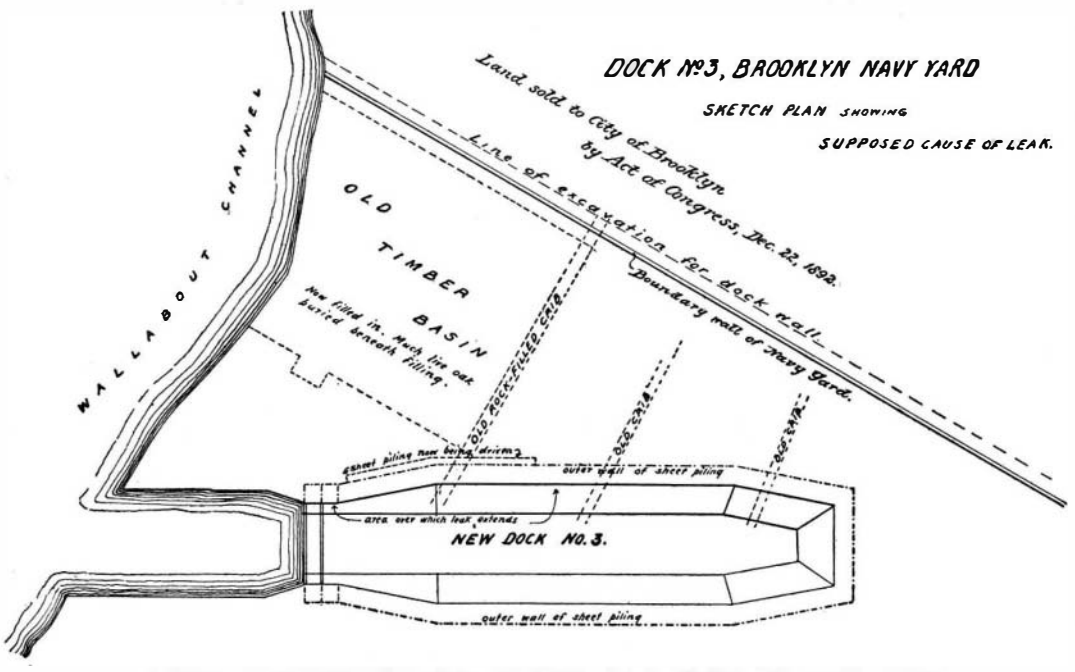
THE LEAK IN THE NEW DRY DOCK, BROOKLYN NAVY YARD.

The large dry dock at the Brooklyn navy yard, known as No. 3, which was completed early in the present year, has developed a leak which is so serious as to necessitate the temporary closing of the dock while measures are being taken to locate and remedy the defect.

The leak first showed itself when the Massachusetts was in the dock, the water coming in at the joints of the side altars or steps. The flow increased so rapidly that the work on the ship was hastened, and water was let into the dock as early as possible. The area over which the water comes in is quite extensive. It commences at a point about 40 feet from the caisson and extends for 250 feet on the north side, all the altar joints leaking from the 26 foot level to the bottom of the dock. The inflow of water is largest near the caisson and at a point where the old timber and stone bulkhead of a former dock line was dredged out during the excavation of the dry dock. It is naturally supposed that the water is working its way in behind the walls of the dock by way of this buried bulkhead.

If our readers refer to the SCIENTIFIC AMERICAN of February 20, they will find a full description of this dry dock, in which the means adopted for preventing seepage of the water through the sides of the dock are explained at full length. In addition to the puddled clay which was worked in immediately behind the altars, a complete wall of sheet piling, as shown in the accompanying sketch, was driven around the dock, completely encircling the sides and inner end. The sheet piles were tongued and grooved, and were driven to the depth of 45 feet, wherever it was practicable. If this wall had been everywhere driven down to hard material, and if the joints had been compactly made, it would be impossible for the amount of water that is entering the dock to pass through. The present heavy leakage makes it almost certain that the wall is defective.

The site upon which the dock is built was originally a swampy piece of ground, which from time immemorial had been used as the general dumping ground of the navy yard. There is reason to believe that three successive crib bulkheads had been built across it parallel with the river front, and the space behind them filled in with miscellaneous material. The ground thus made extended from midway between dock No. 2 and the present dock out in a northerly direction for several hundred yards; and it will thus be seen that the new dock was excavated partly from made ground and partly from the original bottom of the swamp. The axis of the dock lies approximately at right angles to the line of the old bulkheads.



SKETCH PLAN SHOWING SITE OF DOCK No. 3, BROOKLYN NAVY YARD.

The timber and the rock filling of these structures was unearthed by the contractors during the course of the excavation and as much of them as intersected the dock was removed. The outer wall of sheet piling on the north side would naturally intersect the bulkheads, and it is feared that the rocks and timber of which they are built form a break in the continuity of the piling. This does not seem to have affected the dock during the two or three months during which it has been open; but recently dredging operations have been carried on by the city at the northern side of the made ground, where excavation for concrete bulkhead walls is now being carried on. The leak appeared when the dredge was working on the line of the old bulkhead above mentioned, and it is naturally supposed that as the wall of mud was removed the water flowed through the rock filling of the crib, passed through the wall of sheet piling and accumulated behind the altars of the new dock. By reference to the accompanying sketch it will be seen that the southeast corner of the old timber basin abuts on the wall of sheet piling in close proximity to the present leak. This basin is full of live oak timber which lay there in the days of wooden shipbuilding and was never removed when the basin was filled up. It is quite possible that the water also finds its way from the Wallabout Channel through this timber to the weak spot in the sheet piling.

The authorities are endeavoring to stop the leak by driving a second wall of sheet piling ten feet back from the old wall for a distance of two hundred and fifty feet. The new work will be closed by cross walls which will be driven to a watertight connection with the old structure. This will form a kind of three-sided box which will inclose the faulty portion of the work.

It takes no expert to understand that this line of buried cribwork, leading directly up to the dock, is a serious menace to its safety. As long as it lies there it will act as an underground conduit for the water, which might flow in considerable volume through the rock with which the crib is filled. It would surely be good economy to remove these cribs bodily for some distance back from the dock and replace them with more impervious material.

It will be understood that the above statement of the case is based upon the ascertainable facts at the time of our going to press. A special board is now making a thorough investigation of both this dock and dock No. 2, which shows indications of a slight leak on the northern side. We shall hope to give the findings of this board in an early issue.

False Stimulation of Invention.

To stimulate invention the United States government has enacted that every inventor of a new and useful machine, tool, utensil, article of manufacture, composition of matter or any improvement thereon, shall have the exclusive right to make, use and sell the invention for a period of seventeen years. This stimulation has been quite sufficient, for, under its influence, as has been stated, more patents have been granted in the United States than in all the world besides. But recently there has been introduced an additional stimulation in the shape of false statements and deceitful promises about the great fortunes to be made in patents, the result of which is turning the light heads of hundreds of thousands of bread winning dunces from normal toil to illusion, with its direful sequence of ruin and want. It is an actual fact that thousands of men and women are selling farms, horses, cows, and economizing in clothes and shoes for themselves and children because they have been persuaded that a fortune awaits them in a patent for a churn, a washing machine, a kitchen cabinet, a car coupler, nut lock, or in some other of the hundreds of classes of overstocked invention. Many patent attorneys, so called, are flooding the country with "lists of inventions wanted." The inventions are, of course, not wanted. There are, dead in the Patent Office, hundreds of patents in the same class, and these stimulating, seductive statements are really and only in the interest of the alleged patent attorneys who send them.

The average inventor is credulous. Some, having been taught in the school of experience, are wary, but many even of these have fallen prey to the bold and brilliant talent that has recently appeared in the field. They have been plied with such seductive "literature" and lured by such caressing promises of sale of invention and a fortune only waiting to be grasped that they have overcome their caution and silenced their common sense to find themselves sans money, sans patent, sans sale, and rich only in fresh experience and the chagrin which rough teaching brings.

It is far from desirable that real, genuine, progressive invention should be discouraged or checked, but it is desirable and imperious that the mendacities of patent attorneys shall be stopped, because they are the source of most of that which is spurious and sloppy in the Patent Office, to say nothing of the ruin and misery of thousands of people fitted only for honest toil. Not half the patents would be applied for if the alleged inventor was reliably advised as to the state of the art, or told that his device was not patentable. The facts are withheld from him until the attorney has pocketed his fee, and he is not only kept ignorant of the truth, but is cunningly plied with assurances of the great merit of his invention, the promise of its ready sale, with an offer to advertise it for consideration, or with a medal alleged to come from a "board of awards," as a certificate of excellence, etc. By these means he is adroitly lured and robbed, not by the bold "stand and deliver" method of old, but by the cowardly and degenerate methods of educated, refined, brilliant and lawyerlike rascality, using the press of the United States for a shingle and the United States mails for tentacles.—Media, Pa., Ledger, May 6, 1897.

The Universal Postage Stamp.

One subject which is sure to be brought prominently before the International Postal Congress is the universal postage stamp. For many years all those who are engaged in any business which requires a large foreign correspondence have been greatly annoyed by the difficulties connected with forwarding postage to foreign countries. Very often their inquiries are of a personal nature, so that they desire to send necessary postage for the return letter from their correspondent. One way of getting over the difficulty is to purchase English or French stamps from dealers, but the use of such stamps is limited. The other alternative is to have correspondents send their letters without stamping them, but this is expensive, as double the regular rate of postage is charged for unpaid letters. On the other hand, American business houses receive numerous communications from all over the world which require an answer, and as these letters are oftenof a personal nature, the postage is burdensome. For a long time business houses have desired a stamp that could be bought anywhere for its face value and which could be sent to any part of the world with the assurance that it would prepay a letter to the sender.

The subject of international postage stamps has been brought up at former congresses, but objections have been always formulated against them. Our government has also been reluctant to let a universal stamp be adopted, in view of the revenue which would be lost. It is not likely that those of the present congress who represent the American postal authorities will stand in the way of an international stamp.

Another question not directly related to the International Postal Congress is that the stamps of all countries should have a standard color for stamps of approximately the same denomination. The value of such a system is obvious; the clerks would know from the color of the stamp just what has been paid and whether the sum was correct. Our own postal department has been a flagrant sinner in respect to the change of colors in stamps. It is to be hoped that, notwithstanding the conflicting interests of so many countries which are involved, the matter of the international stamp and the uniform color will be adjusted at the present congress.

Rock Pictures in Oregon.

W. B. Whittemore, while in Alturas, Oregon, recently, discovered some remarkable hieroglyphics about fifteen miles northeast from the north end of Warner valley, on the edge of what is locally known as the "desert" in Lake County, says the San Francisco Call. Mr. Whittemore says the hieroglyphics had been cut with a sharp instrument in the surface of the hard basaltic rock. They cover the face of the bluff for a distance of about three miles, and consist of pictures of Indians with bows, arrows, and spears, besides deer, antelope, dogs, and wolves, geese, ducks, swans, and reptiles of various kinds. Intermingled with these animals are characters which, of course, he could not decipher. He says that the execution of the pictures was very good, and he is satisfied that it could not have been the work of ordinary Indians. Throughout the entire distance the characters and pictures are in rows.

The Indians of the vicinity have no knowledge of the meaning of the hieroglyphics or of the people who ages ago chiseled them on the surface of the rocks. From the description given, the picture writing bears a close resemblance to that found in Mexico and Central America. If this supposition is true, a careful study might reveal to the archæologist some insight into the origin or wanderings of a dead and forgotten civilization.

Largest Paper Machine in the World.

At Rumford Falls, Me., the largest paper machine in the world is now in the course of construction by the Rumford Falls Paper Company. It will produce paper 150 inches in width, which is said to be 15 inches wider than any American machine and 2 inches wider than any other machine in the world. It was built at Worcester, Mass., and its estimated weight is 1,200,000 pounds. It is to deliver a web of paper 150 inches wide, at the rate of 500 feet per minute, or, in a complete day's run of 24 hours, will turn out about 9,000,000 square feet, equivalent to 35 tons. A force of between 40 and 50 men will be required to maintain and supply it with stock, etc.

The Development of Kinetograph Films.

Mr. Edmund A. Robins, in the Photogram, says the development of ribbon films is very difficult and uncertain without special appliances to deal with the 40 and 50 foot lengths in general use, and which require very careful manipulation to obtain uniform density and freedom from veiling. The first method was to have two large and deep dishes containing the developer, and the film, being first soaked in water, was passed from one to the other alternately. This was very crude, and the films were easily damaged. The next method was to wind the film on a square frame of paraffined wood or plated metal, the development taking place in a deep dish, and the film left on the frame during the whole of the operations. This is still in use, and gives very good results. The ideal method is to wind the film upon a drum which is capable of rotation in the developer. The system devised and used by Mr. T. H. Blair, and which I give with his permission, is one of the best. A glass drum is suspended in such a manner that it can be raised or lowered vertically, and is capable of rotation upon a horizontal axis. The film is wound spirally upon this, the ends being fastened by clips, and the whole lowered into a trough of enameled iron, shaped to the glass drum. The developer is first placed in the trough to the depth of one inch, and surrounding about one-third of the drum when in place. The drum is rotated, and a camel's hair brush passed over the film to remove air bubbles. To facilitate examination, an incandescent electric lamp covered with ruby fabric can be placed inside the drum, the wires being brought out through the axle, which is hollow. When development is complete, the film is washed by a spray from above, and then passed on to another drum similarly arranged and fixed. The hypo should be about 4 oz. to the pint. Still another drum is used for washing; and these two latter may be made, together with their troughs, of wood well covered with paraffin wax. Each drum is made slightly larger than the first, the film is wound from one to the other by rotating the larger drum, the film being used as a driving belt, and the difference in diameter keeping the adjacent coils from overlapping. The washing is performed by a spray from above, the drum being rotated meanwhile, and twenty minutes' washing being sufficient. The films should be glycerined to prevent the gelatine drying too hard and horny. A 4 per cent solution is recommended, and it should not be left too long in contact, else the film will take up too much and dry "tacky." The European Blair Camera Company recommend the following formula for their negative film, and it is found to answer well with the Eastman film:

Metol	50 grains	3·25 grammes
Hydrokinone	50 grains	3·25 grammes
Sodium sulphite	1½ oz.	42·5 grammes
Sodium carbonate	1 oz.	28·5 grammes
Potass. bromide	20 grains	1·25 grammes
Water	30 oz.	850 c. c.

The metol should be dissolved before the sulphite is added. This gives excellent results, and is very quick. If too energetic, it may be diluted. Another formula which is recommended for the positive chloride film of the Blair Company is as follows:

A.—Hydrokinone	15 grains	1 gramme
Sodium sulphite	75 grains	5 grammes
Water	5 oz.	142 c. c.
B.—Potassium carbonate	90 grains	6 grammes
Water	5 oz.	142 c. c.
C.—Potassium bromide	1 oz.	28·5 grammes
Water	10 oz.	285 c. c.

Equal quantities each of A and B and a few minims of C.

The former formula is not suitable for the positive film, which should be fully exposed, and the development not too protracted, else the high lights are in danger of being veiled. This film is coated on transparent celluloid, gives brown tones with the above developer, and is slow, about the same as a slow lantern plate. Pyro cannot be used for developing these films, as it is oxidized far too rapidly, and is very liable to stain. As the above-mentioned developers may be used again and again, if kept well stoppered when not in use, a great saving is obtained by using them, especially as large quantities are required.

MENDING KINETOGRAMS.

A note on the joining of films may be useful, as it is generally convenient to have the films in one continuous length for development, and also to mend tears. The solvent generally used is acetone. Amyl acetate is also used, but cannot be compared to acetone for effectiveness. To join two pieces of film, the edges must be well scraped free from gelatine and grease for about a quarter of an inch. The edges are then placed over one another in the proper position and acetone placed between by means of a camel hair brush, and the two edges firmly pressed together between glass until set. Care must be taken not to use too much acetone, or the joint will be weakened by the solvent action of the acetone. Splits at the edges of films are mended by cementing a thin strip of scraped celluloid over the tear and firmly pressing. If any of the holes become torn out, others can be placed in the proper position and cemented, the new holes being cut from another similar film, and care being taken that they are kept in proper register.

Recent Patent and Trademark Decisions.

Schenck v. Singer Manufacturing Company (U. S. C. C. A., 2d Cir.), 77 Fed., 841.

Band Wheel Bearing for Sewing Machines.—The Miller and Diehl patent, No. 224,710, has been held valid as to claims 1 and 2, notwithstanding the apparently simple character of the change made, in view of the beneficial results achieved and the obvious defects of construction which had for many years baffled other inventors and mechanics.

Cohler v. George Worthington Company (U. S. C. C., Ohio), 77 Fed., 844.

Presumption of Non-Infringement.—The granting of a subsequent patent raises a presumption that the device therein does not infringe a prior patent.

N. K. Fairbanks Company v. R. W. Bell Manufacturing Company (U. S. C. C. A., 2d Cir.), 77 Fed., 869.

Unfair Competition in Trade by Simulation of Packages.—The likelihood of deception of an ordinary purchaser exercising ordinary care is the test applied to alleged infringement of trademarks, but regard must be had to the class of persons who purchase the article for consumption and also to the circumstances ordinarily attending their purchase. In determining whether packages are so dressed up as to deceive purchasers, we should regard rather the effect on the consumer than upon the jobber. In such cases the danger of deception rather than the intent governs the court. In this case the complainant began manufacturing soap powder that was yellow and placed it in a yellow wrapper bearing the words "Gold Dust" and "Washing Powder." After two or three years of sale and expenditure of considerable money in advertising, defendant, who had been selling washing powders in small red packages, began making a yellow powder called "Buffalo Powder," put up in packages of the same size and with a yellow wrapper of the same shade as complainant's. There were numerous other particulars wherein the two packages resembled. The court enjoined the defendant from selling that particular form of package or any other form which should as closely resemble complainant's packages, but the defendant could sell packages of the powder that were unlike complainant's in appearance.

Philadelphia Creamery Supply Company v. Davis & Rankin Building and Manufacturing Company (U. S. C. C., Ill.), 77 Fed., 879.

Agreement Not to Deny the Validity of a Patent.—An agreement in a license that the licensee will not directly or indirectly question the validity of the patent is not void as against public policy, and it will estop the corporation formed and controlled by the licensees as effectually as the licensees themselves.

Cerealine Manufacturing Company v. Bates (U. S. C. C., Ind.), 77 Fed., 883.

Broadening a Claim by Disclaimer.—An element of a combination claimed cannot be eliminated by disclaimer, as that tends to broaden the claim and make it rest on other elements than those on which it was predicated when issued.

Rogers v. Fitch (U. S. C. C., N. Y.), 77 Fed., 885.

Mattresses.—The Fulton patent, No. 322,326, for a mattress, the lower portion of which is sunk below the bed rails, has been held valid.

Foreign Art.—Patents relating to car seats cannot be cited against or as anticipating a patent for a mattress.

William Schwarzwaelder Company v. Detroit (U. S. C. C., Mich.), 77 Fed., 886.

Evidence of Joint Invention.—Where a patent has been issued to one person and another claims to be a joint inventor with him, the patent is prima facie evidence in favor of the patentee, so that if the only other evidence consists of the party claiming joint inventorship and the patentee denying it, the patent will be held to have been properly issued.

What Amounts to Invention.—Producing a cheaper and more durable folding chair than any before does not amount to invention, where all the parts have been taken from prior constructions and each part does the same work in the same way as before. And the fact that the improved device meets with a ready sale and has largely superseded other constructions does not establish novelty or invention, excepting when the question is otherwise in doubt.

Folding Chairs.—The Chichester patent, No. 328,838, has been declared void.

Williams v. McNeely (U. S. C. C., Pa.), 77 Fed., 894.

Damages for Infringement.—Where the complainant sued on only part of the claims of a patent and it lies solely on an established license fee of the whole patent as the measure of damages, he can recover only a nominal sum where his evidence fails to apportion with reasonable certainty the amount of such fee between the claims in litigation and those not.

Rousseau v. Peck (U. S. C. C. A., 2d Cir.), 78 Fed., 113.

Electric Circuit Breakers.—The Rousseau patent, No. 279,107, for an automatic electric circuit opener or cut-off, used chiefly to light gas jets, has been construed to be of a secondary character and, therefore, limited.

Science Notes.

Furbringer's statistics for the antitoxin treatment during 1896 show 663 cases, with 114 deaths, or a mortality of 17 per cent. In the year preceding there had been 581 cases in the hospital, half of which only were subjected to the serum treatment, and the mortality had been over 30 per cent. Only one accident resulted from the injections. In a child of seven years, syncope lasting two minutes followed what was supposed to have been an injection into a vein. By the employment of violent revulsive agents, the child was brought back to life.

With a view to rendering the common use of acetylene less dangerous, Messrs. Claude and Hess have proposed to store it in solution. The solvent chosen is acetone, which is capable at atmospheric pressure and at 60 degrees Fah. of dissolving 25 times its volume of the gas, while at a pressure of 12 atmospheres it can hold no less than 300 times its volume in solution. Thus one pound weight of acetone is capable of storing practically the whole gas which can be generated from one pound of calcium carbide. The solubility of acetylene in acetone is only about half as much at a temperature of 120 degrees as it is at 60 degrees Fah.

Reports are being frequently published both in the public and medical press relating to burnings by the X rays. The injuries caused by the experiments in taking Roentgen photographs are now attracting the serious attention of physicians and physicists. For example a young woman was photographed who had suffered from hip disease. A few days later she began to feel a numbness and have pains in the hip. She grew worse rapidly, and several operations were performed, the flesh around the sores being cut away, but at last accounts there was no sign of healing, and her condition is now critical. A skin grafting operation will probably be attempted.

The college of agriculture of Cornell University has undertaken to assist, free of expense, all teachers, presumably in New York State, who wish to introduce what is known as "nature study" into their schools. Nature study or seeing familiar things in a new light is now recognized to be a valuable factor in education. The world is full of common things about which people do not inquire; for example, how many people can explain, so that a child can understand it, why water puts out a fire, or whence all the house flies come? Yet such subjects can be made very interesting to children, and they can be taken up in schools, not as an added recitation, but as a rest exercise; once or twice a week to relieve the monotony of the school room, and later be made the theme for a language exercise. Here are two important faculties which may be brought into exercise—observation and the power of expressing definitely what is seen.

A brief description appears in Nature of Pauling's new and novel method of drawing relief maps, which is pronounced a great advance on any system now in use, both in respect of accuracy and ease of execution. The map is said to be, in effect, a closely contoured map, printed on silver gray paper, the contour lines being white where illuminated by a source of light supposed to be 45 degrees above the western horizon, and black elsewhere. Level plateaus and slightly sloping areas are thus represented by the natural gray color of the paper, steep declivities toward the west being lightened by the closely drawn white lines, and toward the east correspondingly darkened by the black lines, the departure from the normal gray showing more the closer the lines, that is, the steeper the slope. Thus, the Pauling method has the merit of giving a clear idea of steepness derived from the contour lines themselves, and the additional advantage is presented of avoiding the confusion produced by the shadows in some modern maps, where the illumination is supposed to come from the horizon.

Prof. Lannelongue, a distinguished French surgeon, recently gave at the Academy of Sciences of Paris an interesting account of a phenomenon he had recently witnessed. He said that a number of children were playing in a courtyard in the shadow of a wall, the top of which was under strong sunlight. Suddenly several of the children began to act in a most peculiar manner, dancing around, each with his hand on his head, and crying out: "My head burns." Prof. Lannelongue examined the heads of the children and found blisters on their scalps. In trying to account to himself for the phenomenon he wondered if the blisters had been produced by X rays projected from the top of the wall. He instituted in his laboratory a series of experiments upon several persons. Some of these when exposed to the action of the rays were protected by strontium glass. These were not affected, but the other persons experimented upon who were not similarly protected were burned as the children had been. Prof. Lannelongue declares that he believed that X rays discoveries would cause a change to be made in the whole treatment of sunstroke. He added that the ancient Greeks were no fools when they covered their heads with brass helmets and their chests and backs with light metal cuirasses, which were impervious to X rays. Perhaps an anti-sunstroke helmet, he concluded, would be made in the future of strontium glass.