

CLEVER FEAT WITH THE CAMERA.

The enterprise of the man with the camera is proverbial; and, although his zeal is not always sweetly tempered with discretion, it must be admitted that the picture-loving world would be the poorer were the click of the kodak no longer heard in the land.

The camera is apt to be a ruthless invader of privacy, and the indignant subject of an extemporized and unconscious sitting will have the sympathy of all well-minded people. Our readers will agree, however, that the intrusion which resulted in the accompanying photograph was eminently proper, although, if we may judge from the subjoined extract from the letter of our correspondent, E. W. Gaines, the mother partridge herewith pictured on her nest was of quite another mind: "The partridge nest was down in a ravine, about twenty feet below the traveled road, in the cemetery in Greenfield, Mass. The mother bird had made her home just at the foot of a tree, and there laid fourteen eggs, on which she was contentedly sitting when discovered. My camera was a Premo, 4 x 5, with a Darlot lens. I set it up about three feet from the nest when the mother bird was away; then, with the bulb in my hand, I lay down, covered myself with leaves, and waited. In about half an hour the bird returned with much spitting and scolding. As I kept perfectly still, she became convinced that her alarm was unnecessary, and settled herself on the nest. I opened my shutter and gave her just a bit of time; then closed it, and the deed was done."



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SNAPSHOTS OF A SITTING PARTRIDGE AND HER NEST.**Important to Poultry Raisers.**

The American Game Keeper, which from the name should be authority on the fowl subject, gives the following simple directions for protecting setting hens against lice and mites, which is their besetting annoyance: A cheap and easy method of destroying these pests and keeping them from the setting hens, it says, is to place one or two of the camphorated balls (such as those displayed in the windows of drug stores) in each nest. They cost very little and by putting them in the nest the work is done, a single ball lasting through the entire warm season.

Every time the hen goes on the nest she imparts heat to it, and a portion of the camphor ordorizes her body and also the material of the nest; lice giving it a wide berth. One of the balls, if placed in a vial of sweet oil, and applied to the heads of the fowls and chicks, on the shanks or under the wings, will also prove serviceable in preventing scaly-legs and destroying the large lice.

For chicks only use one or two drops of the mixture, as grease of any kind is injurious to chicks.

If preferred a mixture may be prepared by using 1 part lard oil, 1 part linseed oil, a few grains of camphor and 3 or 3 drops of oil of sassafras, shaking the mixture well before using.

Whitewash the top and sides of the hen house and use plenty of carbolic acid in the wash; put it on thick over the roosts, nests, and every board, to kill the insect eggs, lice, mites, and germs of contagious diseases, if there is any, and to purify and keep things healthy.

Chicks will commence to scratch when they are but a day old, no difference whether they see the old hen scratch or not. If they are hatched in an incubator and reared in a brooder, they will scratch just the same. This proves that scratching comes by intuition and is nature's plan whereby fowls may get their living. It is a sensible thing to believe that fowls should be made to scratch for nearly all they eat. Scratching will tend to make them vigorous and prolific.

Violet Scent.

One of the most interesting product of the chemist's ingenuity—the artificial violet scent that has reduced the price of sweet violets considerably, and caused them to be sold at all seasons, i. e., "ionon"—is the cause of a very complicated patent decision. The difficulty of establishing the identity of method has been clearly shown during the lawsuits. The true inventor of "ionon" was the German chemist Tieman. In the year 1888 some chemists succeeded in isolating from *beckhausia* an etheric oil, being characterized by a strong lemon scent; it was, therefore, called "citral." Three years later Semmler demonstrated the identity of citral with an aldehyde, previously discovered and named by him "geraniol." Citral may be obtained in various ways, and from it Tieman and Krüger derived a ketone, possessing a stale violet odor, which they named "pseudo-ionon." By intermolecular change from "pseudo-ionon," true "ionon" is developed, which possesses the true violet odor. Says *Fielden's Magazine*: There are, however, it appears prob-

ably three isomeric ketones having this scent. One of these is isolated from iris root, and they gave it the name of "irone," but in a subsequent experiment they obtained "ionon." At the same time, Messrs. Haarmann and Reimer, in conjunction with De Laire, had been working on a larger scale, starting from a decomposition of citral and employing a method by which they obtained "ionon," and which they patented." A manufacturer of essential oils, perfumes, etc., manufactured an artificial oil of violets, which he placed upon the market as his invention. The result has been a patent suit, in which there was the greatest possible difficulty in demonstrating the identity of the

products and the methods employed for their production.

A MUSICAL BICYCLE.

At this time when so many improvements are being made on bicycles, in the way of attachable motors, etc., the machine illustrated herewith will doubtless interest our readers. It is the invention of Mr. Samuel Goss, of Chicago, and was designed for the purpose of furnishing music for the rider of the wheel and his companions, in order to break the monotony and give divertimento during long and tedious runs.

The mechanism, which is quite simple, is mounted on an iron frame made to fit into that of the machine. On this frame are stretched piano wires, *B*, while on the cross-piece, *A*, are some small hammers operated by pins on the cylinder, *C*, and made to strike the wires. The cylinder is rotated by worm gears placed at its left-hand end and driven from the crank shaft by a cord and pulley.

The inventor has foreseen the case when the riders

**A MUSICAL BICYCLE**

should tire of the music, by providing a small lever for throwing out the gears and thus stopping the cylinder. The tune may be varied by putting in new cylinders, and the time of any air may be quickened by increasing the speed of the wheel.

A TRAIN on the Ulster and Delaware Railway was stopped recently on account of the caterpillars which collected on the tracks in sufficient numbers to stop the train by the lubrication of the rails, which resulted from the crushing of their bodies under the wheels. According to *The Railway Review*, it is necessary for men to sit upon the cow-catcher and sweep away the obstructions by holding brooms on the rails.

New Processes for Sulphuric Acid.

A number of improvements have been recently devised in the manufacture of sulphuric acid, which promise to be of great importance in that industry. The first of these is now being used in Germany, and consists in the substitution of cast iron recipients for concentrating the acid for those constructed of platinum; the high price of the latter metal has led the manufacturers to look for a substitute, and it has been found that the cast iron recipients answer very well in cases where it is not necessary to have an acid absolutely free from iron. The iron used should be free from impurities and as hard as possible. In the process used, the acid is first concentrated in lead recipients to 61° Baumé, then introduced into the cast iron vessels, where it is further concentrated to 64°; it finally passes into two other concentrators, where it reaches 97° to 98° Baumé. The smaller recipients last three or four months and the large concentrators from six months to one year, the loss being less than that of platinum and the cost comparatively small. The second process, which is still more important, has been devised in England; in this the lead chambers are entirely suppressed, and nitrous vapors are used as an oxydant, the process resembling that which is now used for producing the Nordhausen, or fuming sulphuric acid. The Baden Anilin and Soda Works have perfected the system and applied it on a large scale in the production of ordinary sulphuric acid. The process is especially advantageous in the production of concentrated acid directly, thus doing away with the concentrating process; it gives an acid which is very pure and especially free from arsenic.

Chemical Food.

The deplorable food waste in our daily life is justly criticized and chemical research and industry are doing their best in devising chemical foods. The last few years have seen a number of artificial foods produced, but most of them are of no value to the poor. Chemists are becoming more and more anxious to find sources of nitrogenous foods. The artificial food industry is chiefly developed among the large concerns that supply dye stuffs, and employ a number of research-chemists. "Tropon" consists of one-third animal and two-thirds vegetable albumin. Another concern makes "Somatose," which is an albuminose, and has also brought out the more economical "Tannin" and "Milk Somatose," which may become very important foods for the masses. A dye-works makes "Nutrose," other concerns make "Plasmon," "Eukasin," "Sanose," and "Sanatogen," the latter being caseine compounds with sodium or ammonium.

Organic Bases in Baku Petroleum.

To isolate the basic nitrogen compound described by Schestakow, an experiment was carried out by G. W. Chopin, in which 600 pounds of baku "masut" were agitated with 5 gallons of 15 per cent sulphuric acid for several weeks; from this was obtained, by supersaturation with alkali and extraction with ether, 0.005 per cent of a thick, oily, dark brown liquid, with a greenish fluorescence and an odor of pyridine. This basic product is sparingly soluble in water, but readily so in ether, benzene, alcohol, cold hydrochloric or sulphuric acid. It furnishes non-crystalline precipitates with the chlorides of platinum, palladium and cadmium, as well as with potassium ferrocyanide or bichromate; alcoholic solution of iodine gives a brownish precipitate. Analysis indicates a composition analogous to that of pyridine or quinoline, with 15 to 18 carbon atoms in the molecule. The examination of the platinum double salts revealed a series behaving like homologous members of a chemical group. Fine members have been isolated with molecular weights ranging from 104 to 309. Experiments on the toxic effect of the basic product on mammals, fish and bacteria lead the author to conclude that the poisonous action of crude petroleum is due to the hydrocarbons and allied derivatives rather than to the nitrogen bases present.

A New Comet.

Dr. William R. Brooks, director of the Smith Observatory, Geneva, N. Y., discovered a bright telescopic comet on the early morning of July 23. Its position was right ascension 2 hours 43 minutes 40 seconds; declination north, 12 degrees 30 minutes. It was in the constellation Aries, and has a northerly motion.

The comet is a beautiful telescopic object, resembling a great naked eye comet in miniature. It has a bright stellar nucleus and a broad tail. This is the twenty-second comet discovered by Dr. Brooks.

The Division of Vegetable Physiology and Pathology of the Department of Agriculture.

The Division of Vegetable Physiology and Pathology of the United States Department of Agriculture has done important work during the fiscal year ending June 30, 1899. One of the most important lines of work of the Division is that relating to nutrition. The science of plant pathology is rapidly crystallizing and there is nothing that will put it on a firmer basis than the study of the phenomena of life. The primary object of this work is to preserve and make useful the life of plants, and this can be done only when we fully realize the importance of the life functions themselves. After all, disease is only a manifestation of the loss of vitality and how to prevent this loss is a problem of the greatest scientific, as well as practical importance. Closely related to nutrition is the problem of heredity, and its bearing on the improvement of plants by breeding and selection. To breed scientifically the functions of the cell itself must be better understood, otherwise the work must be looked upon as more or less empirical.

No systematic attempt has been made in this country to investigate the many serious diseases of timber. As soon as the tree is cut it becomes subject to the attacks of many fungi which often cause serious loss. With a view of obtaining some preliminary data for use in inaugurating more extensive investigations, an agent has been appointed to study some of the more important diseases affecting timber. Field studies of some of the more destructive diseases are being made and information is being gathered which will be of use in determining the line of work looking toward the prevention of the troubles. A study of the diseases of forest and shade trees is closely related to the work on the diseases of timber. Some more or less preliminary studies have been made of the diseases of trees, and it is planned to extend these investigations. The diseases are, as a rule, of such a nature as to necessitate much painstaking work to discover their cause, many of them being produced by unfavorable surroundings, such as improper soil, or food, or the presence of noxious substances. To determine the cause, and the combinations of the influences at work in such cases, is usually a great problem.

Special investigations have been made relative to the little peach disease, and to diseases of pomaceous and other fruits. Studies were also made on the diseases of truck and garden crops, and important results have been obtained in the treatment of a number of diseases of the Irish and sweet potato. The work on plants under glass has been continued and a number of interesting conclusions were secured. The

diseases of violets, carnations and roses, have received special attention, as also the diseases of such crops as lettuce, tomatoes and lemons. This Division has from time to time received complaints relative to the serious diseases of cotton in various parts of the South, especially the one affecting the Sea Island cotton grown off the coast of South Carolina. This cotton is exceedingly valuable and the lands on which it can be grown successfully are in great demand. It has already been shown that the trouble is due to a fungus which attacks the roots of the plants and occurs not only on cotton, but also on other crops when grown in the infected soil. This fungus has great vitality and may live in the soil for years and attack cotton when again planted there. An assistant is making studies with a view to breeding cotton which will have for its object the improvement of varieties now grown both as regards marketable qualities and the ability to resist various diseases. Various facts have been obtained relative to cereals and cereal diseases and extensive work on the curing and fermentation of tobacco has been inaugurated, the investigations being carried on in co-operation with the Division of Soils. The primary object of the work is to obtain, if possible, the cause of the peculiar flavor and texture of different kinds of tobacco and the possibility of controlling these in the finished product.

Some important advances have recently been made in the use of pure yeasts for the production of grape, apple, berry and other wines. Ordinary fermentation in the juices is brought about by the organisms occurring on the fruits themselves, and these organisms are often of such a nature as to seriously interfere with the production of high-class wines. By using a large quantity of yeasts known to be pure, the difficulties resulting from the presence of undesirable organisms can be overcome. Some yeasts were obtained in Germany and preliminary experiments were made to determine their effects on the fermentation of cider. The different forms of yeasts were found to possess distinctive characteristics as far as the production of flavor and bouquet are concerned. Experiments have also been inaugurated with a view to determining the affection of the accumulation of copper in the soil, copper sulphate forming the basis of nearly all fungicides used.

Considerable time was also devoted to the inspection of plants and seeds introduced from various countries for the purpose of distributing them in this country. It is, of course, of the highest importance that all plants and seeds brought in in this way shall be carefully inspected and, if necessary, treated so that no serious fungus or other parasite may be destroyed with them.

Special attention is paid to plant breeding and further work was carried on with hybrid citrus fruits. The walnut crop of California was investigated and it was found that the vine disease, which has been more or less prevalent in Southern California for a number of years, can be kept in check by grafting on certain kinds of roots which are resistant to the disease, and the crossing of raisin grapes has now gone sufficiently far to warrant the statement that time and judicious crossing are all that are necessary to obtain a hardiness of the plant and the fruit qualities required in California, Arizona and Nevada to withstand the cold spring winds.

A sub-tropical garden at Miami, Fla., has been placed at the disposal of the Department, and contains about six acres. The plan is to use this garden in making preliminary tests of hybrid fruits, etc. On the ground is a well-equipped laboratory, which was erected free of cost to the Department.

The Division, of course, bears its part in the correspondence and lectures of the Department. B. T. Galloway, Esq., is the Chief of the Division of Vegetable Physiology and Pathology.

The Current Supplement.

The current SUPPLEMENT, No. 1283, has many articles of unusual interest. "The Electrical Tower at the Pan-American Exposition" is accompanied by a full-page engraving. There are also illustrations of the park lake and two of the buildings. "Transmitter Using the Sine Wave for Cable Telegraphy," by Crehore and Squier is an elaborate article, fully illustrated, describing this remarkable instrument. The "American Engineering Competition," III, deals with the heavy iron and steel trade. "Some Twentieth Century Problems" is by William Trelease. "The German Antarctic Expedition" is described at considerable length. "A Votive Adze of Jadeite from Mexico" is an interesting archaeological article. "Tycho Brahe" is a very full article on the early Danish astronomer.

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RECENTLY PATENTED INVENTIONS.

Agricultural Implements.

SULKY ATTACHMENT FOR HARROWS.—LEON D. HOWARD, Marston, S. D. This attachment is so constructed that it can be turned from side to side as occasion may demand, without exerting corresponding influence on the harrow. Only a single wheel is needed. The driver is seated close to the team, enabling him easily to control the animals. Since the horses are harnessed by whiffletrees to the tongue or pole, the driver is out of the dust. The attachment can be applied to any harrow; and when applied, will cause the harrow to draw much more easily than the customary harrow.

PLOW.—JAMES A. FREEMAN, Belleview, Fla. The stock is so constructed that cutters, sweeps, cultivator-blades or shares, and the like can be flexibly or adjustably applied thereto, so as to accommodate the plow to any character of soil. A landside is provided which is attached to the stock. Sweeps or like blades can be adjustably secured upon the landside. When the landside and stock are connected with the beam and handles, the plow will operate close to a line of fence.

CULTIVATOR ATTACHMENT.—HENRY T. CROSBY, Coleman, Tex. The device can be conveniently attached to the standards or footpieces of any cultivator, and holds different numbers of small plows or harrow-teeth for the cultivation of any crops, or for use at any place where a small harrow is needed. It is of light and simple construction, so that it can be cheaply made.

COW-MILKING MACHINE.—MODESTUS J. CUSHMAN, Waterloo, Iowa. The inventor has devised and put in successful practical use a milking-machine in which suction and traction are applied to the animal's teats, and in which the vacuum in the teat-cups is made alternately to increase and decrease, thus closely imitating the action of a calf's mouth, without injury to the teats or annoyance to the animal, so that a larger yield of milk is obtained.

SEED-COTTON CLEANER AND FEEDER.—VANDER H. TALTON, Columbus, Ga. This apparatus is designed to remove foreign substances from seed-cotton and at the same time to even and feed the cotton uniformly to the gin. Heretofore an endless traveling apron has been employed in connection with one or more toothed cylinders and a screen arranged under one of them for separating the foreign matter. Mr. Talton dispenses with the apron and employs in place of it a rotatable cylinder having tangential teeth. The cylinder is arranged in connection with another, more rapidly rotated, toothed cylinder, whereby the apparatus is reduced in size, made less expensive and more efficient.

Mechanical Appliances.

BOTTLE-FILLING MACHINE.—SAMUEL C. MILLER, Louisville, Ky. The invention provides a bottle-filling machine which employs a vertically-movable liquid-holder; spaced filling-tubes depending therefrom to enter the necks of bottles placed beneath the tubes to receive liquid; and means to cut off the flow of liquid

when the bottles are filled. The liquid is accurately controlled, while passing into one or more bottles. The machine is devoid of all complicated parts and is very efficient in its operation.

BOILER-TUBE SCRAPER.—WORTHINGTON H. INGERSOLL, Hamburg, N. J. The scraper belongs to that class in which a shank carries a series of spring-pressed arms provided with cutting-blades or cutting edges. The inventor has improved the cutting-blades; provided a stronger construction of shank; given the arms a strong support when closed, so as to prevent the breaking of the rivets by which the arms are pivoted to the shank; and constructed the tool so that the scale and dirt will find a ready exit and will not interfere with the pivotal movements of the arms.

MACHINE FOR MAKING FIREPROOF COVERINGS FOR WALLS OR CEILINGS.—PATRICK RYAN, Manhattan, New York city. This machine comprises an elongated supporting-frame having a table on its upper portion; a holder, for liquid coating material, having compartments; a mixing-tank for the liquid coating material, adapted to supply the holder compartments; and a number of paper-sheet carriers, arranged in sequence over the table and from which elongated webs of paper may be extended over one another to rest upon the table. The escape of the liquid from the holder-compartments upon the sheets is readily controlled. The coating material is evenly and thinly distributed as the sheets are moved on the table. A device perforates and scallops each paper-sheet. All the coated sheets are compressed together, thus forming a continuous plaster-board. The compound web is cut into sheets or completed plaster-boards, as it approaches the discharging end of the machine.

Railway Contrivances.

SEAL-LOCK.—CHARLES A. RASCO and JOHN T. TAYLOR, Americus, Ga. This seal-lock for freight-car doors has a casing in which a hook-latch is mounted to swing in the casing; and a hook-bar is designed to be attached to the car-door and to be engaged by the hook-latch. An arm is extended outward from the hook-latch through a slot in the casing; and a lug on the arm has a recess to receive one end of a seal. A keeper-block is mounted on the casing and has a recess to receive the other end of the seal. A rotary movement of the block while engaging the seal is prevented. The seals are made of glass and hence are very cheap.

LOCOMOTIVE-EXHAUST AND MEANS FOR REGULATING DRAFT.—WILLIAM H. PRENDERGAST, 416 Montgomery Street, Savannah, Ga. With the smoke-box an exhaust steam passage communicates, an independent passage being provided for the exhaust-steam. Two rocking-valves are applied to these passages, which valves are mounted upon shafts on which spur-gears are keyed. An intermediate gear meshes therewith; and a lever-mechanism operates the intermediate gear, whereby the oscillation of the intermediate gear effects the opening and closing of the valves. The draft may be left unaffected, while exhaust-steam is allowed free in-

dependent discharge. The amount of exhaust-steam permitted to enter can be regulated by adjusting the valves.

Miscellaneous Inventions.

BIT-GUIDE.—FREDERICK A. LAMBERG, Hot Springs, Ark. The invention provides a mechanism which is small and easily transported, which can be secured to the side of a bench or table, and which will serve for accurately guiding a boring-bit and brace, so that a series of holes can be bored at the same angle or a hole can be bored at any desired angle.

BUCK-SAW.—CHARLES T. REDFIELD, Glenhaven, N. Y. The saw comprises opposite frame-bars between which an arch-bar extends, curved upwardly from end to end. A continuous brace-bar overlies the arch-bar and is made straight, and rigid at its center with the arch-bar at the crown of the latter. The brace-bar can be secured positively to the frame-bars at the ends of the brace-bar. The longitudinal tension exerted on the saw-blade operates longitudinally on the straight brace-bar to hold the arch-bar from moving up between the frame-bars and thus increases the rigidity of the saw.

ANCHOR-IRON.—WALTER R. MADISON, Springfield, Mass. The anchor-plate is adapted to be set in a wall and is provided with an eye. The joist has on its top between the ends an upwardly-extending hook arranged to engage the eye. The anchor-iron is applicable to the ends and sides of a floor and joists and is arranged for holding the joists securely in place on the supporting-walls, but in such manner that, should the joist break or be turned over or otherwise give away, it will readily fall without pulling down the structure.

EYEGLASS-HOLDER.—CARL F. KABISCH, Manhattan, New York city. This holder is so constructed that the eyeglasses can be instantly brought into position for use and as quickly returned within their case, both operations being accomplished by the movement of the thumb of the hand in which the holder is held.

INK-WELL.—OWEN V. FARRELL, Deposit, N. Y. The well comprises a body-portion and a neck-portion. In an opening in the top of the body-portion a bulb is arranged. The neck-portion is provided with a cover. By pressing on the bulb, the cover is swung up and ink forced up the neck-portion. Upon removing pressure from the bulb, the cover drops and the ink sinks.

THEATRICAL APPLIANCE.—CLAUDE L. HAGEN, 542 W. Twenty-sixth Street, Manhattan, New York city. This stage appliance, giving one the illusion of an object passing over a surface (ground, water, ice), is particularly adapted for use in horse or chariot races. The inventor employs a number of narrow endless belts or aprons, arranged on the floor of the stage, between which, chariots and other objects which are supposed to be moving, are placed. The belts are painted to represent the ground over which the chariots run, so that when the belts are driven, it appears to the spectators as though the chariots were actually moving rapidly over the ground. The appliance contributed considerably to the success of the play, "Ben Hur," presented in New York. In an early issue we purpose to give a more extended description.

CHEESE-CUTTER.—WALTER G. DOTY, Middletown, Ohio. The invention provides a machine by means of which any desired amount can be cut from a cheese by a very little power. A simple means is provided for determining the proper position for cutting off a desired weight of cheese.

ATTACHMENT FOR OIL-CONTAINERS.—WILLIAM L. CLAYTON and NEWTON R. PERSINGER, Central City, Neb. The invention relates to a device for filling lamps and the like from a can or barrel. The oil is forced out by air-pressure. A valve-chamber communicates at its middle with a tube or hollow column. One end of the valve-chamber is open to the atmosphere; and the other end communicates with air-pressure devices. A valve is mounted to reciprocate in the valve-chamber and is movable over the mouth of the tube or hollow column, the valve seating in either end of the valve-chamber and serving alternately to place the tube in communication with the air-pressure devices and with the atmosphere.

GATE.—TOBIAS BEARD, Columbiana, Ohio. Simple mechanism whereby a gate can be opened and closed by a person while sitting in a vehicle, forms the subject of this invention. The gate is mounted to swing upon a pivot-bar. An opening-bar is provided, which has arms from which ropes or cables extend. On the bar is a cross-head. Levers are pivoted on the forward end of the gate and are connected by draw-rods with the cross-head. Spring-latches are operated by the levers.

FIREPROOF-SHUTTER.—EMILE F. VERDEL and FELIX L. SAINO, Memphis, Tenn. This metal shutter consists of two spaced corrugated metal plates, the corrugations of one plate being disposed at an angle to those of the other. A fireproof lining is located between the plates and in contact therewith at intervals only, so as to leave on each side of the lining air-spaces running in different directions. The construction renders warping impossible.

COLLAPSIBLE SHIPPING-CRATE.—ZACHARY T. STOCKS, Everett, Wash. The box comprises a front, a rear side, and a bottom hinged to the front and having a sidewise hook connection with the rear side. A cover or top is hinged to the rear side. Spring-pressed catches are pivoted on the front and are adapted to swing into engagement with keepers on the top. Ends are hinged to the front and to the rear side, each made in sections hinged together.

TOBACCO-HOLDER.—WILLARD P. SMITH, Manhattan, New York city. It is the usual practice to wrap chewing-tobacco in tin-foil; and when so wrapped, it becomes dry and practically useless in a very short time. The present invention provides a package or holder practically air-tight when closed, thus preventing the escape of the tobacco's moisture, and so constructed as to permit the forcing out of a quantity of tobacco whenever desired.

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.