

**Picture Frames from Carton Pierre.**

Prof. Meidinger gives the following description of a new method employed in the manufacture of gilded and bronzed picture frames. The composition employed consists of glue, chalk, linseed oil, and paper pulp. The glue is first dissolved and boiled, then silk tissue paper (such as comes between gold leaf is very excellent) is stirred in and rapidly disintegrated, then linseed oil is added, and finally chalk. While hot the mass forms a stiff dough, which is hard when cold, but softens between the fingers, and can be kneaded and pressed into moulds. In a few days it gets dry and is then almost as hard as stone. The paper imparts tenacity to it, so that it is less affected by blows than wood is. Separate pieces of this mass unite readily, and it is easily attached to wood. The proportions of the four constituents are not stated, except that the proper proportions are recognizable by the feeling; in summer more glue is added than in winter, as it readily decomposes (spoils). Owing to the glue, of course, it will not stand the wet, and could not be employed for articles exposed to the weather.

When hard the surface can be shaved off with iron, then polished with sand paper, and is finally coated with a size called "Poliment." This, says Meidinger, is a commercial substance consisting essentially of clay, with the addition of soap and fatty substances. For gilding it is used just as it comes, but for bronzing, only blue or gray shades are used, and some dark pigment must be added, either fine black or umber. The dry pigment would make it too dry, and hence it must be softened by mixing it with melted wax and rubbing it up fine on a stone when cold. One-third of this is mixed with the commercial gray or blue poliment. To make it adhere to the ground, liquid glue must be added. Three or four coats are applied until it is sufficiently covered.

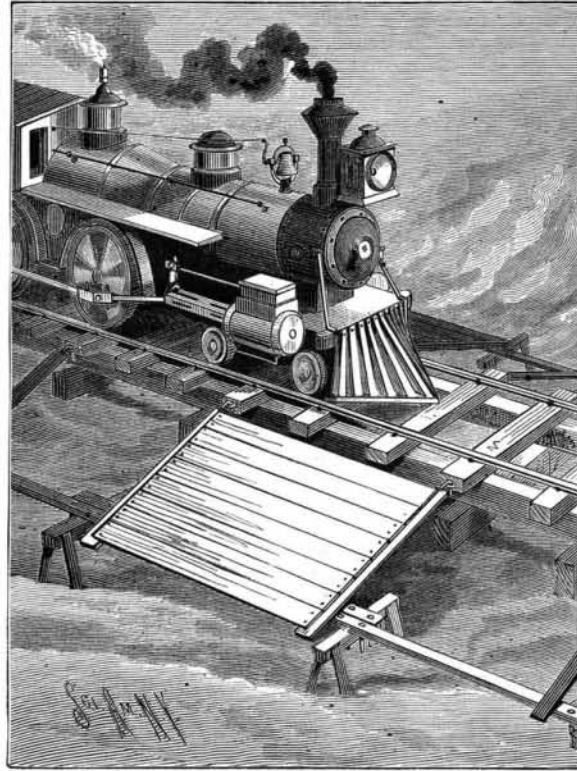
For gilding it is painted over with dilute alcohol and the gold leaf immediately laid on and pressed down. For bronzing a brush is wet with dilute spirits and dipped in the bronze powder, which is applied nearly dry on the poliment. It dries quickly and can be polished at once with agate polishers. The gilding is done as soon as it is polished, but bronzing requires varnishing, so as to impart to it a uniform luster, especially in deep cavities that cannot be polished well, and also to protect the bronze from change of color caused by atmospheric influences. The difference between gilding and bronzing consists, first, in using a darker poliment, as it shows through the bronze, while it is completely hidden by the gold leaf; secondly, in applying the bronze avoiding too damp a brush and too strong alcohol; thirdly, in the final coating with varnish.

**NEW TURRET SHIP CONQUEROR.**

This ship, now fitting out in Chatham Dockyard, will be, when completed, one of the most formidable vessels in the British Navy. Her armament consists of two of the new 43 ton breech-loading guns, in a turret protected by 12 inches of compound steel-faced armor, four 6-inch breech-loaders, two of which are placed in recessed ports aft, and two on Vavasour carriages, behind shields, amidships on the upper deck. She also carries, says the *Graphic*, to which we are indebted for our engraving, seven Nordenfelds, and two Gardner guns aloft in the top, or "upper fortress." Six

**IMPROVED SAND GUARD FOR RAILWAYS.**

The guard prevents sand which is carried along by the wind from accumulating on the tracks. It consists in a series of boards pivoted at the sides of the track and supporting other boards, under which the wind passes, sweeping over the track and carrying the sand along with it. The rails are spiked to ties, placed the usual distance apart, which rest on longitudinal beams supported on sleepers that



**IMPROVED SAND GUARD FOR RAILWAYS.**

are embedded in the ground, which must consist of gravel or some other earth that cannot be blown away. At the ends of some of the ties are loops for receiving hooks on the ends of boards, whose free ends rest on rails placed at the side of the track and parallel with it. These rails rest on horses placed at right angles to the track, and at the ends are provided with downwardly projecting pins, one of which is on each side of the top piece of a horse. On these rails are boards hinged to the ties or fastened in any suitable manner. The free ends of the boards may rest on the ground instead of on the rails supported by the horses. In sand storms the sand gathers in ridges on each side of the track, encroaches on the track, and finally stops travel. The horses are then placed on top of the ridges, and are pressed down until they have a firm bearing, when the rails and boards are placed on them, the latter having their outer edges a certain distance above the sand. The boards are so arranged that their outer edges will be toward the direction from which the sand blows. The wind passes under the boards and is conducted to the other side of the track, carrying the sand with it. The boards need only be large

**Paper for Uncle Sam's Currency.**

The paper on which the United States currency is printed is manufactured at Dalton, Mass., and the Boston *Herald*, in a recent issue, gives the following particulars: Eighteen or twenty Treasury girls, who earn \$3 a day, count the sheets, examining each one closely, and rejecting all imperfect ones. An automatic register at the end of the machine registers every sheet as it is cut off and laid down. The register man takes them away in even hundreds, and they are immediately counted in the drying room. In all the various processes of finishing every sheet is counted, and they are again counted on their receipt at the Treasury Department in Washington. The great protection of the government against counterfeiting lies in the paper here made. The distinctive feature is the introduction of colored silk threads into the body of the paper while it is in the process of manufacture. They are introduced while the paper is in the pulp, and are carried along with it to the end of the machine, where it is delivered as actual paper. This has been more fatal than anything else to the professional counterfeiters.

**Hollow Magnets.**

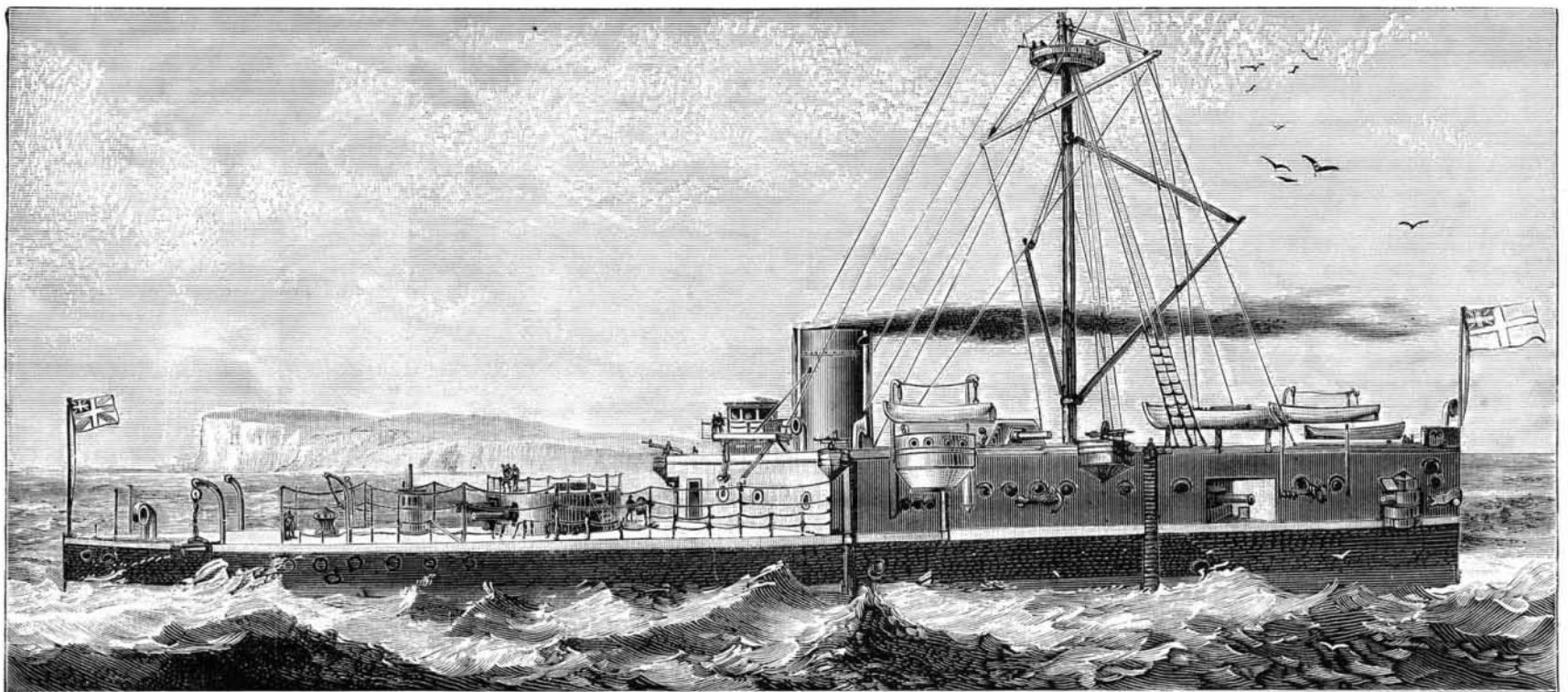
While Preece has found that there is no difference in the conducting power of lightning rods of various forms, Holtz has concluded that solid steel bars do not form so good permanent magnets as tubes, because the core acts as an armature joining the two poles. In experimenting to test his hypothesis, he magnetized rods and tubes to saturation, and found that the magnetism of the tube showed an excess of more than 50 per cent. After waiting six months, he subjected the same magnets to new tests, in order to find which retained the magnetism best. He found that the magnetism of the solid was to that of the hollow magnets, in one case as 1 : 2.5, in another as 1 : 2.9—*Weid. Annalen*.

**Refrigerating Steamship for Carrying Fresh Meat.**

The screw steamer *Loch Ard*, of Dundee, lately docked at Cardiff, is a fine vessel of 838 tons net register, and has been constructed specially for the purpose of carrying dead meat from the River Plate to London. The refrigerating chambers leading forward to the main and fore holds are lined with wood and charcoal, and an engine of novel construction draws the air out of the chambers. The air is then compressed and driven through the holds containing the dead meat, the temperature maintained being often 70° below zero. Messrs. David & W. Henderson, of Glasgow, constructed the engines under the patent of Messrs. Bell, Coleman & Co. The steamer will load for Montevideo, and thence take her cargo of meat for London. The voyage out and home will occupy about three months.

**The Bottle-Nose Whale.**

The *American Naturalist* asserts, on the record of Dr. Gray and Professor Flower, that the ordinary bottle-nose whale is only a variety of the spermaceti whale. According to information derived from a comparison of the bottle-nose with the spermaceti the former has all the characteristics of the latter in its yield of commercial material. Spermaceti is found in the head as in that of the well known spermaceti whale. The bottle-nose attains a length of thirty feet, and



**THE NEW STEEL TURRET SHIP CONQUEROR.**

torpedo ports, three on either side, from which Whitehead torpedoes can be discharged, and a most powerful ram complete her means of offense. Her engines are by Messrs. Humphreys & Tennant, and a full boiler power propel the ship at a speed of 15.5 knots.

THE returns of the census taken on January 1, 1883, which have just been published, show that the Empire of Japan contained a population of 36,700,100, made up of 18,598,998 males and 18,121,000 females.

enough to direct the current of wind so that it will have the desired effect. They may be applied to either side of the track.

The invention was patented by Mr. T. W. Stapleton, of Portland, Oregon, who assigned it to Mr. John G. McBride, 523 Franklin Street, San Francisco, Cal.

At Reddich, Germany, 14,000 persons are engaged in making needles. The total production of needles in the world is 200,000,000 per week, or 10,000,000,000 per year.

then yields two tons of oil and two hundred weight of spermaceti. It feeds upon small cuttlefish and in pursuit of them stays below longer than any others of its order, a fact which makes it difficult to kill. After running out 700 fathoms of line and remaining below two hours, an old male will come up so fresh as to require a second harpoon, and will attack the boats with head and tail. So strong are the muscles of this whale that he can not only leap clear out of the water, but can guide itself in descending so as to plung head first instead of falling helplessly sidewise like the larger whales.