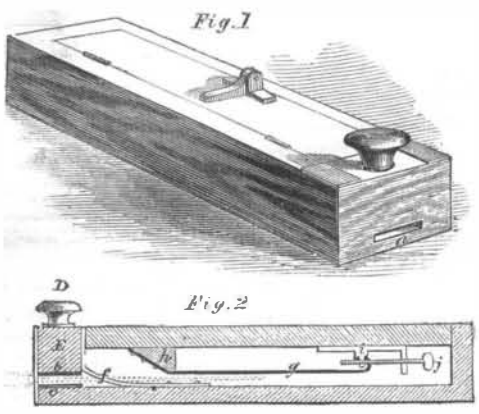
PROTZ'S KNIFE-CLEANER.

The aggregate amount of labor expended upon cleaning knives in a day, and especially in a year, would probably surprise any one who should take the trouble to investigate the subject. Any device, consequently, which materially facilitates this labor is of no inconsiderable value to the community. The neat little box which is represented in the annexed cuts, both in perspective and in section, is a simple and convenient apparatus for cleaning knives and forks, which is compact and easily kept ready at all times for use.



The box being filled with pummice stone or other suitable scouring material, the knife blade is introduced into the slit, *a*, and drawn back and forth between the leather rubbers, *b* and *c*; the rubber, *b*, being pressed down by the hand upon the knob, D. This rubber is fastened to the lower end of the block, E, which is allowed a vertical motion, and is pressed up by two springs, *i*, clear of the knife, excepting when this pressure is overcome by the hand on the knob, D.

For cleaning forks, the strap, *g*, is attached to the lower side of the lid; one end by the triangular block, *h*, and the other by the slide, *i*, which is moved back and forth by the screw rod, *j*, for the purpose of tightening the strap. This strap is brought into use by opening the lid of the box, and may be passed between the tines of the forks, as well as on each side, for the purpose of scouring them on all parts.

The patent for this invention was procured (through the Scientific American Patent Agency) on March 13, 1860; and persons desiring further information in relation to it will please address the inventor, John Protz, at Easton, Pa.

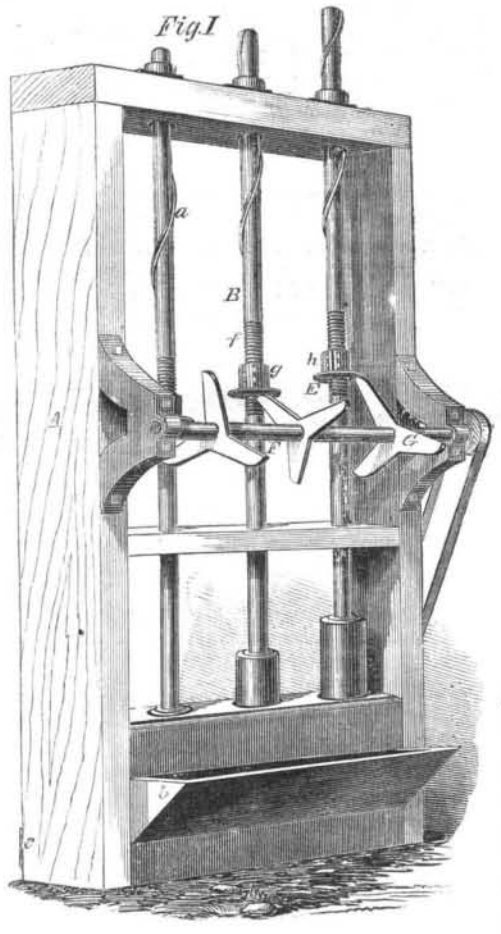
CLAY RETORTS.

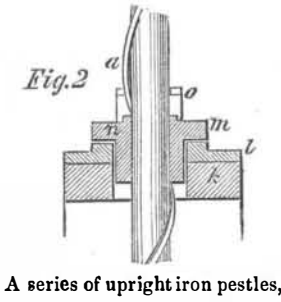
John P. Kennedy, gas engineer of Trenton, N. J., makes the following statement in regard to the comparative merits of clay and iron as a material for making retorts for distilling coal:—

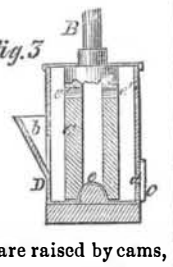
"Retorts made from fire-clay have been used successfully in Europe for many years, and they have recently been introduced into this country from Belgium, England and Scotland; and, wherever they have been used, they have given great satisfaction. The favor with which they have been received has induced several manufacturers of fire-clay materials in this country to commence the manufacture of retorts, and with good prospect of success. Although, at the present time, but comparatively few gas companies have given them a trial, I am satisfied that in a very few years they will entirely supersede iron retorts, for the following very obvious reasons, viz.: that the first cost is much below that of iron, they weigh one-third less, will endure double the time, are not injured by excessive heating, will work off the coal more rapidly, and are as easily managed as iron retorts. Many gas superintendents are under the impression that clay retorts cannot be worked without the use of an exhauster, by reason of the porous nature of the material; but this is a mistake. They require the aid of an exhauster no more than those made of iron; for after the retorts are heated, and the first charge or two made of fine coal or slack, the clay becomes filled at every pore by the carbonaceous deposit from the coal, and are then as impervious as iron retorts. Gas companies who will employ a competent and experienced workman to make the first setting of clay retorts, fire them up, and give the necessary instructions as to their treatment, will never set another iron retort."

BROWN'S QUARTZ-CRUSHER.

The gold which is found yet imbedded in the rocks of the earth occurs usually in veins of quartz, the flinty-looking stone which is one of the three ingredients of granite; and there can be little doubt that the grains of the precious metal which are found in the placer-washings have been separated from the quartz with which they were originally melted, by the wearing away of the mountains during the measureless ages that have elapsed since God said: "Let the dry land appear." These mining operations of nature were conducted on so vast a scale and through so long a period, that the gold was gathered in some places in far greater abundance than it originally existed in any equal portion of the rocks, and it is in these places accordingly that it is first sought. There are however some quartz veins which are so rich in gold that it is found profitable to pulverize the rock and extract the metal. Various modes of pulverizing have been tried, but the one generally used is the pounding process. Quartz is so hard, and when it is broken the corners and angles of the fragments are so sharp, that it makes one of the best grinding materials, and consequently, the mills which have been made for pulverizing the rock by rubbing it between two iron surfaces, have been found to wear away with unexpected rapidity. Large numbers of mills have been erected on the general plan of the one represented in the annexed engraving, and many of them are making swift fortunes for their owners.







A series of upright iron pestles, B, are raised by cams, G, upon a revolving shaft, F, and allowed to fall into a trough containing the quartz; a stream of water flowing constantly through the trough and carrying off the material as it becomes sufficiently fine. It is found that the flow of the material through the trough causes the pestles to wear more on one side than on the other, and the invention which we here illustrate is designed to obviate that difficulty. This is effected by turning the pestle partly around at each stroke, and by a peculiar form which is given to its lower end.

For turning the pestle, the spiral flanch, *a*, is secured upon the portion of the stem which works through the upper guide box, and this box is divided into two portions, one of which, *m*, is carried up a short distance with the upward motion of the pestle, till it is stopped by the guard, *o*, and when the pestle drops, the thimble, *m*, falls again into its place. The lower side of the flanch, *n*, upon this thimble is cut into ratchet teeth that engage with similar teeth upon the upper side of the box, *l*, so as to prevent the thimble from turning when it is down into its place, while it is allowed to turn freely when it is raised. The flanch, *a*, fits into grooves in the thimble, *m*, and it will be understood that this arrangement causes the pestle to turn in its descent, while the necessity of consuming power in rotating it in its ascent is avoided.

The construction of the lower end of the pestle is illustrated in Fig. 3. It is made tubular, of chilled iron, and fits over a nipple, *e*, of the same hard substance. Two orifices, *e' e'*, are made in the upper portion of the tube, C, to allow the air to escape as the pestle enters the water. The nipple, *e*, is secured in a manner to be removed when it is too much worn for use. The quartz and water are poured into the trough through the hopper, *b*, and pass out through the opening, *c*, which is guarded by a strainer, *d*.

In consequence of the rotation of the pestles, it is necessary that the arms upon their stems should be circular plates, in order that the cams, G, may act upon them in all positions; and in order to vary the length of the stroke, these plates are fastened to the stems by collars made in two pieces with projections on their boxes to fit grooves turned in the stems for this purpose.

The inventor, who is a practical miner and builder of quartz machinery, and an old California "forty-niner" withal, recommends that each trough or mortar should contain three pestles, each weighing about 1,000 lbs., and striking 60 blows per minute. The advantages which he claims are cheapness, durability, and but little weight in proportion to the operating capacity.

The patent for this invention was granted, through the Scientific American Patent Agency, on Nov. 29, 1859, and further information may be obtained by addressing the inventor, Thomas S. Brown, at Poughkeepsie, N. Y., Box 328.