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Economy of the Arts.

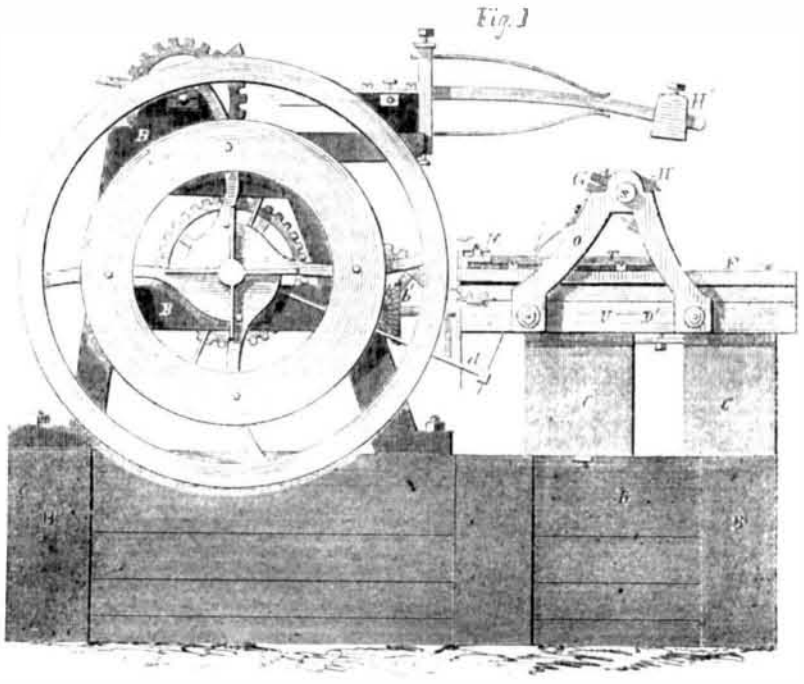
The horse-shoe nails dropped in the streets, carefully collected, reappear in the form of swords and guns. The clippings of tinkers shops mixed with the parings of horses' hoofs, or cast-off woolen garments, appear afterwards, in the forms of dyes of the brightest blue, in the dress of courtly dames. The bones of dead animals yield the chief constituents of lucifer matches—phosphorus. The dregs of port wine, carefully rejected by the port wine drinker in decanting his favorite beverage, are taken by him in the form of Seidlitz powders. The washings of coal gas re-appear carefully preserved in the lady's smelling bottle as an ammoniacal salt.

The First Effect of Hearing Restored.

It is amusing to watch the movements and to note the expressions of astonishment of some of those patients who are suddenly restored to acute hearing. This is most remarkable when the deafness has existed for years. The patients look around for an explanation of the unusual sounds they hear, and then the very movement of looking round rustles the dress, hearing the noise of which they become again bewildered. They cannot be brought to believe that the sounds they hear are natural. The noises in the street are at first terrific.—It is related by the London *Times* that recently a portly gentleman residing in that city on leaving the hospital in which his hearing had been restored, bore it pretty well until he got into Piccadilly, when the noise of the omnibusses—every one of which he thought would be upon him—so frightened him that he started off in a run, and never stopped until he got home.

MACHINE FOR CUTTING FILES.

Fig. 1



File Cutting Machine.

Various machines have been devised and constructed for cutting files to supersede hand labor, but none, we understand, are in successful operation at present. The accompanying illustrations of one, is the first published in our country and in our columns.

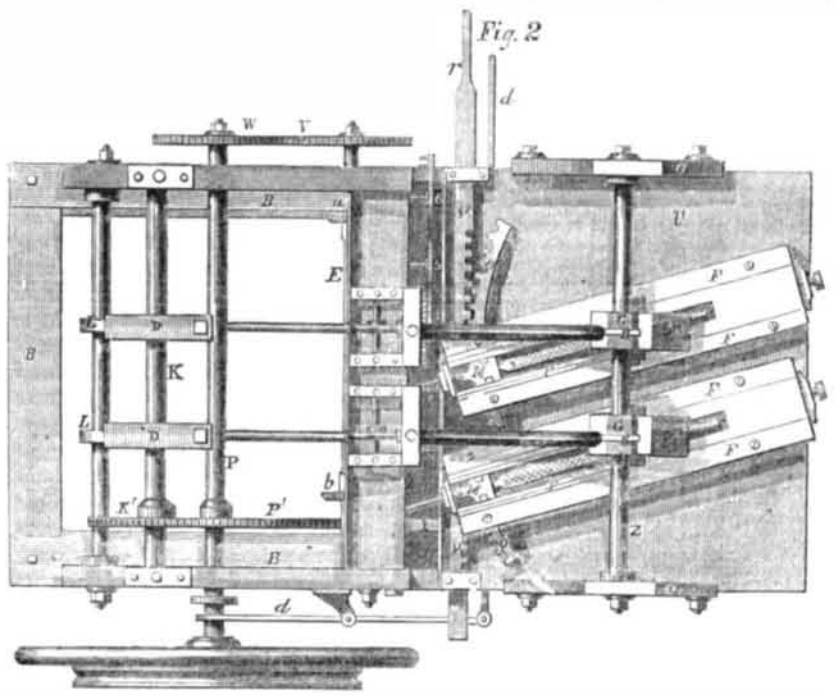
Figure 1 is a side elevation, and figure 2 a plan view, of the file cutting machine, invented by M. Lacroix, and recently secured by patent in England, and illustrated in the London *Engineer*.

The machine is designed for cutting two files at once. B B is the frame of the machine, and C C are two supporting pieces of the table, U. There are two carriages on the table, which are movable on a center, D. The two guiding pieces, F F, are secured on the carriage, between which slides the file rests, T; a pair of jaws, M, hold each file. O is the bracket (one on each side) for supporting the shaft, Z, on which the spring chisel holders, G G, are fixed by screws; H H are cutter chisels secured by screws; H' H' are hammers, secured by a screw on the lever or handles, R, each movable on an axis, to set it to any angle. D D are two cam wheels on shaft K; and K' is a cog wheel on the same shaft, actuated by the wheel, P', on shaft P, which carries the fly wheel. A pulley on the fly wheel is actuated by a band from any main driver—steam engine or water wheel; *d* is a clutch lever for the workman to throw the machine in and out of gear—stop and set it in motion. An accurately divided tooth wheel, W, is secured on the opposite end of shaft P, and can be replaced with another to modify the fineness of the cut of the file. It gears with the wheel, V, on the shaft, E, and two bevel wheels, *a b*, gear with similar ones fixed on two peg wheels, 1 and 6, which gear on either side with intermediate wheels, 2, 3 4, and 5. A spring above and one below each hammer handle regulate the force of the blows.

In figure 2 the file carriages on table U are placed towards the left, and the files are placed on the rests, T. Two toothed segments, Q', of a circle are made fast on each carriage, and gear with a rack, Q, on lever, *r*, to change the position of the files, right or left, for the first or second cutting.

A division screw of about 1-16th of an inch, engages in a nut on each file rest, which slides in grooves in the guides, F; one of the ends of the division screw has a collar, which turns freely in a bearing on one side of the carriage; the other end of the division screw is received by a center pointed screw at the other side of the same carriage; toothed wheels gear with the peg wheels, 4 and 6; the latter, turning towards the right, cause the said wheels, as well as the division screws, to turn to the left, and thus the file rest is carried back to the other side of the carriage. When the first cutting of the file is effected, the catch is removed from its rack, which being moved forward, the carriages are moved to the left on the table, and the toothed wheels then gear with peg wheels, 1, 3, which, turning to the

Fig. 2



left, cause the said wheels and screws to turn to the right, bringing back the sliding rests, T, to their starting point. The file is then cut with double cross cuts. The inclination of the cuttings of the file is given by the inclination of the carriages, F F. The wheel, W, on the shaft outside the frame gears with the wheel, V, fixed on the same shaft as the bevel wheels *a b*. If the wheels, W and V, are of equal diameter, and the wheel K' half the diameter of the wheel P', the cam wheel should revolve twice when the wheels W and V, the bevel wheels, *a b*, and the peg wheels, 1, 2, 3, 4, 5, 6, revolve once; thus the hammer will strike three blows for each half turn of the screw, or three cuts in each eighth inch. If the wheels, W and V, be not of the same diameter, the first being greater or less, the cut of the file would be coarser or finer, by changing these wheels the cut required will be obtained. In order that the chis or cutter may bear truly on the file, the file rest is movable, and made half cylindrical, with a collar at each end working in suitable bearings. This half cylinder bears in its length in a groove cut in the brass rest, and the bearing on which the file is held fast by the jaw, M, is secured by screws on the face of the half cylinder, which allows the file to recline in all directions, and the chisel to bear on the whole breadth of the file. D' is a round iron plate fastened on the carriage, and turning in the table, U, to allow the carriage to turn to the right or left, as required. Cams, L, are fixed on the cam wheels, D D.

This machine has not been patented in the United States, it is therefore public property at present. It appears to embrace every motion requisite for cutting files, such as the fineness of cut, the force of the blow of the hammer, the inclination of the chisels and all the devices necessary for cutting either straight or cross-cut files.

Galvanic Decomposition of Water.

The following, from the Philadelphia *Ledger*, describing a contrivance for exhibiting the action of galvanism in decomposing water, will be of interest to every man of science. The action is described by Lardner to be difficult of explanation:—

"One of the latest, and, in itself, simplest and most useful, for the purpose of illustration, is a contrivance to explain the nature of galvanic decomposition, made by Professor Rogers, of the University, and suspended in the Lecture Hall, before the class. It consists of a board, representing a vessel containing sulphuric acid. At one extremity is let down a plate of zinc—the positive; and at the other extremity the negative pole—a plate of copper. The manner in which the atom of oxygen combines with that of hydrogen, in its passage across the liquid, from one electrode to the other, is shown by the pulling of a string, which brings the two in contact, and so on till the whole is traversed, when, having no atom to unite with, it (the atom of hydrogen) escapes free, and returns towards the positive pole, again to form a fresh union.—This simple contrivance promises to be of great use to the student, and, when brought before the class, elicited much admiring approbation. Professor R. explains the process of silver plating, and exhibits a beautiful pitcher made by Mead. It was remarked that the britannia ware might be made as thin as desired, and the silver deposited with any depth wished, and that thus a far more beautiful article could be made than with the hand."

New Preparation of Cotton.

The Charleston (S. C.) *Mercury*, in noticing the articles on exhibition at the late fair of the Mechanic's Institute in that city, describes a new preparation of cotton, which appears to be a valuable invention. It says:—

"Mr. J. M. Legare, of Aiken, sends a stand, rustic table, reading chair, Emperor Adrian's cabinet, picture frame, library screen, &c., made of cotton, which imitates carved woodwork, by subjecting it to a chemical process. In its use it is pliant and ductile, and may be molded if desired, but with still greater facility worked up by hand without molds. When dry it is moderately elastic, is not affected by heat, cold, or moisture, and possesses a hardness and tenacity beyond the hardest wood."

The Fair is stated to have been an excellent one in every respect, and was very well conducted.

The *milk sickness* is at present prevailing in some districts in Illinois, and great numbers of the cattle have died. It is caused by a long drouth. The people have learned to refrain from drinking milk, and eating meat and butter where it prevails, and thus they escape being infected with it.

A new seam of cannel coal has been discovered in Clinton Co., Pa.