

A NEW DOMESTIC MOTOR.

A short time since we published an illustration of a combined rocking chair and cradle, an ingenious plan the utility of which was obvious. The inventor of the device which we now present has gone several steps further, and not only employs the hitherto wasted female power to oscillate a cradle, but at one and the same time to vibrate the dasher of a churn. By this means, it will be observed, the hands of the fair operator are left free for darning stockings, sewing, or other light work, while the entire individual is completely utilized. Fathers of large families of girls, Mormons, and others blessed with a superabundance of the gentler sex, are thus afforded an effective method of diverting the latent feminine energy, usually manifested in the pursuit of novels, beaux, embroidery, opera boxes, and bonnets, into channels of useful and profitable labor.

The apparatus, as represented, consists of a lever, A, suspended from the ceiling or other suitable support by a swiveled hook and staple. In the extremities of the lever, A, are formed slots through which pass bolts and nuts which secure the adjustable arms, B. To the eyes of the bolts are attached the ends of two ropes, which pass around double guide pulleys fastened to the floor and then to two single pulleys, arranged one beneath the forward and the other beneath the rear part of a rocking chair. The ends of the ropes are secured, as shown, to the rungs of the latter.

Near the extremities of the arms, B, sliding weights are placed, by moving which the lever can be properly balanced. Just inside the weights is secured on one arm the dasher of the churn, and at the other a cord communicating with a cradle rocker. As the chair is oscillated motion is communicated to the lever, and thence to both cradle and churn.

Necessarily this device may be put to a great variety of applications, and may supply motive power for washing machines, wringers, and other articles of household use, as well as for churns and cradles. At all events it opens a new field for "woman's labor," and one in which she is not likely to be disturbed or encounter competition from the other sex.

Patented through the Scientific American Patent Agency, April 15, 1873. For further particulars address the inventor, Mr. Gustavus Meyer, New Richmond, Allegan County, Mich., or the New York Exposition and Manufacturing Company, 52, 54, and 56 Broadway, New York city.

PERAMBULATING COT.

Invalids and persons who are afflicted with loss of powers of locomotion will, according to the statements of the inventor, find the apparatus herewith illustrated a great convenience and comfort. The device is called a perambulating cot, and is made with a pair of large wheels on an axle, upon which rests a light curved iron frame supported in the rear by a pair of pivoted caster wheels which follow the main wheels in any direction. On the iron frame are four curved springs, extending up to the middle section of a light wooden cot frame. There is a joint in the latter, just back of the hips of the occupant, arranged with ratchets, so that he can sit at any desired angle; and from the knee, forward, is a light tapering board and half circle foot piece. At the rear of the cot is a handle, adjustable, so that it may be made high or low, by a rod in the center of the cot frame; and there are two rods from the ends of the handle and attached to the frame at the swivel wheels, for propelling the apparatus. The feet are raised or lowered by turning a small crank on the foot board, and there is a hinged drop leg for use when necessary. Other conveniences, incidental to invalids' uses, are suitably and ingeniously provided for.

The inventor, Mr. A. W. Richards, who may be addressed at Indianola, Iowa, is a crippled United States soldier of the late war, and devised this apparatus in conformity to his own needs. He states that, although unable to sit erect, he can propel himself with ease by placing his hands on the large wheels, and thus travel from room to room. He also is enabled to be pushed around the streets by a child, in order to attend to business, etc. Numerous testimonials are submitted to us by Mr. Richards, which confirm his opinions of the efficiency of the device. It seems to us well adapted for its purpose, and particularly suited for employment in hospitals and other medical uses.

The Largest Steam Engine in the World.

Pittsburgh claims to have in progress of construction a pair of engines which will be the most powerful in the world. Reducing the capacity of some of the largest pumping engines to a uniform lift of one foot in twenty-four hours, it is found that the one at the Lehigh zinc mines will lift 3,456,000,000 gallons; the pair at the Chicago water works, 4,500,000,000 gallons; the pair at Haarlem, Holland, 10,000,000,000 gallons; while the new Pittsburgh engines will lift 14,240,000,000 gallons. The pair will weigh 1,500 tons, and will cost \$423,550. The following dimensions will serve to give some idea of the magnitude: Cranks nine tons; shaft, twenty-four tons; four sections of the two valve chambers, one hundred and twenty tons; fly wheel, seventy tons. The four plungers will weigh upwards of four hundred tons. Cylinder, sixty-four inches diameter; stroke, fourteen feet. Plungers forty inches diameter; eleven feet stroke. This ponderous piece of

machinery will be used to raise water into Highland avenue reservoir in Pittsburgh, a light of three hundred and fifty-six feet. It is estimated it will raise seventy million pounds of water for each hundred pounds of coal consumed, the cost being at the rate of one cent for every 3,070 gallons.

Water Boilers upon Stoves.

A brass or copper vessel tinned upon the inside, holding several gallons, is usually found connected with cooking stoves used in families. As this vessel is kept full of hot water, which is used for ordinary culinary purposes, it is important that no deleterious agent should be connected

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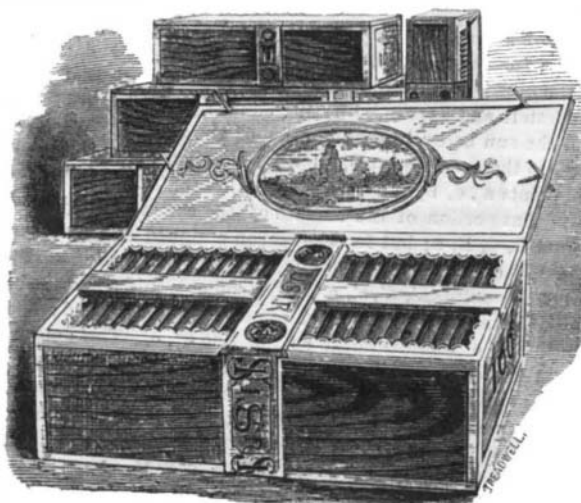
with the metal employed in its construction. A recent analysis has been made of a specimen of tinned brass plate used for making these boilers, and it was found that the tin contained 26 per cent of lead. How far this may serve to cause injury, it is impossible to say. It is certain, however, that lead is an objectionable metal to be brought in contact with culinary utensils, and hence its use must be condemned. An iron boiler lined with porcelain would be much safer, and perhaps not more costly. We understand such a vessel is constructed, and if so, it would certainly

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be a much safer one to employ as a reservoir of hot water for constant household and culinary use.—*Boston Journal of Chemistry.*

THE PATENT REVENUE CIGAR BOX.

Quite a stir has recently been created among the cigar manufacturers on account of the proposed requirement, by



the Government, of the use of a patented form of cigar box. The object of the invention, an engraving of which we here-with present, is to prevent the fraudulent re-employment of stamped boxes. A dealer, in purchasing his stock, naturally desires to inspect in advance the quality and flavor of the article. To do this, boxes must be opened and stamps torn, so that, if the cigars be not sold, they remain on the maker's hands in cases which, so far as the mutilation of their stamps is concerned, are in precisely the same condition as if their contents had been once disposed of. It is plain that an excellent opportunity is here offered for fraud upon the revenue by packing cigars in old stamped boxes, and, in event of detection, asserting that the latter were innocently opened as above described.

The present device, lately patented by Mr. Thomas A. Wiley, of Lancaster, Pa., consists simply in fitting two cross slats, as shown, into the edge of the box, forming a dovetail connection therewith; or a single broad longitudinal strip may be employed to answer the purpose. These slats are put in place after the cigars are packed, when the stamp is pasted partly on the transverse bar and partly over the side of the box. The usual ornamental paper is affixed in the ordinary way. By raising the lid, an opportunity is afforded for examination of the contents through the ample apertures left; while not a single cigar can be abstracted without first raising the slats and thereby rupturing the stamp.

The introduction of the plan is vehemently opposed by the cigar makers, who assert that it is of no greater efficacy than the present mode, while it will prove a serious detriment to their trade.

CEMENTING METAL TO GLASS.—Take two parts finely powdered white litharge, and one part dry white lead, mix intimately, and work up with boiled linseed oil and lac copal to a stiff dough. One part of copal is taken to three parts boiled oil, and enough litharge and white lead added to make a dough similar to putty. The underside of the metal is filled with the cement, and then pressed upon the glass, the excess of cement being scraped off with any sort of instrument. It dries quickly and holds firmly.

Location of Standard Compasses.

For determining the deviation, due to ferruginous materials in their construction and cargoes and to other causes, of the steering compasses of vessels, a so-called standard compass is usually arranged on the upper deck, and at as high an elevation as convenient above the hull.

The position of the instrument is as nearly neutral as can be found—that is, at a point where the local attractions are evenly balanced. By causing the ship to swing in different directions, and noting the variation between the indications of the standard and that of the binnacle compasses a table is formed from which the deviation of the latter for various points is used as a correction to be applied when steering such courses.

M. Glesener, in referring to this subject in *Les Mondes*, suggests placing the standard compass out upon the bowsprit, at a distance previously determined to be without the sphere of attraction of the iron in the vessel. By this means, instead of the attracting substances being grouped around the instrument, perhaps unequally, they necessarily are all upon one side of the compass and symmetrically placed in regard to it. The latter is, of course, so fixed that the lubber's point and the foot of the needle pivot are in a line parallel to the longitudinal axis of the ship. To reflect a portion of the card, an inclined mirror is arranged above it, in which the indication is read from the deck by means of a spyglass.

BUTTER AND FATS.—Dr. J. Campbell Brown says that the proportions of the chemical constituents vary so greatly (from zero upwards) that no reliable evidence of purity or impurity can be obtained by estimating the different fats obtainable by decomposing butter. In fact, the distinction between pure butter and butter mixed with flesh fats is no more a chemical one than the distinction between different animals or different plants. The physiologist distinguishes one kind of tissue from another more readily by their microscopic characters than by their chemical composition; and microscopic examination with polarized light is the most reliable means of distinguishing pure butter from that which contains an admixture of less easily digestible and less palatable fats.

LEMONADE FROM CURRANTS.—Citric acid may be prepared from ripe currants in the following manner: The currants are first broken up by pounding or squeezing; the juice is then pressed out and allowed to ferment. When fermentation ceases, the alcohol is distilled off and the residue neutralized with fine chalk. In this way citrate of lime is formed, which is afterward decomposed by sulphuric acid and the citric acid set free. From 110 pounds of fruit there should be obtained about one pound of citric acid, beside a considerable quantity of alcohol. A dilute solution of citric acid furnishes a pleasant and healthful drink, and, although lemonade is usually made from lemons, we would not, says the *Journal of Applied Chemistry*, be far wrong in calling this drink lemonade, although prepared from currants.