



RICHARDSON'S SWIMMING APPARATUS.

NOVEL SWIMMING DEVICE.

We illustrate herewith one of the most novel applications of machinery that has come under our notice. It is a singular craft without hull or engine, but nevertheless apparently correct in principle and capable of practical application. This swimming apparatus consists essentially of a light frame, carrying a float and a longitudinal shaft, having at one end a small screw propeller and provided with gearing for running the propeller.

The swimmer reclines on the float, and grasping one of the hand cranks in each hand and placing his feet on the two foot cranks, proceeds rapidly and easily, with the head far enough above the surface of the water to be comfortable without extra exertion.

The inventor asserts that a swimmer with one of these machines can, under favorable circumstances, make from four to five miles an hour without undue exertion.—*Scientific American*.

IMPROVED AXE WEDGE.

Every one who has had occasion to use an axe, has observed the difficulty of securing the handle firmly in the eye, ordinary wooden and iron wedges being very likely to work loose. We illustrate herewith an improved wedge made of malleable iron, and provided with teeth so arranged as to hold the wedge securely in its place, when once it is driven in. The head of the wedge is polished and lacquered to prevent rusting, and is constructed large enough to entirely cover the end of the handle, and as it tapers towards the edge an exceedingly neat finish is produced. Blacksmiths who are called upon to make wedges, will no doubt be glad to know that they can procure so thoroughly efficient and practical a wedge as the one described, at a trifling cost. The manufacturers, Messrs. Porter & Wooster, Boston, Mass., inform us that already thousands of these patent wedges are being used in the lumber regions of the east and west. Further particulars can be obtained by addressing the manufacturers as above.

HOW TO MAKE TIGHT TARRIED PAPER ROOFS.

Have the lower layer of paper that comes next to the boards without tar or dressing of any kind (*plain paper*) then over that three layers of tarred paper. When the tarred paper is laid on the boards of the roof it adheres firmly to the boards and when they come to shrink (as they always do) the paper is torn at the joints between the boards, especially if wide lumber is used the fracture is greater. Plain paper does not adhere to the boards, and they are allowed to shrink or expand without damaging the roof. I have tried it and know that a roof put on in this way will remain tight more than twice as long as when the tarred paper is laid next to the boards, besides it entirely prevents the dripping of tar through the cracks of the roof in hot weather. The extra expense is a mere trifle, not 25 cents each square of 100 feet.

TANGYE'S LATHE.

We illustrate a capital and beautifully-finished turning lathe, shown on this stand. This handy tool which is manufactured by Tangye's Machine Tool Company, Limited, has been specially designed for the use of amateurs, and those requiring a small and cheap lathe. It is at once simple and compact, supplied with all the usual accessories, and exhibits true honest workmanship throughout. This lathe is manufactured by Tangye Bros., Birmingham, England.

PATENT WATER-HEATER.—The patent Water-heater, shown in the subjoined engraving, is a valuable and economical gas apparatus for instantly heating water to any required temperature. It is manufactured by Messrs. E. Siddaway and Sons, of West Bromwich, the patentees, and appears to be specially suited for baths, lavators, domestic use, hotels, clubs, and public institutions. This patent water-heater (No. 4 size) will heat two gallons of water per minute, or supply a hot bath of forty gallons to 100 degrees of temperature in a little over half an hour. The advantages claimed for this heater are: (1) The gas is not in direct communication with the water, as in ordinary heaters; (2) the interior being of copper retains a maximum of heat with a minimum of gas burnt; (3) the gas burners being on the Bunsen principle, burning both air and gas, are exceedingly economical; (4) as there are no confined spaces in the interior, there is no risk of explosion under any circumstances; (5) the interior cannot be affected by calcareous deposits which are found in some hard waters; and (6), as the apparatus is complete in itself there is little or no expense in fitting. Practically, with this heater, the supply of hot water is absolutely instantaneous, thus obviating the necessity for, and expense of, maintaining a continuous supply of hot water for domestic emergencies, sudden illness, or cases of accident. The price of Siddaway's Patent Water-heater is sufficiently moderate to bring it within the reach of most households.

VENTILATING BEDROOMS.—A simple device for ventilating bedrooms is within the reach of every one having an ordinary window in his room, by which fresh outer air can be admitted in small quantity with such an upward current as will prevent its being felt as an injurious draft by the inmates. It is particularly adapted to sleeping rooms when the weather is too cold to admit of an open window. Thus, start both top and bottom sashes of the window half an inch, which is not quite enough to clear the rebate or stop-beads at top and bottom, but which leaves an opening of an inch between the meeting rails, through which a current enters, but diverted upward by the glass as it should be, so as not to fall directly to the floor, as its coolness might otherwise induce it to do. It thus becomes well mixed with the air of the room without being felt.—*The Plumber*.