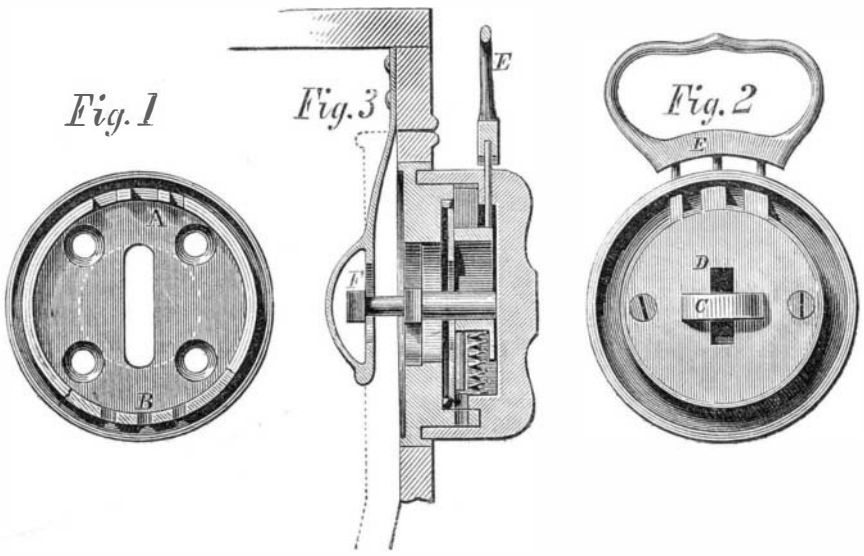
### Improvement in Trunk and Door Locks.

A cheap lock, without complication of parts and not liable to get out of order, or easy to open by skeleton keys or temporary appliances, is a very desirable improvement. Such seems to be the one shown in detail and in several aspects in the accompanying engraving. Ordinary trunk and satchel locks are generally of such a plan and construction that they can be easily opened, even without their proper key, and are very liable to break, particularly when under the control of "baggage smashers"; and even door locks, on which night keys are used, do not always prevent surreptitious entrance.

The working parts of this lock are contained in a circular case, but they may be attached to a lock or case of any other form. The base or back of the lock—that portion permanently attached to the trunk or lid—is shown in Fig. 1, which gives the inside view. It is secured to a trunk, valise, or traveling bag by screws, passing through the holes shown, by rivets, or by any other sufficient means. Near its circumference is a raised circular flange, having on one side three or more parallel slots, A, and exactly opposite an equal number of drilled holes, B. Over this fits a cup-shaped disk, Figs. 2 and 3, having in its center a solid bolt, C, with a T-head, the end opposite the head being firmly seated in the body of the disk. When the part, A, and the disk, Fig. 2, are brought together, the head of C passes through an oblong slot in the central plate, D, and through a similar aperture in the base plate, A, when a quarter turn of the movable part, Fig. 2, brings the head of the bolt, C, across the slot, firmly uniting the parts, as in Fig. 2.




RUPPEL'S PATENT LOCK.

Between the center plate, D, and bottom of the cup disk, is a recess containing two, three, or more bolts lying in parallel recesses. These bolts are actuated at one end by springs, which force them out against the inner part of the flange, and at the other end by the action of a key, E, having as many pins as there are bolts. The pins of this key, being inserted into holes in the rim of the cup disk and pressed against the bolts, force them inwards until their ends correspond with the circumference of the ring holding the plate, D, when the lock may be opened and the parts separated.

Fig. 3 is a vertical central section of the lock, attached to a trunk. In this case the central bolt is extended through the base plate, and has a secondary T-head, F, passing through a slot in a plate attached to the trunk lid.

Fig. 4 shows the attachment of the lock to the knob of a door lock—the whole lock being contained in the knob. When the door is to be opened, as by a night key, the key, E, is inserted, which allows the knob to be turned and at the same time furnishes a lever to assist in turning it. By turning the knob half way around when the key is in, so that the apertures of the knob are on the top, the door can be opened as by any ordinary knob, and at all times the bolt, G, may be moved from the inside. The key, E, is absolutely necessary for opening the lock to which it belongs, as its pins are adapted exactly, in their length, to the bolts of each individual lock; and if an attempt is made to open the lock by the insertion of separate pins or wires, one single bolt may be pushed in too far, which will effectually prevent the turning of the cup disk by the protrusion of the back end of the bolt through the holes, B, in Fig. 1.

Patented through the Scientific American Patent Agency, January 28, 1868, by George Ruppel, Harlem, N. Y., who is desirous to dispose of the patent, or the right to manufacture.

### Fire-Proof Bronze Color for Copper and Brass.

One-sixteenth of an ounce of crystallized verdigris, and the same quantity of finely pounded muriate of ammonia, are to be dissolved in five-sixths of a pint of rain water, the solution left standing covered for three to four hours, and then 1½ pints more water poured into it. The copper vessel, which must be perfectly clean, is now to be held over a charcoal fire until it is equally heated throughout and becomes uniformly tarnished. The copper is now to be rubbed over with the mixture and then carefully dried.

After five or six repetitions of this treatment, the copper receives a brass color; after from six to ten repetitions, it acquires a fine yellow. If the copper is now to be changed from yellow to brown, it must no more be wetted while hot; if, however, it be desired to have it very pale brown, the process must be repeated twenty or twenty-five times. When the desired color is attained, the copper is to be laid in clean water, taking care to clean it or dry it rapidly after taking it out. This must be done carefully. The copper is then held over a weak charcoal fire, when the bronze becomes permanent and fire-proof. To give a fire-proof, brown, bronze color to brass, the following is the process:

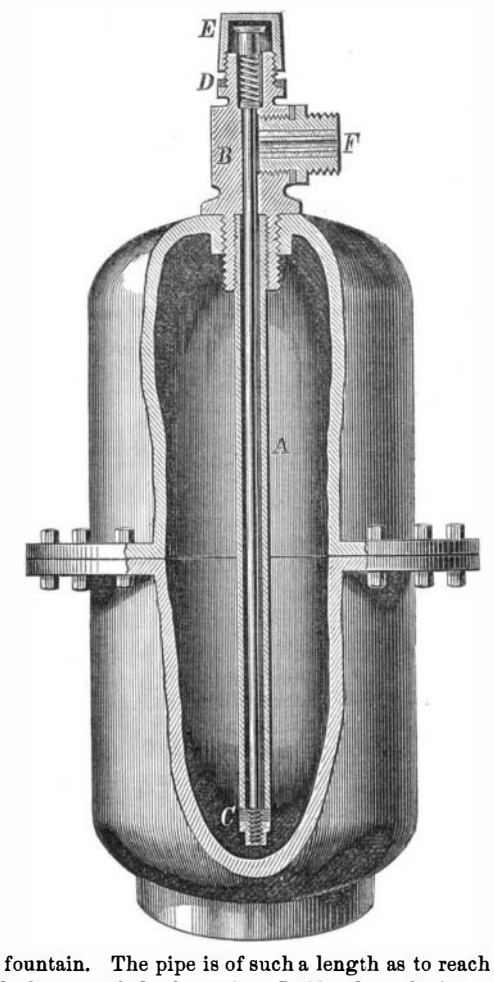
$\frac{3}{32}$ of an ounce of crystallized verdigris and the same quantity of sal-ammoniac are mixed with five-sixths of a pint of rain water, and left to stand from two to three hours. The brass is then to be rubbed over with it from two to three minutes, when it becomes green. 1½ pint of rain water is now to be added to the solution. The metal is now held over a charcoal fire, which must not be too strong, until it acquires a copper color. It is then again wetted, and left to dry by evaporation. When it has been treated in this manner four or five times, it becomes olive colored. The heat may now be somewhat increased, but it is necessary to be very careful that the metal does not become too hot. When it has been treated nine or ten times in this manner, it becomes brown. As long as any greenish places are to be seen, however, this treatment must be continued, in many cases twenty to twenty-five times before the required color is obtained.

If, however, the metal be strong, the materials are to be dissolved in hot rain water, and the metal rubbed with it immediately until it acquires a fine dark green color; it is then to be held over a strong charcoal fire, by which means it acquires a fine brown color after ten to twelve repetitions of the treatment. It is necessary to be careful that the metal is equally heated throughout. If spots appear, they must be bitten out during the work and polished with brick dust.—*Gewerbeblatt aus Wurtem.*

### SCHNACKENBERG & ROSENKRANZ' IMPROVED FEED FOR SODA FOUNTAINS.

The object of this device, for which a patent is now pending through the Scientific American Patent Agency, is to furnish a ready means for preventing the flow of the carbonic acid solution into the delivery pipe from the fountain, to make the transportation of the filled fountains easier and more convenient, and to allow the attachment and detachment of the delivery pipe without annoyance, danger, or trouble.

The pipe, A, of india rubber or any suitable material is attached to the metallic head, B, which screws into one end of




the fountain. The pipe is of such a length as to reach nearly to the bottom of the fountain. Inside the tube is a metallic rod furnished with a nut and elastic washer, C, at its lower end, and at the upper end with a knob and spiral spring. Over this knob is screwed a thimble, E, which, being screwed down, depresses the rod and opens a space between its nut and washer at the bottom of the tube, to allow the passage of the gas charged liquid to the delivery plug, F.

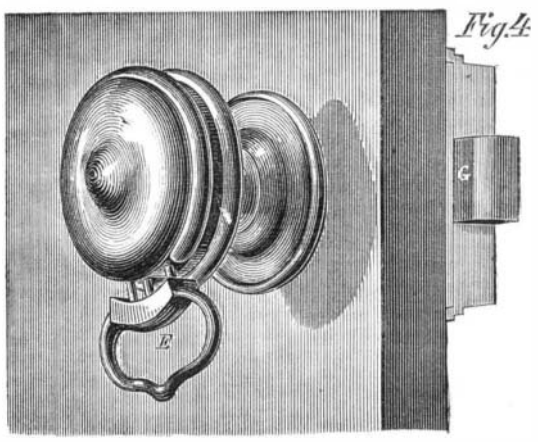
In transporting the charged fountain it is necessary only to partially unscrew the cap, E, allowing the spiral spring, D, to act in conjunction with the outward pressure of the gas against the bottom of the rod, to prevent the escape of the liquid; and at any other time the outflow of the contents of the fountain can be prevented or regulated by the same means.

Address Schnackenberg & Rosenkranz, care of the American Mineral Water Co., President street, between Nevins street and Third Avenue, Brooklyn, N. Y.

### Notes on Recent Scientific Discoveries and their Practical Application.

BOTTLING LAUGHING GAS.

The use of protoxide of nitrogen, or laughing gas, as an anæsthetic agent, is no novelty, and would require no notice here, but for a suggestion recently made in the *British Medical Journal*, which offers a problem to mechanics. It would be very inconvenient for surgeons to be driving about with large bags of gas for administration to their patients. There are inconveniences also in the preparation of the gas on a small scale which disappear when the manufacture is carried on in a moderately large way. Now laughing gas can, by great pressure or intense cold, be condensed into a liquid, and the suggestion of the journal we mention is, that liquid protoxide of nitrogen shall be sold, from which at any moment, by merely turning a tap, a bag of gas can be obtained for inhalation. To carry out this idea, bottles are required which will stand a pressure of at least 800 lb. The pressure at which the gas liquefies is about 30 atmospheres at the freezing point, so perhaps for a bottle to be perfectly safe at our ordinary temperature, it should be proved to 1,000 lb. There can be no difficulty, we should think, in producing such a bottle of cast steel, so light that a surgeon might take it with him on his rounds, and if there are all the advantages claimed for protoxide of nitrogen as an anæsthetic, there will probably be a considerable demand for such bottles. As regards the manufacture of the gas, and its liquefaction, these are very simple matters; the desideratum of to-day is a safe and portable bottle to hold the liquid, and we have little doubt that this will soon be furnished.




METALLIC CEMENT.

A very strong and durable metallic cement, we read in a German *Mechanics' Journal*, is formed when a mixture of equal parts of oxide of zinc, sulphate of lead, peroxide of manganese, and oxide of iron is made into a paste of proper consistence with boiled lineeed oil.

BRASS PICKLING.

Dr. Hiller writes that the brownish red color often obtained when brass work is pickled in the usual mixture of acids, may be avoided by making use of a mixture of equal parts of commercial nitric and sulphuric acids. Articles dipped in this mixture, and then well rinsed in cold water have, he tells us, a very beautiful deep yellow color.

A NEW OIL CAN.

A new can for applying lubricating oil is described in *Cosmos*. It is a cylindrical vessel of a size that can be grasped by the hand, and is much the same in shape as that in common use. The top, however is flexible, and there is a spiral spring in the interior. When oil is required the workman presses with his thumb on the top and forces just the amount necessary. On removing the pressure the spring restores the can to its shape, and the oil in the long spout is forced back by the influx of air. Thus there is no waste of oil by dripping.

EXPLOSIONS OF RED FIRE.

The frequent recurrence of such accidents as that at Nottingham—not often, however, so fatal in their consequences—justifies us in giving a general caution to any readers who may be disposed to amuse themselves with making colored fires. The ingredients for red fire should be powdered separately, and they should be mixed in a sieve, and never in a mortar by means of a pestle. With this precaution the mixing of the color is perfectly safe; but the liability to spontaneous combustion some time after it has been mixed is as great as ever. The spontaneous combustion, however, is not attended with explosion.—*Mechanics' Magazine.*

### New Suspension Bridge.

The Legislature of New York has authorized the erection of a suspension bridge over the Hudson river, at the Highlands. The total length of the bridge will be 2,499 feet; between the towers it is 1,665 feet, and the clear span is 1,600 feet. Its hight above high water is 155 feet; it will bear a pressure of 5,280 tuns, and the breaking strain is 25,171 tuns. It could bear up at once 60 locomotives and 34,560 people; but 53 locomotives and 18,000 people would fill it. It will have twenty cables, each about fourteen inches in diameter, and these cables will contain 70,302 miles of steel wire. The towers will be 280 feet high. The iron and steel in the bridge will weigh 17,005 tuns.