

there any kind of oil that can be added to give more body to the varnish, and at the same time have no injurious effect on the tone? A. Use best French spirit copal or amber varnish. It is much cheaper and more satisfactory to buy than to attempt making either of these. 2. Also a good stain for staining them so they will look well? Have used extract of logwood, but the color is too red. A. Use a warm solution of one ounce bichromate of potash in a pint of water, and touch up with nitric acid diluted with an equal volume of water if necessary. 3. Can you give me any information about the cutting of gear wheels for screw cutting lathes? I mean particularly the size of a train for cutting any particular number of threads to the inch, say, for example, twelve threads. What size should they be, beginning with one on spindle? How many teeth to each wheel, and what size mesh? Can you refer me to any good work on the subject, one that is easy understood? A. The makers of lathes arrange the sizes of gears to accommodate the distance between the center of the lathe head and the driving screw. The pitch of the thread on the driving screw must first be decided; then the sizes of the train wheels are to be computed by the number of teeth; then the pitch multiplied by the number of teeth gives the diameters. Much judgment and experience is needed in deciding the pitch or size of the teeth and arranging the best proportion. Would advise you to study the gears on the lathes in a machine shop. See "Notes and Queries," No. 31, page 322, May 20, 1882. Martin on Screw Cutting, and Johnson on Gearing are good works.

(17) H. O. T. writes: I would be pleased to have you give the receipt for a paste which is used by binders in making tablets, so that there is no necessity of pasting a strip of paper over the part that is glued together. The paste is colored a high color to suit the taste of the patrons. The tablets are not glued first, only thick paste put on the whole lot to be made, and afterward, when dry, a knife is run through where the tablets are to be parted, making an easy and neat looking job? A. The composition is said to be prepared as follows: Glue, four pounds; glycerine, two pounds; linseed oil, half pound; sugar, one-quarter pound; aniline dyes, q. s. to color. The glue is softened by soaking it in a little cold water, then dissolved together with the sugar in the glycerine, by aid of heat over a water bath. To this the dyes are added, after which the oil is well stirred in. It is used hot. Another composition of a somewhat similar nature is prepared as follows: Glue, one pound; glycerine, four ounces; glucose sirup, about two tablespoonfuls; tannin, one-tenth ounce. Give the compositions an hour or more in which to dry or set before cutting or handling the pads.

(18) H. H. H. writes: I am engaged in making artificial ice, and on account of alkali and other impurities in the water the ice is not clear. The water is frozen in cans one foot square and three feet long, making a block of ice the same size. The center of the block is not good, owing to the outside freezing first, and the impurities in the water going to the center and freezing last. Now I wish to know what to put in the water to precipitate it that will not make the water taste or be injurious, as the ice is used for a great many purposes. Or, how can I purify the water to make my ice clear? A. It is very difficult to purify water economically so that it may be artificially congealed in clear cakes. Perhaps the most effectually remedy is to boil the water and then filter it through charcoal. Ordinarily no simple addition to or doctoring of the water will suffice.

MINERALS, ETC.—Specimens have been received from the following correspondents, and examined, with the results stated:

A. G.—1. Quartz with silver glance. 2. Obsidian.—D. J. C.—Both are fine grained sandstones, and No. 1 would make a fine building material, as it contains but little iron. No. 2 is inferior for this purpose.—J. S. R.—No. 1. Quartz, holding a green mass of hornblende. No. 2. Crystals of calcite—carbonate of lime. No. 3 was not large enough to test. No. 4. Carbonate of copper, malachite, and red oxide of copper, with a small proportion of silicate of copper, crysocholla. No. 5. Mispickel, sulpho-arsenate of iron—sulphur, arsenic, and iron.—E. P.—Sample A, Copper pyrites—zinc blende and iron pyrites in quartz, probably contains gold and silver, but not in quantity. An assay would be advisable. B, Crystals of chondrodite in granular limestone, of no metallurgical value. C, Crystals of quartz in a quartz gangue, containing gold and possibly silver. An assay will be necessary to determine the amounts. D, Copper pyrites, with malachite in quartz, which holds silver. Small unlabeled piece in package with D, chondrodite and rutile on granular limestone (of no value).

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

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

October 24, 1882,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

A printed copy of the specification and drawing of any patent in the annexed list, also of any patent issued since 1866, will be furnished from this office for 25 cents. In ordering please state the number and date of the patent desired and remit to Munn & Co., 261 Broadway, corner of Warren Street, New York city. We also furnish copies of patents granted prior to 1866; but at increased cost, as the specifications not being printed, must be copied by hand.

Abrading disk, E. B. Call..... 266,346
Aging and compounding liquors, process and apparatus for, J. H. Welsh..... 266,569
Air cooling and ice making machine, H. F. Starbuck..... 266,547
Air purifier, P. Breen..... 266,267

Annunciator, electric, J. C. Warner..... 266,405
Annunciators of telephone exchanges, circuit for, C. E. Scribner..... 266,319
Bale tie, D. B. Eastburn..... 266,587
Baling machines, conveyor for, J. L. Riter..... 266,317
Band cutter and feeder, G. W. Sharp..... 266,394
Bath tub, W. W. Rosenfield..... 266,531
Bed bottom, Ogborn & Kendrick (r)..... 10,220
Bed bottom, spring, U. Miller..... 266,497
Belt, coiled wire, H. C. Root..... 266,529
Bird perch, G. B. Thorpe..... 266,555
Blast furnaces, cinder car for, J. Kennedy..... 266,480
Blower for furnaces, vacuum, J. P. Mason..... 266,378
Board. See Telephone switch board.
Boiler. See Locomotive boiler.
Boiler and feed steamer, J. H. McCandless..... 266,436
Boring device, metal, D. O'Neil..... 266,306
Bottle stopper and draught nozzle, P. Henrichs..... 266,364
Bottles, box for holding and transporting, J. Boe..... 266,422
Box. See Packing box. Paper box. Watch movement box.
Brick press, R. N. Ross..... 266,532
Bridle blinder stay, J. A. Bowdler..... 266,423
Buffer, R. P. Garsed..... 266,458
Burial casket, H. H. Barry..... 266,578
Butter and making the same, artificial, W. H. Burnett..... 266,580
Butter, coloring compound for artificial, H. Berthold..... 266,417
Butter, making artificial, G. H. Webster..... 266,568
Button fastener, J. H. Robertson..... 266,528
Calendar, E. N. Heath..... 266,289
Calk, driving, G. H. Hathorn..... 266,362
Can labeling machine, J. C. Richardson..... 266,315
Can opener, W. A. Stoddard..... 266,398
Cans, packing, P. Babcock Jr..... 266,577
Canal boats, towing, O. Greene..... 266,360
Candle holder, C. Graher..... 266,463
Cane and opera glass, combined, S. Helfgott..... 266,472
Car coupling, W. H. Heaverin..... 266,473
Car coupling, J. D. Perry..... 266,512
Car coupling, L. Seitz..... 266,537
Car coupling, Trude & Gray..... 266,558
Car coupling, G. Wallenberg..... 266,563
Car platforms, adjustable hood for, C. S. Smith..... 266,323
Car, railway, C. S. Smith..... 266,322
Car, stock, S. W. Remer..... 266,392
Cars, operating inclined plane railway, J. C. Morris..... 266,301
Card, playing, B. Dreyfuss..... 266,444
Carding machine, W. E. Whitehead..... 266,334
Carding machines, rubbing mechanism for, J. Barker..... 266,414
Carpenter's plow, F. A. Rappleye..... 266,519
Carriage bow, W. F. Fleharty..... 266,280
Carriage bow, F. A. Wittich..... 266,409
Carrier. See Trace carrier.
Case. See Packing case.
Caster, O. Pederson..... 266,509
Chains, dog for log, P. Okell..... 266,505
Chains, making ornamental, W. Edge..... 266,278
Chandelier, electric light, L. Stieringer..... 266,550
Check rower, L. J. Odell..... 266,305
Checks, machine for making baggage, E. T. Jones..... 266,370
Cheese knife, M. G. Petey..... 266,513
Chimney and shade, J. J. Dillon..... 266,443
Churn, A. B. Ward..... 266,564
Churn dasher, N. Warrell..... 266,406
Cigar and cigarette holders and pipes, celluloid, mouth-piece or bit for, W. Demuth..... 266,582
Cigarette former, T. Daniels, Jr..... 266,439
Clip. See Tug clip.
Closet. See Water closet.
Clothes wringer, D. B. Piper..... 266,514
Clutch, friction, F. O. Deschamps..... 266,275
Coal hod and sieve, combined, A. Watson..... 266,407
Coal chutes, slate separator for, Fahringer & Crippen..... 266,448
Coffee roaster, H. P. Buffon..... 266,428
Cold by means of anhydrous sulphurous oxide, producing artificial, R. P. Pictet (r)..... 10,221
Collar pad, horse, J. O'Brien..... 266,594
Cooler. See Corpse cooler. Water cooler.
Corn mill, J. A. Field..... 266,450
Corpse cooler, Johnson & McMillan..... 266,294
Corpse cooler, J. C. Sloan..... 266,539
Corset, A. Woodard..... 266,335
Cotton gin, F. H. Lummus..... 266,376
Coupling. See Car coupling. Hose coupling. Thill coupling.
Croquet wicket, H. J. England..... 266,355
Crusher. See Quartz crusher.
Cultivator, W. A. Knowlton..... 266,482
Cuspidor and similar vessels, A. Stewart..... 266,548
Cut-off valve gear, H. Broomell..... 266,425
Cutter. See Band cutter. Tobacco cutter.
Detachable handle for utensils, F. A. Neider..... 266,381, 266,382
Detector. See Time detector.
Door and shutter bolt, R. B. Monroe..... 266,498
Dredge for mining submerged rock, C. W. Townsend..... 266,402
Dress trimming, A. L. Rice..... 266,525
Drill. See Grain drill.
Dye baths with dyeing solutions, enriching, C. L. Klauder..... 266,451
Dyeing, bleaching, washing, and drying yarn, etc., apparatus for, W. Maybury..... 266,494
Electric cable, P. B. Delany..... 266,353
Electric generator, dynamo, Hindley & Buffham..... 266,290
Electrical distribution, junction for conductors of systems of, J. Kruesi..... 266,483
Electrical fixture, L. Stieringer..... 266,549
Electrical machine, E. Guerin..... 266,467
Elevator. See Water elevator.
Elevator safety stop, J. Johnston..... 266,479
End gate lock for wagons, J. C. Nelson..... 266,501
Engine. See Gas engine. Traction engine.
Engine cross heads, guide for, F. W. Dean..... 266,272
Eyeglasses and spectacles, J. M. Crawford..... 266,436
Fabric, S. H. Baldwin..... 266,266
Faucet, T. Lanston..... 266,484
Fence and gate, flood, J. A. Clark..... 266,430
Fence, composite, T. Rogers..... 266,315
Fence post, movable, S. Gibbs..... 266,459
Fence, wire, E. J. Smith..... 266,545
Fencing, metallic barbed, T. V. Allis..... 266,336
Fire escape, A. Newhall..... 266,502
Fire escape, J. Traversham..... 266,596
Fire escape, J. B. Wickersham..... 266,570
Fire extinguisher and alarm, automatic, C. E. Buell..... 266,579
Fire extinguisher for railway cars, H. Purdy..... 266,311
Flood gate, H. Voelmi..... 266,403
Flour dressing machine, F. W. Andree..... 266,264
Fog horn, R. Chester..... 266,270
Fork. See hay fork.
Frame. See Quilting frame.
Gag runner, M. E. Zeller..... 266,575
Gauge. See Gas burner gauge. Ring gauge.
Gas burner gauge, D. M. Small..... 266,540, 266,542
Gas engine, P. Munzinger..... 266,304

Gas, process of and apparatus for making coal, A. Stamm..... 266,326
Gas test and pressure gauge, D. M. Small..... 266,543
Gate. See Flood gate.
Gate post, F. Fogus..... 266,453
Generator. See Electric generator.
Glass for architectural purposes, ornamenting, E. Oudinot..... 266,503
Glass press, M. Ward..... 266,565
Gleaning and binding machine, J. F. Mahon..... 266,489
Glove, S. Montgomery..... 266,299
Glucose from cactus, manufacture of, W. B. Brittingham..... 266,268
Glycerine from spent soap lyes, saline, and other substances, separating, F. J. O'Farrell..... 266,504
Grain binder, R. Brown..... 266,426
Grain binder, A. Goodyear..... 266,294
Grain drill, Morpew & Withrow..... 266,499
Grain drill attachment, P. H. Smith..... 266,325
Grain meter, G. W. Sharp..... 266,395
Grain separator for thrashing machines, C. W. Brackett..... 266,424
Grate, shaking and dumping, W. Swindell..... 266,328
Grinding mill, T. W. Beal..... 266,340
Guard. See Saw guard.
Hame fastener, J. J. Curry..... 266,438
Hand rest for penmen, J. Ridge..... 266,316
Handle. See Detachable handle.
Harrow, spring tooth, H. Cobb..... 266,348
Harvester and husker, combined corn, A. Mote..... 266,302
Hay fork, L. Clairmont..... 266,439
Hay fork, horse, J. J. Cribbs..... 266,271
Hay press, E. M. & T. S. Low..... 266,436
Hay rake, horse, W. H. Hall..... 266,288
Heating apparatus, steam, E. F. Osborne..... 266,506
Heating purposes, adjustable bracket for, J. H. Enger..... 266,446
Hoe, rake, and other agricultural implements, J. R. Hood..... 266,368
Holder. See Candle holder. Lamp globe holder. Paper bag holder. Thill and tongue holder. Watch balance spring holder. Whip holder.
Hook. See Snap hook.
Horse-hoof pad, W. E. Canedy..... 266,347
Horseshoe nail blanks, machine for separating and heading, W. F. Durfee..... 266,583
Horseshoe nail blanks, machine for trimming and stamping, W. F. Durfee..... 266,584
Horseshoe nail blanks, machine for bevelling and trimming, W. F. Durfee..... 266,585
Horseshoe nail blanks, machine for reducing and tapering, Durfee & Fowler..... 266,586
Hose coupling, T. Götzel..... 266,359
Hub, wheel, G. W. Thomas..... 266,400
Ice machine, T. L. Rankin..... 266,312
Indicator. See Musical scale indicator. Spirit cistern indicator.
Inhaling and vaporizing apparatus, W. W. Rosenfeld..... 266,530
Insulator for musical instruments, J. Synar..... 266,552
Iron. See Pole iron.
Jar, A. Luser..... 266,375
Knife. See Cheese knife. Pocket knife.
Labeling machine, J. C. Richardson..... 266,314
Lamp, H. Peigniet..... 266,510
Lamp, argand, F. Funck..... 266,457
Lamp, electric, C. F. Heinrichs..... 266,363
Lamp, electric arc, J. D. F. Andrews..... 266,337
Lamp, electric arc, W. P. Freeman..... 266,455
Lamp, electric incandescent, T. A. Edison..... 266,447
Lamp, electric incandescent, H. Goebel..... 266,358
Lamp globe holder, argand, H. W. Hayden..... 266,470
Lamp globes, apparatus for creating vacuums in incandescent electric, H. J. Müller..... 266,303
Last, J. F. McMullett..... 266,298
Latch, A. B. Prouty..... 266,388
Latch, locking, A. B. Prouty..... 266,389
Life-raft, E. S. Copeman..... 266,349
Lock. See End gate lock. Nut lock.
Lock, A. B. Prouty..... 266,390
Locomotive boiler, G. S. Strong..... 266,551
Loom, let-off mechanism, Crompton & Wyman..... 266,351
Loom shuttle motion, J. Greenway..... 266,361
Looms, adjustable jack strap for, D. D. Mason..... 266,491
Mat. See Oil press mat.
Measure, C. Sangster..... 266,533
Meat and vegetable slicing machine, J. W. Anderson..... 266,263
Meat tenderer, J. Zimmer..... 266,576
Medical compound for rheumatism, etc., E. B. C. Wright..... 266,573
Meter. See Grain meter. Water meter.
Microphone, C. D. Haskins..... 266,286
Middlings purifying machine, H. J. Livergood..... 266,296
Mill. See Corn mill. Grinding mill. Roller mill. Windmill.
Mortising machines, rotary cutter for, W. A. Decker..... 266,440
Motion, device for converting rotary into reciprocating, G. A. Fullerton..... 266,590
Mower, lawn, A. Walsh..... 266,333
Musical instruments, attachment for mechanical, O. H. Arno..... 266,411
Musical scale indicator, C. F. Vetter..... 266,329
Nail. See Screw nail. Sheet metal nail. Shoe nail.
Night soil from cesspools, pneumatic apparatus for removing, J. B. Berlier..... 266,416
Nut lock, A. D. Holland..... 266,476
Oil press and oil press box, W. Krutzsch..... 266,373
Oil press mat, W. Krutzsch..... 266,372
Organ, reed, Courville & Davis..... 266,435
Packing, adjustable piston, L. Herbert..... 266,365
Packing box, jointed, L. N. Headington..... 266,471
Packing case, metallic, Blair & Horton..... 266,430
Packing, piston rod, C. D. Jerome..... 266,293
Pad. See Horse-hoof pad.
Pan. See Sugar pan.
Paper bag holder, F. A. Masters..... 266,379
Paper box, F. R. Duck..... 266,445
Paper boxes, die for cutting blanks for necked, M. F. Wilson..... 266,572
Paper-makers, sizing for, R. A. Fisser..... 266,451
Paper-maker's size, sizing for, R. A. Fisher..... 266,452
Paper-making machine, C. Parent..... 266,307
Paper pulp from worn-out corsets, etc., manufacturing, A. Patterson..... 266,383
Pen, fountain, S. W. Higgins..... 266,475
Pen holders or pencils, anti-nervous attachment for, G. A. Diedel..... 266,442
Picture hanging device, D. O. Eshbaugh..... 266,356
Pipe. See Ventilating pipe.
Planter and check rower, combined self-dropping corn, J. W. Bapple..... 266,413
Planter check row attachment, corn, Benner & Stafford..... 266,341
Planter check row attachment, corn, L. D. Benner..... 266,342
Planter check rower, corn, G. W. & F. P. Murphy (r)..... 10,219
Planter, corn, J. Neff..... 266,500
Planter, hand corn, S. W. Hoar..... 266,367
Planter, hand corn, S. M. Macomber..... 266,487
Plow, Denson & Bell..... 266,274

Pocket knife, J. D. Frary..... 266,454
Pole iron, vehicle, O. Vanorman..... 266,560
Post. See Fence post. Gate post.
Press. See Brick press. Glass press. Hay press. Oil press.
Propeller for vessels, reciprocating, R. Smith (r)..... 10,222
Pump, T. H. Ward..... 266,556
Pump, force, Simons & Gebott..... 266,538
Pump, siphon, A. D. McKellar..... 266,377
Quartz crusher and pulverizer, J. A. Sperry..... 266,397
Quilting frame, H. T. Davis..... 266,581
Quilting frame, T. Goode..... 266,461
Rail straightening machine, W. K. Seaman..... 266,536
Railway signal apparatus, J. P. Livermore..... 266,297
Railway spike, H. Greer..... 266,464
Railways, grip for cable, C. W. Rasmusen..... 266,521
Reading and writing table, Walter & Dyas..... 266,332
Refrigerating apparatus, T. L. Rankin..... 266,391
Ring gauge for jewelers, C. F. Smith..... 266,324
Roaster. See Coffee roaster.
Rocket, P. Cunningham..... 266,437
Roller mill, W. A. Mahaffy..... 266,498
Roller mill, Marmon & Warrington..... 266,490
Rolling harrow teeth, machine for, J. S. Griffin..... 266,465
Rosin percolator, C. C. Tyler..... 266,550
Sad irons, polishing and waxing board for, Muller & Miller..... 266,380
Saddle girth, C. Williams..... 266,571
Satchel and muff, combined, C. Dickhaut..... 266,354
Saw, drag, C. Sawyer..... 266,534
Saw guard, J. G. Groff..... 266,466
Saw set and clamp, J. W. & J. K. Petty..... 266,385
Screw and pipe wrench, W. J. Owen..... 266,595
Screw cutting machine, J. Barrow..... 266,329
Screw nail, H. Dunham..... 266,276
Semaphore signal, H. F. Cox..... 266,390
Separator. See Grain separator.
Sewing machine, J. B. Price..... 266,387
Sewing machine, E. T. Thomas..... 266,553, 266,554
Sewing machine ruffing attachment, A. L. Smith..... 266,544
Sewing machine table, G. A. Rider..... 266,526
Sewing machines, muffling the sound of, J. B. Hain..... 266,591
Sheet metal nail, G. H. Perkins..... 266,511
Shoe nail, E. L. Wires..... 266,408
Shutter, metallic, G. Hayes (r)..... 10,223
Signal. See Semaphore signal.
Singletree, M. D. L. & J. M. Hartley..... 266,469
Snap hook, G. W. Blake..... 266,421
Snap hook, M. Sweet..... 266,327
Sole leveling machine, O. Gilmore..... 266,283
Sound apparatus for transmitting, C. L. Pond..... 266,515
Spark arrester, J. W. Budd..... 266,427
Spirit cistern indicator, J. Gnadinger, Jr..... 266,460
Spirits of great purity directly from the mash, production of, W. H. A. Deiminger..... 266,441
Splint making machine, C. E. Ramus..... 266,517
Spooling machine, yarn, L. C. Billings..... 266,419
Square, try, J. A. Traut..... 266,556
Stamp, Chronometric, B. E. Hill..... 266,396
Stamp stems, etc., fastening for tappets of, P. H. Baker..... 266,393
Steel, apparatus for handling and heating cast, W. Hainsworth..... 266,468
Stock detaching device, A. B. Hollingsworth..... 266,291
Stone breakers and crushers, screening and assorting machine for, P. W. Gates..... 266,282
Stone for veneers, etc., artificial, W. Matt..... 266,493
Stove, heating, E. Schöneberg..... 266,333
Stove, lime heating foot, P. O. Jenkins..... 266,369
Stoves and furnaces, device for burning crude oil in, J. F. Irons..... 266,478
Stoves, gas burner for, L. F. Betts..... 266,413
Sugar, apparatus for the manufacture of, J. A. Morrell..... 266,300
Sugar pan, F. Firmenich..... 266,279
Swing and chair, convertible, G. W. Mason..... 266,492
Switch. See Telephone switch.
Table. See Reading and writing table. Sewing machine table.
Tank. See Water closet supply tank.
Telegraphs, perforator for automatic printing, A. F. & F. B. Johnson..... 266,592, 266,593
Telephone, battery, L. Jacobson..... 266,292
Telephone central office system and apparatus, Breckenridge & Duxbury..... 266,344
Telephone exchange system, C. E. Scribner..... 266,321
Telephone exchanges, multiple switch board for, Haskins & Wilson..... 266,287
Telephone, magneto, T. A. Watson..... 266,567
Telephone switch, C. W. Lewis..... 266,295, 266,374
Telephone switch board and pneumatic signal therefor, C. E. Scribner..... 266,320
Telephonic receiver and automatic circuit, breaker, combined, W. C. Eckert et al..... 266,277
Thill and tongue holder, W. B. McFall..... 266,496
Thill coupling, C. L. Ferguson..... 266,449
Thill coupling, P. Schneider..... 266,535
Thill support, W. C. Wood..... 266,410
Thrashing and separating machine, P. Kaufmann..... 266,371
Thrashing machine, G. Stringer..... 266,399
Tie. See Bale tie.
Tiles, manufacture of, L. J. Walker..... 266,562
Timber with antiseptics, apparatus for treating, J. W. Putnam..... 266,516
Time detector, watchman's, G. F. Ransom..... 266,518
Tire upsetting machine, S. H. Raymond..... 266,313
Tobacco cutter, R. A. Burnett..... 266,345
Tongue support, J. J. Thomas..... 266,401
Tongue support wagon, M. Conrad..... 266,431
Torches, fire kindlers, etc., absorbent compound for the manufacture of, A. G. Hurlbutt..... 266,477
Trace carrier, D. B. Cooley..... 266,432
Trace carrier, M. E. Zeller..... 266,574
Traction engine, E. M. Birdsall..... 266,343
Traction engine, A. O. Frick..... 266,456
Tramway, wire rope, C. W. Rasmusen..... 266,520
Trap. See Waste or sewer trap.
Tree. See Singletree.
Trunkcatch, C. P. Gould..... 266,285
Tub. See Bath tub.
Tug clip, name, N. D. Fowler..... 266,357
Umbrellas, etc., rib-tip retainer for, R. A. Fisher..... 266,589
Vacuum apparatus, T. A. Edison..... 266,588
Valve vent, Gordon & Hobbs..... 266,462
Velocipede, F. Rittenhouse..... 266,527
Ventilating pipe and cowl, J. Cooper..... 266,433
Ventilation, M. B. Stafford..... 266,546
Vise, M. T. Henson..... 266,474
Vise, H. F. Read..... 266,522
Wagon wrench, S. O'Connell..... 266,503
Warbler and cage, combined, J. R. Barry..... 266,415
Warping and beaming machine, J. Walmsey..... 266,390, 266,391
Waste or sewer trap, C. Lightbody..... 266,485
Watch balance spring holder, Smith & McKoon..... 266,396
Watch movement box, L. W. Arnold..... 266,265
Water closet, C. F. Pike..... 266,309
Water closet and urinal, G. E. Waring, Jr..... 266,405
Water closet supply tank, J. Cooper..... 266,434
Water cooler, I. M. Van Wagner..... 266,561
Water elevator, D. F. Brown, Sr..... 266,269

Water meter, Dennert & Lind	266,273
Whiffletree, T. J. Pearson	266,308
Whip holder, S. Baker	266,412
Windmill, J. A. Dean	266,352
Windmill, G. Garside	266,281
Windmill, F. Reiter	266,524
Windows, stained glass, E. Oudinot	266,507
Windows and doors, device for closing, D. Pearson	266,334
Wrench. See Screw and pipe wrench. Wagon wrench.	
Wrench, vise, and nail puller, combined, D. R. Porter	266,310
Wringer. See Clothes wringer.	

DESIGNS.

Advertising blank, E. L. Moodie	13,369
Advertising card, H. Pennington	13,367
Bracelet charm, H. G. McKinney	13,368
Carpet, E. Fajon	13,315
Carpet, D. G. Melville	13,359
Knife, fork, or spoon handle, E. B. Towle	13,366
Lamp, etc., oil, D. R. Lowden	13,358
Oil cloth, C. T. & V. B. Meyer	13,360 to 13,365
Organ case, E. P. Carpenter	13,344
Printed fabric, J. Glen	13,346 to 13,357
Stove, E. L. Caley	13,342, 13,343

TRADE MARKS.

Embroidered canvass, cloths, silks, velvets, and ribbons, J. B. T. Lapaix	9,748
Flour, wheat, E. O. Stanard & Co.	9,750 to 9,752
Iron, pig, R. W. Coleman's Heirs	9,745
Medicinal article used for toilet and other purposes, Nye Brothers & Co.	9,749
Perfume, toilet, G. Kemp	9,747
Saws, tools, and files, H. Disston & Sons	9,741, 9,742
Sugar combined with the essential properties of the lime fruit, tablets of boiled or chemically pure loaf, H. S. Evans	9,743
Tobacco, chewing and smoking, C. B. Hull	9,746
Tobacco, cigars, and cigarettes, smoking, Globe Tobacco Company	9,744

English Patents Issued to Americans.

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Berth ship's, J. H. Milligan, Boston, Mass.
Bicarbonate of soda, manufacture of, B. T. Babbitt, New York city.
Bicycle seat, J. L. Wilson, Waltham, Mass.
Bushing material, G. F. Senter, New York city.
Clock, J. Lindauer, New York city.
Elastic fabric, manufacture of, T. H. Bail, Chicago, Ill.
Elevator, A. D. Fox, New York city.
Frame for bedsteads, etc., B. J. La Mothe, M.D., New York city.
Grain drier, H. Cutler et al., N. Wilbraham, Mass.
Hides, machine for scouring, C. Holmes, Boston, Mass.
Hides, treating, W. Maynard, New York city.
Horseshoe calk sharpener, F. A. Roe, New York city.
Paper bag machinery, M. N. Stanley, New York city.
Spinning machinery, F. Gebhart, New Albany, U. S.
Sulphuric acid, concentrating, J. Gridley, Brooklyn, N. Y.
Telephone, J. P. Stabler, Sandy Spring, Md.
Tricycle, H. C. Bull, Brooklyn, N. Y.

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