NEW BOOKS, ETC.

FIRST AID TO THE INJURED AND AMBUL-ANCE DRILL. By H. Drinkwater. London: J. M. Dent & Co. New York: The Macmillan Company. 1901. Pp. 104. 16mo. Price 40 cents.

The number of books published on this subject is legion, but this is one of the best we have ever seen. Its very moderate price places it within the reach of everyone. A general knowledge of ambulance work should be possessed in many of our small towns and cities where there is no regular ambulance

A TEXTBOOK OF PLANT DISEASES. By George Massee. New York: The Macmillan Company. 1899. 480 pp. Price \$1.60.

This volume forms a complete handbook Vegetable Pathology, or the study of plant diseases. By studying it at odd moments, any grower of plants may learn what diseases his particular species is subject to, and how to prevent, or, failing this, to combat them in the most approved manner. The book will be found invaluable to all florists and gardeners.

Bugle Calls. By Benjamin Wood. New York: Brentano's. 1901. 184 pp.

This book is both interesting and unique, for it gives the convictions and opinions of a very large employer of labor on the trade union question, and is about the only book we have seen coming from such a source which upholds the dignity of labor and believes in the union. The book is valuable, since it gives the results of experience in employing union labor, and shows the many dangers that labor is threatened with in America.

TELEPHONE LINES AND THEIR PROPERTIES. By William I. Hopkins. New York: Longmans, Green & Company. 1901. 302 pp., numerous illustrations.

This book is intended as a help and guide for both the practical telephone man and the student. It covers the whole subject broadly, including the establishing of lines and the operation of exchanges; but is devoted chiefly to the questions of interference with the telephone currents from outside sources, such as electric railways. Any mathematical demonstrations that seem necessary are included in footnotes. The book has entered its fourth edition, and will prove interesting and instructive to the general reader.

THE ROMANCE OF THE HEAVENS. By A. W. Bickerton. New York: The Mac-millan Company. 1901. 276 pp. Price \$1.25.

In this most interesting little volume the author sets forth a new theory of the origin of the solar system—the impact theory. shows how many observed phenomena-such as variable stars-can be accounted for by the use of such a theory, and that it is likewise applicable to the origin of the universe and solar system. The book is non-technical in language, and may be read appreciatively by anyone with but slight knowledge of astronomy.

RECENTI PROGRESSI NELLE APPLICATIONI Dell' Elettricita. Di Rinaldo Fur-rini, Professore nel R. Instituto Tecnico Superiore di Milano. edizione completamente riffata. Milan: Ulrico Hoepli. 1901. Pp. 277, 109 illustrations.

LEE'S AMERICAN AUTOMOBILE ANNUAL FOR 1901. Edited by A. B. Chambers. Philadelphia and Chicago: Laird & Lee. 1901. Price \$1.50.

This volume includes a brief history of the automobile and discusses various types. Its illustrations do not warrant special comment.

PRACTICAL ADVICE FOR MARINE ENGINEERS. By Charles W. Roberts, M. I., Marine Engineer. London: Whittaker & Company. New York: The Macmillan Company. 1901. 16mo. Pp. 150. Price 75 cents.

The author is a practical engineer, and he has produced a work which is of value to all marine engineers. It will be specially welcome to junior engineers who desire to grasp the general ideas which should govern the management of steamship machinery.

SIX MONTHS ABROAD ON \$300. An Account of a Tour Taken by a Gentleman and His Wife. Carrollton, Mo.: E. H. Kellar. 18mo. Pp. 43. Price 50

The author describes a trip to Europe and the East, the accommodations being in the steerage and in inferior classes on the railways. To those who enjoy traveling in this manner the book may be of some assistance, but it is safe to say that the intense annoyances and discomforts of this mode of traveling do not compensate for the money saved by a thousandfold. Americans should not go abroad until they are able to go at least in the second cabin of a good liner.

PRIME NOZIONI FONDAMENTALI DI ELET-TROCHEMICA. Alfonso Cossa. Milan: Ulrico Hoepli. 1901. Pp. 113.

CONTI E CALCELI FATTE, I. Gersi. Milan: Ulrico Hoepli. 1901. 18mo. Price 50

MODERN METHODS OF SAVING LABOR IN GAS WORK. By C. M. Brackenbury, A.M. I.C.E. London: P. S. King & Sons. Pp. 64. Price \$1.60.

A most valuable monograph on the subject. While the literature of gas-making is by no

means limited, we do not know of any work dealing with this particular phase of the subject. The very latest devices and methods are described. It is well illustrated.

SELECT BIBLIOGRAPHY OF CHEMISTRY, 1492-1897. By Henry Carrington Bolton. Sec. 8. Academic Dissertations, Smithsonian Miscellaneous Collections, No. 1,253. Washington: Smithsonian Institution. 1901.

Dr. Bolton has done a signal service to cience in his monumental "Bibliography of Chemistry." He has practically devoted his life to this work, which is, of course, a pure labor of love, which could not be published by any one but a governmental institution. We commented favorably on the first volume when it appeared, and we have nothing but words of praise for the present volume.

PURE AIR, OZONE AND WATER. By W. B. Cowell. London: Scott, Greenwood & Company. New York: D. Van Nostrand Company. 1900. Pp. 85. Price \$2.

This is a practical treatise on the utilization of air, ozone and water in oil, grease, soap, paint, glue and other industries. It deals with the purification of air and water, and also of the generation of ozone and their utilization. The value of pure air for oxidation, purlfication, etc., is well known, but the practical utilization by means of cheap methods has not until recent years been fully realized.

ELEVATION AND STADIA TABLES. For Obtaining Differences of Altitudes for all Angles and Distances: Horizontal Distances in Stadia Work, Etc., with all Necessary Corrections. By Arthur P. Davis. New York: John Wiley & Sons. 1901. 12mo. Pp. 43.

The present volume, which includes hydrauiic tables for giving velocity for various tunnels and slopes, will undoubtedly prove of great value to engineers.

A PRACTICAL TREATISE ON THE LEATHER INDUSTRY. By A. M. Dillon. Translated by Frank T. Addyman. London: Scott, Greenwood & Company. New York: D Van Nostrand Company. 1901. 8vo. Pp. 505. Price \$10.

The literature of leather is limited. Most of the more important books have been suffered to go out of print. The sale of books on this subject is always limited, and for this very reason we welcome most gladly the appearance of a translation of an important French work. The French methods and practices which are described are of deep interest to English and American tanners. It is a book which we can recommend most highly to all who are desirous of obtaining a thoroughly upto-date book on the leather industry. It is well illustrated and is handsomely printed with a wide margin, and is attractively bound.

THE CHEMISTRY OF SEVERAL NATURAL AND ARTIFICIAL HETEROGENEOUS COM. POUNDS USED IN THE MANUFACTURE OF Porcelain, Glass and Pottery. By Simeon Shaw, LL.D. London: Scott, Greenwood & Company. New York: D. Van Nostrand Company. 1900. 8vo. Pp. 713. Price \$5.

This classic work is reissued in its original form by the publishers. It is one of the classics of both ceramic and chemical literature. It was first issued in 1837, and has been known for a long time as a valuable book. In its present form it should have a considerable sale. It is filled with most valuable information for the pottery chemist.

RESEARCHES ON THE PAST AND PRESENT HISTORY OF THE EARTH'S ATMOSPHERE. By Dr. Thomas Lamb Phipson. London: Charles Griffin & Company, Limited. Philadelphia: J. B. Lippincott Company. 12mo. Pp. 194.

This work includes the latest discoveries and their practical applications. It is to a great extent the result of Dr. Phlpson's own observations, which were spread over a considerable number of years. The author is well known as a contributor to chemical literature.

THE A B C OF DYNAMO DESIGN. By Alfred H. Avery. London: Dawbarn & Ward. 1900. 104 pp., 61 illustrations. Price 50 cents.

The instructions found in these pages are clear and concise, and will enable any amateur with a reasonable amount of work to design and construct a small dynamo. All the data are given for a 30, a 500 and a 2,000 watt dynamo, besides directions for designing any other similar size.

ORATORY: ITS REQUIREMENTS AND ITS REwards. By John P. Altgeld. Chicago: Charles H. Kerr & Company. 1901. 65 pp. Price 50 cents.

In this little book will be found a clear exposition of this most powerful of all arts in the swaving of men's emotions. The author sets forth, in a clear, succinct style, the qualifications that one must have to become a successful orator, and gives, in a general way, directions for the cultivation of voice, tone, articulation, etc. He concludes with a description of some of the great orators and orations of history. The book will be found a practical little volume for all public speakers.

THE HISTORY OF THE DEVELOPMENT OF THE MANUFACTURE OF INDIGO. By H. Brunck, Ph.D. New York: Kittroff, Pickhardt & Company. 8vo. pamphlet.

Business and Personal Wants.

READ THIS COLUMN CAREFULLY,-You will find inquiries for certain classes of articles numbered in consecutive order. If you manufacture these goods write us at once and we will send you the name and address of the party desiringtheinformation. In every case it is necessary to give the number of the inquiry. MUNN & CO.

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Manufacturers of Valves, Fittings, Brass and Iron Work. Spindler & Deringer, 18-22 Morris St., Jersey City, N. J. Inquiry No. 1000.—For small ice-making chines, with capacity of 300 to 500 pounds daily.

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Inquiry No.1002.-For flouring mill boilers and engines.

See our Collective Exhibit—Section "S," Electricity Building, Pan American Exposition. Standard Welding Company, Cleveland, Ohio.

Inquiry No. 1003.—For the address of the Con-mental Manufacturing Company, perfumers.

PATENT RIGHTS OF BOILER FOR SALE, No. 538,885 .-Saves 40 per cent. of fuel. Cash \$50,000 for half interest, \$100,000 outright. E. S., Box 773, New York.

Inquiry No. 1004.—For a manufacturer of portable iron houses.

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

Inquiry No. 1005.— For the manufacturer of Naphey's acetylene gas tips, ½-foot and 1-foot sizes.

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

Inquiry No. 1006.—For the manufacturer of machinery to remove dents from locomotive headlight reflectors.

FOR SALE.

One No. 11, 6 1/4 x 8 Scattergood portable hoisting en gine with boiler: drums hold 500 feet %-inch cable; in comparatively new condition. Sold at reasonable figure. and can be inspected at any time. Obermeyer & Liebmann's, Bremen and Noll streets, Brooklyn, N. Y.

Inquiry No. 1007.—For manufacturers of spectroscopes.

A member of a prominent export firm, being about to travel through Australasia, invites communications; manufacturers and proprietors of specialties, with view of arranging for their representation by special agency or otherwise. This offers an exceptional oppor-tunity to manufacturers who wish to introduce new L., P. O. Box 924.

Inquiry No. 1008.—For manufacturers of wire crimping rolls.

ELECTRICAL ENGINEER (Tramways) .- Wanted immediately by the Council of the City of Wellington, New Zealand, a thoroughly qualified Electrical Engineer, who must have had special experience in carrying out and equipping overhead electrical tramways and Full particulars and conditions may be obtained on application to Messrs. R. W. Forbes & Son, Produce Exchange, New York, and applications must be delivered at the office of Messrs. John Duthie & Co., Ltd.. Lime Street, London, E. C., England, not later than noon on the 20th July.

Inquiry No. 1009.—For the address of the Strow-ver automatic telephone exchange.

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

Inquiry No. 1010.—For small ice-making machines and cooling apparatus to work by hand. **Inquiry No. 1011.**—For a small ice plant of about 2 tons capacity.

Inquiry No. 1012.—For dealers in new or second-hand gasoline engines of a bout 1/2 or 1/2 horse power, for running car of about 60 pounds weight.

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.

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.

(8253) B. P. asks: Will you kindly furnish me with information regarding liquid air, its process of manufacture, cost. properties, etc., and what developments have been made regarding its uses and its dangers? A. We can send you ten good articles upon liquid air at ten cents each, or else the book upon the subject by Sloane, for \$2.50 by mall. Liquid air has no commercial uses at present, and there are no dangers from it, if handled by one having knowledge of the usual properties of gases.

(8254) V. N. S. writes: In the Scien-TIFIC AMERICAN of May 25, in answer to question No. 8193, you give a way of stopping "cross talk" caused by two telephone lines crossing each other; and as we have a similar trouble here, caused by a one-wire private line crossing the Bell metallic circuit line, please explain a little more fully how we can overcome the trouble. A. The cross talk can be cured by using the Bell metallic circuit on your line, twisting the two wires around each other as the parts of a rope are twisted. The lines in the cities are usually twisted three to four times per foot. The double wires can be bought ready twisted.

(8255) C. M. L.—The principal source of graphite in the United States is the mines at Ticonderoga, N. Y., which furnish about 200 tons per annum. It is also mined near Raleigh, N. C., and in Virginia, Georgia, New Hampshire, Rhode Island, and California; also in Nova Scotia. The best graphite comes from Colombo, Ceylon, and costs from 2 to 4 cents per pound, according to quality. Prices depend much upon the regularity of the supply.

(8256) W. E. asks: Will you tell me how the voltage and internal resistance of a Bunsen cell can be calculated mathematically, or refer me to a good book on the subject? A. The voltage and internal resistance of a battery are not calculated by mathematics. They are measured by instruments. The processes employed are to be found in Kempe's "Handbook of Electrical Testing," price \$7.50. This work is complete. A special book upon bat-teries is Carhart's "Primary Batteries," price \$1.50, both prices by mall.

(8257) X. writes: I wish to obtain some information which would be very acceptable to me, and in fact to a great many at this time, when the question of using gasoline engines on automobiles of different kinds is very popular; and that is, the dimensions and drawings, if possible, of a jump spark or induction coil that would be oblong in shape, without vibrator, light as possible, and to work on low voltage giving a one-quarter inch spark. A. The details for making an induction coil to give a spark one-quarter inch in length can be found in Bonney's "Induction Colis," price \$1 by mall. You can omit the vibrator and arrange the break in the combustion chamber or cylinder without special instructions. The shape may also be changed to adapt it to the space allotted to it. The important thing is the insulation and the windings. All else is secondary. Only a low voltage can be used upon so small a coil.

(8258) Fuller & Cooper ask: Please tell us how to make a jumping spark coll. Give us a good description if you can. A. See answer to above query.

(8259) F. P. asks: 1. Is the efficiency of an electric motor affected if the body frame of the automobile is iron, or if motor is clad with wrought iron or other metal instead of cast iron? A. The efficiency of an electric motor is not affected by the material of the frame of the carriage to which it is attached. Nor does it make any difference to the motor by what metal it is inclosed. The reason for using ironclad motors on street cars is chiefly to prevent the escape of magnetic lines into the space around the motor. No metal but iron can do this, and cast iron is cheaper than wrought iron. 2. Will wrought iron field magnets, instead of cast iron, in Supplement 1195 (November 26, 1898), double the efficiency of the motors? If not, what winding will do it? A. Wrought iron will transmit about twice as many lines of forces as cast iron; hence a saturated magnet core of wrought iron will give twice the effect of one of cast iron. 3. If pinion wheel is placed on top of gear wheel, is it as efficient as if placed on the side? A. The position of the driving gear does not affect the amount of power it transmits. 4. If QQt

too small, how should motors in SUPPLEMENT 1195 be wound so as to act as dynamos also? A. The winding of a motor does not need to be changed to make it generate as a dynamo. 5. Is there any special danger on an electric automobile, whether still or moving, in a thunder-A. An electric automobile is not exposed to any more danger in a thunder-storm than any other. We do not recall ever hearing of any person being struck by lightning upon a railway train. 6. In the inclosed sketch, if Uis a one horse power motor, with 3-inch pinion meshing into 30-inch gearwheel, connected to 18-Inch rod, JH, and this joined to 6-foot lever, HF, working on fulcrum, G, five feet from power end, what horse power will be obtained at A on the bent axle, DCABE, which is connected to lever, HF, by 18-inch rod, A F? A. With the arrangement you describe you will have at the end of the train of wheels and levers one horse power less whatever has been lost in friction at the several bearings. No one can calculate this. It must be found by experiment, and will depend upon the condition of the machine. A horse power is 33,000 foot-pounds of work done in a minute. It is not affected by the speed of motion nor by the weight lifted. If the speed is great a less weight will be lifted by a horse power; and if the weight is great, the less will be the Your arrangement reduces speed and increases pressure, or weight lifted, but the amount of power remains the same. The 30inch gear moves one-tenth as fast as the gear which drives it, and the end, F, of the lever moves one-fifth as fast as the end, H. Hence F moves one-fiftieth as fast as the small gear on the motor.

(8260) J. F. C. asks: What is the fraction of power lost in the current produced by a generator which runs a motor, the connecting wires being not longer than 10 yards? That is, what is the relative power of motor feet? and generator? Both are the same size. What size of a booster would be required to have both equal? A. A motor only thirty feet from it will be necessary to use a mechanical air the dynamo which furnishes the current for running it has little or no drop of potential from that of the dynamo, and needs no booster. The only loss is due to the heating of the coils by the current.

(8261) B. H. G. asks: Please inform me through your Notes and Queries the principle and details of the radiometer? A. The radiometer is a heat instrument. Light has no connection with it. It consists of a glass globe, usually about two inches in diameter, exhausted to a suitable degree. Within is a steel pivot upon which revolves a cross arm carrying four vanes of aluminium, one face of which is blackened by carbon. When heat falls upon the vanes the black faces absorb more than the bright and are hotter. The molecules of air coming in contact with the black faces are heated more than those coming in contact with the bright faces and rebound with more force. The reaction of this rebound causes the vanes to revolve with t black faces in the rear. The globe itself; has been made to show a tendency to rotate in the opposite direction to the vanes, this being due to the bombardment of the inner surface of the glass by the stream of molecules which rebound from the vanes. Thus the radiometer is a heat engine, transferring heat from the black side of the vanes to the surface of the glass opposite. A satisfactory explanation of the phenomenon is given in Barker's "Physics," price \$3.75 by mall. See also Supplements 13, 37, price ten cents each. 2. Please state also whether energy exists in light, and to what extent. A. Light and heat are now classed together as radiant energy by scientists, and the energy of both is measured by absorbing some material and de termining the heating effect it produces. The energy of light as light has not been measured by any mechanical effect which it can produce.

(8262) G. B. W. asks: 1. Does the magnetic field of an inductor dynamo rotate just as if the field coil were fastened to the inductor? A. No; we think the type you name does not. 2. In a slotted armature does the field have to cross an extra wide air gap due to the depth of the slot? A. No; the air gap is smaller in a slotted armature. The lines follow the iron in preference to the air, and do not pass out at the bottom of the slots. Does a conductor cut the lines of force or do the lines of force cut the conductor? That is, do the lines of force break on one side of the conductor and reunite on the other when it is swept through the field on the armature of dynamo? A. Lines of force are not like threads, to be cut. They are not of material substance, and are not cut in any such sense. The wire passes through the field and is resisted in doing so with a force which has a certain value and effect in generating an electric current which is well expressed by the convention of imaginary lines. The lines are as imaginary as the earth's equator. 4. Is there an arc lamp which does not throw shadows because of the up-and-down rods by the side of the carbon? A. Lamps have been made which do not throw shadows. There need be but a small conductor to carry the current to the lower carbon.

(8263) W. B. asks: In issue of June 1: Notes and Queries, No. 8198, 5.846 deg. F. is given as the latest figure for the melting point of platinum. Is this misprint for 3.846? A. No; the error in the melting point of platinum arose from using a temperature which was in Fahrenheit degrees as if in Centigrade degrees. The melting point of platinum is Broom handle extended Pulger place of Pulger plater. J. J. W.

C., which would be equivalent to about 3200 deg. to 3992 deg. Fahr.

(8264) S. C. asks: 1. Please 1et me know the amount of iron wire which is neces sary for the core of the armature of the simple motor described on page 500 in "Experimenta Science." A. About a pound of wire is required. 2. Would the carbon plates made by the process given on page 705 be all right for the plunge battery on page 401? A. Yes, if well made; but we do not advise an amateur to attempt the manufacture of carbons. He cannot obtain very good results, and they are very cheap in the market. 3. How much bichromate of soda is required for one charging of the same battery? A. To every 6 quarts of water take 3 pounds of sodium bichromate and 1 quart of strong sulphuric acid.

(8265) F. S. L. writes: I would like to know how to make a sparker or a spark coll, and in what way it differs from an induction coll. I want to make a spark coil to use to ignite an acetylene gas jet. A. Spark colls are made about ten inches long. The center is a core of iron wire as in an induction coil. It may be % inch in diameter. Insulate the core by wrapping it with paper which may be soaked in paraffine. Fit heads upon the ends of the core to hold the winding and wind four to six layers of about No. 12 B. & S. double cotton-covered wire upon the core. Insulate the layers with paper. This coll is put in series with a battery, and upon breaking the circuit a spark is produced at the break which lights the gas. There is no secondary coil In this is the difference between a spark and an induction coil.

(8266) J. L M. asks: What is the most practical and least expensive process to produce, as near as possible, an absolute vacuum in a chamber containing about four cubic Will it require a greater capacity of power to empty a large space than it will a smaller one? A. To exhaust so large a space pump. It is not possible to produce an absolute vacuum by any means of exhaustion. It will, however, not require any greater power to empty a large reservoir. It will require more

(8267) A. L. N. asks: 1. Are there any known substances, preferably metal, which allow some kind of gas to pass through, about the same as light through glass? If so, which? A. We do not know any such metal or substances. The molecules of any gas are much too large to pass between the molecules of a metal. Red-hot cast iron will allow some gases escape through it, but not with the with which light passes through glass. 2. Are there any known substances, preferably metal, which will change temperature, when immersed in some gas? If so, which? A. Powdered anti-mony or heated copper foll will burn with the evolution of light if dropped into a jar of chlorine gas.

(8268) E. V. V. writes: I have had some little trouble in convincing a man that ice forms on the bottom of a running stream of water, but having seen the same I know I am right. Would you kindly answer same in your valuable paper? A. Anchor ice is often to be seen fastened to the stones on the bottom of a stream, and also to the timbers around a mill. Very frequently mills are stopped by the anchor ice during a very cold

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July 2, 1901,

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ı		677,619
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	Broom handle extension coupling, S. A.	311,011
	Pulcar	677,372
	Pulger Brush holder, J. J. Wood	677.834

	8		
0 e	Brush, rotary, F. G. Farnham Brushing, grinding, or polishing machine, B. Michols Building block, B. Haffner. Butter, etc., from vessels, device for removing, W. M. Blaney Button, cuff, G. Breda. Buttons, producing turting, F. A. Neider. Buttonhole casing, R. H. Piper. Buttonhole files, apparatus for marking, W. T. Benjamin Cake Jeeter, K. H. McRae.	677,502 677,589 677,351	Fig Fig Fig
e l	moving, W. M. Blaney Button, cuff, G. Breda. Buttons, producing tufting, F. A. Neider. Buttonhole casing, R. H. Piper. Buttonhole files, apparatus for marking, W.	677,732 677,631 677,588 677,792	Fo Fo Fo
y r f	T. Benjamin Cake beater, K. H. McRae Calendar, pen, and pencil, combined, P. Fraser	677,421 677,449	Fr Fu
r e	Calipers, C. A. Huestis	677,574 677,501 677,460 677,566	Fu
e - g	Car construction, W. H. Woodcock Car, convertible dump, H. S. Hart Car coupling, A. A. Moss	677,729 677,352 677,366	Ga Ga Ga Ga
f	Car door, grain, E. V. Williams	677,728 677,511 677,469	Ga Ga Ga
e k	Buttonhole classing, H. H. Fiper. Buttonhole files, apparatus for marking, W. T. Benjamin Cake beater, K. H. McRae. Calendar, pen, and pencil, combined, P. Fraser Calipers, C. A. Huestis. Camera focusing hood, A. D. Davis. Camera, photographic magazine, A. Mixner. Can securing means, milk, E. Eaton. Cane topper, O. Palm. Car construction, W. H. Woodcock. Car, convertible dump, H. S. Hart. Car coupling, A. A. Moss. Car coupling, A. A. Moss. Car door, grain, E. V. Williams. Car door, grain, E. V. Williams. Car daft rigging, railway, J. Rawles. Car fender, S. Lind. Car fender, yielding automatic adjustable, S. W. Alexander Car sand box, A. L. Bacon. Cars, means for supporting and manipulating contact shees of electrically promelled	677,532 677,554	G1 G1 G1
e s	contact shoes of electrically propelled railway, Hastings & Walkins	677,741 677,348 677,580	Go Gr Gr
r	Car sand box, A. L. Bacon. Cars, means for supporting and manipulating contact shoes of electrically propelled railway, Hastings & Walkins. Carbon brush, W. C. Fish. Carbonating apparatus, P. & O. Madlener. Card cutting machine, George & Delivouk. Carpet sweeper fender, S. Greacen. Carriage wheel, T. Loverin. Cartridge, H. Maxim	677,504 677,411 677,525 677,528	Gr Gr Gu
e s r	Cartridge belt or bandoleer, Mills & Orndorff	677,680 677,500	Gu Gu Ha
e	Carringe best or bandoleer, Mills & Urndorf Case. See Eyeglass case. Cash register, J. P. Cleal. Casting making mould, R. F. Ludlow. Castings, apparatus for handling, cleaning, and distributing, G. W. Packer. Ceiling plate for combination light fixtures, F. G. Procunier. Cement calcining apparatus, Lathbury & Spackman	677,549 677,691	Ha Ha
- -			Ha Ha He
ı. n	and trimming, J. C. Howe	677,744 677,742 677,568	Hi Hi
9	and trimming, J. C. Howe	11,919 677,599 677,684 677,586	Ho Ho Ho
c f	Pisko Cigarette mouthpieces, machine for packing, E. T. Pollard Circuit breaker, E. M. Hewlett. Clock, electric self winding, D. W. Thompon	677,793 677,594	Hu Hy Hy
a e r	Clock, electric self winding, D. W. Thompson Closet seat, M. T. Robinson	677,353 677,819 677,799	Hy
e ,	Clutch, H. W. Patrick. Clutch, H. L. Arnold. Clutch, friction, E. Huber. Clutch, procharger, H. F. Kright	677,592 677,615 677,573	Ins
е	Clock, electric self winding, D. W. Thompson Closet seat, M. T. Robinson. Clothes line pole, C. B. St. Clair. Clutch, H. W. Patrick. Clutch, H. L. Arnold. Clutch, friction, E. Huber. Clutch mechanism, H. F. Knight. Coating tin, terne, or like plates, apparatus for, T. Kendrick. Coffee pot, A. L. Rich. Cold storage apparatus, indirect air circulating system for, M. Cooper	677,666 677,700	Iro Ja Jo
e n t	Cold storage apparatus, indirect air circulating system for, M. Cooper	677,536 677,648	Joi Ke
?	Compressed W. I Francis	677,581 677,503 677,462 677,383 677,750	Kn La La
a s	Condensing apparatus, P. Nezeraux	677 471	La La La
e ,	Corn husker and shredder, Teeguarden & Himes	677,386 677,441 677,622	La La La La La
e f	Corn husker and shredder, Teeguarden & Himes Corset, L. Dyer Cover for cases, etc., N. Barney. Cows for milking or the like, leg rope attachment for securing, A. E. Whiting. Crate, folding, W. P. Murphy. Crib, folding, H. F. Meistrell. Crochet needle, J. J. Wickham. Cross head, H. C. Clay. Cuff holder, R. M. Hughes. Cultivator, J. M. Wright. Cultivator, J. M. Wright. Cultivator, J. M. Wright. Cultivator shares or Shovels, standard adapted for, A. G. Perry Cutting implement, W. E. Lott. Dam, N. Gherassimoff. Damper, L. Hoepfner. Dashboard, H. L. Hall. Dental clamp, J. A. Dunn.	677,831 677,683 677,675 677,832	La La Le: Le:
i	Cross head, H. C. Clay	677,338 677,663 677,836	Lii Lii
t 1	adapted for, A. G. Perry. Cutting implement, W. E. Lott. Dam, N. Gherassimoff. Damper, L. Hoepfner	677,694 677,419 677,656 677,572	Lit
1	(Reissue)	11,920	Lo Lo Lo
s e i	Dental forceps, H. N. Lancaster. Desk basket attachment, A. S. Busselle Desk, card-ledger, G. B. Meleney Desk, office, J. B. Rohrer Diamond polishing machine, G. Armeny Digging machine, trench, J. H. W. Libbe Dispensing apparatus, coin controlled, D. Sullivan	677,634 677,786 677,802 677,613	Lo
	Dispensing apparatus, coin controlled, D. Sullivan Display rack, W. Northgraves	677,522 677,748 677,790	Ma Ma
	Sullivan Display rack, W. Northgraves. Door, grain, P. J. Stone. Door hanger, W. Louden. Door openers, controlling device for electrical, G. A. Le Fevre. Draft for buffing rigging, R. D. Gallagher,	677,790 677,379 677,524 677,783	Ma Ma Ma
47.22.11	Jr. Jr. Drawers, set of, A. Finkenrath. Drier. See Malt drier. Drier furnace, W. H. Prinz. Dust guard, J. E. Akers. Dye and making same, red azo, Israel & Kothe	677,654 677,734	Ma Ma
- the	What was alarm Wascher & Wallanhaunt	677,611 677,517 677,829 677,439	Ma Me Me
7	Electric arc furnace, R. C. Contardo Electric battery, portable, M. E. Fuld Electric circuit controlling means, R. Varley,	677,852 677,826	Me Mi Mi
9 9 2	Electric current controller, C. H. Keeney, Electric current interrupter, E. W. Cald- Blectric currents, interrupting, E. W. Cald- well	677,498 677,498	Mi
23	Electric cut out, automatic, F. H. Rogers Electric machine casing, dynamo, C. D.	677,499 677,843 677,533	Mu Nu Nu
93	Electric mains connected to storage batteries, apparatus for regulating pressure	677,355 677,661	Nu Oa Oa Off
3 5 4	Electric motor regulator, W. H. Knight. (Reissue) Electric switch, Cowperthwait & Lind-	11,918 677,340	Or Or
7	Electrical distribution, W. B. Potter	677,371	Or
4 2 0 5	Electrical distribution system, E. W. Rice, Jr. Electrical rosette cut out, G. B. Thomas. Electromagnet, J. D. Ihlder. Ellipsograph, F. Oldfield. Engine igniter, gas, C. Allen. Engines, hydrocarbon spraying device for gasolene, T. B. Jeffrey. Evaporating pan, I. Kitsee. Excavating and gold saving apparatus, J. Excavating and gold saving apparatus, J. Excavating and gold. Excavating apparatus, R. Dalton. Excavating apparatus, R. Dalton. Exchaust head, A. S. Hyde	677,359 677,590 677,491	Pa Pa Ph
3 8 8 6	gasolene, T. B. Jeffrey	677,767 677,416 677,844 677,538	Ph Ph Pia Pia
0 8 4 1			Pic Pic Pic Pi
0 3 9	ington Farm gate, J. E. Moore Faucet, Nagengast & Hulss. Feed and producing same, oat stock, J. D.	677,835 677,364 677,687	Pi Pi Pl Pl
96	Fence post, T. W. Brown	677,587 677,757 677,396 677,773	Pla Pla Pla
60481	Filter, O. Burbridge Filtration and purification system, water, M. L. Davis Fire back, adjustable, E. H. Headford Fire extinguisher, G. W. Thompson Fire extinguisher, automatic, G. W. Thomp-	677,641 677,451. 677,715	Po Pr
24	son	677,716 677,542 677,420	Pr

2 1 8 2	Dich hook envine attachment A D Care	OFF OFF
2 1 8 2	Fish hook spring attachment, A. D. Gary Fish scaling implement, E. S. Herrington Flooring machine, W. O. Vivarttas Fluid meter, H. Chrisman	677,543 677,721
1 8 2 7 1	Fluid meter, H. Chrisman	011,001
- 1	Fluid meter, H. Chrisman. Fluids screen, J. R. Freeman. Folding machine, G. F. Dunn. Folding table napkins, etc., machine for, E. Collon.	677,404 677,436
i	Foundry clamp A. M. Thompson	677,643 677,818
- 1	Frog for use in connection with overhead conductors of electrical tramways or railways, H. G. Nicholson. Furnace, T. Smith. Furnace, at the line recorder for blest J. F.	677,463
94	Fullaces, Stock line recorder for blast, J. E.	677,812 677,665
6	Johnson, Jr. Fuse, electric detonator, Smith & Corrie Gage. See saw gage.	677,477
6 9 2	Gage. See saw gage. Galley lock, Peoples & Walther	677,693 677,782 677,699
6	Gas burner heating attachment, A. M. For- rester	
8 1 9	Gas furnace, retort, H. Burgmann	677,336 677,334
3	Gas purifier cover, T. S. Clapham	677,639 677,530
2	rester neating attachment, A. M. For- rester. Gas furnace, retort, H. Burgmann. Gas generator, acetylene, Benedict & Graf. Gas generator, acetylene, H. A. Holmes. Gas purifier cover, T. S. Clapham. Glass blowing machine, D. Murray. Glass cap making machine, F. H. Loveridge. Glass plates, making wire, Swearer & Toyn- bee.	677,548 677,609
1	Golf club, G. W. MatternGrain binder, automatic, J. F. Appleby	677,811 677,553
8 0 4	Grain drill, Dodson & Evans	677,564 677,347 677,630 677,593
5	Glass plates, making wire, Swearer & Toynbee Golf club, G. W. Mattern. Grain binder, automatic, J. F. Appleby. Grain drill, Dodson & Evans. Grain scouring machine, J. T. Ewan. Grain separator, A. F. Brase. Grinding machine, H. Pearse Guanidin compound and making same, Israel & Kothe	
8 8	& Kothe Guanidin derivatives and making same, mixed. Israel & Kothe	677,514 677.515
0	Guitar attachment, K. Beck	677,515 677,395 677,390
9	muscles of the, G. Troxler, Jr Hank securing means. Wiseburn & Buhle	677,824 677,488 677,658
5	Guandin compound and making same, israel & Kothe Guanidin derivatives and making same, mixed, israel & Kothe. Guitar attachment, K. Beck. Hair crimper, C. L. Walters. Hands and fingers, device for developing muscles of the, G. Trozler, Jr. Hank securing means, Wiseburn & Buhle. Harrow attachment, disk, H. J. Heider Harvester bundle carrying attachment, C. N. Bargunist	677,658 677,621
57	Harvester bundle carrying attachment, C. N. Bargquist Hatchway cover fastening, H. I. Smith Heatter, G. E. Riblet Heating apparatus, A. M. Hewlett Hinge, N. W. McCourt Hoe and weeder, combination, T. R. & F. E. Ferris Hoof pad, J. A. Buck	677,604 677,798 677,764
2 8	Heating apparatus, A. M. Hewlett Hinge, N. W. McCourt Hoe and weeder combination T. R. & F. E.	677,685
9	Ferris	677,405 677,497
946	Horpie, animal, J. P. Meals	677,398 677,676
3	Hub, L. Sturges	677,429 677,575
4	Hydrocarbon burners, preliminary vaporizer for, T. B. Dooley	677,402
9	Ferris Hoof pad, J. A. Buck. Hopple, animal, J. P. Meals. Horseshoe pad, A. Buer. Hot air furnace, C. Messer. Hub, L. Sturges. Hub, vehicle, Z. T. Kale. Hydrocarbon burners, preliminary vaporizer for, T. B. Dooley. Hydrocarbon motor, W. Bruening. Hydrocarbon vapor burner, Holt & McDaniel Index, Throop & Hendricks. Induction chamber and oil eliminator, J. J.	677,397 677,766
6	Induction chamber and oil eliminator, J. J. Hoppes	677,356 677,730
5 3 7	Hoppes Insulating conductors, C. E. Woods. Invalid lifting and handling device, H. E. Sharrer	677,602
6	Sharrer Sharrer Sharrer Jar holder, fruit, S. L. Bray Joint coupling, three ball metallic flexible, G. W. Shields	677,808 677,733
6	G. W. Shields	677,809 677,374
8	C. U. Rhoades	677,597 677,806
1	Knob, door, C. F. Bielé	677,625 677,651
2	Lamp, acetylene gas generating. W. P.	677,714
1	Crary Lamp, electric arc, T. Spencer Lamp globe holder, arc, G. E. Stevens Lamp, incandescent electric, B. M. Drake. Lamp, vapor burning, R. O. Applegate Lancet, R. Caldwell. Lasting machine, J. S. Ladd. Latch, J. Biehl. Latch, R. A. Stevens	677,400 677,605 677,377
6	Lamp, incandescent electric, B. M. Drake Lamp, vapor burning, R. O. Applegate	677,440 677,393 677,756
2	Lancet, R. Caldwell	
3	Lathe slide rest, J. W. von Pittler	677,432 677,713 677,695 677,368
8	Letter box, A. L. Henry. Life saving apparatus, acetylene generator for, J. Ruck Liquids by electrolysis, apparatus for puri- fying, Lemp & Koedding. Lithographic or other transfer sheets, ma- chine for coloring or powdering, H. Michand	677,763
6	for, J. Ruck	677,600 677,418
4 9 6	fying, Lemp & Koedding	677,578
2	Loading machine, stone and dirt, C. C.	677,678
5	Troxell Lock. See Galley lock. Sash lock. Logging car standard, J. C. Barron	677,823 677,556
7 4 6	Loom filling replenishing mechanism. H. W.	
ž	Wyman Loom pick finder, K. Hyde. Loom, weft replenishing, E. S. Stimpson, 677,607,	677,838 677,513
3	26.12	677,513 677,608
3 2 8	Mail or other service, transmission system	677,513 677,608 677,424
3 2 8 0 9	Mail or other service, transmission system for, G. A. Owen	677,513 677,608 677,424 677,423 677,698
3 2 8 0 9 4	Mail or other service, transmission system for, G. A. Owen Mail service system, G. A. Owen Malt drier, W. H. Prinz. Malting and drying apparatus, F. H. C. Mey Mandolin player, electric, A. I. Mitchell. Manhole plate, ad justable swinging, M. E.	677,513 677,608 677,424 677,423 677,698 677,787 677,584
3 2 8 0 9 4 3	Mail or other service, transmission system for, G. A. Owen	677,513 677,608 677,424 677,423 677,698 677,787 677,584 677,637
3 2 8 0 9 4 3 4 4	Mail or other service, transmission system for, G. A. Owen. Mail service system, G. A. Owen. Malt drier, W. H. Prinz. Malting and drying apparatus, F. H. C. Mey Mandolin player, electric, A. I. Mitchell. Manhole plate, adjustable swinging, M. E. Casey Marble, manufacture of artificial, J. Tuckwell Matthe boxing machine, W. R. Swett. Mattress forming device, cotton, J. C. Kyle.	677,513 677,608 677,424 677,423 677,698 677,787 677,584 677,637 677,385 677,780
3 2 8 0 9 4 3 4 7 1	Mail or other service, transmission system for, G. A. Owen	677,513 677,608 677,424 677,423 677,698 677,787 677,584 677,637 677,816 677,780 677,780 677,337
3 2 8 0 9 4 3 4 4 7 1 7 9 9	Mail or other service, transmission system for, G. A. Owen. Mail service system, G. A. Owen. Malt drier, W. H. Prinz	677,513 677,608 677,424 677,423 677,698 677,787 677,584 677,385 677,385 677,780 677,780 677,780 677,450 677,450 677,450 677,450
3 2 8 0 9 4 3 4 4 7 1 7 9 9 9 2 6	Mail or other service, transmission system for, G. A. Owen. Mail service system, G. A. Owen. Malt drier, W. H. Prinz	677,513 677,608 677,424 677,423 677,698 677,787 677,584 677,816 677,816 677,780 677,780 677,780 677,450
3 2 8 0 9 4 3 4 4 7 1 7 9 9 2 6 0	Mail or other service, transmission system for, G. A. Owen	677,513 677,608 677,424 677,423 677,698 677,787 677,584 677,816 677,7816 677,7816 677,7816 677,783 677,754 677,754 677,754 677,754 677,754 677,755 677,753 677,753
3 2 8 0 9 4 3 4 4 7 1 7 9 9 2 6 0 8 9	Mail or other service, transmission system for, G. A. Owen	677,513 677,608 677,424 677,423 677,698 677,787 677,584 677,816 677,7816 677,7816 677,7816 677,783 677,754 677,754 677,754 677,754 677,754 677,755 677,753 677,753
3 2 8 0 9 4 3 4 4 7 1 7 9 9 2 6 0 8 9 3	Mail or other service, transmission system for, G. A. Owen. Mail service system, G. A. Owen. Mail drier, W. H. Prinz. Malting and drying apparatus, F. H. C. Mey Mardolin player, electric, A. I. Mitchell. Manhole plate, adjustable swinging, M. E. Casey Marble, manufacture of artificial, J. Tuckwell Matches forming device, cotton, J. C. Kyle. Mattress forming device, cotton, J. C. Kyle. Meat or vegetable cutter, M. Cameron. Melting, smelting, and crucible furnace, W. H. Thornley Mercerizing, Gros & Bourcart. Metallic tie, A. M. Bowman. Mica splitting machine, De Kaiser & Hadfeld mining apparatus, gold, M. Covel. Mining apparatus, gold, M. Covel. Mosaic art panels, manufacture of, W. J. Rockwood Music stand and music leaf turner, combined, O. C. Zerck. Nut lock, L. J. Mathias.	677,513 677,608 677,424 677,423 677,698 677,787 677,584 677,637 677,816 677,780 677,450 677,754 677,754 677,754 677,754 677,754 677,754 677,754 677,754 677,754 677,754 677,754
32 8094 3 44 71 7992 60 8 93	Mail or other service, transmission system for, G. A. Owen. Mail service system, G. A. Owen. Mail drier, W. H. Prinz. Malting and drying apparatus, F. H. C. Mey Mardolin player, electric, A. I. Mitchell. Manhole plate, adjustable swinging, M. E. Casey Marble, manufacture of artificial, J. Tuckwell Matches forming device, cotton, J. C. Kyle. Mattress forming device, cotton, J. C. Kyle. Meat or vegetable cutter, M. Cameron. Melting, smelting, and crucible furnace, W. H. Thornley Mercerizing, Gros & Bourcart. Metallic tie, A. M. Bowman. Mica splitting machine, De Kaiser & Hadfeld mining apparatus, gold, M. Covel. Mining apparatus, gold, M. Covel. Mosaic art panels, manufacture of, W. J. Rockwood Music stand and music leaf turner, combined, O. C. Zerck. Nut lock, L. J. Mathias.	677,513 677,608 677,424 677,423 677,637 677,584 677,637 677,836 677,780 677,780 677,754 677,754 677,754 677,754 677,754 677,800 677,461 677,461 677,461
32 8094 3 44 71 7992 60 8 93 13 5 1	Mail or other service, transmission system for, G. A. Owen. Mail service system, G. A. Owen. Mail drier, W. H. Prinz. Matting and drying apparatus, F. H. C. Mey Mandolin player, electric, A. I. Mitchell. Manhole plate, adjustable swinging, M. E. Casey Marble, manufacture of artificial, J. Tuckwell Match boxing machine, W. R. Swett. Mattress forming device, cotton, J. C. Kyle. Meat or vegetable cutter, M. Cameron. Melting, smelting, and crucible furnace, W. H. Thornley Mercerizing, Gros & Bourcart. Metallic tie, A. M. Bowman. Mica splitting machine, De Kaiser & Hadfield Mining apparatus, gold, M. Covel. Mining shafts, safety apparatus for setting cage chairs in, Carstens & Henley. Mosaic art panels, manufacture of, W. J. Rockwood Music stand and music leaf turner, combined, O. C. Zerck. Musical instrument, automatic, E. de Kleist Nut lock, L. J. Mathias. Nut lock, T. E. Shortell. Oar making machine, W. T. Jones. Oats process, rolled, J. D. & H. R. Nagel. Offset webs, method of using, J. L. Firm. Oil, etc., apparatus for distributing or feed-	677,513 677,608 677,424 677,423 677,698 677,787 677,584 677,637 677,816 677,780 677,450 677,450 677,754 677,754 677,759 677,759 677,769
32 8094 3 44 71 7992 60 8 93 3 5 1 8 0	Mail or other service, transmission system for, G. A. Owen. Mail service system, G. A. Owen. Malt drier, W. H. Prinz	677,513 677,608 677,424 677,423 677,698 677,787 677,584 677,637 677,816 677,780 677,450 677,450 677,754 677,754 677,759 677,759 677,769
32 8094 3 44 71 7992 60 8 93 3 5 1 8 01	Mail or other service, transmission system for, G. A. Owen. Mail service system, G. A. Owen. Malt drier, W. H. Prinz	677,513 677,608 677,424 677,423 677,637 677,584 677,637 677,836 677,780 677,780 677,754 677,754 677,754 677,754 677,754 677,800 677,461 677,461 677,461
32 8094 3 44 71 7992 60 8 93 3 5 1 8 01 599	Mail or other service, transmission system for, G. A. Owen. Mail service system, G. A. Owen. Malt drier, W. H. Prinz	677,513 677,608 677,424 677,698 677,787 677,584 677,781 677,780 677,781 677,780 677,745 677,755 677,757 677,800 677,769
32 8094 3 44 71 7992 60 8 93 3 5 1 8 01 5990	Mail or other service, transmission system for, G. A. Owen. Mail service system, G. A. Owen. Mail drier, W. H. Prinz. Matting and drying apparatus, F. H. C. Mey Mandolin player, electric, A. I. Mitchell. Manhole plate, adjustable swinging, M. E. Casey Marble, manufacture of artificial, J. Tuckwell Match boxing machine, W. R. Swett. Mattress forming device, cotton, J. C. Kyle. Meat or vegetable cutter, M. Cameron. Melting, smelting, and crucible furnace, W. H. Thornley Mercerizing, Gros & Bourcart. Metallic tie, A. M. Bowman. Mica splitting machine, De Kaiser & Hadfield Mining apparatus, gold, M. Covel. Mining shafts, safety apparatus for setting cage chairs in, Carstens & Henley. Mosaic art panels, manufacture of, W. J. Rockwood Music stand and music leaf turner, combined, O. C. Zerck. Musical instrument, automatic, E. de Kleist Nut lock, L. J. Mathias. Nut lock, T. E. Shortell. Oat making machine, W. T. Jones. Oats process, rolled, J. D. & H. R. Nagel. Offset webs, method of using, J. L. Firm. Oil, etc., apparatus for distributing or feeding coal, J. G. Branch. Ore bucket dumper and chute, L. Collier. Ore roasting furnace, J. Roger. Ores, apparatus for the treatment of, J. Armstrong Ornamenting cardboard, etc., J. W. McCabe Package, H. C. Deckert. Painting machine, H. J. Delaney.	677,513 677,608 677,424 677,424 677,698 677,787 677,584 677,781 677,780 677,781 677,754 677,754 677,754 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,684 677,769 677,769 677,684 677,769
32 8094 3 44 71 7992 60 8 93 3 5 1 8 01 59901 7	Mail or other service, transmission system for, G. A. Owen. Mail service system, G. A. Owen. Mail drier, W. H. Prinz. Matting and drying apparatus, F. H. C. Mey Mandolin player, electric, A. I. Mitchell. Manhole plate, adjustable swinging, M. E. Casey Marble, manufacture of artificial, J. Tuckwell Match boxing machine, W. R. Swett. Mattress forming device, cotton, J. C. Kyle. Meat or vegetable cutter, M. Cameron. Melting, smelting, and crucible furnace, W. H. Thornley Mercerizing, Gros & Bourcart. Metallic tie, A. M. Bowman. Mica splitting machine, De Kaiser & Hadfield Mining apparatus, gold, M. Covel. Mining shafts, safety apparatus for setting cage chairs in, Carstens & Henley. Music stand and music leaf turner, combined, O. C. Zerck. Musical instrument, automatic, E. de Kleist Nut lock, L. J. Mathias. Nut lock, T. E. Shortell. Oar making machine, W. T. Jones. Oats process, rolled, J. D. & H. R. Nagel. Offset webs, method of using, J. L. Firm. Oil, etc., apparatus for distributing or feeding coal, J. G. Branch. Ore bucket dumper and chute, L. Collier. Ore roasting furnace, J. Roger. Ores, apparatus for the treatment of, J. Armstrong Ornamenting cardboard, etc., J. W. McCabe Cabe. Chessee, H. C. Deckert. Painting machine, H. J. Delaney. Photograph plate, P. V. W. Welsh. Photograph plate, P. V. W. Welsh.	677,513 677,608 677,424 677,424 677,698 677,787 677,584 677,781 677,780 677,781 677,754 677,754 677,754 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,684 677,769 677,769 677,684 677,769
32 8094 3 444 71 79992 60 8 93 3 5 1 8 01 599901 76 48	Mail or other service, transmission system for, G. A. Owen. Mail service system, G. A. Owen. Malt drier, W. H. Prinz	677,513 677,608 677,424 677,423 677,698 677,787 677,584 677,637 677,385 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,781 677,782 677,783 677,784 677,789 677,789 677,781 677,784 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789
32 8094 3 44 71 79992 60 8 93 3 3 5 1 8 01 599901 76 48883	Mail or other service, transmission system for, G. A. Owen. Mail service system, G. A. Owen. Malt drier, W. H. Prinz	677,513 677,608 677,424 677,423 677,698 677,787 677,584 677,637 677,385 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,781 677,782 677,783 677,784 677,789 677,789 677,781 677,784 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789
32 8094 3 44 71 79992 60 8 93 3 5 1 8 01 599901 76 488835 5	Mail or other service, transmission system for, G. A. Owen. Mail service system, G. A. Owen. Malt drier, W. H. Prinz	677,513 677,608 677,424 677,423 677,698 677,787 677,584 677,637 677,385 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,780 677,781 677,782 677,783 677,784 677,789 677,789 677,781 677,784 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789 677,789
32 8094 3 444 71 79992 60 8 93 3 5 1 8 01 599901 76 488835 547	Mail or other service, transmission system for, G. A. Owen Mail service system, G. A. Owen Mail service system, G. A. Owen Malt drier, W. H. Prinz. Malting and drying apparatus, F. H. C. Mey Mandolin player, electric, A. I. Mitchell. Manhole plate, adjustable swinging, M. E. Casey Marble, manufacture of artificial, J. Tuck- well Match boxing machine, W. R. Swett. Mattress forming device, cotton, J. C. Kyle. Meat or vegetable cutter, M. Cameron. Melting, smelting, and crucible furnace, W. H. Thornley Mercerizing, Gros & Bourcart. Metallic tie, A. M. Bowman. Mica splitting machine, De Kaiser & Had- field Mining apparatus, gold, M. Covel. Mining shafts, safety apparatus for setting cage chairs in, Carstens & Henley. Mossic art panels, manufacture of, W. J. Rockwood Music stand and music leaf turner, com- bined, C. Zerck. Musical instrument, automatic, E. de Kleist Nut lock, L. J. Mathias. Nut lock, H. C. Karlson. Nut lock, T. E. Shortell. Oar making machine, W. T. Jones. Oar making machine, W. T. Jones. Offset webs, method of using, J. L. Firm Oil, etc., apparatus for distributing or feed- ing coal, J. G. Branch. Ore bucket dumper and chute, L. Collier. Ore roasting furnace, J. Roger. Ores, apparatus for the treatment of, J. Armstrong Ornamenting cardboard, etc., J. W. Mc- Cabe Cackage, H. C. Deckert. Painting machine, H. J. Delaney. Phonograph; Old Comins Ploker checking device, pneumatic, F. B. Comins Picker staff checking device, F. B. Comins. Picker staff controller, F. B. Comins. Picker staff checking device, F. B. Comins. Picker staff checking device, F. B. Comins. Picker staff controller, F. B. Comins. Picker staff checking device, F. B. Comins. Picker staff che	677,513 677,608 677,424 677,423 677,698 677,787 677,584 677,783 677,780 677,785 677,754 677,754 677,754 677,769
32 8094 3 444 71 79992 60 8 93 3 5 1 8 01 599901 76 488835 547 7	Mail or other service, transmission system for, G. A. Owen Mail service system, G. A. Owen Mail service system, G. A. Owen Malt drier, W. H. Prinz. Malting and drying apparatus, F. H. C. Mey Mandolin player, electric, A. I. Mitchell. Manhole plate, adjustable swinging, M. E. Casey Marble, manufacture of artificial, J. Tuck- well Match boxing machine, W. R. Swett. Mattress forming device, cotton, J. C. Kyle. Meat or vegetable cutter, M. Cameron. Melting, smelting, and crucible furnace, W. H. Thornley Mercerizing, Gros & Bourcart. Metallic tie, A. M. Bowman. Mica splitting machine, De Kaiser & Had- field Mining apparatus, gold, M. Covel. Mining shafts, safety apparatus for setting cage chairs in, Carstens & Henley. Mossic art panels, manufacture of, W. J. Rockwood Music stand and music leaf turner, com- bined, C. Zerck. Musical instrument, automatic, E. de Kleist Nut lock, L. J. Mathias. Nut lock, H. C. Karlson. Nut lock, T. E. Shortell. Oar making machine, W. T. Jones. Oar making machine, W. T. Jones. Offset webs, method of using, J. L. Firm Oil, etc., apparatus for distributing or feed- ing coal, J. G. Branch. Ore bucket dumper and chute, L. Collier. Ore roasting furnace, J. Roger. Ores, apparatus for the treatment of, J. Armstrong Ornamenting cardboard, etc., J. W. Mc- Cabe Cackage, H. C. Deckert. Painting machine, H. J. Delaney. Phonograph; Old Comins Ploker checking device, pneumatic, F. B. Comins Picker staff checking device, F. B. Comins. Picker staff controller, F. B. Comins. Picker staff checking device, F. B. Comins. Picker staff checking device, F. B. Comins. Picker staff controller, F. B. Comins. Picker staff checking device, F. B. Comins. Picker staff che	677,513 677,608 677,424 677,423 677,698 677,787 677,584 677,783 677,780 677,785 677,754 677,754 677,754 677,769
32 8094 3 44 71 7999 60 8 93 3 5 1 8 01 599901 76 488835 5447 77763	Mail or other service, transmission system for, G. A. Owen. Mail service system, G. A. Owen. Malt drier, W. H. Prinz	677,513 677,608 677,424 677,423 677,698 677,787 677,584 677,637 677,637 677,385 677,385 677,450 677,450 677,450 677,755 677,756 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,769 677,765 677,769 677,610 677,610 677,496
32 80994 3 444 71 79992 60 8 93 3 5 1 8 01 599901 76 488835 5447 77763 11	Mail or other service, transmission system for, G. A. Owen. Mail service system, G. A. Owen. Malt drier, W. H. Prinz	677,513 677,608 677,424 677,428 677,698 677,787 677,584 677,787 677,886 677,780 677,787 677,784 677,785 677,786 677,786 677,786 677,786 677,786 677,786 677,786 677,786 677,786 677,786 677,786 677,787 677,684 677,788 677,786 677,786 677,786 677,787 677,587 677,580 677,786
3 2 8 0 9 4 3	Mail or other service, transmission system for, G. A. Owen. Mail service system, G. A. Owen. Malt drier, W. H. Prinz	677,513 677,608 677,424 677,428 677,698 677,787 677,584 677,787 677,886 677,780 677,787 677,784 677,785 677,786 677,786 677,786 677,786 677,786 677,786 677,786 677,786 677,786 677,786 677,786 677,787 677,684 677,788 677,786 677,786 677,786 677,787 677,587 677,580 677,786