

HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters, or no attention will be paid thereto. This is for our or no attention will be paid thereto. This is for our information, and not for publication. **References** to former articles or answers should

Heferences to former articles or answers should give date of paper and page or number of question.
 Inq uiries 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.
 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.

to may be had at the office. Price 10 cents each. Books referred to promptly supplied on receipt of

Winerals sent for examination should be distinctly marked or labeled.

(1) F. H. S. asks: In the dynamo described in SUPPLEMENT, No. 161, the wire of the armature is, as I understand, passed between the sections of the copper or brass ferrule of the commutator; do they touch both sections of the ferrule? A. The terminals are attached each to one section of the commutator. 2. How are they fastened-by soldering, or just laid in? A. Soldering with resin flux is best. 3. Is it necessary to alter them from the round shape to fit snug with a smooth surface, and touch the commutator springs? A. The wires do not touch the commutator springs; they need no fiattening. 4. What weight of 12 cotton-covered wire would it take on the magnets for one twice the size and one four times the size of the one described? A. 20 pounds and 80 pounds, about. 5. If the machine is left in a damp place, the magnets and armature will be apt to rust; how should it be treated to prevent this? A. They will not rust much if of cast iron. Varnishing will prevent it. 6. In making a U-shaped electro magnet, what is the best wire to use for one 3 or 4 inches long, and would there be much difference if one was wound with 12 and another with 36, using the same battery power? A. It all depends on your battery, line resist ance, etc. For experimental lifting magnets use No. 16 toNo. 20.

(2) H. G. asks: How much will the expansion of a brass bird cage spring composed of about 6 feet of brass wire about as large as an ordinary darning needle and subject to 100 and to 50 degrees of heat be? And will the expansion run in the wire if it is coiled into a spring as above? A. A brass wire 6 feet in length will expand lineally 365 part of its length, or 0.074 inch, from 32° to 132° Fah.; from 152° Fah. to 182° Fah., 0037 inch, about. The wire will expand whether coiled or not.

(3) Commander of the Electra asks where he can receive instructions in naval architecture and yacht or ship designing. A. Best with some company such as the Harland & Hollingsworth Manufac- to use 1/2 ouuce crude rock oil in boiler whilerunning to addition to our facilities for preparing drawings and turing Co.npany, of Wilmington, Del., or by obtaining prevent scale? A. Lay up your boiler full of water that admission to Annapolis United States Naval Academy. 2. Has any electric pumping machinery ever been invented? If so, when and where is it procurable? A. Address Edison Electric Company, 65 Fifth Avenue, when the boiler is filled to lie up, will help loosen the New York. 3. What is the address of Professor Tuck, scale during the season of lying up. So small a quanthe inventor of a submarine torpedo system? A. The tity of crude oil will do no harm, and may facilitate Tuck torpedo is owned, we believe, by the Submarine the loosening of the scale. The boiler should be cleaned Torpedo Company, 20 West 23d Street, New York city. often when oil is used, as it is aptto gather scale and The inventor Josiah H. L. Tuck, is a resident of San Francisco, Cal.

(4) C. O. writes : 1. Will you please tell me how I can increase my weight? I am over 6 feet tall, and weigh but 150 pounds. Would like to increase it about 25 pounds. A. It will depend upon your consti- a battery of 5 boilers with a cross steam dome riveted tution whether such increase would be possible. If you enjoy normal health, and have no obstacles in the shape all your trouble. The unequal expansion and contracof dyspepsia or other disease, you can probably gain in tion strains the necks, and sets the weakest points to weight by proper attention to your diet. Milk, taken leaking. Any cement that can be put in such a place just before retiring, and slowly sipped in order to permit a thorough mixing with the gastric juices, will be very fattening. The late Dr. Ellerslie Wallace, Dean of taking the joint apart, which would require a disturb Jefferson Medical College, Philadelphia, once recommended one of his broken down students to eat plenty any other plan than riveting and calking, or to change of butter during the summer vacation. In the fall a the method of connection for the whole battery, so as stout, hearty man presented himself before the Doctor, to make it elastic enough to meet the requirements of So great was the change in his appearance, that he expansion. Iron pipe connections arranged to take had to introduce himself as the invalid student of the previous spring. He had spent the summer at his home ferableto the dome. in Virginia, and had eaten three pounds of butter a must be accompanied by plenty of exercise in the open air, or it would be apt to produce other disorders of the system. 2. Could you tell me from what books I could best learn the principles of political economy? A. We would recommend John Stuart Mill's "Principles of Political Economy" (\$3.50); "Money and the fine pumice. Mechanism of Exchange," by W. Stanley Jevons (\$1.75);

161 supply with electricity? A. Five to ten candles. 2. What horse power is required to run it? A. About one-sixth horse power. 3. How many cells of the Daniell battery, 4 inches diameter and 6 inches high, would supply a four candle lamp? A. Twenty to thirty cells. 4. Who manufactures small dynamos? A. Con sult our advertising columns.

(8) J. A. M. asks the best thing to clean a locomotive smokestack, and make it look as black and bright as possible. A. Often wipe down with oil and lampblack. A little plumbago makes the good appearance mare durable.

(9) W. H. B. desires a reliable cement for fastening metal to glass-one that will resist the action of water and acids, especially acetic acid. A. Finely powdered litharge, fine dry white sand, and plaster of Paris, each 3 parts by measure, finely pulverized resin 1 part. Mix and make into a paste with boiled linseed oil, to which a little drier has been added, and let it stand four or five hours before using. After fifteen hours' standing, it loses strength. This cement is said to have long been successfully used in the Zoological Gardens. London.

(10) R. S. D. asks: 1. What chemicals are used in Robert's permanganate battery? Give formula. A. Permanganate of potash, bichromate of potash, and an alkali chloride. It is described in United States patents numbers 311,852, 311,853, and 317,206, which we can send you for 25 cents each. 2. Can cast iron that is a little hard, but not so hard but that it can be readily worked, be softened by annealing so as to be as good for electrical purposes as though it was cast very soft? Will it injure a finished piece if it is covered with air-slaked lime and heated to a white heat? A. The proposed annealing of cast iron would and to what extent are cigarettes injurious to smokers, tend to improve it, especially if you heated it hot enough to start with. 3. Why is a magnet placed so as to curve around a telephone bell? A. The curved magnet or magnets polarize the armature, so that the intermittent currents passed through the electro-magnets cause it to vibrate. 4. Can you furnish work- ing of course a greatly more extended as well as ing drawings of a larger dynamo of a different style more vital part of the mucous membrane. 2. A from the one in SUPPLEMENT, No. 161? A. We hope soon to publish an article on such a dynamo.

(11) W. C., Jr., asks: 1. What is the safe working pressure of a boiler 60 inches diameter by 14 feet long, made of wroughtiron 1/6 inch thick, and one of the sheets exposed to the fire having scaled off 1/6 of an inch thickness for a space of 12 inches diameter, longitudinal seams double riveted? I carry 90 pounds pressure; the boilers are eight years old. Number of tubes 51, 3½ inch. A. If the blister is not disposed to run in deeper, the boiler should still be good for 90 pounds steam pressure. Half inch is very heavy iron for a 60 in. shell; a $\frac{1}{6}$ in. blister still leaves the iron as thick as most boilers are made of that size. All that is necessary to do is to watch the blister, as it may still spread and become deeper. 2. The best method of preserving this boiler when we donot run but four months in a year. Would you advise me to put lye in the boiler to take scales from tubes while idle? Would it be a good plan has been boiled, after having cleaned it. The boiling discharges the air, when it can be shut tight to keep out air. A little carbonate of soda, say 1 pound, putin dirt and form an oil cake, which is dangerous when lodged on a fire sheet. 3. Is not plumbago used with piston packing? A. Plumbago is good on piston packing.

(12) C. R. R.—The plan of connecting to the boilers is not good practice, and is the cause of will only be a temporary contrivance; besides, we can not see how you could insert the cement without ance of all the other joints. We cannot recommend up displacement by heat between the boilers are pre

(13) J. H. asks how to grind brass water week. It will be unnecessary to add that such a diet valves. I have ground them together with fiour of emery and oil, but cannot do good work; it leaves the valves full of creases inside and out. A. The figur of emery used should be very fine, and the work finished with ground pumice stone. If the valve seats are not badly cut, emery should not be used at all, only the

(16) A. R. sends samples of tin and sheet ron finished in colors and figured, and asks how the work is done. A. It is a kind of marbling that is effected much in the same manner as the marbling on book edges, and then varnished. The process requires considerable experience and ingenuity in its artistic accomplishment.

(17) J. R. asks: Is there any preparation that will effectually take out ink from paper without discoloring it? A. A solution of oxalic acid. citric acid, and tartaric acid is attended with the least risk, and may be applied upon the paper without fear of damage. Chloride of lime is also used.

(18) W. M. S. asks: In a photographic lens, where do the rays actually cross to reverse the image on the ground glass? A. The rays from the object cross at the optical axis of the lens between the front and back combinations. It is in the vertical plane of the optical axis that the diaphragms are usually placed.

(19) W. H. P. desires a receipt for citrate magnesia. A. The citrate of magnesia sold in drug stores is made as follows: Calcined magnesis (magnesium oxide) 1¼ pounds (or carbonate, 2 pounds), powdered tartaric acid 11/2 pounds, bicarbonate of sodium 1 pound; dry each article by a gentle heat, then mix them; pass the mixture through a fine sieve in a warm dry room, and keep it in well corked bottles. A few drops of essence of lemon and 3 pounds of finely powdered sugar are generally added to the above quantity. This makes it more agreeable. A small quantity of the bicarbonate of soda is added in powder immediately before corking.

(20) C. N. V. C. asks: 1. In what way especially to, inhalers? A. The injury done by cigarettes is much greater than that from the use of cigars. The difference is caused apparently by the fact that the smoke of the cigars is not allowed to enter the lungs, while that from the cigarettes is inhaled, reachremedy for pimples on the face, also for blackheads. A. See article on Face Worms in SUPPLEMENT, 542, of May 22. 3. What is the value of sulphur as a cosmeti wash? A. The value is almost absolutely nothing

(21) A. E. S. asks: 1. How can I make one of those batteries that workmen use in the streets for blasting? All that I see of the machine is a box, two thumb-screws, and a handle to set it off with. A. What you have seen is probably some form of induction electric machine or of dynamo. See SUPPLEMENT, Nos. 70, 161, 278. 279, 282. 2. Is Atlas powder another name for dynamite? A. It is a brand of dynamite.

TO INVENTORS.

An experience of forty years, and the preparation of more than one hundred thousand applications for pa tents at home and abroad, enable us to understand the laws and practice on both continents, and to possess unequaled facilities for procuring patents everywhere. In specifications quickly, the applicant can rest assured that his case will be filed in the Patent Office without delay. Every application, in which the fees have been paid, is sent usually to the Patent Office the same day the papers are signed at our office, or received by mail, so there is no delay in filing the case-acomplaint we often hear from other sources. A synopsis of the patent laws of the United States and all foreign countries may be had 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

June 15, 1886.

AND EACH BEARING THAT DATE.

[Seenote at end of list about copies of these patents.]

	Dental engine attachment, S. G. Ferry 54,64
	Die, R. Butterworth 343,563
Adding machine. P. T. Lindholm 343,770	Disinfecting water closets, etc., apparatus for, F.
Air moistener, C. W. Monroe 343,720	J. Mitchell 343,593
Alarm. See Burglar alarm. Fire alarm.	Disintegrator and strainer, J. D. Frary 343,809
Ammonia in ammonia soda manufacture, recov-	Ditching machine, J. M. Smith 343,613
ery of, Parnell & Simpson 343,675	Door check, C. A. Phoenix 343,605
Ammonia soda process, Parnell & Simpson 343,673	Door hanger, L. Terry 343,779
Ammonia sulphide to obtain hydrogen sulphide,	Door or blind, H. H. Field 348,807
treating, Parnell & Simpson 343,674	Door or safe lock, M. F. Brown 348,794
Anchor tripper, J. F. Bartlett 343,657	Door, screen, J. N. Lilygren 343,667
Asbestos, vitrified, E. A. Sperry 343.651	Draught equalizer. Devereaux & Murphy 343,659
Atmospheric engine, A. R. Weisz 343,875	Draw bar pin and fastener, C. C. T. Willson 343,658
Axle, car wheel, E. R. Jones 343,905	Drawers, support and frame for, A. L. Moore 343,774
Axle lathe, convertible, N. Harris 343,955	Dress form, J. D. Richardson 343,729

Bolt heading machine. C. T. Parry	348,848
Boneblack in sugarrenneries, apparatus for dry-	949 666
Boot or shoe, F. P. Woodbury	343,000
Boot or shoe jack. H. T. Morse	348.964
Boots or shoes, sole for turned, L. E. Moore	343,832
Bottle stopper, C. L. Morehouse	343,647
Box. See Flower box. Folding box. Paper box.	
Shut-offbox. Telegraph box.	
Bracket. See Sink bracket.	
brake. See Locomotive and car brake. wagon	
Bridle, L. E. Jandrue	343.585
Broom and tool holder, E. Smith	343,926
Buckle, A. Shenfield	343,735
Buildings, machine for making ridges and valleys	
for. L. D. Cortright	343,700
Bung, O. W. Eisenhart	343,574
Burglar alarm, J. Tomney	345,869
H Denick	843 891
Burner. See Lamp burner.	010,004
Burnishing hollow articles, machine for, W. E.	
Hawkins	343,766
Burnishing machine, J. H. Hazen	343,710
Bustle, extension, P. A. O'Connor	343,723
Butter worker and mould, D. B. Woodward	343,684
Button lacing F M Piner	843 847
Button setting instrument, C. H. Eggleston	343,799
Buttons to fabric or leather, stitching shank, W.	
E. Bennett	343,941
Buttons to fabric or other materia), machine for	
stiching, H. H. Cummings et al	343,948
Candle & Clarke	313,566
Car brake and starter W Montgomery	345,001
Car coupling, G. J. Ferguson	343.806
Car coupling, C. E. Fritts	343,707
Car coupling, H. W. Johnstone	343,712
Car coupling, G. Keesy	343.638
Car coupling, J. C. Mowry	343,722
Car coupling, F. H. Stanford	848,740
Car starter, H. Kells	345,818
Car stock, B. F. Holmes	348,996
Cars. station indicator for. W. W. Currie	843.760
Card. sample. E. Drakenfeld	843,704
Carpet stretcher, A. Dann	843,892
Carpet sweeper, W. J. Drew	343,572
Carrier. See Egg carrier.	
Cart, slag, A. Werner	345,783
Cart, slag, A. Werner Cartridge loading case, W. H. Murphy	345,783 343,836 343,786
Cart, slag, A. Werner Cartridge loading case, W. H. Murphy Cartridge loading machine, G. J. Foster Case. See Cartridge loading case. Thermometer	343,783 343,836 343,7 0 6
Cart, slag, A. Werner Cartridge loading case, W. H. Murphy Cartridge loading machine, G. J. Foster Case. See Cartridge loading case. Thermometer case. Watch case.	343,783 343,836 343,706
Cart, slag, A. Werner Cartridge loading case, W. H. Murphy Cartridge loading machine, G. J. Foster Case. See Cartridge loading case. Thermometer case. Watch case. Caster furniture, O. Pederson	343,783 343,836 343,706 343,725
Cart, slag, A. Werner Cartridge loading case, W. H. Murphy Cartridge loading machine, G. J. Foster Case. See Cartridge loading case. Thermometer case. Watch case. Caster furniture, O. Pederson Casting ingots, plant for. W. H. Pollett	343,783 343,836 343,706 343,725 343,954
Cart, slag, A. Werner Cartridge loading case, W. H. Murphy Cartridge loading machine, G. J. Foster Case. See Cartridge loading case. Thermometer case. Watch case. Caster furniture, O. Pederson Casting ingots, plant for. W. H. Pollett Casting, mould for, J. Walker	343,783 343,836 343,706 343,725 543,954 343,872
Cart, slag, A. Werner Cartridge loading case, W. H. Murphy Cartridge loading machine, G. J. Foster Case. See Cartridge loading case. Thermometer case. Watch case. Caster furniture, O. Pederson Casting ingots, plant for. W. H. Pollett Castings, mould for, J. Walker Castings from old steel rails, producing steel, J. J.	343,783 343,836 343,706 343,725 543,954 348,872
Cart, slag, A. Werner Cartridge loading case, W. H. Murphy Cartridge loading machine, G. J. Foster Case. See Cartridge loading case. Thermometer case. Watch case. Caster furniture, O. Pederson Casting ingots, plant for. W. H. Pollett Casting, mould for, J. Walker Castings from old steel rails, producing steel, J. J. Vinton Ceiling metallic J. D. Ottimell	343,783 343,836 343,706 343,725 343,954 343,872 343,617 843,617
Cart, slag, A. Werner Cartridge loading case, W. H. Murphy Cartridge loading machine, G. J. Foster Case. See Cartridge loading case. Thermometer case. Watch case. Caster furniture, O. Pederson Casting ingots, plant for. W. H. Pollett Casting, mould for, J. Walker Castings from old steel rails, producing steel, J. J. Vinton Celling, metallic, J. D. Ottiwell Celler or window screen I. Brooke.	343,783 343,836 343,706 343,706 343,725 343,725 343,954 343,872 343,617 343,617 343,617
 Cart, slag, A. Werner	343,783 343,836 343,706 343,706 343,706 343,705 343,872 343,617 343,697
Cart, slag, A. Werner Cartridge loading case, W. H. Murphy Cartridge loading machine, G. J. Foster Case. See Cartridge loading case. Thermometer case. Watch case. Caster furniture, O. Pederson Casting ingots, plant for. W. H. Pollett Castings from old steel rails, producing steel, J. J. Vinton Ceiling, metallic, J. D. Ottiwell. Cellar or window screen, I. Brooke Cement, manufacturing hydraulic, H. C. & D. Millen	343,783 343,836 343,706 343,706 343,706 343,705 343,617 343,617 343,617 343,617 343,913
Cartridge loading case, W. H. Murphy Cartridge loading machine, G. J. Foster Case. See Cartridge loading case. Thermometer case. Watch case. Caster furniture, O. Pederson Casting ingots, plant for. W. H. Pollett Castings from old steel rails, producing steel, J. J. Vinton Ceiling, metallic, J. D. Ottiwell. Cellar or window screen, I. Brooke Cement, manufacturing hydraulic, H. C. & D. Millen Cement pipe and earthenware, S. D. Castle	343,783 343,836 343,706 343,770 343,954 343,872 343,854 343,872 343,617 343,617 343,697 343,697 343,913 343,914
Cart, slag, A. Werner Cartridge loading case, W. H. Murphy Cartridge loading machine, G. J. Foster Case. See Cartridge loading case. Thermometer case. Watch case. Casting ingots, plant for. W. H. Pollett Casting, mould for, J. Walker Castings from old steel rails, producing steel, J. J. Vinton Celling, metallic, J. D. Ottiwell Cellar or window screen, I. Brooke Cement, manufacturing hydraulic, H. C. & D. Millen Cement pipe and earthenware, S. D. Castle Centrifugalmachine. A. Waldbaur	343,783 343,836 343,706 343,775 343,954 343,872 343,872 343,872 343,872 343,954 343,913 343,913 343,914 343,932
 Cart, slag, A. Werner	343,783 343,836 343,706 343,725 343,954 343,617 343,617 343,617 343,697 343,913 343,944 343,932
Cart, slag, A. Werner Cartridge loading case, W. H. Murphy Cartridge loading machine, G. J. Foster Case. See Cartridge loading case. Thermometer case. Watch case. Caster furniture, O. Pederson Casting ingots, plant for. W. H. Pollett Casting, mould for, J. Walker Castings from old steel rails, producing steel, J. J. Vinton Ceiling, metallic, J. D. Ottiwell Cellar or window screen, I. Brooke Cement, manufacturing hydraulic, H. C. & D. Millen Cement pipe and earthenware, S. D. Castle Chair. See Piano and office chair. Revolving chair. Reclining chair. Railway switch chair. Chair. H. McElrox	343,783 343,836 343,706 343,706 343,770 343,954 343,617 343,617 343,617 343,617 343,913 343,913 343,932 343,932
Cart, slag, A. Werner	343,783 343,836 343,706 343,706 343,706 343,775 343,954 343,913 343,913 343,932 343,955 348,652
Cart, slag, A. Werner	343,783 343,836 343,706 343,706 343,706 343,706 343,954 343,857 343,697 343,913 343,913 343,932 343,955 343,652 343,551
Cart, slag, A. Werner Cartridge loading case, W. H. Murphy Cartridge loading machine, G. J. Foster Case. See Cartridge loading case. Thermometer case. Watch case. Casting ingots, plant for. W. H. Pollett Casting, mould for, J. Walker Castings from old steel rails, producing steel, J. J. Vinton Ceiling, metallic, J. D. Ottiwell. Cellar or window screen, I. Brooke Cement, manufacturing hydraulic, H. C. & D. Millen Cement pipe and earthenware, S. D. Castle Centrifugalmachine. A. Waldbaur Chair. See Piano and office chair. Revolving chair. Reclining chair. Railway switch chair. Chimney top, Trobridge & Conery Chimney top, See Vegetable chopper.	343,783 343,836 343,725 343,954 343,954 343,954 343,697 343,913 343,913 343,944 343,932 343,965 343,652 343,581
Cart, slag, A. Werner Cartridge loading case, W. H. Murphy Cartridge loading machine, G. J. Foster Case. See Cartridge loading case. Thermometer case. Watch case. Caster furniture, O. Pederson Casting ingots, plant for. W. H. Pollett Castings from old steel rails, producing steel, J. J. Vinton Celling, metallic, J. D. Ottiwell Cellar or window screen, I. Brooke Cement, manufacturing hydraulic, H. C. & D. Millen Cement pipe and earthenware, S. D. Castle Centrifugalmachine. A. Waldbaur Chair. See Plano and office chair. Revolving chair. Reclining chair. Railway switch chair. Chimney top, Trobridge & Conery Chimneys, thimble for, C. F. Green Chopper. See Vegetable chopper. Churn, J. M. Davis	343,783 343,836 343,706 343,725 343,954 343,872 343,872 343,872 343,872 343,617 343,617 343,617 343,617 343,913 343,932 343,944 343,932 343,965 343,652 343,851 343,851
Cart, slag, A. Werner	343,783 343,836 343,725 343,954 343,725 343,954 343,954 343,953 343,913 343,913 343,913 343,944 343,932 343,965 343,965 343,951 343,955 343,951 343,955
Cart, slag, A. Werner	343,783 343,785 343,796 343,706 343,706 343,705 343,617 343,617 343,617 343,913 343,913 343,944 343,932 343,965 343,652 343,652 343,651 343,652 343,651 343,851 343,851 343,871
Cart, slag, A. Werner. Cartridge loading case, W. H. Murphy. Cartridge loading machine, G. J. Foster. Case. See Cartridge loading case. Thermometer case. Watch case. Casting ingots, plant for. W. H. Pollett. Casting ingots, plant for. W. H. Pollett. Castings from old steel rails, producing steel, J. J. Vinton. Ceiling, metallic, J. D. Ottiwell. Cellar or window screen, I. Brooke. Cement, manufacturing hydraulic, H. C. & D. Millen. Cement pipe and earthenware, S. D. Castle. Centrifugalmachine. A. Waldbaur. Chair. See Piano and office chair. Revolving chair. Reclining chair. Railway switch chair. Chimney top, Trobridge & Conery. Chimneys, thimble for, C. F. Green. Chorn, J. M. Davis. Churn, Lines & Long Churning or mixing machine, R. Morton. Cigar Clapper and lighter, F. M. Wirtz Class. See Spring Class.	343,785 343,786 343,786 343,775 343,876 343,872 343,872 343,617 343,617 343,617 343,617 343,932 343,618 343,952 343,652 343,671 343,835 343,746
 Cart, slag, A. Werner	343,783 343,786 343,746 343,725 343,954 343,872 343,877 343,877 343,975 343,965 343,965 343,652 343,652 343,652 343,751 343,877 433,774 343,873
 Cart, slag, A. Werner	343,735 343,736 343,746 343,725 343,954 343,746 343,877 343,697 343,965 343,965 343,965 343,965 343,955 343,652 343,551 343,857 343,8746 343,8746
Cart, slag, A. Werner	343,735 343,736 343,746 343,725 343,954 343,775 343,637 343,637 343,637 343,952 343,652 343,652 343,652 343,654 343,654 343,654 343,776 343,771 343,857 343,776
 Cart, slag, A. Werner	343,785 343,786 343,796 343,796 343,796 343,795 343,697 343,697 343,912 343,912 343,914 343,913 343,914 343,912 343,581 343,571 343,852 343,771 343,852 343,776
 Cart, slag, A. Werner	343,735 343,376 343,726 343,974 343,872 343,872 343,872 343,877 343,877 343,877 343,877 343,867 343,965 343,965 343,652 343,652 343,652 343,756 343,776 343,977 343,775 343,776 343,977 343,775 343,776 343,977 343,775 343,776 343,977 343,775 343,977343,97
 Cart, slag, A. Werner	343, 256 343, 256 343, 766 343, 766 343, 776 343, 954 343, 877 343, 954 343, 965 343, 976 343, 977 343, 977 340, 977 340
Cart, slag, A. Werner	343, (33) 343, (34) 343, (74) 343, (74) 343, (74) 343, (74) 343, (74) 343, (74) 343, (97) 343, (97)
Cart, slag, A. Werner	343, (33) 343, (34) 343, (74) 343, (74) 343, (75) 343, (75) 343, (97) 343, (97) 343, (97) 343, (97) 343, (93) 343, (95) 343, (97) 343, (97)
 Cart, slag, A. Werner	343,783 343,786 343,786 343,786 343,786 343,872 343,697 343,697 343,697 343,982 343,982 343,982 343,982 343,982 343,982 343,776 343,982 343,776 343,877 343,977 343,97
 Cart, slag, A. Werner	343, 333, 336 343, 336 343, 356 343, 356 343, 356 343, 357 343, 357 345, 357 345, 357 345, 357 345, 357 345, 357 345, 357 345, 35
Cart, slag, A. Werner	343, 333, 336 343, 334, 336 343, 336 343, 336 343, 356 343, 356 343, 357 343, 3
Cart, slag, A. Werner	343,783 343,786 343,776 343,776 343,954 343,697 343,697 343,697 343,697 343,697 343,697 343,965 343,697 343,965 343,652 343,652 343,654 343,785 343,746 343,874 343,875 343,745343,745 343,745343,745 343,745 343,745 343,745 343,745343,745 343,745 343,745 343,745343,745 343,745343,745 343,745 343,745343,74
Cart, slag, A. Werner	343, 333, 334 343, 334, 334 343, 335 343, 335 343, 335 343, 354 343, 357 343, 357 34
Cart, slag, A. Werner	343, 133, 336 343, 736 343, 736 343, 736 343, 736 343, 737 343, 637 343, 637 343, 637 343, 637 343, 952 343, 652 343, 652 343, 776 343, 771 343, 852 343, 746 343, 747 343, 748 343, 747 343, 748 343, 747 343, 748 343, 748 3
 Cart, slag, A. Werner	343, 353 343, 354 343, 356 343, 356 343, 356 343, 356 343, 357 343, 3
Cart, slag, A. Werner	343, 333, 334, 334, 334, 334, 334, 334,
Cart, slag, A. Werner	343, 333, 336 343, 334, 336 343, 736 343, 736 343, 736 343, 954 343, 957 343, 967 343, 967 343, 965 343, 970 343, 970 34
Cart, slag, A. Werner	343, 333, 334, 334, 334, 334, 334, 334,
Cart, slag, A. Werner. Cartridge loading case, W. H. Murphy. Cartridge loading machine, G. J. Foster. Case. See Cartridge loading case. Thermometer case. Watch case. Caster furniture, O. Pederson. Casting ingots, plant for. W. H. Pollett. Casting, mould for, J. Walker. Castings from old steel rails, producing steel, J. J. Vinton. Ceiling, metallic, J. D. Ottiwell. Cellar or window screen, I. Brooke. Cement, manufacturing hydraulic, H. C. & D. Millen. Cement pipe and earthenware, S. D. Castle. Centrifugalmachine. A. Waldbaur. Chair. See Piano and office chair. Revolving chair. Reelining chair. Railway switch chair. Chinney top, Trobridge & Conery. Chinneys, thimble for, C. F. Green. Chopper. See Vegetable chopper. Churn, J. M. Davis. Churn, J. M. Davis. Churn, J. M. Davis. Churn, J. M. Bavis. Clock movement, electric. P. Lange. Clock winding mechanism, Craig & Eastman. Clock woringer, C. K. Stinson. Coffee pot, R. L. Gore. Colotk winger, C. K. Stinson. Coffee pot, R. L. Gore. Collar, horse, W. J. Bailey et al. Collar, horse, W. J. Bailey et al. Corn shock compressor, A. C. Hedden Corn shock compressor, A. C. Hedden Coupling. See Car coupling. Thill coupling.	343, 353 343, 354 343, 356 343, 356 343, 356 343, 357 343, 358 343, 3
Cart, slag, A. Werner	343, 353 343, 354 343, 356 343, 356 343, 354 343, 354 343, 354 343, 354 343, 355 343, 365 343, 365 343, 365 343, 365 343, 358 343, 358 343, 354 343, 355 343, 3
Cart, slag, A. Werner	343, 333, 334, 334, 334, 334, 334, 334,
Cart, slag, A. Werner	343, 333, 336 343, 334, 336 343, 343, 356 343, 356 343, 356 343, 357 343, 305 343, 305 343, 305 343, 305 343, 305 343, 365 343, 365 343, 365 343, 365 343, 365 343, 366 343, 366 3

"Physics and Politics," by Walter Bagehot (\$1.50); and	(14) T. C. J. asks: What kind of a py-	Axle, wagon, J. Lucksinger	Drier. See Fruit drier.
a long list of others. The subject is a big one.	rometer is used for registering about 4,000° of heat, as	Bag fastener, J. L. McDonald	Drier, A. Buel
(5) C C F desires a receipt for ink	the highest graduated pyrometer that I have seen is	Balance, compound spring, E. L. Chamberlayne 343,946	Drier, M. Hecking
	1.500°? A. There are no pyrometers made for so high	Banjo, O. R. Chase 343,564	Drier, G. & C. N. Meriwether 348,773
to renew a Keystone rubber stamp pad one year in use.	temperature. The Wedgewood pyrometers, made of	Bar. See Grate bar.	Drill. See Grain drill.
A. All links used on this class of pad are made from	clay, registered to 2,500°, but were not reliable. They	Barrel heater, McVicar & Glor, Jr 343,838	Drills, feed mechanism for, M. Schwarzler 343,734
aniline colors dissolved in glycerine and thickened with	were in use in England Pyrometers of platinum rode	Barrel stand, I. G. Pollard 343,920	Dumping and discharging apparatus, automatic,
gelatine. When they need renewal, the addition of a	inclosed in a number tube are probably the most	Bearings, composition of matter to cool and re-	J. T. Evans
little glycerine and alcohol may soften and revivify	nichosek in a plumbago tube are probably the most	duce friction in, J. H. Brown 343,943	Dyeing cotton fiber, O. Bielschowski 843,798
them, but when exhausted they are intended to be		Bed bottoms, machine for making coiled springs	Egg carrier, A. C. Rumble 843,968
thrown away.	(15) C. W. C. desires (1) a recipe for a	for, D. F. Stambaugh 343,928	Electric alarm apparatus, W. C. Smith 343,863
(6) P I D asks, What will dissolve	stain to imitate mahogany on white birch wood, that	Bed spring, J. A. Kelly 343,641	Electric cable, S. F. Shelbourne 343,676
(0) It. L. I. asks. what will dissolve	will not raise the grain of the wood. A. A dark ma-	Bedstead, bureau, M. Samuels 343,858	Electric energy, distribution of, G. & A. Pfaum-
gold chloride? I have about eight or twelve grains	hogany stain is made as follows. Boil half a nound of	Beehive, J. J. McCullar	kuche
dissolved in HCl and HNO ₃ ; then I precipitated with	medder and 2 onness of logwood ching in 1 cellon of	Beer in kegs, apparatus for supplying carbonic	Electric machine, dynamo, S. H. Tacy
hydrogen sulphide, and tried to dissolve the precipi-	water and buch well even the wood while het, when	acid gas to, D. Morris et al 343.596	Electro-magnetic motors, governor for, C. F.
tate in a half ounce of cyanide of potassium, with	drug co over the whole with meanlach colution of	Beer or fluid drip, F. C. & H. A. Stober 348,741	Brush
no result. I heated the mixture. What is the trouble ?	dry, go over the whole with pearlash solution, 2	Beer with carbonic acid gas, process of hopping	Elevator. See Water elevator.
A. Before passing hydrogen sulphide through the gold	drachms to the quart. 2. Can you give recipe for mak-	and preserving. D. Morris et al	Elevator gates, operating, D. Turts 343,681
solution, you had the chloride in solution, and you	ing the acid stain? A. In the acid stain you take ni-	Belt for body wear, electric. G. A. Wright 343,620	Engine. See Hydraulic engine. Gas engine.
should have added the evanide to it. You have not	tric acid, and dilute with 10 parts of water, and wash	Bicycle shoe. T. J. Strickland	Traction engine.
einitated sulphide of gold Dissolve it in nitrie and	the wood with it. 3. Are there any books which give	Bicycles, luggage carrier for, J. A. Lampfugh 545,509	Biobarda 249 954
budnochlonic ocida as hofers	full directions for imitating the different woods? A.	Blind mindom S Damar 843,794	Envelope machine F H Bichards 242 055 342 956
nyuroemorie acius as perore,	We would recommend for your purpose Spon's Work-	Boilor swoonor W T Lovi 943 760	Exhibiting device I P Wilson 943,800 943,809
(7) T. B. asks: 1. How many candle	shop Receipts (second series), which we can send you,	Boilors manifold for sactional N. W. Pratt. 343,727	Evoglass frame C W Wells 943.825
power Edison lamp will the dynamo referred to in	postpaid, for \$2.00.	Bolt. See Flour bolt.	Kabric. See Metal fabric.
• • •			