

New Inventions.

Improvements in Sculpture.

The London *Athenaeum* gives an account of some new inventions of our countryman in Italy, Hiram Powers, the sculptor, in the art to which he has added so much renown by his genius and skill. Thus, in finishing the limbs of his figures with that extreme nicety for which he is celebrated, Mr. Powers adopts the following bold and novel mode:—He has invented a vise, which is set upon a ball and socket joint, and has, by virtue of raising and depressing screws, every possible variety of motion. This instrument is said to be the perfection of ingenuity.

Electrical Protection of Metals.

We stated in our last number, that according to the law of electrical affinities, when two oxydizable metals are connected together and exposed to a moist atmosphere or water, the negative is protected at the expense of the positive. Thus iron, which is very liable to oxydize, is prevented from rusting when connected with zinc, because the latter is more oxydizable. On the other hand, when iron is connected with copper or lead, it rusts more rapidly; it is the positive metal when thus related. Iron may be used as the positive metal, as well as zinc, for a galvanic agent, and we understand it is so used in what is termed "the Maynooth battery," but it is inferior to zinc for such a purpose. Sir Humphrey Davy was the discoverer of this law, and he entertained great hopes of its being so applied as to protect the sheathing of ships permanently. Iron lightning rods have been protected from rusting by connecting them at the foot with pieces of zinc placed in the moist earth. The wrought iron bolts, &c., of water wheels have been prevented from rusting by being connected with strips of zinc, which were easily renewed from time to time. This application of the law of electrical affinities is very useful for protecting the iron of various machines or articles that may be exposed to water or a moist atmosphere.

Iron appears to undergo no change in dry air, and is incapable of decomposing pure water at ordinary temperatures. In the ordinary rusting of iron a hydrated sesquioxide is formed. Iron rust always contains ammonia. In solutions of the alkalies, and in lime water, iron remains bright, these appear to protect it from rusting. All acid salts, on the other hand, rust it rapidly. These facts should not be overlooked by those who employ steam boilers, they should use pure soft water, and no other kind for generating steam.

Machine for Paging Books.

There are several machines in use for printing the proper figures on each page of blank books, but the one here illustrated possesses some advantages peculiar to itself. It was invented by F. O. Degener, of this city, to whom Letters Patent for a paging machine were granted July 24, 1855.

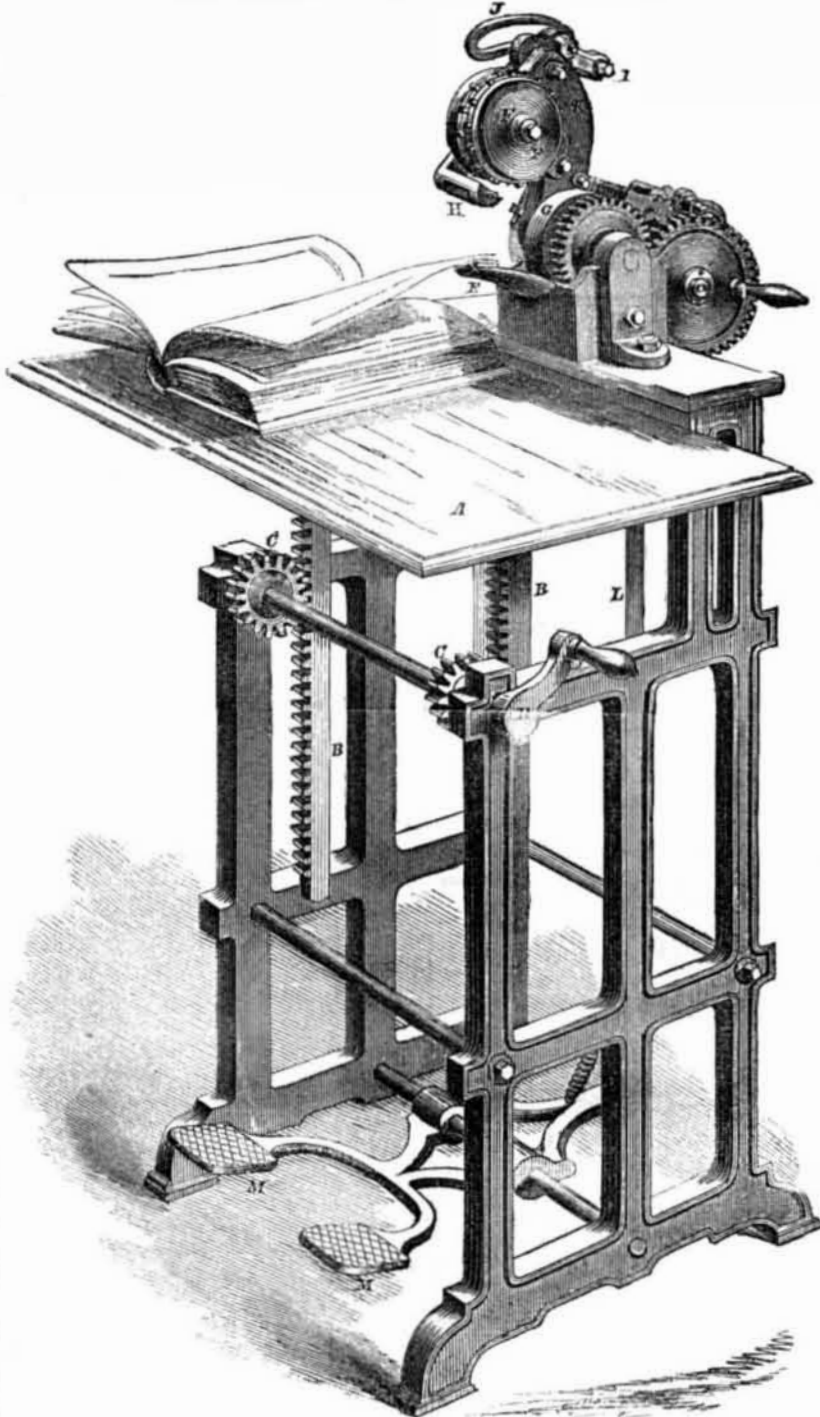
This machine, as also every other intended for the same purpose, requires the leaves to be separated by hand, and to be presented in turn on the bed or platen to receive the impression. With this exception, the operation is entirely automatic, the changing of the figures and the inking of the same after each impression being admirably and perfectly performed. The machine may be worked by power if desired, but is here shown as working by the foot lever, M.

A is the table of the machine, on which the book is laid. B B are racks attached thereto. C C and D represent very obvious means of raising and lowering the same. E is a small flat platen, made suitably soft at its upper side to receive the impressions, and provided with suitable gages to aid in laying the corner of each leaf in the same position as its fellows, so that all the figures shall appear at the same distance from the corner of its respective page.

F is the wheel carrying the figures, and is pressed down upon E at each movement of the foot lever, M. This wheel is compounded of a number of disks, capable of revolving in-

dependently of each other, but ingeniously connected by pawls and notches, so that each moves the next, one notch, at each complete revolution. The motion of these disks is analogous to those of ordinary counting devices, and results in changing the number printed by one unit at each impression. The first disk represents units, and turns regularly

MACHINE FOR PAGING BOOKS.



full revolution its next step moves the third disk one notch, and so on, to any extent required. Four figures, will, of course, include any number up to 9999, which is more than is ever required in practice.

G is a roller supplied with ink in the usual manner from other rollers. The ink is distributed at first by grasping the crank represented, and turning it for a short period; but after the machine is in operation G is partly rotated at each motion of the foot, so that the crank is unnecessary. The compound wheel, F, is carried in the stout lever, K, and derives its motion from a connection of the latter to the foot lever, M, by the link or rod, L. The part denoted by J is not fixed to the lever, K, but is a portion of the stationary

Choosing Printed Paper for Walls.

Most persons when they go into a store to purchase paper for the walls of their houses are never satisfied unless they overhaul a great number of patterns. Their object is to select the prettiest style they can find—the best among the lot—and this course, in ordinary business, has a common sense appearance about it. But a rule of conduct, excellent and correct in the pursuit of one object, may be totally wrong in following after that of another, and this is the case in examining a great number of samples of printed paper at once. Many are so liable to get bewildered when a great variety of pat-

one-tenth of a revolution after each impression, and after having presented its figure 9, presents 0, and gives a movement of one notch to the next disk, after which the disk representing tens remains stationary, until the unit disk has completed another revolution, when it starts along another notch. When the second disk has thus slowly completed a

one-tenth of a revolution after each impression,

When Patents Expire.

A patent taken out in any foreign country and afterwards secured in the United States, expires with the foreign patent. This is according to our patent law. From a communication we have received on the subject we are convinced that many persons are not acquainted with this feature of our patent code. The English patent of E. P. Morewood for galvanized iron, mentioned in our last issue, expired on the 3d inst., thirteen years only from the date of his American patent, but fourteen from May 3d, 1843, the date of the English patent.

Elevators for Steamboats.

The Pittsburgh (Pa.) *Journal* states that Robert Lea, engineer of that city, has constructed an elevator for the steamer *City of Memphis*, for lowering into and raising cargo from its hold, and it has been found very convenient. It is rigged in the hatchway, and occupies the whole space, except about two feet, sufficient for a plank on each side for walking up and down. It consists of endless chains, which revolve on two rollers, attached to each end of the frame, at the deck, and in the hold. On these endless chains, or belts, at regular distances, are fastened cross pieces of wood, to support barrels ascending or descending, and the machine is kept continually in motion by the engine, or can be worked by hand.

In the hold, at the base of the elevator, where the freight is removed, or put on, as the case may be, is erected an inclined plane down which the goods are taken by men when loading, or up which they are rolled and dropped on the belt, when unloading the boat. And on the deck likewise, are planks placed, a little above the belt, forming a gentle declivity towards the gangway. The hatchway, instead of being open, as a trap for the unwary, is cased with doors in front.

No such elevator, so far as we know, is employed on any of our steam or sailing ships, and we think it would be a great improvement if they were all to adopt it. Our common passenger river steamboats do not require them, as they carry their cargoes on deck and have no hold room. Elevators for unloading grain from vessels are in common use, but they are different in their construction from the one on the *City of Memphis*.

Machine Horse and Mule Shoes.

Messrs. Burden & Sons, iron manufacturers at Troy, N. Y., have concluded a large contract with the Government to supply the horse and mule shoes used in the United States service. These shoes are to be made by a machine, which turns them out at the rate of fifty a minute, or ten tons a day. They are swedged between dies, and are as uniform in weight and form as coin.

Iron Ships with Iron Rigging.

The Baltimore papers state that the British iron ship *Santiago* has recently arrived in that city from Africa. She is a clipper of fine model, and besides the hull being of iron, the rigging is mostly composed of wire ropes. The compass is placed on the mizzen topmast, to prevent local attraction, and the top sails can be furled by the men on deck.

Varnish for Rustic Garden Seats.

First wash the woodwork with soap and water, and when dry do it over on a hot sunny day with common boiled linseed oil; leave that to dry for a day or two, and then varnish it once or twice with what is commonly termed "hard varnish." If well done it will last for years, and will prevent any annoyance from insects. Now is the time for varnishing such seats.

American Balance Docks in Austria.

The Austrian Government, convinced of the superiority of our balance and sectional docks, intend to erect such structures for its navy, and J. S. Gilbert, of this city, inventor of the balance dock, is employed at Trieste in building one.

Obed Hussey's Reaping Machine has been introduced into New Zealand by an Englishman, and has been used with gratifying success.