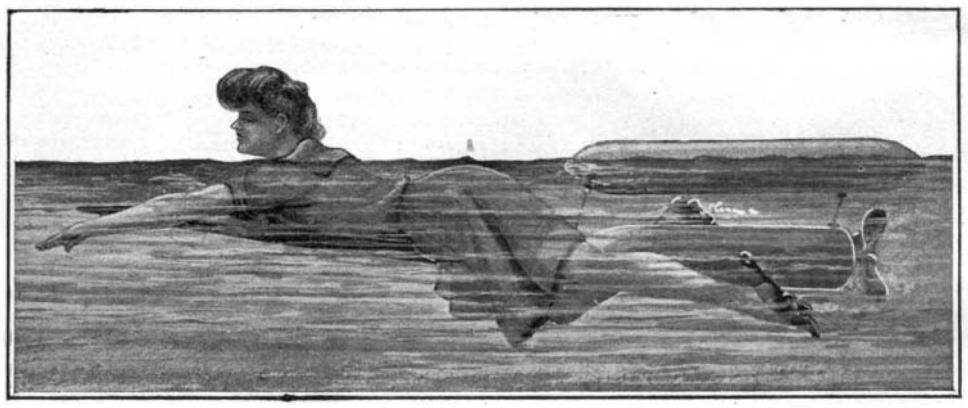
channel member, to lock the two members together. Mr. M. Z. Viau, of 24 Durand Street, Plattsburg, N. Y., has obtained a patent on this improved pipe wrench.

A NOVEL SWIMMING APPARATUS.

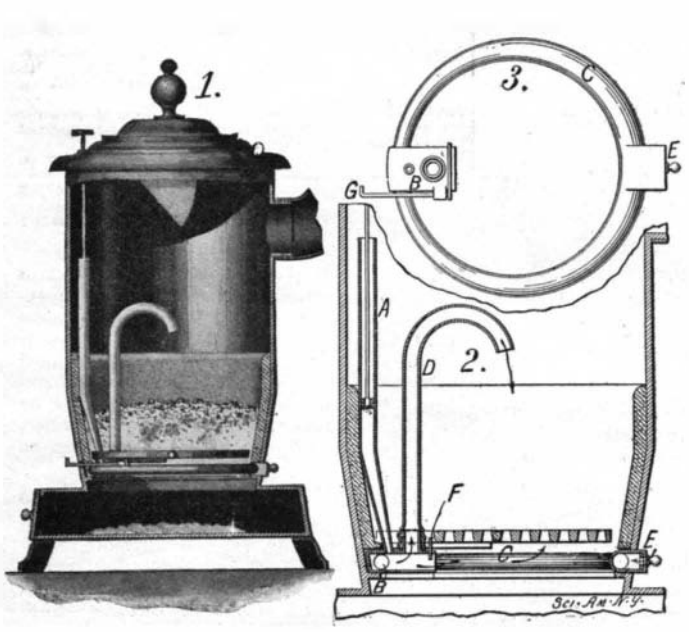
In the accompanying illustration we show what might be termed a "water cycle" invented by Dr. L. K. Baker, of Cleveland, O. The device is a foot-power machine for use in swimming, and so arranged as to secure greater speed from the kick or leg force employed. The power which is applied as in a bicycle operates to drive a propeller. The mechanism is attached to a bronze frame. Metal floats secured to the frame float the mechanism and the forward part of the frame is made hollow to support the chest of the operator. Materials which do not rust—bronze, copper, rubber, and aluminium—are used in the construction, and the completed machine weighs from twenty-three to twenty-six pounds. The average machine gives the user a yard of forward movement for each kick, when the arms are not used, and enables the average swimmer to double his speed. Children ten years of age soon lose their fear and pedal about in any depth of water even when there is a considerable sea. They consider it great sport to toss on the waves without danger of going down. Whenever desired the operator can lie on the machine without effort and rest, and at any moment can readily detach himself from the contrivance.



A NOVEL SWIMMING APPARATUS.

ATTACHMENT FOR STOVES.

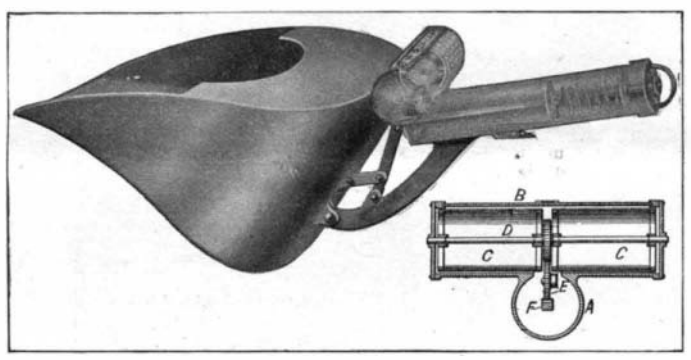
The accompanying engraving illustrates a novel attachment for stoves of the "air-tight" type, whereby hot air with more or less of a strong draft may be delivered simultaneously beneath and above the grate, or above the grate only when a slow fire is needed. The attachment also comprises an air pump, which may be operated to provide a strong forced draft when it is desired to quickly start up a slow or dying fire. The pump is situated inside of the stove, as best shown in Fig. 2, and the handle of the pump projects through the cover of the stove, so that it may be readily operated at any time. The pump piston is formed of asbestos, so that it will not be affected by the intense heat within the stove. The pump cylinder opens into a chest *B*, which is included in the circular trunk *C*. The trunk *C* is also formed with a draft box *E*, which opens through the side of the stove. This draft box is provided with the usual damper to control the amount of draft fed to the fire. Communicating with the chest *B* is a standpipe *D*, which passes upward through the grate and is bent over to a central position over the grate. The chest *B* opens into the stove under the grate, and this opening may be closed by means of the damper *F*, which is operated by the rod *G*, as shown in Fig. 3. In operation then, when the damper of the draft box is open, the air will pass through the circular trunk *C* and through the chest *B* to the lower side of the grate. Also some of the air will be drawn up through the standpipe *D* to consume the gases above the fire. If it be desired to keep the fire low the damper *F* is closed, when air will be supplied to the fire only from above through the standpipe *D*. When it is desired to produce a forced draft the pump *A* is operated, and forces air through the chest *B* and the standpipe *D* to the fire above and below the grate. The inventor of this novel attachment is Mr. E. P. Watson, of Bentonville, Ark.



ATTACHMENT FOR STOVES.

WEIGHING SCOOP.

Pictured in the accompanying engraving is a scoop provided with a weighing mechanism which will indicate the weight and the price per pound of the contents of the scoop. The scoop proper is hinged at its lower end to an arm formed on the handle *A*. This handle, adjacent to the scoop, is provided with a transverse cylinder *B*. Within the cylinder is a drum *C*, formed in two sections. The drum sections are mounted on a shaft *D* which at its center carries a gear adapted to engage a pinion *E*. The latter passes between the drum sections and meshes with a rack *F* which at its inner end is attached to a spring secured in the handle. The opposite end of the rack passes through the handle and is attached to a lever which is connected by a link with the scoop. It will be evident that if any article is placed in the scoop the latter will tend to swing downward on its fulcrum, drawing the rack *F* outward against the tension of the spring. The extent to which this rack is moved will indicate the weight of the contents of the scoop.

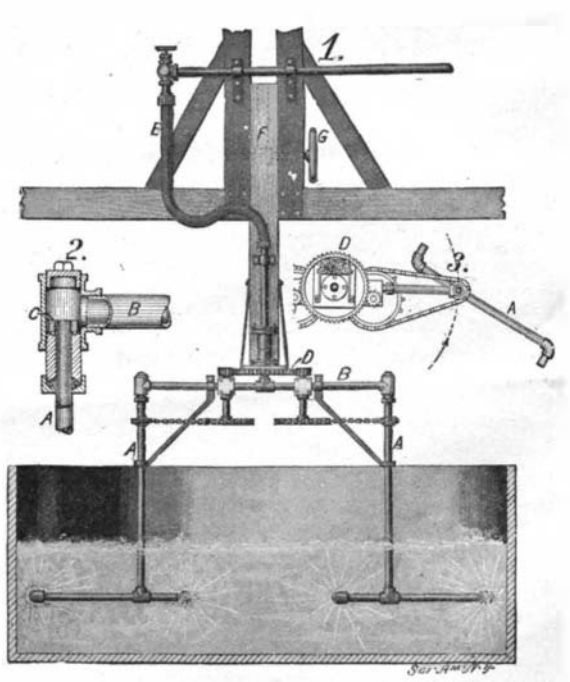


WEIGHING SCOOP.

The cylinder *B* is formed with a glass covered slot longitudinally disposed therein through which it will be possible to read various figures tabulated on the drum sections *C*. The entire surface of the drum sections is covered with figures arranged in circumferentially disposed rows. When the drum is standing at the zero position each of these rows will show a certain price per pound through the glass. Numbers representing multiples of this price, that is, the cost of two pounds, three pounds, etc., are arranged circumferentially of the drum so that if the price per pound were 15 cents, and there were two pounds in the pan, the rack *F* would be extended sufficiently to rotate the drum until the number 30 would appear under the glass. If it be desired to use the scoop without the weighing attachment the rack bar is moved back to its normal position, or until a disk on its inner end engages a spring latch. A thumb lever pivoted on the under side of the handle serves to release this latch whenever it may be desired. Means are also provided for adjusting the spring to the proper tension. The inventor of this weighing scoop is Mr. Frank C. Howe, of Globe, Arizona.

APPARATUS FOR AGITATING LIQUIDS.

The accompanying engraving illustrates a mechanism for stirring, agitating and oxygenating liquids, which, though it may be used with processes of various kinds, is particularly useful in the cyanid process of metal extraction. The machine is operated by compressed air to stir and agitate minerals which have been reduced to a fine powder and placed in a tank containing sodium or potassium cyanid solution, so as to dissolve their values, renovate the contact surfaces, and oxygenate the solution in order to increase its solving power. Figure 1 shows the apparatus in operation. Depending into the tank containing the cyanid solution are a pair of pipes *A* formed at their lower ends with tubular heads, each head ending in a pair of nozzles as shown in the plan view of Figure 3. The pipes *A* communicate with a transverse pipe *B* at their upper ends, the form of coupling being shown in Figure 2. The pipe *A*, it will be observed, projects through a stuffing box and is formed with a collar *C* at its upper end which has ball bearing with the top of the stuffing box. Thus, the pipes *A* are permitted to rotate. Each pipe *A* is connected by chain and sprocket gearing with a pinion journaled on the pipe *B* and which meshes with a fixed gear *D*. The pipe *B* communicates with a flexible pipe *E* which is connected to the compressed air supply pipe. In operation the air which is forced through the system of piping and out of the nozzles strikes the liquid in the tank, and by reaction causes the pipes *A* to rotate. This motion is communicated to the pinions which, by reason of their engagement with the fixed gear *D*, cause the pipe *B* to rotate and revolve the pipes *A*. The pipe *B* and the fixed gear *D* are secured to a beam *F* which is arranged to slide in the main frame of the apparatus. A pinion operated by the hand-wheel *G* engages a rack on this beam and provides for vertical adjustment of the apparatus so as to move the pipes *A* to any desired depth in the tank. We are informed that several of these machines are now in operation in Mexico and have shown very good results. The inventor of this improved agitator is Mr. Benito Solis, of Guadalupe de los Reyes, Sinaloa, Mexico.



APPARATUS FOR AGITATING LIQUIDS.

A recent French patent granted to the Compagnie Française des Produits Fixateur has for its object a stopper of stamped metal, of wood or other material, having a conical form and containing at the lower part a groove which contains a circular rubber band or similar elastic piece. This stopper is used in the following manner. After placing the rubber band in position, the stopper is inserted in the neck of the bottle, the latter having been filled with the liquid to be preserved. The neck of the bottle must be conical, so that the stopper fits into it snugly and its top does not rise above the neck of the bottle. The bottle thus provided with its stopper is placed in the corking machine, which is provided with a special device allowing a vacuum to be made as completely as possible above the stopper. The air contained in the bottle is drawn off, and the stopper rises to let it pass. When the operator judges the vacuum to be sufficient, he operates the machine to press the stopper into place again and also allows the air to enter above it. The bottle is thus hermetically sealed, the rubber band preventing the outer air from entering. Bottles thus stopped can be opened with a pointed instrument or even with an ordinary corkscrew.

A substance known as phycophaein has generally been considered as the material to which the color of the brown seaweeds is due. Tswett, however, has recently stated (in Ber. Deutsch. Bot. Gesellsch.) that this substance does not exist in the living seaweed, and is not present in the chromatophore, but is a post-mortem product. A mixture of the following substances, present in the chromatophore of the living plant, gives the brown color to the alga: carotin, chlorophylin, fucoxanthin, and fucoxanthophyl.