long march 25 miles, so that at the halt the rear man: which a motor is included, when the motor is stopped comes to where the front man started from. At the i and when running? A. The electromotive force is the start a courier rides from the rear to the front, and returns to the rear, reaching it (25 miles ahead from where he started) just as the column halted, all rotate, the current strength increases. movement being at uniform rate. How far did the: (6084) G. H. S. writes I courier ride? A. Rule for contents of taper timber: To the sum of areas of the two ends add four times: the area of the middle section. Multiply this sum by one sixth of the length. If in inches, divide by 144 for board measure. The pole contains 100 feet board measure. The courier rode 42.67 miles to reach the head of the column and $17 \cdot 68$ miles returning to the foot, in all 60 35 $\,$ miles.

diameters of the cylinders of a compound engine be, way to depolarize? Is it necessary to amalgamate the that the sizes of the cylinders will be as 1 is to 4, and the zincs? Mine are cast and have some blow holes which a cylinder26 inches in diameter, the same pressure of scaly substance which prevents the action of the acid on 363/ inches diameter.

through the Scientific American the name of this insect and how to stop its work? A. Reply by Prof. C. V. Riley.—The specimens sent by your correspondent prove to be Lyctus strictus, which is the commonest and most widely distributed of our so-called powder post beetles. These beetles and their larvæ are known to live and tunnel in the branches or trunks of dead trees, furniture for several generations, and that only a portion a large and heavy piece of furniture, e. g., a bureau, is in winter longer in summer. infested, the destruction of the larvæ and beetles is next to impossible without materially injuring the bureau. are still working within the wood.

(6078) W. McC asks: What flux should: be used in soldering copper wires for electrical purposes with soft solder that will not cause the wires to corrode ? A. Resin is the best flux for soft soldering for the purpose stated.

(6079) P. J. K. asks: Is there any way to harden steel? For example, plow shares, so that one side is hardened while the other remains soft. A. We call to mind no satisfactory way of hardening the face side of steel plow shares. In attempting to do so the plates are apt to warp and spring out of shape.

(6080) C. W. C.—A solid bar is stronger than a tube of the same outside diameter.

(6081) C. D. R. asks: 1. I would like to number of lamps? A. There is no such thing as a current of 52 volts. A dynamo of given winding may maintain this potential. To increase the potential to 110 volts the armature. 2. When a dynamo is charging a storage battery what prevents said battery from running dynam $\acute{\bullet}$ as a motor when it has acquired a sufficient current? A. As long as the potential maintained by the dynamo exelectroscope and charging until the potential ceases to carbons and a hollow cylinder of zinc for electrodes, with an exciting solutionof sal-ammoniac, give satisfactory results on open circuit work? If not, how can it be improved? A. Yes; but the better plan is to use a very large carbon surface. A single rod of zinc is enough for eight or ten carbons.

American accumulators, 150 ampere hours capacity each. giving a pressure of 2 volts each. I wish to run a 1/8 horse power 6 volt motor with them with best results as to strength of motor. Is it proper to connect cells in series? How long will cells run motor continuously at tor for ten hours. 2. I wish to charge cells with arc light circuit of 10 amperes. Should cells be thrown into them? What is the formula for above question? A. You cannot do this with safety. We advise you not to to their full capacity each time they are thrown into the arc circuit, or could they be thrown in and out according to convenience? A. You can work either way. It is (6090) S. H. Co. write: Parties here best to charge them up to full capacity frequently.

(6083) A. L. J. asks: 1. Please state the object of placing an induction coil in circuit of long telephone lines, since as the E. M. F. increases, the current strength must decrease. A. It gives high voltage for the circuit external to the induction coil. 2. Is the temperature of the electric arc higher than that obtained with largest burning glasses? A. Yes. 3. I ran a current from battery through a short coil galvanometer with astatic needle. After stopping current, the needle did not point north. What was the cause? A. The needle was so perfectly astatic that there was not enough polarity to move it. 4. In the electrolysis of water why do not carbon electrodes succeed instead of platinum? A. Their porousness might make them retain some gas. Iron or copper electrodes in caustic alkali solution are excellent. 5. In electroplating a spoon, for instance, which are the electrodes, the spoon and the piece of metal to be deposited, or the two rods, connected to battery, from which they are suspended? A. The spoon and piece of metal. 6. What are the differences in electromotive

same except for the armature, which generates counter electromotive force If the armature is not allowed to

(6084) G. H. S. writes: I have recently constructed a simple electric motor and large bichromate of soda battery described in your valuable book, "Experimental Science." At first 4 cells would run the motor, but after a short time the whole 8 would not work it. I used in solution a saturated solution of bichromate of soda and added sulphuric acid to one-fifth volume. If depolarization is the trouble, why should it depolarize so (6076) A. E. R. asks: What must the quick? I never used it half an hour. What is the best two to have the same horse power as a simple engine with will not take the mercury. The zincs get covered with a steam in each case? A. The high pressure cylinder the zinc. At first the action was so strong that it made should be 181/2 inches diameter, low pressure cylinder the solution quite warm and made quite a strong smell. The solution was a little warm at first. Kindly put me on the right track. A. Your entire trouble is due to bad (6077) J. B. G. says: Can you tell me amalgamation of your zines. The production of heat and of an odor shows a destructive and useless action and proves that the amalgamation is imperfect. You will have no satisfaction until you attend to this.

(6085) G. M. H. says: Will you please inform me through your Notes and Queries column how to make printing press rollers? A. To 8 pounds transin telegraph poles, household furniture, wooden handles parent glue add enough cold water to cover it; let it of tools or agricultural implements, etc. In the case of stand with occasional stirring seven or eight hours. After their emergence from furniture, oviposition has taken twenty-four hours, all the water should be absorbed. place while the boards were still in the lumber yard or while the felled tree was still on the ground. It is also pounds molasses that has been made quite hot. Heat, pretty certain that the insects pair and multiply within with frequent stirring, for half an hour. The moulds should be clean and greased. Pour into moulds after it of the beetles issue through the holes bored by them. If has cooled a little, and allow to stand eight or ten hours

(6086) W. C. C. writes: Will you kindly decide the following dispute? A states that a bullet fired The only thing that can be recommended is a liberal and from a rifle straight into the air will reach on its return frequent application of common kerosene by means of a the point of departure with the same velocity with which Finish by lining off into very regular blocks. A more rag or a brush. A portion of the oil will penetrate into it left the muzzle of the gun. B says that possibly this is the wood, through the holes made by the issuing beetles, true in theory, but not in practice, else why will a bullet and will at least kill many of the larvæ and beetles that on being fired from a gun pass through resisting bodies which it cannot penetrate if dropped from a height equal $\,$ to that attained by the missile when discharged from the gun? A. The theory of the vertical projection of a bullet and its final velocity is derived from the unimpeded speed due to a vacuum and gravity. In practice the resistance of the air impedes the velocity of the bullet in both its upward and downward flight, the return impact being much less than the muzzle impact

(6087) F. H. F. asks: 1. What is the rule for determining the number of watts necessary to produce an arc light of given candle power? I understand that experts at the World's Fair decided on 450 watts for a 2,000 candle power light, 300 watts for a 1,200 candle power light; now, how can I determine the watts for a 1,500 candle power or a 1,000 candle power light? A. The rule is partly conventional, and is based on experiknow the difference between a dynamo which gives a ment. There is no rule. You can approximate by incurrent of 52 volts and lights 2 sixteen candle power incantercalation. 2. What is the relation between candle descent lamps and one of 110 volts that lights the same power and watts in arc lights? A. There is no fixed relation that can be stated. You can deduce an approximation from the above. 3. What book will explain the matter in detail? A. See Supplement, Nos. 694. 695, set. The wash must be well stirred during the applicathe simplest plan is to use finer wire and more turns on 696, for general articles on the subject; price 10 cents each by mail.

me a formula for preventing llotype prints from curling be used to advantage over paint or whitewash. ceeds that which the battery can produce, the battery up when I do not desire to mount them? A. After will take current from the dynamo. If the dynamo is washing, dry off the water with blotters, then place the disconnected from the power shaft, the battery will run prints in pairs face to face between sheets of strawit as a motor. 3. How can you tell when a Leyden jar board or cardboard, six pairs between each board, and is fully charged? A. By connecting to a graduated put a weight on top. Let them stand for three or four hours or until dry. Each unmount d print will then rerise. 4. Would a battery of several rods of electric light main flat. 2. How can I keep film negatives from curling up after development? A. After the negatives are washed immerse the films for five minutes in a solution of water 1 oz., glycerine 2 minims. When dry, keep under pressure as advised for Ilo print.

(6089) J. McG. asks: 1. Can a copper vessel be used as a generator in the manufacture of hydro-(6082) A. H. M. writes: I have three gengas, or is a vessel made of sheet or holler iron lined with lead preferable, and what should be the thickness of metal to be used in either case? A. By all means use a lead-lined vessel. Burn the joints together-do not solder. No particular thickness is required. 2. Which is the better and more economical method of generating full load? A. Connect in series. They will run the mo-hydrogen, that by sulphuric acid and iron filings in water or by blowing steam through heated coal? A. By the action of steam on coal you produce a quantity of arc circuit in series? How long will it take to charge; carbon monoxide gas with the hydrogen. By using hot iron borings in place of coal, the steam process will give reasonably pure hydrogen. On the large scale this attempt it. Allow 5 amperes charging current for each square foot of positive plate.

3. Is it best to charge them names of works on subject of generating hydrogen gas

8 light dynamo contained in Supplement, No. 600, and

wish to procure a magnet that metal buried underground had no trouble with it. Is there a Supplement treating will attract. One which will locate gold or silver. They on volt or ampere meters? If so, what numbers? A. claim there is such an instrument called "the hidden Ammeters, Supplement, Nos. 440, 603, 618, 628, 734; treasure seeker." Is there such an instrument manufactured, and if so, can you tell us where one can be procured? A. No such thing exists. [It is surprising that any one should expect to be able to buy apparatus of this description. If there are \$10,000,000,000 worth of treasure hidden in the earth, what would be the value of an instrument that would indicate its whereabouts? And who, owning an instrument of this kind, would part with it for any consideration whatever? The fact of offering for sale an instrument purporting to be an operative instrument for this purpose is prima facie evidence of fraud or dense ignorance. 'The shovel and pick, the hammer and drill, are the only treasure-seeking instruments of any value. Ore finders, divining rods, and devices of that class are delusions.- Eps. 1

(6091) J. M. W., Cal., writes: Would you kindly let me know if the following is correct? In the Encyclopedia Britannica (Americanized edition, Belforce, current strength, and resistance of a circuit in ford-Clarke, publishers, Chicago, 1890) it states under the

States inch=1:000049 British inches? I always thought they were identical, and that Whitworth's standard in measuring was the same in both countries. Again, in an English work I see the grain apothecaries' weight= 1.0978 grains avoirdupois, in other words, 10 grains apoth =nearly 11 grains avoir.; in the above encyclopedia there is no difference given. Is there any difference? In com ing across such discrepancies as the above, it makes one ardently hope that something will soon be done toward bringing about a "universal standard system of weights and measures." Would you mind also stating the difference between the English and American pint, quart, peck and bushel? A. The difference in length of standard measures as stated is correct. Brown & Sharp Manufacturing Co. use the American standard. The grain has but one value, 7,000 to one pound avoirdupois or troy, in England. In the United States 7,000 to one pound avoir dupois and 5,760 to one pound troy and apothecaries weight. The American standard measure of the gallon is 231 cubic inches. The British standard gallon is 277 274 cubic inches. The United States standard bushel is 2150.42 cubic inches. The imperial or British bushel is 2218 192 cubic inches. Divisional measures in proportion. The metric system is intended to equalize international weights and measures.

(6092) G. E. K. says: Would you please give the formula and instructions for mixing same for making Portland cement walks, drives, floors, etc.? I notice some are of a fine am and others of a coarse nature. Also of different colors. Please explain this feature. A. English Portland cement is generally preferred. Procure a sharp, light-colored sand, and wash it free from all particles of soft earth or soil; also some stone chips, gravel, and large stone. Excavate the sidewalk about 18 inches deep, and fill in the large stone to within 6 inches of the surface; prepare a concrete made of the cement 1 part, stone chips and gravel about 6 parts, and bed it in upon the stone bottom to within 2 inches of the surface; then prepare a concrete of the cement 1 part and fine sand 2 parts, and lay it in up to the surface, floating the surface with the cement at pleasure. economical sidewalk can be made by omitting the stone bed, but it will require a good hard soil to lav it on, and then will not be so sure of being permanent. See also Supplement, No. 539. Sometimes finely broken stone is used in place of sand. The color can be varied by the use oxide of iron, such as is used for metallic paint.

(6093) F. L. M. says: How should whitewash be prepared to secure best permanent results on cellar walls? Painters affect entire ignorance in the matter, and the information is difficult to obtain. The following coating for rough brick walls is used by the United States government for painting lighthouses, and it effectually prevents moisture from striking through: Take of fresh Rosendale cement, 3 parts, and of clean, fine sand, I part: mix with fresh water thoroughly. This gives a gray or granite color, dark or light, according to the color of the cement. If brick color is desired, add enough Venetian red to the mixture to produce the color. If a very light color is desired, lime may be used with the cement and sand. Care must be taken to have all the ingredients well mixed together. In applying the wash, the wall must be wet with clean fresh water, then follow immediately with the cement wash. This prevents the bricks from absorbing the water from set. The wash must be well stirred during the application. The mixture is to be made as thick as can be applied conveniently with a whitewash brush. It is ad-(6088) R. C. F. asks: 1. Will you give mirably suited for brickwork, fences, etc., but it cannot

> (6094) E. E. D. asks: I have four 1.2 inch horse shoe magnets. How can I recharge them? A. By touching the poles to the poles of an active dynamo and removing it slowly in the line of the armature axis you can recharge a magnet. Be careful to touch the right poles, i. e., north pole of magnet to south pole of field and viceversa. 2. How can I make a magneto exploder with these magnets? A. See our Supplement, Nos. 161 and 315. 3. How can I make an atomizing petroleum burner? A. See Supplement, No. 569.

> (6095) F. R. H. says: Can you tell me through the Notes and Queries column of your paper how carbon paper is prepared? A. Melt 10 parts lard, 1 part of beeswax, and mix with a sufficient quantity of fine lampblack. Saturate unglazed paper with this, remove excess and press

> (6096) W. T. says: Would you please give me a formula for a cement that I can cement brass ornaments to glass so they will stick tight? A. A cement for such purposes as fixing metal letters to glass windows consists of copal varnish 15 parts, drying oil 5 parts, turpentine 3 parts, oil of turpentine 2 parts, liquefied marine glue 5 parts. Melt in a water bath, and add 10 parts dry slaked lime.

(6090) S. H. Co. write: Parties here at once. I have also made the hand power dynamo, and voltmeters, Supplement, Nos. 353, 552, 556, 668, 734,

Communications Received.

- "On a Display of Aurora Polaris." By A. W. F. "On the White Heron." By T. H.
- "On Slow Beating Pendulums," By C. R. S.
- "The Great Sugar Pine." By T. H.

TO INVENTORS

An experience of forty-four years, and the preparation of morethan one nundred thousand applications for patents 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 had on application, and persons contemplating the securing of patents, either at homeor 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 5, 1894.

AND EACH BEARING THAT DATE.

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

ŀ	Acid by means of heated gases, apparatus for concentrating sulphuric. J. L. Kessler	520,994
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	Cherry stoner. J. W. Brown, Jr. Chopper. See Cotton chopper. Chuck, engraver's, H. Gruner. Chuck, engraver's, F. Mink. Chute, coal. J. Scully. Cigar bunching machine, F. J. Hagen Cigar package, S. Philipson Cigarette wrapper holder, J. R. Hernandez. Cleat, J. C. Steelman Clock, ese, E. P. Bard Clock, ese, E. P. Bard Clock, electric alarm, J. S. Whitehead Clod crusher and pulverizer, Nelson & Nellsen Cloth cutting machine, N. Rubenstein. Clothes pin, T. J. Gordon. Clutch, M. Campbell Clutch, T. J. Thorp Collar and cuff case, traveler's combined, L. D. Dozier (r). Collar or cuff, R. M. Hunter Collars, device for shaping folds of linen, A. C. Vall Concentrator, A. H. Rapp.	521,011 520,778 520,797 521,052 520,881 521,041 521,056 520,97,9 521,063 520,97,9 521,063 520,959 520,959 520,959 520,959 520,959 520,959 520,959 520,959 520,959 520,959 520,959 520,959 520,959 520,959 520,959
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	Cherry stoner. J. W. Brown, Jr. Chopper. See Cotton chopper. Chuck, engraver's, H. Gruner. Chuck, engraver's, F. Mink. Chute, coal. J. Scully. Cigar bunching machine, F. J. Hagen. Cigar package, S. Philipson. Cigarette wrapper holder, J. R. Hernandez. Cleat. J. C. Steelman. Clock case, R. P. Bard. Clock, electric alarm, J. S. Whitehead. Clock case, R. P. Bard. Clock clectric alarm, J. S. Whitehead. Clothes pin, T. J. Gordon. Clothes pin, T. J. Gordon. Clutten, M. Campbell. Clutten, M. Campbell. Clutten, T. Thorp. Collar and cuff case, traveler's combined, L. D. Dozier (r). Collars, device for shaping folds of linen, A. C. Vail Cornecative, A. H. Rapp. Cooler, W. Linter. Cornstalk shocking mechanism, J. W. Ogle. Cotton chopper, G. W. Murray. Cotton chopper, G. W. Murray.	521,011 520,778 520,797 521,052 521,052 520,881 521,052 521,052 521,052 521,063 520,799 521,003 520,799 521,003 520,799 521,003 520,799 521,003 520,830 520,830 520,830 520,830 520,830 520,838 520,838
	Cherry stoner. J. W. Brown, Jr. Chopper. See Cotton chopper. Chuck, engraver's, H. Gruner. Chuck, engraver's, F. Mink. Chute, coal. J. Scully. Cigar bunching machine, F. J. Hagen. Cigar package, S. Philipson. Cigarette wrapper holder, J. R. Hernandez. Cleat. J. C. Steelman. Clock case, R. P. Bard. Clock, electric alarm, J. S. Whitehead. Clock case, R. P. Bard. Clock clectric alarm, J. S. Whitehead. Clothes pin, T. J. Gordon. Clothes pin, T. J. Gordon. Clutten, M. Campbell. Clutten, M. Campbell. Clutten, T. Thorp. Collar and cuff case, traveler's combined, L. D. Dozier (r). Collars, device for shaping folds of linen, A. C. Vail Cornecative, A. H. Rapp. Cooler, W. Linter. Cornstalk shocking mechanism, J. W. Ogle. Cotton chopper, G. W. Murray. Cotton chopper, G. W. Murray.	521,011 520,778 520,797 521,052 520,881 521,041 521,041 521,042 521,063 521,063 520,97,9 521,063 520,939 521,063 520,939 521,061 520,939 521,119 521,061
	Cherry stoner. J. W. Brown, Jr. Chopper. See Cotton chopper. Chuck, engraver's, H. Gruner. Chuck, engraver's, F. Mink Chute, coal. J. Scully Cigar bunching machine, F. J. Hagen Gigar package, S. Philipson Gigarette wrapper holder, J. R. Hernandez. Cleat. J. C. Steelman Clock case, R. P. Bard Clock, electric alarm, J. S. Whitehead Clock, electric alarm, J. S. Whitehead Clot custner and pulverizer, Nelson & Neilsen. Clot cutting machine, N. Rubenstein. Clothes pin, T. J. Gordon Clutch, M. Campbell. Clutch, T. J. Thorp Coin-controlled mechanism, H. A. Manley. Collar and cuff case, traveler's combined, L. D. Dozier (r). Collar or cuff, R. M. Hunter. Collars, device for shaping folds of linen, A. C. Vail Concentrator, A. H. Rapp. Cotton chopper, G. W. Murray. Cotton opener and stopping mechanism therefor, Richardson & Fidler. Coupling. See Car coupling. Flagstaff coupling. Crusher. See Clod crusher.	521,011 520,778 520,797 521,052 520,881 521,028 521,028 521,028 520,799 521,063 520,799 521,059 521,059 521,059 521,061 520,939 521,1061 520,939 521,1088 520,838 520,838
	Cherry stoner. J. W. Brown, Jr. Chopper. See Cotton chopper. Chuck, engraver's, H. Gruner. Chuck, engraver's, F. Mink Chute, coal. J. Scully Cigar bunching machine, F. J. Hagen Gigar package, S. Philipson Gigarette wrapper holder, J. R. Hernandez. Cleat. J. C. Steelman Clock case, R. P. Bard Clock, electric alarm, J. S. Whitehead Clock, electric alarm, J. S. Whitehead Clot custner and pulverizer, Nelson & Neilsen. Clot cutting machine, N. Rubenstein. Clothes pin, T. J. Gordon Clutch, M. Campbell. Clutch, T. J. Thorp Coin-controlled mechanism, H. A. Manley. Collar and cuff case, traveler's combined, L. D. Dozier (r). Collar or cuff, R. M. Hunter. Collars, device for shaping folds of linen, A. C. Vail Concentrator, A. H. Rapp. Cotton chopper, G. W. Murray. Cotton opener and stopping mechanism therefor, Richardson & Fidler. Coupling. See Car coupling. Flagstaff coupling. Crusher. See Clod crusher.	521,011 520,778 520,797 521,052 520,881 521,028 521,028 521,028 520,799 521,063 520,799 521,059 521,059 521,059 521,061 520,939 521,1061 520,939 521,1088 520,838 520,838
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	Cherry stoner. J. W. Brown, Jr. Chopper. See Cotton chopper. Chuck, engraver's, H. Gruner. Chuck, engraver's, F. Mink. Chute, coal. J. Scully. Cigar bunching machine, F. J. Hagen. Cigar punching machine, F. J. Hagen. Cigar package, S. Philipson. Cigarette wrapper holder, J. R. Hernandez. Cleat. J. C. Steelman. Clock case, E. P. Bard. Clock, electric alarm, J. S. Whitehead. Clock case, E. P. Bard. Clothes pin, T. J. Gordon. Clutch, M. Campbell. Clothes pin, T. J. Gordon. Clutch, T. J. Thorp Collar on and cuff case, traveler's combined, L. D. Dozier (r). Collar on cuff, R. M. Hunter. Collars, device for shaping folds of linen, A. C. Vail Concentrator, A. H. Rapp. Cotton chopper, G. W. Murray. Cotton opener and stopping mechanism therefor, Richardson & Fider. Coupling. See Car coupling. Flagstaff coupling. Hose coupling. Pipe coupling. Thill coupling. Crusher. See Clod crusher. Curling iron, C. F. Snyder. Current motor, multiphase, I. Bell. Current motor, multiphase, I. Bell. Current motors, method of and means for starting alternating, I. Bell. Currenting, conomizing the energy of alternating,	521,011 520,778 520,797 521,052 520,891 521,041 521,041 521,042 521,045 521,045 521,046 521,04
	Cherry stoner. J. W. Brown, Jr. Chopper. See Cotton chopper. Chuck, engraver's, H. Gruner. Chuck, engraver's, F. Mink. Chute, coal. J. Scully. Cigar bunching machine, F. J. Hagen. Cigar punching machine, F. J. Hagen. Cigar package, S. Philipson. Cigarette wrapper holder, J. R. Hernandez. Cleat. J. C. Steelman. Clock case, E. P. Bard. Clock, electric alarm, J. S. Whitehead. Clock case, E. P. Bard. Clothes pin, T. J. Gordon. Clutch, M. Campbell. Clothes pin, T. J. Gordon. Clutch, T. J. Thorp Collar on and cuff case, traveler's combined, L. D. Dozier (r). Collar on cuff, R. M. Hunter. Collars, device for shaping folds of linen, A. C. Vail Concentrator, A. H. Rapp. Cotton chopper, G. W. Murray. Cotton opener and stopping mechanism therefor, Richardson & Fider. Coupling. See Car coupling. Flagstaff coupling. Hose coupling. Pipe coupling. Thill coupling. Crusher. See Clod crusher. Curling iron, C. F. Snyder. Current motor, multiphase, I. Bell. Current motor, multiphase, I. Bell. Current motors, method of and means for starting alternating, I. Bell. Currenting, conomizing the energy of alternating,	521,011 520,778 520,797 521,052 520,891 521,041 521,041 521,042 521,045 521,045 521,046 521,04
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	Cherry stoner. J. W. Brown, Jr. Chopper. See Cotton chopper. Chuck, engraver's, H. Gruner. Chuck, engraver's, F. Mink. Chute, coal. J. Scully. Cigar bunching machine, F. J. Hagen. Cigar package, S. Philipson. Cigarster wrapper holder, J. R. Hernandez. Cleat. J. C. Steelman. Clock case, E. P. Bard. Clock, electric alarm, J. S. Whitehead. Clock case, E. P. Bard. Clothes pin, T. J. Gordon. Clutch, M. Campbell. Clothes pin, T. J. Gordon. Clutch, T. J. Thorp Collar on cuff, R. M. Hunter. Collars, device for shaping folds of linen, A. C. Vail. Concentrator, A. H. Rapp. Cooler, W. Linter. Cornstalk shocking mechanism, J. W. Ogie. Cotton chopper, G. W. Murray. Cotton opener and stopping mechanism therefor, Richardson & Fidler. Coupling. See Car coupling. Flagstaff coupling. Current motor, alternating, O. Offrell. Current motor, multiphase, I. Bell. Current motors, method of and means for starting alternating, L. Bell. Current motors, economizing the energy of alternating, C. F. Scott. Cuspidor, Invalid's, J. S. Ross. Cutter. See Band cutter. Decorticating ramme, etc., machine for, P. A.	521,011 520,778 520,797 521,052 520,881 521,041 521,044 521,045 521,056 520,979 521,1063 520,799 521,1063 520,799 521,059 520,993 11,421 520,939 521,1061 520,808 520,888 520,888 520,888 520,893 520,893 520,893 520,893 520,893 520,893 520,893 520,994 520,994 520,993 521,159 521,061 520,893 520,893 520,893 520,893 520,893 520,893 520,893 520,893 520,994
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