

Progress of Preventive Medicine.*

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Ten years ago the only known means of preventing the invasion of any country or city by cholera was to exclude every person and thing contaminated by the germs of the disorder. In 1884 cholera was epidemic and severe in Egypt, and was soon transported to Southern Europe. Germany, England, France, and Italy each appointed a commission of practical medical men and expert bacteriologists to inquire into the nature of the malady and devise means of prophylaxis. No better illustration of the rapid progress of preventive medicine and the manner of that progress can be desired than a study of the methods of investigation pursued by those commissioners and the formulated results of their labors. Their investigations began in Egypt, continued in Europe, and were complete in India, where cholera has its continuous renewal and perpetual home. The results of their labors were not entirely harmonious at first, but the unequalled Koch, at the head of the German commission, made a detailed report of the work and established the facts, the accuracy of which has been conceded by all parties.

Accordingly, we now know that the cholera germ is the spirillum cholerae Asiaticæ—commonly called the comma bacillus of Koch—that it is found in the human body only in the intestines of its victims, where it multiplies rapidly; that it is not communicated directly from person to person, but the alvine evacuations of the victims find their way, generally through water, into the bowels of susceptible persons, who then become additional victims; that this germ also finds a breeding place in damp soil and in stagnant pools and in running streams containing organic matter, and survives in pure water, but does not multiply there; that it is virile only within narrow thermal limits; that it holds its life by a frailer tenure than any other equally prolific and destructive pathogenic spirillum, being quickly destroyed by the official germicides, by drying, by acids, and by a temperature below 56° or above 126° F.

It is the application of this exact knowledge that has confined the cholera to the quarantine dominions at New York, thus preventing its diffusion in the United States; and it is a like application of this knowledge that has, on sundry occasions and at divers points in England and on the Continent, enabled the authorities to confine the Asiatic plague to the single case in which it was discovered. And, per contra, it is ignorance of these established facts, or failure to use them, that permits the ravages of cholera at this time in Arabia, in Russia, and on the shores of the Mediterranean.

Every practitioner of medicine in this country should feel it an obligation to constitute himself a propagandist of the knowledge of the means of prevention of cholera among the populace, and when the people are thoroughly informed in this behalf and join intelligently and heartily with the health authorities in recognizing and managing the first case that may appear in any locality, the disease will be stamped out at that point, and then cholera can never again become epidemic in the United States.

YELLOW FEVER.

Yellow fever is another scourge that has been and still is being much studied, and not with such satisfactory results touching the nature of its course as with cholera, but enough has been determined in regard to its nature to warrant the declaration that it can be stamped out at any point where it may appear. All that is necessary to protect us from further invasion of yellow fever is the watchfulness, the intelligence, the skill, and the devotion to duty everywhere that has been so successfully exercised for eight years by the health authorities at New Orleans.

It is known that yellow fever is an exotic in the United States, and that it comes to us almost exclusively from the inter-tropical islands and mainland on the eastern border of the Western Hemisphere, and it is a reasonable anticipation that the diligent expert investigation now actively prosecuted will presently yield us such knowledge of the nature of its germ and its nativity as will enable us to strangle it in the place of its birth. The pregnant idea of dealing with germ diseases, that have a localized origin, at the point of their generation was under consideration by the Pan-American Medical Congress at its first session in Washington in September, and it is just such great organizations as that, composed of men with enlightened minds and courageous natures, that will work out the problems of sanitary science and art for the welfare of the world.—*Jour. Amer. Med. Assn.*

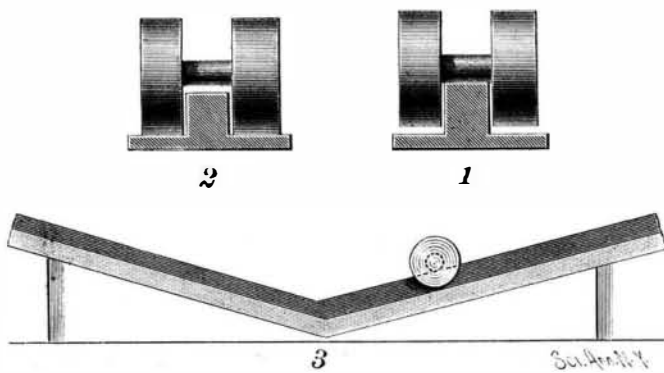
THE American Teredo Proof Company has erected works at Gig Harbor, Puget Sound, where piling for wharf and dock building is treated with a patent preparation, after which, it is claimed, they will withstand all attacks by the destroying teredo.

* Abstract of Address on General Medicine, at a meeting of the Mississippi Valley Medical Association, October 12, 1893.

INTERESTING EXPERIMENTS.

BY PROF. F. J. HILLIG.

I. Experiment with Turpentine Film on Water.—Cover the surface of water in a tank of about two feet diameter with lycopodium. Put in the middle of the part covered a drop of turpentine. A very striking action ensues. The turpentine sweeps in a moment the lycopodium from the center away toward the circumference of a large circle, which it clears perfectly of any trace of the powder. Besides illustrating the behavior of the film toward the lycopodium, the experiment shows the velocity with which such a film spreads over the surface of water, and finally may serve to give an approximate value of the thickness of the film. Taking *v. g.* 15 cub. mm. of turpentine, the surface of the circle covered by the film will be found to measure about 30 cm. in diameter. Applying



EXPERIMENT IN GRAVITY.

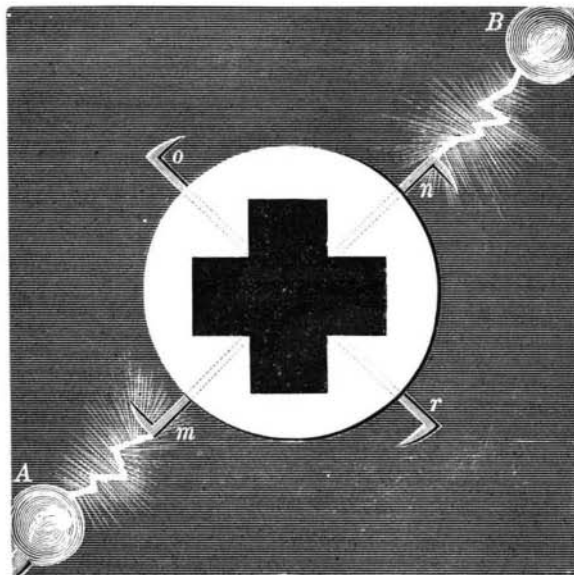
the formula of the cylinder's volume: $V = r^2 \pi h$, the value of $r = 150$ mm., we have:

$$15 = 150^2 \pi h, \text{ therefore} \\ \text{thickness} = h = \frac{15}{150^2 \pi} = \frac{1}{4712} \text{ mm.}$$

II. Experiment in Gravity.—Fit together three cylindrical pieces of wood, as shown in Figs. 1 and 2, to make a double wheel. Then procure two rails about two feet long, with a projecting part in the middle, as in cross section, Figs. 1 and 2. The projection of Fig. 1 will be noticed to be longer than that of Fig. 2, and the distance from the axle to the rims of the wheels to be less than projection in Fig. 1 and more than that in Fig. 2. Now put the two rails with their ends close together, supporting the opposite ends, to produce slight inclination. So the apparatus is ready for use. Set the wheel on upper end of rail No. 1. Since the projection is greater than the corresponding groove of the wheel, the latter will roll down on its inner cylinder, producing a very slow run, but a certain momentum will be developed which, as soon as the wheel strikes rail No. 2, will change the rate of velocity to a much higher degree, because on the second rail the wheel runs on its outer cylinders. Thus you have a wheel running faster up hill than down.

As will be understood, the projection of rail No. 2 is used only to deceive the eye.

III. An Optical Illusion.—Between the electrodes of a Holtz-Toepler machine place an electrical whirl



AN OPTICAL ILLUSION.

at the same level with the electrodes. To the whirl you fasten a circular piece of stiff white paper with some regular figure on it in black. The pivot on which the whirl is to rotate should be insulated. After a few seconds of running your machine, sparks will pass over every time when the wire, *m n* or *o p*, takes the direction of *A B*. This experiment performed in the dark will show the cross always in the same position, thus giving the whirl the appearance of being at rest, though it moves rapidly.

Sugar Beet Items—Germany.

Most excellent results have recently been obtained in beet cultivation by planting and subsequently plowing under a green crop, such as peas. It is found by accurate calculation that nitrogen may be thus furnished to the soil at lower cost than is possible either by the use of barn-yard manure or through chemical salts, such as sodic-nitrate, etc. About 20 tons of beets, averaging 13 per cent sugar to the acre, have been obtained by this special method of cultivation.

A mode of working beet sirups for second and third grade sugars has been giving some success. Immediately after the sirups leave the pan, while still hot, air is forced through them. After twenty-four hours there forms a voluminous frothy mass, which has a specific gravity less than water. If this is allowed to remain in the crystallizing tanks, nearly all the sugar of the sirup will crystallize. The separation of this sugar offers no special novelty; it is interesting to note, however, that the sugar obtained by this process averages a very low percentage of ash. The tanks used for mixing the air with sirups are made very much after the plan of those used in saturation of beet juices with carbonic acid. The air may be either forced through or drawn through; the time required depends upon the quality of the product worked.

Recent experiments show that electricity has one effect upon beet juices that is not to be overlooked. The sugar percentage increases, but this is followed by a slight decolorization. About 50 per cent less time in such cases is needed for defecation than by ordinary methods of carbonatation. When zinc is used as an electrode, the metal is dissolved; one portion of it becomes a neutral double salt and the other portion a zincate, which gives an alkaline reaction to the juice.

When platinum is used as an electrode, inverted sugar is formed; this is never to be dreaded with zinc. Other experiments upon diffusion juices, with an electric current from a Siemens dynamo giving 35 to 40 amperes with 4 to 5 volts between the zinc electrodes, resulted in a deposition on the positive pole of a thick, fatty substance. This should be withdrawn before the juices are defecated with lime. The electric current coagulates the albumen to a certain extent. While certain explanations may be offered as to the reactions, etc., that take place, none are sufficiently accurate to be generally accepted.

The sugar manufacturers have declined to accept the proposal of the sugar refiners respecting raw sugars of 88°. Special arrangements have been made as regards sugars testing 92°. The latter are almost free from organic substances. It has been recommended that considerably more of the 88° sugar be made than hitherto; under such circumstances the manufacturers may be better able to make terms with the refiners.

The problem of handling waste waters from beet sugar factories is by no means settled. The water residuum, most to be dreaded, comes from the diffusion battery and pulp presses. In some special cases, where there is a scarcity of water, this waste water must be used over again. Notwithstanding the precaution of purification, such as employed, after a reasonable time the salts, etc., not eliminated give considerable trouble during manufacture.

The experiments made in crystallization in motion appear to continue in favor among manufacturers, most of whom are willing to admit that by this plan more sugar may be extracted from second and third grade sirups than by any other existing method.

Some most interesting experiments have been made to determine the loss of sugar during evaporation of alkaline juices. After 90 minutes a solution containing 250 grammes sugar, 20 c.c. potassic solution, 230 grammes water, heated to 125° C., polarized 49.11, corresponding to a loss of 0.74 in the polarization. All experiments appear to point to the fact that alkalinity resulting from existing methods of working has but little influence on sugar destruction; what changes do occur may be mainly attributed to heating.

Exportation of beet sugar from Hamburg has remained almost stationary during the past four years. During 1892-93 it was 653,722 tons, of which England received 242,515 tons refined sugar.

Slices of cork have been giving most excellent results in filter presses; these obviate many of the difficulties contended with in filtering very dense sirups. The expense is about \$10 per 10,000 tons beets. The cork offers an excellent medium for several days without being renewed; in fact, even then it may be washed in the presses, which operation demands about one-half hour. The cork may remain in the presses for a month, provided it receives its regular washing at intervals of one week. The filling and emptying cork requires less time than the renewing of filtering cloths. Any bone filter may be changed into a cork filter.—*The Sugar Beet.*

THE first coast light in the United States was erected in 1678.

A Wire Tramway in the Alps.*

A wire tramway having some very long spans has recently been built by Bullivant & Co., of London, from the designs of Mr. W. T. H. Carrington. This tramway has been built to carry tale from mines at a high level in the Italian Alps, on the Franco-Italian frontier, near Pinerolo, for Brayda & Co., of Turin. The mines are situated at a height of about 7,000 feet above the sea, and the material has to be carried to a road situated at a level of about 2,500 feet above the sea, whence it is carted to the railway station at Pinerolo. The mines occur at various points along the line of tramway, and the quantity transported per day is about forty tons. The return traffic up the tramway consists of military stores required for the use of the fortresses erected for the defense of the Italian frontier at various points along the mountain range. The wire tramway erected consists of one upper span, having a length on the incline of 3,090 feet, with a gradient of 1 in 4. A length of ground tramway proceeds from the lower end of this section, by which the material is collected from various mines situated on the lower plateau, and over which the material brought down by the upper section is transported to the upper terminal of the second incline. The latter ropeway is 4,200 feet on its inclined length, and has a gradient of 1 in 2½. From the lower end of this the third incline extends to the roadway above named, the length of this lower incline being, on its inclined length, 3,600 feet, with a gradient of 1 in 2. The nature of ground traversed by this latter incline necessitates the use of a support on a ridge about one-third of the distance from its upper terminal, and at this point the fixed ropes are supported in suitable saddles, over which the carriers run, and the hauling ropes are carried on suitable guide wheels. The upper portion of this lower incline, thus divided by this support, has an incline of about 1 in 2, whereas the lower section has an incline of 1 in 1¾.

All these inclines are constructed on the principle adopted on many other lines of a similar character; two fixed ropes are stretched from end to end of the incline, and an endless hauling rope is employed, which, at the upper end, passes round a suitably devised brake gear, while at the lower end it is passed round a tension pulley, by means of which suitable strain is put on this rope.

* Abstract of article in the London Engineer.

The carriers are designed to contain about 600 lb. of mineral, and arranged to tip on the release of a catch. The running heads from which they are suspended, and by means of which they run on the fixed ropes, are provided with steel wheels carried in a wrought iron frame in which the hanger of the carrier pivots and moves freely. The attachment of the hauling rope is made to the head by means of suitable pendants, to enable it to pass the point of support. The fixed ropes are tightened by means of blocks fitted with Bullivant's patent flexible steel wire rope, and a crab winch placed in the rear of the same. This mode of tightening is found most convenient, as it admits of the fixed ropes being slacked out on to the ground for examination at any time without releasing the attachments, the wire rope falls being provided of sufficient length for this purpose.

The great length of the second span will be noted; it provides a means of transport for a load having a gross weight of about 1,150 lb. The fixed cables are composed of specially made steel wire rope having a breaking strength of about 35 tons; they are made of steel wire of special character to suit the requirements of this description of work. Great care is taken in the attachment of these ropes at the ends, where they are held by patent clamps, arranged to avoid the necessity of splicing, and by means of which the rope is not weakened at the point of attachment. The carriers are allowed to travel at a speed of about 35 miles per hour. The whole section is controlled by one brakeman, who, when not employed in controlling the running of the line, is occupied in loading the carriers, etc.

The transport of the materials discharged at the lower end of the middle section to the upper terminal of the lower section is performed by small trucks which run on a short line of railway between the two points. With the small quantity of mineral required to be carried, the use of this arrangement involves no extra labor; where, however, it is necessary, a direct interchange of loads from one bucket to another can be arranged, but this is only desirable where the quantity to be carried is very considerable. The support placed in the lower incline consists of a timber frame of ample strength, between the uprights of which is suspended a steel transom carrying saddles on which the fixed ropes rest, and between these same uprights, at a lower point, will also be seen the wheels with their guide bars arranged for carrying the hauling rope, by means of which the loaded carrier when descending brings

the empty carrier up. When it is not required to transport any mineral the descending loads are composed of stones, etc., by means of which the military stores are transported up the mountain. It is found that with 600 lb. of mineral in the descending carrier about 250 lb. of military stores can be brought up in the ascending bucket.

Injurious Photographic Chemicals.

The *British Journal* says: Metol seems to be gaining, rightly or wrongly, an unenviable character for the injurious action it is said to exercise on the hands of its users. But, be it ever so hurtful, is there any reason why it should be allowed to exert its ill effects? In the development of negatives, only the extreme tips of the forefingers and thumbs need be wet with the solution, and then only the front portion of them, where the skin is the thickest. In most instances, in handling injurious chemicals, it is only when they come in contact with the thinner portions of the skin—as on the back or between the fingers—that any harm results. However, India-rubber finger stalls, costing but a few pence each, are to be had at all rubber shops, that will perfectly protect the fingers from all pernicious materials. They are much more extensively used by photographers, both professional and amateur, on the Continent than they are here. Being exceedingly thin, they are by no means uncomfortable to work in. It is curious to note the effect that different chemicals have on different persons. One gentleman we knew, who for years had been dealing with impunity with cyanide of potassium in connection with electroplating as well as photography, suffered severely from bichromate of potash. Another gentleman, on whom the bichromate was innocuous, even when used on a large scale, could scarcely touch cyanide without suffering inconvenience. Even the smell of it created nausea and headache. In the wet-collodion days, a friend of ours had to relinquish photography, so far as the development of his negatives was concerned, on account of the injurious action the iron solution had upon his hands.

Underground Conduits in New York City.

The underground electrical conduits in New York City have now a length of 1,667 miles. In these conduits there are about 32,600 miles of telephone and telegraph wires and 1,300 miles of wires for lighting purposes, with which about 6,790 arc lights and 268,000 incandescent lamps are connected.

RECENTLY PATENTED INVENTIONS.**Engineering.**

ENGINE GOVERNOR.—William H. Watson, New Orleans, La. According to this invention the steam passes through the governor on its way to the engine, and the speed of the engine is thus regulated to a nicety without using any gearing or exterior mechanism. The governor comprises a casing, having an inlet at one end and an outlet at the other, a percussion plate being held in the outlet end, while there is a central chamber through which slides a piston having end chambers with ports leading to the central chamber. The regulating piston is moved back and forth automatically by the shifting steam pressure.

Railway Appliances.

CAR COUPLING.—William F. White, Chicago, Ill. This is an improvement in knuckles of the Janney type, and consists principally of a pivoted knuckle held on the drawhead and provided with an extension adapted to be engaged by the forked end of the coupling pin. The extension has a beveled portion, and its front and rear edges are adapted to be engaged by two parallel prongs of the pin, the rear most of the prongs having a lug engaging the beveled portion of the extension, while a lug in the drawhead is adapted to be engaged by the pin to impart a swinging motion to the latter when a pull is exerted.

AIR BRAKE COUPLING DEVICE.—Charles F. Bane, Lafayette, Ind. The hose coupling, according to this invention, has two movable interlocking sections, each with a lug and two stop lugs and a ported valve within each section, there being on the stem of each valve an arm having limited movement between the stop lugs of its own section and adapted to be engaged by the lug on the section carrying the other valve, to be moved against one of the stop lugs of its own section. The device automatically opens the valves in the couplings, whenever the coupling members are united, thus forming an uninterrupted passage for the air in the train pipes on adjacent cars.

AXLE BOX LUBRICATOR.—James S. Patten, Baltimore, Md. This is an improvement on a former patent of the same inventor, according to which there is inserted and held in the car axle box proper a box containing a liquid lubricant, with means for taking up the lubricant and transferring it to the journal; also for re-conveying into the box any surplus which may accumulate on the journal. The improvement having been practically adopted by several railroad companies, the inventor has devised and covers in this patent a better working form, more completely adapting it to everyday use on railroad cars in ordinary service.

Electrical.

ELECTRICAL RESISTANCES.—George B. Lawson, New Orleans, La. An instrument for measuring and regulating these resistances, on the principle of the Wheatstone bridge, has been devised by this inventor. The conductors are wound in exterior spiral grooves on a rotatable non-conducting cylinder, the adjustment

shortening or lengthening the distances between the point bridged from the main circuit, and a conducting rod composed of two aligned but insulated parts is arranged parallel with the cylinder and adapted to rotate. The conductors wound in the grooves of the cylinder are also looped around the rod, so that the current is not only divided and caused to take two paths, but the resistance may be varied at will by rotating the cylinder.

RAILWAY SIGNALING APPARATUS.—Edgar C. Wiley, Bristol, Tenn. The principle employed in this invention comprises a series of electro-magnets in the roadbed or along the line and energized through contacts made mechanically by the passage of the train, these magnets acting by induction upon magnets carried by the locomotive, which pass the stationary magnets so closely as to induce in the magnets of the locomotive a current strong enough to close a local bell circuit on the train and sound the signal, thus apprising the engineer of any train of the presence of another train upon the same section of track.

SERIES ELECTRIC RAILWAY.—Michel Angelo Cattori, Rome, Italy. The conductor, according to this invention, consists of fixed separated and insulated conducting sections and movable conducting circuit breakers in the gaps between sections, to be operated by the locomotives to open or close the gaps, while four conducting wires connect the generating machine with the conductor in sets of two at two separate points, the conductor being interrupted between the two wires of each set, and there being means for electrically connecting the poles of the machine with either of the sets of conducting wires. The invention embraces many other novel features for an improved series system electrical railway with underground conduit.

Mechanical.

NUT LOCK.—John W. Schoaf, McKeesport, Pa. This is an improvement in nut locks, employing a spring washer formed of a spring-split ring, with ends projecting in opposite directions to act as pawls, and the invention consists in fitting a guard plate over the spring washer, so that the washer may be partly compressed, but cannot be mashed flat and so be damaged or made useless. The plate does not prevent the proper operation of the spring washer.

COMBINATION TOOL.—Riley L. Davis, Asheville, N. C. This tool has a hammer or socket head, to which is secured a cutting or clipping tool, and to the latter is detachably secured a supplemental tool for cutting wire, or for use as a screw driver or wrench. The handle of the hammer head is so secured in a tapered socket that shrinkage or wear of the handle may be readily taken up to insure a tight fit at all times.

SAW MILL FEED MECHANISM.—William Fleming, Athens, Ga. This is a variable feed device, comprising a pivoted rotary shaft and shiftable friction disk mounted on a sliding sleeve, to which is pivoted a hand lever. By moving the lever in either of two directions, at right angles to each other, the log carriage is fed either forward or back, while by moving the friction wheel longitudinally on the shaft the speed of the carriage is regulated.

TREADLE ATTACHMENT.—Andrew Prader, Spokane, Wash. This is a simple attachment designed to prevent dead center positions, so that the driven shaft is rotated in a forward direction on starting the treadle. A flat spring is so arranged in connection with the pitman and treadle as to exert pressure against the upper end of the pitman, and consequently on the wrist pin, to hold the latter out of a dead center position relatively to the treadle whenever the machine is stopped.

Agricultural.

WEED CUTTER.—Robert H. Douglass, Colville, Wash. This machine has main cutters of V-shape so placed that their inner edges will be their cutting edges, the angle of the cutters being at the rear, and in conjunction therewith are upright cutters and means whereby the cutters may be quickly and easily adjusted to cover more or less ground, or adapt themselves to rows of different widths. The machine is of very simple, strong and inexpensive construction.

Miscellaneous.

VENTILATION OF BUILDINGS.—William M. Decker, Kingston, N. Y. This inventor has devised a special method of construction in which air shafts lead from the cellar to outlets at the top of the building, communicating with spaces under each floor, while pipes lead from the cellar also to these spaces, there being means for inducing an upward flow of air; there are also air spaces in the several walls of the building, and lateral openings leading from the floor spaces to the wall spaces, and from the latter to the air shafts. The construction affords means for accurately controlling the heat supplied to different rooms, and effectively removing the foul air.

GRIP TESTING MACHINE.—Theobald E. J. Schaibly and Walter Schaibly, Philadelphia, Pa. This is an improvement on a machine formerly patented by one of these inventors, simplifying the construction, and providing means for connecting the tension springs directly to the handle levers and the sides of the case. There is also a connection between the levers and a registering mechanism thrown into gear by dropping a coin into a chute of the machine, the levers being thrown out of gear as soon as they are started, so that they cannot again operate the registering mechanism until another coin is dropped. A brake mechanism holds the indicating hand at the point it reaches, the mechanism being released and the hand returned to normal position on pressing a button.

FOLDING BEDSTEAD.—Paul Gustave Le Dan, Paris, France. This bedstead is intended primarily for use by officers on campaign, explorers, and others. The side pieces are each formed of two sections hinged together, the foot piece being detachably connected and carrying a foot at each end, while there are feet hinged to the head sections of the side pieces, and an adjustable and hinged back. These bedsteads are preferably made of copper tubes, to weigh only about ten pounds, and have a novel style of coupling and fitting whereby they may almost immediately be transformed into a long chair, an easy chair, or a stool.

WIRE FENCE GATE.—William W. Halladay, Farina, Ill. This gate forms really only a part of the fence, and is so cheap and simple that it may be applied at frequent intervals between the posts of the fence to afford openings at any desired point. To the free ends of the strands of a fence section is fastened a stile whose lower end is held to a post by a common staple, while near the upper end of the stile is a link engaged by a hook extending through a hole in the post, the back of the hook being pivoted to a cam lever. When the gate is opened the stile and wires are carried to one side, or the wires may be rolled on the stile.

WIRE STRETCHER.—William P. Negus, West Branch, Iowa. This is a simple device especially adapted for stretching any kind of woven wire fencing, working equally well with bagged or smooth wire, and adjusting itself to any size of wire. It is a forked lever whose prongs have inclined ends, a dog being pivoted between them and having shoulders adapted to swing opposite the inclined ends of the prongs, while there is a toothed cross piece on the free end of the dog. The device is strong and durable, holding the wire very firmly. It is also useful in repairing old, loose fences, as well as for stretching new fence.

WEATHER STRIP.—Norman N. Hazelton, Lamoni, Iowa. This strip comprises a spring plate secured to the outer face of the door, its lower end riding on the threshold piece, while a catch member has a shank portion passing through the door and engaging the inner face of the threshold strip. The device is simple and inexpensive, but is designed to effectively exclude all rain, snow and wind, and also to serve as a door stop or bumper to protect the wall and wall paper.

TRAVELING CASE.—Florence I. Leonard, Arlington, Ga. This is a case designed to be especially useful for ladies as well as gentlemen for short trips, and has apartments to properly contain several dresses, lingerie, hats, etc. Its main compartment is preferably about two feet long, sixteen inches wide and nine inches high, and hinged thereto is a top section on which are hat boxes, the case also having the conveniences of a dressing case.

INHALER.—Alfred M. Adsit, Hastings, Minn. This is a device for the administering of anesthetics, and has a hollow body with top air inlet, a liquid reservoir and liquid discharge regulator, and a series of minutely perforated partitions supporting bibulous material. The device provides for the gradual and measured giving of the anesthetic as desired, according to its effect upon the patient.

DENTAL CLAMP.—Joseph M. Strout, Portland, Me. This is a device which may be used upon any tooth of an upper or lower set, being out of the way of the operator, quickly applied or removed, and effectually holding the rubber dam in position, while at the same time pressing the gum from the neck of a tooth in such manner as to expose a cavity well down in the neck. The clamp has a yoke-like spring body, with adjustably attached extension arm shaped to embrace the neck of a tooth other than the one engaged by the clamp.

ATTACHMENT FOR STOOLS.—Thomas S. Crapp, Tallapoosa, Ga. This is a device for piano