DE GALLEFORD'S IMPROVED PIPE CUTTER.

Tools for hand cutting tubes and pipes have been or some years in use, but whatever their conveniences, each one has had some objectionable feature, one of the commonest of which is the rigidity of position of the cutter, whether rotary or fixed, which would not give to any inequality on the pipe and must be forced through all obstructions. This objection, probably more than all others combined, has delayed and obstructed the general introduction of hand tube cutters,

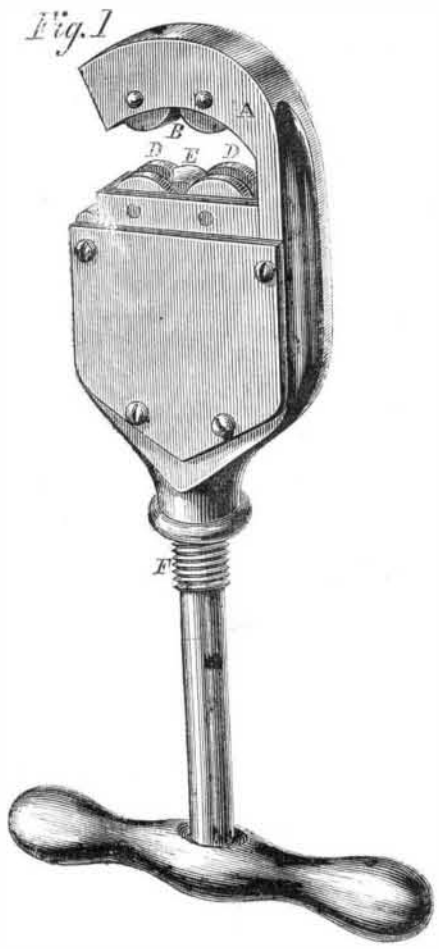


Fig. 1

most workmen preferring the lathe, or even the vise and file or saw, to the uncertain results of the hand cutting tool.

Fig. 1 of the engravings shows a perspective view of a tool on which a patent was issued through the Scientific American Patent Agency April 14, 1868, to J. De Galleford and Wm. E. Marston. Fig. 2 is a section showing the principal working parts. The stock, A, curved or C-shaped, contains two friction rolls, B, on fixed axes, seated in a recess, C, Fig. 2 being the tube or pipe to be cut. In the lower part of the stock is a movable block, the upper part of which holds two other friction rolls, D, which, in connection with the rolls, B, retain the pipe in place, while the cutter, E, performs its work, it being fed against the pipe by the screw F, into which it is seated and by which it is guided as seen in Fig. 2.

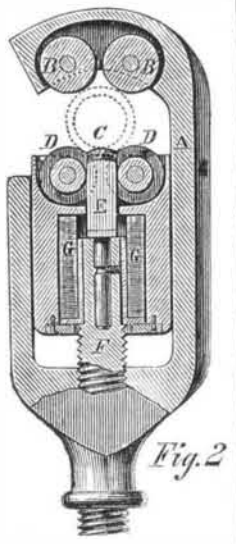


Fig. 2

The principal improvement, however, designed by the inventor, is the yielding of the cutter to obstructions offered by the irregularities in the surface of the pipe to be cut. In this device the cutter and the rolls, D, are sustained on a rubber tube or spring, G, seen in section in Fig. 2. A pressure of 150 pounds is required to compel this rubber tube to yield, which is sufficient to hold the cutter to its work, while not allowing it to be destroyed or even injured by the obstructions offered by inequalities of the surface of the pipe.

For further information address Wm. E. Marston, manufacturer, 326 River street, Troy, or John De Galleford, Box 478, Cohoes, N. Y.

Hardening Iron and Steel.

Francis E. Sessions, of Worcester, Mass., has recently obtained as above.

The article made of iron or steel, to be carbonized or hardened, is immersed in a bath of molten cast iron and allowed to remain the desired length of time, after which it is removed and thrown into cold water. It is found that the melted cast iron, or bath of molten cast iron, works the best when heated to the degree required by founders for pouring good castings, and when thick or large pieces are to be carbonized or hardened, it may be well to raise the heat of the molten metal still higher. The depth at which the metal will be carbonized and hardened will depend much upon the length of time it is allowed to remain in the molten bath of cast iron, and also somewhat upon the degree of heat to which the melted metal is raised, so that each operator can, by a few trials obtain almost any desired depth or carbonization or hardness, whether operating upon iron or steel. The bar or article, if instantly withdrawn from the molten bath, as soon as immersed, and plunged or thrown into cold water, will be carbonized or hardened to a slight depth, and which, in case of thin bars or articles made from thin sheets of iron or steel, may be all-sufficient.

It is unnecessary to recapitulate and enumerate the advantages of my invention, since all, and especially workers in metal will readily appreciate the value and extent to which my invention may be applied successfully. Articles made from iron can be carbonized and hardened at a slight expense, so as to have a surface equal in resistance and hardness to the best tempered steel, while at the same time having an elasticity, owing to the malleability and toughness of the central parts, which prevent the breaking or cracking of the articles.

New Mode of Printing and Embossing Cloth.

Hitherto the art of printing and embossing figures and designs on fabrics has demanded consecutive or separate operations. The ordinary stencil is often employed, and the figures or patterns filled in afterwards. The colors have been piled up or laid on thickly, so as to project the figures and present the appearance of raised work. This mode is defective, since the colors are brittle and liable to crack, and every time the figure comes in contact with any object a portion thereof is broken off, and soon the ornamentation is destroyed and the fabric laid bare again.

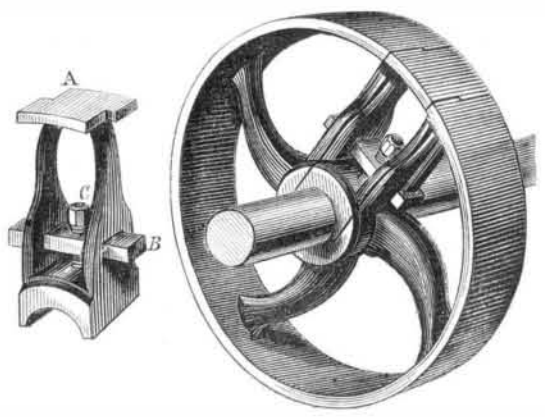
In carrying out this invention, first engrave an ordinary brass plate with sunk or depressed figures, such as flowers, fruit, animals, or whatever designs or representations desired, and charge or feed them throughout with various colors, according to taste. This plate is applied directly to the top of the cloth or fabric, the colors being in a wet state. An iron plate is then heated to a certain degree, and laid on the top or back of the engraved plate, and the whole is placed under a press. The hot iron plate being applied to the engraved plate, the heat will slowly be diffused through the latter plate while the cloth and the two plates are under pressure.

The color is gradually absorbed by the fabric as it enters or is forced into the depressions or engraved portions of the plate, and then it dries with a uniform and elastic finish; and so perfect is the drying that each ornamentation appears to be homogeneous from the surface to the back of the fabric, and therefore the parts thus ornamented present the appearance of fine velvet, or ordinary worsted, embroidered, or raised work. This invention can be applied to any fabric, and in the ornamentation of table covers, piano covers, skirts, slippers, ladies' cloaks, and the like.

Recently patented by Lewis Murr, of Philadelphia, Pa.

WHEELER'S ADJUSTABLE PULLEY FOR ATTACHING TO SHAFTS IN PLACE.

The annoyance of taking down a section of shafting, driving out keys, and removing couplings, merely to slip on a pulley needed for some machine added to the *materiel* of a concern, requires time and necessitates trouble. Frequently, also, it is found that when keyed back the couplings do not assume their former position exactly, and when the faces of the halves are brought together they throw the shafting out of line. Pulleys intended to be placed on a shaft without this trouble are usually cast in halves, and it is notorious that those so made are generally unreliable and troublesome to fit. First, it is difficult to cast them; secondly, they are difficult to turn; and, third, when put on the shaft they seldom run true.



The plan shown in the engraving appears to be the most feasible and reasonable of any we have yet seen. Every practical man must see its advantages at once. One or more of the arms of the pulley is enlarged, or divided, admitting a piece shown at A, a casting separate from the pulley, and easily fitted to the latter by the file. This supplementary piece has a section of the hub embracing one half of the shaft. It engages with the rim of the pulley by a parallel cut, divided in the center at right angles. This form of division, however, is not material. The piece is held in place by a bar, B, passing through the true arms of the pulley and the false arms of the segment and held in place securely by a set screw, C. Instead of this arrangement the bar may be a single key without set screw. Every machinist and millwright will see, at once, the advantages of this simple device for adjustable pulleys. There is no set screw to mar the shaft and no key in the hub of the pulley or key way on the shaft to be cut. Most of the fitting required is at the rim, as the hub portion may be cast accurately enough and the key may be forged to fit.

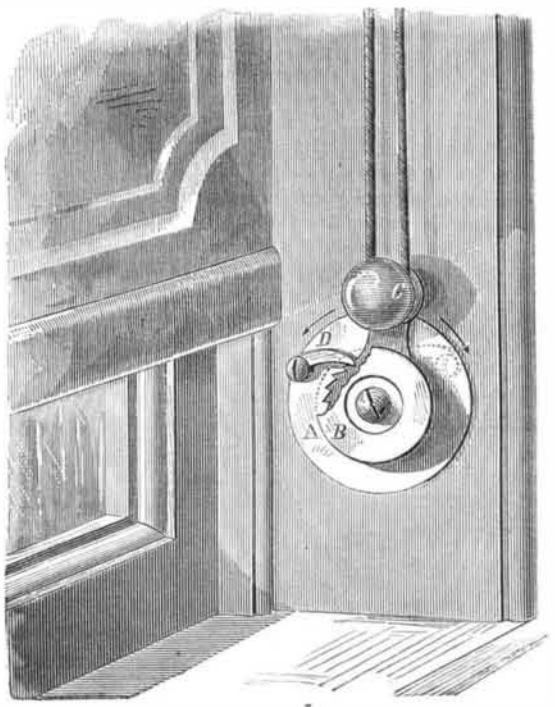
Patented April 24, 1868, by Seth Wheeler, who may be addressed at Albany, N. Y.

Baldwin's Automatic Lathe.

On page 268, Vol. XVI., we gave an illustration and description of Baldwin's automatic lathe for turning ornamental wood work and pieces of unequal diameter. Its simplicity and compactness, with its uniformity of work recommended the machine to us at that time, although our ideas were drawn wholly from a model, a miniature machine. A few days ago, however, we examined one of a size calculated to turn work of from one and a half inches diameter down to the size of a pen holder and even smaller. It may be seen in operation at No. 65 Liberty street, New York city, and we recommend practical mechanics and others interested in this class of work to witness its operation. In length and variety of work it has scarcely any limit, a single machine being capable of turning a fishing rod forty feet long and the most elaborate patterns for architectural, furniture, or cabinet ornamentation. The marvelous rapidity of its action and the exactness of the work performed would hardly be credited except by actually witnessing its operation.

CURLEY'S PATENT ADJUSTABLE CURTAIN FIXTURE.

The neatness and simplicity of the little device shown in the engraving are among its desirable features. It is, as seen, a holder for the cord by which the curtain is raised and lowered, and is attached to the casing of the window frame. There



is a circular base plate, A, and an outer and smaller plate, B, between which is the lever, C, the whole held together and to the wood work by a single central screw. The lever, C, has a pulley for the reception of the cord, and its central portion is cut into a right and left hand ratchet with which the pawl, D, engages. This is for tightening the cord when loose, by depressing the handle of C. The pawl may be used on either side, the right or left, simply by taking out its screw, turning the base plate half way round, and replacing the screw. Having tested it in practice we consider it a very convenient and useful device.

This device was patented through the Scientific American Patent Agency, March 24, 1868, by Thomas Curley, who may be addressed relative thereto at Troy, N. Y.

Magnetic Figures with Iron Filings.

These iron filing magnetic figures are, and, as we believe, have always been, of scientific use. For example, in magnetizing steel bars for permanent magnets, in what other way are we to detect faulty bars. Though the steel may be selected with the greatest care, and very carefully hardened and tempered, and they may appear to be perfectly similar, yet on being magnetized it is probable that not more than 30 per cent will be good; at least, we have always found it so. If the fault be in defective tempering that is easily rectified, but if it be through internal flaws, iron filings only will detect these. Let the bar be magnetized and covered with a stout sheet of paper on to which sift iron filings, and if they arrange themselves round several vacant points along the bar it may be concluded that under these there is an internal flaw, and in all cases it will be found to be so on breaking the bar; such a bar is of no use for a magnet. The cracks in the bar divide it into a series of small magnets.

This is the use that these figures have been put to for many years—at least, we have used them for this purpos, and no doubt others have done the same; but latterly the principle has been put to a most valuable use in a manufacturing and engineering point of view. It has been applied to testing the soundness of manufactured iron, for the detection of internal flaws and unsound welds. For the testing of chain cables and anchors it will be invaluable, so much property and so many lives depending on their soundness. Though these may look sound and perfect externally, they may have internal flaws which will surely cause them to give way when the stress comes upon them. For testing chains and anchors experimentally, it has already been applied, and doubtless it will be soon brought into universal practice, and also for testing the material of which bridges are to be made, and also railway wheels and tweers, and, in fact, manufactured iron of every kind which is required to resist great strains or shocks.—*Mechanics' Magazine.*

PISCICULTURE.—A gentleman in Mumford, N. Y., extensively engaged in trout breeding, lately intrusted to the mercies of the postal service a package of trout spawn for transportation to the far-off land of Dakotah. A letter has just been received informing him that out of two hundred spawn sent, all but six hatched out in a breeding trough and the fish are doing well.