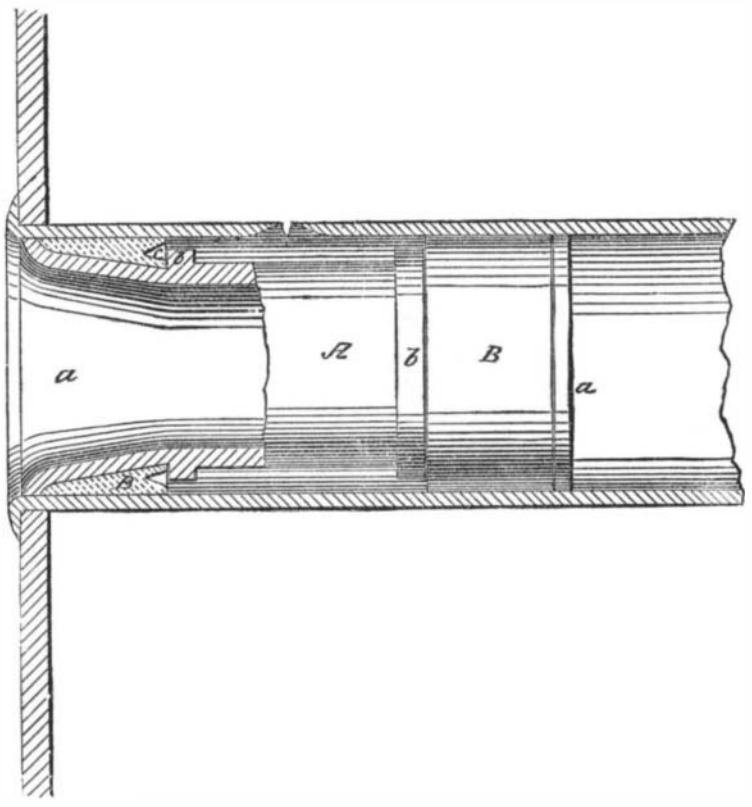
NEW MODE OF STOPPING LEAKS IN BOILER TUBES.

Mr. John McConnell, of Glasgow, Scotland, has patented through the Scientific American Patent Agency a device for stopping leaks in boiler tubes, which he claims may be placed in the tube when the boiler is under full working pressure, and without impairing the efficiency of the tube, as shown in the engraving. A is a tube of iron or other suitable material, which is bell-shaped at each end, *a*, and is provided with the collars, *b*, which surround the tube at the juncture of the bell-shaped and straight portions, and are somewhat less in diameter than the interior of the tube to which the stopper is applied. B B are gaskets of rubber, which have a form adapted to the space between the bell-shaped portion of the tube and the inner surface of the boiler tube, and are provided with a V groove, C, in their thicker or inner edges. The stopper is applied to the boiler tube by moving it by any convenient means to the leak, and placing it so that one of the collars, *b*, is on each side of the leak, as shown: when the pressure of the steam or water will force the rubber rings, B B, outward, and throw the lips or flanges formed by the grooves, C, against the inner surface of the boiler tube and the stopper, thus confining the leakage to the small annular space that surrounds the stopper.



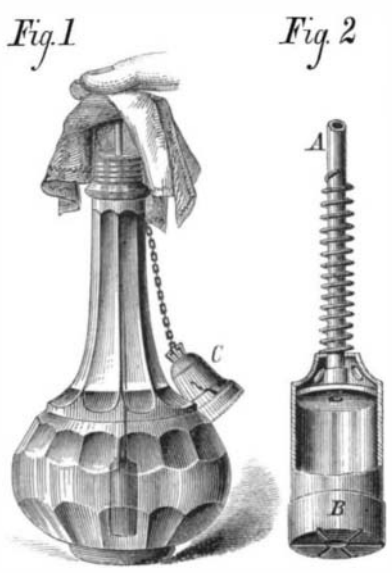
McCONNELL'S TUBE LEAK STOPPER.

Hydriodate of Morphine.

This new compound, which permits of being used in medicine, has been prepared by Ernst Schmidt both by dissolving morphine in hydriodic acid and by the action of acetate of morphine on iodide of potassium. The product in both cases was identical. Both crystallize in long needles, with silky luster and grouped in rosettes. The composition is represented by the formula C_{17} H_{10} NO_3 H I, and $2H_2$ O. When heated to the temperature of boiling water, it loses the two molecules of water, but recovers them on exposure to the air. It is but slightly soluble in cold water, more so in hot water. The hydrobromate of morphine is very similar to the above, crystallizes like it, and the crystals also contain two molecules of water.

A NEW PERFUME BOTTLE.

The annexed engraving represents an ingenious little novelty designed for attachment to perfume bottles. It is not an atomizer, but rather a miniature submerged pump, which, on being operated, forces up a small jet of the liquid against the hand or handkerchief. The stopper of the bottle, Fig. 1, is arranged in any convenient way to allow the passage of a hollow piston rod, A, Fig. 2, which terminates in a piston inclosed in the case, B. The latter is simply struck, in two portions, out of their metal, and has apertures above and a simple valve below. The piston rod is sustained by a spiral spring, and terminates above in a hollow button in which a



hole is made. On pressing on the button, the piston is forced down, the valve in the bottom of the case, B, closes, and the liquid beneath the piston is driven up through the hollow rod and emerges in a fine jet from the button. There is a screw thread on the bottle or stopper to receive the cap, C, for covering the button during transportation.

The advantage of the device is that it prevents waste of the perfume, which is the case when the contents of a bottle is shaken carelessly on the handkerchief, or when the bottle is left unstoppered. It is also a convenient arrangement for the toilet table, as a slight touch on the button causes the escape of a supply without lifting the bottle. The metal parts can be cheaply made by machinery, so that the dealer can sell bottles of perfumery provided with the device at quite a small additional price.

Patented through the Scientific American Patent Agency, January 14, 1873. For further particulars relative to sale of patent, address the inventor, Mr. W. S. Ward, P. O. Box 4,175, New York city.

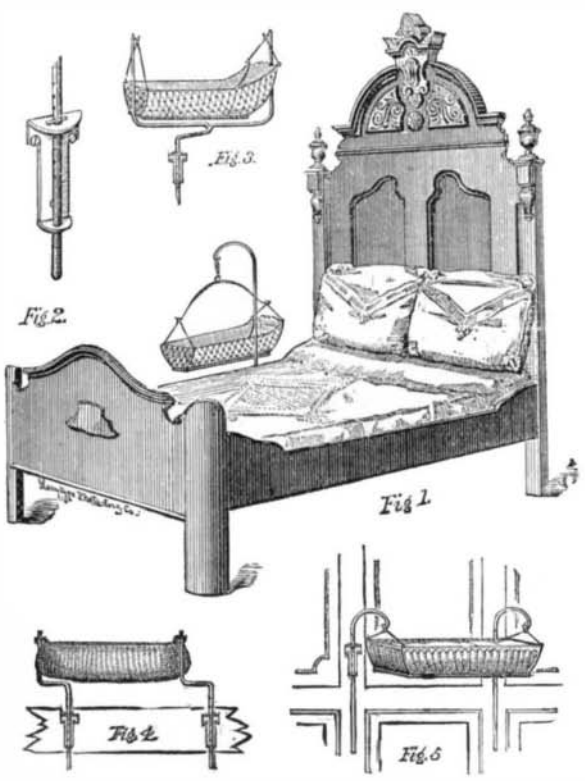
PROFESSOR MARSH, of Yale College, has received from the Geological Society of London a medal known as the Bigsby Medal, accompanied by a letter speaking in flattering terms of his recent discoveries among the fossils.

Learn the Value of Money.

A silver dollar represents a day's work of the laborer. If it is given to a boy, he has no idea of what it has cost, or of what it is worth. He would be as likely to give a dollar as a dime for a top or any other toy. But if the boy has learned to earn his dimes and dollars by the sweat of his face, he knows the difference. Hard work is to him a measure of values that can never be rubbed out of his mind. Let him learn by experience that a hundred dollars represents a hundred weary days' labor, and it seems a great sum of money. A thousand dollars is a fortune, and ten thousand is almost inconceivable, for it is far more than he ever expects to possess. When he has earned a dollar, he thinks twice before he spends it. He wants to invest it so as to get the full value of a day's work for it. It is a great wrong to society and to a boy to bring him up to man's estate without this knowledge. A fortune at twenty-one, without it, is almost inevitably thrown away. With it, and a little capital to start on, he will make his own fortune better than any one can make it for him.—*Hunt's Merchants' Magazine.*

ROBERTSON'S CRADLE ATTACHMENT FOR BEDSTEADS.

The annexed engraving represents a novel mode of attaching an infant's cradle to a bedstead. One form of the invention consists in the use of a bracket, Fig. 2, attached to the inside of the bedstead rail or other convenient place, and provided with holes at top and bottom, through which passes the lower end of a rod having its top curved so as to support the cradle, as shown in Fig. 1. When arranged in this manner with a single rod, the cradle may swing either lengthwise or sidewise; or, by allowing the rod to turn in the bracket, the cradle may have a horizontal, rotary, or semi-



rotary motion imparted to it. By means of a spring interposed between the curved arm and the bail, a jumping motion may be given to the cradle if desired; or the bail or support may be made flexible for the same purpose.

Instead of the single vertical support shown in the main figure, a forked one, such as is shown in Fig. 3, may be used, in which case no bail is required for the cradle, thus leaving it entirely clear at the top; or two supporters—one at each end—may be employed, as in Figs. 4 and 5, when the child grows too heavy for a single support.

One advantage possessed by the single or forked standards is that they may be readily turned so as to swing the cradle either over the bed or on the side of the bedstead, or crosswise, as desired. When in the last position the cradle may be tipped on one side and so held by a hook (not shown), and the child may then receive its nourishment without the mother feeling its weight or heat, which, in warm weather, is a great relief to mothers.

Instead of attaching the brackets to the side of the bedstead they may be fastened to the footboard, and the cradle is then entirely out of the way in getting into bed, and takes up little space that can be occupied by other furniture.

It is often desirable to remove the cradle from the bed room to some other. This may be readily done by attaching to any convenient woodwork, such as the chair or base boards, wainscoting, etc., a bracket or brackets, as shown in Fig. 5; or the bracket on the bedstead may be readily slipped from its fastenings and as easily secured in the desired position. The bracket and rod may be further utilized by hanging a baby-jumper from it when the cradle is removed.

This invention was patented September 17, 1876, by Mr. T. J. W. Robertson, 820 F street, Washington, D. C., to whom applications for further information, or for State, county, or shop rights, or licenses to manufacture on royalty, should be made.

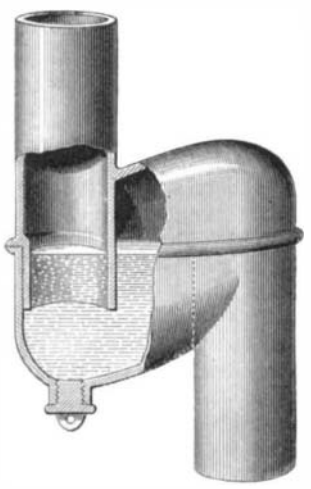
Make Something: Produce Something.

Half the people of the world are idle for want of some overseeing eye to set them to work. The advice which Haydon gave to the erratic poet Keats, to settle down to some definite purpose, needs be given to almost one half of mankind. There are very few persons but would find themselves comfortably well off if they would take hold of any one of a hundred pursuits and stick to it. Industry and economy will make a most wonderful change in many households. So says one of our exchanges, and we believe it is the truth.

ADEE'S IMPROVED TRAP.

In the annexed engraving is represented a very simple trap for soil pipes, drains, etc., which is claimed to completely prevent the backing-up of sewer gas. The ordinary bent pipe trap is not, as a rule, an efficient protection against this exceedingly dangerous emanation, because the discharge of the contents of the drain frequently creates sufficient suction to draw the water which forms the seal below its proper level in the bend. When this occurs, no obstacle whatever is presented to the escape of gas, and the trap may as well be absent altogether.

In the present device the body is made about two and a half



times as large in capacity as the part of the outlet pipe which enters it. Hence the weight of the water contained prevents the seal being broken by suction or siphonage, because it requires a greater force to lift the water than it does to draw air through it. In event of back pressure, the trap will resist about two and a half times as much as the old bent pipe trap. This is evident from the fact that the pressure is distributed over so large a surface of water. If the level of the latter is depressed one half inch in the trap, as a matter of course the level in the upper limb is raised one and a quarter inches. In this way the depth of the seal is increased instead of diminished; and when the pressure is withdrawn, the water naturally falls back to its original depth of seal, which, in this trap, is always one inch.

Patented June 13, 1876. For further particulars, address Messrs. Frederick Adee & Co., 275 Pearl street, New York city.

BITUMINOUS MACADAMIZATION.—In the Faubourg Poissonniére an experiment new to Paris is being tried in road making. The road is laid with broken stones and pebbles, and the whole held together with asphalt or bitumen. The asphalt is allowed to cool, and the material is subjected to a powerful pressure from a steam roller.