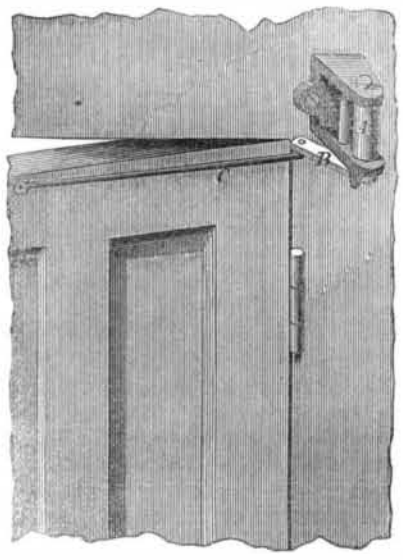
cylinder, and its interior at a diametrically opposite point, to a circular center block, said rim working within a slotted rocker in an oscillating abutment.

Rotary Engine.—By John Robingson, of New Brighton, Pa.—This invention relates to rotary engines having a piston which is fixed relatively to the rotating shaft, or only to a slight extent yielding, and sliding abutments. The improvement consists in a certain novel arrangement of induction and eduction passages on opposite sides of the piston.

Calendar Clock.—By Edwin Allen, of Glastenbury, Conn.—This invention consists in certain novel means of effecting the changes in the movements that are rendered necessary by the different lengths of the months, which render the construction simpler, surer, and cheaper.

Paper Feeder for Printing Presses.—By David Babson, Groton, Ct.—Consists, first, in a peculiar means of picking up the sheets of paper, one at a time, and carrying them to endless bands, which convey them to the printing cylinders. Second, in a device for elevating or feeding the pile of sheets upwards, as fast as they are taken off by the mechanism previously mentioned.

Improved Door Spring.—By G. L. Bailey, of Portland, Me.—In this improvement the power of the spring, A, is applied to the door through the medium of the levers, B C, which have the toggle joint action. The tendency of the spring is to throw the short lever, B, outward, and this draws the inner end of the long lever, C, also outward. The outer extremity of long lever, C, is then pressed inward against the door, to which it is fastened. As the door closes, the ends of the two levers, where they join, straighten, and thus increase the pressure on the door. In this manner the greatest pressure of the spring is always applied when the door offers the greatest resistance, to wit., when standing slightly open.



Another advantage of this arrangement is that the travel of the spring is essentially lessened, in consequence of the crank arm being made to turn inward when the door is opened. The necessity of its being strained to an undue degree when the door is opened wide is thereby almost entirely obviated. The durability of the spring is thus increased very much. The whole travel of the spring is about one-eighth of a turn.

Further information will be given by the patentee as above, or by J. A. Knight & Co., 334 Broadway, this city. Patented April 15th 1856.

A Guano Island Non Est Inventus.

Some time ago it was announced in some of our papers that a guano island, not laid down in any map, had been discovered by one of our merchant ships in the Pacific ocean, and considerable excitement was created respecting it, as it was stated that cheap guano would soon be obtained therefrom in unlimited quantities. Such islands have turned out a delusion, so far as guano is concerned.

The U. S. sloop-of-war *Independence* in its recent cruise in the Pacific, was ordered to take a peep at the Islands, and report to the Government. It did so; and Captain Mervine in his report says:—

"Intense interest appeared to pervade all minds, fore and aft, as the ship neared the promised El Dorado of the mercantile and agricultural interests of our country. The delusion, however, was but transitory; a nearer view revealed to our astonished vision the whole islands covered with a deep green mantle of luxuriant vegetation, indicative certainly of the strength of the soil and heavy rains common in this locality, as also of the worthlessness of the deposit thereon as an article of commerce. The value of guano is, I believe, determined by the amount of ammonia which it contains, which is generated by successive deposits of bird lime in rainless districts.—That there is a large deposit of bird lime on the island in a state of decomposition, the vegetation and great number of birds hovering over it abundantly attest."

Manufacture of Malleable Iron without Fuel.

At the meeting of the British Association for the Advancement of Science, held in Cheltenham, Eng., last month, H. Bessemer, of London, read a paper on a new method of making malleable iron from pig iron, which deserves the attention of our iron manufacturers, as the process is very original, is stated to be perfectly successful, and destined to revolutionize the processes of manufacturing malleable iron and steel.

The following is the substance of his paper, which we have condensed for our columns:—

For the last two years his attention had been almost exclusively devoted to the manufacture of malleable iron and steel, with but little progress, until within the last nine months. The idea occurred to him that if molten pig iron at a glowing heat was run into a chamber and a blast driven through it, that the five per cent. of carbon in it would unite with the oxygen of the blast, producing intense combustion, because carbon cannot exist at a white heat in contact with oxygen. He therefore put up an apparatus capable of converting about 7 cwt. of crude pig into malleable iron, and so successful was the result that crude pig was rendered into malleable iron in half an hour.

He then put up a cylindrical vessel 3 feet in diameter and 5 feet high, like an ordinary cupola furnace, the interior of which he lined with fire brick. At about two inches from the bottom are inserted five tuyre pipes, having nozzles of fire clay. At one side of this vessel, half way up, is a tap hole for running in the crude molten pig iron from a common blast furnace, and on the opposite side is another tap hole, to run out the metal when the process is completed. A blast of air of a pressure of 8 pounds to the square inch is let into this cylinder a few minutes before the crude iron is allowed to flow into it from the blast furnace. The molten crude iron is then let in by its tap, and it soon begins to boil and toss about with great violence. Flames and bright sparks then begin to issue from the vessel's top; the oxygen of the air from the blower combines with the carbon in the metal, evolving a most intense heat producing carbonic acid gas, which escapes; the metal is deprived of its carbon without roasting, by fuel, as by the common mode, and thus it is rendered into malleable iron.

By this simple process the heat generated is stated to be so intense that all slag is thrown out in large foaming massses, and all the sulphur is driven off, together with deriorating earthy bases, so that the metal is completely refined—more pure than any puddled iron. It is also stated that one workman by this process can convert 5 tuns of crude pig into malleable iron in about 30 minutes. Its advantages are painted in such dazzling colors that we are afraid to rely upon them implicitly. If they are such as Mr. Bessemer has described, a new era in the iron manufacture has dawned upon the world, and malleable iron will soon be reduced to a price but little above common pig.

We hail every improvement in the manufacture of iron, either to cheapen its price or improve its quality, as of vast consequence to mankind, because it is the principal material employed in the mechanic arts; it is the great material agent of modern progress in physical science. Without it we would neither have steam engines, steamships, railroads, cotton or woolen manufactories; we would be as deficient in machinery as our forefathers who lived in the age of bronze.

An immense amount of fuel is employed in the common process of rendering pig iron malleable. It is roasted in a furnace by fire heat for a very long period until its carbon is made to unite with the oxygen, to which it is exposed to form carbonic acid, which is driven off. The new process accomplishes the same result without the use of any fuel—the carbon in the metal being made the agent to decarbonize itself.

The heat produced by this process is also stated to be so great that scrap iron placed in a small chamber near its top is smelted. By this process steel of different qualities, it is also stated, can be produced by tapping the metal at different stages of the process after it boils in the cylinder.

The Merrimac's Boilers.

This new steam frigate has been lying in our harbor for some time, and it is stated that her boilers are undergoing extensive alterations by the removal of a vast number of tubes—160 in each—and the plugging up of their holes. The object of these changes is to improve their draft, which was defective. Will the boilers of the other five new steam frigates have to be altered for the same reason? The cost of such great alterations cannot be small. If the boilers of the *Niagara* are constructed in the same manner exactly, they should be altered before they are finally fitted up. It is our opinion that many of our boiler makers and engineers commit great mistakes in packing too many tubes in their boilers in order to obtain a greater amount of heating surface, at the expense of injuring their draft.

There are marine and locomotive boilers now in use that would give better results if one fourth, at least, of their tubes were taken out. In many boilers too little combustion space is allowed, and this defect combined with too many tubes (which add to the cost of a boiler) make them slow generators of steam, and also wasters of fuel.

Fair of the American Institute.

Extensive preparations are now making in the Crystal Palace for holding the next Fair of the Institute, which is to open on the 22d of this month, and continue until the 25th of October. Its last Fair was the best ever held, and it is believed that this one will far surpass it. Its present officers are men of energy and spirit, and they state they will do their best to make this Fair an unrivalled exhibition of American Industry.

We hope that all exhibitors will have their machines and articles perfectly arranged—in full working condition and fully displayed—on the very first day of the Fair, so that it will open without confusion, and in perfect order. It has always been a just cause of complaint against the arrangement of fairs of the Institute, that they have opened prematurely in disorder.

We also urge upon the Managers to require all exhibitors to place proper labels on their articles, especially machines. These should give the names of the inventors or makers, and contain brief descriptions of their character and operations.

Impartial reports of the machinery and manufacturies exhibited will be given in our columns.

Large and Small Steamers and Sea Sickness.

The editor of the *Nautical Magazine* states that the size of vessels do not influence sea sickness, but their shape. He states that the *Great Eastern* will roll beyond measure on account of her form, and that "sea travelers will bear him out in the assertion, that they are not the less subjected to sea sickness in large steamers than in small ones—as a general rule." This may be so, but having made some sea voyages in steamers and sailing vessels, it has not been our experience.

The Quickest Atlantic Voyage.

The steamer *Persia* made her last trip from this port to Liverpool in 9 days, 2 hours, and 40 minutes steaming. This is the shortest passage ever made between the two ports.—The *Adriatic*, now getting in her machinery at the Novelty Works, it is expected, will be ready to make her trial trip in October. It is anticipated that she will beat the *Persia's* best voyages.

Recent Foreign Inventions.

Lustering Colored Fabrics.—Edward Schisakar, of Halifax, Eng., patentee.—This inventor has discovered that wool, hair, silk, cotton, and various textile fabrics, when impregnated with the salts or oxyds of copper, or those of lead, can be acted upon by reducing or deoxydizing agents, such as the proto-salts and oxyds of tin and iron, arsenic acid, arsenites, and sulpharsenites and sugar, so as to impart to them a bright lustrous appearance. The goods are therefore first treated with solutions of the salts or oxyds of the metals first named above, then reduced by a solution of sugar, which is preferred by the patentee. The goods thus treated are stated to have a bright shining appearance. This process is most successful with what are called *steam colors*, in calico printing—that is, submitting the goods in the finishing operation to the action of steam in a close chamber.

Mineral Manure.—A. McDougal, of Manchester, Eng., patentee.—This invention consists in submitting *coprolites* to the action of sulphurous acid and steam, by which, the patentee states, he obtains manures, gelatinous matter and fat—valuable products truly. Coprolites are the remains of extinct animals, and their excrements found in different parts of England and other places, enclosed in the limestone formation. Liebig states, in his letters on chemistry, that "in the remains of an extinct animal world, England is to find the means of increasing her wealth in agricultural produce, as she has found the great support of her manufacturing industry, in a fossil fuel—the remains of a vegetable world."

We are not aware of any discoveries of coprolites made in our own country, no doubt they exist and will yet be exhumed, and perhaps by the invention of Mr. McDougal, they may be made available for our farmers, and supersede the necessity of expending so much annually for guano.

Arranging Propellers in Vessels.—George Napier, of London, and John Miller, of Glasgow—both engineers—we understand, have secured a patent for the following peculiar arrangement of propellers for steam ships.

The propeller is placed on a short shaft mounted in a sliding frame placed in the dead-wood, in which it has bearings down to the keel. A portion of the dead-wood and rudder post support the sliding frame in rear and front, and the sliding frame can be moved vertically up and down. A vertical driving shaft is fitted to the frame, and has a bevel wheel on it, which gears with another on the shaft proceeding from the engine; also by another with the short shaft of the propeller. This frame can be so moved that the propeller can be made to operate at different depths.

It is our opinion that no advantage can be obtained by such an arrangement. Water being an almost incompressible fluid, its density is about the same at all depths; hence the resistance to the propeller is about the same at all depths. The present method of arranging propellers is so simple and permanent that a cumbrous frame, with extra shafts and gearing, like those of the above patentees, appears to be the reverse of an improvement.

Rotary Engine.—Charles C. Joubert, and L. A. Bordier, of Paris, France, have lately patented, in England, a rotary engine, something on the principle of the wing pump. A thread is formed on the extension end of a shaft, upon which a piston paddle is keyed. This works in a cylinder having two openings—one for admitting and the other emitting or exhausting the steam; there is also a fixed partition in the inside of this cylinder. When steam is admitted into the cylinder it presses against the paddles on the shaft, and gives it a rotary motion. This is one of the oldest and most simple of rotary steam engines; it is well known in this country.

The bark of the Mammoth Tree, from California, which has been exhibited in this city in the Crystal Palace, is now on exhibition in London.