

New Inventions.

New Machine for Making Shoemakers' Jiggers.

Mr. Geo. W. Thurston, of Uxbridge, Mass., has invented and taken measures to secure a patent for a very useful machine for making jigger spurs for shoemakers to lay out peg work. There is an improvement on the spur and the machine for cutting them. The spur is made in one piece with its two rims, which are cut by the machine, with the teeth cut on one rim opposite to the spaces on the other, so as to mark out the spaces for the pegs correctly. The teeth are cut by a barring tool set in the mandril of a turning lathe, and the new machine is constructed to move the metal of the spur to be cut, on a spindle, in such a manner as alternately to change and bring the

rims below the barring tool at the right distance for each tooth, gradually raising the metal till the tooth is cut to the proper depth, then changing the position of the second rim, when the first is cut. This is a machine for making a small instrument, but on that account it is no less valuable to community, as it will enable the inventor not only to make a better, but a cheaper article than has hitherto been made.

Improvement in Daguerreotype Cases.

By referring to the list of patents issued January 22nd, 1850, on page 158 of the Scientific American, our readers will see the claim of a patent that was granted to a lady in Connecticut for an improvement in daguerreotype cases. We have had the pleasure of examining the improvements contained in that claim, and we think it one of the finest inventions of the age. The case is constructed in the form

of a sugar loaf, the top and bottom both opening with a lid. At the lower extremity of the case is a cylinder of ground glass, which extends a little way into the case, and protrudes out about one half or three-quarters of an inch below it, even while the bottom lid fits snugly over it and rests against the morocco case. This glass cylinder is for the purpose of admitting light to the picture, which is placed in the bottom of and fixed thereon. At the top of the case about two and a half inches from the picture is inserted a convex lens of sufficient magnifying power to represent the object on the plate, of the size of life. All that is required to be done in exhibiting the picture, is to displace both lids of the case and hold the small end of the case to the eye, when the object inside will appear at a distance its natural size. The operation is similar in principle to the cosmorama but we believe the patent to

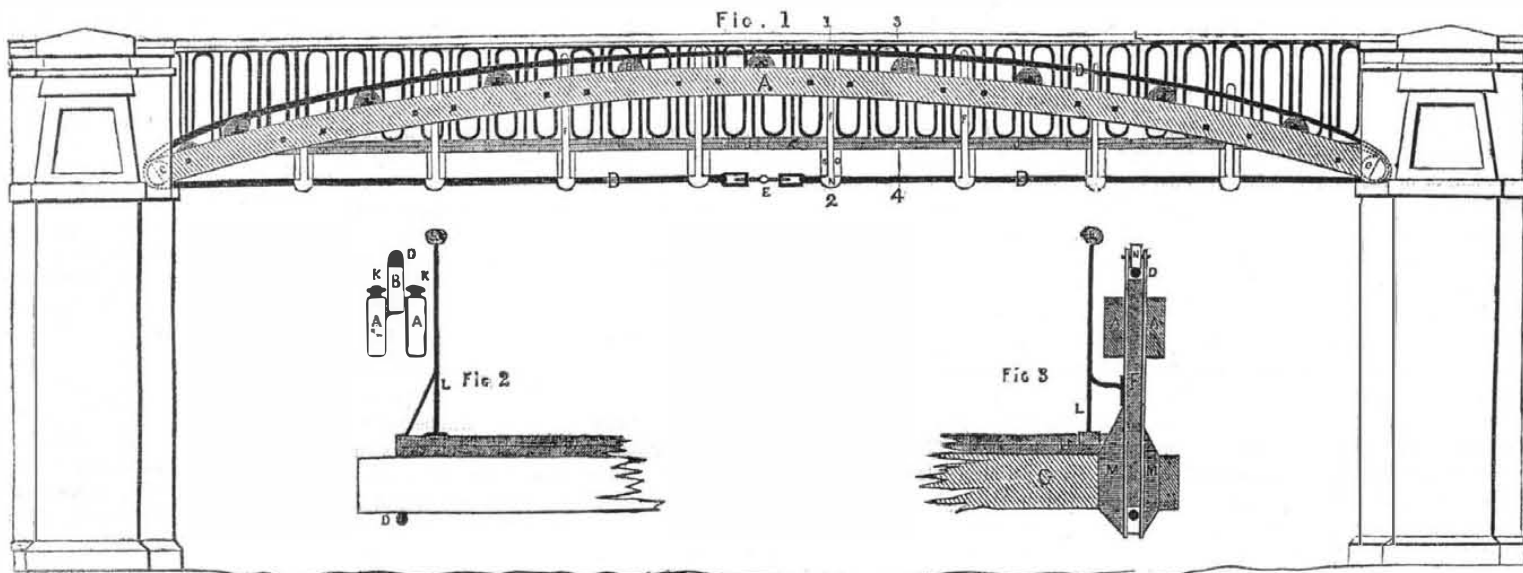
be a valid one. For further particulars concerning the invention, address Jas. Curtis, Jr., Southfield, Conn.

Paine's Electric Light.

Mr. Young, the President of the Manhattan Gas Co., this city, dispatched twelve men to Worcester, last Tuesday, to examine into the merits of Mr. Paine's alleged discovery. The report circulated in our city that the Astor House is to be lighted by Mr. Paine on the 4th of July, is false. We have on hand a brief description of a patent granted to a Frenchman for this same alleged discovery. We will notice it next week, and any other thing we may find of interest, relating to the subject.

Mantel pieces of marble may be effectually cleaned by rubbing them with a flannel dipped in a weak solution of carbonate of soda.

BEVAN'S PATENT ARCH GIRDER.



This, as we mentioned in our last number, is an invention of Mr. John Bevan, of New York, late Assistant Engineer on the Hudson River Railroad, and the patent is jointly owned by the inventor and Freeman Campbell, Esq., President of the Sectional Dock Co., N. Y. These engravings, figures 1, 2, and 3, represent the patent Arch Girder as designed for Bridges, and we can, with confidence, affirm that it combines, in a most perfect manner, the desideratum of strength, lightness, and thereby economy. The adaptation of this invention to the construction of bridges of every description, is evident to all. For cheapness it commends itself to every corporation in our land. Fig. 1 is an elevation of a bridge, 50 feet between supports, Fig. 2 is an enlarged profile on line 1 and 2. Fig. 3 is an enlarged profile on line 3 and 4. Like letters refer to corresponding parts. A is a curved beam or girder, formed of two beams bolted together with blocks between, to keep open an interval or space, as shewn in figs. 2 and 3, A A, each beam is composed of leaves or plates of wood or metal of convenient length; these are firmly secured to each other, the outer layer of plates, breaking joints with the inner layer, and may readily be continued to any required length. At the ends of the girder are fastened clamp iron pedestals, in which the pullies, C C, work. These pullies turn in the space left between the beams forming the girder; on the top of the girder are the pullies, B B, working in pedestals, K K, shewn in fig. 2. A rope of wire, D D, is passed over the girder, resting on the pullies, B B, and is brought round the ends of the girder on pullies C C. The ends of the rope are secured to iron clamps, E, drawn together by a right and left screw. This completes the girder (according to the claims of the patent) as designed for bridges, and it will be readily perceived that the entire length of the rope, D D, is less than twice that of the girder, A, and consequently the girder cannot be straightened unless the rope is first broken. Weight placed on the girder would tend to straighten it; this would be resisted by the tension of the wire rope, and the weight

may be increased until either the wires are drawn asunder by pure tension, or the girder yields, by its fibres being crushed up. Now, the great strength of wood and iron in resisting tension and crushing are well known, and a just idea of the strength of Mr. Bevan's will then be obtained. For the girder, A, secured by the flexible binding, is only exposed to crushing, while its binding rope is to tension. Again, this strength is within itself, and there is neither thrust or strain on the abutments on which it may rest.

Having demonstrated the principles of the invention, we proceed to a description of the construction of the bridge, to prove lightness and economy. F F, figs. 1 and 3, are suspension rods of wood, having a plating of iron attached on two faces. The plating is continued beyond the wood of suspension rods, and at the upper end eyes are drilled for the axle of small pullies, to work in as shewn at N, fig. 3, to work in. At the lower end, the plating spreads out as shown at N, fig. 1, leaving shoulders on which the cross leaves G rest. The suspension rods hang by the pullies, N, on the wire rope, D, and the wood of the lower end ride on the chord rope, D, as shown in all the figures. The cross bearers, or joists, rest on the shoulders, H, of the plating of the suspension rods, and are bolted to the rods, one pair of bearers to each rod. In the interval between the cross bearers, bolster blocks, M M, are bolted, which help to retain the suspension rods at right angles to the cross bearers, and as the rods pass between the beams forming the girder, as shown at F, fig. 3, they stiffen the girder and resist any tendency to buckle. Over the cross bearers the ordinary flooring planks are laid, the side rails, L, fixed, and the bridge is then completed. It may rest on ornamental abutments, or be thrown from bank to bank of a river, with no other abutments than a few logs of timber; the abutments, as we previously mentioned, not being required for increased strength. This bridge can be used for spans as wide as those crossed by suspension bridges, without the suspension piers or costly abutments. It can be repaired

or entirely renewed, without a stop being put to traffic, and we unhesitatingly affirm that its use must be almost universal, whether for crossing of small streams for farm use, or the expansive structures on any of our majestic rivers.

Some proper idea of its lightness may be formed from the dimensions of the girder, two of which, (one on either side of the roadway) support the entire structure. The girders in the drawing are each composed of two beams, measuring 1 foot 3 inches in depth, 4 inches in breadth, and 53 feet in length; the entire beams supporting a roadway 50 feet in length and 17 feet breadth, containing only 1,060 feet of timber 1 inch thickness. The iron rope would be about 2 inches in diameter, and would cost not more than \$15. The pullies might be of hardwood or metal. There can be no doubt about the principle of this invention, bridges will hereafter be constructed at a price merely nominal, in comparison with the expense of building a bridge of equal strength, by any of the systems now in use.

In our next number we will consider the invention as adapted for roofs of buildings and publish an explanatory engraving. The models, one of 40 feet may be seen by application to Freeman Campbell, Esq., of the firm of Campbell & Moody, No. 608 Washington st., and 7 Broad st., N. Y.

Steam Boiler Invention.

The Baltimore Sun states that a very valuable invention of an apparatus has been exhibited there as the invention of a Mr. Grimes, of Philadelphia and which is to prevent the explosion of Boilers. So far as we can get an idea of its construction and operation, it appears to be nothing new in principle although there may be something new in its details of construction and arrangement. Its nature is thus described:

"It is an apparatus which can be placed in any part or room of a building, as, for instance, over the desk in the office of a manufactory, or other establishment where a steam engine is used in the yard, basement or other room,

and which, by connection with the boiler, is a certain and unerring indicator both of the pressure of steam upon the boiler, and the exact height of the water within it; thus affording not only to the engineer, but to all others engaged in any part of a building a safe guard at one and the same time, and by the same operation, against the two only sources of danger—over pressure of steam and lack of water.

Improvement in Sugar Refining.

According to a statement in the London Morning Herald we learn that an important improvement has taken place in the manufacture of Sugar. It says: "By means of the now well known patent for drying by centrifugal force, and the aid of a few simple adjuncts, sugar which took from 3 to 5 weeks to refine, is now done in as many minutes. Incredible as this may seem, the whole process and the result here stated has been witnessed by our information at the sugar houses of Messrs. Finzel and Son, at Bristol. Moreover, sugars altogether unsaleable in our markets were converted in few minutes into an article worth about \$8 48."

[This is the process now described on our first page.

New method of Joining Metals.

Some interest has been excited by the experiments of a French gentleman, in London, who has, it is stated, discovered a method of joining, by some cement, pieces of metal together so firmly, that when exposed to a tensile strain, they will break through the metal rather than at the joint. Could such an invention be brought to bear practically, it would effect a complete revolution in works of metal.

Great Patent Case.

A most interesting Patent trial is now going on in the U. S. C. Court at Boston, the (plaintiffs) Patent of Morse on the one side and that of House (defendants) on the other. Both have patents for Electric Telegraph improvements. We shall notice this case again ere long.