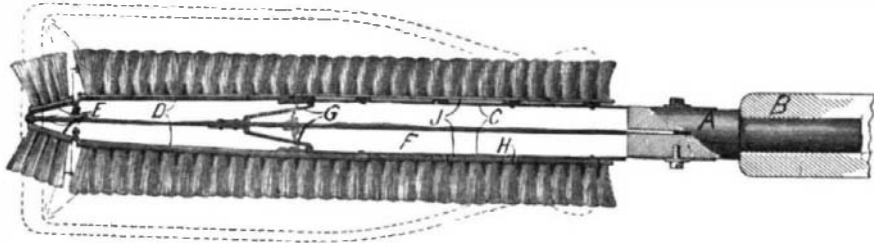


incline and is dumped. A clean-up simply means an unlocking of the riffles and the brushing out of the heavy deposit that remains in the multitude of pockets.

The pan shown in the illustration, and furnished with each machine, holds approximately one-twentieth of a cubic yard of gravel. Or, in other words, seven times as much as the ordinary pan. This amount of material can be run through the machine in about five minutes. Afterward the riffles are cleaned, the deposit saved, and a note taken of the location. In his spare moments the prospector can compare notes and find out the most valuable location for serious work. In this manner a man can travel over a great stretch of ground in a remarkably short time, and, when completed, can decide upon the spot that has given him the most "colors."

The advantages of this machine are obvious even



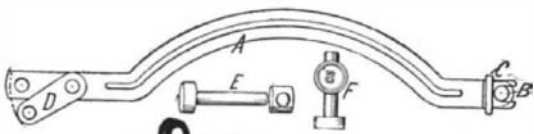
EXPANDING BRUSH FOR CLEANSING BOTTLES.

to those who do not understand mining. What appears to be of the most vital importance is the fact that the prospector can go anywhere and at any time, without fear of not finding water. This means that the countless thousands of acres of desert and arid lands, known to be extremely rich in gold-bearing sands, yet destitute of moisture, can now be easily and thoroughly prospected.

A great number of these machines are in daily operation, especially in the arid regions of Colorado and Nevada, and their success is vouched for by the many prospectors who are only too happy to be free to go where they choose and be rid of the drudgery of the crude pan and primitive methods that previously existed. Not the least advantage of this prospector's machine lies in the fact that it can be readily taken apart and shipped in two trunks, as the illustration shows. Packed thus, and checked as baggage, it will hardly weigh over 200 pounds. Unpacked, and set up, the weight is 180 pounds, and one man can carry one without much trouble.

LOCK FOR ELECTRIC METERS.

A very simple and inexpensive lock has recently been devised for use on electric meters. The lock cannot be opened without breaking a seal, and hence it will reveal any tampering with the meter by an unauthorized person. The lock is particularly adapted for that type of meter in which the cover is secured by two studs on which a pair of keepers are threaded. It comprises a bar, *A*, which extends across the face of the meter, and is made fast to the two keepers in such a way as to keep them from being unscrewed from the studs. One of the keepers, which is screwed onto the stud *B*, is provided with an outwardly projecting flange *C* in which there is a slot. When this keeper has been screwed down against the cover of the meter one end of the bar *A* is passed through the slot. This end of the bar is bifurcated so as to fit around the stud *B*, as shown in the drawing. The stud at the other side of the meter passes through an aperture in the bar *A*, and the keeper *D*, which is screwed onto the stud, serves to hold the bar against the meter. The keeper *D* is provided with an aper-



LOCK FOR ELECTRIC METERS.

ture adapted to be brought into register with an aperture in the bar, and when the keeper has been screwed home a seal is passed through the two apertures. The seal consists of a leaden stud such as shown at *E*. On the projecting shank of the stud a collar of lead is fitted, and, by means of a punch, both collar and shank are flattened and jammed together, while an impression is left on the seal as indicated at *F*. It will be observed that the locking bar *A* is curved so as not to cover the volt and ampere readings of the meter. A patent on this improved lock has been granted to Mr. Joseph H. Jackson, of 343 Atlantic Avenue, Brooklyn, N. Y.

EXPANDING BRUSH FOR CLEANSING BOTTLES.

A new form of brush has just been invented, which is so arranged that after it has been introduced into the bottle, it may be expanded to conform to the shape of the bottle, and thus render the cleansing of the interior more thorough. While the device is particularly adapted for cleansing milk bottles, it may also be employed advantageously for other purposes in which it is necessary to introduce a

brush through a small mouth or neck. In our illustration the head *D* of the brush is attached to the spindle *B* of the bottle-washing machine. Secured to the head are two flexible strips *C* of spring metal. Attached to these flexible pieces are a pair of extension strips *D*, which at their opposite ends are connected by a pair of hinged leaves *E*. A controlling slide *F* is attached to the leaves *E* at one end, while its opposite end enters a slot in the head *A*. The controlling slide *F* is connected to the flexible strips *C* by means of links *G*. The backs which carry the bristles of the brush are directly secured to the strips *D* and leaves *E*; but in the case of the flexible strips *C*, clips *H* are provided, which are riveted to the strips *C*, and are arranged to have sliding engagement with flexible backs *J*, on which the bristles are secured. The operation of the device is very simple. When the brush is introduced into the bottle, the controlling slide *F* comes in contact with the bottom of the bottle, and is thus forced back into the slot in the head *A*. This causes the leaves *E* and links *J* to swing open, thereby expanding the brush to conform with the inner contour of the bottle. Messrs. John J. Heywang, Jr., and Minard Slater of 201 West 73d Street, New York city, have secured a patent on this expanding brush.

APPARATUS FOR PURIFYING WATER BY THE INJECTION OF OZONE.

The apparatus shown in the accompanying engraving purifies water by the introduction of ozone through an aspirator. Either direct or alternating current (usually at 110 volts) is taken from the ordinary electric-light circuit and by a transformer is stepped up to about 8,000 volts. This high voltage produces in the ozonizer (a box containing alternate plates of aluminium and micanite) a slight electric discharge, generating ozone from the air drawn through the ozonizer.

The water to be treated flows, under its own pressure, from the city mains through the pipe to its highest point, and in descending draws the ozone, by means of an aspirator, from the ozonizer, the water and ozone thoroughly commingling. This action is continued during the progress of the water in its descent into the glass sterilizer where the ozone ascends in millions of minute bubbles, again coming into intimate contact with all parts of the water and destroying the bacteria therein. The ozonized water then finds an outlet at the top of the sterilizer and may be conducted into any suitable storage receptacle for future use.

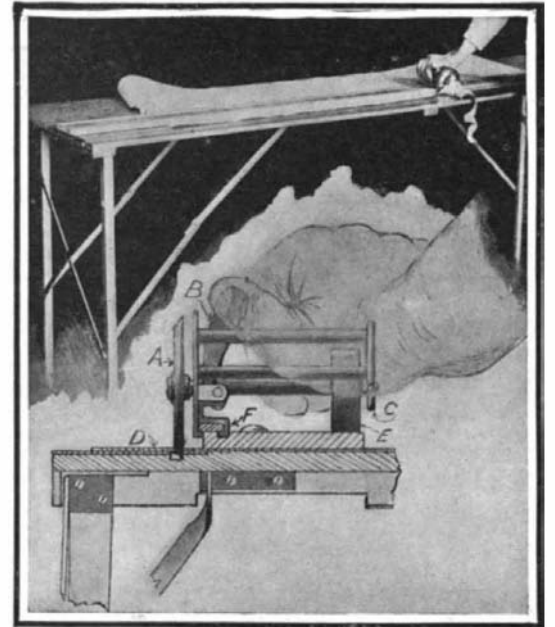
The reason for this destruction of the bacteria by the ozone is very simple. Chemical analysis of the bodies of bacteria shows that they are made up of about 84 per cent of water and 16 per cent of solids. Of these solids more than half is made up of carbon. Ozone, being a concentrated form of oxygen, has a very great affinity for carbon; and the moment a bacillus comes in contact with a bubble of ozonized air the carbon of its body combines with oxygen, and the bacillus is consumed as completely as if it had touched a flame. The product of combustion is carbonic acid, which is partly absorbed by the water, the excess rising to the surface of the water and passing off into the air.

The cost of purifying water by this process is but a small fractional part of a cent per gallon.

With six feet of overhead space the apparatus is capable of purifying 4,000 gallons of water per day, and can be accommodated on a shelf three feet long and one foot wide, the area required being only slightly increased for larger installations.

PAPER HANGER'S TRIMMER.

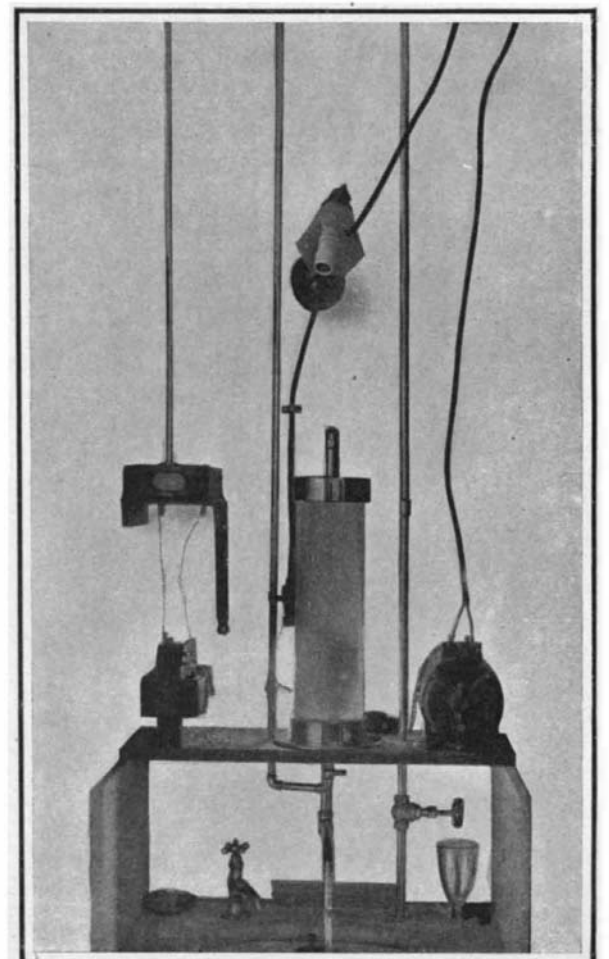
Pictured in the accompanying engraving is a paper hanger's table of improved design with a device mounted thereon, whereby wall paper may be cut and trimmed with clean edges. The table is of the folding type, and is so arranged that when folded it occupies an unusually small compass. The surface of the table is inlaid at one edge adjacent to the cutter with strips of wood of different color, and is provided with a



PAPER HANGER'S TRIMMER.

scale extending at right angles to the inlaid strips. This serves as a gage for cutting the paper to the desired dimensions. The cutter may be removed from the table top when it is desired to fold the table. The sectional view in our engraving shows the details of the cutting device. It consists of a cutting wheel or disk *A*, which is arranged to be moved laterally by means of a thumb lever *B* against a straight edge so as to insure a clean cut. The shaft on which the cutter wheel is mounted carries a roller *E* at the opposite end, which is pressed against the table by the operator when moving the cutter over the paper *D*. To protect the hand from the rotating parts, a cage *C* extends over the shaft and roller *E*, and this is grasped by the hand of the operator with the thumb conveniently placed on the lever *B*. The carriage on which the cutter is mounted is provided with fingers *F*, which engage a guide rail mounted on the table top parallel with the straight edge. Were it not for the lever *B*, which enables the operator to press the cutting disk *A* against the straight edge, any inequalities in the guide rail would separate the wheel slightly from the straight edge, causing a ragged cut of the paper.

The inventor of this improved paper hanger's trimmer is Mr. E. E. Gobie, Brattleboro, Vt.



PURIFYING WATER BY THE INJECTION OF OZONE THROUGH AN ASPIRATOR.