NEW BOOKS AND PUBLICATIONS.

NINTH ANNUAL REPORT OF THE STATE BOARD OF HEALTH OF MASSACHUSETTS. 1878. Boston: Rand, Avery & Co., printers.

The Massachusetts State Board of Health justly ranks as the model institution of the kind in the country. Its reports are always valuable. Among those of 1878, three or four are of general as well as permanent interest; namely, Drainage and Health; Dangers from Color Blindness; The Filtration of Potable Water; School Sanitation; Scarlet Fever.

REPORTS ON THE PHILADELPHIA INTERNATIONAL EXHIBITION OF 1876. Vol. III. London: printed for the Government. 1878. Price 5s.

Vol. III. of the British reports on the Centennial Exhibition contains a list of awards to British and Colonial exhibitors, with the specific recommendations by the judges on which the awards were based; General reports on groups 1, 6, 8, 9, 11, 12, 13, 18, 20, 21, and 25; and the report of the director of the Bureau of Medical Service. These volumes contain a vast amount of matter of permanent scientific and industrial interest.

VAN NOSTRAND'S SCIENCE SERIES: New York: D. Van Nostrand, 1879.

The recent numbers of this useful series are No. 40, The Transmission of Power by Compressed Air, by Robert Zahner, M.E.; No. 41, The Strength of Materials, by William Kent, M.E.; and No. 42, Voussoir Arches applied to Stone Bridges, Tunnels, Domes, and Ground Arches, by William Cain, C.E. Price of each 50 cents.

AMERICAN ALMANAC FOR 1879. Edited by A. R. Spofford, Librarian of Congress. New York: American News Co., 12mo., pp. 420. Price $1.50.

This, the second issue of Mr. Spofford's valuable and convenient treasury of facts, is fully equal to its predecessor. The index covers ten closely printed columns, and refers mainly to skillfully tabulated statements of statistical, financial, and political facts of general and timely interest. Only those who do not read the newspapers will find it easy to do without it.

A POPULAR TREATISE ON THE CURRENCY QUESTION: written from a Southern point of view. By Robert W. Hughes, U. S. Judge of the Eastern District of Virginia. New York: G. P. Putnam's Sons.

An able argument against inflation and in favor of the national banking system. Judge Hughes is a bimetallist, but wants a silver dollar to be all that it pretends to be—a full dollar; and holds that gold and silver have demonstrated their title to be the only material for money by successful competition with all other materials.

HOW TO READ, AND HINTS IN CHOOSING THE BEST BOOKS. By Amelia V. Petit. New York: S. R. Wells & Co.

A book likely to be useful to young readers with unformed critical taste, who wish to read wisely but lack knowledge and experienced guidance.

A POCKET BOOK FOR CHEMISTS, CHEMICAL MANUFACTURERS, METALLURGISTS, DYERS, DISTILLERS, BREWERS, SUGAR REFINERS, PHOTOGRAPHERS, STUDENTS, ETC. By Thomas Bayley. New York E. & F. N. Spon.

Well packed with information of use to chemists, and fairly well indexed. Rather too ambitious and comprehensive for a pocket book, but all the better for a handy book of reference for the student's or the working chemist's table.

THE DESIGN GENERALLY OF IRON BRIDGES OF VERY LARGE SPAN FOR RAILWAY TRAFFIC. By T. C. Clarke, M. Inst. C.E. Edited by the Secretary of the Inst., James Forrest, London: Wm. Clownes & Son.

The Telford prize paper (with discussion) read before the meeting of the British Institution of Civil Engineers, May 21, 1878, by Thomas C. Clarke of Philadelphia. The paper attracted much attention during and after the meeting of the Institution, and was noticed in the SCIENTIFIC AMERICAN. It makes a valuable addition to the literature of civil engineering.

NAUTISCH-TECHNISCHES WOERTERBUCH DER MARINE: Deutsch, Italienisch, Französisch und Englisch. Bearbeitet von P. E. Dabovich, k. k. Schiffbau-Techniker. Herausgegeben von der Redaction der "Mittheilungen aus dem Gebiete des Seewesens," Pola, Austria.

Of this dictionary the first part of vol. I. has appeared. Whoever from necessity or inclination has had occasion to peruse our modern literature on maritime matters, has no doubt felt the want of a dictionary explaining concisely the technical terms occurring in the different branches of naval science. In the above mentioned work this seems to have been successfully accomplished. Part 1, of Vol. I., which covers the terms from "A" to "Ausblasen," contains the synonymous terms for about fifteen hundred German and Italian words in English and French. The Italian synonyms were added, no doubt, because they are of special importance to Austrian mariners, and, although of minor value to us, will be found a valuable addition, especially as the expressions are also given (in brackets) in the peculiar dialect of Austro-Italian seafaring men. The work will be published in two volumes, one of which contains, arranged in alphabetical order, the German and Italian, the other the English and French terms. Each volume will consist of about 8 parts, of about 80 pages each.

THE PRINCETON REVIEW, now one of the strongest periodicals published, gives in its March number nine long and able papers by the late Professor Taylor Lewis, of Union College; Principal Dawson, Montreal; Rev. Phillips Brooks, Boston; Edward A. Freeman, England; E. de Pressense, France; President McCosh, Princeton; P. G. Hamerton, France; Rev. R. M. Patterson, Philadelphia; and Sir Julius Vogel, New Zealand. Of these contributions the second—"The Genesis and Migrations of Plants"; the sixth—"Final Cause"; and the ninth—"The Islands of the Pacific," are of special interest to scientific readers. The Review is now published bi-monthly, in New York (37 Park Row), and gives the matter of a first rate quarterly at the price of a cheap magazine, $2 a year.

THE GOULDS MANUFACTURING COMPANY, of Seneca Falls, N. Y., have issued the 17th edition of their descriptive catalogue of pumps, engines, rams, and other hydraulic machinery. It makes a book of 224 pages, abundantly illustrated, and handsomely printed. Their list embraces a large assortment of suction and lift cistern and well pumps, force pumps, rotary force and fire pumps, rotary gas exhausters for gas works, gas pumps for oil wells, hydraulic rams, garden engines, patent chilled skeins and boxes, steel amalgam bills, Burrall's corn shellers, and other iron goods.

THE BULLETIN OF THE NATIONAL ASSOCIATION OF WOOL MANUFACTURERS for 1878 contains, in addition to the proceedings of the annual meeting of the association, the address of John L. Hayes, LL.D., on the resources of the United States for sheep husbandry and the wool manufacture, delivered before the National Agricultural Congress at New Haven, Conn., August 29, 1878; also an article on sheep husbandry and wool production in the Argentine Republic, communicated by E. Ollendorf, late Commissioner of Agriculture in that republic.

Notes & Queries

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.

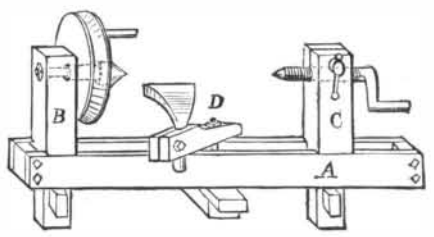
We renew our request that correspondents, in referring to former answers or articles, will be kind enough to name the date of the paper and the page, or the number of the question.

Correspondents whose inquiries do not appear after a reasonable time should repeat them.

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) L. F. C. asks if a lathe can be made entirely of wood excepting the centers. A. The accompanying cut shows a lathe made almost entirely of wood. The bed, A, consists of two wooden bars separated by



blocks at the ends, and fastened together by bolts. The head block, B, consists of a single piece of wood having a tenon which fits between the wooden bars of the bed and is secured by a key. In the head block is fixed a center, on which turns a grooved pulley. This pulley may be used as a face plate, and the chucks used in turning may be attached to it. The tail stock, C, has a threaded spindle passing through it, which may be clamped by the transverse screw to prevent it from turning, the tail stock being split to permit of drawing it together against the spindle. The tool rest is secured in the rest support, D, in a similar way, and the latter is secured by a cross piece and wedge suspended by a bolt. For wood and soft metals this lathe will answer very well.

(2) B. S. S. writes: Given a cylinder of 100 square inches and 32 inches stroke; steam is admitted at 1,000 lbs. and expanded 32 times. 1. What is the mean pressure per square inch? What the aggregate pressure? What the aggregate pressure without cutting off? Same for 100 lbs. steam, expanded 10 times? What is the economic effect and why? Instead of cutting off the 1,000 lbs. at 1 inch, suppose we admit the steam through a very small valve and expand 32 times as the piston travels, will the economic effect be the same? If not, give the reason why. A. Mean pressure 125 lbs., assuming no loss by radiation, condensation, or back pressure. We do not understand your term "aggregate pressure." The mean pressure of 100 lbs., expanding 10 times, is 33 lbs. We do not know of any method of comparing the results of "wire drawing" steam to the cylinder, with those of working steam expansively; but it is known in practice that "throttling," as it is called, will produce higher results with a given consumption of fuel, with an engine working either whole stroke or expansively. 2. Steam is said to be decomposed at 1,000° F., and upward. If we make 14,000 thermal units with 1 lb. of carbon, and use 4,000 units to decompose water into half a pound of hydrogen and 8 lbs. of oxygen, which, on burning, makes 16,000 thermal units, have we not 26,000 units for 1 lb. of coal instead of 14,000 units? Where is the fallacy of the statement? A. For reply to your second query we refer you to Clark's "Manual for Mechanical Engineers," or Rankine's "Steam Engine." 3. Do you know of any experiments testing the amount of steam that may be used to create a draught without injury? The books claim that it costs as much to decompose steam as it is worth. Is this so? A. We know of no such experiments, but we do know that it is the most expensive mode of using steam for producing artificial draught.

(3) W. L. writes: I am a constant and instructed reader of your most valuable paper as well as SUPPLEMENT. I seldom find error, but most reliable information that has given me great pleasure, profit, and satisfaction. In the issue dated March 15, 1879, I find that, in answer to a question by R. B. R., as to the weight of locomotives, you fall into what seems to me grave error. You say the Janus weighed 84 tons. I knew the engine well—saw her wrecked to her destruction. Without positive data, I will say that 84,000 lbs. was her extreme weight. I mean the simple engine, without tender, water, or fuel. I further beg to say that I do not believe that there was ever a locomotive built that weighed over 60 tons, if so much—I mean, as above, the simple locomotive. My experience is that no locomotive of that weight could be made to endure. No steel rail can be made to sustain the running wear of such a weight, nor could metal be found for tire that would stand such a stress. I mean an engine stout enough to make the curves of our American railroads. The Lehigh Valley Railroad Company, at their shops at Weatherly, under the supervision of Philip Hoffecker, the master mechanic, has built several colossal machines, some 10 drivers connected, some 8 drivers connected, with a truck under the front, that do not weigh more than 75,000 lbs., that work on the 150 foot grade and do double the work that the "Janus" did on the same grade. Mr. Hoffecker, as well as all well informed mechanics and railroad men, believe that they are the maximum weight for economy and endurance of the best rail and metal now extant. I would not have written this did I not desire to see the SCIENTIFIC AMERICAN always right. A. You are probably correct; the weight of the engine

only could not have been so great as 84 tons; this weight probably included water in boiler and the tender with water and coal. "Roper" gives the weight of the heaviest locomotive on the Pennsylvania Railroad as 60 tons, and says it is the heaviest locomotive in the world. An engine of the "Consolidation" class, with cylinders 20x24 inches, weighs 96,000 lbs. A medium class passenger locomotive weighs, with water in boiler, from 65,000 to 70,000 lbs., and tender, with water and coal, 46,000 lbs.

(4) W. C. J. writes: I have been experimenting on a plan for a steam gauge; I find it works well and cannot get out of order. As an atmospheric pressure is 15 lbs. per square inch, twice that would be thirty, three times forty-five, and so on. Now, supposing a piston be so constructed that the pressure of the boiler will compress the air in a tight tube and thus show what the pressure on the boiler is. Also to have the cylinder so constructed that when the piston moves up to the required pressure it shall open a port and let the steam escape. Some time ago I wished to purchase a new steam gauge; I took seven gauges for trial, and connected them all to the same boiler at the same time, and no two were alike. Now, as some of them showed as high as 20 lbs. more than others, how could I determine which was right? A. We advise you not to waste your time and money upon your proposed manometer gauge; they have been tried and abandoned long since. Of course you can purchase a cheap (and poor) gauge, as you can a cheap and poor watch. Some spring gauges are like Pindar's razors, not made to use, but to sell.

(5) C. W. K. writes: I wish to ascertain if there is any rule for finding the quantity of cannel coal consumed, with the following data: Size of cylinder 6¼ inches, stroke 8 inches, number of revolutions 120 per minute, at steam pressure of 80 lbs. A. Find the weight of steam used by your engine, in any unit of time, say one minute or one hour; allow cannel coal to evaporate 7·4 lbs. weight of water per pound of coal; divide the weight of steam used by 7·4, result is coal consumed in same time.

(6) "Subscriber" asks if it be safe to use an engine with 80 lbs. steam, the cylinder being little less than ½ inch thick the thinnest part. It is 22 inches long, 10⅜ diameter. A.-Yes, so long as it receives no extra strain or shock; but do not allow water to work through the engine.

(7) C. F. writes: It is said that 2 inch pipe will not discharge any more water under the same head than as many ½ inch pipes, said ½ inch pipes holding the same amount of water. Give us the difference and the reason why. A. 2 inch pipe will discharge most; 16 pipes ½ inch equal in cross area one of 2 inches diameter. The frictional surface of one 2 inch pipe may be represented by 6, and the frictional surface of 16 pipes, ½ inch diameter, by 25—so the resistance from friction will be 4 times as much in the latter as the former.

(8) D. K. E. asks: 1. Could a small steam engine (screw propeller) be put into an ordinary row boat 16x3½ feet? A. Yes, if the screw is properly immersed. 2. What would the engine cost, and how much power would be required to run 4 or 5 miles per hour? A. An engine with 3 inch cylinder would suit. Cost, about $450 with boiler and shafts.

(9) J. N. L. asks: Is a 1½ steam pipe sufficient to run a 9 inch cylinder, 16 inches stroke, steam engine to full capacity; the steam ports are 5 inches long by ⅝ wide, steam pressure 100 lbs. per square inch? A. No; use at least a 2-inch pipe for usual velocity.

(10) E. J. C.—For information on artificial incubation see SCIENTIFIC AMERICAN SUPPLEMENT, No. 54.

(11) J. L. C. writes: I have a tank in my house supplied with water which communicates with a tank 101 feet off in a direct line by a pipe with 1¼ inch bore; the pipe goes down perpendicularly 3½ feet from the house tank and up perpendicularly 5¼ feet into the outside tank; the open end of the pipe in the house is 2 feet higher than the open end of the pipe in the other tank. 1. How much, if any, will the flow of water be increased by lowering the outer end of the pipe, say 1, 2, 3, or 4 feet? A. If the difference in height of open end of pipes is now 2 feet, and you increase it to 4 feet, the flow will be increased about 40 per cent. 2. Will more water pass through an inch perpendicular pipe 10 feet long, than through an inch pipe 1 inch long? A. Yes, if upper ends are at the same level and both supplied from the same tank or reservoir.

(12) J. L. R. asks: 1. Which will yield the greatest amount of heat: 1 lb. of best coal, or 1 lb. of alcohol when burned to best advantage? A. Coal, about 7 per cent more. 2. Why are not low pressure engines used in place of high pressure? Will they not give same power with far less fuel? A. They weigh more, cost more, occupy more room, and do not give much greater economy as the two classes are used in this country. 3. How many pounds will an ordinary horse pull on a straight pull? A. Necessarily indefinite; depends upon the weight of the horse, etc.

(13) S. C. C. asks: When a train of cars are rounding a curve, on which rail is the greater weight thrown, the inside or outside one? A. Outside one.

(14) J. A. H. asks: What can I use to prevent the forming of scales in a boiler? I am compelled to use water from a well which furnishes lime water. A. The mass of lime in your feed water should be separated in the heater; for removing lime scale already formed, use a small quantity of dissolved gum catechu daily, sent in through feed pump; watch carefully its effect, and increase or diminish the quantity as required. A small quantity of oak bark put in the boiler is said to be efficient.

(15) A. H. G. writes: You say in your issue of January 4th, 1879, in obtaining horse power of an engine, multiply area of piston, by pressure of steam, by length of stroke in feet, by double the number of revolutions. Do you not mean: "by revolutions per minute," instead of "double the number of revolutions?" A. No; double the number of revolutions equals number of strokes.

(16) J. H. R. asks: What is the number of threads to the inch in steam pipe? A.:

Inside diameter of pipe.	Threads per inch.
⅛	27
¼	18
⅜	18
½	14
¾	14
1	11½
1¼	11½
1½	11½
2	11½
2½	8
3	8
3½	8
4	8

(17) S. B. & H. W. ask why rotary engines are not more used. A. It is very difficult to keep them tight under continuous use, and in most of them steam cannot be worked expansively, therefore they are not economical.

(18) J. C. asks (1) if there is any way of keeping a cylinder, while in motion, and heated by steam, free from condensation. A. Surround your cylinder with a steam jacket and introduce either live or superheated steam. 2. What kind of journal boxes ought such a cylinder to have, that they may cause no trouble from heating? A. Probably phosphor bronze boxes will be best.

(19) A. M. U. asks for a correct method for laying out a cog or spur wheel. A. See SCIENTIFIC AMERICAN, vol. 38, pp. 36 and 149.

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

H. M. H.—The bead contains copper, lead, antimony, traces of bismuth, and silver. The crystals are anhydrite calcium sulphate.—I. B. R.—It is galena—lead sulphide. It probably contains a small quantity of silver. The heavy mineral is barytes, or heavy spar—sulphate of barytes.—J. A. W.—It is a bituminous shale. It is impossible to make an analysis of any value on two ounces of water.—A. M.—It is a ferruginous quartz—not probably worth assaying. The dark fragment is an argillaceous shale.—The sample of clay in the Estabrook pen box (no name) contains much iron oxide and silica. It may be useful for manufacturing bricks and cheap pottery, tiles, drain pipe, etc.—J. N. W.—The potter's clay is of fair quality. It would be of more value if properly washed. The color is due to oxide of iron.—C.—The metal is lead—it contains a trace of silver. The mineral is muscovite.—C. D.—It is chiefly iron sulphide pyrite, of little value.—J. C.—The sample is the so-called millstone grit. It is too coarse to be of any practical value. Perhaps better stone may be found lower down.

COMMUNICATIONS RECEIVED.

Fence. By G. T. B.
On the Wagon Wheel Question. By G. S. W.
On the Gary Motor. By C. H. H.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

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

March 4, 1879,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

A complete copy of any patent in the annexed list, including both the specifications and drawings, 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.

Air brake relief valve, H. H. & T. C. Osgood..... 212,972
Amalgamator, P. Dickson 212,907
Animal trap, I. R. Spencer..... 212,999
Axle nut, vehicle, G. J. Dykes..... 212,842
Bale tie, J. M. Robertson..... 212,964
Bales, covering for cotton, W. P. Groom 212,925
Baling press, S. Stucky..... 212,823
Baling press, J. M. Tichenor 213,010
Ball trap, T. M. Smith 212,996
Bed bottom, S. Hawker..... 212,930
Bed bottom, W. H. Leininger 212,954
Bed bottom, W. J. Myers 212,816
Bedstead, cabinet, J. W. Stanton..... 213,001
Bee hive, J. P. Karr 212,949
Bee hive, N. Zink..... 212,828
Beer barrel, etc., air supplier, W. F. Class 212,898
Beer cooler, W. Klinefelter 212,951
Blackboard, F. G. Johnson 212,945
Bleaching compound, T. D. Brochocki 212,890
Blind fastener, A. F. Fuller..... 212,920
Blind slat adjuster, O. C. Peck 212,973
Bone grinding mill, T. O. Cutler 212,838
Book case, J. Danner 213,003
Book case, E. J. Smith 212,995
Boot and shoe counter or heel stiffeners, machine for shaping, R. Glover..... 212,923
Boot and shoe stay, A. Seaver (r)..... 8,606
Boot and shoe trimming and burnishing machine, R. C. Lambert 212,853
Boots and shoes, machine for driving staples in lasting, S. Mower..... 212,861
Bottle washer, S. W. Dillin..... 212,841
Breastwork or shield, movable, M. J. Wellman... 212,877
Brick pressing machine, W. L. Hippert..... 212,799
Bridge, P. Jarvis 212,941
Bridle bit, reversible, Holland & McKimm 212,935
Brooms, manufacture of, D. C. M. Barney... 212,785
Brush, hair, F. A. Freeman..... 212,844
Brush, mucilage, J. B. Davids 212,904
Buckle clasp, F. D. Ballou 212,832
Buildings, construction of, H. R. Canine..... 212,894
Butter mould, M. T. Nesbitt 212,970
Candy machine, R. M. Marshall..... 212,811
Car coupling, N. F. Wynkoop 213,023
Car door, grain, Conrath & Knipper..... 212,901
Car door, grain, F. C. L. G. Susemihl..... 213,004
Car replacer, M. S. Shotwell 212,990
Car starter, R. Proctor 212,820
Car wheel, chilled, N. Washburn 212,825
Carbureter, H. S. Maxim..... 212,857
Carding engines to prevent their disintegration, treating rovings on, Haigh & Greenwood.. .. 212,929
Carriage curtain fastener, E. G. Grahn..... 212,924
Cart body, F. H. Trenholm (r) 8,610
Casting steel, mould for, G. Cowing 212,992
Check register, J. Casey 212,788
Chuck, drill, H. S. Pruyn 212,980
Clothes line support, P. Fischer 212,916
Clothes line support, extension, F. Fischlein..... 212,917
Clothes pounder, N. & J. Connoran..... 212,900
Coal slide or chute, G. A. Fall 212,915
Coffee pot, G. F. Hussey 212,801
Coin holder, L. H. Olmsted 212,867
Convertible chair, J. Lee (r)..... 8,604
Cork extractor, L. C. Mumford..... 212,863
Corn stalk cutter, W. Barnes (r)... 8,608
Cradle, A. S. Reisor 212,982
Curtain roller and bracket, Buckley & Sawyer (r). 8,603
Cut-off rain water or other, J. A. Lyons 212,958
Dental chair, H. Woodbury 213,021
Desk and seat, school, G. Munger (r)..... 8,605
Distillation of oils, H. B. Everest..... 212,914
Drawers, E. Levi 212,810
Drum, heating, N. J. Engler..... 212,913
Electric light, Du Motay & Stern 212,860
Electric light, P. O. Jenkins. 212,851
Electric signaling apparatus, E. N. Dickerson, Jr. 212,792
Electrical signaling apparatus, T. N. Vail 212,873
End gate, wagon, J. H. Sifers..... 212,991
Enemas, syringes, etc., of india-rubber, manufacture of, J. G. Ingram 212,939
Engraving machine, J. C. & G. M. Guerrant..... 212,927
Exercising machine F. G. Johnson..... 212,946
Fare register, R. Gornall..... 212,798
Farm gate, T. Alton 212,781
Feather renovator, Lull & Brainerd..... 212,809
Feed water heater, E. Huber 212,936
Feed water heater, G. W. Storer 213,009
Fence post, G. D. Baily 212,784
Fence post, H. S. Palmer..... 212,868
Fence wire barbed, H. M. Vaughan 212,874
File, bill, M. Posz..... 212,979
Fire alarm box, automatic, Pond & Tenney..... 212,818
Fire alarm box, non-interfering, C. H. Pond 212,869
Flue roller and expander, J. H. McGraw 212,964
Fluting bed and roller, M. A. Perrigo..... 212,976
Garter, T. J. Carroll 212,837
Gas apparatus, illuminating, E. J. Jerzmanowski. 212,943
Gas generating apparatus, E. J. Jerzmanowski.... 212,942
Gas retorts, head and lid of, C. W. Isbell 212,940
Glassware, shaper for tubular, A. H. Heisey..... 212,932
Grain, etc., cooler and drier, F. A. Luckenbach.. 212,955
Grate bar, J. B. Miller..... 212,966
Harrow, J. F. Wilcox..... 213,020
Harrow, J. H. Yager..... 213,024
Harvester elevator, C. Ainsworth..... 212,879
Hat, J. Thomas..... 213,008
Hat forming machine, R. Eickemeyer..... 212,910
Hat sweat band, C. O. Kanouse..... 212,948
Heating furnace, J. H. Merrill 212,965
Heel cutting die, H. Turner..... 213,013
Hog trap, R. D. Loudon 212,807
Hoisting apparatus, G. Sanford. 212,989
Horse power, R. S. Legett 212,854
Horse power tread, H. Smith 212,993
Horse tail protector, J. Briggle. 212,836
Hose pipe supporter, W. P. Silvernail 212,992
Hose support, A. M. Waterworth..... 212,876
Hub, vehicle wheel, A. V. Holcomb..... 212,934
Hydrocarbon from substances which have been treated therewith, removing, W. Adamson.... 212,873
Indicator, F. N. Chase..... 212,789
Injector for beer kegs, salt, J. C. G. Hupfel 212,800
Insecticide, J. C. Benton..... 212,835
Iron, galvanizing and tinning, Wahl & Eltonhead. 213,015
Ironing table, S. W. Kilbourne 212,805
Jewelry, sprig work for, L. Heckmann 212,848
Knob, sheet metal, H. A. Matthews..... 212,962
Lamp chimneys, etc., machine for flaring and crimping, R. Hemingray..... 212,850
Lantern, J. H. Irwin (r) 8,611
Last maker's guide, J. Kimball 212,852
Lasting machine, S. E. Mower..... 212,815
Lasting machine, H. G. Thompson 212,824
Latch, W. I. Ludlow 212,956
Lead fumes, collecting waste, G. T. Lewis..... 212,855
Leather work, machine for opening and pressing seams in, G. W. Emerson *et al*..... 212,843
Lifting handle, chest or box, W. Bachtenkirch.... 212,881
Lock, J. J. Dinnan 212,908
Lock, W. I. Ludlow..... 212,957
Lock, W. H. Taylor..... 213,006
Mask, smoke excluding, G. Neally..... 212,969
Measuring lumber, device for, E. Neary..... .. 212,817
Mechanical medium, H. J. Stein..... 212,870
Middlings purifier, E. S. Bartholomew..... 212,834
Milk cooler, L. B. Austin..... 212,830
Motor, J. Plattenburg. 212,977
Music leaf turner, O. H. Goodwin..... 212,846
Oil cloth, metallic binding strip for, C. E. Marshall 212,961
Oil press mat, Perkins & Baker 212,974
Packing, refrigerator door, H. W. Cass..... 212,896
Padlock, H. Budd 212,892
Paintings on panels and other surfaces, reproducing oil, H. Bogaerts 212,887
Paper, M. Newton..... 212,806
Paper folding machine, W. Spalckhaver..... 212,998
Paper folders, pasting mechanism for, S. D. Tucker 212,872
Paper pulp from wood, S. M. Allen 212,782
Pegging machine, A. W. Moore 212,814
Photographing objects in motion, method and apparatus for, E. J. Muybridge.....212,864, 212,865
Piano, pedal, W. J. Becker. 212,885
Pinchers for attaching seam protectors, paper fasteners, etc., Rutz & Weiser 212,988
Pipe and nut wrench, D. Fisher 212,795
Plane, bench, L. C. Rodier 212,986
Plant digger, A. Kreider..... 212,953
Planter, corn, J. W. Bruner..... 212,787
Planter, corn, J. P. R. Mann 212,959
Planter, hand corn, A. M. Haswell..... 212,929
Planter, seed, Ide & Post.. 212,938
Plow, reversible gang, J. Chapman 212,897
Polisher for varnished surfaces, H. S. Bartholomew 212,833
Pressing machine and sheet tie, J. W. Jones 212,947
Printing machine, Anthony & Taylor..... 212,880
Printing press, E. L. Gilman 212,922
Printing press, A. Godfrey 212,797
Pulmonic fountain, C. S. Lockwood 212,856
Pump, R. A. McCauley..... 212,858
Pump, J. W. Robertson..... 212,985
Pump, T. B. Swan 213,005
Pump and syringe, breast, M. Von Beust... 213,014
Pumping and cooling system, Molera & Cebrian.. 212,967
Pumping, forcing, and blowing, machinery for, R. Johnson 212,944
Quartz mill, D. H. Anderson..... 212,829
Rag engine, E. D. G. Jones (r) 8,609
Railway system, flexible, O. C. Woolson..... 212,827
Refrigerator, J. R. Ludlow 212,808
Road engine, H. H. Bridenthal, Jr..... 212,889
Road engine, F. E. Culver 212,839
Rock chair spring, H. Gerrish 212,845
Safety pin, H. H. Thayer.... 213,007
Sash fastener, Ross & Fortmann 212,987
Saw, circular, J. A. Miller..... 212,813
Saw mill dog, E. H. Stearns..... 213,002
Scissors and shears, A. Clarke..... 212,790
Scoop, coal, J. Balmore 212,883
Scoop, weighing, J. Birks..... 212,786
Seed cleaner, blue grass, I. B. Sandusky..... .. 212,821
Sewer pipes and deodorizing the foul air therefrom, ventilating, A. W. Rand 212,981
Sewer and embroiderer, L. C. Mumford.... 212,862
Sewing machine, J. H. Applegate..... 212,783
Sewing machine feeder, N. Durkopp..... . 212,793
Shaft, flexible, N. Stow (r) 8,607
Shawl strap and head rest, H. H. McLane..... 212,812
Shirt, dress, H. F. Elias..... 212,911
Shoe, J. F. Emerson 212,794
Shoe sole trimmer, W. D. Orcutt.. 212,971
Shovel, W. Wharton, Jr..... 213,019
Snap hook, E. Kempshall..... 212,950
Sofa and chair back, J. H. Travis..... 213,012
Spinning machine spindle band holder, C. E. Herrick 212,933
Spools tension device for thread, R. O. Burgess.. 212,893
Spring shaper, S. A. Case 212,895
Stand for decanters, bottles, and jars, G., G. W., & J. Betjemann..... 212,886
Stand pipe and ladder, Tidball & Spencer..... 212,871
Steam boiler, G. W. Doolittle 212,909
Steam boiler, A. H. Fowler..... 212,918
Stencil plate, Krier & Irvin..... 212,952
Stereotype cast, M. J. Hughes..... .12,937
Storage tank, portable, T. B. Riter..... 212,983
Stove, heating, McCaw & Brown..... 212,963
Stove pipe safe and register, H. B. Morrison 212,968
Sun dial, L. Thurston..... 213,000
Surveying instrument, H. S. S. Watkin..... 213,018
Swing, W. W. Elliott 212,912
Syringe, Perkins & Davol..... 212,975
Telegraph, fire alarm, C. H. Pond..... 212,819
Textile and other fabrics cutter for, A. Warth... 213,017
Ticket case, A. W. Sperry 213,000
Tobacco cutter, L. E. Heaton..... 212,931
Tobacco cutter, T. B. McIntosh..... 212,859
Toy motor, H. Groth..... 212,926
Toy pistol, H. M. Weaver... 212,826
Truck cover supporter, J. G. A. Walker..... ... 213,016
Truck, plow and farm, B. Franklin..... 212,919
Tugs or traces, draught, W. M. Cuthbert 212,840
Turnstile register, F. O. Deschamps..... 212,906
Tuyere, G. M. Smith 212,994
Twist drills, making, C. Jacobson 212,802
Umbrella handles, ribbon retainer for, J. Wright. 213,02
Umbrella notch ring, O. M. Smith..... 212,997
Valve, C. C. Walworth 212,875
Valve, slide, J. J. Tonkin..... 213,011
Vegetable assorter, J. H. & H. J. Heinz..... 212,849
Vegetable cutter, C. J. Gardner..... 212,921
Vehicle brake lever, J. Yenne 213,025
Vehicle spring, J. J. Cobb..... 212,791
Vehicle spring, A. L. & L. A. Davis 212,905
Velocipede, H. W. Baltz, Sr..... ... 212,884
Wagon jack, J. B. Gillaspie 212,796
Wagon jack, G. & L. N. Lakins..... 212,806
Wall paper exhibitor, H. M. Collins..... 212,899
Watch, calendar, B. Baillot 212,882
Water elevator, steam, E. C. Plumer..... 212,978
Water wheel, C. E. Marshall..... 212,960
Wave power for propelling vessels, J. B. Greene.. 212,847
Wells, sucker rod socket for oil, J. H. Bair 212,831
Whiffletree plate, H. Keyes 212,803
Whip rolling machine, O. Bryant 212,891
Wind wheel, C. V. Stevens 212,822
Yarn winder, J. & T. A. Boyd..... 212,888
Yoke strap, neck, H. Keyes..... 212,804

TRADE MARKS.

Ales, W. A. Miles & Co..... 7,069
Baking powder, J. H. Knauss 7,058
Blood purifying medicines, A. Seidel & Co 7,071
Blood purifier and fattening remedy, J. H. Langley 7,079
Certain medicinal preparations, G. H. Schafer..... 7,072
Cigars, C. Upmann..... 7,062
Cigars, cigarettes, and smoking and chewing tobacco, A. Lichenstein & Bro.... 7,080
Cleansing preparation for removing stains, etc., Cauldwell & Hubbard..... 7,063
Coffee, Sherman Bros. & Co..... .. 7,060
Collars and cuffs, G. B. Cluett, Bro. & Co..... 7,055
Dyspepsia powders and pills, G. W. Folts..... 7,057
Fever, ague, and liver pads, J. Fleming 7,077
Gas stoves, W. W. Goodwin & Co..... 7,070
Glue, Wahl Brothers..... 7,073
Laundry soap, Colgate & Co.....7,065, 7,066, 7,076
Medicated paper for water closet use, Pond's Extract Company..... 7,083
Medical compound for plasters, W. J. Brown..... 7,054
Medical compound, J. R. Mathewson & Son..... 7,059
Medicinal preparation, Pond's Extract Company... 7,085
Metals, B. W. Baldwin..... 7,074
Mixed oil paints ready for use, Chicago White Lead and Oil Company 7,086
Ointments, J. L. Standart..... 7,082
Plug smoking and chewing tobacco, H. M. Cochran 7,064
Pure Norwegian cod liver oil, Faulkner & Craighill. 7,056
Rivets, washers, burrs, and the like articles of copper and brass, Plume & Atwood Manf. Co..... 7,061
Satinets and cassimeres, F. Glazier 7,068
Sauces, J. Lusk & Co..... 7,081
Spectacles and eyeglasses, Clapp, Young & Co..... 7,067
Toilet powders, R. M. Hobbs 7,078
Toilet preparations, Pond's Extract Company 7,084

DESIGNS.

Boxes, A. Wuensch 11,057
Carpet, J. Forrester..... 11,055
Carpet, J. Campbell... 11,050
Carpet pattern, A. Heald.... .....11,045 to 11,047
Clock and bell, J. A. Lindemann 11,048
Font of printing types, C. E. Heyer..... 11,044
Handkerchief, J. Grimshaw.....11,043, 11,051
Handkerchief, A. Tilt 11,053
Ornamenting furniture, M. Schrenkelsen 11,056
Pendulums, C. Kitschelt 11,052
Pocketbook and bag frames, L. Prahar 11,049
Umbrella tip cap, W. H. Blake 11,054

English Patents Issued to Americans.

From March 4 to March 7, inclusive.

Bird cages, O. W. Taft, New York city.
Chair, G. W. Archer, Washington, N. Y.
Carding engines, B. S. Roy, Worcester, Mass.
Cop tubes and holders, G. W. Dyer, Washington, D.C.
Drying apparatus, A. J. Reynolds, Chicago, Ill.
Heating apparatus, J. S. Hull, Baltimore, Md.
Hoof expander, C. H. Shepard, ——.
Magneto-electric apparatus, W. W. Gary, Washington, D. C.
Metal bars, machine for shaping, J. J. Capewell, Cheshire, Conn.
Sewing machine, J. O'Neil, New York city.
Shaft hangers, H. D. Cone, Stockbridge, Mass.
Steam boilers, G. D. Daly, Flatbush, N. Y.