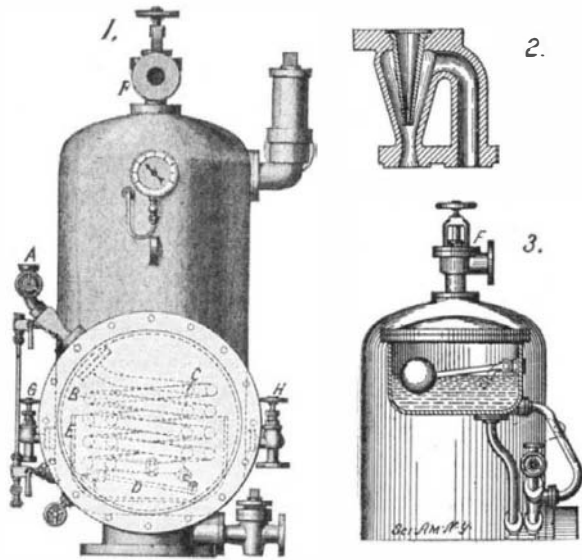




**AN IMPROVED VAPOR GENERATOR.**

Mr. James Andrews, of 180 W. Regent Street, Glasgow, Scotland, has invented a novel apparatus by which the temperature of one fluid may be transmitted to another without bringing the fluids into actual contact. The prime object of the invention is to effect



**A SEA-WATER EVAPORATOR.**

a thoroughly rapid circulation of the fluid, the temperature of which is to be transmitted, so that a greater amount of heat may be transmitted in a given time.

The apparatus, as it is shown in Fig. 1, is adapted as an evaporator of sea-water. It consists of the usual shell or receptacle in which the water to be evaporated is contained; a manhole to permit access into the interior; a safety valve; a pressure gage; and a valve-controlled passage *F* for carrying off the vapor generated. The water-inlet valve is indicated by *G* in the figure mentioned, and the valve for drawing off the brine by *H*. A blow-off cock is provided, which appears in the illustration immediately below the valve *H*. A water-tube and connections for indicating the level of water within the shell are provided. Outer and inner coils of pipe, *B* and *C*, are arranged vertically in the lower part of the shell and connected at their lower ends by a bend, from which a drain-pipe passes. The coils *B* and *C* are also connected at their upper ends with the two passages of an injector, which is shown in detail in Fig. 2. One of the passages of the injector is the injecting passage, the other the suction-passage. A steam-nozzle is introduced into the injector and passes into one of the passages, as shown. The other passage discharges into the former outwardly from the mouth of the nozzle. A steam-supply pipe *A* is connected with the nozzle. When steam is introduced into the injector a fluid movement is created through the one passage of the injector into the outer coil of pipe *C*, and simultaneously a suction effect will be obtained in the other passage of the injector. These movements jointly produce a circulation in the pipe *B*. Consequent-

ly the pipes *B* and *C* with their appurtenances form a continuous fluid passage, and the injector will enforce a continuous fluid movement through this passage. The excess fluid from the water of condensation may be drawn off from the drain-cock. A cylindrical partition *E* is placed at the lower part of the shell and incloses the coils *B* and *C*. This partition enforces a circulation of the sea water upwardly through the pipes and outwardly and downwardly between the sides of the shell and the partition.

In Fig. 3, a tank and ball-cock arrangement is illustrated which automatically draws off the excess fluid in the circulating coils. The fluid moving through the coils *B* and *C* is forced to pass through the tank. As the liquid in the coils increases by reason of the condensation of the steam, the level of the water in the tank rises. The ball-cock is adjusted to discharge all water rising above a certain level. In this manner the discharge of the water of condensation is automatically effected.

**A NEW ELECTRIC CLOCK.**

While electricity has so largely been adapted as a motor in modern machinery, large and small, and is so rapidly superseding old-time appliances, is it not a little strange that the old-fashioned weights and spring, with the attending winding apparatus, still constitute the moving power in most clocks turned out at the present time? In other words, in this branch of industry are we not still following in the footsteps of a century ago?

To be in keeping with the times, the modern clock should be an electric clock—a clock which requires no winding and no attention for periods of a year or more.

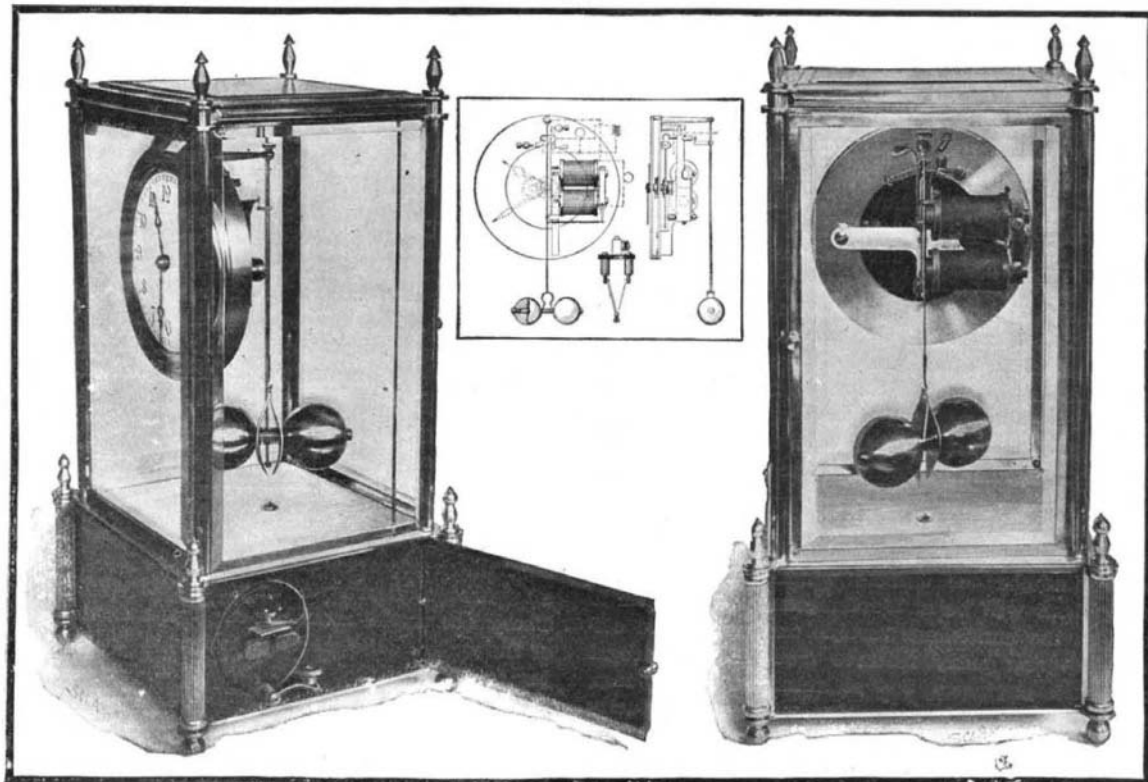
The electric clock shown, and invented by Mr. George S. Tiffany, of 30 Rose Street, New York city, possesses several unique features. It is extremely simple in construction, the working parts consisting mainly of an electro-magnet, a pivoted armature, a pawl mounted on the armature and engaging a single ratchet wheel, to the arbor of which is attached the minute hand. The ordinary train of wheels is dispensed with.

A slow-beat torsional pendulum carrying a contact arm momentarily closes the circuit of the electro-magnet and a battery, at regular intervals determined by the beat of the pendulum. The armature, moving in response to the influence of the magnet, propels the ratchet wheel and hands. As the pendulum has no mechanical work to perform in operating the clock, and consequently no frictional loads, it is obvious that it can perform its functions as a periodic time interval device in a most perfect manner.

Varying frictional loads, which in the movement of a clock of the ordinary type would seriously affect its operation, are of comparatively small importance in this clock. It is evident therefore that a clock upon this principle may be crudely constructed, yet be capable of keeping good time.

The action of the clock is very similar to that of a secondary clock controlled by an independent pendulum. A number of these clocks may be operated in synchronism by removing the pendulums from all but one clock, and using this as a master clock with the others connected properly in circuit.

The current consumption is very small. One good dry cell will operate the clock for many months, and when exhausted may be renewed at a nominal expense.



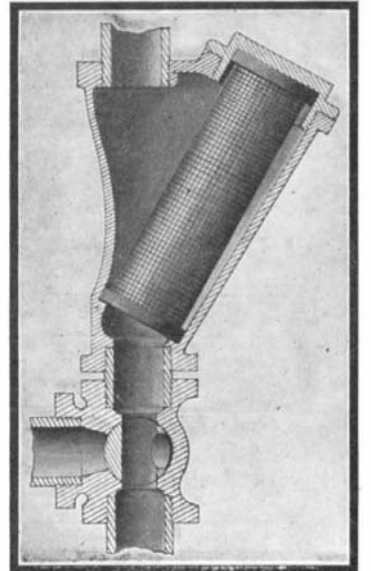
**THE TIFFANY ELECTRIC CLOCK.**

The clock is now being made by the Tiffany Electric Clock Company, whose president is Mr. J. Van Inwagen, of Momence, Ill.

**STRAINER FOR LOCOMOTIVES.**

A new form of strainer which has recently been invented by Mr. Francis B. Brown, of Kingman, Ala., will be found very useful for purifying the water in the feed pipes of locomotives. The strainer, as illustrated herewith, is very simple in construction, and the parts are readily accessible, thus facilitating the making of repairs when necessary. Furthermore, provision is made for cleaning

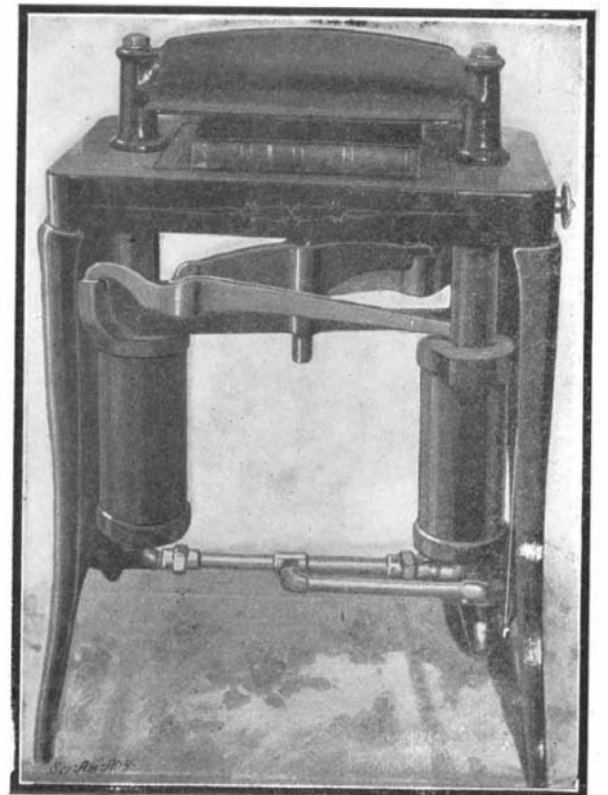
the strainer of any accumulated filth without removing any of the parts. The strainer casing is interposed between sections of the vertical feed pipe of the locomotive. The lower or inlet section is provided with a three-way valve, which is normally turned to allow the water to flow through the strainer, but which, when it is desired to clean the strainer, may be turned to permit discharge of the cleansing fluid. The strainer proper is of cylindrical form, and extends obliquely from the inlet port to an opening near the top of the casing, where it is seated in a cap which closes this opening. The strainer is formed at each end with a metal band, and these fit snugly in their seats, holding the cylinder securely in place, and at the same time spacing it from the wall of the casing. In operation, as the water flows up through the strainer, any impurities will be caught by the meshes of the strainer cylinder. When it is desired to purify the cylinder, the three-way valve is turned to cut off the inflow of water, and connect the strainer with the discharge pipe. Water or steam is then admitted to flow in the return direction to the strainer, to wash the meshes free of the accumulated impurities. In case of any accident to the strainer, the cylinder may be removed by unscrewing the cap which forms its upper seat in the casing.



**STRAINER FOR LOCOMOTIVES.**

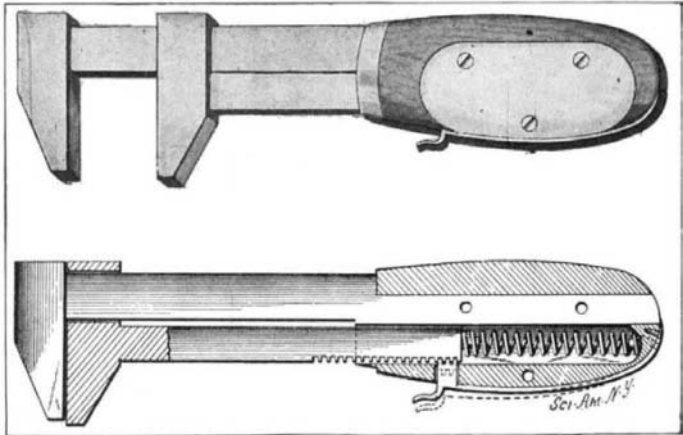
**THE HYDRAULIC LETTER PRESS.**

Letter presses are in such common use in railroad, telegraph, steamship, express offices, etc., that it is really surprising that no one before has thought of rendering them automatic. A patent for such an automatic press has recently been granted to Mr. Walter A. Rosenbaum, of 35 Broad Street, New York city, and the invention offers several important advantages. No physical effort is required to operate it. The pressure applied is equally distributed over the surface. Several tons pressure may be obtained, if desired. The construction is simple, and the power used is obtained



**HYDRAULIC LETTER PRESS.**

from the city water supply. The water power is led to two hydraulic cylinders, secured by means of brackets to the table or standard of the letter press. These brackets are hollow, to receive the pistons, and fulcrumed to each cylinder is a lever, which, at its outer end, enters a slot in the bracket of the opposite cylinder, and bears on the top of the piston. The arrangement is such that the two levers lie parallel, and an equalizing lever is placed diagonally across them. The equalizing lever transmits pressure to a platen through a ball-and-socket joint, the socket being formed with a



A NEW WRENCH.

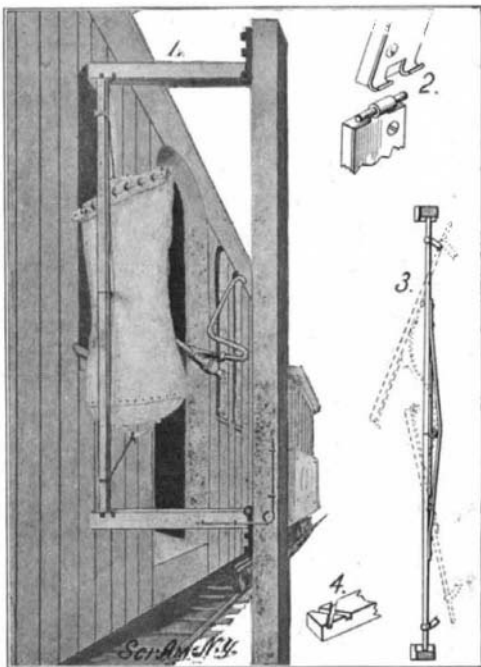
circular rubber cushion to take up any inequalities in the thickness of the book, and render the pressure uniform over the entire book surface. The copying book is pressed upward by the platen against a pressure plate, which is mounted on extensions of the cylinder bracket. The flow of water in the cylinders is controlled by a three-way valve, which is operated by a small hand-wheel conveniently placed near the top of the table.

#### A NOVEL MAIL-BAG CATCHER.

The essential requisite of a good mail-bag catcher is rapidity of operation, which means quick-acting devices to release the mail-sack when caught. This requisite seems to have been attained by William M. Falen, Wakefield, Kan., in a recently patented invention of his.

Mr. Falen's mail-bag catcher is provided with the usual bar and catching arm on the car. The novel features of his invention are to be found in the devices mounted adjacent to the roadbed. Upon a vertical post set in the roadbed, and provided with brackets, two horizontal arms are pivoted, the lower one of which is spring-controlled. These arms support between them the mail-bag holder, which consists primarily of two swinging members, separately hinged together by the peculiar form of hinge shown in Fig. 2. Attached to the two parts of the holder is a flexible connection such as leather, the purpose of which is to hold the two parts in alinement when not under strong pressure.

When the arm on the car comes into contact with the mail sack, the joint, formed by the hinged parts illustrated in Fig. 3, will be broken. The parts will separate and the bag will be swept into the car. Grooves at the ends of the horizontal arms between



A NOVEL MAIL-BAG CATCHER.

which the mail-bag holder is supported will cause this operation to take place without the sliding of the members of the holder in the grooves. When the sack and holder are removed, the horizontal arms previously referred to, will swing in toward the vertical post, the upper one by gravity, and the lower one by means

of its spring. In Fig. 3 is shown, by dotted lines, the course which the members of the holder take in their operation.

#### A NEW WRENCH.

Thomas H. Barry, of Empire, Oregon, is the inventor of an improved wrench of the type having a fixed jaw on the end of a handle-lever, a sliding jaw on the lever, and an arrangement for holding the sliding jaw at a selected point on the lever.

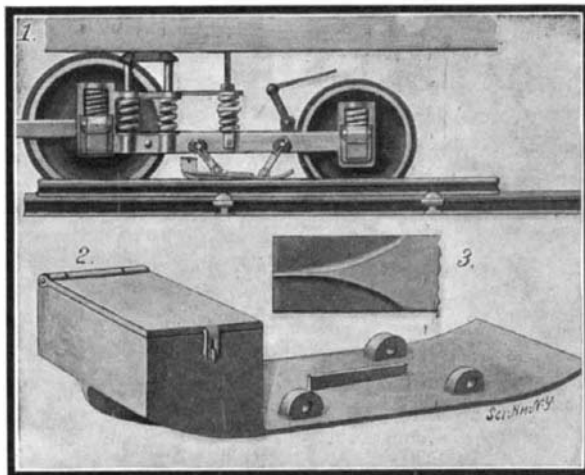
The handle-lever, with the fixed jaw at one end, has at the opposite end a shank reduced in width to form a shoulder. The movable jaw slides on the handle lever and is provided with a rack, the teeth of which are located on the edge near the free end. A handle-block is apertured to receive the shank, and abuts against the shoulder. The handle-block of the shank has a number of perforations for the reception of screws. These serve to secure the handle upon the shank of the handle-lever. The block has a longitudinal chamber parallel with its aperture, which chamber at one end receives the toothed end of the rack-bar. An expansible spring in the chamber presses upon the rack-bar, which is thus forced by the spring toward the fixed jaw.

The means for detachably securing the movable jaw at any point consist of a curved, resilient arm, secured by one end on the end of a handle-block, a laterally-projecting dog at the other end of the arm with teeth projecting through an opening in the handle block for engagement with the rack-bar teeth, and a catch-lip on the resilient arm adjacent to the dog.

In adjusting the wrench to engage a nut or the like, the wrench is grasped by its handle and the slidable jaw is pressed upon the object. Pressure is applied simultaneously with the manipulation of the catch-lip to release the dog from the rack-teeth, thereby locking the rack bar and jaw at a desired point of retracted adjustment. The release of the dog by manipulation of the catch-lip permits the spring to expand and to force the movable jaw into contact with the fixed jaw or into closed position.

#### A COMBINED THIRD-RAIL CONTACT SHOE AND SLEET REMOVER.

The introduction of the third-rail system of electric traction in our large cities has brought with it a most



SLEET-REMOVING THIRD-RAIL CONTACT SHOE.

serious problem, namely, the removal of the insulating layer of sleet that forms upon the third rail during the stormy weather of winter. Naturally the problem has not been left unattended by inventors. Of the many devices that have made their appearance of late years, one of the most promising seems an invention patented by Mr. Henry Rosenfeld, 773 East 174th Street, Bronx, New York city, N. Y.—promising because the contact-shoe itself is made to remove the sleet, so that it is unnecessary to depend upon auxiliary scrapers.

Mr. Rosenfeld's contact shoe is provided at the bottom with divergent ribs that meet at the front end of the shoe in a sharp edge so as to form a plow. As the contact-shoe moves along, the plow cuts into the sleet, pushes it aside, and enables the conducting metal of the shoe to pick up the current. In order that the plow-like ribs may perform their proper function, the forward end of the contact-shoe is weighted. A box filled with metal balls constitutes the weight.

The machinery exhibit at the St. Louis Exposition will be novel in a great many respects as there will be shown a number of designs which are quite new. Among them will be a Worthington pump which is known as the multi-stage turbine centrifugal and differs in a great many features from the centrifugal with which engineers are so familiar. The pump, which will be placed on exhibition, will have a capacity of delivering 500 gallons of water per minute against a headway of 250 pounds per square inch and with high efficiency.

#### Brief Notes Concerning Patents.

There have been a number of claimants for the honor of having discovered Portland cement, but it has been pretty definitely settled that it belongs to Joseph Aspdin, a native of Leeds, England, and effort is now being made by a number of Englishmen engaged in engineering and industrial pursuits, to have a memorial raised to the man who has done such a great work for the building industries of the world. It is said that notwithstanding the fact that the discovery was made in 1813, it was not until eleven years after that he decided to take out patent papers. The value of the cement was soon appreciated, and among the first to make use of it was the great Brunel, who used it on the Thames tunnel, where it attracted a great deal of attention.

James W. Gladstone, of East Orange, N. J., a former employe of Thomas A. Edison at the latter's laboratory, has been accused, by the great inventor, of infringement and making unlawful use of the knowledge obtained while engaged at the Edison works. The suit involves the manufacture of the new storage batteries which Edison has recently put on the market and on which he has been at work for some time. Subsequently, a suit was brought against Edison by Gladstone to restrain him from making use of a process which is said to be essential in the manufacture of the batteries. The bill of complaint alleges that the improvements were invented by Felix de la Laude, of Paris, France, who patented them in this country in 1892 and in the following year sold the rights to William M. Offey, of Washington, D. C., who in turn disposed of them over a year ago to Gladstone.

At the Chicago Exposition, twenty-five girls were kept busy all the time the Fair was in progress engaged in counting the admission tickets. The average daily capacity of these persons was 120,000. It is anticipated that the daily admissions at the St. Louis Exposition will be greater than this by far, and it is proposed to do this work of counting the tickets by machine. The device has been submitted to the Admissions Department, and Chief E. N. White is now engaged in giving it a test to prove its accuracy and rapidity. The inventor claims that four of these machines will handle all of the pasteboards as fast as they are taken up; and if his hopes are realized, the machines will be a great improvement over the old way of doing this work. Another mechanical novelty which is being experimented with by this department of the great show, is a machine ticket seller. It is said that these machines will dispose of the tickets to visitors much more rapidly than the human ticket seller and without any possibility of error or dishonesty.

A patent was recently granted covering the process of beer preservation by electricity. The inventor is Francisque Crotte, of New York. A tube-like receptacle of copper is introduced into the keg of beer to be treated, and this is filled with some preservative, such as boracic acid or peroxide of iron, either in solution or solid form. The beer is then subjected to an electric current of a somewhat high tension for about ten minutes. This is accomplished by making the tube one of the electrodes while the other is formed by means of some suitable contact on the outside of the barrel. The current is said to induce a cathartic transference of the preservative substance through the receptacle into the beer. By this means the organic germ of life in the beer is rendered harmless, so that the beer will keep a great length of time without deterioration. The infinitesimally small quantities of antiseptic are introduced into the beer under the circumstances favorable for the most effective action and the quantity involved is so small that there is no foreign flavor imparted to the beer.

An exhibition of patents and copyrighted designs and patterns is in progress during the months of September and October at Bayreuth, under the auspices of the Central Association of Inventors. It is said that there are 200,000 copyrighted patterns and 140,000 patents, which have some value but which are not availed of, for the reason that the inventors are not able to exploit their inventions. It is rare that an inventor is equipped to get his work before the proper people after he has completed an invention, and the Central Association was formed to do this for him. Every assistance is given to inventors, and those without means are given space free at the exhibition, and no charge is made for effecting a sale. A somewhat similar organization has been recently formed in Philadelphia. It is known as the Inventors' League, and has secured permanent quarters in the center of the city, which are open not only for the members but to all persons interested in this character of work. There is a model room where a permanent exhibition of the work of the members is held, and efforts are being made to attract the attention of investors and industrial people to the exhibition. There is also a reading room where there are a number of periodicals to be found as well as other reading matter likely to be of interest to the members in their work.