and it consists in a ring composed of two separate U-shaped sections, one part provided with longitudinal grooves and the other with inwardly-facing locking-lugs adapted to enter the grooves of the first named section and to be locked thereto by a half-turn.

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 this 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. 7344.—For makers of white luminous paint.

For hoisting engines. J. S. Mundy, Newark, N. J.

Inquiry No. 7345.—For makers of cuts, working details, of cabinet work, such as store fixtures, medicine cabinets, etc.

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

Inquiry No. 7346.—Power jig saw for wood and metals.

Drying Machinery and Presses. Biles, Louisville, Ky.

Inquiry No. 7347.—For manufacturers of wire supports to attach to the back of small wood picture frames.

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

Inquiry No. 7348.—For manufacturers of optical glass for telescope objectives.

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

Inquiry No. 7349.—For parties to do stamping No. 14 gauge soft rolled steel. The article is an extension toggle joint 7/8 inch wide by 10 inches long.

I sell patents. To buy, or having one to sell, write Chas. A. Scott, 719 Mutual Life Building, Buffalo, N. Y.

Inquiry No. 7350.—Wanted, address of Slock Mold Co.

WANTED.—Patented specialties of merit, to manufacture and market. Power Specialty Co., Detroit, Mich.

Inquiry No. 7351.—For manufacturers of gut strings used for stringing tennis racquets.

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. 7352.—For manufacturers of machinery for blanching almond kernels.

Persons interested to promote or buy patented lacing hook for women's shoes. Chas. F. Collins, Jr., 6358 Penn Ave., Pittsburg, Pa.

Inquiry No. 7353.—For dealers in tobacco and fixtures for cigar factory.

WANTED.—Ideas regarding patentable device for water well paste or mucilage bottle. Address Adhesive, P. O. Box 773, New York.

Inquiry No. 7354.—For manufacturers of fittings for hermetically sealed water closet pans.

LATEST ADVERTISING NOVELTIES.—High-grade Illustrating, Designing and Printing. Catalogues a Specialty. Smith & Berkley, Holland Bldg., St. Louis, Mo.

Inquiry No. 7355.—For manufacturers of machinery for printing names on advertising pencils; also address of manufacturers of the pencils.

What have you to sell? We are Mfrs.' Agents, employ salesmen in all sections. Buy and sell patents. Promote companies. The Mfrs.' and Inventors' Sales Co., 133 Leroy Street, Binghamton, N. Y.

Inquiry No. 7356.—For dealers in Stewart's embossing board.

Mechanical devices of brass, aluminum, and kindred metals manufactured for inventors and patentees, and marketed on royalty, when desired. Imperial Brass Mfg. Co., 241 So. Jefferson St., Chicago, Ill.

Inquiry No. 7357.—For manufacturers of machinery for making carpet brooms.

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

Inquiry No. 7358.—For manufacturers of goods made from vulcanized or vulcanizable fiber.

Absolute privacy for inventors and experimenting. A well-equipped private laboratory can be rented on moderate terms from the Electrical Testing Laboratories, 548 East 80th St., New York. Write to-day.

Inquiry No. 7359.—For manufacturers of machinery for gumming paper.

WANTED.—The patents or sole agency for Britain and France, of new machines and articles used in the Brewing and Allied Trades. Highest references given and required. State best terms with full particulars to "Wideawake." care of Street's Agency, 30 Cornhill, London, England.

Inquiry No. 7360.—For firms who manufacture detail parts of furniture, such as various parts of roll top desk and parts of sectional bookcase.

WANTED.—Old, curious and defaulted bonds and stocks. Unsalable and inactive remainders of estates bought. Valuable book on this subject sent to any lawyer or banker on receipt of $1.00.

R. M. SMYTHE
Room 452, Produce Exchange, New York

Inquiry No. 7361.—For manufacturers of stoves, cooking utensils, etc.

Inquiry No. 7362.—For manufacturers of puzzles.

Inquiry No. 7363.—For manufacturers of small, 3-wheeled, rubber-tired delivery wagon.

Inquiry No. 7364.—For manufacturers of vacuum hand pumps.

Inquiry No. 7365.—For manufacturers of steel chimneys.

Inquiry No. 7366.—For manufacturers of diving suits.

Inquiry No. 7367.—For manufacturers of machinery for making wood alcohol.

Inquiry No. 7368.—For parties who make a business of laying out plots, that is for building, viz.: houses, stables, etc.

Notes and Queries.

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.

(9806) R. L. I. says: Please answer the following question through your Notes and Queries. This is probably an old question in one form or another, but it is new to me. A watch spring is coiled up tightly. It will then possess a certain amount of potential energy which will become kinetic when the spring uncoils. According to the doctrine of the conservation of energy, this energy which is stored up in the spring cannot be destroyed but will either be given back in the form of mechanical energy or transformed into some other form of energy. Suppose now that this coiled-up spring is slipped into a test tube of such a size that it will not allow the spring to uncoil, and the spring is dissolved in some acid. What becomes of the energy that was stored up in it? I suppose that it is transformed into heat. Would the heat produced by the reaction be greater when the metal is in this strained condition than when it is in a normal condition? A. We are frank to say that we do not know what becomes of the potential energy of a coiled spring should the spring be dissolved in acid and never get a chance to uncoil itself at all. This is an old conundrum, as difficult to answer as that other comrade of its own—"What becomes of the pins?" An answer to either would be about equally useful to the human race. We have many times answered this question, and always in the same way. The question has no practical value, and does not in any way interfere with the great law of the equality of cause and effect, which is in reality what is meant by the conservation of energy.

(9807) W. F. F. asks: I have been using a mercurial contact on a relay operating electric clock circuit, the mercury being held in a small cup forming one electrode and the other a plunger made of copper wire. After using for some few weeks the wire became entirely honey-combed and there was a carbon deposit on top of the mercury and on the sides of the cup. Can you advise what should be used as a plunger in the mercury? A. The copper wire used for the electrical contact becomes weak and fragile because of its amalgamation with mercury. This takes place slowly in the case of copper, but before long the copper is destroyed. A heavy platinum wire should be used, since platinum is not affected by mercury. We cannot account for a carbon deposit on the mercury. A deposit of oxide of copper in the form of a black powder is to be expected from the action of the oxygen of the air upon the heated end of the copper wire when the circuit is broken. If the black powder is carbon, it may be set on fire in a flame; if it is copper oxide, it will dissolve in nitric acid, giving the blue solution of copper nitrate.

(9808) G. B. asks: In projecting a lantern slide upon a screen with a single double-convex lens, the lines of the picture, when viewed close to the screen, within a foot or two; give the colors of the rainbow. If, however, the observer goes back ten or twenty feet more from the screen, all this color effect immediately disappears. Will you please explain why the color effect is not equally visible at this distance? I understand, of course, if a chromatic lens is used, there will be no such color effect. What I do not understand is why, when you can see it so plainly at a foot away you cannot see it equally plainly at ten feet, although all the other parts of the picture are equally visible at either distance. A. The colors which appear in a lantern slide shown by a single convex lens are not seen at a distance because the eye cannot see lines of the width of these lines of color at so great a distance. The fact is that a line one-tenth inch wide will be just visible at a distance of a little less than thirty feet. From this the distances at which other widths can be seen may easily be determined. Beyond the distance of visibility the separate colors cannot be seen, but the picture as a whole will be seen equally well at all distances. At the greater distances the eye accepts the larger features and does not seek finer details. For that reason a picture on a screen looks better viewed at a distance from the screen.

(9809) S. H. asks: Please explain to me, through your Query Column, why a file used to file a steel cylinder, that is revolving in a lathe, becomes a permanent magnet. A. We do not see any special connection between the use of a file in filing a revolving cylinder and its magnetism. Probably all files become magnets very soon. Being of hard steel the earth will soon magnetize them. All fixed iron or steel on the earth is magnetic with the lower end a north pole. We have noticed that files frequently hold the iron filings stuck on their ends, which shows that they had become magnetized. It is a very common occurrence, and doubtless due to the inductive effect of the earth upon them.

(9810) E. L. says: Does the wheel on the outside rail revolve oftener than the wheel on the inside rail? If not, why not, recognizing that the outside rail is longer than inside rail? A. We would say that the wheels on a steam railroad car or locomotive are rigidly attached to the axle, and therefore have to revolve together at exactly the same rate of speed. The outside rail, however, on a curve, is longer than the inside rail. This makes a certain amount of slippage between the wheels and the rails unavoidable when going around curves. The wheels, however, are somewhat larger in diameter near the flange than they are a few inches away from the flange, and the tendency is for the flange to hug the outer rail of the curves. Therefore, the outer wheel as it is rounding the curve is rolling on a somewhat longer diameter than the inner wheel. This tends to decrease somewhat the amount of slippage there would otherwise be.

(9811) E. N. writes: I have noticed recently in your correspondence column articles on lunar rainbows. I do not know what caused the discussion, but will say I have seen rainbows at night twice. In the early part of the spring of 1904 my attention was called to one of these. The time was about 8:30 P. M. A light rain had been falling, and the full moon shone from the east at an angle of about forty degrees. The arch of the rainbow was almost perfect, and I do not believe I ever saw a brighter-colored one. I do not know how long it lasted. About a month later I saw another one of these occurrences. The time and conditions were about the same, but the bow was not nearly so bright as the first. A. Many of our correspondents have reported lunar rainbows since the matter was first mentioned in our paper. Some have, however, been mistaken in calling what they saw a rainbow. A rainbow is always on the opposite side of the horizon from the sun or moon at the time. If seen in the morning, the solar rainbow is in the west; and if seen in the evening, it is in the east. So, too, the lunar rainbow is always opposite the place of the moon. As you say the moon was in the east, you saw the bow in the west. An arch of color seen on the same side of the sky as the sun or moon is not a rainbow, but a halo, and it is formed not from drops of falling rain, but from crystals of ice suspended high in the atmosphere. The colors of halos are often as bright as those of rainbows.

(9812) H. A. S. asks: Will you kindly enlighten me through your columns on the following discussion: A claims that a body in motion in going around a curve, such as an automobile for instance, the outside wheels leave the track; for this reason railroad tracks are superelevated or banked. B claims that the inside wheels leave the track; for this reason in all automobile races the turns are from right to left and the steering wheel at the right side of the car, and the machinist sits on the left side, more to act as ballast than anything else. If the inside wheels leave the track first, please explain. A. A vehicle turning a corner too rapidly will overturn outward. This is because centrifugal force is developed, and acts from the center of motion or toward the outside of the track. This has been fully discussed in this column several times lately, and we refer you to Queries 9110, Vol. 89, No. 6; 9488, Vol. 91, No. 23; 9576, Vol. 92, No. 12. We send the three papers for ten cents each.

(9813) E. P. C. asks: 1. I have made a small induction coil, the secondary of which is in two sections; 1½ pounds of No. 34 wire to the section. These two sections differ considerably in power, owing I think to the one made first being partially broken down: e. g. where section No. 1 is working alone, excited by two large bichromate cells, it yields sparks 1½ inches long. Section No. 2 under the same conditions gives sparks nearly 3 inches in length. The sparks from either section, however, are white, large, and of uniform size throughout their length. Now, when both sections are in place and working as one coil, the appearance of the spark undergoes a marked change. It is then about 4 inches in length (same battery power), but the full, white appearance only extends for about one-third of the distance from one pole, the remainder being much smaller, and of a reddish color. What is the cause of this? A. The short sparks given by the separate section of your coil are what are called "fat" sparks. They have greater intensity. When the two sections are joined in series, the long spark given when the terminals are wide apart are those which are characteristic of sparks that are near the limit of the ability of the coil. These show the dark space at the negative pole, and are bright only at or near the positive pole. What we have said is descriptive of the sparks, and does not give a cause or reason for these marks or characteristics. These causes are not known. 2. I see in Norrie's work on induc-