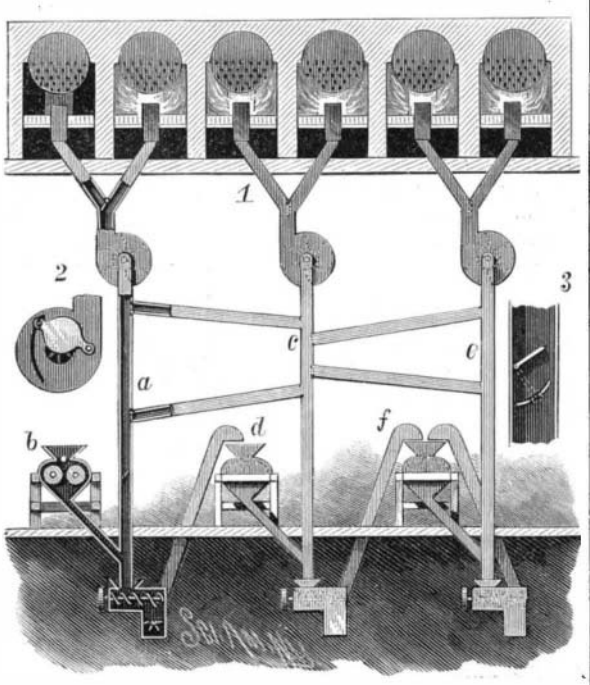
California Whaling Interests.

San Francisco is now one of the most important "whaling ports" in the United States. There has always been more or less whale fishing carried on at the stations along the coast, the product of which was marketed in this city, and this port has been an outfitting station for some few whaling vessels. But in the past few years the whaling fleet which is outfitted here has grown very materially. A number of the vessels are now owned here, among them the steam whalers, the best of the fleet. The Arctic Whaling Company have built large tanks for their oil on the bay shore, and the product is all handled here. The whalers that formerly outfitted at the Hawaiian Islands now come to this port. Oakland Creek is now a favorite wintering place for the Arctic whaling fleet Some of the vessels leave here every fall to go to "the line" fishing, and then work up to the Arctic when the ice breaks up, returning here with their cargoes. The high price of bone of late has made the business very profitable.

The bulk of the oil is reshipped from here to the East, most of it going around Cape Horn in vessels. Of late, however, the railroad company has placed the freight rates at such a point that oil is shipped East by rail. One day recently the first shipment of whale oil for the season was sent from here. There were 17 car loads, or 460,000 lb. of oil. The train was a special one, and it was intended to make the unusual time of 12 days to New Bedford, Mass., the destination of the consignment. No transfers were to be made. The whaling business of this port is now very important. There is a great deal of money invested in it. The steam whalers were some of them built here. The business is one which adds greatly to San Francisco's industrial importance.—*San Francisco Ex.*

FEEDING COAL TO FURNACES.

The method of feeding coal to furnaces as herewith illustrated is designed to insure a more thorough combustion of the coal than has heretofore been obtained. A series of crushers, *b d f*, pulverize and then discharge the coal through branch ducts into the pipes, *a c e*, when the blowers placed at the upper ends of these pipes act upon it. The coal is first put into the crusher, *b*. After being pulverized, it passes through the duct to the pipe, *a*, where the suction current created by the first blower carries the finer particles up into its casing, and then by blast forces it through the forked distributing ducts against fire clay deflectors placed in the center of the fire chambers, just in advance of the bridge, where it is consumed. The large particles of coal, upon which the current has no effect, fall upon a screw in a receptacle at the lower end of the pipe, *a*, which carries them to an elevator which delivers them to the crusher, *d*, set to crush finer than the first one. The course of the coal after leaving this crusher is substantially the same as already described. If all the coal is not drawn up by the blower after leaving the



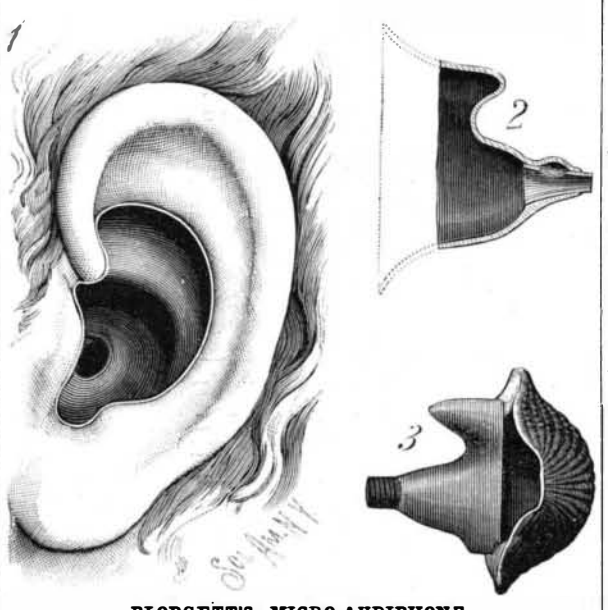
REHMENKLAU'S APPARATUS FOR FEEDING COAL TO FURNACES.

third crusher, *f*, it is carried back by an elevator for further crushing. The pipes, *a c e*, are connected together as shown, and at the junctions are placed valves; the branch pipes leading to the furnaces, and the main pipes, are also provided with valves. The free end of the rod operating the valve moves in an arc slot (Fig. 3), and can be locked in any position by a winged nut. By means of these valves the supply of pulverized coal can be cut off or admitted to any one of the furnaces. A detail view of one of the air inlet ports of the blower is shown in Fig. 2.

This invention has been patented by Mr. R. W. O. Rehmenklau, of 310 Plymouth Ave., Minneapolis, Minn.

THE MICRO-AUDIPHONE.

The accompanying engraving represents the micro-audiphone, the invention of Dr. F. M. Blodgett, of 207 West 34th Street, this city, which is designed to relieve deafness. The instrument is made of hard zylonite or other suitable material, and is formed to fit the ear, the shape being as clearly shown in the three views herewith presented. In the tube of the instrument is placed a membrane, or diaphragm, of very thin rubber or skin, held by the edges over a small chamber, as shown in the sectional view, Fig. 2. This diaphragm is by preference guarded by a small metal thimble placed in the tube, and formed



BLODGETT'S MICRO-AUDIPHONE.

with an opening to expose the diaphragm to the action of the sound waves passing through the tube. The action of the waves on the diaphragm causes it to vibrate, so that it has a "sounding board" effect, and augments the waves and renders the sound more audible. The device may be provided with a tubular portion to be held to the ear by the hand, and it may also be formed with an extending flaring section to collect the sound waves, like an ear trumpet, and direct them to the tube, as shown by the dotted lines. As indicated in Fig. 3, the device may be provided with a shell-shaped attachment, held detachably in place by its edges entering dovetailed grooves in the outer part of the main device. The sound waves enter the opening and strike the inner surface of the shell, by which they are guided directly to the opening of the ear. This attachment serves to collect the sound waves in a manner similar to the hand when held just behind the ear. The above-mentioned article has recently been patented in the U. S., Gt. Britain, and Canada.

APPARATUS FOR MAKING ILLUMINATING GAS.

The accompanying illustration represents an apparatus for some time past in operation at the Laclede Gas Works, of St. Louis, Mo., and we are assured that it has been in continuous operation, without one minute's intermission, since it was first started. A somewhat detailed description of the apparatus will be of interest to all concerned in the making of illuminating gas, because of the many valuable features introduced—all tending to simplify the construction, lessen the cost of the gas, and reduce to a minimum the labor necessary to operate it.

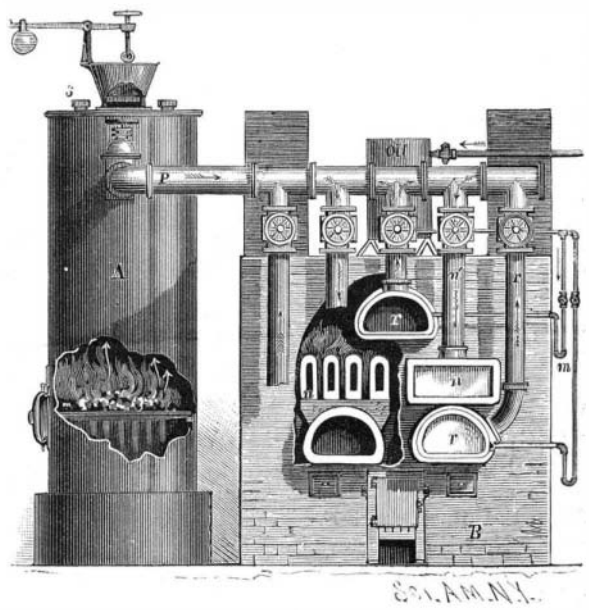
The generator, A, is provided with a door, fuel hopper, and valve, stoke and sight holes, *s*, and take-off pipe, P, leading through suitable valves and pipes to the fixing chambers, *n*. The bench of retorts, B, is such as is used in coal-gas works, except that in place of two of the ordinary retorts generally used there is set a series of fixing chambers, *n*, made of iron or fire clay. They are set on the tile on which the retort is usually placed, but, unlike the retorts, they run all through the bench lengthwise, and are connected at both ends with one common mouthpiece in batteries of four (more or less) to each mouthpiece.

Although retorts might be used instead of these narrow fixing chambers, they would not be as good in operation. It is the heated surface or wall of the fixing chamber which acts on the gas; and when a retort is used much of the gas passes through, if used as a fixing chamber, uncombined, for, gas being a poor conductor of heat, only those vapors near the walls are acted upon. For this reason these inverted U-shaped fixing chambers were devised. As will be seen by reference to the engraving, these chambers are set so that a series of them may be united at each end by one common mouthpiece, and that, for instance, as shown, four of these chambers have one common inlet pipe, *n'*, and also one common outlet pipe at their opposite extremities, or rear of the bench. The outlet pipes connect with a hydraulic seal, from which the gas is taken by an exhauster.

Gas may be made in the retorts independently of the generator, in the good old-fashioned way from coal, with this difference—that as the gas made would not go directly from the retort into the usual hydraulic main, but would have to pass first through the fixing chambers, the tar vapors, which condense soon after leaving the retort, would be subjected to additional heat at the time when they are in the best possible state to be acted on, viz., as vapors, thus adding greatly not only to the illuminating power of the gas produced, but to the volume as well. It will be seen, then, that the bench, as shown, may be used with advantage to make coal, oil, or wood gas, or a combination of all three, and with the best advantage.

The method of making water gas being well understood, it is not necessary to describe the generator here shown, except by the difference in operation from existing ones. Ordinarily, a bed of burning anthracite coal or coke is brought to a high heat by a forced blast; then the air is shut off and steam is admitted, which in passing through this incandescent mass is for the most part decomposed, forming what is generally termed water gas, which, in a subsequent stage, is carbureted to the required degree to form illuminating gas. During this operation the furnace door must be kept closed air tight; it is only opened when clinkering makes it necessary. Of course, the production of gas is intermittent; for while "blowing up," no gas is made for use. With the apparatus here described, all this is unnecessary. By opening the valve between the bench and generator, the same exhauster which takes away the gas from the retorts causes an in-draught of air at the generator door. Superheated steam, admitted under the grate of the generator, passes upward, and is decomposed the same as in the ordinary water-gas generator. The superheated steam, when once the generator is fairly started, seems to add to rather than take from the heat of this part of the apparatus. The fuel used in this case is ordinary Pittsburg gas coal, which, it is claimed, has never been used successfully in any other form of water-gas generator. The tar vapors from the coal add materially to the illuminating power of the gas made, since the gases in the generator as well as those in the retort must pass through the fixing chambers together.

This apparatus was at first designed as a mere auxiliary to the well-appointed coal-gas plant of the company in whose works it is now in operation; but it has proved itself so valuable that it is only a question of time when it will be the principal, and the regular coal-gas process the auxiliary. It is apparent that this apparatus can be easily applied to any style of coal-gas works, and it would be especially valuable to works in which it is found troublesome to supply the great demand made on their resources during the winter months. The bench here shown has produced 100,000 cubic feet of gas in twenty-four hours. It requires 5 gallons of naphtha or other oil, 11 to 14 pounds of bituminous coal, and 20 to 25 pounds of gas coke or other equivalent fuel to produce 1,000 cubic feet of gas. As stated above, the bench can be used either with or without the generator. The following simple enumeration of the operations necessary to run this apparatus clearly shows the small amount of attendance required, and will forcibly illustrate the difference between this and



EGNER'S IMPROVED APPARATUS FOR MAKING ILLUMINATING GAS.

other systems: Open the valves, start the oil, start the exhauster, feed the generator with gas coal about once an hour, feed the fire in the bench about once every forty-five minutes, and rake the ashes out of the generator occasionally. The first three are done once for all. This statement will be particularly appreciated by those familiar with the labor required in attending to other styles of apparatus.

All further particulars can be obtained from the inventor, Mr. Frederic Egner, Engineer of the Laclede Gaslight Company, of St. Louis, Mo.

ACCORDING to Prof. Langley, the inherent temperature of the moon is below that of melting ice.