

there to contradict them. When they will recognize that safety is the primary element among the general public, and utilize intellect for life saving as freely as they do for coal saving, ocean travel will be doubled.

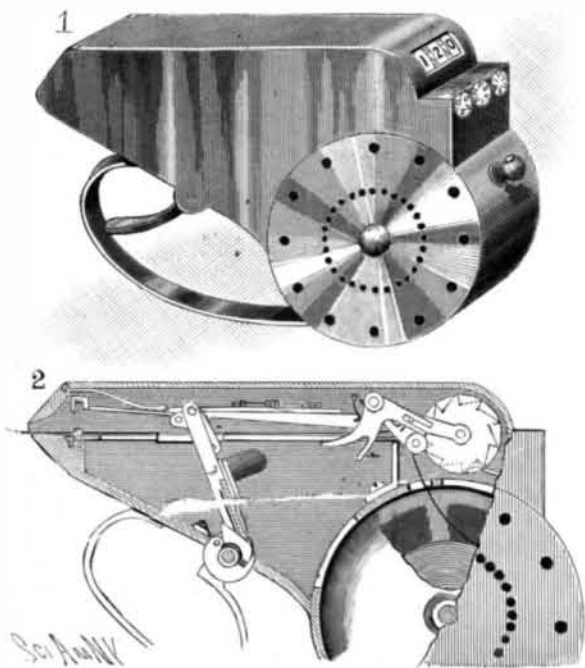
COMBINED TICKET HOLDER AND REGISTER.

We illustrate a ticket holder and ticket register recently patented which is designed to hold and deliver a large number of tickets, such as used on cars or in theaters or other places where a uniform fee is charged. The apparatus is designed to contain a continuous ticket strip and deliver a suitable length corresponding to the length of the ticket, the operative parts being improved in various particulars.

The prime moving part of the mechanism is a spring-controlled trigger which serves to feed the ticket strip by means of a positively acting lever mechanism and automatic clamping and releasing devices for the strip, the parts embodying features of much originality and of simple form, as will be obvious from Fig. 2. The strip is fed a predetermined distance, then held while a knife acts to perforate the strip and facilitate detachment of the ticket by the patron or the employé. It is purposed to intersperse at intervals tickets marked "Free," to induce the patrons to watch the apparatus. The feeding devices are adjustable, that the machine may be adapted to feed according to the length of the ticket used.

Coacting with the other mechanism is a series of registering wheels provided to register the sales. In connection with the cover of the apparatus, a novel combination lock is provided, the dial plates of which are seen in Fig. 1. The total number of tickets registered also appears through the case.

The apparatus is the invention of the late Manuel



FORTUÑO'S TICKET HOLDER AND REGISTER.

Fortuño, whose administrator is Señor Leonardo F. Fortuño, Hospiceo San Nicolas, 23, Mexico City, Mexico.

DR. ISSATSCHENKO, of the bacteriological laboratory attached to the agricultural department of the Russian government, has just made a preliminary communication on a new microbe pathogenic to rats which he has discovered, says Nature. A disease, which assumed epidemic proportions, broke out among the rats kept for experimental purposes in the laboratory, and from the liver and spleen of affected animals a bacillus was isolated, which proved on inoculation to be extremely fatal as regards both rats and mice. Receiving food infected with this organism, rats and mice in variably succumbed, the former after from eight to fourteen days, the latter after from four to eight days. Following Pasteur's example in the case of a bacillus similarly fatal to rabbits, attempts were made to turn this new microbe to practical account and utilize it as a living rat poison. The results so far have not been very encouraging, but further experiments are being made in this direction. It is apparently quite without effect upon pigeons and rabbits. As regards its artificial cultivation, this microbe is very accommodating, growing luxuriantly upon all the customary culture media with the exception of potatoes. In microscopic appearance it varies, as is so often the case, according to the nature of the medium in which it has been previously grown. It is mobile, and is endowed with lateral flagella.

FOR the purpose of cleaning bottles from fatty substances a very simple and practical process has been found. Pour warm water into the bottle, fill in ordinary hay and rub the inside of the bottle with this thoroughly, using a small stick. Now rinse the bottle out with clean water, and not a trace of the odor and the grease will remain. Large bottles which had contained petroleum were successfully cleaned in this way.—Oesterreichische Brauer- und Hopfen-Zeitung.

The Sutro Baths.

The seacoast from San Francisco is reached by either one of two steam railways or the Sutro Electric Railway, all starting from the suburbs of the city and converging near the celebrated Cliff House, in front of the Seal Rocks, says Engineering News. The old Cliff House was burned on December 24, 1895, but a larger structure was at once built, and is a great resort for tourists and people from the city. North of the Cliff House are the new and extensive Sutro Baths. On the top of the hill and overlooking the ocean is Sutro Heights, the residence of Adolph Sutro, mayor of San Francisco, but who is most widely known from his connection with the famous Sutro tunnel on the Comstock lode in Nevada. The grounds of his establishment are open to the public.

On the shore, and close to the Cliff House, are the new Sutro Baths, established and built by Mr. Sutro, which were opened in March, 1896. The buildings are handsome and spacious, and form a pleasure resort for visitors as well as bathers, there being a museum and other attractions, and cheerful promenades lined with palms and growing plants. The entire building is 499.5 by 254.1 feet, and contains about 600 tons of iron-work in the columns and roof trusses, 270,000 cubic feet of concrete, 3,500,000 feet of lumber and 100,000 square feet of glass. Provision is made for spectators at aquatic sports and swimming matches, there being seating capacity for 3,500 persons in the amphitheater and 3,500 on the promenade, while the total capacity of the building, including the aisles, etc., is 25,000 persons. There are seven swimming tanks, as follows: One large tank, 1,409,062 gallons capacity; four small tanks, 70, 283, 400 and 875 gallons; one medium size tank, 112,500 gallons, and one fresh water tank for plunges. There are nine springboards, and seven toboggan slides lined with sheet brass and having a continuous stream of water running down them. There are 517 private dressing rooms and 9 club rooms, the total capacity being 1,110 persons; 29 dressing rooms and all the club rooms are fitted with shower baths, and there are 66 shower baths in all. The laundry equipment can handle 20,000 bathing suits and 40,000 towels per day. The restaurant is on three floors, with an area of 30 by 75 feet on each floor. The water for the baths is taken from the waves or rollers which break on the reef on which the baths are built.

A catchwater basin, 75 by 150 feet, was blasted out of the rock, and this receives the water from the waves, which then flows to the receiving pond, and through a tunnel to the settling tanks, whence it goes to the various bathing tanks. With a high sea rolling in, the tanks can all be filled in an hour. A centrifugal pump with a capacity of 6,000 gallons per minute keeps up a constant circulation, and can fill the baths in from five to six hours. The tanks can all be emptied in an hour, at high or low water, through an outlet of 24 inches diameter, the waste water being led away to a point where it is discharged into a tidal current, so that there is no chance of its being at once taken in again. The water is heated by a system devised by Mr. Sutro, using direct steam driven through small tunnels. The temperature is graduated in the different tanks, and in the smaller tanks it can be raised 10 or 20 degrees in a few minutes. The bath buildings are protected on the west by a breakwater lying north and south, 400 feet long, 20 feet deep, 25 feet wide at the top and 75 feet at the base, containing 450,000 cubic feet of rock; another breakwater runs east and west, this latter being 300 feet long and of the same cross section, containing 300,000 cubic feet of rock.

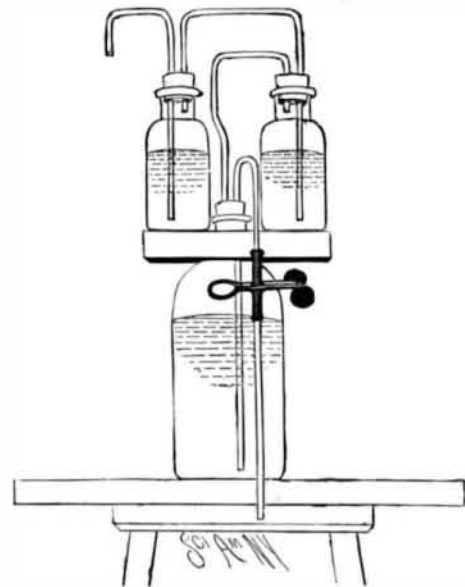
The Current Supplement.

In the SCIENTIFIC AMERICAN SUPPLEMENT of July 23, 1898, will be found many articles of unusual interest to our readers. On the front page is a fine engraving of England's newest battleship, the "Albion," accompanied by a full description of her engines, armament, and general construction. "The Naval War Game—A Strategic Campaign," is a highly interesting article describing by means of Mr. Fred T. Jane's apparatus an imaginary sea-fight off Falmouth, in which the "Indiana" and "Massachusetts" play an important part. The Armstrong discharge tube for torpedoes is exhaustively treated in an article illustrated by nine diagrams. Admiral Cámara's fleet forms the subject of a full page engraving. The new Maxim-Schupphaus smokeless powder is treated at considerable length in a fully illustrated article. Mons. H. Poincaré in a very scholarly essay tells of "The Stability of the Solar System," and Mr. Willis H. Moore, Chief of the Weather Bureau, writes on the "United States Atmospheric Survey." The subject of wireless telegraphy is treated in a descriptive article illustrated by details of the apparatus employed. "New Cycle Details" is an article which is illustrated by numerous drawings and which will prove of no little interest to many bicycle riders. The mineral resources of the Philippine Islands are discussed by Frank Karuth, F.R.G.S. Taken as a whole, the current SUPPLEMENT has covered a very wide field and covered it well.

APPARATUS FOR PRESERVING PYROGALLIC ACID SOLUTIONS.

BY RANDOLPH BOLLING.

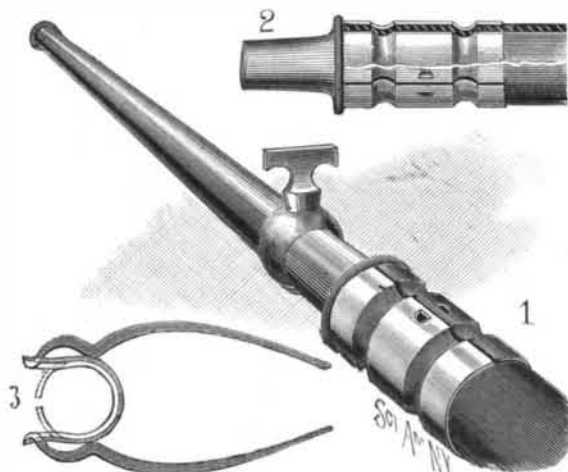
I have devised this piece of apparatus especially for the use of photographers who use a solution of pyrogalllic acid and other chemicals to act as a reducing agent on the silver salts of the photographic plate. The use of the so-called "developing solutions" has



almost ceased, due to the solutions becoming brownish from absorption of the oxygen of the air, and so rendering them useless for developing purposes, and requiring a fresh solution to be made up. The explanation of the solution spoiling was simply that repeated opening of the bottle allowed oxygen to come in contact with the pyrogalllic acid, which, having a strong affinity for it, combined with it, forming a brown or black compound, and the mixture had to be thrown away. To avoid this I have constructed a simple piece of apparatus which any one can make with a few bottles and a yard of glass tubing. Take a quart bottle, which is to serve as a stock bottle, and, having bored two holes in the cork, pass a bent glass tube through it to the bottom; now connect a short tube by means of a gum tube to this and you have a siphon; slip a pinch cock on the gum tubing so as to regulate the flow of the liquid. Above the large bottle is a yoke of wood having a slot sawed in it. This fits the neck firmly and serves as a support for the two absorption bottles, which are connected with each other and the central bottle with glass tubes; so that when the pinch cock is opened the liquid flows out of the stock bottle by way of the siphon and the air to replace it bubbles through both the absorption bottles. The two small bottles are filled with a strong solution of potassium hydroxide and pyrogallol dissolved in water, so that the air in coming into the apparatus has to bubble through a solution which completely removes all of the oxygen, leaving only the nitrogen, which has no action on pyrogalllic acid. You can keep a developing solution for years without the slightest alteration, as nitrogen gas does not combine with pyrogalllic acid.

THE "SIMPLEX" HOSE CLIP.

The purpose of this device is to provide a means for conveniently and efficiently securing hose to couplings or to the shank of the nozzle. It consists simply of a split, tubular, metallic spring band, the ends of which



AN IMPROVED HOSE COUPLING.

can be readily forced apart either for applying to hose or removing from the same. It is possessed of sufficient resiliency, and upon its inner surface are beads or projections so spaced as to effectually press the hose into the indentations of the coupling.

To remove or apply the band, a pair of levers are employed, each being inserted in the special openings provided at either end of the band, and then approximated at their distal extremities, Fig. 3. Figs. 1 and 2 exhibit the clip as applied to hose at the nozzle and to an ordinary hose coupling. It is the invention of Mr. John T. Duncan, of 69 Talbot Road, Bayswater, London, England.