

## New Inventions.

## Invention in Furnaces.

"We have been shown, at the establishment of Messrs. Burns, Carter & Reed, an invention for saving the consumption of fuel in boiler furnaces. It is a triangular shaped bottom, pierced with holes and communicating with the atmosphere by pipes underneath. It can be readily put into any furnace without difficulty, and it is said that a saving of one-third in using wood, and of one-half in using coal, is effected by this invention. If this be the case, it will be an important saving in the expense of fuel to our steamers."

The above is from the Detroit Free Press, and we have merely to say that a model of this improvement is now in our possession, sent by the inventor, Mr. Burns, who intends to take out a patent. Its great object is in spreading or distributing the air equally among the fuel, in the same way that an argand burner is applied to lamps. The air is introduced through a self-regulating tube, and is in part heated before it comes in contact with the fire. By this apparatus, steam could be introduced, decomposed, and the hydrogen set free and ignited, to create a most intense heat, along with the combustion of the carbon or coal.

## Improvement in the Construction of Wagons and Carriages.

Mr. James Patterson, of Franklinville, Cattaraugus Co., N. Y., has made a most excellent improvement in the construction of carriages and wagons, which must ultimately, in our opinion, be of no little pecuniary benefit to himself and the same to the public, as carriages, &c., can be made cheaper and of greater strength by his improvement. By an improvement in the bush of the wheel-hub, no matter how much it may wear, it can be repaired at a very small cost, and made as good as new. The axles are formed upon an improved principle, and the reach, braces, and the fills, can be taken to pieces in a few seconds, packed up into a very small bulk, and put together again in equally as short a period. The most singular thing about it is, that there is only one screw bolt used in the whole of it, to unite the two diagonal braces to the reach, and yet every brace can be taken apart by itself. The inventor has taken measures to secure it by patent.

## Stave and Shingle Machinery.

The Stave machine of Mr. C. B. Hutchinson, of Waterloo, N. Y., illustrated in No. 2 of the present volume of this paper, has been put in operation by the ingenious inventor, and performs most admirably. The machine has cut 18,000 staves per day, attended by five hands, and as many barrel headings; it has also produced 25,000 shingles in the same length of time, and does the work well.

The above statements are from respectable authority, and from our knowledge of the principles of his machine, we should think it capable of executing the very best of work.

## New Railroad Car Wheels.

At the Fair of the Franklin Institute Messrs. Murphy & Saurman exhibited some cast iron wheels, which attracted considerable attention. They were made with plain spokes, but the hubs were cast solid, and to prevent cracking by contraction in cooling, a draught of air is sent through the hubs, to cool them first, while the heat of the rim is retained by being enclosed in an air-tight casing of brick work, until the hub is partially cooled. The face of the wheel is chilled by coming in contact with a rim of cast iron.

## Drummond Lights in Broadway.

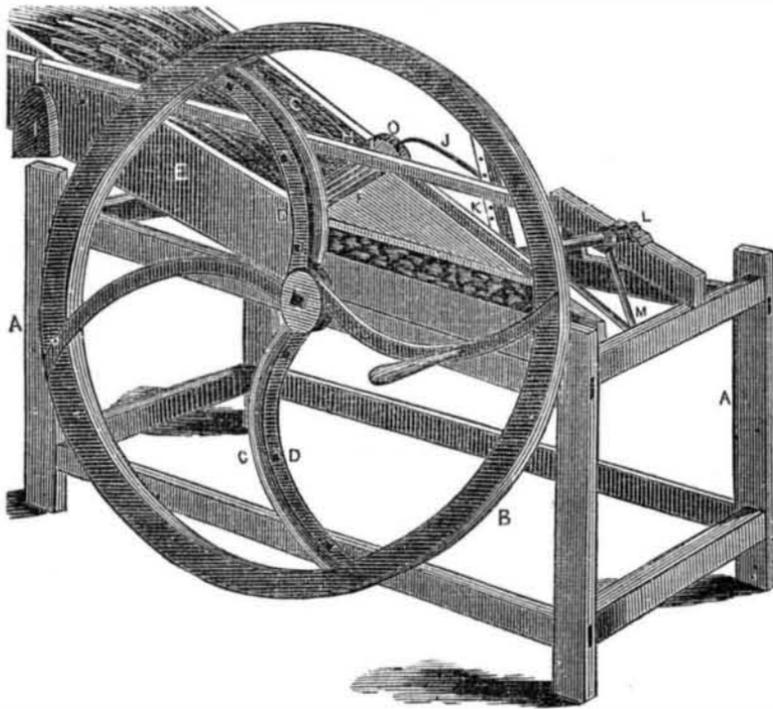
The Tribune discusses the advantages of substituting the gas lights of Broadway by two or three Drummond Lights. Not a bad idea, we think. There is another thing we should like to see, as a reform in the lighting line, viz., to have the dials of the City Hall clock made transparent and illuminated inside, so as to show the hours to passers by, at every period of the night. Various clocks in the city might be illuminated in this way, at a very trifling expense.

## Wooden Suspension Bridges.

We see it stated in more than one of our exchanges, that Mr. Ammi White, of Concord, N. H., has invented what he and many scientific mechanics think will be a substitute for the wire cable. By *dovelling* boards together, making them overlap each other in the construction of the pile, and then fastening them with spikes, he forms a body of any length, and as incapable of division as a tree. He has made a model 500 feet long and six inches square, and elevated 20 feet, which has bore the weight of about five tons, and is capable, in the judgment of Mr. White, of bearing twenty tons. Like wire cables, these wooden ones are to be fastened to firm abutments, and then thrown across rivers over which suspension bridges are to be erected. It is also sta-

ted that the best of the wooden cables will not cost more than one-eighth of those of wire, and will be stronger as well as cheaper, but this is not correct. No cable is so cheap as a wire one. A strand of No. 10 wire, will support a weight of 500 pounds, and a wire cable of 4 inches in diameter, will support a weight of 275,000 pounds. What size would a wooden cable be to support this weight? We saw last year, a model of a wooden bridge made by Mr. McCracken, of Bleecker street, this city, upon the same principle, as it appeared to us, as the one above mentioned, but still there may be a great difference. We often find that men who describe works of art, do it in such a manner as to convey a wrong idea of its principle and construction.

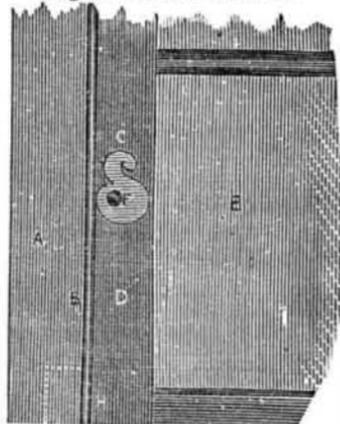
## BERTHOLF'S IMPROVED STRAW CUTTER.



This is a Straw Cutter improved by Mr. H. Bertholf, of Sugar Loaf, Orange Co., N. Y. It has some points about it that are essentially good, and worthy of attention. In the first place, it is one of the most simple machines, and the parts can all be made strong and durable, easily put together, and the expense of construction must be very moderate. In the second place, it cuts the stalks, or straw, lengthwise with the grain, thus rendering the cutting of the same very easy, and with less power, as every person knows, than by cutting across the grain. This is a perspective view, which somewhat hides the gearing for feeding, on the other side, in order to show how the knives cut the straw or stalks lengthwise. A is a stout frame; B is a fly wheel, with spokes, D, on it, to which are secured by nuts two curved knives or cutting blades, C, C. This cutting apparatus, it will be observed, is of the most simple construction. E is the feed-box,

in which the straw, H, is placed. It will be observed that the shaft of the fly wheel is set to the feed-box for the knives to cut the stuff at an angle of about 45°; F is an angular board below which the straw is fed to the cutters by the fluted feed roller, O. There are two of these rollers—the straw being drawn in between them, and they are moved by ratchets, S, biting into ratchet wheels on the ends of the said rollers. These ratchets give an intermittent rotary motion to the rollers, and they receive a reciprocating motion from the main shaft, L, by vibrating levers, M, K. These are not clearly seen, but the principal feature of the machine is, viz., the mode of cutting; G is a lever which, with a bow, (not seen), rests upon the axis of the feed roller, O, to graduate the pressure on the same by the weight, I. Mr. Bertholf exhibited his machine at the Fair, and he has taken measures to secure a patent.

## Page's Window Fastener.



This is an improved Window Fastener, invented by Mr. Lewis B. Page, of Hartford, Ct., and secured to him by letters patent. Its simplicity is its great recommendation, and besides it acts as a self-fastener. C is the fastener; it is a small eccentric piece of metal fixed on the sash, D, of the window, close to the case strip, B, of the window case,

A. E is the window light. This engraving is a section to show the fastener plainly. In raising the windows the hand is placed upon the fastener, C, keeping the curled ear at the top, and whenever, (at any part) it is desired to arrest and retain the window, all that has to be done is to leave the fastener to take care of the window and itself, which it soon does by the heavy side turning downwards, making the fastener press with great power on its eccentric axis, F, against the strip of the case. H is a slot, in dotted lines, into which the fastener swings and locks the window, with the case, thus preventing it from being lifted by any person outside; and in fact it cannot at any time be disturbed from the outside, on windows open at the top, as the harder it is pressed downwards, the more immovable it becomes. In warm weather this is a capital idea for all persons in our cities, who desire to have their windows open at the top for ventilation, and who are now afraid to do so on account of the prowling burglar. This window fastener will no doubt come into very general use.

## Telegraph Invention.

The following is from a communication to the St. Joseph Register, by Col. Speed, President of the Erie and Michigan Telegraph Co., relative to an improvement invented by the Colonel.

"The invention," he says, "will enable us to write from Chicago, St. Louis or New Orleans, to New York, Boston or Halifax, without re-writing; thereby avoiding the errors made by the copyist at the re-writing stations. The improvement consists in making one galvanic circuit break and close a second circuit, both ways, the second a third, and so on, for an unlimited distance; the operator at the extreme end being able to break and close the different circuits, and consequently write on all the Registers connected with the through wire, without the attention of any one, at those stations not receiving the message.

Lines of telegraph cannot be worked advantageously, even with my new insulators, for more than four or five hundred miles in one circuit. To work a line for eight or ten hundred miles in one circuit, would require so powerful a battery and one of such high intensity that much of the electric current would be lost in consequence of imperfect insulation—our best non-conductors being merely very poor conductors. My improvements will enable us to divide the lines into such circuits as can be worked with certainty in bad weather, and will send a message from St. Louis or New Orleans to New York without re-writing."

[This feat has been accomplished before by the Chemical Telegraph, and there was a gentleman in this city last year who said that he could do it on the Electro-Magnet Telegraph, and he was informed, we believe, by the operators of Professor Morse's Line, in this city, that it was not new, since which we have heard no more about it. Perhaps the original inventor was Col. Speed, and as such was known to the operators here.

## Improved Locomotive.

A new engine has been placed upon the Boston & Worcester Railroad, manufactured by Mr. Ross Winans, of Baltimore, which has some peculiarities about it that should be known to all our engineers. It is made for burning anthracite coal, and has a firebox 6 feet in length 3½ in width and about 2 feet in depth, which will contain at least a ton of coal. The fire grate is composed of stout, separate bars, so arranged as to permit the fireman to turn them and shake out the ashes, even when the doors of the fire-box are closed.

It is 38 tons weight, with two driving wheels 7 feet in diameter, and eight supporting or truck wheels—the driving wheels being in the centre. It is made so that the adhesive power or weight may be thrown upon the driving wheels, for the purpose of ascending steep grades, and this adhesive power can be concentrated or spread over the whole of the wheels, according as it is needed. We understand that for a short distance it attained the speed of 60 miles per hour. Mr. Whistler Jr. C., E., spoke very highly of Mr. Winans' coal burning engines in his report, on the Reading Railroad, Pa. Working, drawings, and a full description of one of them will be found in Mr. Emil Reuta's new work, "American Locomotives."

## Franklin Institute.

At the Fair of the Franklin Institute, held last week, there was exhibited a curiosity of an air-tight high pressure engine, made by P. Pellories & Co., on the old Oliver Evans pattern. It had half a beam and the pillar, sustaining it oscillated on a hinge at the base, thereby retaining its parallel motion. It worked with great ease. Visitors who have been to Philadelphia speak very highly of the exhibition. We are happy to hear this.

Herr Ferdinand Sommer, professor of music to the Prince of Wurtemberg, has invented a new instrument, which he has named Euphonia. It possesses great power, and tones deeper than the Ophicleide,—so says foreign journals. Well let him play away on it.

We see it stated in some of our exchanges that wire is becoming a good substitute for lath.