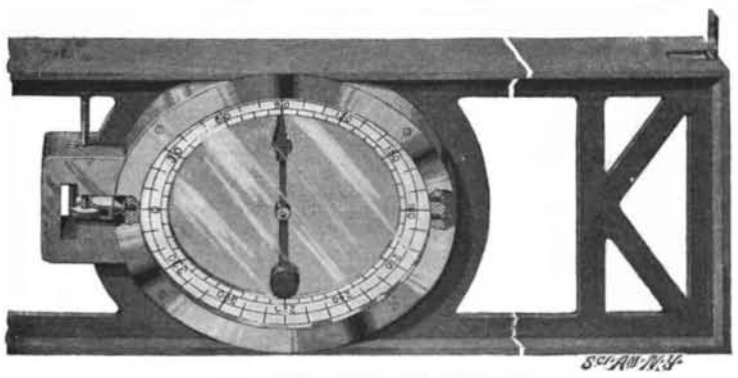
A NEW LEVEL AND PLUMB.

An improved level and plumb has been recently patented by J. V. Janin, of Seattle, Washington. It is designed particularly for determining angles in building operations. The body or frame of the instrument, which is of metal, is made in skeleton form for the sake of lightness. Sights are provided at each end of the instrument, which are hinged, and, when not in use, may swing down into sockets or recesses in the body frame. Supported in a circular central opening of the instrument are two adjustable rings, between which a scale ring is held. The scale ring, on its two opposite surfaces, is marked off to the degrees of a circle. At each side of the scale ring are glass disks, which form the walls of a chamber in which the indicator is adapted to swing. The disks along their inner edges abut against a strip of packing, to which they are held by annular flanges on the adjustable rings. The chamber is thus made liquid tight, and is filled with oil or some other liquid to prevent undue vibration



A NEW LEVEL AND PLUMB.

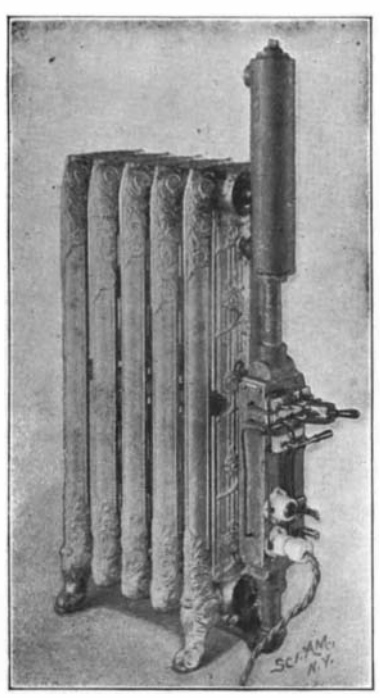
of the indicator. The indicator needle has trunnions near its center, which find bearings in the glass disks. A weight at one end of the needle tends to hold it in vertical position. The other end is forked and straddles the scale ring, forming a pointer for each graduated surface. The instrument can thus be read from either side.

In order to make accurate readings it will be found necessary to adjust the scale ring slightly. The necessary adjustment can be made by turning the thumbnut which is mounted on a threaded stud at the left of the instrument. The sides of this nut are engaged by a yoke piece which is secured to the scale ring. By turning the nut the scale ring can be moved and a proper adjustment made. A set screw is adapted to engage the thumbnut and hold it in place after the adjustment is made.

At the right of the instrument will be noticed two small screws which enter threaded holes in the adjustable rings. Oil can be poured into the chamber through one of these openings, while the air is permitted to escape through the other. The screws normally fill these openings to prevent the escape of the liquid.

ELECTRICAL HOT-WATER HEATING SYSTEM.

A system of heating houses and cars which combines the hot water and electrical systems has been devised by Waldo F. Follett, of New Haven, Conn., who has been recently given patents covering the same. It is claimed to represent high efficiency and to give a uniform and most pleasant heat. The heater itself is made up of but few parts and is yet durable and inexpensive. It is composed of castings which form the connecting heads and circulating fiue or water chambers, around which are placed the electric coils of high resistance. The latter are perfectly insulated by lava and specially prepared cement. The heads of the castings are made to receive iron plates, which are held in place by screws and form a casting around the coils. The heat is controlled by a switch made to use in connection with this heater, and with its use the current is reduced without the aid of any external resistance, thereby keeping all the heat within the heating apparatus.



COMBINED ELECTRIC AND HOT-WATER HEATING SYSTEM.

In the application of this system, the electric water heater is placed in the cellar in place of the ordinary coal burner, the rest of the plant being the same as with the ordinary water-heating installation. The controlling switch may be located in any part of the house that may be desired, from which point the temperature of the entire structure may be regulated.

The convenience of such a system will be apparent to any one. There is no handling of fuel or ashes, and there is also the advantage of instant adjustment.

The principle has been applied to the radiator with an expansion tank and pig and circulating pipes, thus forming a portable electric heating system with a flexible cord connection with the electric light bracket. The illustration presented herewith shows a five-section hot-water radiator, wound for a 115-volt circuit. The one pictured has a radiating surface of 34½ square feet. This heating method is said to be particularly well adapted for the purpose of heating street cars—to be used as the steam jacket heater is now used on the passenger cars of the steam railways.

A Device for Saving Fine Gold or Platinum.

An appliance has been perfected in San Francisco for saving the fine flour-like and microscopic values in gold and platinum contained in sands and gravel beds. The process is the invention of Mr. F. M. Johnson, and the patent rights for this and other countries have been purchased by the Rose Gold Reclamation Company, of 720-721 Hayward Building, San Francisco. The appliance is purely mechanical in nature, using neither chemicals, plates nor magnets, and in appearance resembles an ordinary sluice box. Each one has a capacity of about three tons of sand per hour, and the devices are now being operated in batteries of from ten up.

The cost of operating is merely that involved in putting the sand and water into the appliances. Each one requires in the neighborhood of five inches of water. Salt water is as efficient as fresh. As there are thousands of miles of beach sand carrying high values of both gold and platinum, it will be readily appreciated that this is a great advantage.

The first field test was made on the beach at Aptos, Cal., with a continuous run for thirty days, at the rate of three tons of sand per hour. The device saved not only all of the fine gold and platinum, but the coarse gold as well.

At the present time two plants are in actual operation, and others, aggregating over two thousand of these appliances, are in the process of construction.

Passing of Cork Stoppers.

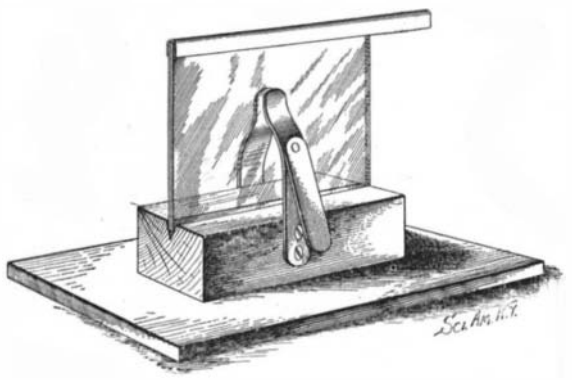
The man who made the discovery many long years ago that a little tapered cylinder of cork was the very best bottle stopper has only been exceeded as a practical genius by those who, within the past century, have set themselves to work to improve upon and undo this early invention, and to get upon the market anything else than a "cork." On both hands there have been successes, the cork people having by improved machinery reduced their price so that there is still to-day nothing cheaper for the closing of a bottle; the patent-stopper men for their part, having shut off avenue after avenue for the use of corks, coming to absolutely control certain lines of trade.

Yet the beginning of the end may almost certainly be seen "as through a glass, darkly." After five centuries of use, says the N. Y. Times, the cork-closing bottles are passing, slowly and with many an effort to hold their own, but passing, nevertheless. Rubber, metal, glass, pasteboard, and pulp are the new coverings of the day that here and there are taking the cork's place. There are financial rewards almost beyond the bounds of the imagination for the inventor who hits the popular taste for a cork substitute, or if not for the inventor, at least for the lucky manufacturer who manages to lease good stopper patent rights.

The new president of the Franklin Institute, Mr. John Birkinbine, has made an earnest appeal for public support, and says that the great work accomplished by the institution was not appreciated. The management has been endeavoring to work up interest in a scheme to obtain accommodations more suited for the work which is carried on. The present building is located in a very crowded section of Philadelphia, where there is no room for expansion, and there is constant danger of fire.

SIMPLE AND INTERESTING INVENTIONS.

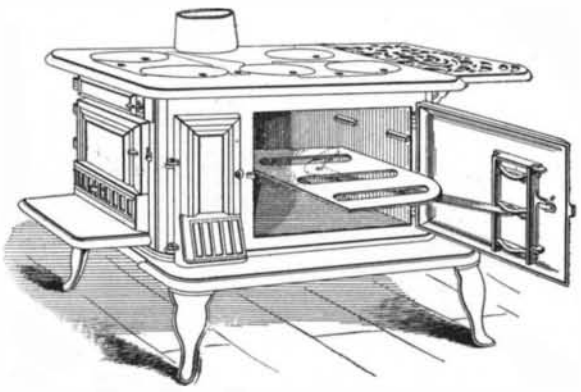
Lantern Slide Clamp.—Anyone who has ever mounted lantern slides knows how difficult it is to bind the glasses together with the customary black tape. In order to facilitate this invention, a clamp has been devised which consists of a base having a wedge-shaped groove to receive the slide and glass plate. The plate and slide are held in the wedge by



LANTERN SLIDE CLAMP.

upwardly-extending springs. The plates being thus held it is a simple matter to bind the edges of the slide and plate.

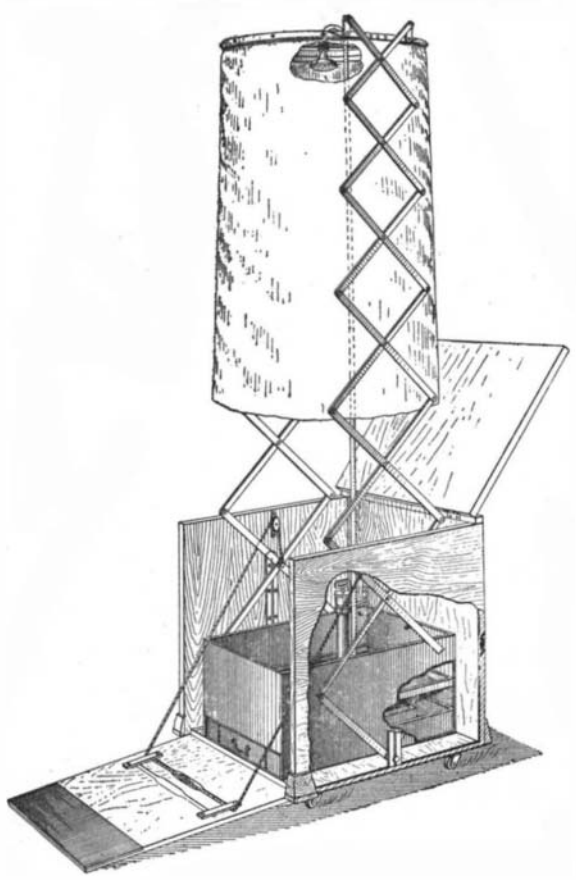
Automatically Operated Oven Shelf.—How an oven shelf can be drawn out of the oven merely by opening the door is shown in a patent issued to a Philadelphia inventor. A bar is pivotally connected with the shelf and has an angle end arranged to come into contact with the inner surface of the oven. A projection upon the bar is automatically engaged by a catch upon



AUTOMATICALLY-OPERATED OVEN SHELF.

the door of the oven. When the oven door is closed, the shelf is pushed in; and when the oven door is opened, the shelf is pushed out. The projection on the bar and the catch are used when it is desired to open the door without removing the shelf.

Folding Shower-Bath Apparatus.—A shower bath that can be folded into a small space is a novelty for which James M. Castle, of Lynn, Mass., has received a patent. The apparatus is contained in a cabinet having a hinged cover and a drop side. The sprinkler is



FOLDING SHOWER-BATH APPARATUS.

carried on either side by lazy-tongs, which are connected by ropes with the drop side. When the side is therefore allowed to drop, the lazy-tongs will simultaneously be extended to elevate the shower-bath apparatus automatically.

Brief Notes Concerning Patents.

Hugh J. Bonner, of New York, who has accepted the tender of an appointment to organize a fire department at Manila, is the inventor of a number of devices used by fire departments. These comprise principally means for opening heavy doors and windows of burning buildings.

The death is announced at Chelsea, Mich., of B. F. Tuttle, who was the inventor of an improvement in the crosscut saw which greatly decreased the labor of using the saw. The attachment was what are known as rakers for removing the chips and sawdust from the logs, making the sawyer's work easier.

Richard T. Barton, formerly of Brooklyn, and an inventor of some note, died at his home in New Haven, Conn., during the early part of January. He devised one of the most successful student lamps which has been made, and he realized considerable money from it. He sold the patent finally to a Meriden company. He was also the inventor of a car vestibule which is in use at present, and a large number of minor things.

Dr. Charles Meyer, of Uerdingen, Germany, has been in this country for some time superintending the construction of a plant at Alma, Mich., for the manufacture of fodder from beet root according to a process of which he is the inventor. This is the first factory of this kind in this country. The Meyer process was awarded a prize of 15,000 marks offered by the beet-sugar growers of Germany.

The recent death is reported of James Spear, president of the James Spear Stove and Heater Company, of Philadelphia. He was the inventor of the first successful railroad car stove, and this at one time was in general use on the roads throughout the entire country. He was also the patentee of an anti-clinker grate which is at present largely used by stove makers. He was 75 years of age, and was interested in a great many charities located in and near Philadelphia.

J. B. Davis, a dentist of New Orleans, recently invented an improvement in the way of forceps for dentist's use which will greatly reduce the cost of the outfit which a dentist is compelled to purchase. His invention consists of the forcep handles, into which can be slipped beaks which are readily detachable. Mr. Davis says that this set is intended more for the use of students and country doctors who pull teeth, and to such persons his device will practically give the advantage of a full dental equipment at a very much reduced cost.

It is announced from Pittsburg that a process of blowing window glass by machinery has been recently perfected there, and a company has been organized to build the machinery and also to make the glass. The National Glass Budget, a paper devoted to the glass interests, has the following to say in this connection: "The introduction of machinery which will materially reduce the cost of cylinder making, and enable manufacturers to cap off and crack open by mechanical and electrical appliances, cannot fail to give the industry a new lease of life, and place it more nearly into competitive position with all kinds of cast sheet and plate glass, because machinery will make thicker and larger sheets than can be made by hand, and eliminate some of the defects inseparable from the hand blowing process." Those interested in the new invention have declined to make any statement concerning the nature of the process.

A commercially practicable process of blowing not only plate glass, but bathtubs and large utensils, has been in use for two years in Dresden, Germany. The inventor is Paul Sievert. The SCIENTIFIC AMERICAN will soon publish a complete illustrated article on the Sievert process.

In a lecture delivered before the students of the College of Commerce and Administration at the University of Chicago recently, Franklin H. Head made a suggestion which he said he thought entirely practical, to light the city of Chicago by utilizing the air movement which almost constantly exists in that section. Mr. Head's scheme is to erect a chain of powerful windmills entirely around the city, and these would be at work all the time charging batteries. He presented a table of wind velocities and windmill efficiencies which seemed to prove conclusively that his point was well taken. This address was made on the 10th of January, and just three days before a patent was granted to Prof. F. Thede, of the same city, covering a scheme to accumulate power in the same manner, except that the latter stores the energy in the shape of compressed air instead of electricity. By means of the windmills coupled together Prof. Thede proposes to compress the air until it is liquefied, and to make use of it in this shape for innumerable purposes. Prof. Thede says that he has the backing to put his idea to the test, and will do so in Chicago because the atmospherical conditions existing there are more favorable than in any other city in the United States. Statistics show that the average wind velocity there is about 16 miles an hour, and this is equaled in no other point in this country.

Legal Notes.

THE GERMAN LAW OF COPYRIGHT ON PHONOGRAPH-RECORDS.—A curious case recently came up for decision in the German Empire, which may be of some value to our readers as a precedent in its way. A well-known opera singer had phonographic records of certain of his songs made for public sale. A manufacturer of phonographs purchased some of these records and reproduced them in large numbers by means of a new duplicating process. The duplicates were sold; and an action was brought against the manufacturer by the opera singer, who claimed that he was entitled to some legal protection. The court granted his claim. The German law of June 11, 1870, relating to the right of an author to his written work, drawings, musical compositions and dramatic works, is intended to prevent the wrongful use of intellectual products, by forbidding their mechanical reproduction. Reasoning by analogy, the plaintiff in the present case claimed that he was entitled to the protection afforded by this statute. But the question arose: Could a song be considered an intellectual product? It is true that the utterances of the human voice, broadly speaking, cannot be protected legally. But in order to be able to sing, there must be not only the natural ability to produce melodious tones, but also persevering study to produce those tones with artistic feeling. In other words, it is not only the sound of the voice itself which an audience desires to hear, but also intelligent interpretation. After the Court had therefore analyzed the human voice, and especially the singing voice, with true German philosophic thoroughness, it came to the conclusion that the song of a trained singer is indeed an intellectual product, and as such is fully entitled to the protection afforded by the act of June 11, 1870. In order to avoid the rendering of an entirely new decision, the Court at first attempted to ascertain whether the record on the wax cylinder could be actually read and distinguished from other records: but since the eye cannot tell one song from another merely by examining wax cylinders, the Court found itself compelled to hold that the unauthorized reproduction of a phonographic record is just as reprehensible as the illegal reproduction of a picture or a book. The case was appealed, but was settled out of court before the appellate bench could hand down an opinion.

In the United States the question could hardly arise. The Librarian of Congress steadfastly refuses to issue copyright papers for phonographic records, because they are not specifically mentioned in the list of intellectual products, the reproduction of which is forbidden by our copyright act. And since, contrary to the German rule, a copyright must first be obtained before an action for infringement can be maintained, it follows that our courts could not well decide after the German manner.

MEASURE OF DAMAGES FOR INFRINGEMENT.—In fixing the damages for infringement of a patent, where it is shown that the patentee had an established license fee for practising the invention, it will be taken as fixing the measure of damages, notwithstanding he may have accepted a smaller sum in settlement with licensees who were in arrears, or made a reduction therefrom, where license fees for a long term were paid in advance.

111 Fed. Rep. (U. S.) 916.

PROCESS FOR REDUCTION OF ALUMINIUM ORES.—The Bradley patents, No. 464,933 and No. 468,148, relating to a process for the reduction of highly refractory and non-conductive metallic ores in an unfused state by electrolysis, some of the claims having specific reference to the application of such process to the separation of aluminium from its ores, are not infringed by the process of the Hall patent No. 400,766, for the reduction of aluminium ores. The Bradley process consists essentially in passing an electrical current through a mass of ore, such current having a sufficient strength and intensity to fuse the ore, and to effect its continuous and progressive decomposition, while the essential feature of the Hall process, which has given it great commercial value, is the employment of a bath of fused cryolite, in which alumina readily dissolves. Such bath has a greater electrolytic stability than the alumina, and the latter, when in solution, is decomposed by passing through the mass an electrical current not having sufficient intensity to effect the decomposition of the bath, which is kept in a fused condition by the heat incidentally developed in the process of electrolysis, and used with repeated charges of alumina. In such process there is not only a different employment of ingredients from that of Bradley, and an entirely new method of operation, but far better results are attained; and, conceding that Bradley was the first to point out the method by which progressive fusion and electrolysis was made practicable, in view of the prior art and of the doubtful utility of his process, which has never been put into commercial use, his patents cannot be given a broad construction, as embodying a pioneer invention, to cover the process of Hall, which has superseded all others and resulted in a remarkable increase in the production and use of aluminium. Electric Smelting and Aluminium Company *vs.* Pittsburg Reduction Company, 111 Fed. Rep. (U. S.) 742.

SOUTH AFRICAN PATENT JURISPRUDENCE.—Under the patent laws of the new British Colonies in South Africa an inventor is compelled to pay heavy taxes to secure several patents in order fully to protect his devices. For that reason the British technical journals are beginning to suggest that arrangements should be made whereby one South African patent should cover all British South African possessions, somewhat after the system adopted by the French government. Under the present arrangement five or six separate patents must be taken out. The South African colonies are vast in extent; but the centers where a patent is likely to be profitable are few and far apart. Patent laws being primarily intended to encourage invention, it follows that the multiplication of expense in securing patents will certainly hamper an inventor in securing adequate protection for a meritorious device.

DESIGN PATENTS.—The United States District Court for the Western District of New Hampshire in a recent decision sums up the essentials of novelty in patents for designs, giving the rule as established by later decisions as follows: (111 Fed. Rep. 1002) "The patent seems to cover two elements: First, the shape or configuration of the monument; and, second, the decorative design for its ornamentation. As to the first, there is nothing in the details or in the combination which can be accepted as new and original. All the features in detail must be treated as old, for the stonecutting art, as known and practised from a very early period, has covered all conceivable shapes and forms in monuments and statuary, and the combination does not, as it seems to me, amount to a new and original design. The second element of the design—that relating to ornamentation—comes nearer to patentable invention than the first. The test is the appearance to the ordinary eye, which results from the design of combining the finished surfaces, the various lines, curves, figures, etc.; and, if this case could be determined in the light of the earlier decisions under the design statute, it would not be difficult to sustain this feature of the patent. But the later tendency has been to require for design patents something akin to inventive genius; or, in other words, as high a design of invention as that required by the rules which govern mechanical patents. In view of the later decisions, I arrive at the conclusion that the decorative design is not so distinctively new and different from previous designs as to bring it within the statute, which requires the design to be new and original."

The United States Circuit Court of Appeals for the second circuit, with reference to design patents has just ruled that (112 Fed. Rep. 61) design patents refer to appearance, and not to mechanical utility, and are intended to apply only to matters of ornament, in which the utility depends on the pleasing effect imparted to the eye, and not to any new function. A calk for a horseshoe is not a proper subject for such a patent.

NEW RESULT FROM OLD PROCESS.—A patent for an electrical insulator and method of making same describes a porcelain insulator for use with high-tension conductors, made, according to the process shown, in two or more separate parts or shells molded so as to nest or fit into each other, and which when dried are coated with glaze, placed together with the open side up, and extra liquid glaze poured into annular channels between the parts. When placed in the oven for firing in this position, the extra glazing material melts, and flows down as the clay shrinks, and fills the spaces and any crevice or crack which may form in the process or firing. It was held, that while neither the making of insulators in parts fitted into each other, nor the uniting of such parts by glazing, was novel, the combination of them with the further step of supplying an extra amount of liquid glaze sufficient not only to fuse the parts into a whole, but to fill all crevices, the result being a superior article, constituted invention, and was not anticipated by anything in the prior art. While the application of an old process to a similar or analogous subject, with no change in the manner of the application, and no result substantially distinct in its nature, will not sustain a patent, even if the new form of result has not before been contemplated, yet, if a new combination and arrangement of known elements produce a new and beneficial result never attained before, it is evidence of invention as a general rule.

111 Fed. Rep. (U. S.) 923.