inders at will and also to remove the water of condensation as fast as formed while the engine is not in motion.

Pertaining to Vehicles.

SPRING-SLEIGH. W. C. PROUTY, Wayne, Mich. The principal object of this improvement is the provision of a sleigh in which the body is supported upon a spring structure of novel design which may be applied to a sleigh running-gear of ordinary construction and which is so constructed that it may be connected with the sleigh-body and running-gear in such manner that no rattling will result and there will be but little tendency to loosen the spring connections.

AUTOMOBILE ATTACHMENT.—J. B. MOTT, Fredonia, N. Y. Mr. Mott's invention has reference to an attachment for automobile-decks adapted to be placed in position when the tonneau or rear seat of the machine is removed. By means of the inventor's improvement a storage-chamber of greatly increased area is provided and the appearance of the vehicle is very materially enhanced.

AUTOMOBILE DRIVING-GEAR.—G. C. CANNON, New York, N. Y. This invention relates to differential gear and appurtenant parts of a motor-vehicle. The differential gear is located directly in the crank-case of the engine and driven by a direct connection with crank-shaft. The divided transmitting-shaft passes from the gear and is joined by Cardan or equivalent flexible connections with short shafts mounted, respectively, in the sides of the vehicle-frame, which shafts in turn have suitable connections with the driving-wheels. Thus a more compact, reliable structure is produced, and by peculiar arrangement of shaft-sections and cardans unavoidable "working" of frame affects not the easy movement of driving parts.

Railways and Their Accessories.

FREIGHT-HANDLING APPARATUS.—F. B. HEWITT, Fort Myers, Fla. Apparatus for loading and unloading railway-cars, vessels, and the like is improved in this invention, the object of the inventor being to provide a device by means of which freight may be rapidly and safely handled. If desired, freight may be both loaded into a car and the same time freight discharged therefrom or the carriers may leave the car empty, to be provided with freight or other material arranged alongside the main frame.

SPIKE.—J. B. ANDERSON, Portland, Ore. Though applicable to other purposes in the arts this improvement has reference more especially to railroad-spikes, and one of the principal objects of the invention is to provide a device of this kind which is thoroughly effective and reliable in use and one which may be easily driven into place and again withdrawn, besides possessing the capacity for long and continued service.

CATTLE-GUARD.—J. F. WOODIN and F. H. WOODIN, Lexa, Ark. This invention has for its object to provide novel details of construction that afford a guard which is very simple, durable, easy to place in position and remove, and that very effectively guards a railroad track against the travel thereover of horses, cattle, or other beasts in either direction. The guard may be moved from one point of a railroad to another and be readily placed in position without requiring any material change in the road-bed, other than to excavate trenches for the reception of the troughs. Inclination given sides of troughs correspondingly increases area of contact with road-bed, and insures stability when in position.

BRAKE-RIGGING.—J. M. DAVIES, JR., Plattsburg, N. Y. This inventor's objects are attained according to the embodiment of the improvement by a connection which contracts automatically, taking up the slack as it occurs and coacting with a brake-lever restrainer which is automatically shifted as the brake-rigging becomes slackened and which limits or restrains the movement of the brake-rigging within the proper throw. The invention relates particularly to the brake-rigging of freight-cars, although useful in other connections.

HAND-BRAKE.—H. B. VICKERS, Schenectady, N. Y. The object of this invention is to provide a brake, more especially designed for use on street-cars and similar vehicles and aranged to permit the operator to powerfully and quickly apply the brake and hold it applied without the operator being required to manipulate locking devices and to allow quick release of the brake whenever desired.

Designs.

DESIGN FOR TRIMMING.—A. M. WEBER, New York, N. Y. In this highly ornamental design the ladies' collar or dress trimming has two thickened rims or edges duly spaced apart and connected by chiffon or bolting cloth. Fagoting covers and extends inward from the outer side of rims, and to the inner edges of the fagoting an ornamental cord is attached, having a series of loops that extend across the chiffon, while another similar cord extends sinuously between the loops and along the longitudinal center of the collar or trimming.

NOTE.—Copies of any of these patents will be furnished by Munn & Co. for ten cents each. Please state the name of the patentee, title of the invention, and date of the paper.

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 desiring the information. **In every case it is necessary to give the number of the inquiry.**

MUNN & CO.

Marine Iron Works. Chicago. Catalogue free.

Inquiry No. 6258.—For a machine for tying up box shooks in a factory.

For bridge erecting engines. J. S. Mundy, Newark, N. J.

Inquiry No. 6259.—For manufacturers of machines for cutting tobacco, as well as for making cigars and cigarettes.

AUTOS.—Duryea Power Co., Reading, Pa.

Inquiry No. 6260.—For manufacturers of household utilities, suitable for the mail order business.

"U. S." Metal Polish. Indianapolis. Samples free.

Inquiry No. 6261.—For makers of power corn shellers and grinders of capacity of about twenty-five bushels per hour; also for makers of power grinders for dry bones and oyster shells.

Perforated Metals. Harrington & King Perforating Co., Chicago.

Inquiry No. 6262.—For manufacturers of blue steel enamel signs and white enamel letters for window signs on glass.

Adding, multiplying and dividing machine, all in one. Felt & Tarrant Mfg. Co., Chicago.

Inquiry No. 6263.—For manufacturers of hand power paint mills for grinding white lead in Japan.

Sawmill machinery and outfits manufactured by the Lane Mfg. Co., Box 13, Montpelier, Vt.

Inquiry No. 6264.—For manufacturers of nickel and electro-plating apparatus.

WANTED.—Patent attorney to sue for infringements on commission basis. X. Y. Z., Box 773, New York.

Inquiry No. 6265.—For manufacturers of brushes of medium grade, wooden back and stiff bristles.

FOR SALE.—Patent No. 699,855. Universal pocket measure. J. F. Steckenrecter, 533 W. 55th St., N. Y. City.

Inquiry No. 6266.—For a machine to strip the bark off a shrub.

We manufacture tripoli stones of all dimensions, disc, cylinders, etc., samples free. Seneca Filter Co., Seneca, Mo.

Inquiry No. 6267.—For manufacturers of handles for shaving brushes, particularly those made of bone or composition.

Glass preserving company, organizing, will issue stock in payment for glass machine or jar patent. Valuable, Box 773, New York.

Inquiry No. 6268.—Wanted, a complete mattress and carpet renovating outfit, for starting a mattress factory.

Patented inventions of brass, bronze, composition or aluminum construction placed on market. Write to American Brass Foundry Co., Hyde Park, Mass.

Inquiry No. 6269.—For makers of electric motors for direct current, for limited field, armature only having small number of coils.

Sheet metal, any kind, cut, formed any shape. Die making, wire forming, embossing, lettering, stamping, punching. Metal Stamping Co., Niagara Falls, N. Y.

Inquiry No. 6270.—Wanted, names and addresses of manufacturers of arsenical sheep-dips.

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

Inquiry No. 6271.—For parties engaged in printing on glass with rubber type, and otherwise, also for parties who print on celluloid with black printers' ink.

LIVE MAN WANTED.—If you have $5,000 and want $1,000 yearly in manufacturing business. Big demand, no competition. Write Manufacturing, Box 773, N. Y.

Inquiry No. 6272.—For manufacturers of mattress-making machinery.

Manufacturers of patent articles, dies, metal stamping, screw machine work, hardware specialties, machinery and tools. Quadriga Manufacturing Company, 18 South Canal Street, Chicago.

Inquiry No. 6273.—For makers of tubes or pipes for musical chimes.

The SCIENTIFIC AMERICAN SUPPLEMENT is publishing a practical series of illustrated articles on experimental electro-chemistry by N Monroe Hopkins.

Inquiry No. 6274.—For manufacturers of machinery for making wooden toothpicks and clothespins.

We manufacture gasoline motor and high-grade machinery, castings best quality gray iron. Select patterns, and let us quote prices. Frontier Iron Works, Buffalo, N. Y.

Inquiry No. 6275.—For manufacturers of storage batteries.

AUTOMATIC (CARPENTER'S) HAMMER DEVICE.—U. S. patent No. 726,466 for sale. Send for descriptive circular with cut. Any reasonable proposition considered. No brokers or agents. Geo. H. Rowe,, L. Box 442, Ennis, Texas.

Inquiry No. 6276.—For manufacturers of bench motor grinders.

WANTED.—An estimating clerk. Must be competent to figure with accuracy time and material on plate work, tanks, boilers, castings, etc.; no one need apply except an experienced man. Address Broomell, Schmidt & Steacy Co., York, Pa.

Inquiry No. 6277.—For machines for making paper bags.

Inquiry No. 6278.—For makers of machinery for making nut food product and extracting of oil.

Inquiry No. 6279.—For manufacturers of an apparatus for distilling water.

Inquiry No. 6280.—For manufacturers of dish-washing machines.

Inquiry No. 6281.—For dealers in all kinds of machinery pertaining to paper making.

Inquiry No. 6282.—For manufacturers of machinery for making paper car wheels.

Inquiry No. 6283.—For manufacturers of programme clocks, for school and college use.

Inquiry No. 6284.—For makers of machinery and materials for the manufacture of brooms, candles and soap.

Inquiry No. 6285.—For a neat eyelet and fastener for same, for fastening the two sides of a small leather pocket book.

Inquiry No. 6286.—For manufacturers of electrical devices and novelties.

Inquiry No. 6287.—For small refrigerating machinery for private use.

Inquiry No. 6288.—For parties to manufacture, in quantities, a small, cast iron fixture, as follows: To be first turned into malleable iron, then copper plated and finally nickel plated.

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.

Buyers wishing to purchase any article not advertised 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.

(9489) G. C. asks: 1. What is the cause of the slight snap which is heard at the poles of an electro-magnet when the circuit is broken? I observe that it seems louder when the poles are close to a large mass of iron. A. The sound heard at the instant the current is broken through an electro-magnet is called the "magnetic click." It is caused by the demagnetizing of the molecules of the iron core. The theory is that the particles of unmagnetized iron or steel stand in all possible positions in the bar. Magnetization consists in setting these particles so that their axes are in the same direction; demagnetization deranges them again. A click is heard both when the bar is magnetized and when it is demagnetized. 2. If matter is considered as composed of molecules with relatively large spaces intervening, how can it be explained that certain solids, even in very thin sheets, can completely bar gases and liquids under pressure from passing through said spaces in their substance? A. All solids, when in sufficiently thin sheets, allow gases to pass through the spaces between their molecules. That some require to be made thinner than others may be explained on the supposition that the molecules of such solids are nearer together than those of others which permit transfusion easily. 3. In a gas engine, what percentage of the heat of combustion escapes with the exhaust gases? What portion through the cooling circuit? A. The heat losses in a gas engine vary greatly with the heating power of the gas and air mixture; the compression as well as the proportions of the mixtures, and the working temperature of the cylinder, as indicated by the volume and temperature of the cooling water passing through the cylinder pocket. In good practice the loss by the exhaust is about 40 per cent, by the water jacket about 30 per cent, leaving the total efficiency about 30 per cent. 4. Does the operation of compressing the explosive mixture in an engine consume any of its power? A. Compression would be a loss if not for the effect of combustion, which expands the compressed charge, and thus increases the effective pressure and the efficiency of the engine. 5. Is the compression made only in order to get a larger amount of fuel into the clearance space? A. Compression increases the density as well as the volume of the charge at the moment of ignition, and therefore increases the pressure far more than the amount of compression. 6. The electric current is spoken of as flowing at a certain rate. Has "rate" here any reference to the *speed* of the particles of electricity? Is not the speed of current practically that of light, whatever the conditions? A. The electric current cannot be correctly spoken of as flowing at any certain rate or velocity. Its velocity depends upon the capacity of the conductor and other conditions. The propagation of electric waves in the ether is quite another matter. These have doubtless the velocity of light, which, according to the present belief of scientists, is simply an electro-magnetic phenomenon. 7. If the charge on electrons is simply static electricity, how can such charge be affected by a magnetic field, as is seen to be the case? No such effect on a charged pith-ball is producible. A. An electron is a particle moving under an impulse and carrying a charge of electricity. Electricity is static when it is in the condition of a charge, as on a pith ball, or on the plates of a condenser, or at the ends of conductors, when its further motion is impeded. If now this charge becomes able to fly off into space, its streaming particles are affected by a magnetic field, and the stream is deviated from its direct path. See the experiments of Maxwell, Crookes, Hertz and others. 8. Does the striated appearance of an iron filing diagram of a magnetic field indicate that no magnetic force is present in the spaces between the lines of filings? Or is the space within the field completely occupied and filled by the flux, as a cup is filled with water? A. The arrangement of the iron filings in lines, with intervening vacant spaces, has given us the conception of space as occupied more or less fully by lines of force. Lines of force are simply a convenient supposition to convey the greater or less intensity of electro-magnetic action within a certain area. The flux may be considered as distributed uniformly through the space, as the molecules of water are in a cup; but not as completely filling the space, any more than do the molecules of water in a cup. These do not fill the cup. However, no more water can under constant conditions of temperature and pressure be put into the cup, while more lines of force can be made to pass through the space. There is thus both a similarity and a difference between the two. 9. Is an induced E. M. F. due primarily to the *cutting* of lines of force, or merely to the change in the number of them passing through the circuit? In the transformer with closed magnetic circuit, it would seem that the flux from the primary, following the iron ring, would simply pass through the secondary coil from end to end, and no lines would cut across the wires, yet a great E. M. F. is caused. A. An induced current is set up in a *closed* conductor when the number of lines of force which it incloses is made to increase or decrease. In the case of the transformer with closed magnetic circuit, the lines of force pass through the convolutions of the wire and around, completing their circuit on the outside of the convolutions of the wire. It is by the varying of the number of lines that the E. M. F. is produced. The variation is incessant by reason of the alternations of the primary E. M. F. This you seem to have overlooked. 10. Can an electric discharge pass across a space completely devoid of matter, however great the potential? If not, why is it that the nearer this condition is approached in a vacuum tube, the less force is required to pass the discharge through? A. A perfect vacuum is not a conductor of electricity. Vacuum tubes can be exhausted till no discharge will take place through them. It is not true, as you state it, that less force is required to pass the discharge through a high vacuum than through a lower one. When the vacuum is higher than a millionth of an atmosphere, it is very difficult to force the discharge through it. 11. Do any of the radium rays *directly* affect the eye as light? A. Radium does not directly produce the sensation of light in the eye. By some it is thought to produce a fluorescence of certain of the media of the eye, and thus indirectly cause a sensation as of light. 12. Can any electricity, however great the tension, pass through chemically *pure* water? Can it pass through any fluid except the metals without causing decomposition? A. Chemically pure water is to be classed as an insulator; but an insulator may have electricity pass through it, if the pressure of the electricity is sufficient. All electrolytes are decomposed by the passage of electricity, but all electrolytes are classed as conductors, better or poorer. All your electrical questions would be resolved more satisfactorily by the study of good books, than by the brief replies in our columns. Thompson's "Elementary Lessons," which we can furnish for $1.50, explains most of them. 13. I have been told that a bicycle tire when tightly inflated is less liable to punctures than when softer. If so, why is this? A. You are correct in your assertion.

(9490) J. H. M. asks: As I am running a new engine that has a bad pound in the cylinder that comes from a badly fitted piston, would you please advise me as to what is the correct allowance to be made for the expansion for piston rings? The above engine is a 20 x 20, speed 210 R. P. M., rated at 328 horse-power. The piston has a clearance of 3-32 inch, and the groove in the piston for the ring is ¾ inch deep; the rings are ⅝ inch deep; this allows the piston to ride all on the cylinder. Should not the ring be at least equal to the depth of the groove in piston? Please state what is good practice in this respect. The piston strikes the top of cylinder on the forward strike, making a very bad sound, otherwise the engine runs perfect. The piston is fitted with snap ring, or as better known spring ring, those being sprung on over the piston into the grooves; cylinder is of the overhanging type. A. The rings on the piston of your engine should not rest on the bottom of the groove, and should not carry the weight of the piston. The knocking may be caused by loose fit of boxes of the crosshead pin, crankpin, or main journal. There should be a take-up adjustment at all these points. We advise you to address the builder of the engine on your trouble.

(9491) H. S. B. writes: Would it be asking too much for you to inform me of a treatment or substance to use to make wood proof against water (or nearly so)? Our wood in the hames we make is in a few cases subjected to contact with sulphur water in the mines, and when saturated, softens the wood; would like a coating to prevent this, in a measure. A. For waterproofing hames we suggest soaking them for a few hours in boiled linseed oil, warmed nearly to the temperature of boiling water. On removing the hames from the bath, brush off the surplus oil, and dry in the sun or a warm oven. The addition of about two ounces of paraffine to a gallon of the oil by heating will make a finer finish to the hames by rubbing with a cloth after drying.

(9492) J. P. O. writes: In moving an object from place to place under a common arc light, the object appears to vibrate. What causes the apparent vibration? A. The apparent vibrations to which you refer are seen only when moving an object under an arc lamp fed by an alternating current, the light of which consists of a series of flashes which, due to the persistency of vision, appear to give

a steady beam of light. When an object is moved under this light, it is seen only at the points where it happens to be when lighted up by the flashes of the arc lamp, and due, again, to the persistency of vision, it seems to remain in each position for a brief interval of time.

NEW BOOKS, ETC.

PRACTICAL COAL MINING. By T. H. Cockin. New York: The Norman W. Henley Publishing Company, 1905. 8vo.; pp. 422. Price, $2.50.

The author of this work is a member of the Institute of Mining Engineers of England, and has been for a considerable period lecturer on coal mining at Sheffield University College. He has also had a varied practical mining experience. As the result of this, his book, while intended for the use of students preparing for mining examinations, or for qualifications for first or second-class colliery managers' certificates, is thoroughly practical in character, and gives much useful information in condensed form. Besides a map of the British coal fields, the book is illustrated with 200 specially-drawn diagrams. It will be found of great value to any person wishing to learn in a short time as much as possible about practical coal mining.

SMOKE PREVENTION AND FUEL ECONOMY. By William H. Booth, M.Amer.Soc. C.E., and John B. C. Kershaw, F.I.C. New York: Norman W. Henley Publishing Company, 1905. 8vo.; pp. 194; 75 illustrations. Price, $2.50.

This book is based on the German work of Ernst Schmatolla, to which, however, much has been added. The object of the authors is to show as briefly as possible the principles of fuel combustion, the methods which have been and are at present in use, as well as the proper scientific methods for obtaining all the energy in the coal and burning it without smoke. Considerable space is given to the examination of the waste gases, and several of the representative English and American mechanical stokers and similar appliances are described. The losses carried away in the waste gases are thoroughly analyzed and discussed in the Appendix, and abstracts are also here given of various patents on combustion apparatus. The book is exceedingly complete, and contains much that is valuable to all who have charge of large plants.

ELECTRIC SMELTING AND REFINING. By Dr. W. Borchers and Walter G. McMillan, F.I.C., F.C.S. London: Charles Griffin & Co., Ltd.; Philadelphia: J. B. Lippincott Company, 1904. 8vo.; pp. 562. Price, $7.

In this, the second English edition of Dr. Borcher's well-known manual (which has been translated from the third German edition of that work), the progress made in electro-technology has been fully chronicled. The great strides made in electro-metallurgical practice in the last few years have made the task of supplying all the latest information a very considerable one; this has been done quite thoroughly by Mr. McMillan, who, in translating, has added many valuable notes of his own. The work treats of all the metals in the extraction and working of which electric current has been found to be applicable, while only those processes which are capable of practical application have, as a rule, been described. A short survey of the purely metallurgical method of treating the metals has been added to each chapter, in order that the reader may compare such methods with electro-metallurgical processes, and see how the two may be used in conjunction. The matter has all been arranged with a view to the industrial aspect of the question, and there are numerous supplementary notes on actual applications of processes not otherwise referred to in the text. The book is very thoroughly illustrated, and forms a complete handbook on the extraction and treatment of metals by means of the electric current.

INFECTION AND IMMUNITY. With Special Reference to the Prevention of Infectious Diseases. By George M. Sternberg, M.D., LL.D. New York: G. P. Putnam's Sons, 1903. 8vo.; pp. 293. Illustrated. Price, $2.

The author, a retired surgeon-general of the United States army, here states for the benefit of non-medical readers the established facts relating to infectious diseases, and indicates the methods necessary for the prevention of such diseases. He has, so far as possible, let the various theories of immunity alone; his object being the diffusion of such knowledge as "cannot fail to promote the sanitary interests of the people."

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Dental engine handpiece, F. K. Hesse.... 776,466
Dental handpiece, A. C. Sargent 776,204
Discharge mechanism and valve, automatic, J. Douglas 776,014
Display rack, E. B. Weston 776,282
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Door controlling device, A. D. Caywood.. 776,294
Door fastening device, C. H. Bellamy.... 776,378
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Door operating device, double, C. P. & F. E. Howard 776,397
Door securer, J. J. Huyler 776,245
Doors, gates, etc., arresting device for, Guedeney & Harles 776,178
Double boiler, M. J. Hillman 776,025
Dough raiser, W. A. Heckel 776,395
Draft and buffing rigging, R. D. Gallagher, Jr. 776,390
Draft rigging, O. S. Pulliam 776,202
Draw gear and buffing apparatus, H. F. Woernley 775,959
Dredge, J. B. Cantwell 776,217
Dredger head for suction dredges, adjustable, O. Fruhling 776,051
Dredging apparatus, O. Fruhling 776,049
Dredging device, O. Fruhling 776,050
Drill coupling, C. H. Giese 776,391
Drill or pump rod extractor, E. F. Day.. 776,221
Dry separator, T. A. Edison 775,965
Dye and making same, blue sulfur, Schmidt & Bethmann 776,264
Dyeing apparatus, J. Kershaw 776,069
Dyeing machine, J. R. Greenwood 776,237
Dyeing machine, J. Hussong 776,327
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Electric generators, means for controlling the voltage from, I. Deutsch..... 776,223
Electric oscillation indicator, A. Slaby.. 776,359
Electric regulator, automatic, A. McGary 776,144
Electric switch, I. H. Parsons..... 775,933
Electric switch and signal apparatus, L. Griffith 776,238
Electrical distribution system, B. J. Arnold 776,374
Electrical oscillations of different phases, producing quick, F. Braun..... 776,380
Electromedical apparatus, Hirschhorn & Lowenstein 776,062
Elevator controlling mechanism, automatic, J. F. Murphy 776,077
Embroidering, A. Schnauder 776,265
Endless elevator, E. Bousse 776,010
Engine crank, C. J. Englert..... 776,228
Engine driving mechanism, J. R. Crow.. 776,385
Engine speed regulator, explosion, M. H. Daley 776,118
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Exercising apparatus, J. L. Roberts..... 775,989
Eyeglass mounting, S. E. West 775,956
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Fabric turning machine, C. S. Shallenberger 775,992
Fan, meter, G. E. Jacobson 776,026
Faucet coupling, L. A. Cornelius..... 776,293
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Filter device, W. B. Smith 776,094
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Fire extinguishing composition, etc., S. T. Boyd 776,011
Firearm, L. O. Thayer 776,270
Firearm, F. W. Brooks 776,381
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Firearm safety device, repeating, L. L. Hepburn 776,322
Firearm sight, J. Windridge 775,958
Fireproof flooring construction with iron beams connecting the carrying walls, flat, W. Kohlmetz 776,071
Fireproof shutter system, W. L. D'Olier.. 776,225
Fireproof window, I. N. Price..... 776,349
Flowers, vines, etc., machine for manufacturing artificial, H. L. McKain 775,985
Fluids by solar heat, apparatus for raising, A. Beurrier 776,106
Fluorescent indicator, Abbey & Esmond.. 776,211
Folding box, Z. B. Webb..... 776,002
Folding machine, H. I. Illingworth 776,328
Folding machine, Robinson & Viele..... 776,427
Folding machine, circular, Wenz & McKee. 776,444
Food cutter, M. A. Pluecker 776,470
Food package, stock, M. L. Luebben..... 776,139
Fruit or lard press, S. R. Munson..... 776,253
Fuel and making same, composite, M. R. Spelman 776,365
Fuel, artificial block, M. Andes 776,373
Fuel, injector or burner for oil, liquid, or gaseous, E. Dyson 775,914
Furnacee, E. S. Ormsby 775,930
Furnace, W. A. Koneman 776,185
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Gage pole or rod, F. Robinson 776,426
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Gas burner, self-lighting, F. Stierli..... 776,437
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Gear teeth, instrument for plotting, C. F. Moon 776,340
Gin safety attachment, W. S. Baker.... 776,007
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Glass, making wired, R. A. B. Walsh.. 776,158
Glass melting furnace, W. T. Nicholls.. 776,196
Glass polishing apparatus, cut, J. J. McCue, Jr. 776,343
Gold and silver ores, treating, C. H. Rider. 776,424
Gold saving apparatus, H. O. Clark.... 776,113
Golf ball holder, W. B. Anderton..... 776,101
Golf club adjustable head, R. L. & E. M. Urquhart 776,368
Governor, speed, H. N. Motsinger 776,028
Grading and ditching machine, road, R. Russell 775,990
Grain binder, F. A. Ryther 776,032
Grain drill distributer, Packham & Oates.. 776,199
Grain or other similar products, frictional scourer for, G. W. Long 776,075
Granite, manufacture of artificial, L. A. Garchey 776,460
Grater, C. B. Hibbard 775,973
Gypsum, manufacture of composition from calcined, L. Mack 776,076
Hame fastener, J. H. Parmelee..... 776,029
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Harrow tooth fastener, L. L. Haworth.... 776,394
Harvester, corn, D. Binns 775,964
Harvester, traveling, D. Best 776,167
Hasp lock, R. B. Rice 776,086
Hat head rest, F. Jaeger 776,085
Hay distributer, O. & G. Hyatt 775,824
Hay rake, horse, Baxter & Martin 775,961
Heat coil, self-soldering, F. E. Cook..... 776,218
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Knitting machine stop motion, F. Wilcomb 776,445
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Lacework holder, C. C. Vilas 776,040
Ladder prop, H. Williamson..... 776,446
Lamp shade, F. Lubow 776,249
Lantern apparatus, automatic magic, M. Bentzon 775,963
Latch, G. Levy 776,073
Latch, gate, J. E. Huffman 776,398
Leather, treating manufactured, A. W. Case 776,453
Levigating mill, J. W. H. James..... 776,472
Light fixture, V. H. Slinack..... 776,361
Locking device, C. A. Wilson..... 775,957
Log hauler, G. W. Brower..... 776,169
Loom center selvage forming attachment, A. S. Cowan 776,300
Loom for weaving carpets, J. W. Tillotson, et al 776,208
Loom for weaving pile fabric, W. G. Hartley 775,970
Loom picker motion check, C. O. Huntoon. 776,399
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