

Correspondence.

A New Calcimine Deposit.

To the Editor of the SCIENTIFIC AMERICAN:

South Dakota has long been noted for the diversity of her mineral deposits, the Black Hills country being especially rich in gold, silver, and countless other minerals. The eastern part of the State is now about to become a mining country also, through the recent discovery of a large bed of carbonates. In boring a well near Antelope Lake, a few miles from Webster, Day County, a Mr. Hartsough brought to the surface a sort of jelly-like substance, of dark slate color, and soon found this underlain by a vein of pure white of similar nature. It is in the form of a stiff paste, absolutely without grain or grit, and on exposure to the air soon dries and hardens. Experiments show it to be an excellent material for polishing all sorts of metals, and it is pure enough to be used as a tooth-powder or any similar purpose. Samples were taken to chemists in St. Paul and the analysis is as follows:

Per cent.	Per cent.
Calcium oxide—lime, 47.70	Combined as—
Magnesium oxide..... 87	Carbonate of lime..... 85.18
Carbonic acid..... 38.43	Carbonate of magnesia..... 1.82
Aluminium oxide.....	1.18
Insoluble residue—mostly silica, 8.85	8.85
Moisture.....	2.97
	100.00

It shows 85.18 per cent. of pure carbonate of lime and 1.82 per cent. carbonate of magnesia. Mixed with water, it makes a perfect calcimine, which readily takes the most delicate tints, dries quickly, and will not crack, flake, or rub off. Mixed with oil it makes a fine quality of putty. It is proposed to at once put a force of men to getting out the material and preparing it for market as calcimine.

The bed is supposed to cover an area of about three acres, several test borings having been made. The formation is peculiar, as the ground had been used for years as a sand pit, from which large quantities of plastering sand have been removed. At about eight feet from the surface a layer of coarse black sand is found, unfit for use, and this had never been penetrated. Mr. Hartsough had noticed that trees seemed to flourish in this part of his farm, and concluded that there must be water near the surface, and made the borings, with the above results. Under the whitening is found coarse gravel and abundance of water. Mr. Hartsough thinks the entire bed is made up of decom-

posed shells, as on the top of the layer can be found the forms resembling snail shells, which soon crumble to powder, and form the same substance as the main body. The find is certainly curious, and contains the possibilities of a profitable industry. The owner says that almost the entire amount of material of this kind now used in the United States is imported from Italy, and that this is superior in every way to the imported article.

J. M. PATTON.

Aberdeen, S. D.

Simple Photographic Lens Adaptor for Orthochromatic and Telephoto Work.

The use of orthochromatic plates for producing better color values in negatives, especially in the more accurate rendering of the different colors in a painting, is now quite extensive.

But to the average amateur photographer provided with a folding camera of popular size, like a 4 × 5 or 5 × 7, the extra bother of carrying additional plates and holders for obtaining such results is annoying. Nearly as good pictures may be obtained by photographing through colored screens on ordinary plates. The same reason is applicable in the taking of distant or telephoto views, for which usually a special additional expensive lens is required.

To assist the amateur in greatly varying and utilizing the lens he already possesses to the uses above described, including several others, Mr. U. Nehring, of this city, has lately introduced what is termed multi-chromatic ampliscope lenses arranged to be inserted adjacent to the diaphragm of the lens used. These lens adaptors have the property of changing the character of the focus of the regular lens, either by elongating or shortening it, thereby adapting the lens to take a view with a less or greater angle than it ordinarily would.

The front lens in the lens tube is unscrewed out and the adaptor lens dropped in next to the diaphragm, after which the front lens is rescrewed in place, the change being made very quickly. When one is cramped for the proper distance to secure a picture, the adaptor will shorten the focus sufficiently to enable the operator to obtain a picture the right size at a wider angle. Special colored lenses are inserted in the same way for photographing paintings and other colored objects adapted to secure the best effects. Other adaptors render the lens suitable for copying at short distances, and for enlarging. In adapting a lens for telephoto work a special tube is provided which is slipped over

the regular lens tube and carries a negative lens for extending the cone of rays, thereby greatly lengthening the focus and magnifying the image of the distant object.

There is also an angular disk which will cut off half the picture when thrown upon the plate, so that duplicate or so-called double pictures can be easily made. A focusing lens is also included. In all something like a hundred different combinations, it is said, can be made with the several lenses and tubes, and all put in a box small enough to be readily carried in one's pocket.

This collection of auxiliary lenses and adaptors promises to be very serviceable in the hands of amateurs, in consequence of the varied quality of work that can be done without the need of expensive different lenses.

Developer for Underexposed Plates.

A developer which has been used with success for underexposed plates is given in the following formula:

Water.....	1,000 cubic centimeters.
Metol.....	4 grammes.
Hydrochinon.....	2 "
Sulphite of soda.....	60 "
Carbonate of soda.....	60 "

This solution is to be recommended, as it will keep for a long time and does not stain the plate.

The Current Supplement.

The current SUPPLEMENT, No. 1281, has many articles of unusual interest. "California Hydraulic Mining Under the Caminetti Act" is an elaborately illustrated article dealing with the subject in an authoritative manner. "Electric Ignition of Gas and Gasoline Engines" is by P. P. Nungesser. "Foreign Power Section of the Paris Exposition" is accompanied by a large engraving. "The Means of Defense in Animals," by Prof. Philip P. Calvert, of the University of Pennsylvania, is concluded in this issue. The five articles have been of unique interest. "Archæology of Lytton, British Columbia" is by Harlan I. Smith.

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RECENTLY PATENTED INVENTIONS.

Agricultural Implements.

CORN HARVESTER AND SHOCKER.—JOHN FEDERMAN, 1249 Market Street, Harrisburg, Penn. The object of the invention is to provide a corn-harvester of simple construction and practical operation, which permits two rows of corn to be quickly cut, gathered into a shock, and then dropped in vertical position and bound before being released from the machine. The features of novelty are to be found in the means for supporting the stalks of corn while being gathered into a shock, and the mechanism for dropping the bundle and holding it within the machine in vertical position, but resting on the ground, while being bound into a shock.

CORN-HARVESTER.—WILLIAM J. LANG, Oyens, Iowa. The machine is so constructed that the ears of corn are husked and detached while the stalks are standing in the field. The ears are positively fed to the husking mechanism so that they are broken from the shuck and subsequently conveyed to an elevator. The husking mechanism can be adjusted so that the machine is adapted for various conditions of the corn. The bearing-wheels can be adjusted to arrange the body of the machine relatively to the corn. In a word, every provision has been made to simplify the work of the operator and to produce a machine which will perform its functions with an efficiency that leaves nothing to be desired.

FLOW-BEAM.—RICHARD H. PURNELL, Rosedale, Miss. The beam is formed of a section of pipe doubled closely upon itself. Couplings secure the doubled portions of the pipe rigidly together. On the forward, doubled end of the beam, is a clevis through which a bolt is passed, extending between the doubled portions of the beam. The doubling of the pipe forms a non-circular clevis end without further labor. The bolt passed between the pipe portions obviates the necessity of drilling a hole through the beam.

Mechanical Devices.

WINDMILL-GEAR.—GIDEON J. MOORE and FRANK E. COOK, Eureka, Cal. The inventor has simplified the driving mechanism of a windmill. He employs gearing in such a manner that the driving motion of wind-power is simultaneously and well-nigh directly applied to the pump-rod at opposite sides. The construction is also such that the cranks, crooked arms, or walking-beams to be found in almost all windmills to bring the pump-rod to the center, are dispensed with.

BOAT-LOWERING MECHANISM.—CARL SCHNEEMANN, Bremen, Germany. This invention comprises a motor and a movable davit. A drum is geared directly to the motor, and a push-rod is geared to the motor through the medium of a clutch. The push-rod serves to throw the davit outward, and a connection between the drum and davit throws the davit inboard. Tripping devices are driven in time with the push-rod and serve automatically to throw the clutch and motor-controlling device in time with the push-rod.

DRIVING MECHANISM.—ANTON E. H. J. THOELLEN, Ansonia, Conn. The driving mechanism is intended for use in connection with machinery, motor-

vehicles, bicycles, and the like. Ratchet-wheels are mounted on a driving-shaft, with which wheel-levers coast. A vertically-swinging pawl is carried by each lever and is engaged by a spring pressed thrust-pin in a boxing on the upper side of each lever. Owing to the short fulcrum of the levers, a small amount of power will be greatly increased when applied to the short members, and this increased power will be considerably augmented by the ratchet-wheels.

PEDAL-ACTION.—ROBERT K. THUMLER, Manhattan, New York city. The inventor has so secured the pedals in their piano-cases that they can be readily removed and replaced, and has provided them with spring-hinge supports, so that they will be noiseless in operation.

MACHINE FOR CLEARING SILK OR OTHER TEXTILE THREADS.—CHARLES G. DIEDERICHS and MARIE A. E. MARQUELET, Ste. Colombe les Vienne, France. This machine rapidly clears threads and frees them from defective knots, wisps, irregularities in thickness, doublings, and the like. On one side of a winding-spool, driving mechanism is arranged, and on the other, a brake. The thread is adapted to pass through a trimmer movable by irregularities of the thread. An operative connection is provided, whereby the movement of the trimmer will throw the winding-spool from an engagement with the brake. Only a minimum force is required for disengagement. The result is that the machine suits all kinds of thread, even the very finest. Stoppage is immediate and does not involve a risk of breaking the thread.

RAISIN-SEEDER.—FRANK H. PETERMAN, Manhattan, New York city. The machine is arranged to insure a complete separation of the seeds from the pulp without unduly injuring the latter by tearing. The operative parts consist of a cylinder with an opening; a flexible belt passed over the cylinder and having its ends passed through the opening and secured to the inside face or periphery of the cylinder; and pins mounted on the flexible belt. A member is attached to the cylinder and fits in the opening to form a continuation of the periphery of the drum. Pins for impaling the raisins are attached to the member.

COTTON-PRESS.—ALBERT L. TREESE, Jennings, Oklahoma Territory. The purpose of the invention is to provide a cotton-press for forming cylindrical bales by rolling a continuous length of batting. By this arrangement not only is a more compact and easily-handled bale produced, but also one less liable to become fired.

Railway-Appliances.

CATTLE-GUARD.—ROBERT F. ADAMS, Oakman, Ala. This novel cattle-guard is designed to be placed along the line of a railroad-track at the abutting ends of a division-fence, where a break in its continuity must necessarily occur in order to give passage to the railway-tracks. The invention consists in a peculiar construction and arrangement of gates arranged to be automatically operated by the animal.

LOCOMOTIVE-EXHAUST.—EBENEZER N. SLOCUM, Fort Smith, Ark. In order to insure a free escape of the

exhaust-steam from the engine cylinders without danger of creating back-pressure, to provide a perfectly-balanced non-pulsating draft in the fire-box and smoke-flues, and to reduce the consumption of fuel, Mr. Slocum increases the distance from the base of the draft-pipe or stack to the tip of the exhaust-nozzle, so that it requires considerable time for the unrestrained steam to travel from the nozzle to the stack.

LOCOMOTIVE-PILOT RIGGING.—JAMES F. DUNN, Salt Lake City, Utah. The invention relates to means for mounting a coupler on a locomotive-pilot, so that the coupler may be raised to inoperative position or lowered into line with the face of the pilot. The pilot is thus permitted to operate effectively. The invention also embodies means for mounting the coupler draw-head, such means serving to brace the buffer-beam against the cylinder-saddle.

Puzzles, Games, and Toys.

PUZZLE.—ALBA C. BOOTH, Burlington, Vt. The puzzle is based upon the story of Jonah and the whale and is designed to afford considerable amusement and to require considerable skill in its solution.

GAME-BOARD.—WILLIAM H. HILLYER, Atlanta, Ga. The essential feature of the invention is to be found in the use of four permanent horseshoe magnets. It is the object of the game to strike a steel ball with a mallet, so that the steel ball will be made to adhere to one of the magnets.

MECHANICAL TOY.—GEORGE WALE, Jr., Everett, Mass. The toy is made in the form of a football player, the arms of which hold a ball. The arms, moreover, are releasably held and work with a swinging leg, also releasably held, so that when the arms are made to drop the ball, the leg is thrown to kick the ball.

Miscellaneous Inventions.

BOILER-TUBE CLEANER.—WORTHINGTON H. INGERSOLL, Hamburg, N. J. The cleaner is a member of that class of devices in which a steam-jet is employed. A twirling motion is given to the steam-jet, which produces suction, whereby air is drawn into the flue. This air, instead of being thrown directly into the flue, is deflected outwardly and finally discharged toward the center, near the periphery of the flue. Thus the inventor secures a plentiful supply and effective distribution of the heated air. The blast of steam and hot air is very effective where it is most needed—that is, at the periphery.

DEVELOPING-TRAY.—STUART B. MOORE, Manhattan, New York city. The invention comprises a tray which is adapted to receive the plate to be developed without exposing that plate to white light. The tray is provided with a reservoir so arranged that the solution can be admitted to the chamber containing the plate and then discharged when desired. The tray is also provided with oppositely-located windows, which are provided with a plate of any transparent, non-actinic material (ruby glass or celluloid), so that the progress of development can be observed in broad daylight.

SPLINT.—JAMES G. HUGHES, Sheboygan, Wis. This splint is especially adapted for use on the lower limbs, but may also be employed on the upper limbs. The construction is such that the splint can be simply and readily applied, and that the fractured member can be examined at any time and the wound properly dressed, without disturbing the union of the parts. The splint can be adjusted to secure perfect extension and fixation without pressure on any part of the limb, thus preventing shortening or deformity after a fracture. Pneumatic or hydraulic pads are employed to distribute the pressure evenly.

FENCE-WIRE LOCK.—EDWIN L. FROGGATT, Spearfish, S. D. The lock consists essentially of a tongue on the fence-post, opposed to which tongue is a recess whose wall is provided with a longitudinal slot and a transverse slot. The wire is placed between the tongue and the vertical wall of the recess, entering the transverse slot. The tongue is then driven to an engagement with the walls of the recesses, so that a rib on the tongue will enter the longitudinal slot and kink the wire.

PROCESS OF TREATING MINERAL WOOL.—ALEXANDER D. ELBERS, Hoboken, N. J. Though mineral wool has been widely used as an insulator of heat, cold and sound, few devices have thus far been either made known or put into operation, whereby this material can be applied in a practicable and marketable manner, except to pack it in its loose state into the spaces to be deafered. This method is both costly and defective, for which reason Mr. Elbers prefers to mold the wool into bricks or sheets, which he finds are far more efficient than the loose material, in addition to their being less expensive.

COG-WHEEL WITH DETACHABLE TEETH.—GEORGE DORNAUF, Frankfurt-on-the-Main, Germany. This cog-wheel consists of a wrought-iron or steel rim of great strength, cogs of wood or metal, and wedges securing the cogs in place. The invention is designed to permit the cogs of such wheels to be attached, detached, and exchanged with despatch, and to render the construction of such wrought cog-wheels simpler and cheaper than those now in use.

CATTLE-STANCHION.—WALTER D. CASE, Granby, Conn. The purpose of this invention is to provide a cattle-stanchion by which the stock can be securely yet comfortably held and which can be easily manipulated. This purpose is attained by providing the stanchion with upper and lower end sections adapted to be shackled to the sills of the stable and having each a semicircular shape. These end sections carry side sections, one of which is hinged to the lower end section and secured to the upper end section by certain novel devices forming an automatic latch.

WINDOW.—PASQUALE C. PASCALE, Manhattan, New York city. This invention relates to stationary, sliding, pivoted, or hinged sashes for windows. The sashes are provided with hinged frames which are opened in such manner as to uncover the entire space within the boundaries of the members of the sashes. When two sashes are employed, the upper member of the hinged frames of one sash and the lower members of the hinged frames of the other sash constitute the meeting-rails of the sashes.

When one sash is in front of the other, the hinged frames of each sash can be freely manipulated. The hinged frames can be locked in any position.

THROAT-FRAME FOR MAIL-BAGS. — CHARLES BATEMAN, Gales Creek, Ore. The inventor has devised an ingenious throat-frame for mail-bags, which holds the mouth of the bag open at full extent in rectangular form for the free reception of the mail-matter, and also forms a secure closure for the bag-mouth. The improvement, although primarily designed for use upon mail-bags, is also applicable to other bags.

COVER CLAMP AND HANDLE FOR FRUIT-BASKETS.—MAJOR TUCKER, Brockton, N. Y. The device performs the dual function of serving, as a handle for a fruit-basket and as a means for securing the cover of the basket in place. This combined clamp and handle can be readily sprung to proper position upon the different sizes of baskets usually employed for packing grapes and known upon the market as "climax baskets." The device tends materially to strengthen any basket to which it may be applied.

SCRAPER.—WILLIAM H. UNION, New Orleans, La. The purpose of the invention is to provide a scraper which may be easily dumped and handled, to which end novel mechanism is employed for holding a bucket in active position and for raising it, so as to carry its load to the dump, and then for readily and quickly inverting the bucket to discharge its contents.

STRAPPING-TOOL.—WILLIAM MAX, Brooklyn, New York city. To provide a tool for conveniently draining and stretching metal straps across the side of a box before nailing is the object of the invention. The tool is composed of an elongated handle and a fixed gripping-jaw, which are formed integrally. To the fixed jaw a movable jaw is pivoted, provided with a tail-piece extending back on the handle. A movable fulcrum-block is arranged in a guide-socket in the under side of the handle and has a foot or shank which passes through the handle, is secured therein, and is adapted to work in contact with the tail-piece of the movable jaw.

ADJUSTABLE BOOK-REST OR TABLE.—MAJOR MILLER, Lowell, Wis. Upon a stand a jointed arm is mounted for horizontal movement; and upon the arm a table is carried for adjustment independently of the adjustment of the sections of the arm or of the arm in its entirety. The table is designed to be used as a rest or support for a book, for manuscripts, music, and the like. The supporting-arm and its table are vertically adjustable.

HOSE-COUPLING.—JENS C. MARTIN, Spokane, Wash. The coupling is composed of two parts adapted to engage and automatically lock together. The parts are duplicate; and each has a locking mechanism of peculiar construction and an annular elastic gasket, which is securely held in place by a peculiar construction and is expanded by water-pressure, so as to form a perfectly tight joint under all conditions.

Designs.

TRIMMING.—PAUL GUMBINER, Manhattan, New York city. The trimming includes a series of scallops at opposite sides of a longitudinal line, the scallops of one series being opposite the space intervening the scallops of the opposing series.

NOTE.—Copies of any of these patents can 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.

NEW BOOKS, ETC.

DER MEISTER VON PALMYRA. Dramatische Dichtung in fünf Aufzügen. Von Adolf Wilbrandt. Edited with introduction and notes by Théodore Henckels. American Book Company. 1900. 12mo.

It can safely be said that every teacher of the German language has been wishing for a long time that this masterpiece of Adolf Wilbrandt might be prepared and edited for class use in American schools and colleges. The work is modern, classical, and free from that excess of realism which often makes many books unsuitable for the class-room. Der Meister von Palmyra is a mysterious Faust-like poem, full of meaning and beauty, and the study of it should be a constant delight to both teacher and pupil; it is admirably adapted for the class-room. In the introduction the student will find a good account of the poet's life and works, and a synopsis of the "dramatic poem." In the notes all difficult expressions are clearly and concisely explained.

LES PLAQUES DE BLINDAGES. Par M. L. Baclé. Paris: Vve Ch. Dunod. 1900. Quarto. Pp. 233, 197 illustrations.

This monograph on armor plates is devoted to a history of steel armor, manufacture of the plates, and tests which have been made both in Europe and America. The author writes with the authority and self-confidence of one who is thoroughly familiar with his subject. Although his work has but little new to offer, it is worth while reading for the reason that it describes very thoroughly what has been accomplished in the metallurgy of armor-plate making and in the way of producing steel which presents the utmost possible resistance to the modern high-power projectile. The numerous illustrations, diagrams, and table provided admirably serve to elucidate the text.

UEBER DEN HYDRAULISCHEN STOSS IN WASSERLEITUNGSROHREN. Von N. Joukowsky. St. Petersburg. 1900. Price \$1.

The action of the so-called "hammering" in water mains is so little known that Prof. Joukowsky, of the Moscow Imperial University, determined to conduct a series of experiments which would add something to our knowledge and supplement the work of Prof. Carpenter, of Cornell, who investigated hammering in small pipes. The results of the Moscow professor's experiments are exhaustively described in the present monograph.

Business and Personal.

Marine Iron Works. Chicago. Catalogue free. "U. S." Metal Polish. Indianapolis. Samples free. Yankee Notions. Waterbury Button Co., Waterbury, Ct. Handle & Spoke Mch. Ober Mfg. Co., 10 Bell St., Chagrin Falls, O.

Most durable, convenient Metal Workers' Crayon is made by D. M. Steward Mfg. Co., Chattanooga, Tenn. Special and Automatic Machines built to drawings on contract. The Garvin Machine Co., 141 Varick St., N. Y.

Ferracute Machine Co., Bridgeton, N. J., U. S. A. Full line of Presses, Dies, and other Sheet Metal Machinery.

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

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

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

Notes & 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.

(7919) G. W. asks: 1. What length of spark must my induction coil produce to make an X ray apparatus for examining objects such as a leg or arm? A. A coil giving an 8-inch spark will answer for the thinner parts of the body, but for every kind of service one giving a 14-inch spark should be had. 2. What kind of tube would be the most suited for this work? A. There are many makers of tubes, whose advertisements are frequently to be found in our columns. A higher vacuum is required for use with a coil than for use with a static machine. All good tubes are now made with adjustable vacuum. 3. Can you give me directions for making a fuoroscope? A. You had better buy your fuoroscope:

(7920) O. M. S. asks: 1. How may opaque objects be seen under the microscope? A. By the use of the bull's-eye condenser. A lens which will focus the light of a lamp upon the upper surface of the object. One of these usually accompanies a microscope. 2. How can the glimmering of artificial light be overcome? A. If the light is too strong, turn the reflecting mirror till the field is illuminated to suit your eye. Shaded glasses can be had from dealers in microscopes which cut down and also color the light agreeably. These may be blue or gray. They are also made so that they are deeper in color in one portion than in another, and a nicer adjustment may be made of the illumination. 3. Will the best window or plate glass do for glass slips to use with a microscope of sixty-five diameters? If not, why? A. Any sort of glass will answer if it is smooth. It is better to buy the regular slips. These are 3x1 inch and are polished on the edges. They present a much better appearance than pieces of glass cut and left rough. 4. What proportion should the liquid, zinc and carbon be for a bichromate cell? A. A good bichromate mixture is composed of water 100 parts, potassium bichromate, 17 parts, and sulphuric acid 10 parts, all by weight. The zinc and the carbon may be of any size which the battery jar will hold. It is better to have a carbon on each side of the zinc, two carbons to each zinc. This gives a larger current and utilizes the action on both sides of the zinc. 5. How to make an induction coil which will not induce a current strong enough to kill a person. A. A good induction coil is described in SUPPLEMENT, No. 160, price 10 cents. It is not necessary to injure one's self with a large coil. A simple rule for safety is to put the left hand in your pocket or behind your back when doing anything to the coil with the right hand, if the coil is running. 6. What are the preserving fluids used in the museums and laboratories? A. Alcohol is the fluid ordinarily used in museums for preserving specimens in jars and bottles.

(7921) L. F. S. Vancouver, Wash., writes: I wish to know what horse power would be developed by a stream of water, which, if dammed would give a head of 20 feet or more. The amount of water flowing over a 4-foot weir is 8 inches, weir being rectangular 4 feet equals breadth, 8 inches equals depth. What size steel pipe or iron pipe would this water fill if it were to be carried to a turbine at distance of 1,200 feet? What is the cost of such pipe a running foot? Also, what would be the cost of a dynamo to utilize power thus developed by turbine. Suppose it were necessary to transmit power to a manufacturing plant at a distance of 4 1/2 miles from power house. What would be loss of power in transmitting and what approximate cost of motor and wiring for such a plant? Kindly tell me where price list of motors and dynamos may be obtained? A. The capacity of your weir is 432 cubic feet of water per minute. This with 130 feet fall will give a theoretical power of nearly 3 1/2 million foot-pounds or 112 horse power. From this must be deducted the loss by friction and the water wheel which, if of the Pelton type, should net you 80 horse power. The size of steel pipe for conveying this amount

of water 1,200 feet with a loss of less than 2 feet head will be 2 1/2 inches in diameter, and will cost about \$1 per foot. A Pelton wheel and connections will cost about \$400. The dynamo will cost about \$2,400. A motor on a 4 1/2-mile line will cost about \$1,000, and should net 60 horse power at 4 1/2 miles distance. We refer you to the water wheel companies for estimates of a complete power plant.

(7922) Y. N. W. writes: As it is your aim to disseminate useful information we make the following statement which will interest all photographers: We recently purchased one of the new aluminium trays and lately undertook to intensify a negative in it, using a three solution intensifier: Bromide of potassium, bichloride of mercury, and sulphite of soda, in the order named. Upon applying the mercury solution the chemical growth (which we had forgotten all about) of which a detailed description was given in the SCIENTIFIC AMERICAN of March 10, immediately began, and we were unable to check it until to-day, when we happened to think of using muriatic acid. We immediately applied a dilute solution of the acid to the tray, using a cloth to take off the black coating. After rinsing we applied a solution of soda and other tests without any action of the mercury. We would, therefore, advise our brother photographers to never use an aluminium tray for intensification, but if they have already spoiled a tray by it to try the acid, which we think will prove effective in every instance. A. We suppose it is not possible that every one who has to do with chemicals should first study their chemical actions sufficiently to avoid the mistake of our correspondent of putting a chemical into his tray which would dissolve it. He knows the fact regarding aluminium now and is not likely to repeat the experiment. Experience is a good schoolmaster, though her instruction comes high, it has been said.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Issued for the Week Ending

JULY 10, 1900, AND EACH BEARING THAT DATE.

[See note at end of list about copies of these patents.]

Table listing inventions with patent numbers and names of inventors. Includes items like Advertising device, Aerial wheel, Air purifier, Arm rest, Armor plates, Ashes from iron vessels, Auger, Ax blade, Ax forging die, Bag filling appliance, Balance, gravity, Bale band fastener, Bale tie, Balloon, electric traction, Battery, Beating engine, Bed attachment, Bed, folding, Bed, invalid, Bed, invalid, A. B. Clark, Bed, invalid, E. Otto, Bed, portable, Setters & McDonald, Beehive, L. A. Aspinwall, Beers not in vacuo, apparatus for top fermentation, Beating knife, Bell, automatic hotel call, Belt, C. F. Batt, Belt dressing, L. F. Duncan, Belt shifter, A. B. Wales, Bicycle attachment, S. J. Ford, Bicycle saddle, H. M. Norman, Bicycle seat, F. H. Cash, Bicycle lock, F. H. Gardner, Bicycle repair jack, M. A. Masters, Bicycle tube clamp, P. L. Hussey, Bill book, W. Hornich, Jr., Blower, blacksmith's, J. W. Robinson, Bolt, folding, L. N. Bachand, Boat fastening device, ferry, W. O. Jones, Boiler, See Sectional boiler, Steam boiler, Tubular boiler, Water tube boiler, Bolt socket, king, H. C. Swan, Book cover, E. M. Page, Boot tree, M. J. Hall, Boot clearing machine, J. Marshall, Bottle, muelage, W. Rodker, Bottle, non-refillable, G. S. Lanthicam, Box, See Fare box, Spool goods box, Box, J. H. Kasschau, Brake, See Car brake, Machine brake, Brush, air, O. C. Wold, Burning gas, See Gas burner, Burning pulverized fuel, Bole & Patterson, Burning pulverized fuel, apparatus for, J. Bole, Button fastener, B. J. Cobligh, Cabinet, F. Wadell, Cable grip, traveling, E. I. Parsons, Camera for color photography, W. N. L. Davidson, Can, See Oil can, Car bicycle carrier, street, A. Hunter, Car brake, R. W. Ennis, Car brakes, apparatus for automatically applying, S. F. Woodworth, Car coupling, S. M. Brooks, Car, dumping, J. B. Rhodes, Car end door, E. A. Goodridge, Car, railway freight, Newberry & Ericson, Carbox diaphragms, machine for grinding, Richmond & Zellers, Carborundum, E. S. Garrett, Carriage body banner, S. R. Bailey, Cart body, dumping, B. W. Clark, Cart, road, R. P. Scott, Cartridge clip, J. P. Lee, Caster, ball, W. P. Fink, Casting door checks or seals, device for, E. L. Thorsen, Chain, J. H. Barry, Chain lubricator for bicycles, etc., H. Garland, Chain, sprocket, J. B. West, Chair, See Rocking chair, Surgical chair, Change maker, cash register, and indicator, combined, M. McAneny, Chest, silver or cutlery, T. G. Walpuski, Cigar cutter, G. S. Eldred, Clamp, See Bicycle tube clamp, Cleaner, See Tube or file cleaner, Clothes line pulley, H. W. Teal, Clothes pounder, C. L. Cole, Clothes wringer, F. W. Merritt, Comb, combing, etc., rendering antracite, W. J. Burke, Coal jigger, J. A. Montgomery, Concentrating table actuating mechanism, D. Cole, Contact brush, S. L. Neely, Convertible apparatus, C. A. Salzman, Copper, silver or cutlery, E. Fink, Copying press, roller, N. C. Stiles, Cording attachment, G. Robinson, Corset, apparel, A. H. Morford, Cotton distributor, J. A. Parker, Cotton press, B. Thomsen, Coupling, See Bar coupling, Shaft or thill coupling, Singletree coupling, Thill coupling, Coupling, J. W. Pettjohn, Cow tail holder, P. T. Brock, Crate for tilting demijohns, G. W. Banker

Table listing inventions with patent numbers and names of inventors. Includes items like Crucible tongs, Cross ties, metallic, J. Q. Adams, Curtain fixture, R. McCullough, Cutter, See Cigar cutter, Potato cutter, Dead centers, device for overcoming, J. Martin, Decker strap, M. D. Keeney, Diametric motion, E. Gates, Die, See Ax forging die, Digester door, P. F. Dundon, Disintegrating machine, G. H. Pond, Distillery sloop, treating, Woolner & Andersen, Door, G. J. Winter, Door check, O. F. Hanington, Door check, O. F. Hanicky, Dowel pin, E. Tyden, Dowel pin, metal, E. Tyden, Drier, See Rotary drier, Drill press, H. De Tamble, Drill supporting column and column clamp, W. K. Mibolland, Dye and making same, beta-naphthoquinone, F. Uhlmann, Dye, brown sulfur, Ashworth & Burger, Dye, making black sulfur, Ashworth & Burger, Dyeing apparatus, W. Mather, Dyeing apparatus, L. E. Palmer, Dynamo or generator, controller, H. H. Custer, Egg beater, E. R. Godward, Electric machine controller, dynamo, H. H. Custer, Electric motor self starter, H. H. Custer, Electric thermostatic cables, reel or spool for, J. K. Mibolland, Electrolytic apparatus, N. I. Turner, Electrostatic separation, E. Gates, Elevator car, A. T. Ramsdell, Elevator safety device, M. M. Hunter, Endless belt press, M. P. Fillingham, Engine, See Beating engine, Explosive engine, Hydraulic engine, Engine controlling mechanism, G. S. Strong, Engine for portable pneumatic drills, H. J. Kimman, Engine igniter, explosive, F. A. Law, Engine piston, single acting, R. L. Morgan, Engine tube igniter, explosive, Von Fahnenfeld & Von Wilferstru, Envelop, J. West, Explosive engine, C. R. Daelenbach, Extension table, E. Tyden, Fabric, See Knit fabric, Woven fabric, Fare box, Evans & Asquith, Faucet, beer, H. Poupard, Feed tank, W. R. Maxie, Feed trough and rack, combined, G. F. Buck, Fence, C. G. Ogden, Fence, portable, I. H. Scharman, Fencing machine, wire, W. Edenborn, File, document, J. Hilbert, Filter, W. I. R. Wallerstein, Filter barrel or tank, J. C. Wallace, Filter, water, S. M. Boyer, Fire escape, F. N. Barnett, Fireproof door, J. W. Rapp, Fishing tackle spoon hook, G. H. Bacon, Flange tube, Baxbels & Schaefer, Fly screen, J. Mueller, Fur whipping machine, F. H. Weisse, Furnace, See Ore roasting furnace, Reverberatory furnace, Furnace, Adams & Knutson, Furnace, V. E. Edwards, Furnace, Edwards & George, Furnace, C. H. Morgan, Furnace, T. E. Puddington, Furnace, F. R. Sellman, Furnace, R. Zeiler, Furnaces, mechanism for feeding billets from the charging to the delivery ends of, C. H. Morgan, Gage, See Track gage, Gage for use with rules, L. J. Gamble, Game, A. C. B. Macdonald, Game counter, L. G. Kurtzborn, Garment supporter, H. Gordon, Garment surface, leveling device, G. H. Perry, Garments, suspenders, etc., fastener for, W. S. Richardson, Garter, W. M. Deacon, Gas burner, S. Bernstein, Gas burner, J. P. Farmer, Gas burner, acetylene, G. E. Gese, Gas generating apparatus, Whitelock & Burwell, Gas generator, acetylene, C. A. Bacon, Gas regulator, N. Sieeman, Gate, G. E. Champion, Gate, P. McCollum, Gear molding machine, F. Kepp, Gearing, variable speed, G. W. Waitenbaugh, Generator, See Gas generator, Steam generator, Gin saw filing machine, J. A. McGowen, Glass articles, machine for manufacturing, F. O'Neill, Glass, making rolls, machine for conjoining, C. Lambrecht, Glass mold ring, White & Robinson, Glass of the prismatic type, means for forming sheet, C. C. Hartung, Glassware, machine for spreading blown, A. G. Nerrill, Glassware manufacturing machine, P. Ebeling, Glove fastener, E. Wainwright, Governor, H. L. Ide, Governor mechanism, engine, C. G. Y. King, Grain binder needle operating mechanism, H. B. Sperry, Grinding mill, W. T. Davis, Gun barrel choke attachment, J. C. Broyles, Guns, explosive charge for, J. H. Brown, Hammer, pneumatic, H. J. Kimman, Handle bar, R. F. Darling, Harmonica, mouth, H. Hohner, Harvester, traveling, D. Best, Hat clearing machine, J. Marshall, Hat fastener, E. S. Swank, Hat sizing apparatus, J. Marshall, Hay rake, side delivery, O. J. Nugent, Heating apparatus, steam, W. C. Serrell, Heel, boot or shoe, F. J. Parker, Hinge, and E. Welker, Hook, See Bill hook, Hook racking machine, C. Reed, Horse detacher, J. L. Pangle, Hydraulic engine, L. D. B. Shaw, Ice creeper, K. P. Degze, Inclidometer, A. Gohl, Index, W. E. Edwards, Iron, apparatus for cutting and banding band, V. E. Edwards, Iron, apparatus for handling band, V. E. Edwards, Jack, See Bicycle repair jack, Lifting jack, Shoe, Jack, Lifting, See Bicycle repair jack, Joiner, D. Cederberg, Joint, See Rail joint, Knife, See Beet knife, Knit fabric, J. G. Powell, Knitting machine, circular, R. W. Scott et al, Lamp, J. Gregory, Lamp burner, incandescent, Lehman, Lamp, electric arc, J. A. Fleming, Lamps and magnetic guide therefor, circuit controller for incandescent, M. W. Hanks, Last, shoe, C. Tannert, Lever driven mechanism, F. Kleinvoegel, Life preserver, Z. C. Angevine, Lifter, See Store lid lifter, Lifting jack, J. Caldwell, Lock, See Bicycle lock, Sash lock, Log loader, steam, L. J. Cody, Loom, W. Sr. & W. Fisher, Jr., Loom, G. F. Kuetl, Loom, W. McMichael, Loom, Weaver, Loom, thin plate detector, J. L. Oswalt, Lubricator, See Chain lubricator, Lubricator, J. F. Lewis, Lubricator filler, sight feed, Allen & Finch, Machine brake, J. Ashman, Magnetic separator, on E. Gates, Mailing card, A. W. Steiger, Mallet, croquet golf, H. McCrear, Mandrel, C. M. Wales, Massaging b/v vacuum, apparatus for, H. F. Garey, Match, Jones & Bates, Measure for trousers, tailors', A. Paul, Measuring apparatus, liquid, M. Arndt, Measuring instrument, combination, G. H. Butrick, Measuring machine, lace or embroidery, J. P. Young, Meat tender, Don & Fowler, Mill, See Grinding mill, Rolling mill, Tube or pebble mill, Wire rod mill, Mine ventilating apparatus, H. Fullwood, Mining dredge, placer, S. K. Behrend, Molding pattern, movable, W. D. Cade, Mop wringer, I. C. Hart, Mosquito canopy, W. J. Durham, Motor, See Pump motor, Motor controller, D. H. Darrin

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