

Recent Foreign Inventions.

PLATING METALS—F. S. Thomas and Wm. Tilley, of London, have obtained a patent for coating lead, iron, or other metals, with tin, nickel, or alumina. The following, from the London *Mechanics Magazine*, is a description of the process, taken from the specification of the patentees.

"The first part of our process," says the inventors, "consists in a mode of preparing a solution of the metal with which the articles are to be coated or plated, for which purpose we proceed as follows:—For tin we dissolve metallic tin by nitro-muriatic acid, and then precipitate the tin by an alkali, or alkaline salt, preferably by the ferro-cyanide of potassium; we then mix sulphuric acid or muriatic acid with the precipitated oxyd of tin, to which we add a portion of water; these we boil in an iron vessel with a small portion of ferro-cyanide of potassium, then filter the liquor, and the solution is completed.

Another mode of forming a solution of tin is as follows:—Having precipitated the oxyd of tin, as above described, we add ferro-cyanide of potassium to the oxyd and boil them; then set the solution aside to cool, and then filter the same; we then pass a stream of sulphuric acid gas through the solution.

For nickel, we dissolve nickel by nitro-muriatic acid, and precipitate the oxyd by ferro-cyanide of potassium; we then wash the oxyd, and add thereto cyanide of potassium dissolved in distilled water; then boil the mixture, and when cool filter the same, which completes the solution of nickel.

For alumina, we dissolve alum in water, and add ammonia until it ceases to precipitate any more; we then wash the alumina, filter it, add thereto distilled water, boil the same with cyanide of potassium, filter when cold, and the solution of alumina is ready.

Having thus obtained either of the foregoing solutions, the articles to be covered or plated are suspended by copper or brass rods in a bath of the required solution, and attached to the zinc pole of a battery, to the positive pole of which is attached, in the case of a tin bath, a piece of platinum, or a pole of tin in the case of a nickel bath, a bag containing oxyd of nickel, or a pole of nickel, and in the case of a bath of alumina, a bag of alumina, or a pole of alumina, or a piece of platinum."

VARNISH FOR PROTECTING IRON SHIPS FROM CORROSION—Joseph Westwood and R. Baillie, of Poplar, England, have taken out a patent for the above named purpose. Both the interior and exterior of iron ships are subject to rapid oxydation, and although it is well known that various varnishes form good protective coatings, it has been found almost impracticable to make them adhere to the metal. This invention has for its object the perfect adherence of a protective coating. The patentees first put on a coating of common black varnish, then a coating of boiled oil and black lead, with a little arsenic to prevent the adhesion of barnacles on the outside of the vessel. The composition of the black varnish is not given in the specification, but we suppose it is the common kind for black iron work. It is made by boiling slowly 48 lbs. of asphaltum for four hours in an iron pot, and then mixed with six gallons of hot boiled linseed oil, made sticky by 6 lbs. of litharge introduced into it, and boiled for a few hours. It is ladled out hot from a pot into the boiling asphaltum, and the two boiled for about an hour. When cool, it is reduced with turpentine to the proper consistency for being put on with a brush. About two pounds of lamp black may be added, to improve its color.

MAKING WOVEN FABRICS WATERPROOF—James Murdoch, of London, patentee.—This invention makes cotton cloth waterproof by the application to its surface of the following varnishes:—In three gallons of water, half a pound of alum, one pound of ox gall, and two pounds of linseed cake, are boiled for one hour, then allowed to cool, and applied with a brush to the surface of the cloth to be coated, which is afterwards placed in a stove room to dry. The next coating is composed of 3 gallons of linseed oil, 1-4 lb. of litharge, 1-2 lb. of india rubber, 1-2 lb. of tar, and 1-2 lb. Prussian blue—the latter as a coloring material. These are boiled for about an hour, and well stirred all

the time, when it will form a strong varnish. It is now allowed to cool, and is put on the surface of the cloth with a brush or machine. The cloth is then allowed to dry again in a stove room, and when dry, its surface is rubbed with pumice stone to make it smooth. The third and last coat is composed of three gallons of linseed oil, boiled over a strong fire for two hours, with two ounces of the salts of tin, and the same amount of the sulphate of zinc—both dryers. This varnish may also be colored with Prussian blue, or other coloring material. When cold, it is applied to the surface of the cloth like the other coatings, and the cloth is afterwards dried in the same manner. The last coating is given with a thin copal varnish. This method of preparing cotton, or coarse hempen woven cloth, to make them waterproof, may be very useful information for our oil cloth manufacturers.

PREPARATION FOR SUGAR REFINERS—In some stages of sugar refining, and in Turkey red dyeing, bullock's blood, in a natural state, is used, and in this condition it is difficult to carry and disagreeable to keep. To obviate these evils, J. Pillars, of London, has taken out a patent for pressing the clotted blood of animals into cakes, then drying them with currents of hot air. It is afterwards ground to powder in a machine, and in that state is used by sugar refiners and dyers. This is certainly a valuable improvement over the old method, if it answers as good a purpose, and the attention of all sugar refiners should be directed to it. The serous portion of the blood, which has been pressed out, is dried like the clotted parts, and is supplied to calico printers for using with their colors, and also to the refiners of wine for their operations, as a substitute for the white of eggs.

[For the Scientific American.]

Encroachments on the Patent Office.

As your journal appears to be the only one through which inventors, and those interested in the general success of the Patent Office, can be reached, I have taken the liberty of calling your attention to the fact that, ever since the completion of the East Wing of the Patent Office building, a manifest disposition has grown up to crowd the Department out of its edifice entirely. These attempts to cripple the Office began with the last Administration; but the crowning act is left for the present Secretary of the Interior. Not satisfied with bringing into the building his own immediate retinue of clerks, he must also crowd in the Census Bureau, and more recently he has occupied one entire floor with the Land Office and its regiment of clerks. Worse still, another fiat has gone forth, and the Patent Office must be pushed further to the wall to admit the Indian Office; and thus a building erected for the special accommodation of inventors, is about to be wrested from them.

The causes for thus circumscribing the Patent Office, to any but a politician, will appear ridiculous. In the first place, it is deemed that the importance of the Department of the Interior, is lost sight of, because it is in a part of the Patent Office Building. This detraction from the magnitude of the "Interior" Department, is to be remedied by some little Act of Congress, asking for an Inspector of Sealing-wax and Tape, or some other equally unimportant Act, in which the name of the building is to be changed from the U. S. Patent Office to that of "Department of the Interior," and a new sign put up in accordance. Secondly, many persons, the Secretary fears, may innocently suppose, from the name of the building, that the Commissioner of Patents out-ranks the Secretary of the Interior. This is an underrating of the Secretary's importance, which he cannot tolerate or forgive.

The Patent Office cannot be used as a political engine, hence, to a mere politician, its insignificance.

Now, let any one visit the Patent Office, and then say whether it has any room to spare:—models, which cost thousands upon thousands of dollars, are heaped up a huge unsightly mass,—under the vestibule, under the portico, under any thing where there is storage room. Other models are in rooms so darkened by the mass of material, as to make an inspection of them impossible. Clerks are crowded inconveniently together; the examiners have no

private apartment where they can keep pending cases from public inspection,—yet with such facts before his eyes, the Secretary of the Interior complains that the Patent Office is too much "spread out"—that they must restrict the Office to less room. Now all this plainly means that the Patent Office is to be turned out of doors, and the Department of the Interior is to take possession of the building. The Land Office is already in the West Wing, and yet there is no roof on it. Squatter sovereignty appears to be the order of the day. There is but one thing more to do, and I do not place that beyond the intent of the present Secretary, viz.: to order that part of the main gallery, which is in the Western Wing, to be cut up into rooms for the Pension, or some other Department.

The Patent Office is unfortunately conditioned at present. There is no Commissioner of Patents, as you are aware, and before one can be appointed, another and fatal blow will be struck. The Secretary of the Interior, or some of his bad advisers, are determined that the Patent Office must contract itself still more. The present Acting Commissioner, a perfect gentleman and faithful officer, has not the power to stop these encroachments. It strikes me, that if President Pierce, straightforward, practical man as he is, knew it, he would clip the wings of this aspiring Secretary. The columns of our city papers cannot be had to call attention to the attempts of the Interior Department to smother the Patent Office, and unless you will do it, we must sit and look on whilst we are robbed of our fine building, for the purpose of gratifying a few aspirants who imagine that they are overshadowed by it.

Strangers coming to our city invariably first visit the Patent Office. Its contents have elicited unbounded astonishment and praise from citizens and foreigners. This is probably to her prejudice, as she detracts, by her contrast, from the other branches of the government, whose officers imagine that they are the shrine at which strangers should worship. The Patent Office, it is true, has not her agents and sub-agents, her receivers and her registers, who are scattered broadcast all over the country, and whose duty it is to cater to the taste of the hand which for the time feeds them, but she has among her votaries the mechanics of the country, who shun politics to devote their time to their pursuits, and thus build up the reputation of their country. These men should know how their labors are appreciated here—how the emanations of their hard study, and the work of their hands,—their time, and their means,—is cared for by the Secretary of the Interior. A knowledge of these facts ought to arouse the whole community of inventors and mechanics, to a rescue of their beautiful building from its invaders.

Washington, D. C., Sept., 1855.

More Encroachments on the Patent Office.

In addition to my former communication, I have now to say, that the Secretary of the Interior, in direct violation of the second section of the Act of 1839, which expressly places that power in the hands of the Commissioner alone, has removed four of the temporary clerks of the Patent Office: they were ladies, to be sure, but among them were the very best copying clerks in the Office, and one of them the daughter of a man who served faithfully in the Office for twenty-five years, and who, since her father's decease, has been supporting, by her pen, his entire family. This act may appear small, but is not so in reality; it takes away from the Commissioner one of the prerogatives of his office, and clearly shows that the Secretary of the Interior intends, by an assumption of power, not given to him by any law or precedent, to manage, control, and direct the affairs of the Office to suit his own purposes and ends. But further: this act not only aims at taking away from the Office its privilege, but another object is gained. The room occupied by these clerks will be taken possession of by him for the Land Office, which is thus beginning to elbow its way, from the west Wing, into the Patent Office proper. Two important objects gained by the Secretary of the Interior in this move, and having "broken the ice," he doubtless supposes that he may now proceed further without hindrance.

You may think that I overrate the designs of the Secretary of the Interior, and that my fears are not founded on facts. In answer, I would say that ten years' intimate and close connection with the Office, in all its phases sustains me in the opinions I have formed. When such men as Buchanan, Webster, and Forsyth, were perfectly clear that the law establishing the Patent Office, gave them, as Secretary of State, no power whatever over her affairs, except to confirm or refuse to confirm nominations made to them, and to sign patents, it is not surprising that we should scoff the action of a "fourth-rate man," as Secretary of the Interior, who, without any change in the law organizing the Office, sets at defiance the deliberate opinions of his predecessors in office and stops at nothing to accomplish his ends.

When application was first made for rooms in the Patent Office building, the then Secretary of the Interior pledged himself that he would go no further than merely take a few rooms for himself and his immediate clerical force, which was small. This he did, and from thence dates the downfall of the Patent Office, unless its friends and supporters step in to prevent it. One encroachment has followed another, until the independence of the Patent Office is crushed out, and its rights in the building expressly provided for it by law, are usurped by others, who allege that "the Patent Office is but simply one of the Bureaus of the Department of the Interior, and has no more right to superior accommodations than the Land Office, the Pension Office, the Indian Office, or the Census Bureau, which are equally branches of the Department of the Interior."

Washington, D. C., Sept., 1855.

The Power of Belting for Driving Machinery.

MESRS. EDITORS—In a late number of the *SCIENTIFIC AMERICAN*, I see a communication from Mr. Charles E. Moore, on the subject of machine belting, wherein he speaks of there being no rule for calculating its powers, &c. I have therefore taken the liberty of sending you the following rules for that purpose; they are from a number of such rules on various subjects connected with mill work, that I have, from time to time, collected from practical memoranda and personal experience, during some forty years spent among and constructing steam engines, both stationary and locomotive, steamboats, water wheels, and mill work of all kinds. The rules I have made use of for belting, and found to answer perfectly, are those of an eminent machinist of your city; they are as follows:

Rule 1. "To find the width of a belt necessary to transmit any number of horses power"—Multiply the horses power to be transmitted by the constant number 5400, divide the result by the velocity of the belt in feet per minute, multiplied by the diameter of the smallest drum (also in feet,) for the width of the belt (in inches) required.

Rule 2. "To find the power of a belt when its width, velocity, and diameter of pulley are known"—Multiply the velocity of the belt in feet per minute, by the diameter of the smallest drum (in feet,) and by the width of the belt in inches. Divide the result by the constant number, 5400, for the number of horse power such a belt will transmit.

Rule 3. "To find the diameter of the smallest drum, when the power, velocity, and width of the belt are known; multiply the horses power by the constant number, 5400. Divide this result by the velocity of the belt, in feet, per minute, multiplied by its width in inches, for the diameter of the smallest drum in feet.

As a belt is soon destroyed by over-straining, these rules are calculated to give some 25 per cent surplus power before it will slip materially. No belt should be worked up to its full power, and as Mr. Moore says, "the slack side on the top, with large drums at high velocity; a long slack belt will work for years, but a short one, under heavy strain, is soon destroyed. When the power to be transmitted is considerable, say fifty horse and upwards, it is best to use gearing at the first mover if you wish to avoid trouble and loss of time.

R. F.

Philadelphia, Sept. 14, 1855.

The Crystal Palace is receiving machines for the Exhibition of the American Institute.