

## AN ELECTRICAL ROCKING CHAIR.

A dynamo attachment for a rocking chair, designed to send a mild current of electricity through a person sitting in the chair, such current being generated by the motion of rocking, is shown in the accompanying illustration, and has been patented by Mr. Charles E. Hartelius, of Bay Ridge, N. Y. (box 94). The dynamo, which may be of any usual type, is fastened on the under side of the chair seat, and on one side of the field



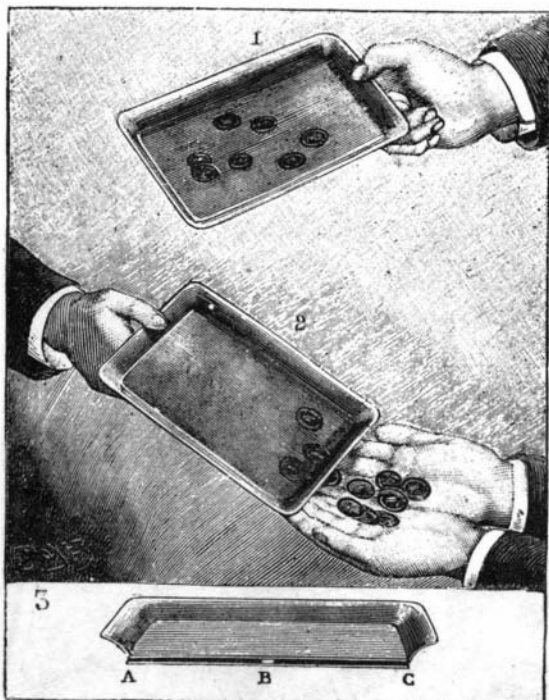
HARTELIUS' ELECTRICAL ATTACHMENT FOR ROCKING CHAIRS.

of the dynamo is a keeper connected with a handle rod on the chair back, by adjusting which the pole pieces may be connected at any desired point to control the strength of the current. The dynamo is driven by a belt from a shaft journaled in hangers on the chair bottom, the shaft being operated by a belt from one end of a lever in connection with a spring and ratchet mechanism. The lever is pivoted to the lower end of a hanger, and at its rear end is a caster or roller, which runs upon the floor, so that as the chair rocks the lever is alternately depressed and elevated. The dynamo is connected by wires with electrodes on the arms of the chair, or with hand pieces, which may be held by one desirous of receiving the current, or with metal foot rests, so that one may by either means receive a mild current of electricity. A gentle current may thus be taken for any desired length of time, the chair being used in the ordinary way when the body is kept out of contact with the electrodes.

## TRICKS IN PRESTIDIGITATION.

**Multiplication of Coins.**—In prestidigitation, very simple experiments, that seem childish as soon as the secret of them is known, often produce quite an effect during the performance and cause the spectators more surprise than do many skillful and complicated tricks. Such is the case with the one that we are about to describe.

Upon a small rectangular tray of japanned sheet iron, similar to those in common use, are placed seven coins (Fig. 1). A spectator is asked to receive these in



FIGS. 1 2 AND 3.—MULTIPLICATION OF COINS.

his hand and to put the coins back upon the tray, one by one, and to count them with a loud voice as he does so. It is then found that the number has doubled, there being fourteen instead of seven. The same operation repeated gives as a result twenty-one coins.

As may be seen in the section in Fig. 3, the tray has a double bottom, forming an interspace a little wider than the thickness of one of the coins, and which is divided breadthwise into two equal compartments by a partition, B. These two compartments are closed all around save at the ends of the tray, where there are two apertures, A and C, that in length are double the diameter of the coins. In this interspace are concealed fourteen coins, seven on each side. When the contents of the tray are emptied into the hand of a spectator, the coins concealed in one of the compartments drop at the same time (Fig. 2). The operator then takes the tray in his other hand and thus naturally seizes it at the end at which the now empty compartment exists, and this allows the seven coins that are contained in the other compartment to join the first ones, when the latter are rapidly emptied into the hands of the spectator for the second time.

A square tray, with a double bottom divided into four compartments by divisions running diagonally from one corner to another, would permit of increasing the number of coins four times.

Let us say, however, that skillful prestidigitators dispense with the double bottom. They hold the coins sometimes under the tray with their fingers extended, and sometimes on the tray, under their thumbs, and renew their supply several times from secret pockets skillfully arranged in various parts of their coats, where the spectators are far from suspecting the existence of them.

**The Wine and the Water.**—After having done considerable talking, as required by his profession, a prestidigitator is excusable for asking permission of his spectators to refresh himself in their presence, especially if he invites one of them to come to keep him company.

An assistant then brings in upon a tray two claret glasses and two perfectly transparent decanters, one of which contains red wine and the other water. The prestidigitator asks his guest to select one of the two decanters and leave the other for himself. No hesitation is possible. The guest hastens to seize the wine and each immediately fills his glass. How astonishing! Upon its contact with the glass the wine changes into water and the water becomes wine. Judge of the hilarity of the spectators and the amazement of the victim! The pretended wine was nothing but the following composition: 1 gramme permanganate of potash and 2 grammes sulphuric acid dissolved in 1 quart of water. This liquid is instantaneously decolorized on entering the glass, at the bottom of which has been placed a few drops of water saturated with hyposulphite of soda. As for the water in the second decanter, that had had considerable alcohol added to it, and at the bottom of the glass that was to receive it had been placed a small pinch of aniline red, which, as well known, possesses strong tinctorial properties. The glasses must be carried away immediately, since in a few instants the wine changed into water loses its limpidity and assumes a milky appearance.—*La Nature*.

## Manufacture of Bronze Powder.

The United States commercial agent at Furth says the greater part of the bronze powder exported from Germany is manufactured in and near the cities of Furth and Nuremberg, about a hundred establishments being engaged, the factories being generally situated on some small stream, where water furnishes cheap power for driving the hammers and stamps. Bronze powder is composed of copper, tin, zinc, and antimony melted in proper proportions, and cast first into rods of half an inch in diameter and about three feet long. These rods are then rolled until about two inches wide, and then cut into suitable lengths for handling. These pieces then go to the hammers, where they are beaten into a very small fraction of their former thickness, and are then taken to a sulphuric acid bath, where each sheet is washed to remove all impurities, rust, and dirt. After being thoroughly dried, the

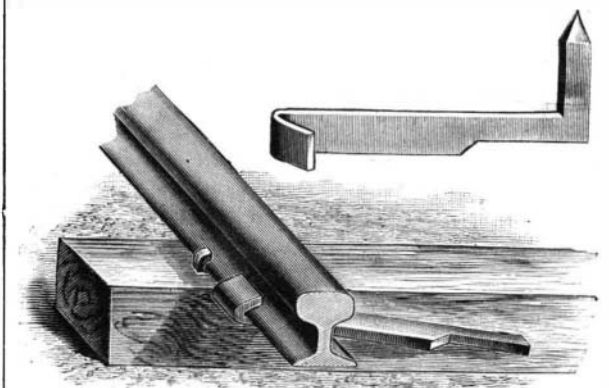
sheets are again hammered by steam hammers until no further reduction is possible, there being a limit to which machinery can be used.

Up to this stage the treatment the metal receives, whether intended for metal leaf or powder, is identical; but now the process changes. If designed for metal leaf, the further beating must be done by hand, but if for bronze powder the sheets go to the shears, where they are cut up into small particles, and now become known as clippings. These are now ready for the stamp mills, which are run in batteries, enabling one man to run or attend fifty or more. When sufficiently pulverized, the powder is sifted in a peculiar manner, the heavier and better qualities going to one receptacle and the inferior grades to another. The cheaper qualities are mixed with quartz powder to enable them to be sold cheaply. The expense of manufacturing bronze powder rests largely in the production of the clippings, a great deal of hand work being required.

Of late years manufacturers in the United States have begun the manufacture of bronze powder, and have purchased the raw material in Bavaria, which appears to have excited fears that ultimately the manufacture will be successfully installed here and the business in Germany broken up. In order to prevent such a disaster to themselves, the manufacturers of bronze powder have entered into an arrangement whereby they all agree not to sell any clippings to be exported to the United States except through a committee, which places the orders at an agreed price, namely, one shilling and threepence per pound, a price which they hope and expect will virtually stop the demand. Bronze powder is sold at prices varying from one shilling per pound for the very cheapest to three shillings for the best quality, the duty being sixpence per pound, irrespective of quality or value. The exports of bronze powder and metal leaf to the United States from the two places, Furth and Nuremberg, in the year 1892, amounted in value to about £140,000, this country taking the greater part of the German exports of bronze powder.

## A TIE-DOG FOR RAILROAD RAILS.

The tie-dog whose application is shown in the picture, to prevent the spreading and breaking of rails, has been patented by Mr. John T. Feindel, of Somerville, N. J., and it is intended that where it is used an even gauge of track will be more easily maintained,



FEINDEL'S TIE-DOG FOR RAILROAD RAILS.

and that it will not be necessary to use as many ties to the mile as heretofore. The dog has a claw at one end to engage the outer flange of the rail, and at the other end of the dog is a laterally projecting spike arm to be driven into the tie. Communications relative to this improvement should be addressed to Mr. Lyman C. Garretson, No. 63 Dey Street, New York City.

An organist says that a cow moos in a perfect fifth octave, or tenth; a dog barks in fifth or fourth; a donkey brays in a perfect octave; and a horse neighs in a descent on the chromatic scale.



FIG. 4.—WATER CHANGED INTO WINE AND WINE INTO WATER.