and the water flows into the air chamber in a steady stream. J. M. may not be able to run at 200, but I think he can go over that. I think the supply pipe is large enough. I hope J. M. will tell through your paper how he succeeds. A. Your hints are practical, and will be of great value to some readers. The air chamber in the supply pipe, however, is not the universal panacea for sulky pumps that you seem to consider it. Still, no one who puts in such an air chamber will have cause to rerget it.

(29) E. L. F. says, in reply to F. S. M. & Co.'s query as to sesquioxide of manganese: The sesquioxide of manganese is found in its anhydrous state as braunite, and in an hydrated state as manganite. It may be obtained by passing chlorine through manganous carbonate, placed in water, and afterwards applying diluted nitric acid to remove the excess of the carbonate.

(30) E. L. F. says, in reply to W. H. R., who asked how to make the muriatic salts of nickel: Pure nickel has a great similarity to iron, both in its external appearance and its combinations, and is regarded as a tetrad, although it forms but one chloride, in which it is bivalent. Nickel chloride ($Ni\ Cl_2$) may be prepared by dissolving the oxide or carbonate of nickel in hydrochloric acid. By a simple process, the nickel carbonate may be prepared from the crude *speiss*. Any good work on chemistry explains the method.

COMMUNICATIONS RECEIVED.

The Editor of the SCIENTIFIC AMERICAN acknowledges, with much pleasure, the receipt of original papers and contributions upon the following subjects:

On Vegetable Fibers. By J. W.
On Hydrocarbons on Iron and Steel. By L. P.
On Solids Floating on Liquids. By A. R.
On Popular Dental Science. By C. S. S.
On a Flying Machine. By C. H. C.
On Boiler Explosions. By R. B.
On Oyster Culture. By O. C.
On Suet Butter. By J. L.
On a New Projectile. By W. L. A.

Also enquiries and answers from the following:

J. G. G.—S. W. R.—E. W. H.—G. A. P.—X. Y. Z.—L. N. K.—W. J. R.—J. W. D.—W. D. D.—F. R. D.—M. L. W.

HINTS TO CORRESPONDENTS.

Correspondents whose inquiries fail to appear should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them. The address of the writer should always be given.

Enquiries relating to patents, or to the patentability of inventions, assignments, etc., will not be published here. All such questions, when initials only are given, are thrown into the waste basket, as it would fill half of our paper to print them all but we generally take pleasure in answering briefly by mail, if the writer's address is given.

Hundreds of enquiries analogous to the following are sent: "Who erects wire tramways? Who buys broken window glass? Who builds engines and boilers for small boats? Where can spectroscopic apparatus be bought? Who sells photographic chemicals that can be relied on for quick work?" All such personal enquiries are printed, as will be observed, in the column of "Business and Personal," which is specially set apart for that purpose, subject to the charge mentioned at the head of that column. Almost any desired information can in this way be expeditiously obtained.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

Letters Patent of the United States were Granted in the Week ending

November 24, 1874,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

Alarm, grist, Hashon & Wright ... 157,174
Alphabet case, Baade & Sangster ... 157,118
Bale tie, S. J. Leach ... 157,206
Bale tie, J. L. Reese ... 157,223
Bee hive, P. O. Peterson ... 157,108
Beer faucet ventilator, H. Gnosill ... 157,172
Beer with gas, charging, J. C. Kennedy ... 157,181
Bitstock, J. S. Mitchell ... 157,212
Blind, folding, A. Le Roy ... 157,075
Boiler, J. R. Lamb ... 157,184
Boiler, steam, S. Bickerstaff ... 157,114
Boilers, injector for steam, W. Randall ... 157,105
Boiler water circulator, N. Wiard ... 157,256
Bolting machine, Martin & Lytle ... 157,209
Brick mold, J. Treadway ... 157,247
Broom hanger, G. Yinger ... 157,263
Brush, A. Thomson ... 157,244
Brush, shoe, C. O. & I. N. Kelly ... 157,180
Brush trimming machine, J. Pickering ... 157,104
Buggy seat, J. B. Wells ... 157,144
Bullet, patched, F. O. Scholze ... 157,227
Bung and faucet, closing, Darozir *et al.* ... 157,092
Butter salting scales, A. A. Skinner ... 157,233
Can, sprinkling, J. W. Gessaman ... 157,170
Car brake, hydraulic, W. M. Henderson ... 157,175
Car coupling, H. C. Chapman ... 157,193
Car coupling, D. W. Deal ... 157,093
Car coupling, L. Dill ... 157,066
Car coupling, B. R. Webber ... 157,253
Car, safety, H. B. Myer ... 157,077
Carriage top support, Z. C. Brown ... 157,151
Chair, adjustable reclining, A. Rapp ... 157,081
Chopper, meat, Edwards & Morlan ... 157,164
Chopper, meat, A. Nittinger, Jr. ... 157,213
Clock keys, manufacture of, G. D. Clark ... 157,064
Clocks, spring barrel for, G. H. Blakesley ... 157,088
Clothes mangle, W. Tinsley ... 157,245
Clothes wringing machine, M. & F. Way ... 157,252
Clutch, friction, Burwell & Bates ... 157,063
Coffee, cooling, J. Burns (r) ... 6,144
Cooler, milk, R. Smith ... 157,138
Copies, producing facsimile, E. De Zuccato ... 157,161
Corn coverer and cultivator, J. Copeland ... 157,196
Corset, J. Bowers (r) ... 6,143
Cradle, L. H. Stellmann ... 157,141
Cranberry picker, W. Crowell ... 157,158
Cross head gib, W. A. Rideout ... 157,136
Cultivator, Graham & Wallace ... 157,125
Dental amalgam, S. S. Southworth ... 157,140
Derrick, C. Lidren ... 157,207
Dividers, W. Smith ... 157,137
Door, sash, L. W. Tatum ... 157,085
Doors, rail for sliding, J. D. Skeer ... 157,235
Draw frame stop, D. W. Hayden (r) ... 6,147
Drawframe stop, A. A. Sweet ... 157,142
Dredging machine, R. R. Osgood ... 157,101
Drill for drilling metal, hand, D. D. Mackay ... 157,099
Drill, rock, C. S. Pattison ... 157,133
Elevator, H. H. Blake ... 157,061
Elevator, bucket, H. Port ... 157,135
Elevator, hydraulic, A. Granville ... 157,126
Engine crank, W. M. Boggs ... 157,147
Envelope, A. C. Fletcher ... 157,167
Explosive compound, C. W. Volney ... 157,143
Faucet, tool for finishing, H. Soffe ... 157,139
Feather renovator, J. C. West ... 157,255
Fence, portable, J. M. Overpeck ... 157,214
Fence, wire, J. F. Glidden ... 157,124
Fire escape, J. B. De Boucherville ... 157,065
Fire extinguisher, T. D. Pennington ... 157,217
Fire extinguisher, chemical, Holzner & Lauer ... 157,177
Food, preserving, D. Snedeker ... 157,107
Fork, hook, shovel, and hoe, G. H. Perkins ... 157,219
Fruit protector, A. S. Dykman ... 157,[illegible]
Fulling machine, C. Ackerman ... 157,086
Game apparatus, W. C. Wingfield ... 157,259
Glassware, stemmed, J. Oesterling (r) ... 6,151
Grain drill, W. Henigst ... 157,072
Grate bar, A. F. Crowell ... 157,091
Halter, pastern, J. C. Ford ... 157,122
Harness, A. W. Lawton ... 157,074
Harness attachment, J. D. Truss ... 157,248
Harness saddle, F. W. Maldeis ... 157,208
Harvester, A. Gray ... 157,127
Harvester cutter, G. Sweet ... 157,243
Harvester knives, grinding, E. W. Phelps ... 157,079
Harvesterrake, Peckenpaugh & Miller ... 157,216
Heel shave, M. A. Tyler ... 157,110
Hemp brake, T. Jones ... 157,096
Hook, detaching, Stone and Mansfield ... 157,084
Horseshoe, J. Jorey ... 157,179
Indexing wheel, H. H. Edwards ... 157,163
Indicator, low water, R. R. Carpenter ... 157,119
Ironing board, A. H. Swain ... 157,242
Jack, lifting, D. T. Welch ... 157,254
Kiln, brick, W. S. Colwell ... 157,090
Ladder, step, Brown & Sweet ... 157,138
Ladder, step, T. F. Kiff ... 157,183
Lamp lighting apparatus, M. A. Lynch ... 157,098
Latch, locking, J. W. Williamson ... 157,257
Leather, scrubbing and cleaning, S. Branaugh ... 157,149
Lines, taking up slack of, H. Douglas ... 157,197
Liquid measure, S. C. Redgrave ... 157,222
Locomotive exhaust mechanism, A. O. Denio ... 157,160
Lubricating compound, W. C. Tilton ... 157,108
Lubricating cup, J. E. Lonergan ... 157,076
Lubricator, spindle, Stauts & Rigby ... 157,240
Mills, conductor for rolling, J. Gearing (r) ... 6,149
Nozzle, exhaust, G. Sewell ... 157,231
Nozzle for steam cylinders, G. Sewell ... 157,230
Packing of condenser tube, etc., W. A. Lighthall ... 157,097
Padlock, permutation, J. L. Willbur ... 157,253
Paint, fireproof, J. C. Smith ... 157,083
Paper pulp, filling fiber in, H. Duemling ... 157,198
Paper with emery, etc., coating, R. J. Edwards ... 157,068
Pawl and ratchet, J. Corbett (r) ... 6,146
Peg cutter, A. Whittemore ... 157,145
Pen and pencil case, C. H. Downes ... 157,067
Philosophical estimator, F. M. Stapff ... 157,239
Pianoforte metal frame, J. E. Atwood ... 157,187
Pipe, water, J. A. Calantarients ... 157,190
Plane, bench, Duncan & Talbot ... 157,162
Plane handle, F. Goodnow ... 157,069
Planter, corn, S. Wright ... 157,262
Plow, A. B. Kellogg ... 157,204
Plow, A. Smith ... 157,234
Plow, side hill, M. Ellis ... 157,200
Plow, side hill, L. L. Iverson ... 157,130
Plow, sulky, E. Derwent, Jr. ... 157,119
Polishing machine, W. S. Wood ... 157,261
Pottery spring punch, A. H. Hews ... 157,129
Press, H. K. Burnett ... 157,089
Press, cotton, W. Koehl ... 157,205
Press, cotton, J. C. Stokes ... 157,241
Press, cotton, W. H. Walker ... 157,251
Pulley, expanding, C. A. Brand ... 157,150
Pump bucket, chain, S. C. Hamlin ... 157,173
Pump, plenum and vacuum, D. L. Cameron ... 157,191
Punch, registering ticket, J. Corbett (r) ... 6,145
Purifier, middlings, A. Fulton ... 157,169
Raft, life, C. Parker ... 157,215
Railroad crossing gate, O. Gassett ... 157,123
Railroad, elevated, J. M. Hannahs (r) ... 6,150
Railroad gage, J. T. Ketchledge ... 157,182
Railroad rail joint, Bryson & Pugh ... 157,152
Rake, horse hay, J. D. Jones ... 6,154
Regulator, exhaust, C. C. Gregory ... 157,201
Retort cap cover, P. Munzinger ... 157,100
Rivet, M. Bray ... 157,116
Rolling iron straps, machine for, J. Jensen ... 157,131
Rooftruss, U. G. Spofford ... 157,238
Roofs, metallic cap for, P. B. Laidlaw ... 157,132
Sash dovetailing machine, Pennell & Zimmer ... 157,134
Sash fastener, W. C. Alden ... 157,186
Saw mill dog, G. W. Baker ... 157,146
Saw mill dog, J. A. Fordon ... 157,168
Saw mill dog, L. P. Gilbert ... 157,171
Saw mill dog, N. Hunt ... 157,202
Saw tooth swage, A. G. Rouse ... 157,225
Scaffold clamp, W. Smith ... 157,236
Screw driver, I. Allard ... 157,087
Screw driver, W. F. Patterson ... 157,102
Seeder, plaster sower, and harrow, L. Dague ... 157,159
Seeding machine, A. C. Evans ... 157,166
Separator, ore, Campfield & Hornbeck ... 157,192
Sewing machine attachment holder, J. H. Bean ... 157,059
Sewing machine ruffler, L. Schultz ... 157,228
Sewing machine table, E. R. Adams ... 157,185
Sheep shearing devices, E. Chaquette ... 157,156, 157,157
Shutter and window fastener, J. C. Ryckman ... 157,226
Sieve, metallic, C. B. Porter ... 157,220
Sleeve adjuster, A. Perego ... 157,218
Snow plow, hand, C. A. and G. R. Parker ... 157,078
Soap frame, J. H. Keller ... 157,203
Soda water cooler, M. S. Andrews ... 157,058
Spittoon filter and holder, N. K. Ellsworth ... 157,165
Stove, base heating, V. Vermilye ... 157,249
Stove, heating, J. W. Elliot ... 157,121
Stove, reservoir cooking, J. F. Quimby (r) ... 6,152
Stoves, oven door for cooking, E. W. Harvey ... 157,128
Street sweeping machine, R. A. Smith (r) ... 6,153
Stripping, peeling, and splitting, S. Kuh ... 157,073
Switch, J. A. Duggan ... 157,120
Table for undertakers, C. B. Simmons ... 157,232
Thimble skeins, setting, E. F. Edwards ... 157,094
Tinner's machine clamp, W. H. Burnett ... 157,189
Tobacco cutter, S. Rodgers ... 157,106
Toy, G. W. Hawk ... 157,095
Toy pistol, S. Tomlinson ... 157,246
Toy pistol, J. T. Trowbridge ... 157,109
Trace fastener, R. Whiting ... 157,111
Umbrella, A. and I. Herzberg ... 157,176
Umbrella and parasol, W. M. Henderson ... 157,071
Valve, globe, J. Arthur ... 157,112
Valve, globe, J. Broughton ... 157,117
Vehicle wheel, W. Beers ... 157,060
Vehicle wheel, H. C. Hubbell ... 157,178
Velocipede, J. F. McClure ... 157,210
Ventilator, T. W. Bracher ... 157,148
Vessels, construction of iron, D. W. Zantzinger ... 157,264
Vessels, propelling, E. Raynale ... 157,221
Wagon brake, G. Seeger ... 157,229
Washing machine, I. D. Buck ... 157,062
Washing machine, A. Cook ... 157,095
Washing machine, Spangler & Reich ... 157,137
Watch balance, E. Chapin ... 157,154
Watch barrel, E. Chapin ... 157,155
Watch guard attachment, A. S. Potter ... 157,080
Watch plate, E. Chapin ... 157,153
Water closet apparatus, A. McGilchrist ... 157,211
Water wheel, M. E. Washburn ... 157,250
Water wheel, turbine, C. Healy ... 157,070
Whip socket, W. W. Richardson (r) ... 6,148
Windmill, H. J. Wolcott ... 157,260
Window blind, screen, J. P. Clark, Jr. ... 157,194
Window casing, W. J. Ross ... 157,224
Wrench, H. D. Rouse ... 157,082
Wrench ratchet, J. Bowers ... 157,115

APPLICATIONS FOR EXTENSION.

Applications have been duly filed and are now pending for the extension of the following letters patent. Hearings upon the respective applications are appointed for the days hereinafter mentioned:

31,443.—FELLY MACHINE.—C. H. Denison. Feb. 3.
31,445.—LIME KILN.—R. Donaldson. Feb. 3.
31,502.—COAL BREAKER.—R. A. Wilder. Feb. 3.
31,533.—WEIGHING APPARATUS.—A. B. Davis. Feb. 10.
31,534.—SCALE BEAM.—A. B. Davis. Feb. 10.
31,566.—DRYING TUNNELS.—F. H. Smith. Feb. 10.
31,579.—CORN PLANTER.—F. B. Preston. Feb. 10.

EXTENSIONS GRANTED.

30,633.—FIRE ESCAPE.—E. B. Larcher.
30,651.—HARVESTER.—S. W. Tyler.
30,685.—SEED DRILL.—H. Moore.
30,691.—CASTING PLOWSHARES.—F. F. Smith.
30,691.—PLOW.—F. F. Smith.
30,719.—PAPER FOLDER.—C. Chambers, Jr.
30,745.—CULTIVATOR.—N. Messenger.

DISCLAIMERS FILED.

102,462.—COOK STOVE.—J. B. Wilkinson, Troy, N. Y.
155,534.—DRESS PROTECTOR.—H. M. Macdonald, Lowell, Ms.

DESIGNS PATENTED.

7,855 to 7,858.—CARPETS.—R. Allan, Yonkers, N. Y.
7,859 to 7,862.—CUTLERY.—J. D. Frary, New Britain, Conn.
7,863.—COOKING STOVE.—G. G. Richmond, Providence, R. I.
7,864.—BOTTLE.—S. C. Upham, Philadelphia, Pa.
7,865 to 7,869.—SILVER WARE.—G. Wilkinson, Pr'dence, R. I.
7,870.—WINDOW SCREEN.—G. Shatswell, Waukegan, Ill.
7,871.—INKSTAND COVER.—H. C. Wilcox, W. Meriden, Ct
7,872.—MONUMENT.—H. C. Borgner, Lebanon, Pa.
7,873.—ORGAN CASE.—G. E. Carhart *et al*, Washington, D. C.
7,874 to 7,876.—CARPETS.—F. W. Green, Orange, N. J.
7,877 to 7,884.—CARPETS.—H. Horan, East Orange, N. J.
7,885.—PARLOR HEATER.—A. T. Jones, Stamford, Conn.
7,886.—HOT CLOSET RANGE.—A. T. Jones, Stamford, Ct.
7,887.—CARPET.—L. G. Malkin, New York city.
7,888.—WRITING PAPER.—C. D. Myers *et al.*, N. Y. city.
7,889.—CARPET.—H. Nordmann, New York city.
7,890 & 7,891.—BUTTONS.—H. E. Bostwick, New Milford, Ct.
7,892 to 7,901.—EMBROIDERY.—E. Crisand, New Haven, Ct.
7,902.—FORK HANDLE.—C. Osborne, N. Attleborough, Ms.
7,903.—STATUETTE.—T. J. Pairpoint, Providence, R. I.
7,904.—OILCLOTH.—C. T. & V. E. Meyer, Bergen, N. J.

TRADE MARKS REGISTERED.

2,072.—CHEWING TOBACCO.—Allan *et al.*, Cincinnati, O.
2,073.—STOVE POLISH.—H. A. Bartlett & Co., Phila, Pa.
2,074.—STOVE DRESSING.—B. F. Brown & Co., Boston, Ms.
2,075.—GLOVES.—Harris Bros., New York city.
2,076.—SHIRTINGS.—Naumkeag Steam Co., Salem, Mass.
2,077.—COOK STOVE, ETC.—G. G. Richmond, Pr'dence, R. I.
2,078.—HEALING SALVE.—Stapleton & Co., Springfield, Ms.
2,079.—MEDICINE.—G. Steloff, Cincinnati, O.
2,080.—PERFUMERY, ETC.—J. & E. Atkinson, London, Eng
2,081 & 2,082.—CORSETS.—L. Coleman & Co., Boston, Mass
2,083.—CORSET.—Ottenheimer & Co., New York city.
2,084.—SOAP.—Reed & Co., Pittsburgh, Pa.
2,085 to 2,088.—SALT.—Union Pacific Salt Co., S. F'cisco, Cal.
2,089.—TOBACCO.—Frishmuth & Co., Philadelphia, Pa.
2,090.—PILE REMEDY.—C. Mayne, New York city.
2,091.—MEDICINE.—Dr. J. Simms & Son, Wilmington, Del.
2,092.—PICKLES, ETC.—C. G. Summers & Co., Baltimore, Md.
2,093.—SALERATUS.—J. M. Taylor, New York city.
2,094.—SUGAR, ETC.—DeCastro & Donner Co., N. Y. city.
2,095 to 2,097.—WOOLEN GOODS.—Wash. Mills, Lawrence, Ms.
2,098.—GROCERIES.—N. W. Burchell, Washington, D. C.

SCHEDULE OF PATENT FEES.

On each Caveat	$10
On each Trade mark	$25
On filing each application for a Patent (17 years)	$15
On issuing each original Patent	$20
On appeal to Examiners-in-Chief	$10
On appeal to Commissioner of Patents	$20
On application for Reissue	$30
On filing a Disclaimer	$10
On an application for Design (3½ years)	$10
On application for Design (7 years)	$15
On application for Design (14 years)	$30

INDEX

ILLUSTRATIONS.

A

Air ship, Rhone's ... 52
Air, the effects of compressed, Bert's apparatus ... 18
Aquarium at Southport, England ... 295
Arrow heads, feathering ... 5
Axles, machine for turning carriage, Aram's ... 207

B

Baird, James, Gartsherrie, Scotland ... 95
Balloon, hot air, Ménier's ... 377
Balloon, sectional, Hartness' ... 99
Balloon, Sivel's ... 55
Barrow in Furness iron shipbuilding works ... 311
Battery, thermo-electric, Clamond's ... 34
Bearing, alarm for hot ... 403
Bear pits at Philadelphia, the ... 358
Blinder, horse, Kennedy's ... 275
Blood, the transfusion of ... 146, 147
Blow-off, surface, Waugh's ... 310
Bolckow, Mr. H. W. F. ... 175
Boiler covering, Irons and Clayton's ... 262
Boiler explosion at Dubuque, Iowa ... 277
Boiler explosion at Geddes, N. Y. ... 5
Boiler, steam, Harvey's ... 246
Boiler, vertical, Hill's ... 98
Bouquet of grasses and flowers, a June ... 135
Brake, friction ... 273
Brake, the Westinghouse ... 20
Brick press, hydraulic, Badmer's ... 151
Brick press, Whitehead's ... 199
Bricks, universal angle, Billings' ... 291
Bridge over the Mississippi, at Keokuk, Iowa ... 367
Bridge over the Po, Italy ... 66
Bridge, railway, near York, Eng. ... 399
Bridge, rolling, at St. Malo, France ... 67
Bridge, the Comba Scura ... 351
Bridle, horse, Sanborn's ... 358
Bullets impacted in the air ... 5

C

Cannon, the Krupp 10-inch ... 115
Cap of Liberty, the, Yellowstone region ... 179
Carrier pigeons ... 306
Car, section of railroad ... 212
Castalia, the twin steamer ... 279
Cattle, Guernsey ... 247
Centrolinead, Maccord's ... 274
Clamp, adjustable, Hammer & Co.'s ... 194
Coal cutter, hand, Jones' ... 178
Coal screen, Leach's ... 287
Compass, gravitation, Lord Caithness' ... 19
Condenser, compound engine, Hathorn's ... 211
Conservatory at Southport, Eng. ... 295
Conservatory at Sundridge Park, Kent ... 71
Cooling air, various methods ... 28
Cow milker, automatic ... 242
Cranes, safety catch for ... 377
Crow bar, tamping, Wright and Tew's ... 98
Cupressus cornuta, cones of the ... 39
Cutting and punching machine, Reynolds' ... 102

D

Deer's head, a four-antlered ... 114
Dicksonia antarctica, the ... 39
Disintegrator, Davis' ... 278
Diving bell, Toselli's ... 19
Docks at Portsmouth, England, the new ... 354
Dough kneader and cutter, Möckl's ... 262
Dogs' teeth, filing ... 72
Dovetailing machine, miter, Davis' ... 1
Drill, hand crank, New York Engine Co.'s ... 134

E

Ear trumpet, a simple ... 36
Encephalartus altensteinii, the ... 39
Engine and boiler, Hill and Massey's ... 199
Engine, compound, Davenport's ... 19
Engine, horizontal compound, Hathorn's ... 210
Engine, portable, Montel & Co.'s ... 258
Engine, portable, the Shapley ... 335
Engine, rotary, Myers' ... 303
Exposition buildings, Chili ... 103

F

Face plate, sliding, Whitmore's ... 357
Fairbairn, Sir William ... 143
Faucet, improved, Webster's ... 150
Feed water heater, Penner's ... 340
Ferrule and hook for whiffletrees, Starling's ... 194
Filter, a cheap ... 251
Fire engine, floating, Merryweather's ... 366
Fire governor, automatic, Slade's ... 287
Floor damp, Davidson's ... 214
Fly catching plant, the ... 4
Flying machine, proposed ... 357
Fountain Cave, Va., views in ... 35
Friction brake, Gill's ... 340
Furnace, Fairbairn's ... 194
Furnace for melting brass, Bush's ... 54
Furnace, safety, Shand and Mason's ... 50

G

Galls, oak ... 82
Gardenia, the lemon-scented ... 359
Gear-cutting attachment, Hopkins' ... 63
Glass, crystalization of ... 386
Governor, cut-off, Ord's ... 86
Governors, pendulum ... 389, 404
Grain, machine for unloading, Clark's ... 111
Granary at Bristol, England ... 79
Grapnel, Toselli's ... 21
Grappling tools, Dexter's ...
Gun, the new French army ... 358
Gyroscope, the ... 91

H

Hammer, air spring, Hotchkiss' ... 26
Hammer, the monster—The furnace ... 226

© 1874 SCIENTIFIC AMERICAN, INC.

Hatchet, Wisner's ... 342
Heel trimming machine, Jones' ... 230
Hoisting machine, Mason's ... 47
Hot springs, the Mammoth, Yellowstone region ... 179
Hub, Davis' ... 102
Hyme nocalyx undulata, the ... 391

I

Ice and freezing house, Newsham & Co.'s ... 255
Ice creeper, Earle's ... 54
Ice-making process, Newsham's ... 54
Independencia, launch of the frigate ... 183
Iris susiana, the ... 82
Iron castings, weak points in ... 227
Ironclad battery, the Stevens ... 87

J

Jack, hydraulic, Biddle's ... 342
Jack, wagon, Rowland's ... 198

L

Lacing belts, McCoy's method ... 357
Laird, John, the late ... 343
Latch, locking, Folsom's ... 150
Lantern, Lordon's ... 198
Lathe, combination, the Strange Company's ... 127
Lifeboats ... 195
Life, geological records of ... 228
Lighter, non-explosive self, Muller's ... 242
Lights for greenhouses ... 275
Lock, Moat's ... 294
Locomotive, double bogie, Mason's 215
Locusts destroying a grain field ... 119

M

Market at Florence, Italy ... 83
Mechanical movement, Frese's ... 6
Milk can, Gaines' ... 342
Milk cooling can, Fluke's ... 275
Mill ng machine, the Tanite Co.'s 271
Molding castings, machine for, Eames & Co.'s ... 239
Moss, long ... 263

N

Nail, Lowensohn's ... 403
Needle, Gaillard's ... 22
Normal school, New York city ... 387

O

Orchid, the anæctochilus ... 82

P

Padlock, self-locking, Miller's ... 278
Paint brush, Thompson's ... 86
Palm, the jubæa spectabilis ... 7
Paper burnishing machine, Alauzet's ... 183
Parabola, to draw a ... 213
Parachute, Degroof's ... 291
Pea, plant grown from a mummy. 290
Peat fuel manufacture in Canada. 355
Pekin, the steamship ... 161
Petroleum motor, a ... 41
Phosphoric acid, estimation of, Ville's method ... 388
Photograph frame, enameling ... 242
Photo skylights, French ... 403
Phylloxera, the grape ... 162
Pinking iron, Welch's ... 342
Pitcher, water, Cox' ... 22
Pittsburgh and its prominent industries ... 376
Planing and molding machine, Furness & Co.'s ... 406
Planing machine, vertical, Bourne's 163
Plants, curious ... 39
Platinum, melting, Deville's method ... 34
Plows, steam, new ... 243
Potato coverer, Whitford's ... 207
Press, balanced screw revolving, Woolfolk's ... 15
Press, hay and cotton, Mickleson. 38
Priming in boilers, preventing, Johnson's device ... 370
Printing machine, fabric, Bialon's 131
Propeller, measuring a screw ... 240
Propeller of the Britannic ... 56
Pulley, loose, Holden's ... 102
Pulley, taper sleeve, and wheel fastener, Newell's ... 22
Pumpmechanism, Worswick's ... 242
Pump, steam, Valley Machine Co.'s 38

R

Rhodotypus kerrioides, the ... 359
Railroad depot at Bryn Mawr ... 227
Railway, portable, Corbin's ... 130
Ramsden, Sir James, statue of ... 311
Ram, siphon water, Fresc's ... 357
Ram, the hydraulic ... 355
Rebolting machine, Fletcher's ... 127
Rein holder, Smith's ... 358
Rifle contest, international—The targets ... 248
Rudder, Gumpel's ... 195

S

Sash boring and grooving machine, Blaisdell's ... 310
Saws, gang, Arbrey's ... 50
Scorpion, the venomous ... 170
Screw, aerial, De Fonvielle's ... 290
Sczaroch, the ... 228
Sewing machine motor, Young's .. 70
Shafting, lining, Woodward's method ... 388
Shoemaker's combined tool, Ober's ... 242
Singeing cloth, machine for, Blanché's ... 386
Siphon for drawing liquids ... 228
Siphon for poisons and acids, Weisholdt's ... 214
Siphon of the Spring Valley Mining Co. ... 216
Slide valve, locomotive ... 212
Soap crutching machine, Lehrmann's ... 214
Spanner, hose, Pond's ... 6
Spiders' webs and spinnerets ... 276
Spike extractor, Devine's ... 390
Spray apparatus for throat diseases, Pulligraff's ... 168
Stapelia hirsuta minor, the ... 39
Steam generator, the Eclipse ... 31
Steam trap, Bonser's ... 4
Stevens, Edwin A. ... 87
Stone sawing machine, diamond, Emerson's ... 159, 163
Stove, cooking, Iredale's ... 38
Stove, open ventilating, Open Stove Ventilating Co.'s ... 198
Stove plate dressing machine, Northampton Emery Co.'s ... 191
Stump sawing machine, Elston's .. 234
Submarine building, Wenmaeker's system ... 306
Sun, measuring the distance of the, Lillard's method ... 180
Surgery, bloodless ... 5

T

Tapping machine, water main, Young's ... 118
Taps, making ... 187
Telegraph, Morse's conception of the ... 408
Telegraph, the Pacific ocean ... 259
Telegraphy, cable, improvement in, Winter's ... 258
Telescopes, constructing mammoth, Skey's plan for ... 165
Tempering device, Hawkins' ... 213
Tempering tools, Rose's device for 276
Thermometer, solar, Negretti & Co.'s ... 211
Thermo-motor, Bernardi's ... 150
Thrashing machine, iron framed, Marshall & Co.'s ... 407
Threader, cutter, etc., pipe and bolt, Empire Manufacturing Co.'s ... 230
Tool, compound, Broadbook's ... 406
Torpedo, pneumatic, Ericsson's .. 390
Track lifter, railway, Kinzel's ... 191
Transplanter, Coppen's ... 390
Transplanting trees ... 51
Troy, the ruins of—Earthenware jars ... 291
Tunneling, new rt of, Haskin's .. 377

U

Underground railway, New York city.—Map of New York ... 307
Underground railway, New York city.—The beam tunnel openings and ventilators ... 338, 339
Underground railway, New York city.—The beams, joints, and couplings ... 339
Underground railway, New York city. The first bridge ... 307
Underground railway, N. Y. city. The great arch near 96th st ... 402
Underground railway, New York city.—Them asonry tunnels and ventilating shafts ... 371
Underground railway, New York city.—The profile ... 308
Universal joints in screw shafts .. 340
Urea, instrument for estimating, Russell & West's ... 253

V

Vacuum, procuring a ... 75
Vase for flowering bulbs ... 359
Venus, the transit of ... 114
Vessels, raising sunken, Sowerbutt's ... 215
Victoria regia water lily, the ... 263

W

Wagon, dumping, Smith's ... 118
Water belt for transmitting motion, Robertson's ... 99
Water wheel, current, McCarty's. 223
Water wheel governor, standard, Snow's ... 182
Water wheel, the Blackstone and Elmer ... 134
Whitworth, Sir Joseph ... 383
Wire tramway at Aalsnnd, Norway, Carrington's ... 370

Y

Yacht, steam, Khédive of Egypt's 231
Yuccas, a group of ... 391

MISCELLANY.

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

A

Acoustics of public buildings (63) 251
Adulterations, undetectable ... 180
Advertisement, magic of an ... 41
Aerial screw, the* ... 290
Aged, hygienic treatment of the .. 37
Agricultural life in Missouri ... 121
Air, compressed, as a motor ... 85
Air, fresh, value of ... 344
Air machine, ventilating ... 51
Air, motive power by compressed 171
Air pressure and animal life ... * 18
Air pressure in wind instruments 342
Air ship, a novel ... * 52
Air, weight of ... 11
Alarm, hot bearing ... * 403
Alarm, railway or sea ... 21
Alaska and the Icelanders ... 193
Albumen ... 344
Albumenized paper ... (1) 298
Alcohol ... 40
Alcohol casks, lining ... (80) 362
Alcohol, effects of ... 91
Alcohol, food, and force ... 224
Alcohol in wine ... 7
Alcohol in wines, estimating ... 245
Alcohol, its relation to physical strength ... 320
Alcohols into nitric ethers ... 40
Alcohol, the strength of ... (4) 235
Aldehyde ammonia ... (2) 2, 235
Aleutian islands, the ... 259
Alkaline metals and water ... 282
Alloy, a new white ... 321
Alloy for patterns ... 11
Aluminum ... 91
Amazon, water of the ... 155
American Association for the Advancement of Science, 129, 152, 168
American Institute, the Fair of the ... 193, 233, 244, 248, 296, 344
American Institute Fair, the engines ... 277
American Institute Fair, the next 33
American inventive genius ... 99
American, the most eminent ... 323
Ammonia for cooling air ... * 23
Ammonia fumes on flowers ... 329
Ammonium chloride, vapor of (37) 315
Ancient race, relics of an ... 341
Ancient weapons, power of ... 177
Anæsthesia by subcutaneous injection ... 324
Anemometer, an ... 139
Aniline black dyes ... 309
Aniline colors ... 354
Aniline lake, a new material for ... 263
Aniline, sausages colored by ... 41
Animals are automata ... 192
Animals as motor powers ... 386
Annatto ... 149
Annato for coloring butter ... (3) 314
Annealing boiler tubes ... 171
Answers to correspondents 11, 16, 43, 68, *74, *90, 106, 123, 138, 155, *171, *187, 202, 219, 235, *250, 266, 282, 298, 314, *331, 346, 362, 379, 395, 409
Antiques, the fabrication of ... 112
Antiscorbutics, natural ... 337
Ant's instinct, the ... 132
Ants, rabies in ... 49
Ants, raiding ... 68
Ants, the ... 113
Ants, the leaf-cutting ... 54
Ants, white ... 20
Apples, American ... 385
Apples, curious ... 324, 357, 388
Apples, keeping ... 293
Apples, preserving ... 7
Apples rot? what makes ... 177
Aquarium and winter garden, Southport, England ... * 295
Aquarium at Manchester, England 24
Aquarium, the ... 80
Archæological explorations ... 83
Architects and builders, hints to .. 209
Arctic exploration, the Austrian .. 184
Arrowheads, beveled ... 169
Arrowheads, feathering ... * 5
Arsenical wall paper ... 81
Arsenic in agricultural and technical products ... 245
Arsenic, Marsh's test for ... (14) 298
Art galleries, illumination of ... 368
Artillery, modern German ... * 115
Asbestos ... (42) 299
Asparagus and celery, medical value of ... 41
Asphalt pavement ... (14) 395
Astronomical notes ... 20, 292, 356
Assyria, explorations in ... 84
Asteroids, the ... (5) 266
Astor library, the ... 3
Asymptote curve, the ... 138
Atmosphere, weight of the ... 91
Atmospheric pressure, changes in 341
Axle grease ... 90

B

Baird, James, of Gartsherrie, Scotland ... * 95
Ball dropped through the earth 138, 250
Balloon, a new sectional ... * 99
Balloon ascent, a novel ... * 55
Balloon, hot air ... *377
Balloon mete orology ... 356
Balloon steering device, a ... *167
Balloons, toy ... (4) 218
Balloon voyage, a ... 68
Balloon, 400 miles in a ... 102
Ballturning ... *293
Bamboo, the ... 162
Barometers, living ... 176
Barometers, use of ... (12) 187
Barrels, straightening gun 107, (26) 187
Barrow in Furness shipbuilding works ... *311
Barytes green or manganate of baryta ... 392
Bastian's experiments, Dr. ... 384
Batteries, carbons for ... (19) 362
Batteries, chromic acid for ... 5
Batteries, new galvanic ... 277, *357
Battery, a cheap galvanic ... 209
Battery, galvanic ... 155
Battery power, relative ... (26) 379
Battery, the Leclanché (73) 315, (26) 362
Battery, thermo-electric ... * 34
Battery, the music stool ... 102
Battery, the Smee ... 90
Battery, the Stevens ironclad ... * 87
Beacon lights, American ... 193
Bear pits at Fairmount Park ... *275
Beech blight ... 356
Beehive, qualities in the ... 65
Beer, clarifying ... 75
Bees and honey ... 213
Beeswax, bleaching ... (44) 299
Bell metal ... (31) 363
Bell, Mr. I. Lowthian ... 373
Bells, mending cracked ... 244
Belt lacings ... 401
Belts, lacing ... *357
Belts, rawhide ... 149
Belts, speed of ... (24) 267
Belt water, for transmitting motion ... * 99
Bending glass tubes ... 27
Bending timber ... 26
Bending tubes ... 156
Benefactor, a public ... 5
Benzoic acid ... 85
Bessemer, launch of the ... 279
Bessemer saloon, predicted failure of the ... 291
Bicycle, the ... 356
Billion, a ... 138
Birds, educated ... 351
Birds, the flight of ... 216
Black for gun barrels ... (60) 203
Black heads, to remove ... (30) 251
Blacking ... 139
Blacking, boot ... (45) 283
Blackleading of iron ... 41
Black on German silver ... (63) 283
Black paint for boilers ... (19) 379
Blades, forging sword ... 135
Blades, tempering sword ... 135
Blasting accidents, causes of ... 264
Bleaching ivory and bones ... 49
Blinder, horse ... *358
Blood coloring matter free from iron ... 389
Bloodless surgery ... * 5
Blood, the transfusion of ... *146, 147
Blow-off, surface ... *310
Bluing gun work ... 123
Bluing, washing ... (69) 219
Boat, a tripod ... 281
Boiler covering, new ... *262
Boiler experiments at Sandy Hook 20
Boiler explosion ... 241
Boiler explosion near Geddes, N.Y. * 5
Boiler explosion, remarkable ... *276
Boiler feed, automatic ... 58
Boiler furnace fire clay ... (43) 267
Boiler, improved steam ... *246
Boiler incrustation, zinc for ... 369
Boiler inspection and insurance ... 64
Boilers ... 312
Boilers at the Fair ... 296
Boilers, novel improvements in ... 37
Boilers, unequal pressure in ... 123
Boiler, the Eclipse steam ... * 31
Boiler trials, improvised apparatus for ... 257
Boiler, vertical ... * 98
Bolckow, Mr. H. W. F. ... *175
Bone black ... 138
Bone black, artificial ... 291
Bones, a case of fragile ... 226
Bones as manure ... 75
Bones, a woman without ... 176
Boots, cork soled ... *326
Boots, oil ... 246
Boots, wet ... 306
Bouquets from field and garden ... *135
Boxer, the South American ... 277
Brain wounds, curious effects of ... 372
Brake, new friction ... *340
Brakes, car ... 343
Brake, the Henderson ... 120
Brake, the hydraulic ... 317
Brake, the Westinghouse ... 22
Brasses, fitting ... *190
Bread, gases from ... (27) 409
Breathing through the mouth ... 304
Brick press, improved ... *199
Bricks, manufacture of mortar ... *151
Bridge, universal, model ... *291
Bridge and tunnel, St. Louis, opening for traffic ... 296
Bridge, a new Niagara ... 131
Bridge, a skew brick ... (44) 251
Bridge at Mezzana-Corti, Italy ... * 66
Bridge at St. Malo, rolling ... * 67
Bridge, Keokuk, Iowa ... *367
Bridge on the Mont Cenis railway *351
Bridge, railway, near York, Eng. * 399
Bridge, the East river ... 9, 289
Bridge, the New York and Brooklyn ... 343
Bridge, the St. Louis ... 69
Bridge, the St. Louis, opening of the ... 17
Bridge, the St. Louis, testing ... 42
Bridge, the Tay ... 166
Bridle, horse ... *358
Brimstone, black ... (21) 314
Britannia metal, a good ... 262
British Association for the Advancement of Science ... 216, 247
Bryant, William Cullen ... 323
Bromhydric acid ... 337
Bronze ... (31) 363
Bronze on brass, verde ... (69) 283
Bronze on steel and iron ... (68) 283
Bronze on tin and white metal ... 27
Bronzes of copper and tin ... 294
Bronzing on steel ... (62) 363
Browning bamboo, etc. ... (82) 204
Browning gun barrels ... 11
Bude light, the ... 43
Bugs ... 178
Bugs, etc., destroying ... 21
Buildings, high ... 120
Bullets impacted in the air ... * 5
Bulls on the track ... 224
Bunions ... (5) 331
Business king, characteristics of a 358
Business outlook, the ... 116
Bust at Rome ... 278
Bust, silver, at Herculaneum ... 275
Butter, coloring ... (6) 187
Butter, keeping ... 74
Butter, making ... 124
Butter, the detection of suet ... 370
Butter, tin-canned ... 373
Butter, watered ... 342

C

Callipers ... *133
California's growing industries ... 399
Camera, a field ... 58, (72) 203
Camera glasses ... (18) 298
Camera lucida for drawing ... 296
Camera oscura, an accident 1 ... (71) 363
Camera, the wonder ... 26
Camphor, powdering ... 117
Canal, a new Russian ... 337
Canal improvements, the Welland. 151
Canals, steam on the ... 68
Canal, the Fort St. Philip ... 4
Candle flames and streaks of cloud 208
Candolles, M. F. de ... 72
Canning fish ... (58) 299
Canning green corn ... 107
Cans, cheap fruit ... 97
Car axle journals ... (15) 250
Car axles, wear of ... 42
Carbon cells and plates ... 392
Carbonic acid as a motor ... 149
Carbon in cast iron and steel ... 185
Carbons, battery ... (20) 187, (55) 203
Carbon, the crystallization of .. 308, 356
Car couplers, drawbars, and buffers 37
Car improvements, patented 33, 99, 120
Car, oscillating railway ... 247
Carpenter's bench, to make a .. (74) 283
Carriage axles, machine for turning *207
Carriage cleaning machine, a ... 121
Carrier pigeons ... 181, *306
Carrots ... 359
Cars, check chains on ... 31
Cars, safety device for railway ... 246
Cars, steam and locomotives ... *212
Cars, street, propelled by springs. 393
Carvacrol ... 91
Car ventilation ... 52, 165
Case-hardening iron ... (16) 202
Casks, tasteless solution for lining 138
Casting, blowholes in ... (5) 409
Casting, cleansing ... 139
Castings, sound ... 123
Castor beans in California ... 385
Castor oil ... (4) 187
Catalogue, a specimen ... 7
Catarrh, vapor of ammonia for (16) 265
Cattle, the Guernsey breed of ... *24
Cement for caustic ley tanks ... 37
Cement for glass ... (9) 877
Cement for iron pipes ... 29
Cement for iron vessels ... (11) 409
Cement for millstones ... (45) 251
Cement, hydraulic ... 138
Cement, Sorel's ... (36) 267
Centennial exhibition buildings ... *327
Centennial exhibition, the great .. 98
Centennial, Great Britain and the 404
Centennial, prepare for the ... 160
Centennial, the—The work begun. 151
Centrifugal force ... (11) 266
Centrolineal, the protracting* ... 274
Chain towage on the St. Lawrence *322
Chameleons ... 59
Chamois leather, washing ... 91
Charcoal, animal ... (9) 202
Charcoal, bone ... 85
Charcoal, oxydizing power of ... 232
Chasers* ... 21
Chassepot rifle, as altered ... 136
Chemical centennial, the ... 50
Chemistry, the study of ... 342
Chickens, predatory ... 185
Chilian exposition, the ... *103
Chiming machine, new ... 310
China and glass ware ... 182
China making in Dresden ... 119
China, the population of ... 289
Chinese, the, and the sewing machine ... 207
Chip, an ancient ... 274
Chipping ... *133
Chloral for headache ... 85
Chloral hydrate ... 54, 91
Chlorates, pulverizing the ... 81
Chloride of copper ... (2) 331
Chloroform dangers ... 305
Chocolate as a beverage ... 341
Cholera and its treatment ... 64
Chord, the length of a, to find ... 139
Chromic acid on textile materials. 257
Cider ... 293
Cider, preserving ... 11
Cincinnati industrial exposition ... 33
Cistern, building a ... 91
Cistern for soft water ... 43
Cisterns, water in ... 156
Cities, dead ... 81
Citron, preserved ... 155
City, a model ... 247
City built by one man, a ... 128
Clamp, adjustable ... *194
Clamp, improved floor ... *214
Clay in water, suspension of ... 163
Clay, porcelain ... (21) 267
Cloth, saving from rot ... (23) 250
Coal and iron products of the world 369
Coal bricks ... (47) 219
Coal, burning slack ... (29) 379
Coal, damp air on ... 387
Coal cutter, hand ... *178
Coal fields, fire in ... 8
Coal in California, no ... 263
Coal, Pictou ... 207
Coal, price of, and shipbuilding ... 241
Coal, structure of ... 159
Cockmetal ... (31) 363
Cockroaches, to get rid of ... 43
Cold applications to the neck ... 40
Cold weather, causes of sudden ... 341
Colored races, skins of ... (62) 363
Colored rocket stars ... 90, (55) 219
Combustion of charcoal, spontaneous ... 15
Combustion of powder ... 177
Comet, another new ... 104
Comet, a retrospect, a ... 32
Comet, Coggia's ... 231
Comets, new theory of ... 117
Comet, spectrum of the ... 20
Comet, the new ... 2, 121
Compass, the gravitation ... *19
Compressed air as a street car motor ... 278
Compressed air machinery ... 209
Concrete ... (3) 266
Concrete as a building material ... 117
Condensor, Körting's ... 39
Connecting rods, fitting ... *164
Conservatory at Sundridge, Eng. . *71
Cooling air, methods of ... *23
Coöperation ... 344
Coöperation in Great Britain ... 208
Copaiba in croup ... 149
Copper, a preventive of cholera ... 149
Copper by precipitation ... (20) 409
Copper, facts about ... 294
Coppering iron rollers ... 370
Copper plating ... 90
Copyrights ... 58
Copyrights for labels, new law ... 17
Corals, ivory, etc., artificial ... 196
Corn meal, analysis of ... (57) 219
Cotton waste, cleansing ... (7) 202
Cotton worm, the ... 168
Cow milker, the automatic ... *242
Cramps in the stomach ... (69) 263
Cranes, safety catch for ... *377
Cranks, turning ... *293
Crater of Maui, the ... 9
Crayfish, the ... (2) 202
Cribbing in horses ... 309, 340
Crime epidemics ... 241
Criminals, the scientific treatment of ... 224, 276
Croton and chloral ... 200
Croup, copaiba in ... 149
Crow and tamping bar ... *98
Crucibles ... 309
Crystallization, water of ... 168
Cupressus cornuta, cones of ... *39
Curculio on peaches, the ... (63) 203
Curiosity, a natural ... 120
Currents, deep sea ... 247
Cutting and punching machine ... *102
Cutting out clothes, machine for .. 233
Cutting speed and feed ... *69
Cyanogen ... 91
Cylinders, fitting ... *197, *229
Cyprus, explorations in ... 84

D

Daguerreotyping, early days of ... 311
Dam disaster, another ... 70
Dampness in houses ... 155
Days a month long ... 247
Deafening floors ... 123
Death, living ... 216
Death rate, the hourly ... 337
Debt of the United States ... 342
Deer's head, a four-antlered ... * 114
Delivery, what constitutes a mercantile ... 228
Demoniacal possessions ... 273
Dental laboratory, the ... 245
Dental office furniture ... 245
Dentistry in the United States ... 180, 200, 232, 245
Depot, the Grand Central ... 40
Details, studying ... 97
Diabetes ... 149
Diamond drill, the ... 391
Diamonds, can we make ... 247
Diamonds, the formation of ... 96
Diamond, the largest ... (11) 331
Diastase as a digestive agent ... 149
Dicksonia antarctica, the ... * 39
Dies, adjustable ... * 101
Dies, hand stock ... 101
Dinner service, the King of Siam's 4
Diphtheria, local remedy in ... 274
Discoverer, an unfortunate ... 24
Discovery, an interesting ... 121
Diseases of the throat and nose .. * 168
Disinfectant, a new ... 180
Disintegrator, improved ... * 278
Dissociation or thermolysis ... 7
Distances, instrument for measuring ... (78) 219
Distances, measuring by sound ... 255
Distilling sea water ... 277
Diving bell, a navigable ... * 19
Dock at Portsmouth, England, new *354
Dock system, New York city ... 8
Dog dentistry ... 7
Dog, filing the teeth of the ... * 72
Dog killing by electricity ... 39
Dog on the witness stand, a ... 361
Doing much ... 245
Dough kneader and cutter ... 262
Draining cellars ... 27
Drains into chimneys, turning ... 401
Drawing as an educator ... 357
Dredging process, a new ... 387
Drill, hand crank ... * 134
Drop press, a large ... 37
Dust, atmospheric ... 39
Dyeing, Epsom salts and sulphurous acid in ... 84
Dyeing feathers ... (39) 299
Dyeing ivory ... (13) 331
Dyeing ivory blue ... 43
Dyeing muslins, calicoes, etc. .. (8) 331
Dynamometer, a vehicle ... 7
Dysentery, new remedy for ... 8
Dyspepsia and the use of pepsin ... 85
Dyspepsia remedies ... 120

E

Eagle, the bald ... (7) 250
Earth, action of, on organic matter 102
Earth, analysis of ... 9
Earth's figure and geologic changes ... 113
Earth, sphericity of the ... (8) 395
Ear trumpet, a simple ... * 36
Eating, economy in ... 272
Ebony, artificial ... 337
Eccentrics, turning ... 261
Eccentric, to find the throw of an ... (46) 299
Eclipse of April 16, solar ... 15
Education, a good ... 40
Education, practical ... 53
Education, the science of ... 247
Effort, a first ... 84
Eggs, preserving ... (34) 219
Eggs, the decomposition of ... 216
Elbows in pipes, making ... 233
Electrical countries ... 389
Electrical gas lighting ... 111
Electrical machine ... (65) 283
Electrical Society, the American .. 335
Electric amalgam ... 11
Electric condition of flame ... 19
Electric discharges, character of .. 341
Electricity, battery and coil ... (11) 395
Electricity, battery and frictional ... (2) 187
Electricity by mechanical action .. 31
Electricity, generating positive .. 341
Electricity in a boiler ... (3) 362
Electricity, new theory of ... 274
Electricity, toothache cured by ... 121
Electricity, vaporizing metals by 120
Electricity, wood-cutting by ... 393
Electric light, cost of ... (22) 379
Electric light, effects of ... 24
Electric railway whistles ... 390
Electro-capillarity, experiment in 17
Electro-chemical paper ... 43
Electro-deposition of metals .393, 407
Electro-magnetic station indicator 191
Electro-magnets ... 11
Electro-magnets ... (14) 202
Electro-motograph, the ... 145
Electro-motor, the Camacho ... 343
Electro-plating with iron ... (3) 395
Elm trees, dangers of ... 134
Emery paper ... 133
Emery wheels, turning ... 91
Employers, the true course for ... 178
Enamel of the teeth ... 296
Encephalartus altensteinii, the .. * 39
Engine and boiler, novel ... * 199
Engineering 2,000 years ago ... 275
Engineers' and pilots' licenses (33) 282
Engineers, convention of civil ... 8
Engineers, education of ... 8
Engineers, schools for ... 329
Engine, horizontal compound *210, 211
Engine, portable ... *258 * 335
Engine question, the small ... 196
Engine, rotary ... 248
Engines and boilers, small ... 113
Engines at the Fair ... 277
Engines, compound ... 386
Engines, compound vs. oscillating 100
Engine, small boat ... 276
Engine, small printing press ... 228
Engines, performance of small ... 148
Engines, portable and stationary .. 4
Engines, reports on small ... * 273
Engines, rotative vs. rotary ... * 112
Engines, small steam ... * 340
Engine, steam, compound ... * 19
Engines, steam, gain by use of condensers ... 256
Engine, the Myers rotary ... * 303
Engine, three-cylinder ... * 326
Engraving on copper ... 257
Entomological notes ... 356
Ephesus, explorations in ... 83
Equine mechanics ... 22
Erysipelas ... 40
Erysipelas, treatment of ... 84
Etching on glass ... (13) 409
Ether ... 216
Ether, preparation of ... 54
Etna, eruption of ... 175
Exhibitions, international ... 71
Expansion and contraction ... * 325
Experiments, new ... 232
Experiments, two typical ... 384
Explorations in Central America .. 181
Exploring expedition, the Wheeler 290
Explosions, firedamp, produced by sound ... 129
Explosion, spontaneous ... 343
Explosives, recent experiments on 369
Expositions, great ... 153
Eucalyptus globulus, the ... 360
Evaporation instead of ice ... 4
Eye, surgical treatment of the ... 233

F

Face plate, a sliding ... * 357
Fairbairn, Sir William ... * 143
Fair, machinery at the ... 292
Fallacies, popular ... 148
Fall sickness ... 321
Falling bodies, rule for force of ... 26
Fare register, street railroad ... 294
Farkin, the ruins of ... 169
Fat in forage plants ... 177
Faucet, improved ... * 150
Fauna of the Middle States, the cave ... 129
Feed water heaters, gain by using 288
Fence posts ... (68) 347
Fermentation of wine ... (77) 219
Ferns, whitening ... (7) 331
Ferrotype plates ... (44) 219
Ferrule and hook for whiffletrees* 194
Fever nests and their remedy ... 240
Files, classification of ... 11
Files, machine cut ... (80) 220
Files, resharpening ... 361
Filing ... 133
Filtering, hot ... 41
Filtering water ... *(39) 251
Filtering water for boilers ... (83) 204
Filtration of water ... (3) 235
Fingal cave, the ... 259
Firearms, American ... 387
Fire commissioners of Boston, Mass. 321
Fire engine, floating ... * 386
Fire engines, railroad ... 310
Fire engines, self-propelling steam 214
Fire, fighting with explosives ... 15
Fire governor for gas works ... * 287
Fire grates, open ... 22
Fire in Chicago, another ... 64
Fire in cotton mill, Fall River ... 231
Fireless locomotive accident, the 68
Fireless locomotive, explosion of a 5
Fireless locomotive, progress of the 17
Fireless locomotive system, the ... 120
Fire lighter, a ... (42) 347
Fire on the hearth, the ... * 198
Fireproof construction, premium for ... 280
Fire, protection from ... 3
Fires, usual causes of ... 232
Fire underwriters, the board of ... 226
Fishbones as fertilizers ... 337
Fish, freezing ... 214
Fishing by means of explosives 118, 184
Fish trade, live ... 354
Flame, jumping of gas ... 144
Flame, recent researches on ... 101
Flame, reflecting power of ... 17
Flies, to kill ... 124
Floods, disastrous ... 97
Flour, danger in bad ... 81
Flower market at Florence, Italy* 83
Flowers, lasting ... (13) 266
Flume, pressure in a ... (24) 379
Fly-catching plant, the ... * 4
Flying machine, a ... *357
Flying, the perils of ... 99
Fly paper ... 75
Fly wheel, bursting of a ... 372
Food adulteration, English ... 361
Forces, the correlation of ... 213
Fork, swallowing a ... 292
Foundery charcoal ... 343
Fossil plant, a ... 343
Fossils of the departed ... 49
Fountain cave, Va., views in ... *35, 36
Fountain luminous ... (3) 250
Four-footed motion ... 16
Fox, the late Sir Charles ... 111
Fracture by long continued jarring* 37
Franklin Institute exhibition ... 312, 328
Freights, cheap ... 401
French Association for the Advancement of Science ... 215
French colonies, industrial resources of the ... 144
Friction pulleys ... (18) 409
Frosts, theory of ... 75
Fruit packing room, a ... 58
Fruit trees, cuttings of ... 86
Fuchsin adulterations, detecting 198
Fuel, the economy of powdered ... 376
Fulgurites ... 3
Fulgurites, more ... 274
Fulminate, a new ... 214
Fulminate for cartridges ... (13) 250
Fulminating mercury ... 90
Fulminating silver ... 90
Funeral, will do it after a ... 401
Furnace, a safety ... * 50
Furnace for melting brass ... 54
Furnaces, their construction and management ... * 194
Furs, artificial ... 151

G

Galvanized iron, frosted ... (66) 347
Gardenia, the lemon scented ... *359
Garden, the indoor ... *359
Gas burner, self-lighting ... 248
Gas, expansion of ... (62) 363
Gases in the coagulation of the blood ... 292
Gas for fuel, natural ... 287
Gas for puddling, natural ... 37
Gas light, prices of ... 185
Gas mains, sheet iron ... 328
Gas pipes fatal to trees ... 47
Gas refuse, effect on fish ... 323
Gas regulator ... *166
Gas, removing ammonia from ... 341
Gas retorts, improvement in ... 309
Gas saver, the automatic ... *322
Gastric juice, acid in the ... 392
Gas well, a wonderful ... 130
Gas works, fire governor for ... *287
Gear cutting attachment for lathes* 63
Geese and ganders ... 117
Gelatin in coffee ... (70) 363
Gelatin, making ... (9) 187
Gem stones, manufacture of ... 49
Geographical congress, international ... 72
Geological discovery, new ... 115
German silver ... (24) 409
German silver for casting ... 260
Germ theory of disease, the ... 9
Gift, a valuable ... 326
Gilding ... (61) 347
Gilding on spelter ... 27
Gilt frames, cleaning ... 27
Glacial action ... 90
Glass, boring holes in ... (16) 218
Glass, crystallization of ... *386
Glass for walls, etc. ... 370
Glass, manufacture of plate ... 175
Glass, marking ... (3) 187
Glass, soluble ... (55) 315
Glass tubes, strength of ... 17
Glass, white opaque ... 211
Glazing for pottery, new ... 113
Gloves, cleaning buckskin ... (66) 363
Glue, marine ... 106, (28) 282
Glue, strong ... 33
Glue, waterproof ... 91
Gluing veneers ... (20) 379
Glycerin, animal ... (9) 202
Gold in New Hampshire ... 378
Gold region, our new ... 149
Gong metal, the Chinese ... 294
Governor, cut-off ... * 86
Grafts, cutting and storing ... 354
Grain elevator, a gigantic ... 149
Grain, unloading, machine for ... *111
Granary at Bristol, England ... * 79
Grapnel, a new ... *214
Grappling tools ... * 6
Grasshoppers, to kill ... 37
Grease on clothes, etc. ... (46) 315
Great Eastern, dimensions of the ... (28) 346
Greenhouses, lights for ... *275
Grinding swords ... 135
Grindstone spindles ... 228
Grindstones, wear of ... 340
Guano, the origin of ... 360
Gulf stream, the ... (21) 409
Gum arabic mucilage, preserving 291
Gun, an eighty-ton ... 164, 378
Gun cotton, a slow ... (8) 282
Gun cotton, compressed ... 88
Guns, new Prussian ... 194
Gun, the new French army ... *338
Gunpowder, theory of the ... * 91

H

Hailstones, soda ... 262
Hailstorm, a remarkable ... 49
Hair, gray ... (29) 267
Hair-heading machine ... 248
Hair oil ... (64) 363
Hammer, air spring ... *262
Hammer, a large trip ... 370
Hammer, large, at Woolwich ... *226
Hammers, steam ... 312
Hammer, the common ... 373
Hardening and tempering tools, 68, 84, 100, 116, 132, 148, 165, 180, *213, 276
Hardening a watch spring ... 155
Hardening brass wire ... 155
Hash ... 216
Hatchet, improved ... *342
Hatching, heat for ... 155
Hawaiians, their physical failure .. 184
Hay fever ... 85, 215
Hay fever, remedy for ... 68
Hay in Iowa, as fuel ... 193
Head wash ... (65) 363
Health, working men's ... 289
Heat and its relation to construction ... 114
Heating houses, possible improvement in ... 236
Heat of the human body ... 342
Heat radiation and colors ... (2) 379
Heat, registering the chemical action of ... 216
Heat, the development of subterranean ... 305
Heel trimming machine ... *230
Heb cultivation ... 183
Hides, carbolic acid for preserving 121
Hilts, dressing the sword ... 130
Hogs of Ohio, extinct ... 152
Hoisting machine ... * 47
Honesty, more machine ... 15
Honey, strained or in the comb .. 148
Horse, buying a ... 264
Horse power, nominal ... 101
Horseshoe, detachable ... *328
Horseshoes, india rubber ... *166
Horticulture at the Fair ... 233
Household hints ... 192
Hub, improved ... *102
Huxley, Professor, and Harvard ... 97
Hydraulic jack ... *312
Hydraulic mining ... *216
Hydro-electric cable, the ... 51
Hydrogen by zinc and sulphuric acid ... (6) 298
Hydrogen gas, making ... 90
Hydrogen generator accidents ... 114
Hydrogen, lifting power of ... 74, 139
Hydrophobia ... 4
Hydrophobia, a cure for ... 200
Hydrophobia, death from ... 15
Hydrophobia- dog's teeth, the ... * 73
Hydrophobia, hot weather ... 3
Hygiene, hospital ... 9
Hygrometer ... 48
Hymenocalyx undulata, the ... *391
Hypodermic medication ... 82
Hypodermic syringe, substitute for the ... 149

I

Ice and freezing house ... *255
Ice as a medicine ... 24
Ice cream machine ... 296
Ice creeper ... * 54
Ice houses and spontaneous combustion ... 138
Ice house, to build an ... (29) 251
Ice in New York city ... 41
Ice lenses of unlimited size ... 276
Ice making process ... * 54
Ice, the coldest ... (17) 187
Ignorance and crime ... 316
Immersion lenses ... (8) 409
Incline, tractile power on an ... 139
Indian rubber, adulteration of ... 17
India rubber in Columbia ... 50
Induction by the Ruhmkorff coil .. 163
Induction coils ... (24) 362
Injections, hypodermic ... 40
Ink, burnishing, for boots ... (57) 347
Ink, Chinese or Indian ... 335
Ink, copperplate ... 11
Ink, invisible ... 280
Ink stains, removing ... 43
Ink, sympathetic ... (56) 219
Ink, white ... 75
Insects, Professor Riley on ... 168

© 1874 SCIENTIFIC AMERICAN, INC

Insects, preserving 138
Insects, replacement of injurious 152
Inventor, honors to an 351
Inventors, a chance for 18
Inventors and capitalists, hints to 304
Inventor, sad fate of an 51
Inventors, impracticable 256
Iodide of potassium 40
Iodide of potassium improved 85
Iris, an, and an orchid *82
Iron, American 339
Iron and steel, sulphuric acid on 322
Iron, case hardening 69
Iron castings, cleansing 107
Iron castings, weak points in 227
Iron, cast—Interesting investigations 132
Ironclad, new and powerful 244
Iron, coating with copper 117
Iron dams 117
Iron, English enamel for 274
Iron, etching 329
Iron, fatty matters in 20
Iron for filtering water (60) 347
Iron for rinsing bottles 153
Iron floating on molten iron 133
Iron, galvanizing (12) 346
Iron hail 127
Iron in a battery 379
Iron in Missouri 159
Iron industry, the Gartsherrie *95
Iron in stone, fixing 391
Iron, modern cast 199
Iron, occlusion of gases by 360
Iron ore in New York city 324
Iron, passage of gas through heated 196
Iron pipes, water in 358
Iron puddlers' strike 293
Iron purifies water 149
Iron rail products, our 50
Iron rails at Columbus, Ohio 329
Iron shipbuilding at Birkenhead *343
Iron ships, preservation of 70
Iron stains, removing (61) [illegible]
Iron, the passivity of 278
Iron, weight of cast (15) 218
Iron works of the United States 322
Iron works, the Degerfors 67
Iron with copper, coating [illegible] 202
Island, a floating 120
Itch, styrax in 233
Ivory, ductile (27) 362

J

Java agricultural and industrial exhibition 350
Journal boxes, boring 75

K

Kaleidoscope, to make a 91
Kauri gum 257
Kettles, rusty 43
Kite navigation 200

L

Laboratory at Oxford, the new 388
Labor prospects for the winter 320
Labor, rest, and recreation 277
Lake or sea in Africa, new 151
Lake, the highest 146
Lakes, African, the proposed artificial 337
Lampblack, manufacture of 138
Landing stage, the Liverpool 161
Language of insects and animals 80
Lantern, improved *198
Latch, improved locking 150
Lathe, fitting a 43
Lathe, the combination foot *127
Lathe work *261, *325
Latitude and longitude 75
Laudanum 43
Lawn and pleasure grounds 183
Lawyer's advice, a 296
Lead, peroxide of 155
Lead poisoning 197
Leaf and flower impressions 161, 211
Leather pulp 296
Leg locomotion 184
Leg supporter 156
Lenses, grinding and polishing (43) 363
Levee, building a (2) 266
Levees on the Mississippi 20
Level glass, adjusting a (25) 218
Leyden jar, to make a (16) 218
Leys, utilizing waste 141
Libyan desert, explorations of the 96
Liebig, a monument to 184
Lick, James 5
Lifeboats, on *195
Lifeboats, ship *195
Life, geological records of 228
Life saving invention, a 34
Lighthouse, a new 361
Lighthouses, our 388
Lightning and glass casters (65) 203
Lightning, are feather beds a protection 144
Lightning, magnetism by (37) 347
Lightning, oil fired by 86
Lightning, protection from 144
Lightning rods 58, 106, (19) 187
Lightning rods, air in hollow (49) 203
Lightning rods and water and gas pipes 145
Lightning rods, are more than one useful? 145
Lightning rods, how made and applied 145
Lightning rods, metal roofs, gutters, etc. 145
Lightning rods of value, are 144
Lightning rods, proper size and material for 145
Lightning rods, protective area of 145
Lightning rods, straw 321, 324
Lightning rods, terminals of 145
Lightning rods, why should they be pointed? 145
Light of coming days, the 128
Lights of the heavens 211
Light, solar, chemical action of 198
Lily, the Victoria Regia 263
Link motions, fitting *197
Lithographic stone, French 187
Lithography (1) 298
Lock, improved [illegible]
Lockjaw and quinia 85
Locomotive, double bogie tank *215
Locomotives and steam cars 212
Locomotives, coal burning, in the South 244
Locomotives for Russia 117
Locomotive, the largest *7, 100
Locust in Minnesota, the 65
Locusts destroying a grain field 119
Locusts, the plague of 196
Locust, the seventeen year 58
Log, the Hotchkiss marine 38
Longitude and latitude 74
Louse and the compass, the 261
[illegible] 171
Lunar acceleration 309
Lunar acceleration, its cause 260
Lutecine or Paris metal 18

M

Machine department at the Fair 292, 296
Machines, the utility of 215
Madder, rose (19) 409
Magnetic [illegible] 377
Magnetic experiments 228
Magnetic iron columns (5) 250
Magnetic metals, the 47
Magnetic ore in New Jersey [illegible]
Magnetic variation (4) 346
Magnetism, a novel experiment in *100
Magnetization, molecular changes of [illegible]
Magnetization of steel [illegible]
Magnetizing a compass needle (7) 235
Magneto-mechanical separator 215
Magnets 74, [illegible]
Magnets, how made (15) 298
Magnifying glasses [illegible] 395
Manganese in seeds 149
Manganese, sesquioxide of (29) 410
Mammoth cave of Mexico, the 255
Mammoth cave discoveries 406
Man, Huxley's theory of 224
Manifold writing paper (72) 363
Man, pre-glacial, in England 274
Map, a novel 292
Marking cotton piece goods (60) 286
Mary Powell, speed of the 195
Masters and men 303
Matches 43
Matches, phosphorus 11
Measuring a tree 296
Measuring width of a stream 171
Meat preserving process 17
Mechanical æsthetics and practical men 337
Mechanical engineering and industrial operations 208
Mechanical movement, novel *6
Mechanic of the future, the 353, 372
Medals, centennial 321
Medical notes 24, 40, 85, 149, 200, 233
Medicines, mistakes in giving 85
Mennonites, the 111
Mental conditions, morbid 48
Mercury and lead, antidote wanted 24
Mercury, new method of detecting 56
Metachloral 150
Metal floating on melted metal 342
Metaline 233
Metallurgical researches, recent 144
Metal ornamentation 86
Metals, coloring 41
Metals, softening 27
Metals, the precious 42
Metals, the transmutation of 184
Metal surfaces, ornamental 81
Meteoric shower, the August 136
Meteorological and medical statistics 112
Meter, casting the standard 34
Metric system, the 152
Mica mines in North Carolina 385
Microscope as a criminal detective 160
Microscopical 38
Mildew in cotton 90
Miles and feet, German, Danish, and English (24) 346
Milk can, a novel *342
Milk cooling can 275
Mill, a great flour 127
Milling machine, the Tanite Company's 271
Millwrights, school of 207
Mind reading 291
Minerals, New Jersey 244
Mines and minerals of India, the 33
Mines, ladders in 264
Miniature knitting machine 248
Mining, deep 391
Mining, the vicissitudes of 230
Mississippi, improvement of the 257
Mississippi river, the 58
Miter dovetailing machine *1
Molding castings, machine for *239
Molds for casting resin, etc. (10) 409
Moles 50, 117, (7) 331
Monument at Saratoga 24
Moon and the tides, the [illegible]
Moon's atmosphere, the 75
Morphine, a new alkaloid from 51
Mortar for furnace walls (48) 219
Mortar, the requisites for good 102
Mosquitoes, wash to keep off 75
Moss, long *263
Motor, a new *150
Motor, a petroleum *41
Mounds in Iowa 40
Mounting maps, etc. 91
Moxa 91
Muscarin 177, 341
Museum, a new scientific 136
Musical glasses (4) 250, (73) 283, (72) 347
Music by telegraph 70
Musicians, primeval 81

N

Nail, a new *408
Nails and shoe pins 51
Nails, brittle finger 155
National Academy of Science 341
Naval architects, the institution of 324
Navy, machinists in the 394
Navy, the German 262
Needle, a novel 22
Nest egg, to make a 53
New books and publications 9, 24, 72, 88, 121, 136, 153, 169, 200, 248, 280, [illegible], 361
New Hampshire, physical history of 152
Newport conglomerate 311
Newspapers in Peru 209
New York State Agricultural fair 98
Nickel mines in Australia 180
Nickel, muriate salts of [illegible] 410
Nickel plates, cast 207
Nickel plating 43, 90
Nickel plating solutions (11) 346
Nickel salts (63) 347
Nile exploring expedition 81
Nitrate of ammonia for gunpowder (12) 266
Nitric acid, neutralizing (2) 395
Nitrogen of the soil 129
Nitro-glycerin 53
Nitrous acid in plants 191
Noon mark, making a (13) 395
Normal college, the New York city [illegible]
Notes from Washington, D. C. 20, 148, 260

O

Oak apples or galls *82
Oatmeal, cooking 360
Oatmeal, manufacture of 223
OBITUARIES:
Beaumont, Elié de 294
Buckhout, J. C. 258
Cornell, Ezra 91
Curtis, Benjamin R. 229
Fairbairn, Sir W. *143
Fisher, S. S. 135
Fox, Sir Charles 9, 111
Gavit, John E. 161
Johnson, T. M. 150
Keller, Charles M. 277
Laird, John *343
Laplace, Marquis de 369
Rennie, Sir John 233
Saxton, Joseph 341
Ocher and umber 106
Odorless excavating apparatus 175
Odors 360
Oil, cheap transit for 48
Oil district, the Butler 228
Oil, mineral 65
Oil, oxygenized (26) 409
Oil of brick (20) 331
Oils, essential, distilling (61) 219
Oils, extracting essential 74
Oil spots on paper (13) 331
Oil tank cars 31
Oil well, a wonderful 103
Oleate of soda (1) 266
Oleic acid (20) 331
Ophir, the ruins of 84
Optical delusion, an 85
Orchid, an, and an iris *82
Ordnance experiments, Sandy Hook 378
Organs, making hand 55
[illegible] 155
Ostrich, a human 351
Otto of roses 231
Owen, Samuel, centenary of 4
Oxidation shown by color [illegible]
Oxygen, discovery of 104
Oxygen gas, making 90
Oxyhydrogen flame, spectra with the 247
Oxyhydrogen light, the 324
Oyster culture, American 368

P

Padlock, self-locking *278
Paint, blistering 123
Paint brush *86
Pain in the lower animals, sensation of 321
Painting and varnishing ways (67) 203
Painting on albumen paper (2) 409
Painting on zinc without paint 337
Painting plastered walls (20) 346
Paintings, oil, to clean (13) 298
Painting weatherboarding (12) 409
Palestine, explorations in 83
Palm, the Jubæa spectabilis 7
Paper and ink, incombustible 6
Papering whitewashed walls (10) 331
Paper, palm 7
Papers, transferring colored 183
Parabola, to draw a *213
Parachute, M. de Groof's 290
Paraffinic acid 177
Paraffin, some uses of 16
Parallel motion 26
Parasites 153
Parian marble (38) 251
Paris metal or lutecine 18
Paris, United States commerce with 291
Pasigraphy 69
PATENT DECISIONS OF THE COURTS:
Air, carbureting 248
Alphabet blocks 88
Boiler furnace 136
Bracelet 88
Clover seed machine 408
Cornplanter 280
PATENT DECISIONS OF THE COURTS:—
Drilling, submarine 72
Fire extinguisher 104
Fruit jar 233
Hair net 9
Refrigerator 394
Safety valve 6
Shawl strap 185
Spring, rubber and metal 185
Stone breaker 216
Time detector 72
Tray 136
Patent dummy, a 39
Patentee, a Chinese 373
Patenting imitations 309
Patent law, another amendment of the 400
Patent Office again, the 384
Patent Office, a panic at the 272
Patent Office clerks, the 401
Patent Office justice 65
Patent Office, operations of the 352
Patent Office, reform needed at the 389
Patent Office tea set, the 404
Patent Office testimonial, the 369
Patent Office, the 368
Patent Office yearly report 369
Patents, Canadian, official list of 12, 28, 41, 60, 76, 92, 108, 124, 140, 157, 172, 188, 204, 220, 236, 252, 268, 284, 300, 316, 332, 348, 364, 380, 396, 410
Patents, English, by Americans 9, 24, 42, 88, 121, 136, 169, 200, 233, 248, 280, 330, 361
Patents in England and United States 212
Patents, official list of 12, 27, 44, 59, 75, 92, 108, 121, 140, 156, 172, 188, 204, 220, 236, 252, 267, 284, 300, 315, 332, 348, 364, 380, 395, 410
Patents, recent American and foreign 9, 24, 42, 57, 72, 88, 105, 121, 136, 153, 170, 185, 201, 217, 231, 249, 264, 281, 297, 313, 330, 347, 361, 378, 394, 408
Patents, the Commissionership of 241
Pavement, new concrete 136
Peach brandy (59) 219
Peach, yellows in the 167
Peas three thousand years old 290
Peat fuel manufacture in Canada 355, 356
Peat, leaf mold, etc. 99
Peat paper 337
Peculiar people 241
Pendulum governors *389, 404
Pendulum, length of a 27, 156
Pendulum, the cone 26
Penholders 160
Pennsylvania Railway, the 341
Percussion powder for cartridges (59) 315
Peru, engineering in 257
Petrifaction vs. putrefaction 84
Petroleum barrels, cleansing 124
Petroleum benzin for oleoresins 41
Petroleum, boiling point of (17) 266
Petroleum products 58
Pharmaceutical conference, British 50
Phelps, Dodge & Co., case of 24
Phosphate of lime (12) 331
Phosphor bronze axle bearings 152
Phosphor bronzes, new 329
Phosphorescence, insect 231
Phosphorescence of animal matter 231
Phosphoretted hydrogen 232
Phosphoric acid, etc., estimation of *388
Phosphorus and phosphates in putrefaction 223
Phosphorus bronze 65
Phosphorus light, the (66) 203
Photographing lace on silk 391
Photographs, enameled and embossed *242
Photographs, immense 402
Photographs, waxing (23) 362
Photograph, the glace or enameled *359
Photography on tin (1) 298
Photo-lithography (12) 202
Photo skylight and tent *408
Phylloxera, chemical effect of the 369
Phylloxera, the 231, 273
Phylloxera, the eucalyptus and the 292
Phylloxera, the grape [illegible]
Pickets in a fence (7) 409
Pickles 155
Picture frames, composition for 228
Piles in salt water, preserving 124
Pinking iron *342
Pip among chickens 155
Pipe and bolt threader and cutter *230
Pipe cutting and threading machine 296
Pipes and plates, non-corrosive 290
Pipes, protecting cast iron 255
Piston rings 293, 325
Pistons and rods, turning 293
Pitcher, water *22
Pittsburgh and her industries *376
Pittsburgh manufacturers for 1873 153
Pittsburgh, the subterranean fires 369
Plane irons, grinding 324
Planer, surface, the Hamilton *319
Planetary motions, the relations of 84
Planetary orbits, relations of 17
Planing and molding machine *405
Planing machine, vertical *163
Plaster bandage, a new 287
Plate, cleaning and burnishing (13) 298
Plating with platinum 106
Platinum, furnace for melting *34
Plows, new steam *243
Plumbers' carelessness 176
Plumber's defence, the 292
Pneumatic burial 209
Poisoning by shot 85
Poke root, the (48) 299
Polar expedition, the latest 401
Polish, French 11
Polishing shirts (77) 203
Polishing swords 135
Population of the United States 152, 263
Postal cards, incendiary 723
Postal system, the 224
Post Office, the New York 50
Potassic sulphocyanate (34) 219
Potassium, a lecture experiment with 5
Potato, a new 329
Potato bugs, vesicatory 213, 231, 277, 356
Potato bug, the 309
Potato bug, the Colorado 52
Potato coverer, improved *207
Power for cotton machinery 48
Power for turning wheels (14) 409
Power in cotton mills 165
Power in cotton mills, waste of 329
Power of a water wheel (9) 409
Power supplying company, a 1
Practical man, the 80
Practical mechanic at the Fair 244
Practical mechanism 196
Practical mechanism 21*, 69*, 101*, 133, 181, 197*, 229*, 261*, 293*, 325*, 373*, 405*
Practical men and mechanical æsthetics 337
Precious metals, the 232
Premium for carriage lamp 18
Prescription, a queer looking *51, *84
Press, balanced screw cotton 15
Press, hay and cotton 38
Pressure of water in casks (1) 409
Pressure on piston (4) 409
Pressures, experiments at high 216
Priestley centenary, the 104
Priestley centennial, the 50
Priming, device for preventing *370
Printers' roller composition (56) 283
Printing ink (19) 298
Printing machine, fabric *131
Printing, polychrome 368
Printing press improvements, recent 32
Printing without a press 199
Prismatic colors, proportions of the 75
Prison reform 336
Prizes for essays 325
Prizes for essays on steel 376
Prizes for hand turning 168
Propeller of the Britannic *56
Propeller shafts, lining 107
Propellers, screw 86
Prurigo and pruritus 209
Pulley, loose *102
Pulley, taper sleeve, and wheel fastening *22
Pump difficulty, a (28) 409
Pumping engine, automatic 296
Pump mechanism, improved *242
Pumps, improved steam *38
Pumps, test of (8) 250
Pump, the Sprengel 95
Putty, colored 107
Putty, removing old 392
Pyrometers 216

Q

Quick as wink 177
Quicksilver in California 3
Quicksilver mines in California 130

R

Rail, fast travel by 42
Railroad depot at Bryn Mawr, Pa. *227
Railroad employees and their pay 256
Railroads, consumption of wood by 287
Railroads, early opinion of 337
Railroad train, fast 207
Railroad train timer 169
Railroad, wooden, in Michigan 358
Rails, the manufacture of 8
Rail system, the one 370
Railway, an 18 inch 242
Railway, a portable *180
Railway cars, French 117
Railway, 440 miles by 65
Railway gage, change of 72
Railway rails, rusting of 352
Railway regulations, Pennsylvania 378
Railway Review, the Chicago 72
Railway rolling stock, U. S 120
Railways and wheeled vehicles 264, 279
Railways, English and American 98, 215
Railways, German 128
Railway signals, the block system of 216
Railways in New York city 100
Railways of the United States 16
Railway station, the Holborn viaduct 130
Railway statistics 180
Railway track lifter *191
Railway trains, coal per mile 305
Railway traveling, rapid 292
Railway up Mount Vesuvius 71
Rain at New Haven, Conn 135
Rainbow, a lunar 72
Rain gage, to make a (5) 235
Rains, queer 193
Raisins, making (17) 409
Ramsden, Sir James *311
Ram, the hydraulic *259
Rapid transit in New York 229, *259, 304
Rarefied air, breathing 290
Rat science vs. alligator strength 134
Rat, the California wood 63
Rattan 127
Reason why, the 103
Rebolting machine *127
Reflection, extraordinary 216
Reformation in Japan, the 151
Refrigerating car, railway 290
Refrigerating mixtures and their physiological effects 17
Refrigerating process, new 88
Regatta, the annual college 65
Reinholder, improved *358
Reservoir, fall of a 230
Reversion of thoroughbred animals 152
Rheumatism, guarana in chronic 149
Rhodium, metallic, new property of 120
Rhodotypus kerrioides *359
Rib, laying out a curved 171
Rickets and softening of the bones 200
Rifle barrels, straightening (68) 251
Rifle contest, the international *248
Rifle sights at Creedmoor (70) 283
Rock, crystaline, decay of 341
Rock drill, a compound engine 113
Rocks, the disintegration of 152
Roman remains 351
Rome, explorations in 83
Rootbeer 138
Rope, testing 185
Rose, the qualities of the 37
Rosin oil (18) 266
Rowers, the training of 37
Rubber insulators, substitutes for 344
Rubber, solvents for 368
Rubber stamps 156
Rubber thermometers, hard 372
Rudder, improved *195
Rule, draftsman's *274
Russian international exposition 184
Rust, cleaning off 107
Rust on iron and steel (32) 299
Rust on steel tools (59) 283

S

Safety valves, formulæ for 107
Sail, the shadow 52
Sal ammoniac, inhaling 200
Salt as manure 178
Salt raising bread (16) 379
Salts in food 263
S[illegible]l, a curious property in 337
Sand, sonorous 149
Sandstone to marble, transformation of 277
Sandwheel, to make a 26
Sarcophagus, an Italian 121
Sargasso sea, the 91
Sash boring and grooving machine 310
Saw contest at Cincinnati 296
Saw improvements, gang *50
Sawing lumber (44) 347
Saw making, French 194
Saw premium at Cincinnati, the 260
Saw, premium for circular 168
Saw, scroll 248
Saws, speed of (20) 202
Saws, speed of teeth of (5) 218
Saw, the diamond band 296
Saxton, Joseph and his labors 341
Scabbards, making sword 136
Science and metallurgy 3
Science as a tree 134
Science, recent advances in 29
Science, the National Academy of 341
SCIENTIFIC AMERICAN in Germany, the 262
SCIENTIFIC AMERICAN, special edition 288, 353
SCIENTIFIC AMERICAN, to subscribers 405
SCIENTIFIC AMERICAN, value of the 37, 168, 280
Scientific and practical information 9, 17, 37, 49, 81, 113, 131, 149, 177, 257, 289, 321, 337, 360, 369
Scientific industry, society for the promotion of 263
Scientific marketing 149
Scientific investigation, aid to 16
Scient, the 264
Scorpions and their venom *178
Scotland, exploration in 84
Sce encoal *287
Screw cutting tools *21
Screw propeller, measuring a *240
Screw shafts, universal joints in *340
Scribing block, the *133
Sczaroch an American invention, the *228
Sczaroch, the 70, 260
Sea sickness and vomiting 85
Sea weeds 22
[illegible]lighter, non-explosive *242
Sensitized paper 74, 120
Sensitizing gelatin 91
Sensitizing gelatin paper 82
Sensitizing paper (64) 203
Sewage, machine for drying 131
Sewage question, the 168
Sewage, utilization of [illegible]
Sewing machine motor *70
Shad, American, in Germany 193
Shad shipped to Persia 161
Shaft and cranks, water works 54
Shafting, how to line *388
Ship, a new double 7
Ship, capsizing a (16) 409
Ship launch, disaster at a *183
Shipping of the world 403
Ships, non-inflammable 81
Ship, the polyspheric 100
Shoemaker's combination tool *242
Shrinkage in hardening 139
Shrubbery, the *359
Silk rags, utilization of 309
Silvered telescopic mirrors 177
Silvering glass (20) 267
Silvering glass, Draper's method of (31) 267
Silvering glass, Siemens' process (19) 331
Silvering mirrors (18) 203
Silver ore from Connecticut 293
Silver plating (15) 187, (23) 362
Silver plating fluid (35) 299
Singeing cloth, machine for *386
Siphon, a great *216
Siphon for drawing liquids *228
Siphon for poisons and acids *274
Siphon water ram, a *357
Sirius 31
Sirup, making starch (27) 379
Six-legged rivals, our 113
Size, printer's gold 74
Skeletonizing leaves 155
Skin diseases, Gurjun oil in 7
Slide valve, the *373
Slide valve, improved *166
Slide valves, pressure on (46) 299
Slide valves, proportioning (46) 299
Slugs, rose, to destroy 207
Smalt 155
Soap crutching machine *214
Soap, erasive 131
Soap, hard, with tallow (4) 331
Soap, soft and hard (10) 379
Soap water on incandescent metals 244
Soda water law suit, a [illegible]
Sodium press 232
Soils and fertilizers 99
Solar heat, differences in 129
Solder for brass (55) 363
Soldering tin 43
Solder in thin bars (76) 283
Sound and moisture (10) 395
Sounding the Pacific 179
Sound, philosophers on 3
Sounds, the simultaneous perception of *80
Sound, the transmission of 36
Spanner, patent *6
Specific heat 132
Spectroscope, a direct vision 168
Spectroscope, new 261
Spectroscopic art in England and America 392
Spermaceti, purifying (36) 251
Spider, ingenuity of a 392
Spiders' webs and spinnerets *276
Spike extractor, improved *390
Spiral theory of physical phenomena, the 36
Spiritualism, how to investigate 381
Spiritual phenomena 126
Sponge divers, the Syrian 60
Spontaneous combustion 159
Spontaneous combustion in hay 310
Spring, horse power of a (81) 223
Spring, winding a tapered (57) 203
Square, the 134
Squirrel's leap, a 133
Stains of fruit, to remove (48) 289
Stapelia hirsuta minor, the *33
Star catastrophe, a (44) 205
Starch, potato (30) 315
Stars, numbers of the fixed 152
Stay, can we 160
Steam and pressure (16) 395
Steamboat, new French river 121
Steam cars 116
Steam, cutting wheat by 383
Steam engines, gain by condensers to 256
Steamer Castalia, the English channel *279
Steamer City of Pekin, trial trip *161
Steamer, new 291
Steamer, fast Atlantic (21) 331
Steamer, the Bessemer saloon 56
Steamer, the Ohio 360
Steam for heating purposes, exhaust 336
Steam generator, the Eclipse *31
Steaming fast 153
Steam navigation, early history of 198
Steam trap *4
Steel chrome 181
Steel direct from the ore 323
Steel, French improvements in 8
Steel, hardening (41) 347
Steel manufacturers, to American 280
Steel, restoring burnt 6, 180
Steel, softening 123
Steel, tool 21
Steel, what is 352
Steel, Whitworth 22, 100
Stevens Institute of Technology 260
Stevens, Messrs., and their ironclads *87
Stings, remedy for insect 118
St. Joseph exposition, the 169
Stone sawing machine, diamond *159
Stones, cutting 59
Storms, facts about 79
Stove, an open *198
Stove, a novel cooking *38
Stove plate dressing machine, American 191
Stove polish [illegible] 219
Strasbourg goose culture 81
Stucco, improved 383
Stump sawing machine *391
Stumps of trees, rotting (72) 219
Subscribers, to our present and future 369
Stuttering 275
Submarine building *306
Success and blunders 121
Success, ways to 199
Suction 352
Sudorific, a new 370
Sugar making, improvements in 151
Sulphate of copper optics 309
Sulphur, a mine of liquid 294
Sulphur, etherole of 85
Sulphuric acid on lead 289
Sulphur in Iceland 149
Sulphur in lead poisoning 81
Sulphur in Sicily, and its reduction from the ore 295
Sumac (68) 363
Sun, measuring the distance of the *180
Sun, motion of in space (75) 203
Sun's apparent diameter, changes in the 290
Sun's declination, the (7) 395
Sun, photosphere of the 404
Sun, spectrum analysis of the 90
Sunstroke, quick remedy for 131
Sun, the constitution of the 393, 404
Sun, the temperature of the 339
Sun, velocity of the (13) 314
Superstition, mediæval 343
Surgical freezing 242
Swatara, the 191
Swelling of cattle 58
Swim? can you 96
Swimming with the clothes on 180
Switch accident, a 48
Sword grips, making 136
Sword manufacture in Birmingham 135
Sydney exhibition, New South Wales 337

T

Tallow, bleaching 27
Tan on the face and hands 139
Tape worm, kousso for 233
Tapping machine, water main *118
Tapping screw threads (14) 298
Taps and dies 101
Taps, forming and tempering 340
Taps, making *(1) 187
Taps, V-threaded 228
Tar roofing (73) 347
Taxing power of the legislature 32
Tea exports, Indian 245
Tea, Indian and Chinese 247
Teeth, chemical and galvanic action on 117
Teeth, composition filling for (1) 202
Teeth from vulcanite, removing 361
Teeth, manufacture of artificial 181
Teeth, mounting of artificial 200
Teeth of children, removing 17
Teeth, value of the 100
Telegraph between Great Britain and Ireland 278
Telegraph cable, Brazilian 378
Telegraph, conception of the *403
Telegraphic cables 306
Telegraphic crows 69
Telegraphing, quick 275
Telegraph lines, government monopoly of the 400
Telegraph paper, chemical (37) 299, (65) 347
Telegraph posts, trees for 153
Telegraph relay, new 376
Telegraphs in Mexico 72
Telegraphs, open circuit (5) 395
Telegraph survey, Pacific Ocean 191
Telegraph, the Brazilian 136
Telegraph, the builder of the first 103
Telegraph, the Pacific ocean *259
Telegraph wire, four messages on one 56
Telegraph wires 184
Telegraph wires, kite tails and 113
Telegraphy, American 121
Telegraphy, an improvement in cable *258
Telegraphy, cable 292, 324, 372
Telegraphy, cheap 406
Telegraphy in the United States 294
Telegraphy, new discovery in—The electro-motograph 145
Telegraph, pneumatic 180
Telescopes, constructing mammoth 165
Telescopic lenses, improved 216
Telescopes, reflector (6) 409
Temperature kills? what 289, 356
Temperatures, underground [illegible]
Tempering anvils (67) [illegible]
Tempering cast steel (82) [illegible]
Tempering steel for cutting burrs, etc. (8) 202
Teredo, the 8
Terrapin, breeding 214
Testing chlorides 58
Testing colors for their fastness 146
Testing governors (52) 363
Testing oak and pine 263
Testing oxide of zinc [illegible] 267
Testing urine 81
Tests for oils 326
Thermometer, mean of a (25) [illegible]
Thermometer, separation of mercury in a [illegible]
Thermometer, solar radiation *211
Thermometers, rubber 341
Thrashing machine, iron framed *407
Thunderstorm, the safest place in 144
Tides in the Gulf of Mexico 97
Tides of lakes and lakelets 212
Tiles, cementing (29) 202
Timber, the growth of 36
Time by telegraph 152
Tin, corrosion of 9
Tin, crystalization of 304
Tin cup, scale on a (17) 331
Tinfoil [illegible] 203
Tinning gray iron (14) 362
Tin, precipitated 139
Tin waste, the utilization of 319
Tobacco, analysis of (19) 250
Tobacco and the brain 138
Tool, compound, new *406
Tools, forging 21
Tools, hardening 21
Tools, machine, at the Fair 296
Tools, metal working 248
Tools, scraping *164
Torpedoes, effects of 113
Torpedoes, range of 257
Torpedo practice at Newport 144
Torpedo, the Ericsson pneumatic *390
Trades' unions, decline of 406
Transferring engravings to glass (4) 298
Transplanter, improved *390
Trees for avenues 181
Trees in hot weather 37
Trees, transplanting *51
Trepanning, coconut 49
Trotting, fast 136
Troy, explorations in 83
Troy, jars found in the ruins of *291
Tunnel, a new Thames 56
Tunnels, cost of 288
Tunnels, ventilation of railway 169
Tunnel, the French and English 321
Tunnel, the St. Gothard 196
Tunnel, the St. Louis 72
Tunnel under the Hudson river *376
Turnings, tyre (23) 202
Tyndall, Prof. and the Buddhist 308
Tyndall's address at Belfast, Prof. 208
Tyndall's address, Professor 176, 192
Tyndall on typhoid 385
Tyres, contraction of 42

U

Underground railway in Constantinople 290
Underground railways in London 261
Underground railway, the, N. Y. city *307, [illegible], 339, *371, 387 *402
Undulation, velocity of primary 129
Unionidæ, the North American 129
United States, machinery in the 85
Urea, instrument for estimating [illegible]
Uric acid, effects of 24
Urine, new compound from 392

V

Vacuum in a bottle *75
Valve for gases and corrosive liquids 100
Valves, setting locomotive 124
Vanilla from pine trees 37
Vanilline 342
Van, the lake and city of 184
Vapors and the solar rays [illegible]
Varnish, paraffin 91
Varnish, waterproof 11
Vase for flowering bulbs *359
Vegetation, more curious 59
Vehicles, wheeled, and railways 264, 279
Ventilation and cooling air *23
Ventilation, simple plan of 324
Venus, transit of 53, *114, 155, (52) 283, 400
Vertebrates, power of thought in 247
Vessels, apparatus for raising *215
Vibrations of solids optically studied, the [illegible]
Vigorite 351
Vinegar from molasses [illegible]
Violin notes, softening 49
Violin tones, softening 123
Vise work *164
Vise work—Pening *197
Vise work—Tools [illegible]
Vivisection 192
Volcanoes and earthquakes 247
Volatilization of metals (26) 314

W

Wagon, dumping *118
Wagon jack, improved *198
Walking feats, recent [illegible]
Wall paper, red, dangers of 343
Washington, D. C., notes from 20, 148, 260
Waste in manufactures, prevention of [illegible]
Watch key, refitting a [illegible]
Water impurities, rain 54
Water in cisterns 156
Water in galvanized pipes (13) 202
Water in lead pipes (11) 202
Water in the spheroidal state (31) 219
Water, maximum density of 232
Water power sewing machine (15) 409
Water pipes, lime in 81
Waterproof glue (80) 204
Waterproofing cloth 74, (42) 347
Waterproofing compound 290
Waterproofing linen 113
Waterproof paper 146
Waterproof paper (23) 409
Waterproof silk paper 39
Water, purifying 155
Water, sanitary condition of 51
Watertroughs, size of (3) 409
Water, weight of 156
Water wheel, current *223
Waterwheel governor *182
Water wheel, the Blackstone and Elmer *134
Wave motion 356
Weapons, the results of improved 60
Webster, Daniel, statue to 185
Welding, the philosophy of 118
Wells, foul 36
Well water, microscopic examination 41
Wheel question, the (5) 298
White metal 139, (51) 363
White not a color (5) 379
Whitworth industrial scholarships, the [illegible]
Wiredrawn steam, loss from 107
Wire tramways *370
Wind, pressure and velocity of 123
Wind, printing the direction of the 152
Wood a costly building material 183
Wood, dyeing black (18) [illegible]
Wood, filling for (61) 347
Woodlands, the American 152
Wood, phenic acid for preserving 184
Wood, the preservation of 319
Woodworking implements 248
Worker's friend, the 168
Workmen, cheap, and dear work 320
Workmen, dealing with 163
Wounds from non-explosive bullets 289
Wrinkles, two [illegible]

Y

Yacht for the Khedive of Egypt *331
Yacht, the royal 161
Yarn congress, the 391
Years old, a hundred and twenty 184
Yeast (61) 299
Yellow fever, protection from 95
Yellowstone hot springs, the *179
Yuccas, the 391

Z

Zinc by water, precipitation of 323
Zinc white, to restore 184
Zodiacal light, the 116, (16) 266

© 1874 SCIENTIFIC AMERICAN, INC