

Novelties in Varnishes and Shoe Polishes.

Reinhardt has devised a method of destroying the stickiness of varnish, which consists in placing the article in a closed vessel or chamber where it can be exposed to the action of ozonized air in motion.

A leather varnish or polish is prepared by Gunther, of Berlin, by mixing a filtered solution of 80 parts of shellac in 15 parts of alcohol, with 3 parts of wax, 2 parts of castor oil, and a sufficient quantity of pigment. The mixture is evaporated in a vacuum to a sirup. The varnish is applied to the leather with a brush moistened with alcohol or with a colorless alcoholic varnish.

Nicolet, of Lyons, prepares boot blacking by dissolving 150 parts of wax and 15 parts of tallow in a mixture of 200 parts of linseed oil, 20 parts of litharge, and 100 parts of molasses, at a temperature of 230° or 250° Fabr. After this 108 parts of lampblack are added, and when cold it is diluted with 230 parts of spirits of turpentine, and finally is mixed with a solution of 5 parts of gum lac and 2 parts of aniline violet in 35 parts of alcohol.

Hein, in Kaufering, makes another kind of shoe blacking by melting 90 parts of beeswax, or ceresine, 30 parts of spermaceti, and 350 parts of spirits of turpentine, with 20 parts of asphalt varnish, and adds 10 parts of borax, 20 parts of lampblack, 10 parts of Prussian blue, and 5 parts of nitro-benzol.

Brunner uses 10 parts of bone black, 10 parts of glucose sirup, 5 parts of sulphuric acid, 20 parts of train oil, 4 parts of water, and 2 parts of (carbonate of) soda. The bone black and glucose are stirred with the acid in a porcelain vessel until the whole mass is homogeneous and has a shining black surface when at rest. The soda is dissolved in a little water, and boiled with the oil under constant stirring until it forms a thick liquid, and then the other mixture is stirred into it. By varying the proportions of these two mixtures, the blacking is made thinner and softer, or harder and firmer. The substances sold as French polish are mostly composed of these ingredients. In this and all other kinds of shoe blacking made with bone black and sulphuric acid, the precaution must be observed of stirring rapidly and evenly after the acid is added, otherwise lumps will be formed that are difficult to crush, and the blacking will have a granular condition that does not belong to it. Good shoe blacking must always remain soft, and show a smooth uniform surface when applied to the leather.—*Neueste Erfahrungen.*

THE "PEERLESS" ENGINE.

The engine represented in the engraving is one of the simplest, most compact, and strongest in the market. The piston rod, valve stem, and pins are made of steel. The crank shaft and connecting rod are made of Chester steel. The main frame of the engine and the slides, as well as the bearings for the crank shaft, are cast in one piece, so that it is impossible for the working parts of the engine to get out of line or change their relation to each other.

The construction of the engine is such that the action of the piston rod is exactly central, and all lateral strains are avoided.

The "Peerless" engines do not require any masonry foundation, or extra care in setting up, thus saving expense to the buyer. They will stand upon any ordinary floor and do perfect work, even when out of plumb. Every engine is adjusted, and run for several hours, before leaving the shop, and is in complete order when sent out.

A detached engine has many features which recommend it to those wanting power. When small engines are mounted on boilers, the journals often become so heated that it is difficult to keep them lubricated, and the working parts of the engine are liable to be thrown out of line by unequal expansion of the different parts of the boiler to which they are attached, and the durability and efficiency of the engine greatly lessened.

This engine occupies but little space, is convenient to work around, and makes a solid, substantial thing. Should it be necessary to move it at any time, the boiler can be taken off the base by simply unscrewing the steam and exhaust pipes.

A valuable feature of this form of portable boiler and engine is, that it can be taken apart and carried up or down stairs, or into localities where it would be difficult and expensive to carry the same power engines and boilers if all fastened together.

All persons familiar with the mechanical principles involved will understand why this form of engine, detached from boiler and standing on a solid iron foundation, is superior to the lightly constructed engines which are bolted to the boiler shell. Aside from every other consideration, the greater power obtainable from an engine of this pattern, of same sized cylinder, owing to the higher rate of speed at which it can be run without serious vibration, should give it the preference among all careful buyers.

In a vertical engine no counter weight is required, because the recoil produced in a horizontal engine in overcoming the inertia of the reciprocating parts is here prevented by the perfect resistance of the earth, as the travel of the piston is in the direction of the line of gravitation and not across it, as with horizontal engines, and greater steadiness and free-

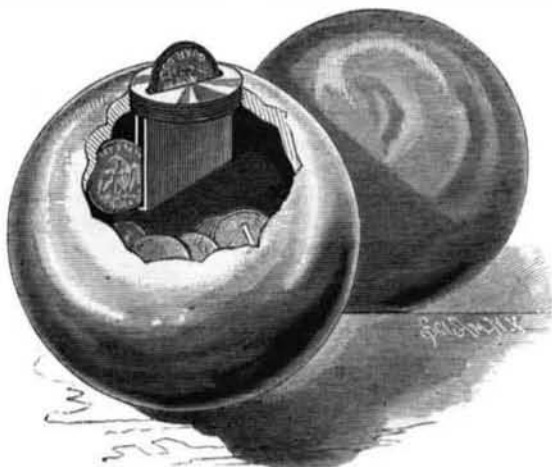
dom from vibration is obtained. In a vertical engine the wear is equal on all sides, which is not the case with a horizontal engine, in which there is always the heaviest wear on the under side of the cylinder.

Five sizes are manufactured, two, four, five, six, and nine horse power. Chas. P. Willard & Company, 20 La Salle Street, Chicago.

TOY MONEY SAFE.

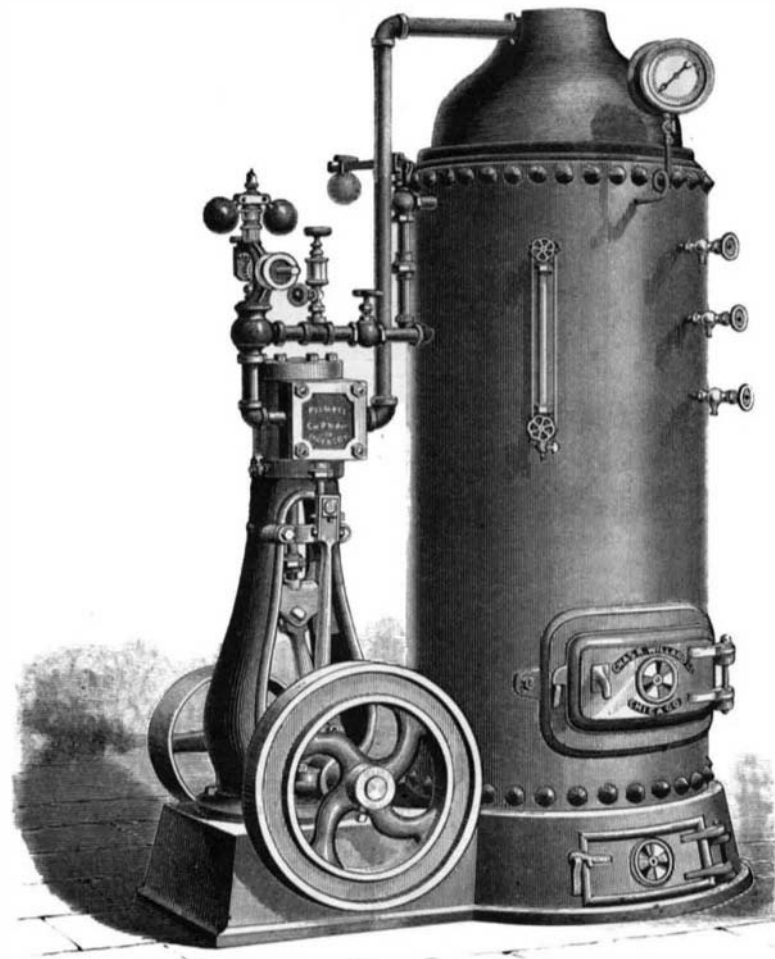
The child's bank or toy money safe shown in the engraving serves as a secure and convenient receptacle for coins, and at the same time is a truly ornamental object, being of polished metal, nicked, silvered, or gilded, bronzed or japanned. It may be made of rubber or any other suitable material. It can also be made of brass spun in spherical form.

The hollow sphere forming the money safe has a narrow flat base forming the stopper of the aperture through which the coins are removed. The stopper screws in with a fine,

**HOTCHKISS' TOY MONEY SAFE.**

close-fitting thread, and with so much friction as to render it impossible for the child to remove it. In the stopper is a slot connecting with a short flat tube having an inclined bottom, which deflects the coins as they are introduced, and absolutely prevents their being shaken out.

This simple device can be made to sell for a very low price and yield a good profit; at the same time it admits of a fine finish, and may be made in various sizes to suit users.

**C. P. WILLARD & CO'S VERTICAL ENGINE.**

This invention has recently been patented by Mr. J. F. Hotchkiss, of 84 John Street, New York city, who may be addressed for further information.

Laver Bread.

Laver bread is made of a seaweed (*Porphyra laciniata*) found growing on the low rocks. The women gather it in large baskets and carefully pick it over, wash it, and take out any other sort of seaweed that gets in with it. It is then thoroughly washed again to remove all the sand, after which it is boiled for about two hours, then chopped up with a

knife, rolled into lumps, and sprinkled with oatmeal to keep it together and make it look clean. It is only made along the Glower and Devonshire coasts, where a great many women earn their living by making it. After it is cooked it will keep for about three or four days in summer, and for about a week in winter. Most of it is taken to the Swansea market, for which a great deal is sent from Devonshire, where the seaweed grows more abundantly than about Gower. It is sold at 3d., 4d., and 5d. per pound. The poor people are very fond of it, and eat it either fried with bacon grease, or else cooked like a vegetable with meat.—*Kew Report.*

A New Tar Explosive.

Among the derivatives of coal tar, several kinds of explosives have long been known; but a new compound of this character has lately been made by Dr. Himly and Herr Von Fruttschler-Falkenstein, which is said to be suitable either for mining purposes or for firearms. It is described in the *Journal of Gas Lighting* (London) as a mixture of saltpeter, chlorate of potash, and a solid hydrocarbon, for which latter constituent paraffin, asphaltum, or pitch may be chosen. The solid ingredients are powdered and intimately mixed; and the mixture is then treated with a liquid volatile hydrocarbon, such as benzine or gasoline, which dissolves the solid hydrocarbon and forms the whole into a plastic mass. The cake is then rolled into sheets, and hardened by allowing the liquid solvent to evaporate; the product being afterward broken up into grains of any desired size, like ordinary gunpowder. By this mode of dissolving the hydrocarbon before or after admixture with the salts, the grains become coated, after drying, with a waterproof coating of varnish. The process of manufacture is simple and free from danger, because in the event of the paste catching fire the volatile hydrocarbon will first burn away entirely, after which the powder will burn slowly and quietly. The new compound is therefore only an explosive when confined in a close space. It possesses the same density as gunpowder, and is very hard. It can be made twice as strong as the latter; but the intensity of the explosion can be regulated at will by varying the proportions of the ingredients and the size of the granules.

Hearing in Insects.

The sense of hearing in insects has been recently studied by Herr Gruber. He found the cockroach (*Blatta germanica*) very sensitive. On sounding a violin note when a cockroach was running across the floor, the creature always suddenly stopped. Again, a number of these cockroaches were inclosed in a glass vessel, and on making a strong sound there was evident agitation and excitement; some would fall down from the glass as if paralyzed. A cockroach was hung by a thread from its hind leg; when it was quiet a bow was drawn sharply over the violin strings at the distance of about four feet, whereupon the insect was greatly excited, and struggled round, getting its head uppermost.

Beetles also were readily affected by sounds, but grubs and ants gave no certain indications. Of aquatic insects various kinds of corixa were tried. These would often remain quite quiet for several minutes, but on tapping the glass with a glass tube they rushed about with much agitation. A disk at the end of a long rod drawn to and fro in the water near a quiet corixa produced no effect, but on conducting the sound of a struck bell into the liquid by the rod, there was lively reaction; similarly when a glass bell stroked with a bow was brought to touch the water. These creatures were also sensitive to high violin notes in air, to the sound of a metal plate struck with a hammer, etc.

Still more sensitive to sound were various aquatic beetles (*Iaccophilus*, *Iaccobius*, *Nepa cinerea*, etc). On the other hand various larvæ, especially of ephemerides, were unaffected; but these were sensitive to mechanical agitation of the water. Herr Gruber considers the response the insects make to sound an indication of true hearing, and not mere reflex action.—*English Mechanic.*

The Dismal Swamp.

The Dismal Swamp in Virginia is much reduced in extent compared to what it was twenty years ago. It now contains, says a recent visitor there, some of the best farming land in the State. A railroad runs across it, and it is on its way to final extinction. The drainage of Lake Drummond, a central body of water lying higher than the average level of the swamp, would make the whole area fertile. This is a project of Gov. Benjamin F. Butler, who once had surveys made, but at length abandoned it. The one great industry of the swamp is lumbering. It is penetrated by small ditches in connection with larger canals, and by rude tramroads, over which the logs are hauled to be sawed up into shingles, railroad ties and fencing. The lake, however, with its fringe of cypress and its projecting roots and stumps, is just as dismal as ever.

PASTE for labels is made by soaking glue in strong vinegar, then heating it to boiling and adding flour.