sions were laid waste. But in the less accessible mountains of Spain the Moors preserved the breed, and it is to them that modern Spain owes the merino sheep, which are the direct descendants of this cross breed of the Greek and African ancestors referred to. It is a valuable inheritance, too, which that country owes to the combined Greek, Roman, and Moorish civilization, and of which our California woolgrowers also earn the advantages, by the prosperity of this breed of sheep, which was there a few years ago.

PROGRESS OF COTTON SEED OIL MANUFACTURE.

The industries of the South have, since the close of our civil war, been extending in different directions, while some peculiar branches have attained a degree of importance never dreamed of in the days of slavery. One of these is the manufacture of the oil of cotton seed and the art of refining the same, hy which it is made as sweet as olive oil, and not only used as such in the United States, but it is now largely exported to Italy to compete with the native olive oil, which is a staple article. It is there used for adulterating the native article, and then it is exported again as genuine olive oil. This has already become a serious matter, as of the six million gallons of cotton seed oil which were exported from the United States during the last year, the greater portion went to Italy. The Italian Government, therefore, in order to check this adulteration, has imposed a heavy duty upon the importation of cotton seed oil from the United States. The exportation, which in 1877 and 1878 was about one and a half million gallons per year, reached in 1879 nearly six millions, and this will be surpassed in 1880. Our home consumption of the article is over two million gallons per year.

Mississippi and Louisiana have each 9 cotton oil mills; Tennessee, 8; Texas, 6; Arkansas, 4; and Missouri, Alabama, and Georgia, 2 each; together, 42. At present 410,000 tons of the seed are now pressed, yielding 35 gallons of oil and 750 pounds of oil cake to the ton of seed. This oil cake has admirable fattening qualities, and is largely used for cattle.

Progress of the Brush Electric Light.

The Brush Electric Light Company, of New York, have opened offices at 860 Broadway, and the officers expect that before the end of October a large number of lights will be in operation in the vicinity of Madison and Union squares. Negotiations for a building near Madison square, in which to place the engines and other machinery, are about completed. In the district to be illuminated there are many public buildings, restaurants, and stores. It is said that no attempt has been made to subdivide the light for use in private dwellings, but for lighting large areas the Brush system is entirely successful.

The Brush Company of New York is distinct from the general company having its headquarters in Cleveland. The New York company was recently incorporated, and holds the privilege of using the Brush light on Manhattan Island only.

The officers of the new company are: President, W. L. Strong; Vice President, A. D. Juilliard; Secretary and Treasurer, A. A. Hayes, Jr.; General Manager, C. M. Rowley.

Postponement of the Prize.

Mr. Edward Lee Brown, Chicago, Ill., President of the American Humane Association, writes us that the time for receiving models and plans in competition for the prize of five thousand dollars offered by the Association for the most approved cattle car, has been extended until January 1, 1881.

THE UNICORN.

The unicorn is generally regarded as belonging more to the realm of fancy than of fact, yet according to M. A. T. de Rochebrune, of the French Academy of Sciences, a race of animals exists in Africa which resemble the fabulous unicorn more than any other living beast does. It is true that this animal has two other horns like those of a cow, but since there are "mooly" cows having no side horns, there may be similarly unfinished animals among these beasts described hy M. De Rochebrune, in which case they would present all the characteristics of the distinguished unicorn who is popularly supposed to be fighting the British lion for the possession of the crown. M. De Rochebrune says: Naturalists and travelers, for some unknown reason, have kept the most absolute silence as to a race of domestic cattle belonging to Senegambia. Belonging, like the greater part of its African relations, to the group of great zebus (*Bos indicus*, Auct.), it appears to be indigenous to the high plateaus of the Fonta-Djallon, whence the Pouls, a pastoral people, have scattered the animals for commercial purposes along the whole coast, from Cape White to the Point de Galle. The Negroes and Moors use them for beasts of burden under the name of carrier cattle. An eminently exceptional characteristic distinguishes them from other races; this characteristic consists of a genuine horn in the nasal region, identical in its nature and even in its mode of development with the frontal horns. Belonging to the females as well as the males, this horn, sometimes conical but more frequently developed in the form of a four-sided truncated pyramid, reaches a height of 2¼ to 2¾ inches, a width of 2 inches, and a thickness of 1½ inches; its faces are furrowed with vertical furrows and crossed by stratified horizontal ridges from base to summit. Out of a herd of one hundred of these animals about sixty will have this well-defined nasal horn, while the remaining forty will not have it, but will have a nasal hollow in the roof of the mouth, covered with a horny plate, thin and rough. There are some other anatomical peculiarities of this animal, but the chief one is the nasal horn.

INSECTICIDES FOR THE PROTECTION OF COTTON.

BY PROF. C. V. RILEY.

In some remarks at the recent meeting of the A. A. A. S., I gave an account of some of the more recent practical results of the investigation now being carried on by the United States Entomological Commission, to ascertain the best means of controlling the insects affecting the cotton plant. I herewith give you the substance of that portion referring to insecticides.

The experience of the year has so far given us nothing superior to the substances previously tested. We have over five tons of extracts and decoctions of various native plants centered at Selina, made either by Prof. R. W. Jones, of the University of Mississippi, or by Mr. James Roane, agents of the commission. But two or three so far give any promise, and these not much. Yeast ferment or beer mash, which Mr. Hagen so strongly recommended, has proved entirely useless. Of the various arsenical poisons, Paris green still proves the best, so far as efficacy and harmlessness to the plant are concerned, but the use of this and of different preparations of white arsenic is to-day so well understood that they need no further mention.

LONDON PURPLE.

Of this arsenical refuse, which I introduced for this purpose a year ago with a good deal of hope as a cheap substitute for Paris green, it will be well, however, to say a few words.

The testimony in regard to it is very generally favorable the present year, as I anticipated would be the case from the experiments we made in 1879. But some reports are less favorable, and such mostly come from parties who have not understood how properly to mix and use it. Pound for pound it should be made to go twice as far as Paris green; *i. e.*, a pound of the purple is sufficient to eighty, or even one hundred gallons of water, and if used dry, should be in proportion of one to forty parts of the diluent.

It should be borne in mind that great care is necessary in mixing it in water to prevent its forming lumps, and that it acts more slowly than Paris green. To this last fact is due most of the unfavorable experience and judgment. If a rain follow too soon after an application, the purple kills comparatively few worms. Its good effects are fully seen only under favorable circumstances on the second or third day, while the green shows its good effects a few hours after application, and particularly the day following. In the early use of the green the same diversified experience was had, and from defective methods or adulterated material unfavorable results were quite frequent. One source of failure with both these materials in liquid is the lack of provision to keep them stirred up and well suspended; another, in not bearing in mind that the poison has greater specific gravity than the water in which it is carried, so that in poisoning many rows at a time, the finer spray falls on the furthermost rows with little or no poison.

London purple is exceedingly fine and sifts through the slightest crevice. This is an advantage to the planter who uses it on his cotton, but necessitates great care in shipping. The manufacturers have shipped it for the most part in barrels, which have permitted it to leak and stain other goods, as well as the vehicles of transport, thus doing more or less injury and prejudicing freight agents against it. This defect should be remedied.

Experience seems to indicate that it is less dangerous to use than Paris green. We know of two negroes who stole some flour in which it had been mixed in the ordinary proportion for use on cotton, and made biscuits thereof. Both were made sick, but neither seriously, and Prof. Barnard found that the steward on one of the Mississippi steamboats (the decks of which get quite purple from carrying it) has made regular use of the wastage, so easily obtained on every hand, for coloring his pastry and ice cream. That no ill results have followed is no reason for perpetuating the practice. Some of the unfavorable experience with this purple, I am constrained to believe, has resulted from adulteration.

PYRETHRUM.

This powder, of which, since last year's experiments, I have had great hopes, fully warrants them. No other vegetable substance approaches it. Last year, while it was found by Prof. Hilgard, of California, that an alcoholic extract of any part of the plant possessed the insecticide property, I had serious doubts whether it could ever be successfully used in the cotton field because of its cost. The simple powder mixed with flour as a diluent could then be made to go over more ground than the alcoholic extract. The present year we have found that an ordinary fluid extract, made after the usual formula of the Pharmacopœia, will go much farther, and that the extract from a pound kills all young worms when diluted in one hundred and twenty gallons of water. Nay, more, one of the most important discoveries is that it acts equally well or even better when the powder is simply mixed with water, and even one pound to one hundred and fifty gallons is effective, and one pound to two hundred gallons will cause the destruction of most young worms. Its action is really marvelous, but as it kills by contact, its effects are not lasting, as in the case of arsenical poisons, which act through the stomach. It produces convulsions and paralysis, so that all young worms it comes in contact with soon writhe to the ground, from which they rarely recover, even if the pyrethrum fails in the end to kill, for once on the ground and enfeebled, and a host of enemies are always ready to finish the work begun by the powder. This insecticide acts quite differently on different insects, but Aletia is one of the most susceptible to it.

I have not a doubt but that when it is once produced in this country so that the cost of the powder will be nominal, it will be extensively employed by planters, and to this end I have taken steps to have it introduced and cultivated. Its harmlessness to man, the small quantity necessary, and the fact that it may be grown by the planter himself, will offset the greater permanency of the arsenical powders.

OILS.

Nothing is more deadly to the insect in all stages than kerosene, or oils of any kind, and they are the only substances with which we may hope to destroy the eggs. In this connection the difficulty of diluting them, from the fact that they do not mix well with water, has been solved by first combining them with either fresh or spoiled milk to form an emulsion, which is easily effected; while this in turn, like milk alone, may be diluted to any extent so that particles of oil will be held homogeneously in suspension.

Thus the question of applying oils in any desired dilution is settled, and something practicable from them may be looked for.

Fraudulent "American" Cottons.

During a recent tour through Lower Egypt an American correspondent was astonished to find at Rosetta, Damanhour, Zagazig, and especially at the great fair at Tantah, a great quantity of cotton goods offered for sale purporting to be of American manufacture. These goods consisted of a wretched flimsy fabric, filled up with "sizing." A large portion of them bore the word "Mexican" in large English letters and underneath the word "American" in large Arabic letters. The traveler found on consulting the official report of the Director of the Egyptian Statistical Bureau, M. Amici Bey, that no American cotton goods have been entered at the regular Egyptian custom house during the past five years. A small quantity of American cotton goods have entered Egypt by way of Smyrna, where the greater part of the duty was paid; but all such goods were found upon inquiry to have been of uniform excellent quality. The presence of the fraudulent "American" goods is explainable only on the theory that the English manufacturers, who now monopolize the Egyptian market, have found a new way of "spoiling the Egyptian," by palming off upon them their "cheapened" goods as American, and thus momentarily avoiding the consequences of their cheating in the fabric and at the same time doing untold harm to American manufacturers.

Spurious Indian Implements.

A Western journal announces the finding of a fine specimen of the discoidal stone, a kind of stone implement rarely found, and deserving notice on account of the growing interest in American antiquities. The name has been given to this form of stone for reason of its double convex shape. It is said to be made of quartz, very smooth, and it is remarked that its manufacture without the use of metallic tools must have cost the ancient mound builder who made it the labor of many months. Its use cannot be accounted for. We are inclined to believe of such stones what the State Geologist of Indiana, Prof. Cox, said of a similar but elongated specimen exhibited at the late meeting of the American Association for the Advancement of Science, in Boston, found in the Wyandotte Cave, and pretended to have been some kind of tool of the early cave dwellers. Prof. Cox considered it simply as a natural production, a piece of water-worn rock, made smooth by continual rollings; the marks of wear upon its ends he declared to be recent, and formed by collectors of mineral specimens who found it a handy substitute for a hammer to knock off pieces of rock. He said that the tendency to consider every peculiarly-shaped stone as an Indian implement is running wild, that every splinter of quartz is considered an arrow-head, every small bowlder an Indian hammer or ax, etc., and warned collectors only to trust to undoubted marks of human workmanship.

Diamond Cutting in New York.

Among the curious and interesting industrial facts brought to light during the census inquiries not the least is the fact that the recently introduced art of diamond cutting has been so admirably developed here that diamonds cut in Amsterdam are now sent to this city for recutting. Hitherto Amsterdam has monopolized the work of diamond cutting; and the aim there has been to remove in cutting the least possible weight of the gem. The American plan is to cut mathematically, according to recognized laws of light, so as to secure the utmost brilliancy for the finished stone. The greater loss in weight, as compared with the Amsterdam cutting, is thus more than made good by the superior brilliancy of the product. From the inquiries made by chief special census agent, Chas. E. Hill, it appears that the average increase of value given to diamonds by the New York cutting is $5,000 for each person employed for twelve months; also, that our dealers are receiving the best Amsterdam-cut gems from abroad to be recut here and returned.

The Stevens Battery Sold.

The costly experiment in naval architecture, known as the Stevens battery, was sold at auction, by order of the New Jersey Court of Chancery, September 29. Something like $2,000,000 have been spent on the undertaking. The hull of the vessel, as far as completed, with the engines and boilers on board, a locomotive boiler and Worthington pump, and a quantity of rope and trestle work, and shed beneath which the battery was housed, brought only $55,000. The buyer was Mr. William E. Laimbeer, of this city. The old iron and articles in the machine shop, blacksmith shop, shed, storeroom, and yard, brought $7,790, making the entire proceeds of the sale $62,790. Two years ago the estate refused $125,000 for the battery.

MAXIM'S NEW FOCUSING ELECTRIC LAMP.

Very nearly all focusing electric lamps have until recently been imported from England and France. The Duboscq was the first electric lamp ever made and regularly placed in the market for sale. It was originally intended by its inventor for use in the theaters of the French capital.

In the Duboscq lamp there are two opposing forces, one for pushing the carbons together, and one for drawing them apart. Each is provided with a separate system of clockwork, and a vibrating detent is balanced between the two in such a manner that it unlocks one system at the same moment that it locks the other. If the current is too strong from a too short voltaic arc, a magnet pulls the detent away from the system that pushes the carbons together, and at the same time unlocks the system that pulls them apart; while if they are too far apart a contra result takes place.

The next electric lamp to meet with popularity was the "Serrin," in which the carbons were fed together by the weight of the positive carrier, their position being nicely regulated by a single system of clockwork. This lamp had quite an extensive sale prior to the introduction of the celebrated Jablochkoff candle into France.

The Siemens lamp may be described as one with a small electric motor inside its case, so arranged that it moves the carbon in either direction, up or down, as may be required.

All the above-named lamps are beautifully made and operate very well in laboratory experiments. For rough usage in the hands of the unskilled they are liable to become disarranged and out of order.

Hiram S. Maxim, M.E., has lately produced a new focusing lamp, of which we herewith give illustrations. It is especially intended for use at sea in connection with his marine projector. This lamp is very strongly and substantially made, all the parts being of considerable weight, with no delicate points requiring fine adjustment.

Fig. 1 shows a side elevation of this lamp. In Fig. 2, which shows the internal mechanism, A is a tube in which the positive carrier operates, and B is the tube of the negative carrier. On the positive carrier there is a rack, C, which meshes into the train of gears. D is a pulley on the lower extremity of the negative carrier. E is the coil of an axial magnet. F is a stop for arresting the movement of the gears when extinguishing the light. G is an adjusting screw which determines the length of the voltaic arc.

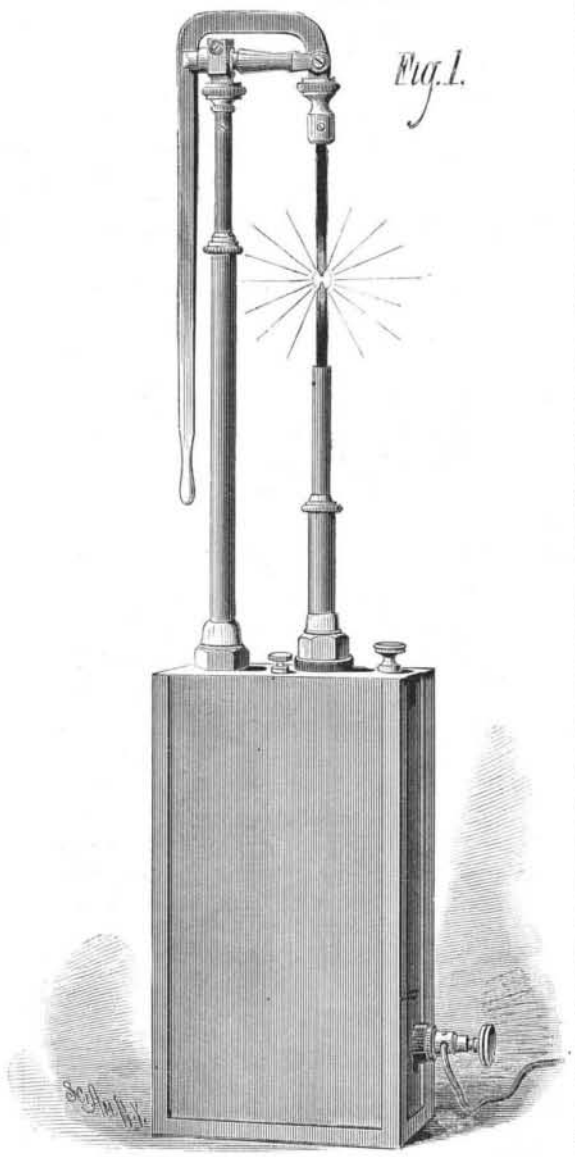
The operation of this lamp is as follows: The positive carrier being drawn upward to its fullest extent and carbons placed in the holders, the weight of the positive carrier sets the train of gears in motion. As the positive carbon descends it winds up the cord and draws the pulley, D, upward. When the two carbon points touch the circuit is completed, the current passes, the helix is excited and draws the coil, E, downward, which, being attached to a detent, locks the gears which prevent any further advance of the positive carbon, and at the same time establishes the voltaic arc by the downward movement of one end of the cord which holds the negative carbon. As the carbons become consumed and the arc becomes lengthened, the degree of excitement in the helix is correspondingly lessened. The spring draws the coil upward until the detent unlocks the gears, when the carbons slowly approach each other until the arc is reduced to a proper length, when the current is brought back to its normal strength, the coil drawn upward, and the gears again locked.

All the parts being nicely pivoted, very little change in the electromotive force is required to lock or unlock the gears. In places where a special engine operates the dynamo machine it is desirable to use as small an engine as possible. Space can thereby be economized, and the first cost of the apparatus for operating the machine, as well as the steam used, demand that the machine should run as lightly as possible.

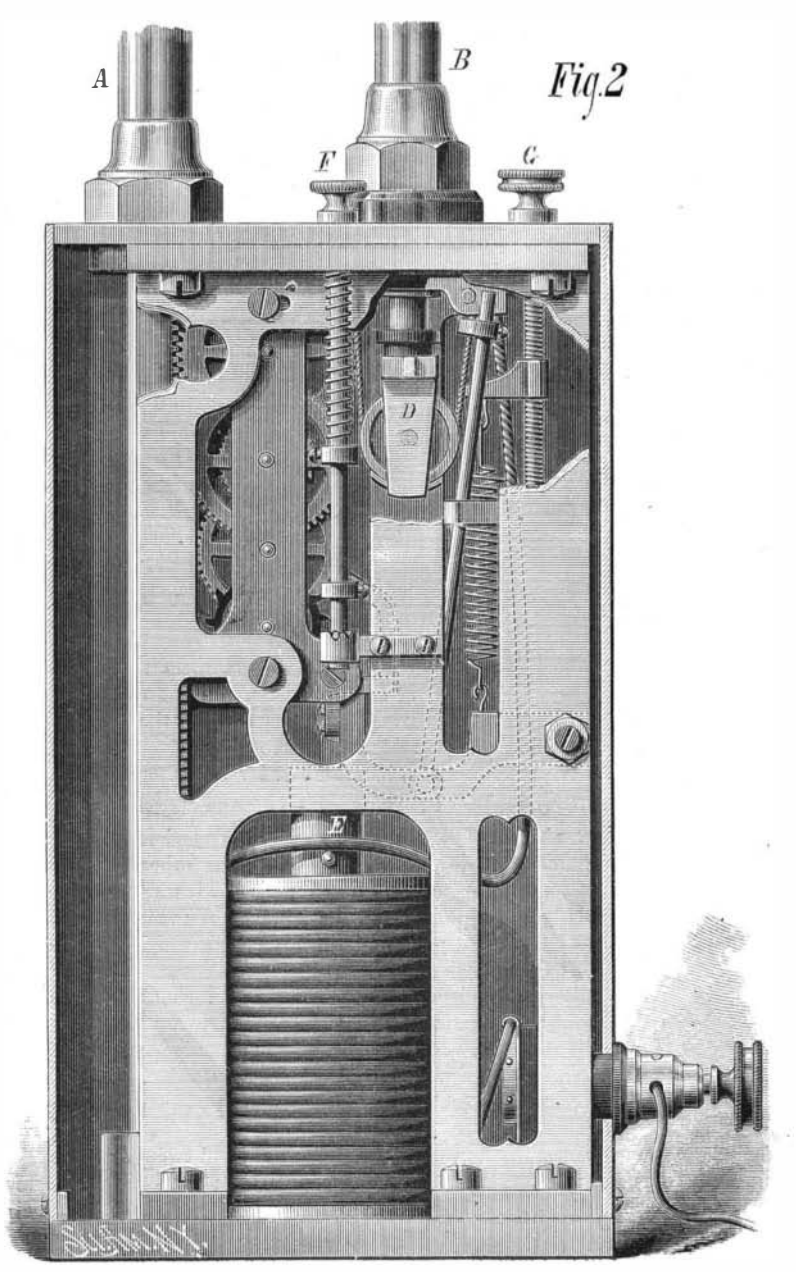
When the carbons in a lamp run together or approach very near to each other, much more power is required than when a proper distance is maintained between them. With this lamp, however, very little margin has to be allowed, as the construction of it is such that the carbons can draw apart to the desired distance at any time.

Tests have shown that machines of all makers run lighter on this lamp than on any other, and with much less fluctuation of power.

Any further information may be obtained from the United States Electric Lighting Company, 120 Broadway, New York



MAXIM'S NEW FOCUSING ELECTRIC LAMP.



MOVEMENT OF MAXIM'S LAMP.

ENGINEER AND INVENTOR.

Among the recent deaths in this city was that of Col. Eugene H. Angamar, of New Orleans, La. He was a highly educated engineer, and before the war one of the most successful sugar planters of St. Landry Parish. He devised and practically demonstrated during the year 1859 a method of closing crevasses, which quickly checked those terrible overflows that so often inundated the finest portion of his State. It is of record that through the efficiency of his apparatus—tested on our coast before and after the war—many dangerous crevasses were closed in a remarkably expeditious manner He invented several methods of exploding torpedoes and otherwise proving his engineering skill. He filled the office of engineer of the State of Louisiana, having special charge of the levee system and the connection with the Mississippi of some of the tributaries of the great river. He was later in charge of the method of applying compressed air to the uses of street cars in New Orleans. Subsequently he devised a method of applying steam to surface and elevated city railroads, which, while retaining all the especial power of steam, divests it of the objections to use in city streets. By charging the boiler at the station with highly heated water and his furnace with a few shovels of live coals, his car makes a run of twenty miles without attention to either the fire or water supply during the trip. Obviating all smoke, gas, or exhaust of steam while in service on the most crowded streets, from the large volume of water used, nearly three times that of other boilers, rendering the boiler entirely safe, his method was successfully demonstrated recently by a continuous run of three months on the Third Avenue horse railroad of this city.

THE Extension Water Gauge Company, whose apparatus we recently illustrated, have their headquarters at Cheshire, New Haven county, Conn. Mr. C. N. Marcellus, 91 Liberty street, New York, is agent. The company have no office in New Haven, as erroneously stated in the article referred to.

RECENT INVENTIONS.

Mr. John Collins, of Brooklyn, N. Y., has patented apparatus for generating gas for mineral waters. This is an improvement in that class of carbonic acid gas generators in which the discharge of acid into the chamber containing lime or other carbonate is regulated automatically by the variation in the pressure of gas, which acts upon a piston that, in turn, tilts a pivoted lever, and thereby opens a valve that controls the escape of acid from its tank or holder.

Mr. John Collins, of Brooklyn, N. Y., has patented a wagon for mineral water and other gaseous-liquid fountains, so constructed that the fountains can be readily placed in and removed from the wagon, and will be held securely in place while being carried.

An improvement in gates has been patented by Mr. Robert M. Grier, of O'Fallon, Mo. The objects of this invention are, first, to prevent the trouble arising from sagging of gate posts; second, to provide for widening the gate entrance when an unusual width is required; and, third, to furnish a gate of durable construction and requiring but a small quantity of lumber for its manufacture.

Mr. Henry W. Fleming, of Denver, Col., has patented a drill which will bring out a solid core of rock from any desired depth at which it is practicable to drill or bore.

An improved measuring pump, designed to draw out all the fluid from a barrel, and to correctly measure molasses, oil, or any other liquid, and to dispense with oil tanks, measures, funnels, and tapping devices, has been patented by Mr. Fradelshon Harris, of Rockport, Ill.

An improvement in the class of pendulums designed for use in connection with clocks requiring compensating pendulum has been patented by John W. Hile, of Leavenworth, Kan. This improvement consists in the construction and arrangement of parts, whereby the bob or weight is adjusted up or down automatically to compensate for changes in the length or extension of the pendulum due to changes in temperature of the surrounding air or adjacent surfaces or objects.

Mr. Alden B. Richardson, of Dover, Del., has patented an improved device for soldering tin cans, which is an improvement on that form of device shown in Patent No. 74,290, in which a copper block is notched to receive the edge of the can, and this notch is filled with solder which is kept in a melted condition by a flame beneath, while the can is soldered by singly turning its edge in the notch of the copper block.

Mr. Israel V. Ketcham, of Brooklyn, N. Y., has patented an improvement in milk pails used by dealers for delivering milk in small quantities to consumers. The object of the invention is to furnish a self-measuring pail from which a regulated quantity of fluid shall run at each inversion of the pail.