

## New Inventions.

**Improved Machine for Bending Felloes**  
Mr. Andrew M. Johnston, of St. Georges, New Castle Co., Delaware, has invented and applied for a patent for an improved machine for bending felloes for wheels of carriages, wagons &c., and which should receive no small attention. The principle of the invention consists in forcing the felloe timber between two curved curbs placed upon a bed-piece, the outer or larger curb being firmly secured to it. After the felloetimber is forced between the curbs, it is secured by clamps to the inner or smaller curb, and the smaller curb with the felloe attached is removed from the bed-piece by removing bolts which hold it to the same. The felloe timber is forced out of a narrow box before entering the curbs, or the timbers may pass between rolls which will answer the same purpose.

**Improved Grass and Grain Cutter.**  
Mr. Wm. C. Betts, of Brooklyn, Kings Co., N. Y., has made a valuable improvement on machines for cutting grain, &c., for which he has taken measures to secure a patent. He employs a revolving cutter, by which the grass or grain is made to fall over on the platform without the aid of a conveyor reel. It also works with less friction than a commonly constructed reciprocating cutter. He also employs a series of rakes upon an endless chain, to carry off the grain from the platform and deposit it on the ground in bunches. The machine is guided in its motion by a set of guide rollers.

**New Board Fence.**  
A new mode of constructing fences has been invented by Mr. J. Bejdan, of Plymouth, Michigan, the principal features of which are not a little novel. By his plan, a good substantial and economical fence can be constructed of boards without posts. The boards for the construction of this fence have notches cut in them near their ends, and they are locked together in such a manner as to form a worm or zig-zag fence. The boards are supported in the middle by stakes passing down each side and secured together by clamps drawn together by a wedge. A brace or rider passes between the stakes resting upon the clamps, thus adding to the height and strength of the fence. The inventor has taken measures to secure a patent.

**Improvement in Hanging Picker Staves in Looms.**  
Mr. Geo. W. Perry, of Thompson, Windham Co., Conn., has taken measures to secure a patent for a new method of hanging the picker staves of looms, which deserves attention. Each picker staff is hung on two radius rods which are attached to fixed centres on the frame of the lay, being connected by joint pins, one at the lower and the other at a short distance from it. The effect produced by this arrangement causes the end of the staff which acts upon the shuttle to move in a right line parallel to the raceway, the two radius rods producing a parallel motion without any other device for controlling it.

**New Grain Cleaner.**  
Mr. George Wilkes, of Louisville, Ky., has invented and taken measures to secure a patent for certain new and useful improvements in machines for cleaning grain, whereby it is stated, "very beneficial results are obtained." He employs a cylindrical screen provided with revolving beaters working in connection with a fan blast and a number of flat inclined screens, which afford an increased screening surface and a very effectual action within a comparatively small space.

**Heating Railroad Cars.**  
A Belgian engraver, M. Blacher has introduced, says the "Precursor d'Anvers," a method of heating the cars of a railway train, by carrying off the smoke of the locomotive through iron pipes placed in them.—[Ex. This is a borrowed idea, taken from our columns, away over to Europe and made into a new invention for the Flemings. This invention is fully illustrated and described on page 49, Vol. 2, Sci. Am.]

## PATENT CORRUGATED BOILER PLATES.

The accompanying engravings represent the application of the new invention of Mr. Richard Montgomery, of this city, to the construction of steam boilers. Fig. 1 is a perspective view of the arched boiler with the end removed. Fig. 2 is a perspective view of boiler tubes, a side view of which in a single tube is represented by fig. 3. As the invention is so easily demonstrated, its application requires no particular reference to parts by such signs as letters; we have therefore to describe its principal features and advantages, rather than the relative parts which are employed in the construction of any boiler.

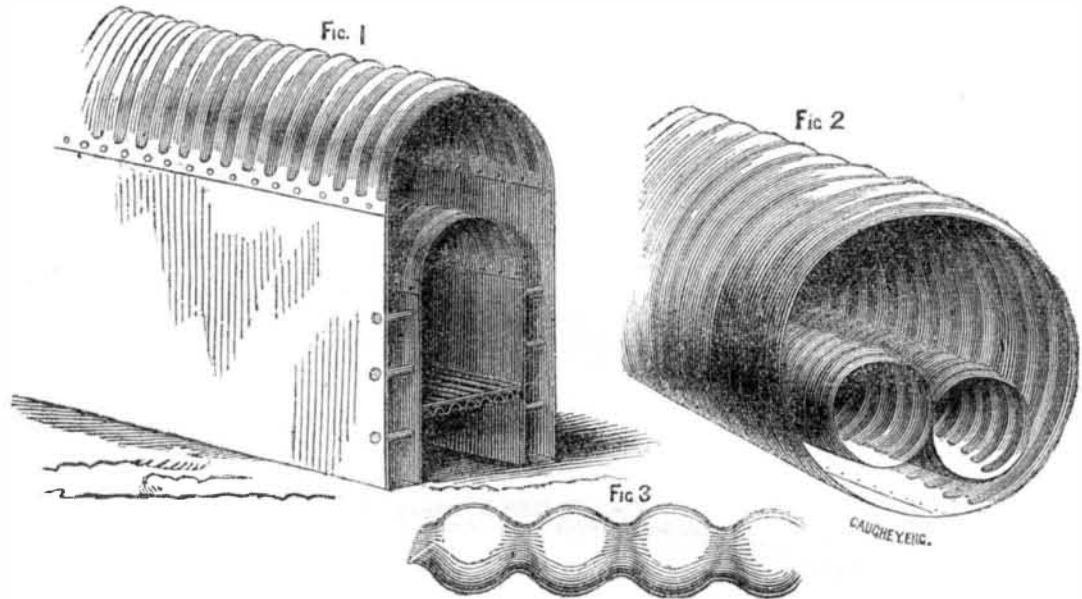
This invention consists in forming cylindrical

cal flues, curved fire arches, and (if deemed advisable) the curved shells of boilers, of corrugated plates of metal. The metal being rolled in this form, gives great additional strength and security to the arches, and makes them self-sustaining, without the aid of the immovable stays with which most boilers, especially high pressure ones, are obliged to be furnished, and which add so much to the unnecessary weight, and increase their liability to burn out and scale.

The fire arch of a locomotive is required to be stayed with a great number of angle iron ribs and braces, and the iron of the arch itself must be very thick. Marine boilers also have

to be braced and stayed throughout. To obviate these evils (for evils they are in a certain sense though not in another.) Mr. Montgomery employs arches of corrugated plates and cylindrical corrugated flues. An evident advantage gained by this form, is a great extension of heating surface, and greater strength of metal in less space than in common fire arches.

It is contemplated to use the corrugated surface in the flues and arches of boilers, as shown in the above engravings, and when great strength and lightness are required, the shell of the boiler should also be made of the corrugated plates. By employing the corruga-



ted plates in the crowns of furnaces, in the tops of flues, and the bottoms of cylindrical boilers, a great extension of effective heating surface is obtained, consequently the sufficient steam generating surface may be had in a reduced space without any increase in the weight of the metal. Experiments have proved that the corrugated boiler plate, in an arched form, with the flutings running in the direction of the arch, possesses such great strength that it allows the disuse of many stays, every one of

which is a lodging place for scale, and thus a great evil is removed. There is, therefore, a saving in the weight and cost of stays, and of much labor in their construction. In long flues it will probably confer the additional advantage of obviating the evils of the expansion of the metal by which the boiler heads are strained and become leaky. It has been ascertained that the saving effected in the weight of boiler plate alone, by the corrugated plate, amounts to a large percentage of the

total cost, and if to this be added the saving of weight and cost effected by dispensing with many braces and stays, besides diminishing the space required for the accommodation of steamship boilers and those of locomotives. The improvement is one of very great importance and worthy of the attention of every person interested in the safe and economical use of steam power. The boiler of a steam engine is like the fountain-head of a stream—if it is not good the engine is of little use.

**Improved Hand-Truck for Wheeling Bales.**  
Messrs. Frederick and Jacob Nishwitz, of Williamsburgh, L. I., have taken measures to secure a patent for a very valuable improvement in hand-trucks. The improvement relates to the construction of the frame, and consists in the constructing it of iron, and having it so arranged that the front piece of the truck is firmly supported and braced by lips, and secured to that part which requires great strength and firmness for loading, by inserting the front piece under the bale or other article to be drawn, and then by depressing the hands to make them act like a heaving lever to roll back the bale easily and quickly on the frame of the truck.

**Improved Water Gate.**  
Mr. J. R. Howell, of Springfield, Mass., has invented an improved anti-friction balance gate. The gate is of a curved shape, the curve forming part of a circle, with one or more arms extending from the inner or concave side of the gate to a point which is the centre of the circle of which the gate forms a part. The armor arms work upon a pin or pivot at the point above mentioned, said pin being sufficiently strong to resist any pressure that may act upon the concave or inner surface of the gate.

This gate is for wheels, and the water, by a peculiar system of packing, acts in such a manner as tends to keep it water-tight.

**Improved Machinery for Dressing and Jointing Staves.**

Mr. John Hall, of Vermont, Fulton Co., Illinois, has taken measures to secure a patent for machinery to dress staves, a kind of machinery which is very important in our country, and every improvement made on it, is of great value, because there is such an innumerable quantity of staves used up every year. The staves are forced in between cutters by means of a gate having a series of vibrating

stops operated on by springs, these stops pass horizontally through the vertical centre piece of the gate, and the stave to be dressed is placed against it, the lower end entering a slot immediately above the cutter; the gate by a system of levers, is then forced down, and the upper stop being over the top of the stave, the said stave is forced between the cutters as far as the gate vibrates; when the gate ascends, the stop immediately beneath the upper one is forced out by its springs as soon as it gets above the stave, and it bears upon the top of the stave, when the gate again descends, and so on till the whole stave is forced between the cutters.

In connection with dressing the staves, there is a jointing operation, whereby the whole of the trimming of the stave is finished at one operation. A set of jointing knives are attached to the upper part of the gate and act upon the stave as the gate descends. The gate, therefore, in descending is forcing a stave between the dressing knives below, at the same time the jointing knives on the top of the gate are jointing the stave.

## New Churn.

Mr. George B. Clarke, of Leonardsville, Madison Co., N. Y., has applied for a patent for an improvement on a churn, which is stated to be very valuable, and owing to which, the term "Excelsior Churn" has been applied to it. The body of the churn is made to rotate and the cream or milk is agitated by stationary dashers in the interior. A stream of hot or cold water, as is required to keep the temperature at about 62°, is pumped by the action of the churn, through an interior tin chamber, the water entering at the one side and coming out at the other, or the continuous motion may be suspended at pleasure. A stream of air is also sent by a tube into the milk, &c., by annular passages to supply the necessary air for the ventilation of the churn.

## Improved Method of Manufacturing Twisted Gun and Pistol Barrels.

We learn by the London Mechanics' Magazine that a Mr. Aaron Rose, of Worcester, England, has just enrolled his description of a new method of manufacturing twisted gun barrels, which is thus described:—An iron or steel rod, or a mixture of both, of sufficient length and thickness to form a gun or pistol barrel, is wound into a compact coil, and then placed in an anvil having a semicircular groove, where it is submitted to the action of the tilt hammer. The coil is then submitted to a welding heat in an air furnace, then hammered and rolled, a stream of water being used in both cases to wash away the scale.

The tilt hammer has a groove on its face corresponding with the anvil to act upon the coil, before the welding.

## Anotta Dye.

This beautiful color is one of the readiest known to the good housewife, and as there are some who have to make it, we will give them the simple direction. First be careful to procure the article pure, as it is one very subject to adulteration. Cut it into small pieces and boil it in soft water with an equal weight in pearlsh, in a copper boiler, say one pound to four gallons of water. Rinse the articles to be dyed in clean water and let them boil some time; take out and rinse. The quantity of anatto used must be regulated entirely by the depth of color required. A little experience will soon teach that.—[American Agriculturist.]

[This is a color which none of our farmers should dye, because it is so fugitive. If it is exposed to the sun for five minutes, it fades; for ribbons &c., not exposed to the sun it may do very well, but it is a very poor color, although beautiful. Anotta is employed to dye a salmon and an orange color, but it should never be used for woolen goods.]