

Business and Personal.

The Charge for Insertion under this head is One Dollar a line for each insertion; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in next issue.

Berryman Feed Water Heater. See illus. adv., p. 396. A Great Bargain in Guns is offered by C. Folsom, for thirty years a well known New York gun dealer.

Baxter Wrenches fit peculiar corners. Indispensable to first-class mechanics. Greene, Tweed & Co., N. Y.

Abbe Bolt Forging Machines and Palmer Power Hammers a specialty. S. C. Forsaith & Co., Manchester, N. H.

Suffer no longer. Relief is always obtained by the German Corn Remover; certain and harmless. Druggists.

A simple means to keep disease away is to use Van Bell's "Eye and Rock."

R. J. W.—Froth or scum in your boilers caused by sediment in water from driven wells, entirely obviated without loss of water, by Hotchkiss' Mechanical Boiler Cleaner. Send for circular. 84 John St., New York.

Wanted.—Good Party to Manufacture and Sell New Store Seat, like that mentioned page 374 this paper. Wood or iron. S., P. O. Box 1973, Phila.

Wanted.—A party with capital and facilities to manufacture a line of standard, heavy machinery. Address, giving name and location of works, Earnest, Box 773, N. Y.

Wanted.—To manufacture and introduce to the hardware trade, articles principally or wholly of gray iron castings. Samson & Swett, Medina, N. Y.

Linen Hose, Rubber Hose, Cotton Belting, Rubber Belting, Leather Belting. Greene, Tweed & Co., 118 Chambers St., N. Y.

Before visiting your shoemaker get a bottle of German Corn Remover; you can secure a much nicer fit; 25 cents.

Wanted.—Some light article to manufacture as a specialty; in wood preferred. Van Cleve & Stilwell, 68 N. J. R. R. Ave., Newark, N. J.

Wanted.—A quantity of second-hand light T Rail, in good condition. S. L. Rockwell, Jordan, N. Y.

List 26.—Description of 2,500 new and second-hand Machines, now ready for distribution. Send stamp for the same. S. C. Forsaith & Co., Manchester, N. H.

Combination Roll and Rubber Co., 27 Barclay St., N. Y. Wringer Rolls and Moulded Goods Specialties.

Tarred Roofing and Sheathing Felts. A. Wiskeman, Paterson, N. J.

Punching Presses & Shears for Metal-workers, Power Drill Presses, \$25 upward. Power & Foot Lathes. Low Prices. Peerless Punch & Shear Co., 115 S. Liberty St., N. Y.

Improved Skinner Portable Engines. Erie, Pa.

"Rival" Steam Pumps for Hot or Cold Water; \$32 and upward. The John H. McGowan Co., Cincinnati, O.

The Eureka Mower cuts a six foot swath easier than a side cut mower cuts four feet, and leaves the cut grass standing light and loose, curing in half the time. Send for circular. Eureka Mower Company, Towanda, Pa.

The Newell Universal Mill Co., Office 34 Cortlandt St., New York, are manufacturers of the Newell Universal Grinder for crushing ores and grinding phosphates, bone, plaster, dyewoods, and all gummy and sticky substances. Circulars and prices forwarded upon request.

Pure Oak Leather Belting. C. W. Arny & Son, Manufacturers. Philadelphia. Correspondence solicited.

Presses & Dies. Ferracuta Mach. Co., Bridgeton, N. J. Wood Working Machinery of Improved Design and Workmanship. Corliesman, Egan & Co., Cincinnati, O.

Experts in Patent Causes and Mechanical Counsel. Park Benjamin & Bro., 50 Astor House, New York.

Split Pulleys at low prices, and of same strength and appearance as Whole Pulleys. Yocom & Son's Shafting Works, Drinker St., Philadelphia, Pa.

Malleable and Gray Iron Castings, all descriptions, by Erie Malleable Iron Company, limited, Erie, Pa.

National Steel Tube Cleaner for boiler tubes. Adjustable, durable. Chalmers-Spence Co., 10 Cortlandt St., N. Y.

Corrugated Wrought Iron for Tires on Traction Engines, etc. Sole mfrs., H. Lloyd, Son & Co., Pittsburg, Pa.

Best Oak Tanned Leather Belting. Wm. F. Forepaugh, Jr., & Bros., 531 Jefferson St., Philadelphia, Pa.

Wright's Patent Steam Engine, with automatic cut off. The best engine made. For prices, address William Wright, Manufacturer, Newburgh, N. Y.

Nickel Plating.—Sole manufacturers cast nickel anodes, pure nickel salts, importers Vienna lime, crocus, etc. Hanson & Van Winkle, Newark, N. J., and 92 and 94 Liberty St., New York.

Presses, Dies, Tools for working Sheet Metals, etc. Fruit and other Can Tools. E. W. Bliss, Brooklyn, N. Y. Peck's Patent Drop Press. See adv., page 366.

Long & Allstatler Co.'s Power Punch. See adv., p. 365. For Mill Mach'y & Mill Furnishing, see illus. adv. p. 364.

Saw Mill Machinery. Stearns Mfg. Co. See p. 36. Saunders' Pipe Cutting Threading Mach. See p. 366.

For Sequiera Water Meter, see adv. on page 364. For Machinists' Tools, see Whitcomb's adv., p. 364.

Clark Rubber Wheels adv. See page 380.

For Pat. Safety Elevators, Hoisting Engines, Friction Cnech Pulleys, Cut-off Coupling, see Frisbie's ad. p. 381. Safety Boilers. See Harrison Boiler Works adv., p. 381.

Mineral Lands Prospected, Artesian Wells Bored, by Pa Diamond Drill Co. Box 423, Pottsville, Pa. See p. 381.

Rollstone Mac. Co.'s Wood Working Mach'y ad. p. 380.

Fire Brick, Tile, and Clay Retorts, all shapes. Borgner & O'Brien, M'f'rs, 22d St., above Race, Phila., Pa.

Turbine Wheels; Mill Mach'y. O. J. Bollinger, York, Pa.

For best Portable Forges and Blacksmiths' Hand Blowers, address Buffalo Forge Co., Buffalo, N. Y.

The Brown Automatic Cut-off Engine; unexcelled for workmanship, economy, and durability. Write for information. C. H. Brown & Co., Fitchburg, Mass.

Brass & Copper in sheets, wire & blanks. See ad. p. 398.

The Chester Steel Castings Co., office 407 Library St., Philadelphia, Pa., can prove by 15,000 Crank Shafts, and 10,000 Gear Wheels, now in use, the superiority of their Castings over all others. Circular and price list free.

Cope & Maxwell M'f'g Co.'s Pump adv., page 397.

The Improved Hydraulic Jacks, Punches, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

Eagle Anvils, 10 cents per pound. Fully warranted. Geiser's Patent Grain Thrasher, Peerless, Portable, and Traction Engine. Geiser M'f'g Co., Waynesboro, Pa.

Houston's Sash Dovetailing Machine. See ad., p. 398.

Comb'd Punch & Shears; Universal Lathe (chucks. Lambertville Iron Works, Lambertville, N. J. See ad. p. 381.

Pat. Steam Hoisting Mach'y. See illus. adv., p. 398.

New Economizer Portable Engine. See illus. adv. p. 396.

Fine Taps and Dies in Cases for Jewelers, Dentists, Amateurs. The Pratt & Whitney Co., Hartford, Conn.

Rue's New "Little Giant" Injector is much praised for its capacity, reliability, and long use without repairs. Rue Manufacturing Co., Philadelphia, Pa.

Diamond Planers. J. Dickinson, 64 Nassau St., N. Y.

For Shafts, Pulleys, or Hangers, call and see stock kept at 79 Liberty St., N. Y. Wm. Sellers & Co.

Wm. Sellers & Co., Phila., have introduced a new Injector, worked by a single motion of a lever.

The Sweetland Chuck. See illus. adv., p. 396.

Machine Knives for Wood-working Machinery, Book Binders, and Paper Mills. Also manufacturers of Solomon's Parallel Vise, Taylor, Stiles & Co., Riegelsville, N. J.

Skinner's Chuck. Universal, and Eccentric. See p. 397.

Don't buy a Steam Pump until you have written Valley Machine Co., Easthampton, Mass.

Wren's Patent Grate Bar. See adv. page 397.

Use the Vacuum Oils. The best car, lubricating, engine, and cylinder oils made. Address Vacuum Oil Co., No. 3 Rochester Savings Bank, Rochester, N. Y.

Lightning Screw Plates and Labor-saving Tools, p. 396.



HINTS TO CORRESPONDENTS.

No attention will be paid to communications unless accompanied with the full name and address of the writer.

Names and addresses of correspondents will not be given to inquirers.

We renew our request that correspondents, in referring to former answers or articles, will be kind enough to name the date of the paper and the page, or the number of the question.

Correspondents whose inquiries do not appear after a reasonable time should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them.

Persons desiring special information which is purely of a personal character, and not of general interest, should remit from \$1 to \$5, according to the subject, as we cannot be expected to spend time and labor to obtain such information without remuneration.

Any numbers of the SCIENTIFIC AMERICAN SUPPLEMENT referred to in these columns may be had at this office. Price 10 cents each.

(1) F. M. E. asks for the composition of the inks used for stamp ribbons, such as are used on type writing machines. I have such a writer, but have not used it for two years, for the reason that I cannot re-ink the ribbons. A. Dissolve 1 oz. of best soluble nigrosine in 4 oz. of hot glycerine by triturating together in a hot mortar, and add 1/4 oz. of soap previously made into a thick paste by triturating and macerating it with a small quantity of hot water. Rub this well into the ribbon.

(2) S. W. asks: What ingredient can be mixed with lime whitewash to prevent it turning yellow in rainy or damp weather when used on outside work? A. See answer to O. E. C., page 375 (40), current volume.

(3) W. L. S. asks for what purpose lamp-black is used. Is it in demand, and what is the market value? A. It is extensively used in the preparation of various black paints, varnishes, japans, printing, marking, stenciling, and transfer inks. Address the dealer in paints and colors. See column of Business and Personal and Hints to Correspondents.

(4) B. W. B. asks how to make an ink that, when first written, cannot be seen, but when applied to heat it turns black. A. Use a dilute solution of chloride of cobalt (pure) in soft water. 2. Also an ink that after a certain time after it is written disappears. A. We cannot give you a receipt for such an ink. See Inks, in SUPPLEMENT, No. 158.

(5) H. G. F. asks for a remedy for mildew in sailcloth exposed to rain and sun. Something more potent than lime water, but not too expensive? A. Saturate the cloth with a strong hot solution of soap, press out excess of the liquid, and digest for six hours or more in a solution of alum 1 lb., in water 1 gallon. Rinse in plenty of clean water before drying. Acetate of lead is sometimes used instead of the alum.

(6) In answer to L. M. and others, C. M. says: The price of soap is regulated by the cost of materials employed, provided the manufacturer is fully competent in the art of soap making. My own experience is that a cotton seed oil soap costs 3 1/2 cents a pound for materials, and a pure tallow soap 4 1/2 cents a pound.

(7) L. B. writes: I wish to stencil some letters and figures around an ordinary white opaque glass globe (for gas). What kind of paint can I use that will not run and will not wash off? A. Try good black japan varnish, thinned with turpentine if necessary.

(8) A. B. asks: 1. How much sulphuric acid, chalk, and water, or sulphuric acid, marble, and water, or sulphuric acid, bicarbonates of soda, and water is necessary to make ten square feet of carbonic acid gas? A. Under ordinary conditions of temperature and pressure ten cubic feet of carbonic acid gas will require, in practice, 3 1/2 pounds of good chalk or marble, 4 pounds of sulphuric acid and 2 1/2 gallons of water; or 2 3/4 pounds of bicarbonate of soda, 1 1/2 pounds of sulphuric acid, and about 3 quarts of water. 2. Does strong

pressure hinder the development of the carbonic acid gas? A. The reaction by which the gas is produced takes place under pressure the same as when the materials are exposed in an open vessel. 3. What is the best elastic material to resist the action of the mineral acids? A. Vulcanized rubber.

(9) W. J. B. asks: Will the common type used in printing stand to be heated hot enough to print letters in gold on the leather covers of books without injury? A. With care, yes. 2. Will the recipe given to W. S. P., in No. 23, do for lettering cloth book backs? A. Yes.

(10) A. B. B. asks (1) for a receipt for making a cement for cementing stone to wood. A. Melt and mix together equal parts of pitch, gutta percha, and shellac. Use hot. See Cements in SUPPLEMENT, No. 157. 2. Of what is hydraulic cement made? A. It is prepared by strongly calcining an argillo-silicious limestone or by calcining an intimate mixture of finely-ground lime, or limestone, clay, and sand. See Gilmore's "Cements and Mortars." 3. What is used for making artificial marble for tops of stands, etc.? A. The materials used are lime, lime carbonate, barytes, zinc white, and water-glass. Some of the stone is hardened by immersing it in a strong solution of chloride of calcium. For minerals, see under appropriate heading.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

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

May 24, 1881,

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 one dollar. In ordering please state the number and date of the patent desired and remit to Munn & Co., 37 Park Row, 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.

Table listing various inventions with their patent numbers and dates, including items like 'Abdominal supporter', 'Aging and purifying whisky', 'Air compressing apparatus', etc.

Table listing various inventions with their patent numbers and dates, including items like 'Curd from buttermilk', 'Curtain fixture', 'Curtain fixture, F. E. Wagner', etc.

# INDEX

## ILLUSTRATIONS.

### A

Air brake, improved..... 102  
Air, impure, test for..... (20) 123  
Air refrigerating machine..... 118  
Alligator snapping turtle..... 311  
Amateur mechanics..... 150  
American industries, 15, 21, 90, 111, 127, 191, 194, 207, 211, 223, 239, 243, 303, 307  
Amphora of bronze, etc..... 391  
Anvil and vise, combined..... 127  
Asbestos..... 127  
Ash sifter, improved..... 229  
Attractive residences..... 399, 402  
Awning and ventilator, imp..... 22

### B

Barrel machinery..... 111, 175  
Basket, fish novel..... 233  
Bath chamber, hot air..... 310  
Bath tub, folding, new..... 179  
Beet fly, Russian..... 113  
Bell's photophone..... 1, 4  
Belt clamp, new..... 355  
Bench clamp, improved..... 86  
Bench plane, improved..... 50  
Bench plane, new..... 370  
Berth, self-levelling, Houston..... 23  
Bird, humming, sword bill..... 23  
Boat, fire, mammoth..... 143  
Boiler explosion, mysterious..... 98  
Boiler, steam, novel..... 51  
Bolts and nuts, manufacture of..... 15, 21  
Book holder, novel..... 342  
Book protector, new..... 330  
Bottle cork, improved..... 51  
Bottle, dose-measuring..... 306  
Branchiopod crustaceans..... 231  
Bridge, Brooklyn, progress of..... 31  
Bridge, N. Y. and Bkln., second..... 335  
Bridge, suspension, N. Y. and Bkln., 1st..... 332  
Brush electric light..... 247, 248  
Brush holder..... 82  
Butter cooler and water holder..... 82

### C

Can and bottle opener, new..... 338  
Candlestick, novel..... 326  
Cane with toilet combination..... 251  
Cap and scarf, convertible..... 132  
Carbonizer furnace..... 159  
Carbons, naked and metallized..... 210  
Car cooler, novel..... 323  
Car doors, fastener for..... 406  
Cask cooling, new..... 263  
Cattle feeder, improved..... 67  
Cave, Howe's..... 35  
Chairs, elegant..... 343  
Cheiroleles, the..... 183  
Chicago waterworks, the..... 287  
Cieviz, improved..... 115  
Coffee pot, improved..... 169  
Connecting rod, improved..... 314  
Cotton seed, hulling..... 278  
Cradle, folding, novel..... 342  
Crane, steam, improved..... 115  
Crane, steam, locomotive..... 102  
Cremation temple..... 5  
Curious inhab. of Sargasso Sea..... 263

### D

Destructor and carbonizer..... 159  
Disk, fusion, Reese..... 244  
Door fastener..... 247  
Dolbear's telephonic system..... 383  
Drill, radial, new..... 54  
Dragon-fly, slender..... 407  
Drop attachment for bottles..... 146  
Drying kiln, improved..... 230  
Ducking battery, a..... 153  
Dynamo-electric mach., Edison's..... 47

### E

Electrical fire indicator..... 210  
Electric machine, Holtz..... 247  
Electric soldering iron..... 163  
Electricity, storing of..... 406  
Embroidering frame, new..... 242  
Engine, road, novel..... 242  
Engine with gas-fired boiler..... 163  
Explosion, boiler, mysterious..... 98  
Explosion, mysterious, and cause..... 38  
Explosion, tubular..... 403  
Extension table, improved..... 89

### F

Fabrics, finishing machine for..... 367  
Falcon in India..... 343  
Fastener for grain car doors..... 354  
Fat, estimation of, in milk..... 303  
Feast of strange fish..... 398  
Feed water heater and pump..... 358  
Fences and posts, construction of..... 291  
Filter pump, simple..... 324  
Finger, mechanical, in photos..... 261  
Fire boat, mammoth..... 143  
Fire kindler, novel..... 214  
Fish basket, novel..... 233  
Fish, lump, the..... 391  
Fish, parasitic, a strange..... 33  
Fish, strange, feast of..... 398  
Fishes, scaly-finned..... 215  
Flour milling..... 223  
Flower-like forms of ice..... 193  
Fly wheels, bursting of..... 262  
Fog horn, steam improved..... 51  
Fountain water closet, portable..... 34  
Frames, mirror, etc., adjuster for..... 155  
Fresh water medusa..... 33  
Fruit jar, improved..... 338  
Furnace carbonizer..... 159  
Fusion disk, Reese..... 244

### G

Game counter, new..... 259  
Gas boring machine, new..... 357  
Gate, swing, new..... 195  
Gecko or wall lizard..... 119  
Globules, grinding bands on..... 262  
Governor for waste water pipes..... 229  
Grappling tool for oil wells..... 229  
Grave, curious, a..... 35  
Guns, machine, improvement in..... 75

### H

Handle, new, for soldering irons..... 213  
Hand press, improved..... 70  
Hanger for shafting..... 276  
Harvesters, double tongue for..... 397  
Harvesting machs., manu. of 303, 307  
Hatchling device, new..... 447

Heat, radiant, experiment on..... 210  
Helmet crests..... 103  
Herreshoff steam launch, etc..... 95, 99  
Hinge, improved..... 8  
Hoe, hand, improved..... 131  
Holtz electrical machine..... 247  
Hornbill, the common..... 71  
Horned screamer, the..... 183  
Howe's cave..... 35  
Hudson river tunnel, inside the..... 35  
Hulling cotton seed..... 278  
Human footprints in Ky. sandstone..... 42  
Human trees of India..... 71  
Hydraulic hoisting machinery..... 239, 243  
Hydraulic ram, improved..... 214

### I

Ice crusher, new..... 131  
Ice boiler, improved..... 230  
Industries, American, 15, 21, 99, 111, 127, 191, 194, 207, 211, 223, 303, 307

### J

Jelly fish, a, parasites on..... 199  
Jersey bull Diavolo..... 87

### K

Keely motor deception..... 370  
Kiln, drying, improved..... 231  
Knife for cutting tobacco leaf..... 51  
Krug jugs..... 311

### L

Lace, real, manufacture of..... 295  
Lantern, magic, simple..... 67  
Launch, steam, Herreshoff..... 95, 99  
Leech farming..... 359  
Lemur vari, the..... 327  
Light, lime, new..... 150  
Light, polarized, exper. with..... 163  
Lime light, new..... 189  
Lobsters..... 375  
Lock, imp. for museum cases..... 82  
Lump fish, the..... 391

### M

Magic lantern, novel..... 101  
Magic lantern, simple..... 67  
Magic mirrors..... 53  
McCormick harv. machine Co. 303, 307  
Measures, time, curious..... 39  
Mechanical movement, new..... 66  
Mechanical principles, demon..... 18  
Mechanics, amateur..... 150  
Meteor, brilliant..... 52  
Meteor, the..... 83  
Microphone, new..... 83  
Middlings purifier, electric..... 223  
Milking stool, new..... 67  
Mirrors, magic, improved..... 53  
Mole trap, new..... 378  
Mortiser, power, new style..... 334  
Motor, novel, a..... 198  
Motor, wind, improved..... 330  
Mountain R. R. system, Edoux's..... 63

### N

Natural history, curious fact in..... 55

### O

Obelisk, the, presented to the U.S..... 79  
Oil separator, novel..... 322  
Optometer, improved..... 294  
Osprey, the..... 151  
Oven paper company..... 271, 275  
Oxygen for bleaching powder..... 376

### P

Packing and valves, Jenkins'..... 19  
Paper, writing, manu. of..... 271, 275  
Parasites on a jelly fish..... 189  
Parasitic fish, a strange..... 33  
Parasitella, the..... 255  
Patrol system, Chicago police..... 231  
Percolation, upward, appar. for..... 50  
Performing machine, new..... 242  
Photographing the voice..... 389  
Photophone, Bell's..... 1, 4  
Pinking machine..... 175  
Porcelain, soft, English..... 375  
Post hole digger, improved..... 346  
Posts and fences, construction of..... 291  
Pottery, decorating, appar. for..... 134  
Printing press, many color..... 83  
Proprietary specialties..... 191, 194  
Protector, book, new..... 340  
Pump, force improved..... 274  
Pumping engine, new..... 370

### R

Radial drill, new..... 54  
Railway system, mountain..... 163  
Recording telephonic receiver..... 103  
Refrigerator, improved..... 246  
Remondr, novel..... 387  
Residences, attractive..... 399, 402  
Riveting machine for boilers..... 50  
Road car, new..... 310  
Road engine, novel..... 8  
Rope clamp, improved..... 179

### S

Sand blast..... (4) 74  
Scallops..... 182  
Scissors, novel..... 182  
Screw wood, improved..... 66  
Sea cat, the..... 115  
Seat for shop girls, a..... 215  
Sevens vase..... 293  
Sewers, final outlets for..... 19  
Shears, an improvement in..... 294  
Signs, spacing and lettering..... 353  
Silhouettes, app. for taking..... 249  
Skate sailing..... 146  
Steel pencil machine..... 106  
Snow flowers..... 196  
Sound in water, velocity of..... 137  
Specialties, proprietary..... 191, 194  
Spring-making tool..... 70  
Stag beetle and champion beetle..... 279  
Starch, preparing, app. for..... 163  
Steamboat experiment, J. Fitch's..... 359  
Steamboats for South America..... 34  
Steam launch, Herreshoff..... 95, 99  
Steamer, steel, American built..... 119  
Stone, broken, testing..... 260  
Strange fish, feast of..... 398  
Street illumination in N. Y..... 207, 211  
Surgeon family, the..... 231  
Suburban residences, attract..... 399, 402  
Swinging gate, new..... 185  
Swivel holder for fish hooks..... 181  
Sword bill humming btd..... 23

### T

Technology, Stevens Institute..... 354  
Telegraph hand car..... 35  
Telephone and telegraph lines..... 213  
Telephone circuit, arr. of..... (7) 10  
Telephone system, Chicago police..... 255  
Telephone transmitter, new..... 182, 336  
Telephonic receiver, recording..... 165  
Telenctic system, Dolbear's..... 383  
Telescope, new, of short focus..... 162  
Temple, cremation..... 5  
Thermophones..... 341  
Tidal outlets for sewers..... 19  
Time measures, curious..... 39  
Tobacco leaf cutting knife..... 50  
Tongs, improved..... 35  
Tools, reversible..... 259  
Trees, human, of India..... 71  
Tugboat explosion..... 403  
Tunnel, Hudson river, inside the..... 351

### V

Vase, richly decorated..... 281  
Velocipede carriage..... 403  
Velocipede hand car..... 246  
Vise, hand and bench..... 22  
Voice, the, photographing..... 389

### W

Wagon brake, improved..... 134  
Washing machine, novel..... 325  
Waste water pipes, governor for..... 5  
Watch, self-winding..... 146  
Water closet, fountain, portable..... 34  
Water meter, improved..... 274  
Water, velocity of sound in..... 137  
Waterworks, Chicago, the..... 287  
Weaverbirds..... 185  
Whiffletree, safety, new..... 214  
Wind motor, improved..... 380  
Winkle, the, or landle-shell..... 167  
Wood screw, improved..... 66  
Woodworking..... 150  
Writing papers, manu. of..... 271, 275

## MISCELLANY.

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

### A

Accident, strange..... 358  
Acid burns, remedy for..... 358  
Acid, carbolic, diffusibility of..... 121  
Acid, nitric..... 405  
Acid, nitric, in cattle disease..... 164  
Acid, nitric, system, comb. by..... 405  
Acids, vegetable, action of on tin..... 131  
Acoustic telephone..... (18) 238  
Actinic phenomenon, novel..... 200  
Actinic zinc..... 340  
Adirondack survey, N. Y..... 25  
Adirondack survey, the..... 283  
Aerographic progress..... 280  
Agricultural inventions, 7, 19, 41, 105, 149, 228, 296, 377, 386, 408  
Agricultural machinery for..... 72  
Agricultural notes..... 392, 404  
Aque, amy nitrate for..... 387  
Aids to hearing, on..... 32  
Air and water..... 312  
Air brake, improved..... 102  
Air brake patents..... 3  
Air, cold, for domestic use..... 338  
Air, impure, test for..... (26) 123  
Air, lack of..... 312  
Air locomotive, complete..... 114  
Aircrafting machine..... 114  
Albion coal mines..... 20  
Alum, bleaching..... 177  
Alcoholism..... 274  
Alcohol, rectifying..... 177  
Alkalimetric indicator, new..... 313  
Alkaloids, qualitative analysis of..... 346  
Alligator snapping turtle..... 311  
Alligator, white, the..... 184  
Alloy for brands..... (30) 363  
Alphabet, the, in writing, etc..... 197  
Alum baking powders in court..... 73  
Alum water..... 407  
Aluminum battery, an..... 107  
Aluminum movement, illus. of..... 356  
American awards, Int. Fish. Ex. 361  
American goods..... 217  
American industries, 15, 21, 99, 111, 127, 191, 194, 207, 211, 223, 303, 307  
American Institute, min. eng..... 163  
American inventors, sent. illus. of..... 356  
American manufactures in India..... 196  
American Medical Association..... 383  
American science association..... 401  
America, the yacht..... (7) 122  
Ammonia jelly motor, the..... 343  
Ammonia vapor engines..... 343  
Amphora of bronze, etc., illus. of..... 391  
Ancient works in New Mexico..... 123  
Aniline black ink..... (31) 331  
Aniline colors..... 200  
Aniline pencils, to make..... (6) 378  
Aniline reds, dangers of..... 160  
Aniline motions, study of..... 376  
Animal reasoning..... 184  
Anthracite steamer, report on..... 64  
Antidotes to arsenic..... 6  
Ants, curious uses and works of..... 42  
Anvil and vise, combined..... 127  
Arsenic, antidotes to..... 6  
Aphis, a new species of..... 327  
Apple trees, to protect..... (1) 154  
Apprentice system reviving..... 67  
Aqua ammonia, how made..... (27) 155  
Arctic research, American..... 245  
Arberg tunnel, the..... 153  
Arsenic, operation of..... 387  
Arsenic sulphide as a poison..... 374  
Artificial daylight..... 177  
Artificial indigo..... 53  
Asbestos..... 127  
Asbestos in the Black Hills..... 401  
Ash sifter, improved..... 229  
Asphalt walks..... (24) 134  
Assaying..... 339  
Astronomical notes..... 9  
Athletic training, dangers of..... 294  
Atlanta exhibition, the..... 34  
Atlantic cables..... 18  
Atlantic passage, fast..... 152  
Atom, electricity of..... 325  
Authenticity, value of..... 280  
Avenues, diagonal, in cities..... 97  
Awning and ventilator, imp..... 22

### B

Bacteria, intestinal..... 233  
Bait fish, climbing trees for..... 232  
Baldness, a barber on..... 277  
Baldness, new remedy for..... 401  
Balloon house..... 402  
Ballons, making of..... (34) 171  
Barge system on the Mississippi..... 193  
Barometer, glycerine..... 178  
Barometer, registering..... 259  
Barometer, to refill..... (13) 154  
Barrel machinery..... 111, 175  
Basket, fish, novel..... 233  
Bath chamber, hot air..... 310  
Bath tub, folding, new..... 179  
Battery carbons, to make..... (6) 282  
Battlefield, old, uncovered..... 278  
Beans, buggy..... 261  
Beef juice furor..... 311  
Beef liver, Russian..... 215  
Beef stings, bicyclic acid for..... 120  
Bees, banishment of..... 186  
Bees, shipment of to N. Zealand..... 25  
Beetles, carpet, preventive for..... 72  
Beet sugar industry in Canada..... 196  
Beet sugar in New York..... 257  
Bell, cracked, to reat..... (31) 123  
Bell Professor, reception of..... 182  
Bell's photophone..... 1, 4  
Belt clamp, new..... 355  
Bench clamp, improved..... 86  
Bending machine, new..... 370  
Bent river, exploration of..... 236  
Berthelot, reception of..... 182  
Berth, self-levelling, Houston..... 23  
Bey, Mariette..... 281  
Bible, eight thousand dollar, an..... 256  
Bible revision, the..... 372  
Birch for cabinet work..... 213  
Bird, humming, sword-bill..... 23  
Bird skins, to preserve..... 155  
Black dip for castings..... (20) 11  
Black polish for leather..... (2) 155  
Blacking for harness..... 28  
Bleach, the coming..... 314  
Blocks, concrete..... 67  
Blood, etc., utilization of..... 361  
Blood stains, in evidence..... (6) 27  
Blue pipe assay..... (20) 106  
Blue pipe work, support for..... (17) 186  
Boat, fire, mammoth..... 143  
Boat, lumber, of New York..... (4) 171  
Boats, propelling..... 47  
Boiler attendants, instruction to..... 10  
Boiler explosions, recent, two..... 401  
Boiler explosion, remarkable..... 17  
Boiler explosion, mysterious..... 98  
Boiler explosions in 1880..... 278  
Boiler, care of..... (9) 10  
Boiler, steam, explosion..... 48  
Boiler, steam, novel..... 51  
Boilers, steam, care of..... 40  
Boilers, whose, explode..... 176  
Bolts and nuts, manufacture of..... 15, 21  
Bone, to dye..... (21) 218  
Botanical notes..... 336, 342  
Botanist, a, in the field..... 262  
Bottle cork, improved..... 51  
Bottle, dose-measuring..... 306  
Brain, undeveloped, overworking..... 377  
Brakes, good, value of..... 361  
Branchiopod crustaceans..... 231  
Brass, suspension, between N..... (30) 91  
Brass castings, to scale..... (23) 11  
Brass plating, solution for..... (1) 27  
Brass, to blacken..... (24) 58  
Bread-making in the East..... 146  
Breadstuffs, our export of..... 116  
Breath, the, temperature of..... 245  
Breath, to clean..... (13) 170  
Bricks, to color dark..... (8) 373  
Bridge between N. Y. and Bkln..... 335  
Bridge, Brooklyn, progress of..... 31  
Bridge, East River..... 352  
Bridge, N. Y. and Bkln., second..... 335  
Bridge, 2d, bet. N. Y. and Bkln..... 312  
Bridge, suspension, between N..... (30) 91  
Bridge, and Brooklyn..... 319, 322  
British scientists to be invited..... 386  
Bromide, manufacture of..... 311  
Bronchial catarrh..... 185  
Bronze worker, Japanese..... 373  
Bronze, to clean..... (13) 170  
Bronze, strength of..... 35  
Brush dam, Yuba River..... 216  
Brush electric light..... 207, 211  
Brush electric light in London..... 133  
Brush holder..... 82  
Brush system of electric lighting..... 32  
Brushing exhibition, another..... 51  
Buffalo, largest, of Sargasso sea..... 263  
Buffaloes, 100,000 killed last winter..... 405  
Buildings, public, cost of..... 326  
Burned papers, to restore..... (14) 154  
Butter, American, in Ceylon..... 209  
Butter cooler and water holder..... 82  
Byrne, Oliver..... 82

### C

Cables, Atlantic..... 18  
Calcium light..... (33) 331  
Calculating machine, Vireas'..... 258  
Calf, to bleach..... (9) 74  
Canada, indus. condition of..... 176  
Canal de l'Est..... 197  
Can and bottle opener, new..... 338  
Candlestick, novel..... 326  
Cane with toilet combination..... 251  
Canvas, paint for..... (23) 90  
Cane, as a pestiferous..... 197  
Carbolic acid, diffusibility of..... 121  
Carbonic oxide, to detect..... 389  
Carbonizer furnace..... 159  
Carbons, naked and metallized..... 210  
Car brake decision, Stevens..... 242  
Carbuncle, treatment of..... 212  
Cariyle and his dyspepsia..... 380  
Car cooler, novel..... 323  
Cars, metallic..... 260  
Car doors, fastener for..... 406  
Car wheels, chilled, grinding..... 372  
Cask, cooling, new..... 258  
Castes and trades of India..... 197  
Cast iron, carbon in..... (2) 218  
Cast iron, to repair..... (9) 74  
Cast iron, to solder..... (18) 74  
Casting, large, another..... 386  
Castings, filler for..... (26) 363  
Castings, malleable..... 185  
Catharrh..... 185  
Cathedrals and churches, cap. of..... 373  
Cat, the, as a pestiferous..... 197  
Cattle car competition..... 145  
Cattle car, new..... 338  
Cattle car prize..... 276  
Cattle feeder, improved..... 67  
Cattle, how killed for N. Y. mkt..... 300  
Cautic, improved..... 103  
Cave, adventure in a..... 313  
Cave, How's..... 35  
Cement, acid proof..... (34) 59  
Cement floors..... 343  
Cement for iron in stone..... (31) 299  
Cement for leather..... 117  
Cement for rubber..... 245  
Cement for wooden cisterns..... (25) 187  
Cements for the ship..... 121  
Cesspools, separating app. for..... 121  
Chagres river dam..... 296  
Chairs, elegant..... 343

### D

Dark day, the, in Canada..... 329  
Deaf, the, restoring..... 52  
Deafness, a cause of railway risks..... 369  
Deafness, partial, curious case of..... 356  
Deafness, prevention of..... 356  
Deafness, relating to patents..... 100  
Decorative printing, new process..... 328  
Deep sea fisheries, our..... 208  
Dentistry, dangers of..... 369  
Destructor and carbonizer..... 159  
Digest of patents, proposed..... 121  
Disinfectant, new, another..... 292  
Disinfectants..... 277  
Disinfection of ships..... 293  
Disinfection with sulphurous acid..... 179  
Disk, fusion, Reese..... 244  
Disk, fusing, the..... 280  
Dispatch boats, novel..... 367  
Distemper, of Sargasso sea..... 258  
Dont's for thevarish room..... 258  
Door fastener, improved..... 306  
Dragon-fly, slender..... 407  
Drainage and disease..... 385  
Drainage of Chicago, new plan..... 25  
Drain pipes, testing..... 120  
Dressing, glue, for wounds..... 121  
Drill, radial, new..... 54  
Drink, strong, effects of on liver..... 88  
Drop attachment for bottle..... 146  
Dry docks, Erie basin..... 97  
Drying kiln, improved..... 230  
Ducking battery, a..... 153  
Dykes, broken, in Holland..... 49  
Dynamite..... (3) 202, 299  
Dynamo-electric mach., Edison..... 47  
Dynamo-telegraphy..... 69

### E

Earache..... 196  
Ear of Caithness, the..... 241  
Earth, non-rotation of the..... 372

Charcoal, unrecognized qual. in..... 80  
Cheese, land..... 175  
Chromoles, the..... 183  
Chemical nomenclature..... (12) 362  
Chemical research..... 31  
Chemistry of plants..... 56  
Chloroform, use in cancer..... 377  
Chicago breakwater, the..... 227  
Chicago waterworks, the..... 287  
Children, education of..... 313  
Chimborazo and Cotopaxi..... 199  
China, our trade with..... 73  
Chinese coasts, longitude of..... 384  
Chisholm, Henry..... 274  
Chloride of gold, to make..... 101  
Chloride of lime, to make..... (22) 196  
Cholera, winter, in Chicago..... 546  
Cigars, throwing for..... (23) 55  
Cinnabar..... 281  
Circular saw, Reese..... 249, 247  
City area and sewerage..... 234  
City sewerage, in Algiers..... 229  
City sewerage, another discovery..... 6  
Cities, diagonal avenues in..... 87  
Cities having a population of 10,000..... 69  
Cities, utilizing of waste of..... 197  
Clark, William..... 401  
Clay burnt, for railroad ballast..... 115  
Clay, improved..... 239  
Cliff town, another discovery..... 6  
Clocks, church tower, how wound..... 8  
Clocks in the earthquake..... 377  
Clocks, tower, flex shaft for..... 166  
Cloth, to fasten on wood surfaces..... 118  
Clouds, solar, and sun spots..... 45  
Coal, best of..... 239  
Coal in Mantoloking..... 370  
Coal in Venezuela..... 291  
Coal mines, Albion..... 20  
Coal oil in Italy..... 17  
Coal, pulverized, in furnaces..... 183  
Coal tar, natural, discovery of..... 314  
Coal to evaporate gal. water..... (27) 129  
Coal and nicker separation of..... 100  
Coca..... 345  
Codfish, salted, reddening of..... 151  
Coff liver oil..... 345  
Coffee..... 237  
Coffee pot, improved..... 169  
Coffee, new type of..... 256  
Coke effect on vegetation..... (7) 154  
Colloid films..... 213  
Cologne, to make..... (5) 27  
Color blindness, statistics of..... 378  
Color relations of metals..... 185  
Color, wasting..... 220  
Colored fires..... (23) 115  
Col'd lights in parlor theatricals..... 4  
Comet, a 1881..... 45  
Comet, 1881..... 45  
Comet, new, Pennule..... 68  
Comet telegraphy..... 336  
Commerce, foreign, in the U. S..... 151  
Community, a long-lived..... 985  
Compass plant, the..... 136  
Composition, new, another..... 179  
Concrete blocks..... 67  
Confectioners who don't make money..... 217  
Conducting rod, improved..... 374  
Constipation..... 281  
Constipation, Swedish cure for..... 351  
Cooking by electricity..... 342  
Copper bottoms, when first put on ships..... (24) 107  
Copying pad..... (17) 218  
Copying pad and ink..... (35) 59  
Coping process..... 394  
Corliss engine, the great..... 273  
Corn as fuel..... 323  
Corn sugar factory, gigantic..... 383  
Cornum localities of Georgia..... 116  
Corwin's cruise, the..... 336  
Cotton, a big load of..... 282  
Cotton, fair, Atlantic..... 25  
Cotton manufacture..... 88  
Cotton pressing, improvement in..... 69  
Cotton seed, hulling..... 278  
Cotton seed hulls, a use for..... 70  
Courage of firemen..... 168  
Cow, a big load of..... 282  
Cradle, folding, novel..... 342  
Craft, large, on the lakes..... 208  
Crane, steam, improved..... 115  
Crane, steam, locomotive..... 102  
Crank pin, friction on..... (14) 122  
Crank shaft, large..... 337  
Crates, temporary..... 376  
Cream tartar, test for..... (2) 234  
Cremation temple..... 5  
Crematory, proposed, in B'klyn..... 214  
Critical pressure..... 372  
Crow, a lost in the mails..... 313  
Cure, new, for malaria..... 313  
Cushions, making..... 392  
Cylinder, monster, a..... 326  
Cylinder pressure, average of..... (6) 106  
Cyprus, ancient, near Sparta..... 360

Eastriver bridge..... 352  
Eggs, to pack..... (4) 378  
Eggs, to preserve..... (16) 184  
Egyptian obelisk now in N. Y..... 51  
Egyptian obelisks..... 51  
Electrical battery, gigantic..... 215  
Electrical exhibition at Paris..... 148  
Electrical exhibition, French..... 177  
Electrical fire indicator..... 210  
Electrical machine, Holtz..... 247  
Electrical society, new..... 161  
Electric exhibition in N. York..... 50  
Electric illumination..... 49  
Electric lamps, on shipboard..... 57  
Electric light, Brush, in London..... 133  
Electric light experiment..... 82  
Electric light good for the eyes..... 49  
Electric light in Akron, Ohio..... 272  
Electric light in an art gallery..... 311  
Electric light on a buoy..... 197  
Electric light wires, danger of..... 68  
Electric light wires, insulation of..... 340  
Electric lighting, Brush system..... 185  
Electric lighting of mines..... 185  
Electric lights, iridium for..... 131  
Electric lights on Broadway..... 16  
Electric postal railway..... 310  
Electric railway in Berlin..... 336  
Electric railway in London..... 212  
Electricity, velocity of..... (6) 10  
Electricity of wires..... 184  
Electro brass plating..... 3  
Electro-engraving..... (14) 202  
Electro-metallurgy..... 33, 81, 116, 137  
Electrotyping..... (1) 27  
Elementary physics..... 164  
Elephant, crazy..... 30  
Elevated railway, Philadelphia..... 342  
Elevation of land and sea..... 164  
Elevator, safety, test of..... 131  
Elms, large, growth of..... 6  
Embroidering frame, new..... 242  
Employment, new type of..... 261  
Employers, responsibility of..... 103  
Employment, novel, of elephants..... 213  
Enamel for tinware..... (22) 218  
Enamel for wood..... (3) 234  
Engineering inventions..... 5, 18, 37, 36, 259, 325, 336, 374, 380  
Engineers, Civil, Am. Society..... 387  
Engineers club, Philadelphia..... 277  
Engineers, Mining, Institute of..... 85  
Engine, road, novel..... 242  
Engine with gas fired boiler..... 166  
Engines, stationary and portable..... 227  
Engines, steam, for electric light..... 145  
Engraving, new type of..... 256  
Ennals, William..... 308  
Erie basin, letter, costly..... 200  
Ephemeris, rock boring..... 273  
Erie basin dry docks..... 97  
Erie canal, improvement of..... 117  
Eratrum..... 85  
Exercise, a, of temperature..... (17) 150  
Exhibition, Cullen, the..... 256  
Exhibition, international, another..... 241  
Exhibition of electricity..... 8  
Exhibition of electricity, inter..... 241  
Expedition, search, Jeannette..... 245  
Expert, the..... 241  
Explosion, boiler, so-called myst..... 98  
Explosion, locomotive..... 166  
Explosive, mysterious, and its cause..... 38  
Explosive compound, new..... 117  
Express, Atlantic, steamers..... 314  
Extension table, improved..... 89  
Eye, the, foreign bodies in..... 149  
Eyes, the, of railway men..... 149  
Eyes, glass..... 169  
Eyes, imperfect, among children..... 318

Fabrics, finishing, machine for..... 367  
Falcon in India..... 343  
Fans, Japanese, how made..... 354  
Farm, the largest..... 229  
Fat, estimation of, in milk..... 303  
Fat, excess of..... 313  
Feed pipes, pressure in..... (8) 122  
Feed water heater and pump..... 358  
Fence, electric, an..... 267  
Fence, iron..... 372  
Fence, legal, the, what is..... 297  
Fences and posts, construction of..... 291  
Fertilizer, concentrated..... (8) 282  
Fertilizer, improved..... 151  
Evening, how to get rid of..... 321  
Fish, medicinal uses of..... 335  
Filter for porous hard woods..... 326  
Filter pump, simple..... 326  
Filtration and decolorization..... 87  
Finger, mechanical, in photo..... 261  
Fire boat, mammoth..... 143  
Fire escape, simple..... 177  
Fire extinguisher, chemicals..... (29) 343  
Fire extinguishers, filling for..... (29) 187  
Fire kindler, novel..... 214  
Fire loss, annual..... 260  
Firemen, courage and perils of..... 166  
Fires in coal mines..... 72  
Fishes, culturists' convention..... 240  
Fish basket, novel..... 233  
Fish culturists' convention..... 240  
Fish eggs, packing for shipment..... 292  
Fish for artificial ponds



