

Scientific American.

NEW-YORK, APRIL 19, 1856.

The Architecture of Cast Iron.

We have before us, in an illustrated and a well written pamphlet by John W. Thomson, A. M., of this city, an account of the origin, application, and advantages of cast iron in the construction of buildings. No city in the world is undergoing such an architectural transformation, at present, as New York, and cast iron is a powerful agent in this revolutionary work. In one single street ten handsome houses—some of brick and some of stone—which a few years ago were used as the mansions of wealthy citizens, are now being taken down, and on their sites are to be erected ten structures for stores, with ornamental cast-iron fronts. Designed upon one plan, and placed close together they will resemble a single harmonious, stately, and imposing edifice. The "happy adaptation of cast-iron to ornamental architecture," no man can doubt for a moment, after viewing the majestic pile of Messrs. Harper, in Pearl street, and other cast-iron buildings which have been erected during the past few years in New York, and other American cities. The value of cast-iron as a plastic and stable material for building, is now being appreciated; and in a few years hence, so many beautiful buildings of it will be put up in our cities, as will make them far surpass, in architectural effect, the most famous cities of the old world.

The origin of cast-iron buildings is due to James Bogardus, of this city. The pamphlet informs us, that it was while contemplating the rich architectural designs of antiquity in Rome and Florence, in 1840, that he conceived the idea of emulating them in his native country by the aid of cast-iron. When he returned, some years afterwards, he devoted his attention to the subject, and in 1848 commenced to build his factory on the corner of Center and Duane streets, which we are informed was the first entire cast iron edifice ever erected. The inventor met with much to try his patience, and to discourage him during the time it was building. There was a general prejudice, amongst all classes, and peculiarly so among most men of science, against the use of metal as a building material. It was believed that by the changes of atmospheric temperature, it would expand and contract so frequently, that a building made of it would soon become loose in its joints, buckle in its several parts, and become unstable and unsafe. Experience has proven such notions to be unsound and erroneous. The atmospheric changes of temperature exercise no appreciable effect upon such structures.

The pamphlet states that not a single joint in Mr. Bogardus' factory has ever moved an hair's breadth, although a powerful steam engine, is kept at work on one of the floors, and heavy machinery kept in operation on all the others. To us it appears that such cast-iron buildings must be more stable than those of granite, stone or brick, the numerous joints of which are only united by a feeble bond of mortar, whereas, the whole of the joints of these cast-iron structures, are turned true in a lathe to fit accurately, and then they are all screwed together, thus making a cast-iron building as strong as if it were one entire casting.

It may justly be asserted that cast iron has already been the means of originating new styles of architecture, and we may be pardoned for indulging in a feeling of national pride, because of its American origin. In brick, stone, marble, and granite, the finest modern structures are but feeble imitations of the old masters; and as Ruskin has placed metal as a building material, beyond the pale of conservative architecture, we may justly claim cast-iron building as the only new architectural art which modern genius has devised. Hitherto its use has been chiefly confined to factories, stores, lighthouses, and towers, but we hope the day is not far distant when churches, spires, mansions, and cottages will be constructed of it.

A single ornament for a building may be

as cheaply executed in marble or freestone, but when a multiplicity of such is required, they can be cast in iron at an expense not to be named in comparison with like ornaments in wood or stone, and with this advantage they will always retain their original fullness and sharpness of outline. The pamphlet referred to contains some very beautiful and chaste ideas on this point, which we cannot do better than close this article with:—

"Fluted columns and Corinthian capitals, the most elaborate carvings, and the richest designs, the architect may have dreamed of, may be re-produced in iron for little more than the cost of ordinary castings. Ornamental architecture, which, with limited means, is apt to be tawdry, because incomplete, thus becomes practicable, and its general introduction would tend to elevate the public taste for the beautiful, and at the same time gratify one of the finest qualities of the human mind."

Recent American Patents.

**Sifting Apparatus**—By Samuel Harris, of Springfield, Mass.—Consists in providing the cover of the sifting box with a series of pins, which, when shut down, project into the sieve and come in contact with the substance to be sifted. When the sieve is moved back and forth the pins serve to stir up the substance and separate particles that adhere, and thus ensure thorough sifting. For spices and many other articles this plan is admirable. The sieve is moved by a crank and rod.

**New Method of Arranging Steam Propellers**—By Aaron Arnold, of Troy, N. Y.—The inventor provides two extra keels, running along on the bottom of the vessel, one on each side of the central keel. A propeller is attached to the end of each extra keel. The keels are bored to accommodate the propeller shafts, and, if desired, a propeller may be placed at both ends of each shaft. Located on the bottom of the vessel where the water is more solid and unbroken by the passage of the ship the propellers are expected to act with greater effect than when placed at the stern in the common manner.

**Driggs' Improvements in Pianofortes**—This invention, described and illustrated in the last number of our paper, was patented in the United States Dec. 18th, 1855. It has also been patented in Great Britain and France through the Scientific American Agency.

**Machine for Mixing Mortar**—By Henry W. Hunt, of Peekskill, N. Y., and John Sands, of Greenwich, Conn.—The lime and sand are spread out on a circular platform on which traverses a large wheel, while behind follows a couple of scrapers, placed at different angles. Riding on the scrapers is a vessel from which water is allowed to drip upon the lime and sand, so as to impart the necessary consistency. The action of the wheel is to spread out the mortar, but the scrapers immediately throw it up again into a continuous heap. The mortar is thus very quickly and intimately mixed. At a suitable part of the platform there is a trap door through which the mortar falls, in a heap, when duly prepared.

**Improvement in Slate Frames**—By Edwin Young, of Philadelphia, Pa.—Slate frames are generally made of four pieces of wood, dovetailed and pinned together at their corners. In this improvement only one piece of wood is used, which, after being grooved to receive the slate, is bound around the same like a hoop and fastened. Slates thus formed may be made in oval form, the framing consisting of rattan or other light handsome wood. They are rendered much more convenient to handle, are more durable, as the frame cannot easily give out, will not brake on falling, are cheaper, &c. This is an excellent improvement.

**Fastenings of Folding Doors and Windows**—By G. H. Lindner, of Hoboken, N. J.—Where folding doors are used it is necessary, for security, that one of them shall be firmly fastened, independent of the other; this is generally done by means of bolts at the top and bottom; to fasten and unfasten these bolts is inconvenient. In the present improvement a new kind of self-acting latch is used which takes the place of the bolts, so that by the mere act of closing the two doors one or them will be secured at the top and bottom as before

**Tidal Flood Gates**—By George W. Flanders, of Lynn, Mass.—On many parts of the sea coast the rise and fall of tide water is employed to drive grist and other mills. For this purpose a dam is generally thrown across a creek, a sluice way being left in the middle. The sluice is furnished inside the dam with a hinged gate, so that when the tide rises it pushes up the gate and rushes into the enclosure formed by the dam. When the tide begins to fall and the current changes the water closes the gate; the fall thus obtained is employed to turn a wheel until the tide rises again. The gate is generally hinged at the top and passes across the top of the sluice, so that navigation is wholly cut off. The present improvement consists in hinging the gate at the bottom, so that it may be made to turn down level with the ground either by force or by the incoming of the tide, thus leaving the sluice open for vessels to pass through.

**Universal Lathe Chuck**—By Michael Necker-man, of Pittsburg, Pa.—The design of the inventor of this improvement is to permit the centering of an object in lathe, either on its true center or eccentrically, as may be desired, without inconvenience. Most chucks are so arranged that the article cannot be centered eccentrically without taking the chuck apart to alter the position of the jaws; after use the chuck must be again taken to pieces to restore the parts. In the present invention there is an ingenious arrangement, whereby the chuck may be instantly altered to hold the object eccentrically or otherwise, at pleasure. It is a good improvement.

**Pressure Tea Bell**—By Jason Barton, of Middle Haddam, Conn.—Ornamental tea bells of the gong shape, operated by pushing down a button, are extensively sold. In these the hammer is connected with a spring and escapement. In the present improvement, which is of the same form and class, the button is attached to one end of a lever within the bell and the hammer to the other; the fulcrum of the lever is placed quite near to the point where the button connects, so that the opposite or hammer end of the lever, when the button is pressed, will have a larger sweep than the other end, and strike the bell. The improvement cheapens this kind of bell considerably, and renders it more durable, as the spring and escapement are wholly dispensed with.

**Fire Regulator for Steam Boilers**—By Wm. S. Gale, of New York City—This improvement relates to a method of regulating the draft damper of steam boilers, so as to increase or diminish the fire according to the pressure of the steam. When the pressure exceeds a given weight the apparatus shuts the damper and slacks down the fire; and when there is not steam enough the damper is opened so as to quicken the fire. These contrivances are coming into very extensive use. They effect an important economy in fuel by assisting to maintain a steady fire in the furnace.

Most of the apparatuses of this kind consist of a lever attached at one end to the fire damper, and at the other to a piston, which rises and falls according to the pressure of steam.

The present improvement consists in giving the interior of the piston cylinder a slightly conical or taper form for the purpose of allowing the piston to fit easily within it while the damper is open, so as to be very sensitive to any increase of pressure, but to increase the friction of the piston as it is lifted by an increasing pressure of the steam, thereby causing the damper to check the draft quickly at first and then more gradually, instead of entirely closing it with a sudden movement as in other regulators. Another portion of the improvement relates to the construction of the piston.

**Improved Washboard**—By Royal Hatch, assignor to H. C. Hatch, of Strafford, Vt.—The washboard is composed of beaded rounds placed together lengthwise in a frame, the beads of one round fitting into the spaces between the beads of the next round, so that a perfect corrugated surface is obtained for the clothes to be rubbed over. The water will pass through the rounds, but the suds will be retained, spattering will be prevented, &c.

**Machine for Polishing Buckles**—By Robert

G. Pine, of Sing Sing, N. Y.—Consists in securing the buckles or other articles in clamps attached to rotating shafts, which work in yielding or elastic bearings, said shafts being placed at each side of a polishing wheel and guide wheels so that the articles to be polished will be properly presented to the polishing wheel. The shafts while rotating are moved longitudinally, so that the whole surface of the work will be presented to the polishing surface. The polishing is done quickly and in a very thorough manner.

**Improvement in Shot Guns**—By Buckel and Dorsch, of Munroe, Mich.—This invention consists in giving the barrel of the gun a slightly undulating form, for the purpose of causing all the shot to strike within a certain circle, and prevent its indiscriminate scattering. The barrel is divided into an odd number of parts, say five, seven, or nine, according to the length, the said parts being made alternately of larger and smaller diameter. The parts next the breech and at the muzzle are of the larger diameter, and the intervening parts smaller and larger alternately, thus producing an undulating bore. Many experiments, we are told, have been made with shot guns of this construction, and the result in all cases is, that the shot fall within and evenly cover a certain sized circle, never scattering beyond. Such guns must be far more effective for sporting purposes than the ordinary kind.

**Improved Safe Lock**—By William Maurer, of New York City—The invention consists in an ingenious construction and arrangement of a series of thimbles, bolt catch, and bit. This lock is believed to present perfect security against burglary, while the expense of manufacture is quite small.

Recent Foreign Inventions.

**Cure for Cholera, Dysentery, &c.**—T. Sleight, of Hull, England, has obtained a patent for the following compound to cure bowel complaints: Essential oil of cassia, peppermint cloves, and nutmeg, (about an ounce each) are added to spirits of wine (a pint) and when intimately mixed, about an ounce of ground apple of the *pinus picea*, or silver fir tree, is also added. A little of the tincture of opium is also added, and the compound is complete. It is given in very small doses, and the smaller the better we opine. No patents for medicines have been granted for a long period by our Patent Office; but in our notes on "Curious American Inventions" we shall present some which will throw the above one entirely in the shade.

**Water Gas**—W. H. Lancaster and J. Smith, of Liverpool, patentees.—This invention embraces the introduction of water into the common coal gas retort during the process of distillation, whereby the water is decomposed and its hydrogen given off with the carbon and hydrogen of the coal. The claim is for the simultaneous decomposition of water and coal in one retort.

**New Lubricating Compound for Railway Axles, &c.**—G. Durham and C. Wyatt, of London, patentees.—Take 24 parts of tallow, 12 parts of common soap, and 2 parts (all by weight) of resin, and mix them with warm water. The tallow, soap, and resin may be heated and rendered fluid before they are placed in the hot water. The compound is stirred until quite cool. Some of our engineers should make some experiments with this lubricator.

**Compound for Feeding Horses and Cattle**—The patentee of the following great interior invigorator is A. C. Morrison, of London—a relative, perhaps, of the renowned Dr. Pill Morrison. It consists of kidney beans, oats, barley, rice, linseed, liquorice, niter, carraway, Peruvian bark, galingal, gentian, sulphur, salt, resin, cream of tartar, carbonate of soda, grains of paradise, ginger root, Iceland moss, arrow root, aniseed, cardamom, turmeric, cascarilla bark, canella, alba, and guacum. These are mixed together, in various proportions, to feed the animals, and is stated to be an improvement on the feed compound patented by G. W. Henri, Jan. 30, 1855.

This receipt surpasses the one of Sam Slick for feeding his horses on pine shavings by mounting them, at meal times, with green spectacles. Sam's, however, has the merit of