chitecture was made; two centuries and a half later this had grown into the architecture which we admire; from this it came to pass that Roman building was what it was, and from Roman building has come all that of later Europe." The history of architecture in Europe from 350 A.D. up to recent times is covered by nine chapters in which is crowded a vast deal of valuable information and most interesting comment. The book is embellished with ten plates and 256 other illustrations.

A TREATISE ON ARCHES. By Malverd A. Howe, C.E. New York: John Wiley & Sons. Pp. 371. Price \$4.

This is a book particularly designed to facilitate the work of the practicing engineer, saving his time in the making of many essential mathematical demonstrations and furnishing formulæ and tables adapted to his wants for a wide variety of work. The author is professor of civil engineering in Rose Polytechnic Institute, and the demonstrations are designed to be such as may be readily followed by senior students in technical schools.

The large and valuable catalogue of manufacturers' and machinists' hardware, issued by Charles H. Besly & Company, of Chicago, presents an extent and variety of tools and supplies which one seldom finds in a single volume. It comprises 300 closely printed pages in fine type, with profuse illustrations and ample index, the articles catalogued including almost everything from an engine lathe to calipers or from a differential pulley to a scratch awl.

SCIENTIFIC AMERICAN BUILDING EDITION

JULY, 1897. - (No. 141.)

TABLE OF CONTENTS.

- No. 1. Perspective elevation, in colors, and floor plans of a Colonial residence at Overbrook, Pa. A unique design. Mr. Thomas P. Lonsdale, architect, Philadelphia, Pa.
- No. 2. Colorial house at Richmond Hill, N. Y., recently erected at a cost of \$4,200. Perspective view and floor plans. An attractive and pleasing de sign. Architects, Messrs. Haugaard Brothers Richmond Hill, N. Y.
- No. 3. A residence, in the Colonial style, recently erected at Larchmont, N. Y., for Mr. William Murray, at a cost of \$7,700 complete. Two perspective elevations and floor plans. A pleasing design with excellent interior arrangement. Mr. Frank A. Moore, architect, New York City.
- No. 4. A cottage at Prohibition Park, Staten Island, re cently erected for Mr. August Mayer at a cost of \$2,250 complete. A very attractive design for a modern cottage of small dimensions. Perspective elevation and floor plans. Mr. John Winans, architect, Prohibition Park, Staten
- No. 5. "Wyandauk." the country residence of Lieut. Morton at Southampton, Long Island. A most excellent design in the Colonial style. Two perspective elevations and floor plans. Mr. James B. Lord, architect, New York City.
- No. 6. A modern dwelling at Binghamton, N. Y., recently erected for Mr. William Mannis at a cost of \$3,000 complete. A good example of a suburban house. Two perspective elevations and floor plans. Messrs. T. Q. Lacey & Son, Binghamton, N. Y., architects.
- No. 7. A Colonial residence at Ardmore, Pa., recently erected for Dr. Louis O. Lusson. Perspective elevation and floor plans. Messrs, Boyd & Boyd, architects, Philadelphia, Pa.
- No. 8. A Colonial residence at Bensonhurst, Long Island recently erected for Mr. Thomas A. Ritson. Two perspective elevations and floor plans A handsome design. Architects, Messrs. Parfitt Brothers, Brooklyn, N. Y.
- No. 9. A residence at West Chester, Pa., recently erected for Dr. S. Hagerty. Perspective elevation and floor plans. A design with many excellent features. Mr. Edward S. Paxson, architect, Philadelphia.
- No. 10. A residence at Attleboro, Mass., erected for E. P. Clafin, Esq., at a cost of \$5,500 complete. An artistic and pleasing design. Messrs. George F. Barber & Company, architects, Knoxville,
- No. 11. Perspective and interior view of the Walhalla of Ratisbon on the Danube. A costly reproduction of the Parthenon at Athens. This temple was erected at a cost of about \$6,000,000, and is devoted entirely to the display of busts of distinguished Germans.

No. 12. Design for a "cozy corner."

- No. 13. View of the library of Mr. Henry L. Hotchkiss, New Haven, Conn.
- No. 14. Miscellaneous Contents: Fatalities to workmen Scaffolding.—Lime water in freezing weather. —How to make a cheap greenhouse. floors warm .- Inexpensive country homes.-Improved sash lock, illustrated.—An improved door hanger, illustrated.-A novel wood working machine, illustrated. - Gray bricks. -Dixon's silica graphite paint.—A convenient gage for carpenters and builders, illustrated.

The Scientific American Building Edition is issued monthly. \$2.50 a year. Single copies, 25 cents. Thirty two large quarto pages, forming a large and splendid MAGAZINE OF ARCHITECTURE, richly adorned with elegant plates and fine engravings, illustrating the most interesting examples of Modern Architectural Construction and allied subjects. All who contemplate building, or improving homes or structures of any kind, have in this handsome work an almost endless series of the latest and best examples from which to make selections thus saving time and money.

The Fullness, Richness, Cheapness and Convenience of this work have won for it the LARGEST CIRCULATION of any Architectural Publication in the world. Sold by all newsdealers. MUNN & CO., PUBLISHERS,

361 Broadway, New York.

Business and Personal.

The charge for insertion under this head is One Dollar of line for each insertion; about eight mords to a line Advertisements must be received at publication office as early as Thursday morning to appear in the following week's issue.

Marine Iron Works. Chicago. Catalogue free

For hoisting engines. J. S. Mundy, Newark, N. J. "U. S." Metal Polish. Indianapolis. Samples free.

Yankee Notions. Waterbury Button Co., Waterb'y, Ct. Handle & Spoke Mchy. Ober Lathe Co., Chagrin Falls, O. Improved Bicycle Macbinery of every description.

The Garvin Machine Co., Spring and Varick Sts., N. Y. Concrete Houses - cheaper than brick, superior to " Ransome," 757 Monadnock Block, Chicago.

For static machines for all purposes, and X ray appa ratus, write Reedsburg Electric Mfg. Co., Reedsburg, Wis., U. S. A.

The Norwich Line-Inside route between New York Boston, and Worcester. Leave Pier 40, North River 5:30 P. M., week days only.

Machinery manufacturers, attention! Concrete and mortar mixing mills. Exclusive rights for sale. "Ransome," 757 Monadnock Block, Chicago,

The celebrated "Hornsby-Akroyd" Patent Safety Oil Engine is built by the De La Vergne Refrigerating Machine Company. Foot of East 138th Street, New York.

The best book for electricians and beginners in elec-Experimental Science," by Geo. M. Hopkins. By mail, \$4. Munn & Co., publishers, 361 Broadway, N. Y.

Send for new and complete catalogue of Scientific and other Books for sale by Munn & Co., 361 Broadway. New York. Free on application.



HINTS TO CORRESPONDENTS

Names and Address must accompany all letters or no attention will be paid thereto. This is for our information and not for publication.

References to former articles or answers should give date of paper and page or number of question.

Inquiries not answered in reasonable time should be repeated: correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn.

Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same.

Special Written Information on matters of personal rather than general interest cannot be expected without remuneration.

Scientific American Supplements referred to may be had at the office. Price 10 cents each.

Books referred to promptly supplied on receipt of price.

Minerals sent for examination should be distinctly

price.

Minerals sent for examination should be distinctly marked or labeled.

(7179) W. D. M. says: Is shellac considered a good bicycle wood rım cement? If so, how is it prepared for that purpose? Also, how should it be applied? A. Cements for Tires.

1. Shellac		2 oz.	av.
Gutta percha		2 "	**
Red lead	9	0 gr.	
Sulphur	Qu	0 66	

Melt the shellac and gutta percha, and add, with constant stirring, the red lead and sulphur melted. Use while hot.

2. Isinglass	1/2 oz. av.
Gutta percha	
Caoutchouc	1 " "
Carbon bisulphide	4 fl. oz.
Mix and dissolve.	
3. Caoutchouc	2 oz. av.
Resin	140 gr.
Shellac	100 "

the other ingredients. 4. Crude rubber...... 1/2 oz. Carbon disulphide..... 4

Carbon disulphide, a sufficient quantity to dissolve

Macerate twenty four hours, and then add a solution Carbon disulphide 4 "

(7180) G. R. S. says: Will you kindly inform me through your Notes and Queries of a cleane and polish for tan shoes that will not injure the leather i A. We have published directions for making preparations for cleaning and polishing shoes, in our SUPPLE-MENT. Nos. 1063, 1073, 1078, ten cents each.

(7181) J. C. McK. writes: I have been constructing an induction coil along the following lines and would be pleased to have your opinion as to the spark we might reasonably expect from the same. Length of coil inside heads will be a little over 13 inches. Three sections of 4 inches each. Size of coil when finished, 7 inches. Size of core, 136 inch. Wire on primary, No. 16, two layers. Wire on secondary, No. 38, 100 layers approximately. Winding, 116 to inch. No. 200 thread (cotton) between, making it a solid mass. Amount of wire on secondary, 5 pounds. Insulation between layers is two thicknesses of finely paraffined paper. The winding is very nearly perfect. We have one pound of wire on now, and a 10,000 ohm magnet, will not ring through it, although some current passes. As No. 38 wire has a resistance of a little over 10,000 ohms to the pound, the insulating must be very near perfect. We get quite a good shock by using a 10 volt battery, but it would seem to us that we ought to get more from No. 1 wire. We have no core, and no condenser, simply trying the coil in the winding apparatus. A. Your coil should give at the longest a 4 inch to 6 inch spark from its dimensions, though in a six inch coil as large a number of sections a eight are used in the secondary. The induced current would be very weak without condenser and core. Should say you would better have used No. 12 copper wire cot-

ton covered in two layers of primary, but additional current can be used to overcome your larger resistance. In doing so more heat will of course be developed, and the coil cannot be run as long at a time. With an odd number of sections in secondary, one end of the wire will come out on inside of spool. An even number of spools should have been used. The larger the number of sections, the less the risk of breaking down the insulation between the turns of secondary, because there is less difference of potential between adjacent parts of the coil.

(7182) R. E. R. writes: I have made the caustic potash battery you describe in "Experimental Science." I used a cast iron kettle for the cell after heating the water. I added the potash (1/2 pound), which was in stick form, and after this was thoroughly dissolved I put in a pound of black oxide. The sheet zinc is three feet long and six inches wide, rolled in spiral shape. The inside of kettle seemed to corrode to a considerable thickness. Can you account for it? Would not a copper pail be a good substitute for the kettle? A. The cell with oxide of copper in an iron dish, and a solution of caustic potash or soda, must have a thin layer of heavy petroleum oil on the top of the liquid to prevent the action of the carbonic acid of the air upon the potash or soda. You do not mention using this. In the action of the cell a dark brown or nearly black mud is formed from the black oxide. This may be what you have thought to be the corrosion of the kettle. If the kettle corrodes, it will be seen by the formation of holes or pits in the iron. This should not take place. The zinc of this battery, for best effect, should be amalgamated. This is difficult with ordinary sheet zinc; probably impossible with so large a piece as you use. This battery is properly to be used on closed circuit; that is, it should be left with current flowing through a large resistance when you are not at work with it. From your description it is difficult to see why you have had a complete failure. The suggestions above may lead you to better success. A copper pall would be more expensive. If you would use copper, we would advise a dish bent up from sheet copper to hold the black oxide. This set into a glass jar would form a good negative plate. Rivet an insulated copper wire to the copper dish, so that neither the liquid nor the zinc can touch the wire on its way out. Then, if you can get a plate of zinc such as is used in the gravity hattery and amalgamate it, the result will be much better.

TO INVENTORS.

An experience of nearly fifty years, and the preparation of more than one hundred thousand applications for natents at home and abroad, enable us to understand the laws and practice on both continents, and to possess unequaled facilities for procuring patents everywhere. A synopsis of the patent laws of the United States and all foreign countries may be bad on application, and persons contemplating the securing of patents, either at home or abroad, are invited to write to this office for prices, which are low, in accordance with the times and our extensive facilities for conducting the business. Address MUNN & CO., office SCIENTIFIC AMERICAN, 361 Broadway, New York.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

JULY 20, 1897,

AND EACH BEARING THAT DATE.

[See note at end of list about copies of these patents.]

A CONTRACT TO A STATE	
Acetanilid, manufacturing, F. W. A. Frerichs	586,551
Acetanilid, manufacturing, F. W. A. Frerichs Adjustable spring, J. Wichmann. Air car, A. Brodbeck. Air compressor, A. Shedlock	586,645 586,590 586,669
Air car, A. Brodbeck	586,590
Air compressor, A. Shedlock	586,669
Att COOKING apparatus, D. II data	586,766
Alarm. See Gas alarm. Amalgam washing apparatus, H. C. F. Stormer Ammonia, purifying, F. W. A. Frerichs Amusement apparatus, W. Wharton, Jr	596 695
Ammonia nurifying F W A Froricha	586,635 586,950
Amusement annaratus, W. Wharton, Jr.	586.718
Annealing furnace, J. Timms	586,718 586,883
Arch center, G. A. Schillinger	586,870
Ashes, device for handling locomotive, Wallis &	
Strattan	586,581
Axle lubricator, car, J. S. Patten	586,564 586,674
Back support, J. Stretch	000,014
Raglock H & Caskill	586,792
Bait, artificial, H. R. Osborn	586,620
Bag. See Mail bag. Water bag. Bag lock, H. S. Gaskill. Balt, artfil cial, H. R. Osborn. Bale tie, Edinger & Crane. Bale tie, admistable P. K. Dederick	586,682
Bale tie, adjustable, P. K. Dederick	586,682 586,839
Bale tie, adjustable, P. K. Dederick	586,574
Bar. See Bicycle handle bar. Car draw bar. Rail	
Pottern plates nating material for accordant C	- 1
A Rosenthal	586,627
Bearing, ball, W. Hoag.	586,769
Bearing, ball, G. Wood	586,921
Bed pan, C. Voorhies	586,769 586,921 586,749 586,550
Bedstead, W. S. Foster	586,550
splice bar. Battery plates, active material for secondary S. A. Rosenthal. Bearing, ball, W. Hoag. Bearing, ball, G. Wood. Bed pan, C. Voorhies. Bedstead, W. S. Foster. Bedstead lock, G. H. Cline. Bell, bicycle, H. G. Martin. Bicycle, E. Dederick. Bicycle F. W. Mallett. Bicycle attachment, W. C. Burbank. Bicycle trame, A. F. Temple.	586,948 586,954 586,596
Ricycle E. Dederick	586 596
Bicycle, F. W. Mallett.	586,611
Bicycle attachment, W. C. Burbank	586,611 586,591
Bicycle frame. A. F. Temple	586,639
Bicycle handle attachment J. Godfrey	586,897
Bicycle handle bar, J. G. Walsh	586,678 586,830
Pierele holder G. W. Donglag	586,681
Ricycle or other velocinede I. Sturges	586,880
Bicycle pedal, C. F. Lancaster	586,608
Bicycle, E. Dederick Bicycle, F. W. Mallett. Bicycle attachment, W. C. Burbank Bicycle frame, A. F. Temple. Bicycle handle attachment J. Godfrey. Bicycle handle bar, J. G. Walsh. Bicycle handle or grip, G. W. Williams. Bicycle holder, G. W. Douglas. Bicycle or other velocipede, L. Sturges. Bicycle pedal, C. F. Lancaster. Bicycle stand, La Barre & Hill. Bicycle support, W. Hayball, Jr. Bicycle support, J. E. Norelius Bicycle support, J. E. Norelius Bicycle support, pedal, W. J. Simonis. Bicycle, water, C. L. Knepper. Block. See Printer's block.	586.741 586,817
Bicycle support, W. Hayball, Jr	586,817
Bicycle support, J. E. Norellus	586,619
Bicycle support, folding, Hunter & Fendleton	586,902 586,629
Ricycle water C. I. Knenner	586,851
Dlock Goo Dulmtonia block	
Block. See Printer's block.	000,002
Blotter, revolving, G. S. Foster	586,815
Blotter, revolving, G. S. Foster	586,815
Blotter, revolving, G. S. Foster	586,815 586,927
Blotter, revolving, G. S. Foster	586,815 586,927
Blotter, revolving, G. S. Foster	586,815
Blotter, revolving, G. S. Foster	586,927 586,934
Blotter, revolving, G. S. Foster. Boats, device for launching life or other, G. W. Beebe. Boiler, See Steam boiler. Boiler, W. Radcliff. Boilers, apparatus for removing sediment from steam, J. Watt. Bot lock for communicating doors W. H. Taylor	586,815 586,927 586,934 586,805
Blotter, revolving, G. S. Foster. Boats, device for launching life or other, G. W. Beebe. Boiler, See Steam boiler. Boiler, W. Radcliff. Boilers, apparatus for removing sediment from steam, J. Watt. Bot lock for communicating doors W. H. Taylor	586,927 586,934 586,805 586,675
Blotter, revolving, G. S. Foster. Boats, device for launching life or other, G. W. Beebe. Boiler. See Steam boiler. Boiler, W. Radcliff. Boilers, apparatus for removing sediment from steam, J. Watt. Bolt lock for communicating doors W. H. Taylor	586,927 586,934 586,805 586,675 586,640
Blotter, revolving, G. S. Foster. Boats, device for launching life or other, G. W. Beebe. Boiler. See Steam boiler. Boiler. W. Radcliff. Boilers, apparatus for removing sediment from steam. J. Watt. Bolt lock for communicating doors, W. H. Tay br Book and carbon sheet bolder therefor, manifold memorandum. F. M. Turck. Bookbinding, T. C. Kenworthy.	586,927 586,934 586,805 586,675
Blotter, revolving, G. S. Foster. Boats, device for launching life or other, G. W. Beebe. Boiler. See Steam boiler. Boiler. W. Radcliff. Boilers, apparatus for removing sediment from steam. J. Watt. Bolt lock for communicating doors, W. H. Tay br Book and carbon sheet bolder therefor, manifold memorandum. F. M. Turck. Bookbinding, T. C. Kenworthy.	586,815 586,927 586,934 586,805 586,675 586,640 586,604
Blotter, revolving, G. S. Foster. Boats, device for launching life or other, G. W. Beebe. Boiler. See Steam boiler. Boiler. W. Radcliff. Boilers, apparatus for removing sediment from steam. J. Watt. Bolt lock for communicating doors, W. H. Tay br Book and carbon sheet bolder therefor, manifold memorandum. F. M. Turck. Bookbinding, T. C. Kenworthy.	586,927 586,934 586,805 586,675 586,640
Blotter, revolving, G. S. Foster. Boats, device for launching life or other, G. W. Beebe. Boiler. See Steam boiler. Boiler. W. Radcliff. Boilers, apparatus for removing sediment from steam. J. Watt. Bolt lock for communicating doors, W. H. Tay br Book and carbon sheet bolder therefor, manifold memorandum. F. M. Turck. Bookbinding, T. C. Kenworthy.	586,815 586,927 586,934 586,805 586,675 586,640 586,604
Blotter, revolving, G. S. Foster. Boats, device for launching life or other, G. W. Beebe. Boiler. See Steam boiler. Boiler. W. Radcliff. Boilers, apparatus for removing sediment from steam. J. Watt. Bolt lock for communicating doors, W. H. Tay br Book and carbon sheet bolder therefor, manifold memorandum. F. M. Turck. Bookbinding, T. C. Kenworthy.	586,815 586,927 586,934 586,805 586,675 586,640 586,604 586,925
Blotter, revolving, G. S. Foster. Boats, device for launching life or other, G. W. Beebe. Boiler. See Steam boiler. Boiler. W. Radcliff. Boilers, apparatus for removing sediment from steam. J. Watt. Bolt lock for communicating doors, W. H. Tay br Book and carbon sheet bolder therefor, manifold memorandum. F. M. Turck. Bookbinding, T. C. Kenworthy.	586,815 586,927 586,934 586,805 586,675 586,640 586,604 586,925
Blotter, revolving, G. S. Foster. Boats, device for launching life or other, G. W. Beebe. Boiler. See Steam boiler. Boiler. W. Radcliff. Boilers, apparatus for removing sediment from steam. J. Watt. Bolt lock for communicating doors, W. H. Tay br Book and carbon sheet bolder therefor, manifold memorandum. F. M. Turck. Bookbinding, T. C. Kenworthy.	586,815 586,927 586,934 586,805 586,675 586,640 586,604 586,925
Blotter, revolving, G. S. Foster. Boats, device for launching life or other, G. W. Beebe. Boiler. See Steam boiler. Boiler. W. Radcliff. Boilers, apparatus for removing sediment from steam. J. Watt. Bolt lock for communicating doors, W. H. Tay br Book and carbon sheet bolder therefor, manifold memorandum. F. M. Turck. Bookbinding, T. C. Kenworthy.	586,815 586,927 586,934 586,905 586,675 586,640 586,604 586,925
Blotter, revolving, G. S. Foster. Boats, device for launching life or other, G. W. Beebe. Boiler. See Steam boiler. Boiler. W. Radcliff. Boilers, apparatus for removing sediment from steam, J. Watt. Bot lock for communicating doors, W. H. Tay lor Book and carbon sheet holder therefor, manifold memorandum, F. M. Turck. Bookbinding, T. C. Kenworthy. Book, cashier's and salesman's check, C. I. Lo- zano. Boring or drilling macbine with means for driv- ing rods, bars or tubes into holes drilled, com- bined multiple, V. & G. Jetley. Bottle illing machine, T. Roberts. Bottle locker, automatic, J. J. Reifgraber. Bottle, non-refillable, T. E. Worthington. Bottles, macbine for feeding stoppers automati-	586,815 586,927 586,934 586,805 586,675 586,600 586,600 586,925 586,603 586,717 586,633 586,717
Blotter, revolving, G. S. Foster. Boats, device for launching life or other, G. W. Beebe. Boiler. See Steam boiler. Boiler. W. Radcliff. Boilers, apparatus for removing sediment from steam, J. Watt. Bot lock for communicating doors, W. H. Tay lor Book and carbon sheet holder therefor, manifold memorandum, F. M. Turck. Bookbinding, T. C. Kenworthy. Book, cashier's and salesman's check, C. I. Lo- zano. Boring or drilling macbine with means for driv- ing rods, bars or tubes into holes drilled, com- bined multiple, V. & G. Jetley. Bottle illing machine, T. Roberts. Bottle locker, automatic, J. J. Reifgraber. Bottle, non-refillable, T. E. Worthington. Bottles, macbine for feeding stoppers automati-	586,815 586,927 586,934 586,805 586,675 586,640 586,604 586,925
Blotter, revolving, G. S. Foster. Boats, device for launching life or other, G. W. Beebe. Boiler. See Steam boiler. Boiler. W. Radcliff. Boilers, apparatus for removing sediment from steam, J. Watt. Bot lock for communicating doors, W. H. Tay lor Book and carbon sheet holder therefor, manifold memorandum, F. M. Turck. Bookbinding, T. C. Kenworthy. Book, cashier's and salesman's check, C. I. Lo- zano. Boring or drilling macbine with means for driv- ing rods, bars or tubes into holes drilled, com- bined multiple, V. & G. Jetley. Bottle illing machine, T. Roberts. Bottle locker, automatic, J. J. Reifgraber. Bottle, non-refillable, T. E. Worthington. Bottles, macbine for feeding stoppers automati-	586,815 586,927 586,934 586,805 586,675 586,600 586,600 586,925 586,603 586,717 586,633 586,717
Blotter, revolving, G. S. Foster. Boats, device for launching life or other, G. W. Beebe. Boiler. See Steam boiler. Boiler. W. Radcliff. Boilers, apparatus for removing sediment from steam, J. Watt. Bot lock for communicating doors, W. H. Tay lor Book and carbon sheet holder therefor, manifold memorandum, F. M. Turck. Bookbinding, T. C. Kenworthy. Book, cashier's and salesman's check, C. I. Lo- zano. Boring or drilling macbine with means for driv- ing rods, bars or tubes into holes drilled, com- bined multiple, V. & G. Jetley. Bottle illing machine, T. Roberts. Bottle locker, automatic, J. J. Reifgraber. Bottle, non-refillable, T. E. Worthington. Bottles, macbine for feeding stoppers automati-	586,815 586,927 586,934 586,805 586,675 586,604 586,925 586,603 586,717 586,833 586,719 586,613
Blotter, revolving, G. S. Foster. Boats, device for launching life or other, G. W. Beebe. Boiler. See Steam boiler. Boiler. W. Radcliff. Boilers, apparatus for removing sediment from steam, J. Watt. Bolt lock for communicating doors, W. H. Tay lor Book and carbon sheet bolder therefor, manifold memorandum, F. M. Turck. Bookbinding, T. C. Kenworthy. Book, cashier's and salesman's check, C. I. Lozano. Boring or drilling machine with means for driving rods, bars or tubes into holes drilled, combined multiple, V. & G. Jettey. Bottle locker, automatic, J. J. Reifgraber. Bottle, non-refillable, T. E. Worthington. Bottles, machine for feeding stoppers automatically to, N. Muslar. Bottles or other vessels with gases by means of capsules or containers charged with liquefied or compressed gases, apparatus for charging,	586,815 586,927 586,804 586,805 586,675 586,600 586,600 586,707 586,603 586,717 586,613
Blotter, revolving, G. S. Foster. Boats, device for launching life or other, G. W. Beebe. Boiler. See Steam boiler. Boiler. W. Radcliff. Boilers, apparatus for removing sediment from steam, J. Watt. Bolt lock for communicating doors, W. H. Tay lor Book and carbon sheet bolder therefor, manifold memorandum, F. M. Turck. Bookbinding, T. C. Kenworthy. Book, cashier's and salesman's check, C. I. Lozano. Boring or drilling machine with means for driving rods, bars or tubes into holes drilled, combined multiple, V. & G. Jettey. Bottle locker, automatic, J. J. Reifgraber. Bottle, non-refillable, T. E. Worthington. Bottles, machine for feeding stoppers automatically to, N. Muslar. Bottles or other vessels with gases by means of capsules or containers charged with liquefied or compressed gases, apparatus for charging,	586,815 586,927 586,934 586,805 586,675 586,604 586,925 586,603 586,717 586,833 586,719 586,613
Blotter, revolving, G. S. Foster. Boats, device for launching life or other, G. W. Beebe. Boiler. See Steam boiler. Boiler. W. Radcliff. Boilers, apparatus for removing sediment from steam, J. Watt. Bolt lock for communicating doors, W. H. Tay by Book and carbon sheet bolder therefor, manifold memorandum, F. M. Turck. Bookbinding, T. C. Kenworthy. Book, cashier's and salesman's check, C. I. Lo- sano. drilling macbine with means for driv- ing rods, bars or tubes into holes drilled, com- bined multiple, V. & G. Jetley. Bottle fling machine, T. Roberts. Bottle locker, automatic, J. J. Reifgraber. Bottle, non-refillable, T. E. Worthington. Bottles or other vessels with gases by means of capsules or containers charged with liquefied or compressed gases, apparatus for charging, E. Sterne. Box. See Cardboard box. Folding box. Knock-	586,815 586,927 586,804 586,805 586,675 586,600 586,600 586,707 586,603 586,717 586,613
Blotter, revolving, G. S. Foster. Boats, device for launching life or other, G. W. Beebe. Boiler. See Steam boiler. Boiler. See Steam boiler. Boiler. W. Radcliff. Boilers, apparatus for removing sediment from steam, J. Watt. Book lock for communicating doors, W. H. Tay lor Book and carbon sheet holder therefor, manifold memorandum, F. M. Turck. Book holding, T. C. Kenworthy. Book, cashier's and salesman's check, C. I. Lozano. Boring or drilling macbine with means for driving rods, bars or tubes into holes drilled, combined multiple, V. & G. Jetley. Bottle filling machine, T. Roberts. Bottle locker, automatic, J. J. Reifgraber. Bottle, non-refillable, T. E. Worthington. Bottles, macbine for feeding stoppers automatically to, N. Muslar. Bottles or other vessels with gases by means of capsules or containers charged with liquefled or compressed gases, apparatus for charging. Bow, H. C. Peters. Box. See Cardboard box. Folding box. Knockdown box. Match box.	586,815 586,927 586,934 586,805 586,675 586,640 586,604 586,925 586,747 586,713 586,713 586,613
Blotter, revolving, G. S. Foster. Boats, device for launching life or other, G. W. Beebe. Boiler. See Steam boiler. Boiler. See Steam boiler. Boiler. W. Radcliff. Boilers, apparatus for removing sediment from steam, J. Watt. Book lock for communicating doors, W. H. Tay lor Book and carbon sheet holder therefor, manifold memorandum, F. M. Turck. Book holding, T. C. Kenworthy. Book, cashier's and salesman's check, C. I. Lozano. Boring or drilling macbine with means for driving rods, bars or tubes into holes drilled, combined multiple, V. & G. Jetley. Bottle filling machine, T. Roberts. Bottle locker, automatic, J. J. Reifgraber. Bottle, non-refillable, T. E. Worthington. Bottles, macbine for feeding stoppers automatically to, N. Muslar. Bottles or other vessels with gases by means of capsules or containers charged with liquefled or compressed gases, apparatus for charging. Bow, H. C. Peters. Box. See Cardboard box. Folding box. Knockdown box. Match box.	586,815 586,927 586,934 586,805 586,675 586,640 586,604 586,925 586,747 586,713 586,713 586,613
Blotter, revolving, G. S. Foster. Boats, device for launching life or other, G. W. Beebe. Boiler. See Steam boiler. Boiler. See Steam boiler. Boiler. W. Radcliff. Boilers, apparatus for removing sediment from steam, J. Watt. Book lock for communicating doors, W. H. Tay lor Book and carbon sheet holder therefor, manifold memorandum, F. M. Turck. Book holding, T. C. Kenworthy. Book, cashier's and salesman's check, C. I. Lozano. Boring or drilling macbine with means for driving rods, bars or tubes into holes drilled, combined multiple, V. & G. Jetley. Bottle filling machine, T. Roberts. Bottle locker, automatic, J. J. Reifgraber. Bottle, non-refillable, T. E. Worthington. Bottles, macbine for feeding stoppers automatically to, N. Muslar. Bottles or other vessels with gases by means of capsules or containers charged with liquefled or compressed gases, apparatus for charging. Bow, H. C. Peters. Box. See Cardboard box. Folding box. Knockdown box. Match box.	586,815 586,927 586,934 586,805 586,675 586,640 586,604 586,925 586,747 586,713 586,713 586,613
Blotter, revolving, G. S. Foster. Boats, device for launching life or other, G. W. Beebe. Boiler. See Steam boiler. Boiler. See Steam boiler. Boiler. W. Radcliff. Boilers, apparatus for removing sediment from steam, J. Watt. Bolt lock for communicating doors, W. H. Tay lor Book and carbon sheet holder therefor, manifold memorandum, F. M. Turck. Bookbinding, T. C. Kenworthy. Book, cashier's and salesman's check, C. I. Lozano. Boring or drilling macbine with means for driving rods, bars or tubes into holes drilled, combined multiple, V. & G. Jetley. Bottle filling machine, T. Roberts. Bottle locker, automatic, J. J. Reifgraber. Bottle, non-refillable, T. E. Worthington. Bottles, macbine for feeding stoppers automatically to, N. Muslar. Bottles or other vessels with gases by means of capsules or containers charged with liquefied or compressed gases, apparatus for charging, E. Sterne. Bow, H. C. Peters. Box. See Cardboard box. Folding box. Knockdown box. Match box. Bracket, A. Taubert. Brake, See Car brake. Sewing machine brake. Brake mechanism full d pressure O. R. Mosher.	586,815 586,927 586,894 586,805 586,675 586,675 586,604 586,925 586,603 586,747 586,613 586,719 586,613 586,713 586,613
Blotter, revolving, G. S. Foster. Boats, device for launching life or other, G. W. Beebe. Boiler. See Steam boiler. Boiler, W. Radcliff. Boiler, W. Radcliff. Boilers, apparatus for removing sediment from steam, J. Watt. Book for communicating doors, W. H. Tay lor Book and carbon sheet holder therefor, manifold memorandum, F. M. Turck. Book ashier's and salesman's check, C. I. Lo- zano. Boring or drilling macbine with means for driv- ing rods, bars or tubes into holes drilled, com- bined multiple, V. & G. Jetley. Bottle filling machine, T. Roberts. Bottle locker, automatic, J. J. Reifgraber. Bottle, non-refillable, T. E. Worthington. Bottles, macbine for feeding stoppers automati- cally to, N. Muslar. Bottles, macbine for feeding stoppers automati- cally to, N. Muslar. Bottles or other vessels with gases by means of capsules or containers charged with liquefled or compressed gases, apparatus for charging, Bow, H. C. Peters. Box. See Cardoard box. Folding box. Knock- down box. Match box.	586,815 586,927 586,894 586,805 586,675 586,675 586,604 586,925 586,603 586,747 586,613 586,719 586,613 586,713 586,613

Bridle, M. Wilson
Bridle, M. Wilson. 586,648 Brush and mop holder, combined scrubbling, F. 586,857 E. Matthews. 586,857 Buckle, I. D. Rank. 586,746 Buckle, martingale, G. T. Wolff. 586,649 Building construction, W. H. & F. A. Winslow 586,941 Button making machine, S. Menkin 586,821
Cable mechanism, secondary J. T. & W. J. Hun- ter. 586,901 Cable strand, E. P. Frederick. 586,706
Can. See Oil can. Can opener, W. A. Simond
E. Sterne 586,633 Car brake, W. L. & Z. M. Hibbard 586,631 Car draw bar, railway, W. T. Van Dorn 586,701 Car, hand, I. N. Glover 586,601
E. Sterne
Cars, air brake for railway, J. F. Coffin
Carriage and wheel chair, combined baby, J. A. Crandall
Case. See Paper case. Spectacle case. 586,854 Casein, making ammoniacal, W. Majert. 586,854 Cement sidewalk, W. P. Beckwith. 595,549 Chair. See Reclining chair. Rocking chair. 586,549 Chair. See Reclining chair. Rocking chair. 586,610 Churn, A. Mearns. 586,610 Churn, C. L. Monroe 586,734 Churn, C. L. Monroe 586,734 Charette machine, F. Girard. 586,539 Cistern cover lock, H. Oberjohann 586,600 Citern attactment, F. Zimmerly. 586,601 Cleaner. See Grain cleaner. 586,601
Chair. See Recining chair. Rocking chair. Chair and foot rest, combination, C. A. Lee
Churn dasher, P. C. Barlow. 586,754 Cigarette machine, F. Girard. 586,599 Cistern cover lock, H. Oberjohann. 586,800
W. Krause. 586,807 Clutch, friction, Bardons & Oliver. 586,832 Clutch, friction, J. E. Windle. 586,784 Clutch mechanism, traction engine, E. Huber. 586,664
Cock, stop and waste, J. H. Lyons. 586,710 Cotton elevator and cleaner, seed, G. Lemoine. 586,978 Cotton gin feeder, T. F. Marlow. 586,778
Clutch, friction, Bardons & Oliver
Crate machine, F. B. Sites 586,671 Cultivator, F. Benfield 586,685 Current recorder, excessive, J. R. Cravath 586,723 Curtain fixture, A. J. Roth 586,935
Crate machine, F. B. Sites 596,671 Cultivator, F. Benfield 586,655 Current recorder, excessive, J. R. Cravath 586,725 Cuttain fixture, A. J. Roth 586,635 Cutoff, rainwater, E. E. Snyder 595,572 Cutout, fusible, Perkins & Tregoning 586,565 Cutter See Paper cutter. Potato cutter Cycle chains, adjustingmeans for, Roberts & Morton 596,624
Cycle chains, adjustingmeans for, Roberts & Morton. 586,624 Cycle gear cases, apparatus for manufacturing, H.
ton 586,624 Cycle gear cases, apparatus for manufacturing, H. W. Dover
Dental instrument, J. W. Hard
Draugoting tool, E. H. Rooney
Elastic wheel, J. H. Peterson. 586,566 Electric furnace, R. F. S. Heath. 586,686, 566,687 Electric furnace, F. J. Patten. 586,824, 586,824
Die. See Glove cutting die.
Electric switch connection, H. A. Bullard 586,543
& Du Bois. 586.665 Electrical conductor, C. N. Dutton 586.501 Electrical meter, W. D. Marks. 586.502 Electrodepositing device, J. Bossard. 586,894 Electrolysis, method of and apparatus for effecting, C. Kellner. 586,894
ing, C. Kellner. 586,729 Electromagnetic motor, F. J. Patten 586,828 Elevator. See Cotton elevator.
ing, C. Kellner. 586,728 Eleetronagnetic motor, F. J. Patten. 586,828 Elevator. See Cotton elevator. Elevator clutch and brake, W. Weismantel. 586,885 Elliptic apring, T. G. Mandt. 586,777 Embroidery hoop, C. S. Bucklin. 586,947 Engine. See Explosive engine. Pumping engine.
tion engine.
Engine tender, traction, P. Schmitt. 586,871 Engines, cutoff apparatus for marine, F. Bittner. 586,883 Envelope, P. A. Roberts. 586,625 Explostry engine, F. A. Redmon. 586,828 Expressing press F. Stitzel 586,625 Expressing press F. Stitzel 586,623
Extract, animal, E. Reinert.
Engine tender, traction, P. Schmitt.
Fence stretcher, wire, C. H. Salisbury. 586,802 Fencing, wire, B. Scarles 586,802 Fifth wheel, vehicle, J. McLaughlin. 586,911
File and handle, A. Weed . 685,582 File for deposit slips, J. H. Rand . 586,693 Filter, C. A. Kunzel, Jr . 586,703
Filter press plate, H. P. Chamberlain. 586,583 Fish trap and boat, combined, G. W. Nelson. 586,583 Float trap, J. F. McElroy. 586,611
Finishing tank J.C. Fisher 586,924 Folding box, S. Klein 586,819 Frame. See Bicycle frame.
Fumigator, I. W. Cock. 588,789 Fumigator, J. W. Hill. 586,788 Furnace. See Annealing furnaca. Electric furnace. Smelting furnace. Furnace door, R. B. Hobson. 586,562 Georg. See Sew table grope.
Gage. See Saw table gage.
Gas alarm, electrical, J. Erikson. 586,818 Gas turrer, J. Stubbers. 586,748 Gas manafacturing apparatus, A. E. Aldrich. 586,823 Gate. See Railway crossing gate. Gearing, W. A. McCollough. 586,614 Glove, E. L. Blun. 586,578 Glove cutting die, L. A. Van Praag. 586,578 Glove fastener, W. B. Page. 586,572 Grain binder butt adjuster, B. F. Stewart. 586,584 Grain cleaner and separator, J. C. Benson. 586,766 Guard. See Sewing machine needle guard. Trolley guard. Handle. See Bicycle handle.
Gearing, W. A. McCollough 586,614 Glove, E. L. Blun. 586,588 Glove cutting die, L. A. Van Praag 586,578
Glove fastener, F. F. Raymond, 2d. 586,622 Grain binder butt adjuster, B. F. Stewart. 586,632 Grain cleaner and separator, J. C. Benson 586,756
Guard. See Sewing machine needle guard. Trolley guard. Handle. See Bicycle handle.
Harrow, drag, I. T. Evans. 586,548 Harrow for racecourses, G. E. Guerne 586,548 Harrow rotary Curry & Slinker 586,585
ley guard. Handle See Bicycle handle Harp, P. Stark 586,573 Harrow, drag, I. T. Evans 586,549 Harrow for racecourses, G. E. Guerne 586,549 Harrow rotary, Curry & Slinker 586,595 Harvester and separator, combined, J. L. Slatton 586,585 Hat fastener, J. Stauber 586,630 Headlight, C. Bash 586,594 Headlight, dash electric, J. Kirby, Jr 586,594 Headlight, dash electric, J. Kirby, Jr 586,594 Headlight 586,594 Headlig
Heater. See Electric heater. Storage heater. Tire beater. Heating apparatus, steam, R. M. Dixon
Heating apparatus, steam, R. M. Dixon. 586,761 Hinge, R. W. Hubbard. 586,663 Hook. See Lacing hook. Hoop. See Embroidery hoop. Horse sterter R. E. Sharman. 586,969
Horseshoe, elastic, M. W. Lowes. 586,558 Horseshoe, softtread, L. D. Saxton. 586,648 Hub, vebicle wheel, H. L. Eaton. 586,548
lce cream disner, J. E. & W. H. Crea
Inkstand, W. L. Stewart. 586,878 Inkstand, self-closing, A. K. Sagen. 586,688 Insulated conductor, flexibly, J. H. Kelman. 586,554
Hoos. See Embroidery hoop. Horse starter, R. E. Sherman
Jar top, T. F. Sullivan. 586,636 Knockdown box, T. E. Wiedersheim, Jr. 586,646 Lace fastener, E. D. Heinemann. 586,818 Lacing hook E. Kampakall
Lacing, tipped, E. Kempshall. 586,772 Ladder, convertible step, H. S. Williams. 586,878 Land roller, J. M. Miller. 586,989
Lantern and illuminated sign for street cars, W. I. Larzelere
Liquid vessel, G. W. Brown 586,833
dispersing, F. Nerz. 586,575 Lightning arrester, switchboard, A. M. Taylor. 586,575 Liquid vessel, G. W. Brown. 586,833 Litharge, test for manufacturing, W. H. Williams. 586,763 Lock. See Bag lock. Bedstead lock. Bolt lock.
Litharge, test for manufacturing, W. H. Wil- liams.
Lock J. D. Ross. 586,898 Locomotive cab window, W. P. F. Carroll. 586,898 Loom, W. P. Kirkpatrick 586,904 (Continued on page 78.)