

A NEW MECHANICAL MONEY BOX.

A variety of curiously ingenious money boxes for children have, of late, appeared in the hardware and toy stores, which, it seems to us, must tend to cause the average youngster to lay up immense stores of pennies, if only for the satisfaction of seeing the toy operate whenever a coin is inserted. There is a metal frog into whose mouth the penny is put, whereupon he gulps down the coin and rolls his eyes in the most astonishing manner. Another device is so constructed that, when the penny is dropped in the slit of the box, two or three tin horses proceed to race around a miniature race track; still another is the figure of a portly individual seated in a chair. The coin is placed in his hand, whereupon he promptly inserts it in the slit which is located in the position of a coat pocket. About the most ingenious invention of the kind we have yet seen is that herewith illustrated. It was patented by Mr. C. C. Johnson, of Windsor, Vt. The penny is placed on the tray held by the miniature cashier outside of the house, and the weight is just sufficient to press down the platform on which the figure stands. The arm, in descending, strikes the pin of a locking device beneath it and frees a spindle which, operated by concealed clockwork causes the cashier to be carried round in a circle against the door on the left, which opens before him so that he can enter the bank, and then closes behind him. He carries his receiver through the slot of a chute, a lip on which removes the coin so that it drops down the chute and into the vault below. Then the cashier moves round against the other door, which opens outward and closes as he passes, and coming again to the front of the bank he is again held by the locking device, waiting for the next contribution.

The Fair of the American Institute.

The 45th annual exhibition of the American Institute will open on the 6th of September next, at the Institute building, corner of 63d street and Third avenue, in this city. The management announce unusual preparations to accommodate exhibitors, and also the fact that a new gold medal will be awarded for articles of great merit and novelty. It is thought that the influx of people to the Centennial will render local fairs in its vicinity exceptionally valuable for advertising purposes to exhibitors. Application for space, etc., is to be made to the General Superintendent, American Institute, New York city.

TRIMMING AND PUNCHING ROOFING SLATES.

Mr. E. R. Davis, of Detroit, Mich., has patented (Dec. 21, 1875), a new machine with which a roofing slate may be trimmed and the nail holes punched at a single operation.

In the engraving herewith given, A is the main frame, to which the cutting frame, B, is hinged. C¹ are two bearers, adjustably secured, so that they can be adjusted to or from each other, according to the width of the slates to be trimmed. The bearer, C¹, has one side turned up, as at C², forming a guide flange for one side of the slate, which is laid against it. A guide is adjustably secured to the front girt between the bearers. The outer edges of the beveled ends of the bearers are flanged upwardly, and sharpened to form cutting edges, b. The cutting frame is composed of two parallel iron bars set up edgewise, bent to form three sides of a frame, with spacer blocks between the bars, which are tied by bolts through the said spacer blocks. The cutters, EE, are adjustably secured under the frame diagonally across its corners, so as to bring their cutting edges just outside the cutting edges of the bearers below. F is a handle across the front edge of the cutting frame, which can thereby be lifted up or thrown forcibly down, the impact upon the front girt of the main frame being eased by rubber buffers.

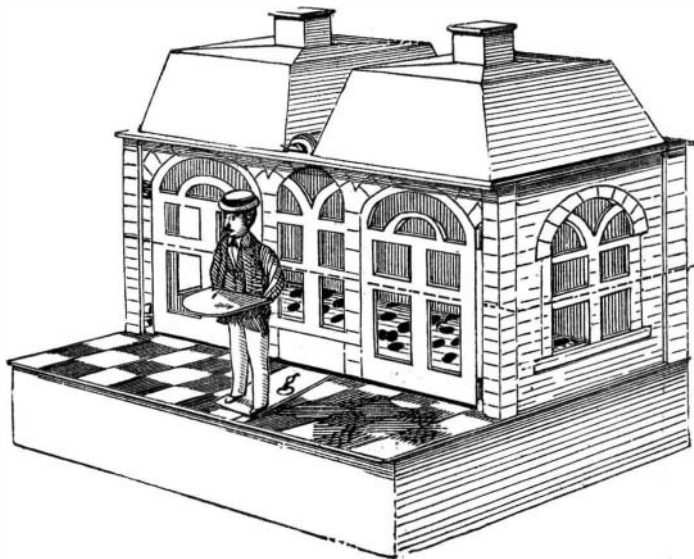
To trim a slate the latter is laid on the bearers, one edge bearing against the guide, C², and the front end against the guide, D. The cutting frame is then thrown down, when its knives will shear off the corners of the slate in line with the cutting edges, b, of said bearers. To punch the nail holes in the slate at the same operation each bearer is provided with an anvil, G, longitudinally adjustable in a slot therein, each anvil having an oval hole through it. Across the top of the cutting frame a cross beam, H, is jacked, said beam being constructed like the cutting frame of two parallel iron bars set up edgewise, and may be moved forward or back by loosening its jack bolts. I are nail hole punches, each having a screw shank which is inserted up through the slots of the cross beam, where it receives a wing nut, I', which secures it in position to have the point enter the anvil hole. First passing through the slate. A spring, J, spirally coiled about the punch, forces off the slate when the punch is raised.

Export of Cotton Fabrics and Breadstuffs.

The exports of domestic cottons from New York to foreign ports in one week, recently, were over 1,000 packages, which bring the total, from the 1st of January, up to 31,500 packages. The shipments of grain are enormous. Last week's exports were of wheat, 13,023,300 bushels, corn, 409,546 bushels, besides a fair quantity of peas, rye, and oats. The prospect of war in Europe has stimulated the grain trade.

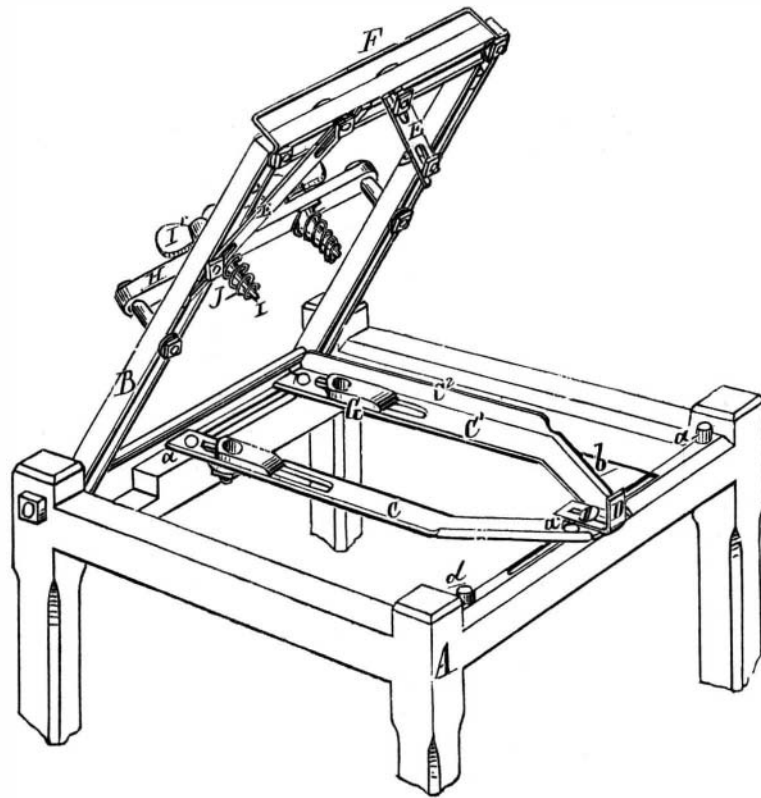
Separating Paraffin from Hydrocarbon Oils.

Mr. Joseph B. Meriam, Cleveland, O., says: "Heretofore paraffin has usually been removed from hydrocarbon oils by putting the material into sacks or folds of canvas, or folds of hair cloth, etc., and then subjecting to pressure at a low temperature. The difficulty, however, in those processes was that, the heavier the pressure that was applied, the more open would the pores of the bags or sacks become, and the more readily would the paraffin pass through them, rendering it almost impracticable to make a thorough separation.

**A NOVEL MONEY BOX.**

"I have discovered that the scales of paraffin that are thus left, after thus extracting the oil by pressure at a low temperature, are separate and distinct, and, except under the application of heat, cannot be, by ordinary pressure, reduced to an impervious mass; and I make use of this property as follows, for the purpose of separating the paraffin from oils.

"I first take suitable receptacles, preferably of metal, protected by a non-conductor of heat, which receptacles have perforated bottoms. I then place over the bottom on the inside a wire gauze, screen, or cloth to prevent the scales of paraffin from falling through. I then fill in upon the said screen a quantity of paraffin scales that have been separated from hydrocarbon oil by pressure under a low temperature, as above described. The hydrocarbon oil to be treated is then prepared as follows: It is first reduced to a low temperature, sufficiently to chill it, and leave it in the condition termed granulated. This oil, in its chilled, granulated condition, is then put into the vat upon the paraffin scales, and then subjected to a pressure under a low temperature, in any convenient way, as, for instance, by a plunger. This pressure drives the oil through the mass of

**DAVIS' MACHINE FOR TRIMMING AND PUNCHING SLATES.**

paraffin scales, which filters from it the paraffin that may be contained therein. The greater pressure applied, the more closely will the paraffin scales be pressed together, and the more perfectly will it filter the paraffin from the oil that is being operated upon. In this way I am enabled to make an almost perfect separation of the paraffin from the oil, thus leaving the oil in a practically pure condition."

PHOTO-CHEMICALS.

BY EDWARD DUNMORE.

Gallic acid, obtained from nut galls, consists of small, feathery crystals, nearly white, but which, however, vary in color, some samples being decidedly brown. Preference should be given to the more colorless sample for photographic purposes. It is freely soluble in hot water, but in cold about four and a half grains will form a saturated so-

lution in one ounce of water. The reason of the much greater activity of a hot saturated solution in development will be at once apparent.

Pyrogallol acid, or pyrogallol, occurs in white, brilliant crystalline plates, massed together in light, cottony masses, which, by exposure to the air and light, gradually darken and, in some measure, lose their photographic activity. Colorless samples should, therefore, be selected. It may generally be relied on for purity. The writer was once accidentally supplied with benzoic acid in lieu of pyrogallol, which it somewhat resembles in appearance; but the substituted acid will be readily detected by its aromatic odor.

Nitric acid should be colorless, and the upper part of the bottle containing it free from red vapor. Its specific gravity is about half again as heavy as water. It is very corrosive, staining the skin yellow, and must be very carefully handled, as its corrosive action will give rise to very troublesome sores. The fact of its producing a yellow stain on many organic substances—a quill, for example—may serve to distinguish this acid from most others.

Sulphuric acid is a colorless, heavy liquid, having great attraction for water, and should be stored in well stoppered bottles. If kept in corked vessels it will soon become dark in color from portions of the cork becoming decomposed and falling into it. Any organic matter will cause rapid darkening, and there is most violent reaction when it is mixed with turpentine and other hydrocarbons. Its chief use in photography is in the preparation of pyroxylin, and as a detergent for removing organic and alkaline deposits from glass vessels.

Hydrochloric acid, when pure, is colorless, giving off white fumes on exposure to the air. It may be readily distinguished from other acids by the dense white vapor which forms on its fumes mixing with those of ammonia. The commercial acid is of a yellow color and contains many impurities, but is sufficiently good for the purpose of precipitating solutions of nitrate of silver. Diluted with water, it readily removes stains of the alkaline developer from the hands and ink stains from wood or other materials. Aqua regia, or nitro-hydrochloric acid, is a mixture of one part of nitric with three or four parts of hydrochloric acid, and is used for dissolving gold in the preparation of the chloride of that metal.

Bicarbonate of soda, often purchased as carbonate of soda, is a white powder and useful for many purposes, culinary and scientific. The quality varies considerably; that known as "Howard's" is considered as the best preparation, being more soluble than the common variety. It is often called carbonate of soda, an appellation only correct when applied to the preparation known as washing soda, or this in its purified forms.

Morphia acetate is an alkaloid obtained from opium, and may be purchased as a dirty white crystalline powder, which inflames like resin. It is a dangerous narcotic, but useful in the preparation of dry plates with very limited keeping powers.

Alcohol, or spirit of wine, is a colorless, volatile liquid of a strength of 56° to 60° over proof, suitable for addition to the above developer, varnish, etc. A more highly rectified quality, termed absolute alcohol, is used in the preparation of collodion, or for diluting the same. The only difference or probable impurity in proof spirit, rectified spirit, or absolute alcohol, is the percentage of water contained in it. A rough method (if the hydrometer be not at hand) of estimating the strength is by watching the rapidity of its evaporation. On a slip of note paper being dipped into it and suffered to dry spontaneously, if the spirit be tolerably free from adulteration, evaporation will take place rapidly; but if much diluted, it will be some time before this takes place.

Rectified ether is an extremely volatile, colorless fluid, boiling at a low temperature, and not miscible with water unless mixed with spirit of wine. Spirit of ether is occasionally supplied in lieu of the rectified ether, and consists of a solution of ether in spirit of wine. The mixture may be readily detected by adding a few drops of spirit of turpentine, which will cause no turbidity if the ether be pure, but will do so if it contain spirit of wine.

Methylated spirit: This should be nothing more than spirit of wine with an admixture of wood naphtha; but it is often impure from the presence of resinous and other matters. Methylated finish is sometimes sold for it, a preparation utterly unsuitable for photographic use, containing, as it does, a large percentage of resinous matters. Good methylated spirit should, if burned in a spirit lamp, form no incrustation whatever round the wick tube, and should not be more than slightly opalescent if mixed with water.

Ammonia: The sesquicarbonate of ammonia, or volatile salt, occurs in semi-transparent lumps of various sizes. Access of air will cause them to be converted into another carbonate, of an opaque white, powdery character, and of less active chemical qualities. Lumps free from this powdery surface should be selected, and the vessels in which it is kept made airtight. It is a good precaution never to reduce it to powder until just before use, as in a state of fine division it is more liable to become inert.—*British Journal of Photography.*