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 asearly as Thursday morning to appear in next issue.

The Hat Holder Patent, illustrated on page 198, will be let on royalty, or a part interest sold.

Wanted -First-class metal pattern-maker. familiar with gating and making small metal patterns. Address St. Louis Malleable Iron Co., St. Louis, Mo.

Gear Wheels for Models (list free); Experimental Work, etc. D. Gilbert & Son, 212 Chester St., Phila., Pa.

Another Victory!-In spite of all competition the contract for furnishing (7,000) seven thousand feet iron fence to inclose Woodland Avenue Cemetery, at Cleve-land, O., was on March 5, 1883, awarded to Champion Iron Fence Company, Kenton, Ohio.

The Ide Automatic Cut-off Engine, designed for driving electric lights and furnishing steady, reliable power; high speed; superior construction; economy in fuel guaranteed. A. L. Ide, Springfield, Ill.

Read the Electrical Review, advertised in this issue. Comfort Dinner Pails -Most convenient in use. For sale everywhere. Reardon, Ennis & Co., Troy, N. Y.

For Sale Cheap.—New and second-hand engines, boilers, pumps, pipe, etc. Address Young & Locke, 68 and 70 South FranklinStreet, Titusville, Pa.

The following letter from a well known dealer in building materials will explain itself:

AKRON. O., February 24, 1883. -: In reply to your request to give you my opinion of H. W. Johns' l'aints. I take pleasure in stating that I have been handling these paints for nearly eight years, keeping them on sale in all the different shades and using them in my building business. and I have no hesitancy in saving I believe them to be the cheapest and best paints in use, not excepting pure lead and oil. They are cheaper because they will spread over more surface and cover better. I know to a certainty that two coats will cover better and last longer than three of any other paint, and it will outwear and retain its luster and color better than any other. I have tried many kinds of paint, and had concluded before using these that pure lead and oil was the only reliable paint, but after years of experience lam entirely satisfied that these paints are much better and more economical to use

D. W. THOMAS.

Storage Electricity, \$1; Dictionary Electricity, \$2. All inventions described. Best out. School Electricity, N.Y. American Fruit Drier. Free Pamphlet. See ad., p. 189.

Am. Twist Drill Co., Meredith, N. H., make Pat. Chuck Jaws, Emery Wheels, Grinders, automatic Knife Grinders. The Chester Steel Castings Co., office 407 Library St.,

Philadelphia, Pa., can prove by 20,000 Crank Shafts and Castings over all others. Circular and price list free.

Brass & Copper in sheets, wire & blanks. See ad.p. 190. The Improved Hydraulic Jacks, Punches, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

Diamond Engineer, J. Dickmson, 64 Nassau St., N.Y. Tight and Slack Barrel Machinery a specialty. John Greenwood & Co., Rochester, N. Y. See illus. adv. p. 190. For best Portable Forges and Blacksmiths' Hand Blowers, address Buffalo Forge Co., Buffalo, N. Y.

Cutters for Teeth of Gear Wheels formed entirely by machinery. The Pratt & Whitney Co. Hartford, Conn. Catechism of the Locomotive. 625 pages. 250 engravings. Most accurate, complete, and easily understood book on the Locomotive. Price \$2.50. Sendfor catalogue of railroad books. The Railroad Gazette, 73 B'way, N.Y. C. B. Rogers & Co., Norwich, Conn.. Wood Working Machinery of every kind. See adv., page 190

20,000 Duc Spherical Elevator Buckets, sizes 31/2 to 17 inches, constantly on hand. Telegraphic orders filled. T. F. Rowland, sole manufacturer, Brooklyn, N. Y.

First Class Engine Lathes, 20 inch swing, 8 foot bed now ready. F. C. & A. E. Rowland, New Haven, Conn. Scientific Books. See page 188. 100 page Catalogue free. E. & F. N. Spon, 44 Murray Street, N. Y.

Permanent Exposition .- Inventors' Institute, Cooper Union, N.Y. City. Every facility for exhibition of machinery, merchandise, and inventions. The expense is small—the advantages great. Send for particulars.

Drop Forgings, Billings & Spencer Co. See adv., p. 173. For Pat. Safety Elevators, Hoisting Engines, Friction Clutch Pulleys, Cut-off Coupling, see Frisbie's ad. p. 174. For Mill Mach'y & Mill Furnishing, see illus. adv, p.172. See New American File Co.'s Advertisement, P. 174.

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Sox 423. Pottsville, Pa. See p. 172.

Steam Pumps. See adv. Smith, Vaile & Co., p. 172.

Common Sense Dry Kiln. Adapted to drying of all material where kiln, etc., drying houses are used. See p.174.

Contracts taken to manuf. small goods in sheet or

Lightning Screw Plates, Labor-saving Tools, p. 156.

Woodwork'g Mach'v. Rollstone Mach. Co. Adv., p. 158.

Nickel Plating .- Sole manufacturers cast nickel anodes, purenicke salts, polishing compositions, etc. Complete outfit for plating, etc. Hanson & Van Winkle, Newark, N. J., and 92 and 94 Liberty St., New York.

Guild & Garrison's Steam Pump Works, Brooklyn, N. Y. Steam Pumping Machinery of every descrip-

Lists 29, 30 & 31, describing 4,000 new and 2d-hand Machines, ready for distribution. State just what machines wanted. Forsaith & Co., Manchester, N. H., & N. Y. city.

Forsaith & Co., 209 Centre St., N. Y. city. have the following new, first-class modern engine lathes ready for \$750. With a large stock of other machine tools.

Magic lanterns, stereopticons, cond. lenses, etc., on hand and made to order, C. Beseler, 218 Centre St., N. Y.

Railway and Machine Shop Equipment, Send for Monthly Machinery List to the George Place Machinery Company 121 Chambers and 103 Reade Streets, New York.

Improved Skinner Portable Engines. Erie, Pa. 25" Lathes of the best design. G. A. Ohl & Co., East Newark, N. J.

For Power & Economy, Alcott's Turbine, Mt. Holly, N. J. "How to Keep Boilers Clean." Book sent free by James F. Hotchkiss, 84 John St., New York.

Engines, 10 to 50 horse power, complete, with governor. \$250 to \$550. Satisfaction guaranteed. More than seven hundred in use. For circular address Heald & Morris (Drawer 127), Baldwinsville, N. Y.

Wanted .- Patented articles or machinery to make and introduce. Gaynor & Fitzgerald, New Haven. Conn Latest Improved Diamond Drills. Send for circular to M. C. Bullock Mfg. Co., 80 to 88 Market St., Chicago, Ili.

Water purified for all purposes, from household supplies to those of largest cities, by the improved filters manufactured by the Newark Filtering Co., 177 Commerce St., Newark, N. J.

Ice Making Machines and Machines for Cooling Breweries, etc. Pictet Artificial Ice Co. (Limited), 142 Greenwich Street. P. O. Box 3083, New York city.

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

Machinery for Light Manufacturing, on hand and built to order. E. E. Garvin & Co., 139 Center St., N. Y Presses & Dies. Ferracute Mach. Co., Bridgeton, N., J.

Supplement Catalogue.-Persons in pursuit of information on any special engineering, mechanical, or scientific subject, can have catalogue of contents of the Sci-ENTIFIC 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.



HINTS TO CORRESPONDENTS.

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

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 15,000 Gear Wheels, now in use, the superiority of their 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 nurely 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 Supple-MENT referred toin 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 identi-

(1) W. B. writes: 1. I read that lead put in sweet oil and set in the sun would make good oil to use on a gun. After it has been in the sun a number of days a white sediment falls. What is this sediment? A. We cannot tell what the white sediment is; probably a combination of lead with some acid contained in the oil. 2. Is there any quicker way to make the oil than by the sun? A. None. 3. Is this oil poisonous if it was taken by accident? A. The lead is poisonous, but the mixture would probably be harmless. 4. Will it hurt guns in any way by using it on the works or barrel? A. No.

(2) C. H. D. asks: What benefit is it to have castings blued? I think it opens the iron, and the japan adheres to it. If there is any benefit derived from it, please state it through your paper. How much heat is required for japanning sewing machine work black, brown, white, green, and blue? A. The heating of iron work, or bluing as it is called, is to make the japan take evenly, and also to clear the work of any oil or grease that may remain in the corners or on the porous surface, which interferes with evenness of drying. The heat required must be suited to the kind of japansused, and must be ascertained by trial, as the same kinds and colors of japans made by different establishments will cast brass steel, or iron. Estimates given on receipt of model. H. C. Goodrich, 66 to 72 Ogden Place, Chicago. ored japans require from 200° to 240°, according to the nature of the pigments, oxides generally drying easier than carbonates or sulphates.

(3) S. W. asks: 1. What are the component parts of smoke, or of what gases is it composed; and in what proportion, both of wood and coal, and what is it that is in the smoke or passes off with it that is incombustible? If the oxygen of the air in passing through the fuel causes its combustion and is burned with it, what becomes of the nitrogen? A. The results of a perfect combustion of either wood or coal are carbon dioxide and water, but as there is generally insufficient oxygen to combine the carbon, small particles of it pass off and color the smoke. Nitrogen is inert, and has no effect on the combustion at all. 2. Is there anything that passes off from the burning fuel that is not comthat passes off from the burning fuel that is not com-instant shipment: 6' x 16'', \$300; 6' x 18'', \$25; 8' x x 18'', \$345; 9' x 18'', \$355; 18' x 18'', \$355; 8' x 20'', \$375; 12' x 20'', bustible; or can everything that escapes from the fuel \$415; 8' x 22", \$550; 14' x 26", \$700; 16' x 26", \$736. Also, or that passes out of the smokestack, be burned or utiof new first-class upright drills, as follows: 18", \$110; 20", lized? A. Most combustions are imperfect, and there-\$150; 24", \$185; 22", \$315; 32", \$365. One 48" radial drill, fore it frequently happens that vapors pass out of the chimney without being consumed. 3. Has water gas (i.e., James Hamblet, Electrical Clocks. P. O. Box 1414, N.Y. decomposed water) ever been used to any advantage in making or assist in making steam; or is there any "Abbe" Bolt Forging Machines and "Palmer" Power known way of using it to be a benefit? A. Water gas is Hammers a specialty. Forsaith & Co., Manchester, N.H. in common use for illuminating and heating purposes.

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

F. G.—The sample is iron sesquioxide (limonite) containing iron sulphide (pyrites). The latter may contain gold. An assay would cost \$5. A simple determination of the amount of iron would be the same.—G. L. N.— The specimen is a clay iron ore. It is composed of pyrites (iron sulphide) which has become oxidized externally by the influences to which it has been subjected. -A. B C.-The powder has the appearance of being a micaceous mineral pulverized. We do not think that it contains sufficient alumina to be of any service as a material for fire brick.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

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

March 13, 1883.

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 25cents. 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 band.

Advertising device, card and picture holder, E.

	Advertising device, card and picture holder, E.	
	W. Taylor	
	Amalgamating and concentrating ores, machine	
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•	Amalgamator, dry, I. Stead	
	Ambulance, J. E. Wilkie	273,925
3	Axle box, car, C. M. & R. M. Wood	
	Axle luhricator, F. C. Hockensmith	273,990
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,	Bag. See Paper bag. Balcony, adjustable, W. Donegan	973 893
Į	Baie tie, W. R. Williamson.	
ì	Baking powder, W. P. Clotworthy	273,958
ì	Bar. See Grate bar.	
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r	Basket, J. H. Marvil	273,004
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3	Bessemer converter, S. G. Thomas	274,055
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,	Blast furnace, W. Kent Blind for skylights, O. N. Medgarden	974019
, !	Blind stop, G. Beverly	273.937
1	Blue, manufacture for anthracene, H. Brunck	274,081
į	Boat. See Life boat. Submarine boat.	
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, !	Boot and shoe lasting jack or holder, Z.T. French	274.091
. !	Boring machine, wood, J. M. Nash	274,020
- !	Bottle stopper and fastening, W. H. Bate	
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i	Box. See Axle box. Post office box. Box fastener, S. & M. E. Martinelli	079 009
,	Box or case, J. Sheehey	
,	Brake. See Car brake. Friction brake. Wagon	
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ì	Brewers' shavings, A. Lachenmeyer	
١	Broom, E. Q. Bowman	273,941
·	Broom, R. W. Harper	
۱!	Brush, shoe, J. D. Moore	274,016
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.	Button setting instrument, J. F. Thayer	
.	Button, sleeve. S. C. Howard	273,844
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:	Car brake, electro-magnetic, H. S. Park	
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Pocket, safety, J. Geary Portable tank and pump, combined. N. Vizelich Post. See Drilling machine post. Fence and tele-		Toy cap exploder. D. H. Murphy	273,956
graph post. Post office box, J. A. Howe	273,992	Tube. See Radiator tube. Tube fagot, A. I. Murphy	
Potter's table and carriage, combined, M. W. Jordan Press. See Veneer press.	274,001	Tube heating furnace, R. H. Brown Tug, hame, M. E. Lasher Twine holder, M. E. Stephenson	273.743 274,047
rinted sheets, drying, G. D. Carroll		Valve, balanced slide, E. T. Conrad Valve, balanced slide, W. T. Reaser 273,691, Valve gear, steam engine, G. L. & E. Hoxsie	273,892
Protector. See Plant protector. Pulley for use in connection with awnings, etc., P.	214,004	Valve, step, T. Hennessy	273,839
C. Rowe Pulverizing machine, S. P. M. Tasker Pulverizing machine hopper, H. B. Feldmann	274,050	Vehicle sand band, W. M. Farr	274.098
Pulverizing machine hopper, H. B. Feldmann Pulverizing machine hopper, S. P. M. Tasker Pump, G. M. Conway	274,05i	Vehicle wheel, M. C. Johnson	273,850
Pump, J. Harris	274.061	Veneer press, R. Goff	
Pump, rotary, G. W. Hunter	į	Wagon body, Coutant & Benson	273,967
Radiator tube, steam, J. Keefe	279,735	Washboiler, D. Bunker	273,809 273,866
Railway rail joint, J. W Ollis	273,865	Wash beiler, W. A. Wright Wash stand, E. F. Collins Washing machine. Strader & Wittich	273.710
Railway switches and rails, brace for, F. C. Weir Railways permanent way of, J. Whiteford	273,786 273,925	Washing machine, J. Wilson	274,072 273,759
Reaming machine, hand, M. Flather		Watch, dust-proof. A. Bitner	
gasregulator. Temperature regulator. Rein guard, C. R. Chute		Water, purifying G. S. Strong	273,777
Revolver, H. Goodman	· .	positionfor. H. Trenk	
Road engine, F. D. Pierce	274,024	Wind engine, J. L. Walker	273,920 273.796
Roller. See Land roller. Roofing compound, Bushey & Woodcock Rotary engine, C. P. Case:		Wire barbing machine, Hedge & Noble Wire, machine for making barbed, N. G. Ross Wire springs, machine for forming, R. S. Baldwin	273,765
Rotary engine and pump. N. N. Tverskoy Bafe, kitchen, F. X. Ober'e	273,916	Wood, solution for seasoning and preserving, J. Loomis	273,861
alt water preparatory to purifying and evaporat- ing the same, apparatus for heating, M. R. Haves	273,988	Wooden plate, S. H. Smith	

17	DESIGNS.	i
30	Chain link, ornamental, S. L. Lederer 13,718	i
	Chain, ernamental, W. Ballou	ı
01	Chain, ornamental, W. W. Briggs 13,715	i
20	Cretonne, G. W. Fries	ı
79	Dish, china or earthenware, J. Chetwynd 13,716	ı
30	Fringe, J. Goodman	ļ
142	Jewelry, H. Untermeyer	ı
84	Oil cloth. C. T. & V. E. Meyer	ı
74	Statuary, monumental, M. Muldoon	ı
82	Stove, W. L. McDoweil	ł
55	Stove, laundry, J. Ringen	ļ
55	Type, J. A. St. John	ı
45		į
54	TRADE MARKS.	ļ
54	Alcohol, wood, American Chemical Company 10,117	ı
54	Cigarette paper, L. Lacroix. Fils	ı
88	Drugs and chemicals, C. Lowe & Co	ı
	Flour, wheat, H. B. Crosby & Son 10.112	ļ
27	Ink, writing, Carter, Dinsmore & Co	ļ
	Liniment for internal or external use, C. A.	ļ
90	Vogeler Company	ı
77	Licorice paste, D. V. Arguimbau10,109, 10,111	i
81 47	Licorice paste in sticks, D. V. Arguimbau 10,110	ı
58	Lubricants, Leib Lubricating Company 10,113	ı
21 ·	Medical tea, A. Sicre	ļ
21	Mucilage, Carter, Dinsmore & Co	!
36	Mustard, Wolff & Reessing	1
90	Oils, Americating, Bliven & Carrington	
95	Oils, lubricating, Leib Lubricating Company 10.114	
15	Perfumery, H. Tetlow & Bro	
72	Tubing (of rubberorgas-tight composition), Union	
83	Tubing Company 10,115	
02	Waterproof jackets, pants, and coats, H. M. Saw-	į
26	yer	:
1 6 :	Whalebone, B. Seligman	i
32	Writing fluid, Carter, Dinsmore & Co	ī
34	Witting Huld, Carter, Dinsmore & Co	İ
87	Advertisements.	I
	"些产价",文学的身份文明和文化有一个	I
80	Inside Page, each insertion 75 cents a line,	l
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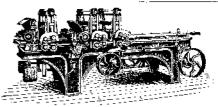




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