest ... 117
Steam disinfecter ... *227
Steam engine, Webb's ... *307
Steam engineering ... 56
Steam, generating by slag ... 402
Steam pipes, danger from ... 101
Steam pipes, fire from 117, 165, 199, 229
Steam pump, Empire ... *54
Steam valves, muffler for ... *402
Steam yacht ... 218
Steamboats, small, licenses ... 224
Steamboats wanted ... 306
Steamer for the Nile ... *163
Steamer La Bourgogne ... *271
Steamer Oregon ... 192, 256, 337
Steamers to run 50 miles an hour ... 359
Steel and iron, aluminum ... 113
Steel, cast, hardening of ... 160
Steel process, Clapp-Griffiths ... *191
Steel ships ... 185
Steel, structure of ... 391
Steel wire gun ... 403
Steel work, Bessemer ... 193
Steering by electricity ... 64
Stereoscope, new form ... 340
Stereotyping for amateurs ... 118
Stone, artificial ... 279
Stone channeling machine ... *115
Stone, luminous ... 384
Stone, preservation of ... 7
Stone saw, wire ... *147
Stones, lithographic, artificial ... 199
Stones, precious, American ... 80
Stones, seasoning ... 375
Stonework, cleaning ... 133
Stop motion, new ... *338
Stoppers, fixed, removal ... 337
Stove grate, Baily's ... *339
Stove, Taylor's ... *243
Strainer and cut-off ... *52
Straits of Belle Isle, closing ... 165
Street cleaning ... 338
Street cleaning, Boston ... 216
Streets, lighting, cost of ... 195
Strikers, whole number of ... 336
Success in life ... 68
Sulphur in coal, origin ... 336
Summer house, design for ... *182
Sun, corona of ... 7, 20
Sun, eclipse of ... 7
Sunflowers, use of ... 291
Surgery, electrical ... 185
Surgery, manual, for players ... 36
Switch for depositing machine ... *50
Switch, safety, railway ... *281
Swords, cavalry, testing ... *179
Swords, electrical ... 87

T

Table, ironing ... *210
Table ware from slag ... 201
Tableaux lights ... 36
Tanks, water, for fire purposes ... 341
Tax on drummers ... 184
Tea kettle, Ford's ... *372
Tea, peach root ... 291
Teeth extracting with pistol ... 180
Teeth, separating device for ... *233
Telegraph, African ... 389
Telegraph inst., learner's ... *180
Telegraph, life saved by ... 40
Telegraphy, history of ... 389
Telegraphy, railway ... 119
Telemeter, universal ... 177
Telephone, Bell not inventor ... 21
Telephone case, Bell ... 2
Telephone caveat, Meucci's ... 104
Telephone controversy ... 128
Telephone decision, New Orleans ... 384
Telephone, growth of ... 198
Telephone, Guthrie's ... 246
Telephone, invention of ... 6
Telephone nutshell ... 321
Telephone, origin of ... 137
Telephone patent, Bell ... 64
Telephone, early ... *385
Telephoning from lightships ... 68
Telescope, equatorial ... 21
Telescope, inventor of ... 339
Telescope mounting, design ... 405
Temperatures, low ... 187
Tendrils of cucurbits ... 376
Termes flavipes ... *71
Testing machine ... *374
Thibet, exploration of ... 49
Thorn clipper, Brown's ... *178
Throat, sore, cure for ... 17
Thunderstorm in a clear sky ... 325
Tiemann road, plantations ... 209
Ties, cross, railway ... 87
Ties, ozokerite ... 338
Ties, paint to preserve ... 197
Ties, wood, preserving ... 117
Tiles, encaustic ... 246
Time calculator ... *226
Time notation ... 151
Times we live in ... 89
Tin, Cornwall ... 248
Tin, new form of ... 212
Tintoretto's house ... *265
Tire and tire bolt, Hitt's ... *323
Tire, Shetland ... 292
Toads as bee eaters ... 180
Toads, tree ... *264
Tobacco blindness ... 329
Tongue, the, in disease ... 329
Tool grinder, improved ... *402
Tooth for saws, new ... *178
Top, traveling ... *83
Tornado at St. Cloud ... 277
Tornadoes ... 309
Torpedo boats, construction ... *275
Torpedo boat, fast ... 117
Torpedo boats, submarine ... 166
Torpedo catcher ... 52
Torpedo experiments ... 48, 209
Torpedo, fish, and its enemy ... 38
Torpedo, new ... 230
Tower, observatory ... *87
Towers of silence, the ... 307
Track clearer ... *386
Trade mark decision ... 201, 243, 341, 356
Trade mark in signs ... 181
Transformers ... *131
Transportation, water, inland ... 129
Trap, spring ... *82
Treadle for bicycles ... *105
Trees in Mexico ... 277
Trees, sanitary value ... 375
Trellis for garden crops ... *114
Trichiniasis, fatal ... 362
Trick, match, simple ... *276
Trough, watering, Boles' ... *18
Truck, hand, Caldwell's ... *402
Truck, hand, Smith's ... *402
Truss and supporter ... *260
Tunnel, a deadly ... 198
Tunnel, Big Bend ... *85
Tunnel, Mersey ... *159
Tunnel, water, Cleveland ... 80
Tunneling machine, sewer ... *390
Tunnels of the ancients ... 358
Turf cutter, Mineo's ... *322
Turpentine, spirits of ... 50
Turtle, sea monster ... 216
Tympan, Squire's ... *339
Type and overlay ... *290
Type writer, Remington ... 289
Typewriter, 14 inch ... 115

U

Ultramarine, mineral ... 401
University, California ... 6

V

Vaccination, philosophy ... 200
Valve for wash basins ... *146
Valve, governor ... 386
Valves, steam, muffler for ... *402
Van Nostrand, D., death of ... 401
Vaporizing device ... *226
Varnish, shellac, clear ... 305
Vegetation, chemical ... *361
Vehicle spring ... *18
Vehicle wheel ... *19
Vehicles, gear for ... *34
Venice ... 276
Ventilation, best mode ... 6
Ventilator, Briggs' ... *291
Vessels, armor for ... *201
Vessels communicating at sea ... 17
Vest, the, poor lung protector ... 339
Viaduct, Tay, new ... *15
Vineyards, protection ... 244
Voltaic cell ... 8

W

Wagon coupling, new ... *290
Wagon, dumping ... *19
Wagons, end gate for ... *242
Wagon tires, fastening ... *329
Walls, brick ... 202
Walls, cellar, damp ... 385
Walls different cost of ... 305
Wall tint ... 373
Walls, party, law as to ... 401
Walls, strength of ... 88
War ships, motive power ... 228
War s, removal of ... 339
Wash bottle, laboratory ... 2
Washing machine ... *194
Waste pipes, cleaning ... 41
Watch protector ... 370
Water, aerated, apparatus ... *35
Water, boiling points ... 376
Water bulk ... *407
Water elevator, Davis' ... *386
Water, flow of through lead pipe ... 201
Water, freezing point ... 230
Water heating itself ... 7
Water, how to carry in a sieve ... *311
Water, illuminating ... 393
Water, soda, what is it? ... 373
Water, spheroidal state ... *404
Water supply, new ... 98
Water supply, to secure ... 210
Water tanks for fire purposes ... 341
Water works, automatic ... *178
Water works, Brooklyn ... *233
Waters, mineral, of U. States ... 289
Watertight compartments ... 388
Watt, James, anniversary ... 212
Watt, Jas., shop of ... *391
Wave, cold, great ... 84
Wax process for engraving ... 402
Weavers, handloom, last of ... 357
Well finding ... 164
Well, gas, cost of drilling ... 391
Well, gas, natural ... *233
Well, oil, ocean ... 263
Well system, driven ... *228
Wells, gas, red by lightning ... 372
Westinghouse, George ... 290, 372
Whale, right, Atlantic ... 117
Whales and whaling ... *24
Whales off Long Island ... 8
Whaling interests, California ... 66
What is thought of us ... 280
Wheat, antiquity of ... 147
Wheat production, cost of ... 177
Wheel snaping machine ... *259
Wheel, vehicle ... *18
Wheels, car, inaccuracies ... 87
Wheels, car, new process ... 304
Willow farm, Georgia ... 145
Window and door heads ... *99
Window glass manufacture ... *175
Window grille ... *263
Window sash, improved ... *329
Wine, strong, tears of ... *377
Wire gun, steel ... 403
Wohler, Friedrich, monument ... 281
Woman, a child ... 321
Wood, fossil, of the West ... 35
Wood, lining, to prevent fire ... 229
Wood, oiling ... 289
Wood, petrified ... 215
Wood, preservation of ... 353
Wood sawing machine ... *180
Wood ties, preserving ... 117
Wood wool ... *406
Woods, affinities of ... 264
Wool, wood ... 402
Woolen as sanitary measure ... 402
Work, what it is ... 309
Workmen, awards for ... 225
Workshop of James Watt ... *391
Wrench and drill ... *371
Wrench, Gales' ... *24
Writing machine ... *160
Writing materials ... 68

Y

Yacht Atlantic ... *319
Yacht, steam ... 213

Z

Zinc ... 193
Zinc architectural work ... 233
Zinc chloride ... 53
Zinc, durability of ... 384
Zinc, separation of solder from ... 2

© 1886 SCIENTIFIC AMERICAN, INC