

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 This is for our information and not for publication.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.

his turn.

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

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 marked or labeled.

(8314) R. V. asks: 1. If you know the voltage and amperage of a battery how do you find the watt output? A. Multiply the volts by the amperes. 2. Are the field and armature of a motor common or magnet wire? Could magnet wire be used? Should the primaries and secondaries of an induction coil be common or magnet wire? Could magnet wire be used? A. Magnet wire is used. Magnet wire is simply ordinary copper wire covered with one or two layers of cotton thread so that the energy which it loses in each swing bethe wire of one turn or layer shall not touch the wire of the adjacent turns or layers. In other words, magnet wire is insulated wire; ing ball is by the conditions of the question, common wire is uninsulated. Insulated wire freed from. Hence it will move forever withis used so that the electricity must go through the whole length of the coil round and round, and not pass across to the other end of the coil directly.

(8315) G. H. DeL.: I wish to kill a number of pole-cats by means of electricity, without damaging the fur. I have a 1,000 watt alternating current dynamo with 8-pole field and 8-pole armature, but do not have any idea of its practical value for this purpose. The floor upon which the animals are driven is finished off with strips of zinc 4 inches wide and about 1/2 inch apart, being properly insulated from each other, each alternating strip being connected for positive and negative poles. If this dynamo could be re-wound to do the work effectively, what would be your idea as to field and armature winding, also speed required, and what would be the minimum current required to produce the desired result? A. It is not probable that a high voltage is required to kill a skunk. The dyname may be all right for this work as it is. We think the zincs should be wet with an alkali solution, caustic soda or potash, before the animals are driven upon them. This will insure good contact between their feet and the Then turn the current on by a switch and observe the result. We have no idea whatever as to the current required.

(8316) E. D. S. writes: In your issue of July 6, on page 12, "Notes and Queries," No. 8250. W. M. R. says he put a slotted core armature in the 8-light dynamo, and succeeded in getting 50 volts at a speed of 1,660 per minute as against 2,200 for the armature as usually constructed. To an amateur like myself it is interesting to note the difference in speed due to the improved magnetic circuit, and thinking there may be others interested in this dynamo I would describe a change I made in the magnets of this machine with very good results. The armature was made exactly to size, and the iron wire core was used. The field was the inverted horseshoe type with circular cores 61/2 inches long, 4 inches in diameter, with quite stout pole-pieces and yoke, and of soft cast iron. The fields were shunt wound and took % of an ampere at 55 volts. The machine ran cool and sparkless at full load, and with volts at 55 our speed was 1,250 per minute, or nearly 1,000 slower than the speed for the other magnets. A. The change in the machine described by our correspondent makes a very different machine from the original machine. His circular core 4 inches in diameter contains over 12.5 square inches of iron, while the core in the original design contained about 8 inches of iron. Of course the voltage is greatly raised by the change, or, in other words, the original voltage can be produced by about two-thirds the speed. If he ran his machine up to full speed he would have between 80 and 100 volts.

(8317) C. J. M. asks: 1. Can you tell would run a fan? A. Correspond with any of our advertisers who supply fans and motors. 2. Are boots or shoes made out of India rubber? I mean the soft pliable sheet rubber like that used for patching bicycle tires. A. Rubber overshoes were first made of the pure gum. This was fifty or more years ago, before the art of vulcanizing the rubber was invented by years again, but the public did not want them and they were not a success. They hind the feet too closely and stretch too easily; they are not durable. The kind ordinarily used are much better in every way. 3. What causes the green stuff that forms in a creek or any slow-running water. It will form on a board do you call it? I have seen it forming on a ing takes place when standing.

roof where condensed steam runs down. The green slime is a plant, or rather millions of plants, which grow from other plants just as higher plants do; only the method of their reproduction is entirely unlike that of the higher plants. The germ of the plant must have been taken to the roof by the wind or in some other manner and there have grown in the warm water condensed from the steam.

(8318) W. J. B. asks: Suppose a hole through the earth and its center of gravita-Eliminating all friction and resistance to the passage of a ball dropped into this hole, the only force acting being that of gravitation, will the ball pass beyond the center of gravitation? In what manner will it come to rest, if at all? A. The ball will fall with an increasing velocity till it reaches the center of the earth. At that point it will have its greatest velocity and momentum. stop there. It will pass beyond the center of the earth as far as it has fallen to reach it; that is, it will go through the earth to the other side and then fall back to its place of starting. This it will continue to do forever under the conditions imposed. tion is no different from that of the pendulum of a clock, which oscillates under gravity alone as readily as any other falling body. pendulum is a falling body, exactly like the supposed ball dropped into the earth. It falls to its lowest position and rises as far beyond it as it has fallen; just like the ball dropped into the earth. The mechanism of the clock is simply designed to restore to the pendulum cause of the friction of the air and other frictions in its motion. These the freely fallout loss of energy

(8319) H. G. M. asks: 1. Would like to know a simple method of securing copper plates to carbon (solid), e. g. A. Electroplate the carbons with copper, and then solder the copper plates to the electroplating. A firm connection will be made. 2. How are copper connections secured to carbon brushes? A. The carbon brushes are covered with copper by electroplating and the contact is made by a set screw pressing a plate of copper against the carbon brush. 3. Can this be done by any other than an electrolytic process? satisfactorily.

(8320) J. W. A. proposes these problems: 1. A contracts to furnish B electric motive power 11 hours per day, 26 days per month, at \$2 per month per horse power, be measured by a Thompson recording meter, sold by General Electric Company, giving readings on five dials in watt-hours. meter readings to be multiplied by a constant B installs a 10 horse power motor. Kindly take an imaginary reading and show the method of ascertaining the number of horse power to be charged for at end of first month. A. Eleven hours per day for 26 days are 286 hours. One horse power hour is 746 watt-hours, since 746 watts are 1 electrical horse power. To reduce a reading of the watt-meter in watt-hours to horse power per month: Multiply the meter reading by the constant 4 and divide by 746. The quotient is horse power hours. Divide this quotient by 286 and you have the horse power per month. 2. Please say which price is more advantageous to A (the seller of power), \$2 per month per horse power or 2 cents per 1,000 watts. A. Two cents per 1,000 watts is a higher price than \$2 per month per horse power based upon 11 hours per day for 26 days

(8321) F. K. S. asks: 1. On the use of storage cells what is meant by sulphating, buckling and internal short circuiting? A. Sulphating is the formation of sulphate of lead by the action of sulphuric acid upon the lead of the plates. This wastes the active material. Buckling is the bending of the plates by the charging and discharging, and is due to the fact that the material occupies a different amount of space in its different forms as oxide or peroxide of lead. The buckling sometimes bends the plates to such an extent that the positive and negative plates touch each other and produce a short circuit, through which the electric current can pass without going through the external line. You should have a book on the storage cell, such mail. 2. Is it necessary to use a voltmeter, ammeter and polarity indicator? A. Yes, to observe the condition of the battery and to know when recharging is necessary, or when the cells are fully charged. 3. Is it advisable with regard to the running expenses to use me where a spring motor can be got, one that them? A. Yes, if you have a good and cheap current for recharging. 4. About what would be the cost of charging a 15 ampere hour battery of 6 cells? A. That depends upon the answer to the last question. 5. Which make would you advise me to get. Can you tell me anything of a volt ammeter? A. There is no advertising done in this column. There are reliable dealers who can advise you regarding Goodyear. They have been made within a few their goods. The firm you mention deals mostly with schools and this class of trade requires good goods. 6. Is it necessary to use the cells immediately after charging, and to charge immediately after discharging, and can they be used on an open circuit, i. e., once in a while, or are they to be used on a closed circuit until discharged. A. No. They can or stone or anything water runs on, and what stand on open circuit for a time. But sulphat-

(8322) H. C. S. asks: 1. Wishing to Automobiles, starting device for oil or gasconstruct an experimental wireless telegraph outfit, if possible, I would like to know what is the shortest length of spark that could be used to illustrate the principle, having your instruments the length of an ordinary room apart? Also if you have published a Supple-MENT or can recommend a book containing a description of such an instrument? A. A coil giving quarter-inch spark will send a message much farther than the length of a room. coil which will fill the requirements is described in Supplement No. 160, price ten cents. There is no description of the apparatus for wireless telegraphy which gives dimensions and drawings to scale so that one could make it from the plans. Of course, there are reasons for this. These inventions are new and those who have developed the instruments have patented them and are not anxious to have others work in the same line. We have published descriptions of coherers and coils, etc., of the various parts, from time to time, such that one who had mechanical skill could make these parts from the descriptions and pictures without scale drawings and dimensions. can send you SUPPLEMENTS Nos. 1318, 1319, 1320, price ten cents each. These contain a series of articles on "Electric Waves," in which a good description of a coherer is given, as well as many hints for making the various parts of an outfit. Fahie's "History of Wireless Telegraphy," price \$2 by mail, is valuable. 2. Have you a SUPPLEMENT or do you know of a book showing the construction of a liquid air machine for amateurs? A. Sloane's "Liquid Air," price \$2.50. We must say that the making of a liquid air apparatus is hardly a task for an amateur. 3. Name books or SUPPLEMENTS for constructing a voltmeter from 0 to 120 and an ammeter from 0 to 15. A. SUPPLEMENT No. 1215, price ten cents, contains exactly what you request.

(8323) W. E. S. asks: 1. Will a dynamo furnish the same spark for igniting a gasolene engine when the circuit is broken as the batteries will? A. Yes. 2. Can a dynamo be used in starting the engine without batteries? A. No, unless you have other power for running the dynamo than that of the gas engine. 3. Can a dynamo be used for igniting the engine and for lighting purposes also? A. A dynamo for igniting a charge in a gas engine is usually a small machine built for this special work. It is not adapted for lighting purposes. Current from a lighting plant could be used to ignite the gas for a gas engine.

#### NEW BOOKS, ETC.

Laboratory Instructions in General CHEMISTRY. Arranged by Ernest A. Congdon, Ph. D., F. C. S. Philadelphia: P. Blakiston's Son & Co. 1901. Pp. 110. Price \$1.

The present work is intended to Illustrate a course of study in general chemistry. Much of the material is original, having been developed in the course of ten years' experience in laboratory teaching, while those portions taken from other sources have been modified and added to so that they might better meet the wants of students. The book is interleaved.

LES INDUSTRIES CÉRAMIQUES. E. S. Auscher et Ch. Quillard. Encyclopedie Industrielle. Paris: J. B. Bailliere & Fils. 1901. 16mo. Pp. 280. Price \$1.25.

The authors have produced a book which deserves to take its place in the literature of ceramic industries. They have given formulas which have been tested by long experience, and have reduced the number of these formulas as far as possible in order that the work might not become too complex. The Illustrations in the book, although not very excellent examples of engraving, are nevertheless clear enough for the purpose of the technical reader.

Das Gasglühlicht. Die Fabrikation der Glühneke ("Strümpfe"). Von Prof. Dr. I. Castellani, Autroisirte Uebersetzung und Bearbeitung von Dr. M. L. Baczewski. Wien: A. Hartleben's Verlag. 1901. Pp. 121.

It has been the author's purpose to give a fairly complete account of the manufacture of the well-known incandescent gas light mantles. He has, therefore, carefully and clearly described each step in the process of making the mantles, the properties of the materials which enter into that process and the source of supply whence these materials can be obtained. The work is the result of the author's long experience in the making of

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AND EACH BEARING THAT DATE.

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Cards, etc., mechanism for feeding, J. French 679, Casket cover fastener, J. R. Corbett. 679, Casket cover fastener, J. R. Corbett. 679, Caster, furniture, B. P. Kenyon 670, Chain, belt, E. Magaldi. 680, Chair bottom or back, E. F. Brainard 679, Check receiver, workman's S. A. Marker. 679, Cigar or cigarette making machine, Pisko & Philippi 680, Cigarette boxing machine, G. M. Williams 679, Cigarette wrapper, J. C. Simering. 680, Cigarette wrapper, J. C. Simering. 680, Cilpper, hair, C. Carleton 679, Clutch, G. R. Goughnour 679, Clutch, G. R. Goughnour 679, Clutch for traction engines, friction, M. Lafever 680, Cock, gas or other, C. F. Kincheloe 679, Coin delivery apparatus, H. L. Fisher 679, Coliar blanks, etc., machine for folding, G. Reece 60mbs, drawing off device for circle, Long & Foster 680, Conduits, cushioning device for fluid, H. See 679, Conveyer, H. W. Blaisdell. 679, Conveyer, H. W. Blaisdell. 679, Copper sulphates, manufacturing, Palas & Cotta 679, Cotta 679, L. & W. H. Calhoun 679, Corn busking bench and fodder binder, com-	034 840 961 961 961 9727 849 159 939 766 069 811 944 205 889 9837 744 205 889 974 975 040 8818 875 984 984 985
Cards, etc., mechanism for feeding, J. French 679, Casket cover fastener, J. R. Corbett. 679, Casket cover fastener, J. R. Corbett. 679, Caster, furniture, B. P. Kenyon 670, Chain, belt, E. Magaldi. 680, Chair bottom or back, E. F. Brainard 679, Check receiver, workman's S. A. Marker. 679, Cigar or cigarette making machine, Pisko & Philippi 680, Cigarette boxing machine, G. M. Williams 679, Cigarette wrapper, J. C. Simering. 680, Clipper, hair, C. Carleton 679, Clutch, G. R. Goughnour 679, Clutch, G. R. Goughnour 679, Clutch for traction engines, friction, M. Lafever 680, Cock, gas or other, C. F. Kincheloe 679, Coin delivery apparatus, H. L. Fisher 679, Coliar blanks, etc., machine for folding, G. Reece 680, drawing off device for circle, Long & Foster 680, Conservatory, portable, F. Alsip 679, Conveyer, C. W. Hunt 679, Conveyer, H. W. Blaisdell 679, Conveyer, H. W. Blaisdell 679, Conveyer, H. W. Blaisdell 679, Conveyer, C. W. Hunt 679, Conveyer, H. W. Blaisdell 679, Conveyer, C. W. Hunt 67	034 840 961 961 727 849 159 939 766 069 944 205 889 774 205 889 774 749 975 0786 818 817 749 975 984 985 722
Cards, etc., mechanism for feeding, J. French 679, Casket cover fastener, J. R. Corbett. 679, Casket cover fastener, J. R. Corbett. 679, Caster, furniture, B. P. Kenyon 670, Chain, belt, E. Magaldi. 680, Chair bottom or back, E. F. Brainard 679, Check receiver, workman's S. A. Marker. 679, Cigar or cigarette making machine, Pisko & Philippi 680, Cigarette boxing machine, G. M. Williams 679, Cigarette wrapper, J. C. Simering. 680, Clipper, hair, C. Carleton 679, Clutch, G. R. Goughnour 679, Clutch, G. R. Goughnour 679, Clutch for traction engines, friction, M. Lafever 680, Cock, gas or other, C. F. Kincheloe 679, Coin delivery apparatus, H. L. Fisher 679, Coliar blanks, etc., machine for folding, G. Reece 680, drawing off device for circle, Long & Foster 680, Conservatory, portable, F. Alsip 679, Conveyer, C. W. Hunt 679, Conveyer, H. W. Blaisdell 679, Conveyer, H. W. Blaisdell 679, Conveyer, H. W. Blaisdell 679, Conveyer, C. W. Hunt 679, Conveyer, H. W. Blaisdell 679, Conveyer, C. W. Hunt 67	034 840 950 961 727 849 939 939 939 811 904 744 205 887 749 975 040 781 8875 984 985 984 985
Cards, etc., mechanism for feeding, J. French 679, Casket cover fastener, J. R. Corbett. 679, Casket cover fastener, J. R. Corbett. 679, Caster, furniture, B. P. Kenyon 670, Chain, belt, E. Magaldi. 680, Chair bottom or back, E. F. Brainard 679, Check receiver, workman's S. A. Marker. 679, Cigar or cigarette making machine, Pisko & Philippi 680, Cigarette boxing machine, G. M. Williams 679, Cigarette wrapper, J. C. Simering. 680, Clipper, hair, C. Carleton 679, Clutch, G. R. Goughnour 679, Clutch, G. R. Goughnour 679, Clutch for traction engines, friction, M. Lafever 680, Cock, gas or other, C. F. Kincheloe 679, Coin delivery apparatus, H. L. Fisher 679, Coliar blanks, etc., machine for folding, G. Reece 680, drawing off device for circle, Long & Foster 680, Conservatory, portable, F. Alsip 679, Conveyer, C. W. Hunt 679, Conveyer, H. W. Blaisdell 679, Conveyer, H. W. Blaisdell 679, Conveyer, H. W. Blaisdell 679, Conveyer, C. W. Hunt 679, Conveyer, H. W. Blaisdell 679, Conveyer, C. W. Hunt 67	034 840 050 961 727 849 939 939 9766 811 9044 744 205 887 7749 975 040 818 877 7786 818 877 7786 818 877 7786 818 877 7786 818 877 7786 818 877 7786 818 877 7786 818 877 878 877 878 877 878 878 877 878 878 877 878
Cards, etc., mechanism for feeding, J. French 679, Casket cover fastener, J. R. Corbett. 679, Casket cover fastener, J. R. Corbett. 679, Caster, furniture, B. P. Kenyon 670, Chain, belt, E. Magaldi. 680, Chair bottom or back, E. F. Brainard 679, Check receiver, workman's S. A. Marker. 679, Cigar or cigarette making machine, Pisko & Philippi 680, Cigarette boxing machine, G. M. Williams 679, Cigarette wrapper, J. C. Simering. 680, Clipper, hair, C. Carleton 679, Clutch, G. R. Goughnour 679, Clutch, G. R. Goughnour 679, Clutch for traction engines, friction, M. Lafever 680, Cock, gas or other, C. F. Kincheloe 679, Coin delivery apparatus, H. L. Fisher 679, Coliar blanks, etc., machine for folding, G. Reece 680, drawing off device for circle, Long & Foster 680, Conservatory, portable, F. Alsip 679, Conveyer, C. W. Hunt 679, Conveyer, H. W. Blaisdell 679, Conveyer, H. W. Blaisdell 679, Conveyer, H. W. Blaisdell 679, Conveyer, C. W. Hunt 679, Conveyer, H. W. Blaisdell 679, Conveyer, C. W. Hunt 67	034 840 961 727 849 976 606 9811 100 934 944 744 975 983 974 974 975 985 985 722 735 985 985 722 735 985 985 722 735
Cards, etc., mechanism for feeding, J. French 679, Casket cover fastener, J. R. Corbett. 679, Casket cover fastener, J. R. Corbett. 679, Caster, furniture, B. P. Kenyon 670, Chain, belt, E. Magaldi. 680, Chair bottom or back, E. F. Brainard 679, Check receiver, workman's S. A. Marker. 679, Cigar or cigarette making machine, Pisko & Philippi 680, Cigarette boxing machine, G. M. Williams 679, Cigarette wrapper, J. C. Simering. 680, Clipper, hair, C. Carleton 679, Clutch, G. R. Goughnour 679, Clutch, G. R. Goughnour 679, Clutch for traction engines, friction, M. Lafever 680, Cock, gas or other, C. F. Kincheloe 679, Coin delivery apparatus, H. L. Fisher 679, Coliar blanks, etc., machine for folding, G. Reece 680, drawing off device for circle, Long & Foster 680, Conservatory, portable, F. Alsip 679, Conveyer, C. W. Hunt 679, Conveyer, H. W. Blaisdell 679, Conveyer, H. W. Blaisdell 679, Conveyer, H. W. Blaisdell 679, Conveyer, C. W. Hunt 679, Conveyer, H. W. Blaisdell 679, Conveyer, C. W. Hunt 67	034 840 961 727 849 976 606 9811 100 934 944 744 975 983 974 974 975 985 985 722 735 985 985 722 735 985 985 722 735
Cards, etc., mechanism for feeding, J. French 679, Casket cover fastener, J. R. Corbett. 679, Chain, belt, E. Magaldi. 680, Chair bottom or back, E. F. Brainard. 679, Check receiver, workman's S. A. Marker. 679, Cigar or cigarette making machine, Pisko & Philippi 680, Cigarette boxing machine, G. M. Williams. 679, Cigarette wrapper, J. C. Simering. 680, Cigarette wrapper, J. C. Simering. 680, Clipper, hair, C. Carleton 679, Clutch, G. R. Goughnour 670, Clutch, G. R. Goughnour 670, Clutch for traction engines, friction, M. Lafever 680, Cock, gas or other, C. F. Kincheloe 679, Coin delivery apparatus, H. L. Fisher 679, Coliar blanks, etc., machine for folding, G. Reece 60mbs, drawing off device for circle, Long & Foster 679, Condensation, device for removing water of, P. J. Harleman. 680, Conduits, cushioning device for fluid, H. See 679, Conservatory, portable, F. Alsip 679, Conveyer, C. W. Hunt. 679, Conveyer, G. W. Hunt. 679, Conveyer, G. W. Hunt. 679, Corn husking bench and fodder binder, combined, J. Emans 679, Corn husking bench and fodder binder, combined, J. Emans 680, Corset, J. D. Belcher. 680, Corset steel, E. J. Martin. 679, Cotton elevator, cleaner, and feeder, R. S. Munger 679, Crate, folding, M. G. Coughlan 679, Cream separator, centrifugal, Collin & Hartmann 679,	034 840 961 727 849 976 069 811 159 993 961 174 975 040 7749 174 975 040 786 887 749 985 722 735 030 112 948
Cards, etc., mechanism for feeding, J. French 679, Casket cover fastener, J. R. Corbett. 679, Chain, belt, E. Magaldi. 680, Chair bottom or back, E. F. Brainard. 679, Check receiver, workman's S. A. Marker. 679, Cigar or cigarette making machine, Pisko & Philippi 680, Cigarette boxing machine, G. M. Williams. 679, Cigarette wrapper, J. C. Simering. 680, Cigarette wrapper, J. C. Simering. 680, Clipper, hair, C. Carleton 679, Clutch, G. R. Goughnour 670, Clutch, G. R. Goughnour 670, Clutch for traction engines, friction, M. Lafever 680, Cock, gas or other, C. F. Kincheloe 679, Coin delivery apparatus, H. L. Fisher 679, Coliar blanks, etc., machine for folding, G. Reece 60mbs, drawing off device for circle, Long & Foster 679, Condensation, device for removing water of, P. J. Harleman. 680, Conduits, cushioning device for fluid, H. See 679, Conservatory, portable, F. Alsip 679, Conveyer, C. W. Hunt. 679, Conveyer, G. W. Hunt. 679, Conveyer, G. W. Hunt. 679, Corn husking bench and fodder binder, combined, J. Emans 679, Corn husking bench and fodder binder, combined, J. Emans 680, Corset, J. D. Belcher. 680, Corset steel, E. J. Martin. 679, Cotton elevator, cleaner, and feeder, R. S. Munger 679, Crate, folding, M. G. Coughlan 679, Cream separator, centrifugal, Collin & Hartmann 679,	034 840 961 727 849 976 069 811 159 993 961 174 975 040 7749 174 975 040 786 887 749 985 722 735 030 112 948
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Cards, etc., mechanism for feeding, J. French 679, Casket cover fastener, J. R. Corbett. 679, Chain, belt, E. Magaldi. 680, Chair bottom or back, E. F. Brainard. 679, Check receiver, workman's S. A. Marker. 679, Cigar or cigarette making machine, Pisko & Philippi 680, Cigarette boxing machine, G. M. Williams. 679, Cigarette wrapper, J. C. Simering. 680, Cigarette wrapper, J. C. Simering. 680, Clipper, hair, C. Carleton 679, Clutch, G. R. Goughnour 670, Clutch, G. R. Goughnour 670, Clutch for traction engines, friction, M. Lafever 680, Cock, gas or other, C. F. Kincheloe 679, Coin delivery apparatus, H. L. Fisher 679, Coliar blanks, etc., machine for folding, G. Reece 60mbs, drawing off device for circle, Long & Foster 679, Condensation, device for removing water of, P. J. Harleman. 680, Conduits, cushioning device for fluid, H. See 679, Conservatory, portable, F. Alsip 679, Conveyer, C. W. Hunt. 679, Conveyer, G. W. Hunt. 679, Conveyer, G. W. Hunt. 679, Corn husking bench and fodder binder, combined, J. Emans 679, Corn husking bench and fodder binder, combined, J. Emans 680, Corset, J. D. Belcher. 680, Corset steel, E. J. Martin. 679, Cotton elevator, cleaner, and feeder, R. S. Munger 679, Crate, folding, M. G. Coughlan 679, Cream separator, centrifugal, Collin & Hartmann 679,	034 840 961 727 849 976 606 961 727 849 976 606 9811 744 975 9837 749 975 984 985 722 735 985 985 722 735 985 985 799 985 799 985 799 985 799 985 799 985 985 985 985 985 985 985 985 985 9
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Cards, etc., mechanism for feeding, J. French Casket cover fastener, J. R. Corbett. 679, Casket cover fastener, J. R. Corbett. 679, Caster, furniture, B. P. Kenyon. 670, Chain, belt, E. Magaldi. 680, Chair bottom or back, E. F. Brainard. 679, Check receiver, workman's S. A. Marker. 679, Cigar or cigarette making machine, Pisko & Philippi 680, Cigarette boxing machine, G. M. Williams. 679, Cigarette wrapper, J. C. Simering. 680, Clipper, hair, C. Carleton. 679, Clutch, G. R. Goughnour. 679, Clutch for traction engines, friction, M. Lafever 680, Cock, gas or other, C. F. Kincheloe. 679, Coin delivery apparatus, H. L. Fisher 679, Colia blanks, etc., machine for folding, G. Recce 60mbs, drawing off device for circle, Long & Foster 680, Conservatory, portable, F. Alsip. 679, Conveyer, H. W. Blaisdell. 679, Conveyer, C. W. Hunt. 679, Conveyer, C. W. Hunt. 679, Conveyer, C. W. Hunt. 679, Corn husking bench and fodder binder, combined, J. Emans. 680, Corst steel, E. J. Martin. 679, Cracker stacking machine, E. Mackay 679, Cuspidor, F. Strothenke 680, Cuspidor, F. Strothenke 680, Cuspidor, non-spillable, O. D. Charles 680, Cuspidor, non-spillable, O. D. Charles 680, Cuspidor, non-spillable, O. D. Charles 680, Cuspidor, f. Strothenke 680, Cuspidor, f. Strothenke 680, Cuspidor, non-spillable, O. D. Charles 680, Cuspidor, non-spillable, O. D. Charles 680, Cuspidor, non-spillable, O. D. Charles 680, Cuspidor, f. Strothenke 680, Cuspidor, f. Strothenke 680, Cuspidor, f. Strothenke 680, Cuspidor, f. Str	034 840 961 727 849 939 939 939 939 939 941 159 939 941 159 939 941 174 975 040 68 877 749 975 040 877 975 985 987 779 985 987 987 987 987 987 987 987 987 987 987
Cards, etc., mechanism for feeding, J. French Casket cover fastener, J. R. Corbett. 679, Casket cover fastener, J. R. Corbett. 679, Caster, furniture, B. P. Kenyon. 670, Chain, belt, E. Magaldi. 680, Chair bottom or back, E. F. Brainard. 679, Check receiver, workman's S. A. Marker. 679, Cigar or cigarette making machine, Pisko & Philippi 680, Cigarette boxing machine, G. M. Williams. 679, Cigarette wrapper, J. C. Simering. 680, Clipper, hair, C. Carleton. 679, Clutch, G. R. Goughnour. 679, Clutch for traction engines, friction, M. Lafever 680, Cock, gas or other, C. F. Kincheloe. 679, Coin delivery apparatus, H. L. Fisher 679, Colia blanks, etc., machine for folding, G. Recce 60mbs, drawing off device for circle, Long & Foster 680, Conservatory, portable, F. Alsip. 679, Conveyer, H. W. Blaisdell. 679, Conveyer, C. W. Hunt. 679, Conveyer, C. W. Hunt. 679, Conveyer, C. W. Hunt. 679, Corn husking bench and fodder binder, combined, J. Emans. 680, Corst steel, E. J. Martin. 679, Cracker stacking machine, E. Mackay 679, Cuspidor, F. Strothenke 680, Cuspidor, F. Strothenke 680, Cuspidor, non-spillable, O. D. Charles 680, Cuspidor, non-spillable, O. D. Charles 680, Cuspidor, non-spillable, O. D. Charles 680, Cuspidor, f. Strothenke 680, Cuspidor, f. Strothenke 680, Cuspidor, non-spillable, O. D. Charles 680, Cuspidor, non-spillable, O. D. Charles 680, Cuspidor, non-spillable, O. D. Charles 680, Cuspidor, f. Strothenke 680, Cuspidor, f. Strothenke 680, Cuspidor, f. Strothenke 680, Cuspidor, f. Str	034 840 961 727 849 939 939 941 159 939 941 174 975 040 978 887 749 975 040 112 977 978 988 988 722 735 988 988 722 735 988 988 735 988 988 735 735 735 735 735 735 735 735 735 735
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Cards, etc., mechanism for feeding, J. French Casket cover fastener, J. R. Corbett. 679, Casket cover fastener, J. R. Corbett. 679, Caster, furniture, B. P. Kenyon 670, Chain, belt, E. Magaldi. 680, Chair bottom or back, E. F. Brainard 679, Check receiver, workman's S. A. Marker 679, Cigar or cigarette making machine, Pisko & Philippi 680, Cigarette boxing machine, G. M. Williams 679, Cigarette wrapper, J. C. Simering. 680, Clipper, hair, C. Carleton. 679, Clutch, G. R. Goughnour. 679, Clutch for traction engines, friction, M. Lafever 680, Cock, gas or other, C. F. Kincheloe. 679, Colin delivery apparatus, H. L. Fisher 679, Colia blanks, etc., machine for folding, G. Reece 680, Combs, drawing off device for circle, Long & Foster 680, Conservatory, portable, F. Alsip 679, Conveyer, H. W. Blaisdell. 679, Conveyer, H. W. Blaisdell. 679, Conveyer, C. W. Hunt. 679, Conveyer, C. W. Hunt. 679, Corn husking bench and fodder binder, combined, J. Emans 680, Corn husking bench and fodder binder, combined, J. Emans 680, Corn husking implement and twine cutter, J. Emans 680, Corset steel, E. J. Martin 679, Cortae, folding, M. G. Coughlan 679, Crake, folding, M. G. Coughlan 679, Crake, folding, M. G. Coughlan 679, Crake, folding, M. G. Coughlan 679, Cuspidor, F. Strothenke 680, Cuspido	034 840 840 961 727 849 975 069 811 159 9376 069 811 744 975 0786 818 829 977 749 975 0786 818 829 977 9749 975 975 976 977 977 977 977 977 977 977 977 977
Cards, etc., mechanism for feeding, J. French Casket cover fastener, J. R. Corbett. 679, Casket cover fastener, J. R. Corbett. 679, Caster, furniture, B. P. Kenyon 670, Chain, belt, E. Magaldi. 680, Chair bottom or back, E. F. Brainard 679, Check receiver, workman's S. A. Marker 679, Cigar or cigarette making machine, Pisko & Philippi 680, Cigarette boxing machine, G. M. Williams 679, Cigarette wrapper, J. C. Simering. 680, Clipper, hair, C. Carleton. 679, Clutch, G. R. Goughnour. 679, Clutch for traction engines, friction, M. Lafever 680, Cock, gas or other, C. F. Kincheloe. 679, Colin delivery apparatus, H. L. Fisher 679, Colia blanks, etc., machine for folding, G. Reece 680, Combs, drawing off device for circle, Long & Foster 680, Conservatory, portable, F. Alsip 679, Conveyer, H. W. Blaisdell. 679, Conveyer, H. W. Blaisdell. 679, Conveyer, C. W. Hunt. 679, Conveyer, C. W. Hunt. 679, Corn husking bench and fodder binder, combined, J. Emans 680, Corn husking bench and fodder binder, combined, J. Emans 680, Corn husking implement and twine cutter, J. Emans 680, Corset steel, E. J. Martin 679, Cortae, folding, M. G. Coughlan 679, Crake, folding, M. G. Coughlan 679, Crake, folding, M. G. Coughlan 679, Crake, folding, M. G. Coughlan 679, Cuspidor, F. Strothenke 680, Cuspido	034 840 950 961 727 849 939 961 159 939 961 159 939 944 744 975 948 988 722 735 948 948 948 948 948 948 948 948 948 948
Cards, etc., mechanism for feeding, J. French Casket cover fastener, J. R. Corbett. 679, Casket cover fastener, J. R. Corbett. 679, Caster, furniture, B. P. Kenyon 670, Chain, belt, E. Magaldi. 680, Chair bottom or back, E. F. Brainard 679, Check receiver, workman's S. A. Marker 679, Cigar or cigarette making machine, Pisko & Philippi 680, Cigarette boxing machine, G. M. Williams 679, Cigarette wrapper, J. C. Simering. 680, Clipper, hair, C. Carleton. 679, Clutch, G. R. Goughnour. 679, Clutch for traction engines, friction, M. Lafever 680, Cock, gas or other, C. F. Kincheloe. 679, Colin delivery apparatus, H. L. Fisher 679, Colia blanks, etc., machine for folding, G. Reece 680, Combs, drawing off device for circle, Long & Foster 680, Conservatory, portable, F. Alsip 679, Conveyer, H. W. Blaisdell. 679, Conveyer, H. W. Blaisdell. 679, Conveyer, C. W. Hunt. 679, Conveyer, C. W. Hunt. 679, Corn husking bench and fodder binder, combined, J. Emans 680, Corn husking bench and fodder binder, combined, J. Emans 680, Corn husking implement and twine cutter, J. Emans 680, Corset steel, E. J. Martin 679, Cortae, folding, M. G. Coughlan 679, Crake, folding, M. G. Coughlan 679, Crake, folding, M. G. Coughlan 679, Crake, folding, M. G. Coughlan 679, Cuspidor, F. Strothenke 680, Cuspido	034 840 950 961 727 849 939 961 159 939 961 159 939 944 744 975 946 987 947 975 974 975 974 975 974 975 975 977 977 977 977 977 977 977 977
Cards, etc., mechanism for feeding, J. French Casket cover fastener, J. R. Corbett. 679, Casket cover fastener, J. R. Corbett. 679, Casket cover fastener, J. R. Corbett. 679, Chain, belt, E. Magaldi. 680, Chair bottom or back, E. F. Brainard 679, Check receiver, workman's S. A. Marker. 679, Cigar or cigarette making machine, Pisko & Philippi	034 840 960 960 9727 9849 9939 96811 159 9939 96811 9749 975 9749 9749 975 9749 975 9749 975 9749 975 9777 975 9777 9778 9778 9778 9778
Cards, etc., mechanism for feeding, J. French Casket cover fastener, J. R. Corbett. 679, Casket cover fastener, J. R. Corbett. 679, Casket cover fastener, J. R. Corbett. 679, Chain, belt, E. Magaldi. 680, Chair bottom or back, E. F. Brainard 679, Check receiver, workman's S. A. Marker. 679, Cigar or cigarette making machine, Pisko & Philippi	034 840 960 960 9727 9849 9939 96811 159 9939 96811 9749 975 9749 9749 975 9749 975 9749 975 9749 975 9777 975 9777 9778 9778 9778 9778
Cards, etc., mechanism for feeding, J. French Casket cover fastener, J. R. Corbett. 679, Casket cover fastener, J. R. Corbett. 679, Casket cover fastener, J. R. Corbett. 679, Chain, belt, E. Magaldi. 680, Chair bottom or back, E. F. Brainard 679, Check receiver, workman's S. A. Marker. 679, Cigar or cigarette making machine, Pisko & Philippi	034 840 960 960 9727 9849 9939 96811 159 9939 96811 9749 975 9749 9749 975 9749 975 9749 975 9749 975 9777 975 9777 9778 9778 9778 9778
Cards, etc., mechanism for feeding, J. French 679, Casket cover fastener, J. R. Corbett. 679, Casket cover fastener, J. R. Corbett. 679, Casket cover fastener, J. R. Corbett. 679, Chain, belt, E. Magaldi. 680, Chair bottom or back, E. F. Brainard 679, Check receiver, workman's S. A. Marker. 679, Cigar or cigarette making machine, Pisko & Philippi	034 840 961 727 849 993 993 903 903 944 205 889 7749 975 948 8877 749 975 948 8877 749 975 985 985 985 985 985 985 985 985 985 98
Cards, etc., mechanism for feeding, J. French Casket cover fastener, J. R. Corbett	034 840 840 961 727 849 978 849 978 978 978 978 978 978 978 978 978 97
Cards, etc., mechanism for feeding, J. French (Casket cover fastener, J. R. Corbett. (679, Casket cover fastener, J. R. Corbett. (679, Casket cover fastener, J. R. Corbett. (679, Casket cover fastener, J. R. Corbett. (679, Chain, belt, E. Magaldi. (680, Chair bottom or back, E. F. Brainard. (679, Check receiver, workman's S. A. Marker. (679, Cigar or cigarette making machine, Pisko & Philippi (680, Cigarette boxing machine, G. M. Williams. (679, Cigarette wrapper, J. C. Simering. (680, Clipper, hair, C. Carleton. (679, Clutch, G. R. Goughnour. (679, Colin delivery apparatus, H. L. Fisher (679, Coke oven, L. J. Hirt. (679, Colin delivery apparatus, H. L. Fisher (679, Colidar blanks, etc., machine for folding, G. Reece. (680, Greece. (680, G	034 840 840 961 727 849 9766 9811 159 9939 887 174 975 040 8875 988 8774 975 040 8774 975 976 9774 9775 9786 9786 9786 9786 9786 9786 9786 9786
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(Continued on page 110)

L. Laska... Dye house con

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Ear drum, artificial, L. H. Vickers Electric cable, C. A. W. Hultman Electric conductors, underground conduit for,	<b>679,925</b> 680,150	1
Electric conductors, underground conduit for, C. A. W. Hultman.  Electric furnace, D. Lance et al.  Electric machines, means for regulating double current dynamo, J. L. Woodbridge. Electric machines, regulating double cur- rent dynamo, J. L. Woodbridge.	680,151 679,973	w
double current dyname, J. L. Woodbridge. Electric machines, regulating double cur- rent dyname, J. L. Woodbridge Electrical call or alarm device, A. B. Miller Electrical conductor cords, each adjuster for	679,813 679,812	us Ma
Dieterical conductor cords, cord adjuster for,	680,059 679,829	SE
Electrode for arc lamps, H. Bremer Elevator controller, electric, N. O. Lind-	680,134 679,877 679,760	69
strom Elevator gates or duors, means for operat- ing, J. Rice Engine controller, steam, R. J. Patterson Pague link movement, I. L. Neely	679,861 680,172	
Engines, speed regulator for expressive, F.	679,857 679,883	F
Engines, vaporizer for internal combustion, C. H. Blomstrom. Tengraving plate, Zearing & McWherter Envelope manufacturing machine, W. S. Timmis Exercising machine, M. B. Ryan.	$680,115 \\ 679,815$	SI
Eve apparatus for measuring errors of re-	679,921 679,784	
fraction in the human, L. L. Ferguson Fabric renovating compound, J. Hammer Fan, electric, E. W. Brown. Fastening device, W. Cesak	679,890 680,144 680,120	
J. Wright	679,724 679,814	
Fence making machine, wire, C. V. Kahoa.	679.976 679,969 680,201	4
Sherwood  File sharpening apparatus, E. C. Huntley	680,079 680,152	
Film strips, etc., device for applying liquids to, H. Foersterling	679.891 679,908	B
Fire extinguisher, automatic, Tessier & Sevigny Firemen's hose, shut-off nozzle for, J. M.	680,207 680,084	Bu
Baker	680,016 679,860	ľ
Fireproof partition for buildings, S. E. Rab- bitt Fireproofing wood, J. F. Geisler	680,062	12
Flue cleaner, steam and hot air, Kennedy & Hoopes	C79,756 680.166 679.946	Pr \$
& Hoopes  Flue cutter, J. T. McGrath Fly escape, extensible, A. J. Collar. Follower, hinged split, J. F. Collins. Fur or pelts, machine for removing down or pulling from C. Dohner.	679,947 679,835	
Furnace, G. Allen. Furnace tire box, steam boiler, G. J. Bowe. Furnace for heating metal bars, J. H. Tay-	68 <b>0</b> ,1 <b>0</b> 7 679,720	4
furnace or stove draft regulator, Raggio & Malatesta	680,010 680,075	ľ
Furnace or stove draft regulator, Raggio & Malatesta	679,796 680,208 679,897	-
Game, M. Reinhart	680,175	Wi
Paul A. Phillips. Garment, A. Phillips. Garment fastener, N. Stutson. Garment banger, R. Norris. Gas apparatus, acetylene, J. J. Hendler. Gas generator, acetylene, M. D. Compton. Gas generator, acetylene, McNamara & O'Reilly	679,778 679,793 680,168	A
Gas apparatus, acetylene, J. J. Hendler Gas generator, acetylene, M. D. Compton Gas generator, acetylene, McNamara &	679,964 679,726	S.
O'Reilly Gas generator, acetylene, T. R. Rider. Gas generator, acetylene, E. S. Martindale. Gas generators, etc., governor for, T. H. J. Lackband	679,774 $679,862$ $680,161$	M
	679,851 690,199 679,885	•
Gas purifying apparatus, A. L. Lion	679,761 679,990 680,054	
Gold separator or washer, G. Robertson Governing mechanism for internal combustion engines, C. H. Blomstrom	680,176 680,176	
Gas holder, A. Davis. Gas producer, A. R. Calder. Gas purifying apparatus, A. L. Lion Gate, E. W. Pratt. Gato, J. L. Manlove. Go cart, H. Levi. Gold separator or wasber, G. Robertson. Governing mechanism for internal combustion engines. C. H. Blomstrom. Governor, E. P. Coleman. Grain, machine for handling. W. Galbreath. Grinding mill. C. W. Pank. Grinding rolls. composite, W. E. Arnold Guns, apparatus for discharging ships', L.	680,198 679,737 679,775	1
Guns, apparatus for discharging ships', L. Obry Guns, mechanical primer for, G. Stuart	679,821 680,066 679,792	1
Hammock support, T. S. Hayward	679,963 $679,854$ $679,753$	of ou
Hay fork carrier, Patten & Hangen Hay rack for wagons, R. E. Poindexter Hook, P. B. Southworth	680,083 679,986 680,070 680,005	B N al
Guns, apparatus for discharging ships', L. Obry Guns, mechanical primer for, 4: Stuart. Hammock support, T. S. Hayward. Harrow, J. W. Miller Harvester, broom corn, M. Ingels. Hat hlock and gage, E. G. Taylor. Hay fork carrier, Patten & Hangen. Hay rack for wagons, R. E. Poindexter. Hook, P. B. Southworth. Hose nozzle, C. N. Edgell. Hose supporting device, M. B. Hammond. Hub, ball bearing, P. F. Schaffer. Ice making apparatus, E. J. Ullrich, 680,087, Incubator, J. L. Macy Insect exterminator, J. K. Jessup. Iroulng board and clothes rack, combined, G. R. Freeman.	679,733 679,893 679,995	gr se
Insect exterminator, J. K. Jessup	680,088 679,764 679,848	•
G. R. Freeman	680,202 679,718 679,965	1
Jar or bottle closure, Madigan & Crocker  Jar top, W. P. Coldren  Key keeper, A. B. Lang	680.053 680,125 679,758 679,817	
Kiln, F. W. Heidenreich	679,842 679,819 679,987	4
Ladder book, E. L. Clark Ladle car, Ferry & Laing Lamp cord adjuster, electric, G. Webster	679.887 680.139 679,930	11
Lamp, electric arc, H. Stenz Lamplighter, time, W. & F. Walter	679,878 680,082 680,090 679,770	F
Lamp shade or globe, O. A. Mygatt Lamp support, miner's, S. Davis Lamps, manufacture of filaments for incan-	680,090 679,770 679,771 680,133	
Insect exterminator, J. K. Jossup. Ironing board and clothes rack, combined, G. R. Freeman. Ironing machine, W. M. Barnes. Irrigating ditch clay trough, V. von Holdt. Jar or bottle closure, Madigan & Crocker. Jar top, W. P. Coldren. Key koeper, A. B. Lang. Kilin, F. W. Heidenreich. Kilin furnace, F. Alsip. Kneading hoard, L. D. Patten. Ladder book, E. L. Clark. Ladde car, Ferry & Laing. Lamp cord adjuster, electric, G. Webster. Lamp, electric arc, H. Stenz. Lamplighter, time, W. & F. Walter. Lamp shade or globe, O. A. Mygatt. Lamps, manufacture of filaments for incandescent electric, W. L. Voelker. 679,803, Lampblack, making, G. Wegelin Lathe, engine, C. W. Nitterauer. Lead by electrolysis, refining, A. G. Betts. Leather, article provided with bead of, C. E. Bailey Ledger, account, P. K. Paulsen.	679,926 680,093 680,167 679,824	
Leather, article provided with bead of, C. E. Bailey Ledger, account. P. K. Paulsen	679,823 680,173	S
E. Bailey Ledger, account. P. K. Paulsen Lotter box. A. M. Keeney Lever, H. A. Backus Life preserver, H. C. Bristol Lifting jack, L. F. Brown Loading or unloading apparatus, G. H. Hulett	680,157 679,873 679,721 679,827	N
Localing or unloading apparatus, G. H. Hulett Locomotive, G. W. West. Locomotives, strainer cleaning device for,	679.967 679.808	
Locomotives, strainer cleaning device for, R. K. West.  Loom and filling carrier therefor, R. Burgess  Loom, bag, G. F. Hutchins.	680,096 679.941	
TARRED THING TEPHENISHING MECHANISM, J.		
Loom reed motion, E. H. Ryon	680,181	
Machines upon ends of study or shafts, means for bolding loose members of, B.	680,029	
Holland Mail hag holder, A. M. Harriott Malt liquor, producing non alcoholic, W. Rath	680,041 680,076	
Rath Mantle support. N. E. Ericson. Match box shuck machine, C. B. Andrews. Mattress making machine, C. W. White Measuring instrument electrical bot wire	680,031 680,012 679.809	
Measuring instrument, electrical bot wire. P. Meyer et al. Measuring tool, J. H. Armstead. Meat cutter, M. Burton. Medicinal agents, apparatus for vaporizing, E. T. Camp.	679,769 679,820 679,884	
Morcerizing apparatus, Crompton & Horrocks	680.131	
Metals from their fused compounds, electro- lytic process of obtaining, G. P. Scholl Micrometer, F. H. Pierpont Miter box, A. L. Chandler	679,997 679,779 680 021	
server ova, A. D. Chanquer	680,021	١



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Josse
Soam closing strip, F. W. Merrick. 679,978
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Seat. C. Rudolf. 679,918
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T. Hogan .
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Sewing machine looper operating mechanism. L. Onderdonk. 680,013
Sewing machine overseaming, C. J. Appleton. 680,013
Sewing machine thread controlling device, B. J. Bergman. 680,013
Sewing machine thread controlling device, B. J. Bergman. 680,013
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Sharpening attachment for meat cutters, C.
B. Hopkins. 680,045
Sharpening device, cutter, J. Fellows. 680,033
Sharpening device, cutter, J. Fellows. 680,033
Sharpening device, cutter, J. Fellows. 680,033
Sharpening device, cutter, J. Fellows. 680,141
Shintles, drying, Gibbard & Anderson. 680,141
Shintler, rolling, P. H. Wilson. 680,141
Shintler, rolling, P. H. Wilson. 680,030
Signaling system electrical, J. A. Gehrung, 680,036
Silo, R. Stoddard Short, 680,052
Soap cake, T. A. Lynch. 680,052
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G. Webster 679,805
Switch operating mechanism. F. A. Carroll. 680,020
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Johnson 679,896
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Telephone exchange system, Sinclair & Aitken 679,788
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Sabin 680,077
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Thresher, pea. M. T. White 680,097
The bolding clasp, Barr & Weil. 680,097
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Tinning, material for protecting sheets,
etc., in, J. A. Kyle. 679,972
Toaster, W. Wells. 680,095
Tobacco pipe charging device, D. H. Allen, 679,872 (Continued on page 111)

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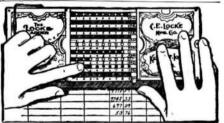
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