

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.

Saw Filer and Clamp. Saves labor and files. Circulars free. W. Taft & Co., Tolland, Conn.

For Sale.—A 6 x 12 Double Cylinder Otis Hoisting Engine, nearly new. Rich, 120 N. 6th St., Philadelphia, Pa.

Ask for Hard Rubber Triangles, Curves, Scales, Squares, etc., made by Keuffel & Esser; the best drawing implements out; all warranted true; exchanged if not so. Don't buy imitations.

Chicago News.—Messrs. Armour Dalg & Co.'s immense new corn sheds, cor. of Sixteenth St. and Oakley Ave., are being roofed with H. W. Johns' Asbestos Roofing. More than fifty thousand square feet of roofing are required.

Manufacturers and Patentees of Meritorious Articles should write J. M. M. Conrad, 232 Baltimore st., Baltimore, Md., who has special facilities for introducing new goods.

Drop Forgings. Billings & Spencer Co., Hartford, Ct.

T. New, 32 John St., New York, has sold and applied over fifty million feet of his Prepared Roofing, the major part being placed upon manufacturing establishments.

Agents Wanted.—None but intelligent and energetic need apply. Must furnish good recommendations, or no notice will be taken of applications. Exclusive territory will be given up to May 15, 1882. Agents are now making from \$10 to \$15 a day. Address, for terms, The Infallible Coin Scale Co., 267 Broadway, New York city.

Improved Skinner Portable Engines. Erie, Pa.

Jas. F. Hotchkiss, 84 John St., N. Y.: Send me your free book entitled "How to Keep Boilers Clean," containing useful information for steam users & engineers. (Forward above by postal or letter; mention this paper.)

Steel Stamps and Pattern Letters. The best made. J. F. W. Dorman, 21 German St., Baltimore. Catalogue free.

Draughtsman's Sensitive Paper. T. H. McCollin, Phila., Pa.

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

Machinery for Light Manufacturing, on hand and built to order. E. E. Garvin & Co., 139 Center St., N. Y.

For Power & Economy, Alcott's Turbine, Mt. Holly, N. J.

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

Presses & Dies (fruit cans) Ayar Mach. Wks., Salem, N. J.

Latest Improved Diamond Drills. Send for circular to M. C. Bullock, 90 to 98 Market St., Chicago, Ill.

Wood Working Machinery of Improved Design and Workmanship. Cordesman, Egan & Co., Cincinnati, O.

Cope & Maxwell Mfg Co.'s Pump adv., page 263.

Supplement Catalogue.—Persons in pursuit of information on any special engineering, mechanical, or scientific subject, can have catalogue of contents of the SCIENTIFIC AMERICAN SUPPLEMENT sent to them free. The SUPPLEMENT contains lengthy articles embracing the whole range of engineering, mechanics, and physical science. Address Munn & Co., Publishers, New York.

For Mill Mach'y & Mill Furnishing, see illus. adv. p. 252.

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

Presses & Dies. Ferrante Mach. Co., Bridgeton, N. J.

List 27.—Description of 3,000 new and second-hand machines, now ready for distribution. Send stamp for same. S. C. Forsyth & Co., Manchester, N. H., and N. Y. city.

Presses, Dies, Tools for working Sheet Metals, etc. Fruit and other Can Tools. E. W. Bliss, Brooklyn, N. Y.

C. B. Rogers & Co., Norwich, Conn., Wood Working Machinery of every kind. See adv., page 270.

Electric Lights.—Thomson Houston System of the Arc type. Estimates given and contracts made. 631 Arch, Phil

The Sweetland Chuck. See illus. adv., p. 270.

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

4 to 40 H. P. Steam Engines. See adv. p. 285.

Fire Brick, Tile, and Clay Retorts, all shapes. Borgner & O'Brien, M'f'rs, 23d St., above Race, Phila., Pa.

Peck's Patent Drop Press. See adv., page 220.

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

Brass & Copper in sheets, wire & blanks. See ad. p. 285.

The Chester Steel Castings Co., office 407 Library St., Philadelphia, Pa. Can prove by 15,000 Crank Shafts, and 1,000 Gear Wheels, now in use, the superiority of their Castings over all others. Circular and price list free.

Paragon School Desk Extension Slides. See adv. p. 285.

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

Ball's Variable Cut-off Engine. See adv., page 286.

Tight and Slack Barrel machinery a specialty. John Greenwood & Co., Rochester, N. Y. See illus. adv. p. 286.

Patent Key Seat Cutter. See page 285.

Millstone Dressing Diamonds. Simple, effective, and durable. J. Dickinson, 64 Nassau street, New York.

Supplee Steam Engine. See adv. p. 221.

Lehigh Valley Emery and Corundum Wheels are acknowledged to be the safest, freest cutting, and most durable wheels in use. Write for prices, stating sizes you use. L. V. E. W. Co., Lehigh, Pa.

Drop Hammers. Power Shears, Punching Presses, Die Sinks. The Pratt & Whitney Co., Hartford, Conn.

Saw Mill Machinery. Stearns Mfg. Co. See p. 286.

THE SCIENTIFIC BASIS OF NATIONAL PROGRESS, INCLUDING THAT OF MORALITY. By George Gore, LL.D., F.R.S. London: Williams & Norgate.

Dr. Gore's thesis is that nations advance by new knowledge. The investigator discovers some new matter, combination, fact, or law; the inventor promptly applies it to the advancement of national wealth and power. The investigator and inventor may be one person; but in all cases the discovery precedes the application. And while the application brings wealth to the inventor, the investigator, pure and simple, usually gains little or nothing. Hence the necessity of making special provisions for the promotion of original scientific research, the direct source of the new knowledge whence comes all national progress, moral as well as material.

THE OCCULT WORLD. By A. P. Sinnett. Boston: Calby & Rich. \$1.

Mr. Sinnett writes very earnestly and confidently of the magical power and knowledge of the adepts of "Occultism;" of the Theosophical Society and their recent performances in India; and of the teachings of occult philosophy. He seems always on the point of telling something credible, but he never does. The rational mind of the West, unlike that of Asia, is more impressed by evidence than by sheer assertion, however bold; and it will require something more than tricks with cigarettes and saucers to convince the Western World that the adepts of "occultism" have unlimited knowledge and power to work miracles at will.



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.

Correspondents sending samples of minerals, etc., for examination, should be careful to distinctly mark or label their specimens so as to avoid error in their identification.

(1) Mrs. S. M. A. asks: What kind of tools are commonly employed in the manufacture of artificial flowers? A. The principal tools used by artificial florists are: Stamps, an arrangement of knives of various sizes and shapes by means of which leaves and petals are cut out. The material to be shaped is laid, folded several times, upon a leaden table, and the stamp is driven through it with a hammer or mallet. This part of the work is usually done by men. Moulds called veiners, as the name indicates, employed to vein the leaves; burnishers of glass or agate give the leaves the appearance of most real foliage and flowers. As a rule, the florists' fingers, guided by taste and skill, are found better than other mechanical appliances. The best flowers are painted by hand. See "Dictionnaire Universel du XIX. Siecle," Larousse, art. "Fleurs Artificielles;" and "Art of Making Paper Flowers," by Mrs. Bartlett (New York).

(2) F. A. A. asks: Do you know of any metal or combinations of metals that will not expand and contract with the heat and cold, and which will have a degree of hardness equal to steel drawn to a low blue? I think I have heard that palladium is not affected. A. We know of no such metal or alloy. Palladium, in common with other metals, is alterable by variation, of temperature. Consult Gutter's "Metallic Alloys."

(3) J. V. C. asks: What size engine will I need to drive a portable saw mill for sawing three foot maple logs? A. It will depend upon the quantity you wish to saw per day. You may use a 15 horse engine or a 40 horse engine. A good 20 horse power engine will saw about 10,000 feet per day.

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

W. H. G.—No. 1. Quartz and pyroxene. No. 2. Altered quartzose rock, containing a little selenite. No. 3. Red jasper. No. 4. Vein quartz with calciferous clay selvage. No. 5. A ferruginous quartz rock. Nos. 2, 4, and 5 may contain traces of precious metals. Assays will be necessary to determine this.—W. M. E.—It is an impure hornblende rock and probably contains nothing of value.—A. E. U.—Sample of "fiber" received, but no letter.—H. Z.—Hematitic argillite, containing a small quantity of molybdenite.—H. A. I.—It is a common clay slate—not what is sometimes called "blossom." It cannot be strictly considered as an indication of coal.—Rev. H. C. S.—It is a nodule of partially altered iron pyrites, iron sulphide. Not valuable.—J. V. McC.—It is sulphide of iron, pyrites, of very little value.—R. W.—The ochre is of fair quality, but somewhat coarse and gritty. It will be necessary to grind it finer. Address some manufacturer of paints.

COMMUNICATIONS RECEIVED.

On the Liver Fluke. By R. W. S. On the Explosion of a Sawmill Boiler. By H. J. B.

INDEX OF INVENTIONS FOR WHICH Letters Patent of the United States were Granted in the Week Ending April 18, 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., 351 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.

- Adding machine, F. Plumb..... 256,591
Advertising table, W. Wilson..... 256,728
Amalgamator, C. Pontez..... 256,733
Apparatus for administering injections, P. V. Schenck..... 256,745
Atomizer, J. Beggs..... 256,621
Auzer, earth, W. Brunner..... 256,457
Axle lubricator, vehicle, E. Firth..... 256,664
Axle skein, J. & P. Herrmann..... 256,681
Axle skein, wagon, J. Sandage..... 256,744
Bar, See Chain cross bar.
Barrel, J. J. Lück..... 256,491
Battery, See Galvanic battery.
Batting, Smith & Beale..... 255,903
Bed bottom, E. B. Hull..... 256,684
Bed fastening, P. Forg..... 256,560
Bedstead, F. G. Ford..... 256,686
Bedstead, bureau, Maasch & Bertram..... 256,712
Bedstead, wardrobe, E. Ortlepp..... 256,497
Beer, cooling, D. W. Davis..... 256,550
Beer drawing apparatus, C. A. Maus..... 256,717
Beer, manufacture of root or tonic, L. Becker..... 256,536
Bell for table ware, call, Miller & Berry..... 256,722
Bell, gong, G. B. Owen..... 256,727
Belt, electric, T. W. Williams..... 256,526
Betting, method of and implement for uniting the ends of, W. M. Whitling..... 256,525
Bier, C. J. Everhard..... 256,472
Billiard cue tips, clamp for holding, J. Reckten-walt..... 256,531
Binder, temporary, J. A. Berstler..... 256,626
Boiler, See Steam boiler. Wash boiler.
Boiler tubes, device for cutting, J. J. Franklin..... 256,474
Bolt, See Spring bolt.
Bolt threading machine, C. H. Graham..... 256,675
Bookcase, revolving, D. M. Schell..... 256,600
Boot or shoe, rubber, W. Cable..... 256,544
Boot, seamless felt, M. R. Bissell..... 256,538
Boring, apparatus for subaqueous, T. English..... 256,658
Box, See Cigarette box. Syringe box.
Box fastener, G. S. Randall..... 256,737
Brace, See Chair brace.
Bracket, See Dental bracket. Shelving bracket.
Brake, See Car brake.
Brush, D. A. McDonel..... 256,582
Buckle and snap hook, combined, W. M. Morse..... 256,725
Buckle, back band, J. A. Lowe..... 256,805
Burial case, J. H. Hedenberg..... 256,565
Burner, See Hydrocarbon burner.
Butter mould, J. De Carly..... 256,467
Button, G. K. Webster..... 256,775
Button setting machine, A. Appler, Jr..... 256,659
Cab, F. Forder..... 256,473
Can, See Cracker and grocer's can. Refrigerating can.
Cane mill, sugar, D. Stewart..... 256,759
Car brake, J. B. Bray..... 256,635
Car brake, J. Meissner..... 256,720
Car brake, A. C. Springer..... 256,604
Car brake, railway, C. E. Kendall..... 256,485
Car, cattle, E. Kohler..... 256,707
Car coupling, P. A. Aikman..... 256,531
Car coupling, S. & R. S. Tappenden..... 256,762
Car coupling, F. Voegtle..... 256,770
Car coupling tool, B. Askew..... 256,611
Car, railway, C. H. Bradley..... 256,631
Car, safety, A. A. Starr..... 256,757
Car shunter, L. Collins..... 256,545
Card grinding machine, J. J. Hoey..... 256,687
Carrier, See Lantern carrier.
Cartridge primer, A. J. Hobbs..... 256,684
Case, See Bookcase. Burial case. Cell case.
Caster, trunk, J. J. Cowell..... 256,643
Catheter, double, E. Pfarre..... 256,590
Cell case, I. Nichols..... 256,726
Chain cross bar, S. Davidson..... 256,649
Chain, drive, J. M. Dodge..... 256,552
Chair, See Reclining chair.
Chair brace, J. A. Gallagher..... 256,562
Chandelier, S. S. Newton..... 256,587
Chandelier, lamp, J. A. Everts..... 256,680
Channel and feather cutter, P. F. Barry..... 256,454
Check register, A. H. Austin..... 256,534
Check row attachment, Cox & Morrisey..... 256,547
Chuck, drill, G. Rehfsuss..... 256,739
Chuck, planer, G. B. Durkee..... 256,656
Churn dasher, C. Friedeborn..... 256,667
Cigarette, S. Jacoby..... 256,483
Cigarette box, G. Gollasch..... 256,673
Clamp, See Saw handle clamp.
Clamp, J. S. Adams..... 256,530
Cleaner, See Grain cleaner.
Clock movement, F. A. Lane..... 256,708
Clocks, striking device for electric and other, A. Lemoine..... 256,709
Clothes horse, H. M. Sweet..... 256,513
Cockle separating machine, W. E. Gorton..... 256,674
Coffee and nut roaster, T. F. McCaffrey..... 256,718
Coffin, C. H. Olson..... 256,496
Coloring matter, production of, C. H. Rudolph..... 256,599
Column, shaft, girder, etc., H. J. Harrison..... 256,478
Condenser, W. D. Hooker..... 256,479
Condenser, steam, C. P. Deane..... 256,451
Cork extractor, W. Meyer..... 256,721
Corral, portable, C. A. Tarragon..... 256,661
Coupling, See Car coupling. Trace coupling.
Cracker and grocer's can, combined, C. F. Mark-land..... 256,806
Cramping machine, S. A. Gould..... 256,475
Crushing and grinding limestone rock, etc., machine for, J. Hause..... 256,678
Culinary vessel, W. H. Daniell..... 256,643
Cultivator, R. H. Avery..... 256,612
Cultivator, S. A. Batson..... 256,455
Cultivator, E. E. Bostwick..... 256,542
Curtain fixture, H. Farley..... 256,557
Curtain fixture, W. P. Putnam..... 256,736
Cuspidor, H. F. Malloy..... 256,492
Cuspidor, H. L. Palmer..... 256,589
Dental bracket, H. C. Merrill..... 256,538
Dental engine hand piece, W. H. Kimball..... 256,675
Die and die stock, J. Gassmann..... 256,669
Display rack, folding, J. Smith..... 256,811

- Dock, floating dry, L. C. Watts..... 256,608
Door lock and latch, O. Flagstad..... 256,665
Drawer lock, F. W. Mix..... 256,723
Drawers or tights, R. M. Appletton..... 256,532
Drier, See Fruit drier.
Drier, G. F. Robinson..... 256,503
Drill, See Grain drill. Rock drill.
Drum strap, A. Voegel..... 256,520
Drying and heating apparatus, A. Dreyfus..... 256,665
Dyeing purposes, ink for, Reid & Eastwood..... 256,596
Electric light, C. P. Hoenack..... 256,686
Electric light carbon, J. B. King..... 256,593
Electric light guard, W. McDeavitt..... 256,581
Electric machine, dynamo, G. H. Bangs..... 256,618
Electric machine, dynamo, E. Weston..... 256,718
Electric machine, dynamo, L. G. Woolley..... 256,786
Electric motor, J. D. Kiely..... 256,704
Electric signal transmitter, J. King..... 256,486
Electro-magnetic motor, L. G. Woolley..... 256,784
Elevator, See Hydraulic and pneumatic elevator. Wood and coal elevator.
Elevator, S. H. Thornton..... 256,517
Ellipsograph, E. E. Clark..... 256,462
End gate, wagon, G. Quick..... 256,593
Engine, See Logging engine. Pulp engine.
Extractor, See Corn extractor.
Faucet, J. H. Howes..... 256,480, 256,481
Faucet, water, J. Stephenson..... 256,510
Fence nail, wire, C. W. Dean..... 256,466
Fence nail, wire, S. Leonard..... 256,488
Fence rail, barbed metallic, G. C. Baker..... 256,585
Fence wire machine for making barbed, Con-verse & Cady..... 256,794
Fertilizer distributor, J. L. Bergen..... 256,625
Fertilizer distributor, J. M. Heulings..... 256,739
File, paper bag, L. R. Witherell..... 256,527
Flood gate, O. M. Hemingway..... 256,680
Fork, See Lifting fork. Pitch fork.
Fountain, See Wash boiler fountain.
Frame, See Harvester frame. Saw mill frame.
Fruit cleaning machine, Rice & Ovens..... 256,598
Fruit drier, W. J. Bacon..... 256,615
Fruit drier, Burnett & Hill..... 256,459
Fuel, artificial, J. T. Jackson..... 256,572
Furnace, See Glass melting furnace.
Furnace feeder, automatic, A. Waters..... 256,522
Furnace for treating the ores of mercury, Hall & Haskins..... 256,677
Furnace grate bar, crucible, Schöndorf & Preib..... 256,507
Furnace linings and bottoms, composition for refractory, A. E. Tucker..... 256,607
Galvanic battery, G. M. Hopkins..... 256,691
Game apparatus, G. R. Spear..... 256,756
Gas and electric lamp fixture, combined, E. H. Johnson..... 256,701
Gasgenerating apparatus, E. B. Reynolds..... 256,741
Gas governor for vulcanizers, T. Shaw..... 256,508
Gate, See End gate. Flood gate.
Generator, See Steam generator.
Glass melting furnace, F. Siemens..... 256,748
Glass sirup can and mould for making the same, Fuerehake & Brady..... 256,663
Glove, H. S. Flood..... 256,558
Glycerine and apparatus therefor, process of extracting, B. T. Babbitt..... 256,613
Glycerine from salt soap lye, extracting, B. T. Babbitt..... 256,614
Grain binder, N. T. Remy..... 256,808
Grain cleaner, S. Truax..... 256,769
Grain drill, H. P. Tenant..... 256,764
Grain drill, force feed, H. P. Tenant..... 256,763
Grate, sifting, James & Dunbar..... 256,698
Grinding mill roll, R. Birkholz..... 256,638
Ground roller, J. Steislinger..... 256,758
Guard, See Electric light guard.
Gun, bomb, P. Cunningham..... 256,548
Handle, See Trunk handle.
Harrow, J. H. Barley..... 256,619
Harvester, T. A. Jones..... 256,484
Harvester, O. Simpson..... 256,751
Harvester frame, P. Hanson..... 256,477
Hat sizing machine, M. Chittenden..... 256,461
Hay loader, G. W. Le Vin..... 256,710
Hay rake, sulky, W. P. Pull..... 256,735
Heater, See Photographic silver bath heater.
Hinge, gate, I. Gaston..... 256,670
Holder, See Lathe cutter holder. Lead and crayon holder. Sash holder.
Hoop making machine, J. B. Dougherty..... 256,468
Hot water or steam main or pipe, R. H. Buel..... 256,543
Hydrants and water mains, electric alarm for, U. Thompson..... 256,516
Hydraulic and pneumatic elevator, Johnson & Bailey..... 256,702
Hydrocarbon burner, E. N. Dickerson, Jr..... 256,551
Inhaler, J. H. Nelson..... 256,495
Insect destroyer, W. L. Waddy..... 256,771
Iron, See Sad iron.
Iron and other plates, apparatus for galvanizing and coating sheet, J. Mulholland, Jr..... 256,494
Journal bearing, W. L. Clark..... 256,463
Key, See Telegraph key.
Knife, See Skinning knife.
Knitting machines, stop motion for circular, R. M. Appletton..... 256,530
Lacing stud, S. Montgomery..... 256,585
Lamp, D. Bennett..... 256,624
Lamp chimney, J. B. Döbelmann..... 256,796
Lamp chimney, H. L. Hawes..... 256,679
Lamp, electric, C. P. Hoenack..... 256,685
Lamp, electric, C. T. Holloway..... 256,690
Lamp, electric, E. J. Houston..... 256,693
Lamp, electric, L. Sexauer..... 256,746
Lamp, electric, E. Thomson..... 256,605
Lamp, electric, L. G. Woolley..... 256,785
Lantern carrier, A. J. Curtis..... 256,647
Lard and tallow tank, J. K. Martin..... 256,715
Latch, gate, L. L. Lightcap..... 256,577
Lathe, button turning, G. L. Pallatt..... 256,588
Lathe cutter holder, F. N. Gardner..... 256,688
Lead and crayon holder, J. Illfelder..... 256,802
Lifting fork, G. W. McDannold..... 256,719
Light, See Electric light.
Link, swivel, D. F. Spangler..... 256,755
Lock, See Door lock. Drawer lock. Nut lock. Seal lock.
Logging engine, J. Dolbe..... 256,553
Lubricator, See Axle lubricator.
Lubricator, M. D. Miller..... 256,807
Lubricator, A. Weber..... 256,619
Lumber from the crib, apparatus for drawing, J. W. Stillwell..... 256,511
Mail bag fastening, E. A. Brandau..... 256,529
Manger, O. C. Burdick..... 256,536
Marking and cutting instrument, combined, E. C. Holley..... 256,689
Measure, dimension, R. Wittmann..... 256,783
Mechanical movement, J. B. Bray..... 256,633
Metal breaker, drop, E. S. Wenrich..... 256,777
Metals, ornamenting, J. D. Planchamp..... 256,723
Millstone driver, J. H. Wooster..... 256,797
Mould, See Butter mould.