#### ENGINEERING INVENTION.

A steam muffler has been patented by Mr. Thomas E. Hill, of Rahway, N. J. It has an outer and inner casing, with perforated plates surrounding the latter, held by rods and spaced by short intermediate tubes, there being a weighted lever to deter mine the pressure at which a valve will lift to blow off steam, with other novel features.

### AGRICULTURAL INVENTION.

A potato planter has been patented by Mr. James W. Estes, of East Atchison, Mo. It is supported upon a wheel carriage and has an adjustable furrow opener, adjustable covering blades, distributing arms arranged to reciprocate within a hopper, and vibrating fingers to pick the potatoes from the hopper and deposit them within a vertical tube in rear of the

#### MISCELLANEOUS INVENTIONS

A fare register has been patented by Mr. Henry R. Coffey, of Stockton, Cal. This invention covers a novel construction, combination, and arrange ment of parts for a register designed to be simple, convenient, and durable, and which may be readily carried about the person of the operator.

A glove fastener has been patented by Mr. George H. Coursen, of Baltimore, Md. It has a cylindrical keeper with one lower edge struck up to form a lip, and a radial locking bar, with a series of teeth on the under surface, adapted to project through the keeper and engage the lip.

A glove fastener forming the subject of another patent issued to the same inventor has a locking plate provided with an arched body, and an in wardlycurved latch integral with one endhavingan outwardly projecting horizontal tongue, there being a keeper with a slot in its upper surface adapted to receive the latch and tongue.

A bench stop has been patented by Mr. Isaac H. Terrell, of New York City. It consists of a strip of steel with one end sharpened and turned down, in the form of two prongs, while the other end has teeth, and steel projections thereto, making a stop which can be readily driven into any part of a carpenter's bench to hold work in position.

A lathe for turning wooden handles has been patented by Mr. Nathan R. Flint, of East Hiram, Me. This invention covers a novel construction and combination of parts in a lathe adapted for turning a number of wooden handles at a time to the shape of a former, and enables the handles to be made larger or smaller than the former

A chalk line holder has been patented by Mr. Benjamin Howard, of Sheep Ranch, Cal. It consists of an oval flexible chalk receptacle, with eyelets at the ends, one serving as a stopper, so made that the line or cord may be wound on the holder and the line thoroughly covered with chalk as it is drawn through

A vehicle wheel has been patented by Mr. Henry L. Smith, of Jericho Center, Vt. This invention provides a construction designed to increase the durability of the wheel and axle, and enable a ready and easy attachment of the one upon the other. securing an even wearing of the wheel upon the axle, and enabling repairs to be readily made.

A draught timber for cars has been patented by Mr. John B. Owens, of Jackson, Tenn. The invention is especially adapted to facilitate the construction of freight cars, providing means whereby the draught timbers may be expeditiously and effectively bolted to the sills, while the means employed are

A locket has been patented by Mr. Joseph Cohn, of New York City. It has an exterior casing with a front and rear plate, between which is pivotally held a picture casing adapted to be locked in place by aspring catch, with a spring held at the pivot of the casing which serves to force the latter outward when released by the spring catch.

A combined bridle and halter has 18. Engraving of the new Consolidated Stock and Pebeen patented by Mr. John O. Walton, of Belle Vernon, Ohio. This invention relates to halters made of a single piece to fit, respectively, over the head and nose of the horse, secured at the folds by metal corner pieces, upon which it may be readily adjusted, and otherwise secured by metal fastenings without the use of seams or rivets.

A rasp has been patented by Mr Philip S. Stokes, of Tennent, N. J. It is an improved article of manufacture, in which the teeth are perfectly and uniformly raised from the surface of the plate by pnnch, from recesses of less depth than in rasps cut in the usual manner, while each tooth is re-enforced by extra metal, the teeth being brought to a very point or edge without cutting or turning.

A neck tie fastener has been patented by Mr. Adolph Hellenberg, of New York City. It consists of an open spring clasp finished to form the knot of the tie, and made to be opened at the back to receive and retain the neckband after its free end has been passed around the neck, and is to be used in connec tion with a special construction of the necktie, to avoid the necessity of tying.

A device for side dressing saws has been patented by Mr. George Glass, of Cadillac, Mich. This invention provides means whereby the files serve as guides for the saw being treated, and are so formed that they will not abrade the teeth below the swaged portion, but will equally dress off the opposite sides of this portion, the teeth being held from being pressed to one side or the other, that they may be dressed off

skiving machines has been patented by Messrs. Philo B. Clark and George J. Klingler, of Brooklyn, N. Y. It is for constant attachment to a special cons

tion of leather skiving machine, whereby the sharpening disk may be revolved by power from the machine, the disk being adapted for accurate and convenient adjustment to the knife, and to be used thereon with great facility.

An adding machine has been patented by Mr. Charles C. Moore, of New York City. Combined with a numbering disk and rack for turning it are sliding plates operated by the numbering disk, with a second and other numbering disks also operated by sliding plates, and other novel features, the machine allowing a period of deferred action between an apparent and the actual "carrying," whereby friction and loss of power are obviated.

A combined plug and ferrule for wash tray connections has been patented by Mr. Cornelius J. Phillips, of New York City. The construction is such that the ferrule is made to serve the double purpose of ferrule and holder for the pipe in the tray, and it furnishes the resisting flange for the drawing action upon the pipe by the jam nut, to avoid the use of coupling, and so that any length connection may be

A discharge mechanism for vacuum pans forms the subject of two patents issued to Mr. Richard G. Peters, of Manistee, Mich. The inventions are especially designed for application in the manufacture of salt, where the brine is held in suspension in a vacuum pan, and a leg extends therefrom in which the salt precipitates, there being a cylinder and piston connected therewith, and a valve for controlling the discharge of the precipitate, one construction having a leg with valve casing, and a pocket valve rotatably supported therein, with mechanism whereby the valve may be reciprocated longitudinally in its casing.

# SCIENTIFIC AMERICAN

# BUILDING EDITION.

JUNE NUMBER.-(No. 32.)

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- 3. A cottage of field stone and wood, perspective and floor plans.
- Perspective and floor plans for a seaside cottage, cost about five thousand dollars.
- 5. Sketch of a residence at Minneapolis, Minn.
- 6. Perspective view of a small suburban or seaside cottage costing one thousand eight hundred dollars.
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Supplement Catalogue.—Persons in pursuit of inforation of any special engineering, mechanical. or scien tific subject, can have catalogue of contents of the 801-ENTIFIC AMERICAN SUPPLEMENT sent to them free. The SUPPLEMENT contains lengthy articles embracing the whole range of engineering, mechanics, and physical science. Address Munn & Co., Publishers, New York.

The Holly Manufacturing Co., of Lockport, N. Y., will send their paniphlet, describing water works machinery, and containing reports of tests, on application.

Lockwood's Dictionary of Terms used in the practice of Mechanical Engineering, embracing those current in the drawing office, pattern shop, foundry, fitting, turning, smith's and boiler shop, etc., comprising over 6,000 definitions. Edited by a foreman patternmaker. 1888. Price, \$3.00. For sale by Munn & Co., 361 Broadway, New

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# WEW ROOKS AND PURLICATIONS

MINE SURVEYING. By Bennett H. Brough. London: Charles Griffin & Co. Pp. 302. Price \$2.50.

This is a book intended primarily for students, and mbodies the substance of the course of instruction in mine surveying given at the British Royal School of Mines, with which the author is connected. His admission, therefore, that "no mine surveys made in this country [England] approach in accuracy those of the collieries in Pennsylvania, United States," will proba-bly be somewhat of a surprise to English mining engineers, whose attention he directs to " recent improveof London Institute.

YANKEE GIRLS IN ZULU LAND. By Louise Vercelius-Sheldon. New York: Worthington & Co.

This is a sketchy and spirited account of a visit of a party to South Africa, in search of health. The book is beautifully illustrated, and gives daily occurrences and impressions in a style so vivid that the imaginative reader may almost conceive himself or herself one of

OLD AND NEW ASTRONOMY. Parts I. and By Richard A. Proctor. London and New York.

Two parts of this attractive work have now been received, representing a total of 128 pages. In its typography and illustration, nothing is left to be desired, and Mr. Proctor's vivid and picturesque treatment of the subject is tinged with the attractiveness due to the individuality of a pronounced nature. The different methods of projecting the earth's surface occupy much of the second part, and as elucidated, the subject is excellent reading. We also commend the author's preface, in which he gives his views as to why the book should be written, and other details, all expressed in the picturesque way familiar to the readers of Knowledge.

AN ELEMENTARY COURSE IN DESCRIP-TIVE GEOMETRY. By Samuel Woolf, A.M. New York: John Wiley & Sons. 1888. Pp. x, 152. Price \$3.

This work alms at the less severe treatment of its subject. Perspective is freely made use of to indicate the relations of planes of projection to each other, and of objects thereto. Its author, professor in the College of the City of New York, where much attention has long been given to the "poetry of mathematics," as it Steam Pipe Covering, Sectional and Plastic. Write should be called, embodies naturally the result of much earnest work in the lecture and recitation room. It will be of value to all students beginning the subject. Development of surfaces is treated rather shortly, yet its principles are so simple, and so strictly based on the general subject, that perhaps a little is as good as a great quantity.

> THE FUNDAMENTAL PRINCIPLES OF CHEMISTRY. By Robert Galloway, M.R.I.A., F.C.S. London: Longmans, Green & Co. 1888. Pp. xii, 364.

> The claim made on its title page, that this work treats chemistry by a new method, is not without foundation. Abandoning the subjective treatment by description of the properties of elements and their characteristic compounds, the author attacks the subject as a whole. Matter, molecular attraction, gravitation, ebullition, density, sublimation, classes of compound substances, are sample headings, and the scheme is carried out through the whole book. At intervals the practice of chemistry is given in considerable detail. It is not too much to say that the work is a really important advance on the time honored treatment, and many who have studied by the old method would find themselves well refreshed and the scope of their intellectual vision enlarged by the reading of the book. Exercises in calculations and experiments to be performed by the stadent are scattered through the book, and solutions of such as required are given in the end.

> Tables of the Properties of Satur-ATED STEAM AND OTHER VAPORS. By Charles H. Peabody, B.S. New York: John Wiley & Sons. 1888. Pp. 25, 35. Price \$1.

> This book, in its first section of 25 pages, gives the mathematical treatment of the subject of saturated steam and other vapors. With great clearness the author lays down the principles, and applies formulæ to steam, sulphurous oxide, and ammonia. Then with a new pagination a thirty-five page table of data of saturated steam is given. The book is a most valuable contribution to steam engineering, and seems to supply a want in technical literature.

> Notes on the Compressive Resistance OF FREESTONE, BRICK PIERS, HY DRAULIC CEMENTS. MORTARS AND CONCRETES. By Q. A. Gillmore, Ph.D. New York: John Wiley & Sons. 1888. Pp. vi, 198. With a number of folding charts. Price \$3.50.

> The eminence of the .distinguished and lamented author of this work, joined to the fact that the tests were made on the great Watertown testing machine, thus giving him the best facilities. in the world for his work, render all criticism of this book needless. The titular subject is treated not only in detail, but with great interest, and the reader's attention is never allowed to flag from inadequate expression or tedious prolixity. It is a work that no civil engineer can afford to be without, and it is a good memorial of the author, and a fitting remembrance for all to possess who have followed his career in the engineering world.

> SEASIDE AND WAYSIDE. No. 2. By Julia McNair White. Illustrated by C. S. King. Boston: D. C. Heath & Co. 1888. Pp. viii, 175.

> This is a good sample of the modern method of teach ing. It is a school reader devoted to the natural history of insects, radiates, and crustaceans, so that a bright child, in reading it, will acquire with instruction in reading no inconsiderable information about ants. flies, crabs, star fish, and other familiar, but too little understood, creatures of the lower orders of life. The book is excellently printed and very prettily illustrated.

LESSONS IN GEOMETRY FOR THE USE OF BEGINNERS. By G. A. Hill, A.M. Boston: Ginn & Co. 1888. Pp. viii,

This little work aims at an objective and pictorial treatment of the subject, and with considerable success. It covers linear, superficial, and solid geometry. Reference throughout is made to everyday objects, so as to remove as far as possible from it the abstractness of the Euclidian science. We cordially recommend ments in foreign practice." The appendix gives the extitue book as a sample of an attractive treatment of amination questions and exercises of the City and Guilds | what is usually considered a dry subject. The author gives definitions. Some of these we would omit, as

geometrical definitions, even those which have been accepted by generations of geometricians, are often weak, if not absolutely incorrect

TREATISE ON PATENT ESTATE. By Thos. B. Hall. Cleveland: Ingham, Clarke & Co. 1888. Pp. 240. Price \$3.

Although many manuals of patent law have lately been issued, yet in the little work before us a some what different treatment is accorded the subject than that which is usually given it in manuals. The author' plan is characterized by a desire to place the subject on a logical basis. The objects of the patent system and the incorporeal nature of patent rights are first considered as a basis for the work. The property rights of patents, profits, partition, and part ownership are all considered in considerable detail. The action for infringement by one part owner against another is the subject of a separate chapter, and the interesting subject is excellently presented. The propositions throughout the work are based on court decisions, and some times much of the text is made up of quotations therefrom. This gives the book its standard character, and removes from it the emasculating atmosphere that is apt to be created by the study of mere manuals, from which verbal citations of decisions are excluded. The book bas a good table of contents and a full index.

TURNING LATHES. Edited by James Lukin, B.A. London: E. & F. N. Spon. 1888. Pp. vi, 160. Price \$1.

This book is an illustrated treatise on lathe work, designed for use in technical schools. The minuteness and practical nature of the directions given, however, make it of value to amateur turners. To those wishing to learn the art from the beginning, it would be hard to recommend a more useful book. Wood and metal turning are both considered, and the description of hand turning is especially full.

The Cosmopolitan Magazine of New York City in its May issue introduced a decided novelty in the way of illustration, consisting of four pages of beautifully colored pictures in embellishment of Moncure D. Conway's rather recondite article on "The Pedigrec of the Devil." The general contents of the magazine, besides, are above the average of those of most of the similar monthly publications, and well calculated to make the Cosmopolitan a popular favorite The subscription price is \$2 a year.

Ferns and Wild Flowers of the Rocky Mountain Region, pressed and well mounted for preservation, are now being furnished by Mr. P. J. Atkinson, of Colorado Springs, Col. They are bound in books varying in size from 31/4 by 41/4 inches to the standard botanical size of 111/2 by 161/2 inches, the prices for which range from 50 cents to \$10 each set. Some specimens we have seen were very beautiful, and the skill and good taste exhibited in their arrangement and presentation left nothing to be desired. Persons making collections of pressed flowers, leaves, ferns, etc., will derive good information from consulting Mr. At kinson's collection of Rocky Mountain specimens.

Any of the above books may be purchased through this office. Send for new catalogue just published Address Munn & Co., 361 Broadway, New York.



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

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Books referred to promptly supplied on receipt of price.

Minerala sent for examination should be distinctly marked or labeled.

- (1) F. J. R. writes: I am making an induction coil 3 x 11/2 inches, and would like to know what sizes of wire I should use, also whether a bundle of iron wires is very much better than a solid iron core? A. For primary use two layers No. 20 wire, and fill up well as preserve the tin. A. Use Prince's metallic far the best.
- (2) O. K. writes: I have constructed a simple electric motor, as described in Scientific AMERICAN, March 17, 1888, and connected it with an or what is better, place it in a shunt. By a little experiment you will soon arrive at the proper resistance.
- (3) J. C. H.—Surface tension or the attraction of cohesion is the principal reason why mercury does not distribute itself all along the tubes when thermometers are laid horizontally. In many thermometers that have large tubes the mercury will separate by turning them bottom end up, and in a few the tube will fill solid by overturning. Mercury expands in bulk as 1 to 1.0154 when the temperature varies from 32° to 212º Fah. Alcohol 1 to 1.11. The expansion of the solid metals is usually expressed as linear; a rod of iron 100 feet long will expand 0.00326 in. for each degree Fah. of rise in temperature, and for a rod 100 feet long of the following metals, the expansion for each degree Fah. will be:

Gold......0.0101 in. Silver.... 0'0127 in. Brass.. 0.0125 in. Copper....0.0115 in. Lead..... .0.019 in. Zinc.....0.0207 in. Platinum . . 0'00571 in. Tin......0.0145 in.

insulated wire be substituted for the shellac-covered wire 'ting it.

used in armature? A. Cotton-covered magnet wire is ecommended in the article referred to. The shellac insures a more perfect insulation, and at the same time serves to cement the different layers of wire together. 2. What portions of the field magnet correspond to the north and south poles? A. The poles are above and below the center of the armature. 3. Is it possible to make a dynamo to run the motor? If so, would its conmotor? If so, what would be the changes? A. A motor can be operated by a current from the dynamo. The dynamo could be made upon the same plan as the motor by using a cast iron field magnet and winding the armature with finer wire, say No. 20. 4. Could the efficiency of the motor be increased by using finer wire? A. It depends upon the quality of the current used for running the motor. For a current of high voltage you should use finer wire. 5. Would not the dynamo be a much cheaper source of the electricity than the batteries, provided you have the power to run it (the dynamo)? A. The dynamo is a cheaper source of electricity than batteries. 6. Is it necessary to charge the field magnet of a dynamo when first constructed, or is there enough residual electricity in the iron to start the current? A. Ordinarily, there is enough magnetism resident in the cores of the field magnet to start the current, but it sometimes happens that it is necessary to supply the magnetism from an outside current. 7. I wish to have my pupils construct an electric motor of say 1/2 horse power, also a dynamo to runit. We have the appliances of an ordinary machine shop to aid us. Have you ever published, or intend to publish soon, the details of construction of such a motor and dynamo? If not, where can I find such a description? A. In Supplement, No. 600, you will find a description of a small dynamo which would also serve MENT, descriptions of many forms of arc lamps. See our Supplement catalogue and Supplement, No. 652.

- (5) C. A. L. asks how to make and put up a mechanical telephone good for a distance of a quarter of a mile. A. For an acoustic telephone use small twisted wire cable picture cord. Stretch it between two disks of thin tin or steel in thickness abou No. 34 wire gange. Disks to be 3 inches diameter, fastened with screws between two pieces of hard wood, so made as to pinch the disks all around. The wire to be fastened to the center of the disks by a loop through a soldered eve. The wire may rest in slings of rubber or leather attached to poles about 150 feet apart. The wire should not turn sharp corners. The disks should be set square with the wire at convenient positions to maintain a strong tension upon the wire, as well as convenient for conversation.
- (6) J. C. writes: I am making an induction coil on the general principles of one described in Supplement, No. 569. Primary coil is finished, and to make the porous cup of a galvanic battery. If not, works very well, but I would like to have a little information. Primary coil has on it four coils of No. 24 Make it of clay or use a flower pot with the hole in its wire. Paper tube for secondary coil measures 11/2 inches outside. Must I use No. 36 wire, or will No. 32, or even heavier, wire answer the purpose? How many layers will be required, keeping in view the fact that I do not want to get it more than 3 inches in diameter, if possible, and what will be approximate weight of wire? A. There is an advantage in using fine wire in the se condary coil, as the entire body wire will be nearer the metallic core. We think you have made a mistake in making your core and primary coil of such large diameter. You should have from 15 to 20 layers of the secondary wire.
- 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 anawered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and though we endeavor to reply to all, either by letter or in this department, each must take his turn.

  Special Written Information on matters of without decomposition. 2. How is ink prepared that writes blue and then turns black? A. See the formulas given in Scientific American Supplement, No. 157. 3. How long will quicklime take to dissolve bones, and is the dry or slaked lime the most active? A. Place the bones in a large kettle filled with ashes, and about one peck of lime to a barrel of bones. Cover with water and boil. In twenty-four hours all the bones, with the exception perhaps of the hard shin bones, will become so much softened as to be easily pulverized by hand.
- (8) W. M. M. asks the best kind of paint to use on a tin roof, something that will stop leaks as with No. 34 wire for secondary. The "bundle" core is paint, or any ground exide of iron, mixed with linseed oil.
- (9) C. R. M. asks a good cement for leather belting. A. Take of common glue and isinglass Edison light circuit, and it melts the brushes. A. You to cover them. Bring gradually to a boiling heat and should reduce the current by introducing resistance, add pure tannin until the whole becomes ropy or appears like the white of eggs. Buff off the surfaces to be joined, apply this cement warm, and clamp firmly.
  - (10) T. S. A. desires (1) a good recipe for lemon sugar, one that will not taste too much of the sugar, and be insipid. A. Citric acid 1 ounce. white sugar 2 pounds, essence of lemon 1/2 ounce; powder and keep dry for use. One dessertspoonful will make a glass of lemonade. 2. A recipe for old fashioned ginger pop beer. A. See the recipes given in SCIEN-TIFIC AMERICAN SUPPLEMENT, No. 270, under the title of "Effervescing Beverages."
- (11) G. A. D. writes: In the West a great deal of grain is bound with twine made from manila. Has there ever been any effort made to manufacture binder twine from flax, and what success has it had? Is flax twine any more apt to be "cut" by insects than manila twine? How should twine be treated to prevent insects from gnawing off the bands? A. Binder twine was made from flax in the early days of the rust off drawing instruments without injuring the resper. The manila twine is the cheapest. Flax is (4) W. McD. writes: 1. In reference to not affected by insects, to our knowledge. Saturating horn, and 25 of spirits of wine, to a paste. Cleanse the the construction of the simple electric motor, could not | the twine with salt brine will keep insects from cut- | articles with this, and finally rub with soft blotting

- (12) C. E. L. asks: What will drive out large black ants from a pantry? A. Red pepper, sulphur, kerosene, carbolic acid, and similar substances are efficacious in driving ants away.
- (13) O. R. R. writes: 1. There is a no tion prevalent in this vicinity that, in order to have good well water, the well must be open so as to exstruction differ in any way from the construction of the pose the water to the air, and also that some way of raising the water which agitates it is to be preferre How much truth is there in the above? A. Agitation and exposure to the air is valuable as a means of destroying organic matter in water. 2. What is the reason that dynamite will explode by percussion, but not by fire? Would a very hot iron cause it to explode? A. It is often impossible to assign a reason for chemical facts. A sudden heat applied to the whole mass might cause an explosion, while the local application
  - (14) F. G. asks how to drill by hand a one-half or three-fourths inch hole through a plate of glass one-fourth of an inch thick, for a Wimshurst electrical influence machine. The glass disks are eighteen inches in diameter, and each is to carry sixteen sectors. A. Clamp over the glass disk a board having in it a thirteen-sixteenths inch round hole, the hole to be arranged exactly over the center of the disk. On a brass or copper tube six or eight inches long, and % inch in diameter, secure a spool about 2 inches in diameter, and in the top of the tube insert a hard wood handle having a shoulder which will bear upon the top of the tube. Provide a long bow with strong catgut cord, and operate the tube like a bow drill. Keep the hole in the board supplied with coarse emery and water.
- (15) G. E. T. asks: Can you give genas a motor. 8. Have you ever published anything re- eral proportions for increasing the capacity of the dygarding the construction of an electric lamp (arc)? A. name machine described in Supplement to 24 or 32 You will find in the back numbers of the Supple: 16 candle power lamps? Does it make any material difference whether the rings of the armature are cast or wrought? How should the machine be mounted? A. We can also supply Arc and Globe Lamps, by Maier, \$3. If you increase the dimensions one-half (linear), the dynamo will run from 24 to 30 lights. The rings of the armatures should be of wrought iron. The machine should be mounted upon a frame so as to be adjustable, for the purpose of tightening the belt. The belt should be seamless.
  - (16) G. W. G. asks: What will destroy roaches or drive them away? A. Use fresh borax and Persian insect powder continuously until the pests are exterminated. Or use a phosphoric paste, of which there are several kinds to be had at drug stores. It should be mixed with a little molasses, and put on bits of cardboard or paper, distributed around infested places. The practice should be kept up some time after the pests have apparently disappeared, on account of young ones coming out, say for three or four weeks.
  - (17) W. C. T. asks if common putty. such as used to put in window glasses, could be used what is a good way to make one? A. Putty is useless. bottom corked up.
  - (18) N. P. K. asks how to polish black marble. A. The process embraces five stages, beginning with the use of coarse materials and finishing with dry rags. A full description of it is given in Spons' Workshop Receipts," first series, in an article entitled We can supply the book for \$2. Marble Working."
  - (19) C. S. asks: What will stick celluloid to paper, wood, glass, etc.? A. Trythe following Gum shellac 1 ounce, camphor 1 ounce, alcohol 4 ounces. Dissolve and filter.
  - (20) C. S. W. asks a recipe for making compressed yeast, also called German yeast. A. It is obtained by straining the common yeast in breweries and distilleries, until a moist mass is obtained, which is then placed in hair bags, and the rest of the water sed out until the mass is nearly dry.
  - (21) J. H. N. asks how to wake a varnish of bleached shellac to be used in the place of the common shellac dissolved in alcohol. A Break the gum in small pieces, and macerate in a stoppared bottle with ether; after swelling up sufficiently the 👌 ether is poured off, and it will readily dissolve in alco-
  - (22) R. C. asks (1) the proper name to apply to a person who makes insects a study. A. Entomologist. 2. A recipe for an effective insect powder. A. See "Two Valuable Insecticides," contained in Scr-ENTIFIC AMERICAN SUPPLEMENT, No. 218. Powdered sulphur is likewise efficacious in many instances.
- (23) A. H. T. asks: 1. What chemical action takes place when milk sours, and why? A. The milk sugar which it contains decomposes into lactic acid. This process is known as lactic fermentation. See the article on fermentation in any cyclopedia. 2. equal parts, soaked for ten hours in just enough water How to prevent milk from souring. A. Milk is best preserved by the addition of a few grains of bicarbon-
  - (24) N. A. E. asks how to make rose perfume or rose water. A. Dissolve attar of roses, 6 drachms avoirdupois, in strongest alcohol hot, 1 imperial pint; throw the solution into a 12 gallon carboy, and add 10 gallons pure distilled water at 180°-185° Fah. At once cork the carboy, at first loosely, and agitate the whole briskly, although at first cautiously, till quite cold. See also "Rose Oil or Otto of Roses" in Scientific AMERICAN SUPPLEMENT, No. 275. We can also supply you with the Manufacture of Perfumes, by Snively. Price \$3.
  - (25) L. L. U. asks: How much coal will it take to melt 3,000 pounds of light scrap iron in a cupola 20 inches diameter? A. From 700 to 1,000 pounds anthracite.
  - (26) A. F. M. desires a receipt for taking them. A. Mix 10 parts of tin putty, 8 of prepared buck's

#### TO INVENTORS.

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Buckle frames, manufacture of, G. R. Kelsey Building block, H. S. Pallmer. Bung bushing, R. Pentlarge. Burner. See Oil burner. Stove burner. Bustle, F. J. Brand. Butter mould, F. P. Ayer. Button mould, F. P. Ayer. Button making device, J. Stewart. Calculator, interest, C. M. Dunham. Calendar, memorandum, A. H. Isbell. Can clamp, fruit, M. J. Hamlin. Car coupling, C. L. Baittinger. Car coupling, F. A. Fox. Car coupling, F. A. Fox. Car coupling, J. Scott. Car coupling, J. Scott. Car coupling, J. Scott. Car cheating apparatus, W. F. Steele. Car heating apparatus, Rilway, E. A. Leland Car mover, J. Bird. Car starter, H. R. Keller. Cars and similar structures, apparatus for heating, W. F. Steele. Cars, draught timber for, J. B. Owens. Cars, street or station indicator for, W. P. Williams. Card rack, A. S. Greenwood.	384,587 384,273 384,273 384,431 384,526 384,547 384,554 384,556 384,575 384,575 384,575 384,575 384,578 384,502 384,502 384,502 384,508 384,508 384,400 384,588 384,400 384,588
Buckle frames, manufacture of, G. R. Kelsey Building block, H. S. Pallmer. Bung bushing, R. Pentlarge. Burner. See Oil burner. Stove burner. Bustle, F. J. Brand. Butter mould, F. P. Ayer. Button Making device, J. Stewart. Calculator, interest, C. M. Dunham. Calendar, memorandum, A. H. Isbell. Can clamp, fruit, M. J. Hamlin. Car brake, J. H. Brown. Car coupling, C. L. Baittinger. Car coupling, F. A. Fox. Car coupling, F. A. Fox. Car coupling, J. Scott. Car coupling, J. Scott. Car coupling, J. Scott. Car cettric railway, E. Julien. Car heating apparatus, W. F. Steele. Car heating apparatus, W. F. Steele. Car and similar structures, apparatus for heating, W. F. Steele. Cars, street or station indicator for, W. P. Williams. Card Tack, A. S. Greenwood. Carpet stretcher, B. Manning. Carriage, wheel fender for, Rogers & Stenz. Carriages, wheel fender for, Rogers & Stenz.	384,387  384,557  384,308  384,273  384,547  384,526  384,361  384,554  384,312  384,575  384,575  384,581  384,401  384,452  384,588  384,488  384,494  384,494  384,335
Buckle frames, manufacture of, G. R. Kelsey Building block, H. S. Palmer. Bung bushing, R. Pentlarge. Burner. See Oil burner. Stove burner. Bustle, F. J. Brand. Butter mould, F. P. Ayer. Button, Anderson & Pattison. Button making device, J. Stewart. Calculator, interest, C. M. Dunham. Calendar, memorandum, A. H. Isbell. Can clamp, fruit, M. J. Hamlin. Car brake, J. H. Brown. Car coupling, F. A. Fox. Car coupling, F. A. Fox. Car coupling, F. C. Greenawalt. Car coupling, J. Scott. Car coupling, J. Scott. Car coupling, J. Scott. Car can device, W. N. Morrison. Car, electric railway, E. Julien. Car heating apparatus, W. F. Steele. Car heating apparatus, W. F. Steele. Car sarter, H. R. Keller. Cars and similar structures, apparatus for heating, W. F. Steele. Cars, draught timber for, J. B. Owens. Cars, street or station indicator for, W. P. Williams. Card rack, A. S. Greenwood. Carpet stretcher, B. Manning. Carriage, baby, G. H. Baker. Carriages, wheel fender for, Rogers & Stenz. Cartinger. See Package carrier. Cart, hand, D. E. Teal.	384,387  384,273  384,273  384,526  384,547  384,526  384,551  384,551  384,575  384,573  384,581  384,401  384,502  384,503  384,483  384,494  384,335  384,494  384,335
Buckle frames, manufacture of, G. R. Kelsey Building block, H. S. Pallmer. Bung bushing, R. Pentlarge. Burner. See Oil burner. Stove burner. Bustle, F. J. Brand. Butter mould, F. P. Ayer. Button mould, F. P. Ayer. Button making device, J. Stewart. Calculator, interest, C. M. Dunham. Calendar, memorandum, A. H. Isbell Can clamp, fruit, M. J. Hamlin. Car coupling, C. L. Baittinger. Car coupling, F. A. Fox. Car coupling, F. A. Fox. Car coupling, F. A. Fox. Car coupling, E. Greenawalt. Car coupling, B. Gott. Car coupling, B. Scott. Car coupling device, W. N. Morrison Car, electric railway, E. Julien Car heating apparatus, W. F. Steele. Car heating apparatus, railway, E. A. Leland Car starter, H. R. Keller. Cars and similar structures, apparatus for heating, W. F. Steele. Cars, draught timber for, J. B. Owens. Cars, street or station indicator for, W. P. Williams. Card rack, A. S. Greenwood Carriage, baby, G. H. Baker Carriage, wheel fender for, Rogers & Stenz Carriage, wheel fender for, Rogers & Stenz Carriage, wheel fender for, Rogers & Stenz Cartingen, W. M. McCrosson	384,587 384,507 384,308 384,273 384,527 384,431 384,507 384,513 384,507 384,513 384,513 384,513 384,513 384,513 384,503
Buckle frames, manufacture of, G. R. Kelsey Building block, H. S. Pallmer. Bung bushing, R. Pentlarge. Burner. See Oil burner. Stove burner. Bustle, F. J. Brand Butter mould, F. P. Ayer Button Making device, J. Stewart. Calculator, interest, C. M. Dunham Calendar, memorandum, A. H. Isbell Can clamp, fruit, M. J. Hamlin. Car brake, J. H. Brown Car coupling, C. L. Baittinger Car coupling, F. A. Fox Car coupling, F. A. Fox Car coupling, J. Scott Car coupling, J. Scott Car coupling, J. Scott Car cettic railway, E. Julien Car heating apparatus, W. F. Steele Car heating apparatus, W. F. Steele Car sand similar structures, apparatus for heating, W. F. Steele. Cars, street or station indicator for, W. P. Williams. Card rack, A. S. Greenwood Carpet stretcher, B. Manning. Carriage, baby, G. H. Baker Carriage, baby, G. H. Baker Carrier. See Package carrier. Cart, hand, D. E. Teal Cart, road, W. M. McCrosson Cart, road, W. M. Wilson	384,587 384,507 384,308 384,273 384,527 384,431 384,507 384,513 384,507 384,513 384,513 384,513 384,513 384,513 384,503
Buckle frames, manufacture of, G. R. Kelsey Building block, H. S. Pallmer. Bung bushing, R. Pentlarge. Burner. See Oil burner. Stove burner. Bustle, F. J. Brand. Butter mould, F. P. Ayer. Button mould, F. P. Ayer. Button making device, J. Stewart. Calculator, interest, C. M. Dunham. Calendar, memorandum, A. H. Isbell Can clamp, fruit, M. J. Hamlin. Car coupling, C. L. Baittinger. Car coupling, F. A. Fox. Car coupling, F. A. Fox. Car coupling, F. A. Fox. Car coupling, E. Greenawalt. Car coupling, B. Gott. Car coupling, B. Scott. Car coupling device, W. N. Morrison Car, electric railway, E. Julien Car heating apparatus, W. F. Steele. Car heating apparatus, railway, E. A. Leland Car starter, H. R. Keller. Cars and similar structures, apparatus for heating, W. F. Steele. Cars, draught timber for, J. B. Owens. Cars, street or station indicator for, W. P. Williams. Card rack, A. S. Greenwood Carriage, baby, G. H. Baker Carriage, wheel fender for, Rogers & Stenz Carriage, wheel fender for, Rogers & Stenz Carriage, wheel fender for, Rogers & Stenz Cartingen, W. M. McCrosson	384,387  384,273  384,273  384,526  384,547  384,526  384,551  384,551  384,575  384,575  384,581  384,400  384,588  384,488  384,489  384,494  384,335  384,494  384,335
Buckle frames, manufacture of, G. R. Kelsey Building block, H. S. Pallmer. Bung bushing, R. Pentlarge. Burner. See Oil burner. Stove burner. Bustle, F. J. Brand. Butter mould, F. P. Ayer. Button Making device, J. Stewart. Calculator, interest, C. M. Dunham. Calendar, memorandum, A. H. Isbell. Can clamp, fruit, M. J. Hamlin. Car clamp, fruit, M. J. Hamlin. Car coupling, C. L. Baittinger. Car coupling, F. A. Fox. Car coupling, F. A. Fox. Car coupling, J. Scott. Car coupling, J. Scott. Car cettic railway, E. Julien. Car heating apparatus, W. F. Steele. Car heating apparatus, railway, E. A. Leland Car mover, J. Bird. Car starter, H. R. Keller. Cars and similar structures, apparatus for heating, W. F. Steele. Cars, street or station indicator for, W. P. Williams. Card rack, A. S. Greenwood. Carpet stretcher, B. Manning. Carriage, baby, G. H. Baker. Cartiage, baby, G. H. Baker. Cartiage, wheel fender for, Rogers & Stenz. Cart, road, W. M. McCrosson. Catt, road, A. M. Wilson. Cash register and indicator, W. W. Wythe. Cash tegister and indicator, W. W. Wythe.	384,387  384,557  384,308  384,273  384,526  384,361  384,551  384,554  384,312  384,575  384,474  384,452  384,466  384,388  384,490  384,493  384,493  384,493  384,493  384,493  384,493  384,493  384,493  384,493  384,493
Buckle frames, manufacture of, G. R. Kelsey Building block, H. S. Palmer. Bung bushing, R. Pentlarge. Burner. See Oil burner. Stove burner. Bustle, F. J. Brand. Butter mould, F. P. Ayer. Button, Anderson & Pattison. Button making device, J. Stewart. Calculator, interest, C. M. Dunham Calendar, memorandum, A. H. Isbell Can clamp, fruit, M. J. Hamlin. Car brake, J. H. Brown Car coupling, F. A. Fox. Car coupling, F. A. Fox. Car coupling, P. C. Greenawalt Car coupling, J. Scott Car coupling, J. Scott Car coupling, J. Scott Car etaing apparatus, W. F. Steele. Car heating apparatus, W. F. Steele. Car heating apparatus, railway, E. A. Leland Car mover, J. Bird Cars and similar structures, apparatus for heating, W. F. Steele. Cars, draught timber for, J. B. Owens. Card rack, A. S. Greenwood Carpet stretcher, B. Manning Carriage, baby, G. H. Baker Carriages, wheel fender for, Rogers & Stenz Cart, road, W. M. McCrosson Cast. register and indicator, W. W. Wythe Cash register and indicator, W. W. Wythe Cash register and indicator, W. W. Wythe Cash tills, recorder for, G. R. Stokes et al Casting machines, elevator for ingot, J. B. D. Bol-	384,387  384,557  384,308  384,273  384,547  384,531  384,554  384,312  384,575  384,575  384,581  384,581  384,490  384,488  384,488  384,488  384,494  384,335  384,493  384,493  384,493  384,493  384,493  384,493  384,493
Buckle frames, manufacture of, G. R. Kelsey Building block, H. S. Palmer. Bung bushing, R. Pentlarge. Burner. See Oil burner. Stove burner. Bustle, F. J. Brand. Butter mould, F. P. Ayer. Button, Anderson & Pattison. Button making device, J. Stewart. Calculator, interest, C. M. Dunham. Calendar, memorandum, A. H. Isbell. Can clamp, fruit, M. J. Hamlin. Car brake, J. H. Brown. Car coupling, F. A. Fox. Car coupling, F. A. Fox. Car coupling, F. C. Greenawalt. Car coupling, J. Scott. Car coupling, J. Scott. Car coupling, J. Scott. Car coupling, E. Houtz. Car coupling, J. Scott. Car cating apparatus, W. F. Steele. Car heating apparatus, W. F. Steele. Car heating apparatus, railway, E. A. Leland Car starter, H. R. Keller Cars and similar structures, apparatus for heating, W. F. Steele. Cars, draught timber for, J. B. Owens. Carpet stretcher, B. Manning. Carriage, baby, G. H. Baker. Carriages, wheel fender for, Rogers & Stenz. Carting, Cart, Land, W. M. McCrosson. Cart, road, W. M. McCrosson. Cart, road, A. M. Wilson. Case. See Map case. Watch case. Cash register and indicator, W. W. Wythe Cash tills, recorder for, G. R. Stokes et al. Casting machines, elevator for ingot, J. B. D. Bolton.	384,387 384,273 384,273 384,273 384,431 384,526 384,361 384,554 384,512 384,575 384,474 384,588 384,483 384,460 384,588 384,483 384,484 384,388 384,489 384,489 384,494 384,375 384,499 384,375 384,499
Buckle frames, manufacture of, G. R. Kelsey Building block, H. S. Pallmer. Bung bushing, R. Pentlarge. Burner. See Oil burner. Stove burner. Bustle, F. J. Brand Butter mould, F. P. Ayer Button making device, J. Stewart. Calculator, interest, C. M. Dunham Calendar, memorandum, A. H. Isbell Can clamp, fruit, M. J. Hamlin. Car car coupling, C. L. Baittinger Car coupling, F. A. Fox Car coupling, F. A. Fox Car coupling, J. Scott Car coupling, J. Scott Car coupling, J. Scott Car coupling device, W. N. Morrison Car, electric railway, E. Julien Car heating apparatus, W. F. Steele. Car heating apparatus, railway, E. A. Leland Car mover, J. Bird Car starter, H. R. Keller Cars and similar structures, apparatus for heating, W. F. Steele. Cars, street or station indicator for, W. P. Williams. Card rack, A. S. Greenwood Carriage, baby, G. H. Baker Cartinge, baby, G. H. Baker Cart, Pand, D. E. Teal Cart, road, A. M. Wilson Cash register and indicator, W. W. Wythe Cash tills, recorder for, G. R. Stokes et al. Casting machines, elevator for ingot, J. B. D. Bolton Catamenial sack, J. Hothersall	384,387  384,557  384,308  384,273  384,547  384,431  384,550  384,511  384,551  384,513  384,513  384,513  384,513  384,513  384,513  384,401  384,452  384,466  384,490  384,493  384,493  384,493  384,493  384,493  384,493  384,493  384,493
Buckle frames, manufacture of, G. R. Kelsey Building block, H. S. Pallmer. Bung bushing, R. Pentlarge. Burner. See Oil burner. Stove burner. Bustle, F. J. Brand Butter mould, F. P. Ayer Button mould, F. P. Ayer Button making device, J. Stewart. Calculator, interest, C. M. Dunham Calendar, memorandum, A. H. Isbell Can clamp, fruit, M. J. Hamlin Car coupling, C. L. Baittinger Car coupling, F. A. Fox Car coupling, F. A. Fox Car coupling, J. Scott Car coupling, J. Scott Car coupling device, W. N. Morrison Car, electric railway, E. Julien Car heating apparatus, W. F. Steele. Car heating apparatus, railway, E. A. Leland Car mover, J. Bird Car starter, H. R. Keller Cars and similar structures, apparatus for heating, W. F. Steele. Cars, draught timber for, J. B. Owens Card, rack, A. S. Greenwood Card rack, A. S. Greenwood Carriage, baby, G. H. Baker Carriage, wheel fender for, Rogers & Stenz Cartier. See Package carrier. Cart, road, W. M. McCrosson Cash register and indicator, W. W. Wythe Cash tills, recorder for, G. R. Stokes et al. Casting machines, elevator for ingot, J. B. D. Bolton 1. W. Stockwell  2. W. Stockwell 2. W. Stockwell 2. W. Stockwell 2. W. Stockwell 2. W. Stockwell 2. W. Stockwell 2. W. Stockwell 2. W. Stockwell 2. Were and structure of articles from hydraulic. 2. W. Stockwell	384,387  384,557  384,308  384,273  384,547  384,561  384,561  384,561  384,561  384,561  384,561  384,563  384,563  384,563  384,563  384,460  384,588  384,494  384,335  384,494  384,335  384,494  384,335  384,493  384,493  384,494  384,335  384,493  384,493  384,494  384,335  384,493  384,494  384,335  384,493  384,494  384,335  384,494  384,335
Buckle frames, manufacture of, G. R. Kelsey Building block, H. S. Pallmer. Bung bushing, R. Pentlarge. Burner. See Oil burner. Stove burner. Bustle, F. J. Brand Butter mould, F. P. Ayer Button mould, F. P. Ayer Button making device, J. Stewart. Calculator, interest, C. M. Dunham Calendar, memorandum, A. H. Isbell Can clamp, fruit, M. J. Hamlin. Car car coupling, C. L. Baittinger Car coupling, F. A. Fox Car coupling, F. A. Fox Car coupling, J. Scott Car coupling, J. Scott Car coupling device, W. N. Morrison Car, electric railway, E. Julien Car heating apparatus, W. F. Steele. Car heating apparatus, railway, E. A. Leland Car mover, J. Bird Car starter, H. R. Keller Cars and similar structures, apparatus for heating, W. F. Steele. Cars, street or station indicator for, W. P. Williams. Card rack, A. S. Greenwood Carriage, baby, G. H. Baker Cartiage, baby, G. H. Baker Cartiage, wheel fender for, Rogers & Stenz Cart, road, W. M. McCrosson Cash register and indicator, W. W. Wythe Cash tills, recorder for, G. R. Stokes et al. Casting machines, elevator for ingot, J. B. D. Bolton Catamenial sack, J. Hothersall Cement, manufacture of articles from hydraulic, J. W. Stockwell. Chalk line holder, B. Howard	384,387  384,557  384,308  384,273  384,547  384,4311  384,554  384,361  384,575  384,575  384,401  384,526  384,503  384,503  384,503  384,503  384,404  384,503  384,403  384,503  384,403  384,503  384,404  384,305  384,406  384,305  384,406  384,407  384,406  384,407  384,408  384,409  384,409  384,406  384,406  384,406  384,406  384,407  384,406  384,406  384,406  384,406  384,407  384,408  38
Buckle frames, manufacture of, G. R. Kelsey Building block, H. S. Pallmer. Bung bushing, R. Pentlarge. Burner. See Oil burner. Stove burner. Bustle, F. J. Brand Butter mould, F. P. Ayer Button mould, F. P. Ayer Button making device, J. Stewart. Calculator, interest, C. M. Dunham Calendar, memorandum, A. H. Isbell Can clamp, fruit, M. J. Hamlin. Car car coupling, C. L. Baittinger Car coupling, F. A. Fox Car coupling, F. A. Fox Car coupling, J. Scott Car coupling, J. Scott Car coupling device, W. N. Morrison Car, electric railway, E. Julien Car heating apparatus, W. F. Steele. Car heating apparatus, railway, E. A. Leland Car mover, J. Bird Car starter, H. R. Keller Cars and similar structures, apparatus for heating, W. F. Steele. Cars, street or station indicator for, W. P. Williams. Card rack, A. S. Greenwood Carriage, baby, G. H. Baker Cartiage, baby, G. H. Baker Cartiage, wheel fender for, Rogers & Stenz Cart, road, W. M. McCrosson Cash register and indicator, W. W. Wythe Cash tills, recorder for, G. R. Stokes et al. Casting machines, elevator for ingot, J. B. D. Bolton Catamenial sack, J. Hothersall Cement, manufacture of articles from hydraulic, J. W. Stockwell. Chalk line holder, B. Howard	384,387  384,557  384,308  384,273  384,547  384,4311  384,554  384,361  384,575  384,575  384,401  384,526  384,503  384,503  384,503  384,503  384,404  384,503  384,403  384,503  384,403  384,503  384,404  384,305  384,406  384,305  384,406  384,407  384,406  384,407  384,408  384,409  384,409  384,406  384,406  384,406  384,406  384,407  384,406  384,406  384,406  384,406  384,407  384,408  38
Buckle frames, manufacture of, G. R. Kelsey Building block, H. S. Palmer. Bung bushing, R. Pentlarge. Burner. See Oil burner. Stove burner. Bustle, F. J. Brand. Butter mould, F. P. Ayer. Button Making device, J. Stewart. Calculator, interest, C. M. Dunham. Calendar, memorandum, A. H. Isbell. Can clamp, fruit, M. J. Hamlin. Car brake, J. H. Brown. Car coupling, F. A. Fox. Car coupling, F. A. Fox. Car coupling, F. A. Fox. Car coupling, J. Scott. Car coupling, J. Scott. Car coupling, J. Scott. Car endering apparatus, W. F. Steele. Car heating apparatus, W. F. Steele. Car heating apparatus, railway, E. A. Leland Car starter, H. R. Keller. Cars and similar structures, apparatus for heating, W. F. Steele. Cars, street or station indicator for, W. P. Williams. Card rack, A. S. Greenwood. Carpet stretcher, B. Manning. Carriages, wheel fender for, Rogers & Stenz. Cartinges, wheel fender for, Rogers & Stenz. Cart, road, W. M. McCrosson. Case. See Map case. Watch case. Cash register and indicator, W. W. Wythe. Cash tills, recorder for, G. R. Stokes et al. Cast menufacture of articles from hydraulic, J. W. Stockwell. Chalk line holder, B. Howard. Change receiver, J. A. Kimball. Check, price and inventory, C. S. De Witt.	384,387  384,273 384,273 384,431 384,526 384,351 384,554 384,555 384,575 384,575 384,575 384,581 384,401 384,588  384,488 384,588  384,488 384,489 384,335  384,494 384,335  384,494 384,335  384,494 384,337  384,494 384,337  384,494 384,337
Buckle frames, manufacture of, G. R. Kelsey Building block, H. S. Pallmer. Bung bushing, R. Pentlarge. Burner. See Oil burner. Stove burner. Bustle, F. J. Brand Butter mould, F. P. Ayer Button mould, F. P. Ayer Button making device, J. Stewart. Calculator, interest, C. M. Dunham Calendar, memorandum, A. H. Isbell Can clamp, fruit, M. J. Hamlin Car coupling, C. L. Baittinger Car coupling, F. A. Fox Car coupling, F. A. Fox Car coupling, J. Scott Car coupling, J. Scott Car coupling, J. Scott Car coupling, E. Houtz Car coupling, J. Scott Car heating apparatus, W. F. Steele Car heating apparatus, W. F. Steele. Car heating apparatus, railway, E. A. Leland Car mover, J. Bird Car starter, H. R. Keller Cars and similar structures, apparatus for heating, W. F. Steele. Cars, draught timber for, J. B. Owens Cars, street or station indicator for, W. P. Williams Card rack, A. S. Greenwood Carriage, baby, G. H. Baker Carriage, wheel fender for, Rogers & Stenz Cartier. See Package carrier. Cart, hand, D. E. Teal Cart, road, W. M. McCrosson Cast, road, A. M. Wilson Cash register and indicator, W. W. Wythe Cash tills, recorder for, G. R. Stokes et al. Casting machines, elevator for ingot, J. B. D. Bolton Chalk line holder, B. Howard. Change receiver, J. A. Kimball. Check, price and inventory, C. S. De Witt Check register or tally, A. B. Gill	384,387  384,557  384,303  384,273  384,527  384,431  384,507  384,513  384,507  384,513
Buckle frames, manufacture of, G. R. Kelsey Building block, H. S. Palmer. Bung bushing, R. Pentlarge. Burner. See Oil burner. Stove burner. Bustle, F. J. Brand Butter mould, F. P. Ayer Button making device, J. Stewart. Calculator, interest, C. M. Dunham Calendar, memorandum, A. H. Isbell Can clamp, fruit, M. J. Hamlin. Car brake, J. H. Brown Car coupling, C. L. Baittinger Car coupling, F. A. Fox Car coupling, F. A. Fox Car coupling, J. Scott Car coupling, J. Scott Car coupling, J. Scott Car coupling, J. Scott Car coupling, W. F. Steele Car, electric railway, E. Julien Car heating apparatus, W. F. Steele Car heating apparatus, railway, E. A. Leland Car mover, J. Bird Car sand similar structures, apparatus for heating, W. F. Steele Cars, street or station indicator for, W. P. Williams. Carriage, baby, G. H. Baker Carriage, baby, G. H. Baker Carriage, baby, G. H. Baker Carting, W. M. McCrosson Cart, road, A. M. Wilson Cash tregister and indicator, W. W. Wythe Cash tills, recorder for, G. R. Stokes et al Casting machines, elevator for ingot, J. B. D. Bolton Catling machines, elevator for ingot, J. B. D. Bolton Chalk line holder, B. Howard. Change receiver, J. A. Kimball. Check, price and inventory, C. S. De Witt Check register or tally, A. B. Gill Checkrein, B. Miller	384,387  384,557  384,308  384,273  384,517  384,431  384,526  384,311  384,554  384,312  384,575  384,474  384,526  384,401  384,452  384,466  384,488  384,493
Buckle frames, manufacture of, G. R. Kelsey Building block, H. S. Palmer. Bung bushing, R. Pentlarge. Burner. See Oil burner. Stove burner. Bustle, F. J. Brand. Butter mould, F. P. Ayer. Button, Anderson & Pattison. Button making device, J. Stewart. Calculator, interest, C. M. Dunham Calendar, memorandum, A. H. Isbell Can clamp, fruit, M. J. Hamlin. Car otaghing, C. L. Baittinger. Car coupling, F. A. Fox. Car coupling, F. A. Fox. Car coupling, P. C. Greenawalt. Car coupling, E. Houtz. Car coupling, J. Scott. Car coupling, J. Scott. Car cating apparatus, W. F. Steele. Car heating apparatus, W. F. Steele. Car heating apparatus, railway, E. A. Leland Car mover, J. Bird. Car starter, H. R. Keller. Cars and similar structures, apparatus for heating, W. F. Steele. Cars, street or station indicator for, W. P. Williams. Card rack, A. S. Greenwood. Carpet stretcher, B. Manning. Carriage, baby, G. H. Baker. Carriage, baby, G. H. Baker. Carriages, wheel fender for, Rogers & Stenz Cart, road, W. M. McCrosson. Catt, road, W. M. McCrosson. Catt, road, A. M. Wilson. Case. See Map case. Watch case. Cash register and indicator, W. W. Wythe Cash rills, recorder for, G. R. Stokes et al. Casting machines, elevator for ingot, J. B. D. Bolton. Catamenial sack, J. Hothersall Cement, manufacture of articles from hydraulic, J. W. Stockwell Chalk line holder, B. Howard. Change receiver, J. A. Kimball. Check, price and inventory, C. S. De Witt Check register or tally, A. B. Gill Checkerein, B. Miller	384,387  384,557  384,308  384,273  384,517  384,431  384,526  384,311  384,554  384,312  384,575  384,474  384,526  384,401  384,452  384,466  384,488  384,493
Buckle frames, manufacture of, G. R. Kelsey Building block, H. S. Palmer. Bung bushing, R. Pentlarge. Burner. See Oil burner. Stove burner. Bustle, F. J. Brand. Butter mould, F. P. Ayer. Button Making device, J. Stewart. Calculator, interest, C. M. Dunham. Calendar, memorandum, A. H. Isbell. Can clamp, fruit, M. J. Hamlin. Car coupling, C. L. Baittinger. Car coupling, F. A. Fox. Car coupling, F. A. Fox. Car coupling, P. C. Greenawalt. Car coupling, J. Scott. Car coupling, J. Scott. Car coupling, J. Scott. Car coupling, W. F. Steele. Car heating apparatus, W. F. Steele. Car heating apparatus, W. F. Steele. Car starter, H. R. Keller. Cars and similar structures, apparatus for heating, W. F. Steele. Cars, street or station indicator for, W. P. Williams. Card rack, A. S. Greenwood. Carpet stretcher, B. Manning. Carriage, baby, G. H. Baker. Cartiage, baby, G. H. Baker. Cartiage, baby, G. H. Baker. Cart, road, A. M. Wilson. Cash. C	384,387 384,273 384,273 384,273 384,431 384,526 384,361 384,507 384,512 384,513 384,513 384,513 384,513 384,401 384,583 384,401 384,583 384,483 384,484 384,335 384,494 384,335 384,494 384,337 384,345 384,494 384,337 384,345 384,494 384,337
Buckle frames, manufacture of, G. R. Kelsey Building block, H. S. Palmer. Bung bushing, R. Pentlarge. Burner. See Oil burner. Stove burner. Bustle, F. J. Brand. Butter mould, F. P. Ayer. Button, Anderson & Pattison. Button making device, J. Stewart. Calculator, interest, C. M. Dunham. Calendar, memorandum, A. H. Isbell. Can clamp, fruit, M. J. Hamlin. Car brake, J. H. Brown. Car coupling, F. A. Fox. Car coupling, F. A. Fox. Car coupling, F. A. Fox. Car coupling, B. C. Greenawalt. Car coupling, J. Scott. Car coupling, J. Scott. Car coupling, E. Houtz. Car coupling, E. Houtz. Car eneating apparatus, W. F. Steele. Car heating apparatus, W. F. Steele. Car heating apparatus, w. F. Steele. Car starter, H. R. Keller. Cars and similar structures, apparatus for heating, W. F. Steele. Cars, street or station indicator for, W. P. Williams. Carfack, A. S. Greenwood. Carpet stretcher, B. Manning. Carriage, baby, G. H. Baker. Carriages, wheel fender for, Rogers & Stenz. Carrier. See Package carrier. Cart, hand, D. E. Teal. Cart, road, A. M. Wilson. Case. See Map case. Watch case. Cash ingister and indicator, W. W. Wythe. Cash tills, recorder for, G. R. Stokes et al. Cash tills, recorder for, G. R. Stokes et al. Cash tills, recorder for, G. R. Stokes et al. Cash tills, recorder for, G. R. Stokes et al. Cash tills, recorder for, G. R. Stokes et al. Cash tills, recorder for, G. R. Stokes et al. Cash tills, recorder for, G. R. Stokes et al. Cash tills, recorder for, G. R. Stokes et al. Cash tills, recorder for, G. R. Stokes et al. Cash tills, recorder for, G. R. Stokes et al. Cash tills, recorder for, G. R. Stokes et al. Cash tills, recorder for, G. R. Stokes et al. Chalk line holder, B. Howard. Change receiver, J. A. Kimball. Check, price and inventory, C. S. De Witt. Check register or tally, A. B. Gill Checkrein, B. Miller. Chin rest for the dead, C. B. Dolge. Chopper. See Cotton chopper.	384,387  384,557  384,308  384,273  384,517  384,4311  384,554  384,311  384,554  384,311  384,554  384,401  384,558  384,401  384,452  384,588  384,408  384,409  384,588  384,409  384,588  384,409  384,345  384,406  384,345  384,406  384,345  384,406  384,406  384,345  384,406  384,406  384,345  384,406  384,406  384,345  384,406  384,345  384,406  384,345  384,406  384,345  384,406  384,345  384,406  384,345  384,406  384,345  384,406  384,345  384,406  384,345  384,406  384,345  384,406  384,315  384,406  384,315  384,406  384,315  384,406  384,315  384,315  384,315  384,315  384,315  384,315  384,315  384,315  384,513
Buckle frames, manufacture of, G. R. Kelsey Building block, H. S. Palmer. Bung bushing, R. Pentlarge. Burner. See Oil burner. Stove burner. Bustle, F. J. Brand. Butter mould, F. P. Ayer. Button making device, J. Stewart. Calculator, interest, C. M. Dunham. Calendar, memorandum, A. H. Isbell Can clamp, fruit, M. J. Hamlin. Car caupling, C. L. Baittinger. Car coupling, F. A. Fox. Car coupling, F. A. Fox. Car coupling, F. A. Fox. Car coupling, E. Houtz Car coupling, B. Scott. Car coupling, B. Scott. Car cheating apparatus, W. F. Steele. Car heating apparatus, Tallway, E. A. Leland Car heating apparatus, Tallway, E. A. Leland Car starter, H. R. Keller. Cars and similar structures, apparatus for heating, W. F. Steele. Cars, draught timber for, J. B. Owens. Cars, street or station indicator for, W. P. Williams. Card rack, A. S. Greenwood Carpet stretcher, B. Manning. Carriage, baby, G. H. Baker Carriages, wheel fender for, Rogers & Stenz Carriage, wheel fender for, Rogers & Stenz Carriage, wheel fender for, Rogers & Stenz Cart, road, W. M. McCrosson. Case. See Map case. Watch case. Cash register and indicator, W. W. Wythe Cash tills, recorder for, G. R. Stokes et al. Casting machines, elevator for ingot, J. B. D. Bolton. Change receiver, J. A. Kimball. Check, price and inventory, C. S. De Witt Check register or tally, A. B. Gill Check, price and inventory, C. S. De Witt Check register or tally, A. B. Gill Check, price and inventory, C. S. De Witt Check register or tally, A. B. Gill Check, price and inventory, C. S. De Witt Check register or tally, A. B. Gill Check, price and inventory, C. S. De Witt Check register or tally, A. B. Gill Check, price and inventory, C. S. De Witt Check register or tally, A. B. Gill Check, price and inventory, C. S. De Witt Check register or tally, A. B. Gill Check, price and inventory, C. S. De Witt Check register or tally, A. B. Gill Check, price and inventory of the price and inventory of the price and inventory of the price and	384,387  384,557  384,308  384,273  384,517  384,4311  384,554  384,311  384,554  384,311  384,554  384,401  384,558  384,401  384,452  384,588  384,408  384,409  384,588  384,409  384,588  384,409  384,345  384,406  384,345  384,406  384,345  384,406  384,406  384,345  384,406  384,406  384,345  384,406  384,406  384,345  384,406  384,345  384,406  384,345  384,406  384,345  384,406  384,345  384,406  384,345  384,406  384,345  384,406  384,345  384,406  384,345  384,406  384,345  384,406  384,315  384,406  384,315  384,406  384,315  384,406  384,315  384,315  384,315  384,315  384,315  384,315  384,315  384,315  384,513
Buckle frames, manufacture of, G. R. Kelsey Building block, H. S. Palmer. Bung bushing, R. Pentlarge. Burner. See Oil burner. Stove burner. Bustle, F. J. Brand. Butter mould, F. P. Ayer. Button making device, J. Stewart. Calculator, interest, C. M. Dunham. Calendar, memorandum, A. H. Isbell. Can clamp, fruit, M. J. Hamlin. Car brake, J. H. Brown. Car coupling, C. L. Baittinger. Car coupling, F. A. Fox. Car coupling, F. A. Fox. Car coupling, J. Scott. Car coupling, J. Scott. Car coupling, B. Scott. Car coupling, W. F. Steele. Car heating apparatus, W. F. Steele. Car heating apparatus, W. F. Steele. Car heating apparatus, railway, E. A. Leland Car mover, J. Bird. Car starter, H. R. Keller. Cars and similar structures, apparatus for heating, W. F. Steele. Cars, street or station indicator for, W. P. Williams. Card rack, A. S. Greenwood. Carpet stretcher, B. Manning. Carriage, baby, G. H. Baker. Cartinges, wheel fender for, Rogers & Stenz. Carrier. See Package carrier. Cart, hand, D. E. Teal. Cart, road, W. M. McCrosson. Cart, road, A. M. Wilson. Case. See Map case. Watch Case. Cash register and indicator, W. W. Wythe. Cash tills, recorder for, G. R. Stokes et al. Cast machines, elevator for ingot, J. B. D. Bolton. Catement, manufacture of articles from hydraulic, J. W. Stockwell. Chalk line holder, B. Howard. Change receiver, J. A. Kimball. Check, price and inventory, C. S. De Witt. Check register or tally, A. B. Gill Checkrein, B. Miller. Chin rest for the dead, C. B. Dolge. Chopper. See Cotton chopper. Churn, C. E. Gale. Cigar bunching machine, Boehm & Reed. Clamp. See Shoe clasp.	384,387  384,557  384,303  384,273  384,547  384,431  384,556  384,511  384,556  384,513  384,513  384,513  384,513  384,513  384,401  384,513  384,401  384,513  384,403  384,503  384,404  384,503  384,403  384,503  384,404  384,503  384,406  384,406  384,406  384,407  384,503  384,406  384,406  384,503  384,406  384,505  384,406  384,505  384,406  384,505
Buckle frames, manufacture of, G. R. Kelsey Building block, H. S. Palmer. Bung bushing, R. Pentlarge. Burner. See Oil burner. Stove burner. Bustle, F. J. Brand. Butter mould, F. P. Ayer. Button making device, J. Stewart. Calculator, interest, C. M. Dunham. Calendar, memorandum, A. H. Isbell Can clamp, fruit, M. J. Hamlin. Car brake, J. H. Brown. Car coupling, C. L. Baittinger. Car coupling, F. A. Fox. Car coupling, F. A. Fox. Car coupling, E. Houtz. Car coupling, E. Houtz. Car coupling, J. Scott. Car coupling device, W. N. Morrison. Car, electric railway, E. Julien. Car heating apparatus, W. F. Steele. Car heating apparatus, railway, E. A. Leland Car mover, J. Bird. Car starter, H. R. Keller. Cars and similar structures, apparatus for heating, W. F. Steele. Cars, draught timber for, J. B. Owens. Cars, street or station indicator for, W. P. Williams. Card rack, A. S. Greenwood. Carpet stretcher, B. Manning. Carriage, baby, G. H. Baker Carriages, wheel fender for, Rogers & Stenz Carrier. See Package carrier. Cart, road, W. M. McCrosson. Case. See Map case. Watch case. Cash register and indicator, W. W. Wythe Cash tills, recorder for, G. R. Stokes et al. Casting machines, elevator for ingot, J. B. D. Bolton. Catamenial sack, J. Hothersall Change receiver, J. A. Kimball. Check, price and inventory, C. S. De Witt Check register or tally, A. B. Gill Check, price and inventory, C. S. De Witt Check register or tally, A. B. Gill Check, price and inventory, C. S. De Witt Check register or tally, A. B. Gill Check, price and inventory, C. S. De Witt Check register or tally, A. B. Gill Check, price and inventory, C. S. De Witt Check register or tally, A. B. Gill Check, price and inventory, C. S. De Witt Check register or tally, A. B. Gill Check, price and inventory, C. S. De Witt Check register or tally, A. B. Gill Check, price and inventory, C. S. De Witt Check register or tally, A. B. Gill Check, price and inventory, C. S. De Witt Check register or tally, A. B. Gill Check, p	384,387 384,273 384,273 384,431 384,526 384,311 384,507 384,512 384,512 384,513 384,513 384,513 384,513 384,513 384,483 384,483 384,484 384,335 384,484 384,335 384,484 384,335 384,484 384,335 384,484 384,335 384,485 384,486 384,316 384,317 384,345 384,483 384,317 384,345 384,483 384,317 384,345 384,345 384,345 384,345 384,345 384,345 384,345 384,345 384,356 384,356 384,356

Reams.....

Clothes washer, atmospheric, H. T. Lemon ...... 884,453