Correspondence

How to Put a Wood Saw in Good Order.

MESSRS. EDITORS:—I propose to give a few plain and simple directions how to file, and otherwise put in order, the common wood saw, so called, which is so generally used throughout the country for sawing up fire-wood by hand. I have filed wood saws for the community, here, for more than thirty years, and I have endeavored to profit by experience.

I will relate an incident that occurred a few years ago. A gentleman called on me one day, and, in conversation, stated that he had had considerable experience in filing all kinds of saws. I asked him how long it usually took him to file a wood saw; he answered, about half an hour. I told him that I could file one well in ten minutes. He seemed a little incredulous. I told him that I had just as soon file one as not, to prove my statement. I then took a wood saw of common hardness, which I had used for many years, but as the saw was not dull, I took a flat file and jointed down the points of the teeth until the saw was very dull indeed, I then directed the gentleman to take out his watch, which he did, and by it, in just four minutes, I had filed every tooth in the saw sharp and well. This was all the time consumed in filing the saw, but did not include the time of turning the saw over once in the clamp to file both sides.

I will describe the tools, etc., that I use for wood saws. First, a rest on which the saw is laid flat, and to which it is clamped. The rest is made from a piece of two-inch plank about thirty-two inches long, and six inches wide, and it is fastened down to the bench with one edge resting thereon, and the other edge raised, so that the surface of the rest will present an angle, with the bench, of about thirty deg. and slanting from the operator; the rest should be fixed directly opposite a window. Second, I use a six-inch three-corner file, with two handles, one of the handles is fixed upon the point of the file and it is only about two inches long and terminates in a sort of knob or ball at the end so as to be held conveniently with the thumb and two first fingers of the left hand. With two handles to the file, four times as much work can be done as there could be in using but one handle, and the work will be done far better. And, again, the file will do much more work before it is worn out, for it can be safely used the entire length of its cut.

To file the saw it must first be removed from the frame, and if the blank or uncut portions of the saw, at each end, project beyond the points of the teeth, then cut away this part as follows:—Lay the saw on an anvil or block of iron, and with a cold chisel make a cut on one side of the blank part of the saw, and as high up, and in line, with the roots of the teeth. Next, place the saw in the jaws of an iron vise just even with the cut, and with a hammer break off that part above the vise; it is all very easily done. Next examine the saw to see if there are any crooks in the plate, and if so, then place the saw flat on an anvil or other substitute, with the crook uppermost, and strike that part with the pane or corner of the face of the hammer, until the crook is removed. Next, the points of the teeth should be jointed off true and at perfect right angles with the sides of the plate; to do this a tool must be used which is made expressly for the purpose, consisting of a flat file, eight or ten inches long, which is fastened flat to the face of a piece of wood; and to this piece of wood are also fastened two other pieces of wood, each having a face at right angles with the face of the flat file. The depth of each face should be about one and a-half inches, and they should be so close together that the saw will only just pass between them while it is in the act of being jointed. After jointing the saw the teeth should next be set so as to be about twice as wide as the thickness of the saw plate at the back. The saw is now ready to be filed, and is next placed on the rest and clamped down to it with the teeth projecting a little above the upper edge of the rest.

Take the file by both handles and place it against the front side of the first tooth at the left end of the saw. See that the file is placed at the right angle both for the bevel and pitch of the teeth, and when this is right then keep the same position throughout the whole filing. Always file the front side of every alternate tooth first, then file the back side of the same teeth. Then turn over the saw and file the other side in the same way, always commencing at the left end of the saw and work toward the right. Care must be had not to file any tooth any more than just to bring it to a point. Next, if there should be a heavy feather edge left on the teeth, after filing, it should be scraped off with a sharp steel instrument. Next lay the saw flat on a bench and with a straight flat file, placed on the side of the teeth, pass it along over the sides of the teeth once very lightly, this will cause the saw to run smooth.

One word about saw frames. I advise all persons to choose a light saw frame, and, by all means, use a cord to strain it up with in preference to other devices.

JOHN S. DUTTON.

Jaffrey, N. H., Aug. 21, 1866.

Steam Fire Engines.

MESSRS. EDITORS:—In reply to the solicitation of C. H. H., I give you the performance of one of our steam fire engines, the *Citizens' Gift*. This is the oldest engine in use in our city, and has been in use thirteen years. Time of raising steam, 3 minutes and 40 seconds from the time the torch is applied until water is thrown from the nozzle; size of nozzle, 1½ inches; distance thrown, 310 feet, measuring from the end of the nozzle to the place where solid water fell; size of steam cylinder, 10 inches bore, 24 inches stroke; pumps, 6 inches bore, 24 inches stroke; double engine cranks at right angles; large air vessels, connected together; length of hose, 100 feet; steam, 100 pounds to the square inch; pressure on water cylinder, 240 pounds to the square inch; speed of engine, 110 revolutions; 220 strokes of pumps; grate surface, 16 feet; heating surface, 560 feet.

FINLEY LATTA.

Cincinnati, Aug. 27, 1866.

Must a Patent Dealer Take Out a License?

MESSRS. EDITORS:—Please inform me if a patentee, or his agents, canvassing for the sale of patent rights, requires a license.

B. M.

[A patentee does not require a license simply to transfer a patent. But, if he becomes a patent-right dealer, then he must have a license. So must his agents. The following is an extract from the existing law upon the subject of licenses:—

Patent-right dealers shall pay ten dollars. Every person whose business it is to sell, or offer for sale, patent rights, shall be regarded as a patent-right dealer.—EDS.

Gratifying Success.

MESSRS. MUNN & Co.—Allow me to inform you of my success in disposing of my patent on my bolt-cutting machine, which was patented through your Agency on the 5th of June last. I commenced operations about ten days ago, by selling one State, and to-day closed out the entire territory. I sold the thing myself, and all to parties in the city of Niles. I shall realize not far from $8,000 in the operation.

You will hear from me again, soon, as I am about making application for another patent.

D. D. ROBINSON.

Niles, Mich., Aug. 17th, 1866.

Welding Cast Iron and Steel.

MESSRS. EDITORS:—I notice in your column of "Notes and Queries," of the 11th, the query of J. G. B., in regard to welding cast iron and steel, as being practically unanswered. Supposing you desire to answer all such questions, for general as well as for individual information, I take the liberty of giving you the *modus operandi* of putting steel faces on cast iron anvils, or, rather, putting the anvils on the faces.

The plate of steel is highly polished and placed in the bottom of the mold, and dusted with fused borax. The hot cast iron is then poured into the mold, which is so "gated" as to cause it to pass over the plate and out at the other end, until the face is fused, when the escape is closed, and the mold filled.

It takes about three hundred pounds of melted metal to make a two hundred pound anvil.

W. H.

Atlanta, Ga., Aug. 22, 1866.

The Maynard Breech-loader vs. Muzzle-loaders.

MESSRS. EDITORS:—I witnessed, recently, a trial of breech and muzzle-loading rifles, which developed some interesting evidence. The distance shot was twenty rods (110 yards), the shooting was from a rest supporting both ends of the gun. Globe and peep sights were used on all the guns. A violent north-west wind was blowing directly across the line of fire. Forty strings, of ten shots each, were fired, and no one allowed to see his shots till his string was completed. The muzzle-loaders were none of them over 13 lbs. weight, made by first-class workmen, and provided with false muzzle and starters. The breech-loaders were all Maynard rifles, from 20 to 26 inches length of barrel, none of them weighing over 9 lbs.

No very nice work could be done while such a gale of wind was blowing. The match was won by a muzzle-loader, with a string of 11¼ inches from the center of the bull's eye to the center of each bullet hole. As this, however, is not a test of the comparative powers of the guns, and as these targets afforded a good opportunity of making such comparison, I selected the five best strings shot with muzzle-loaders, and an equal number of the best shot with Maynard rifles, and made very careful measurements of the circles of impact of the ten shots of each, without any regard to the distance from the bull's eye. The following table gives the results in inches, showing, first, the diameter of a circle passing through the centers of the two bullet holes furthest from each other in each string of ten shots; second, the vertical variation, or greatest vertical distance between any two shots; and, third, the horizontal variation or greatest horizontal distance between any two shots:—

Muzzle Loaders.			Maynard Rifles.		
Diam. of circle.	Vert. var.	Hor. var.	Diam. of circle.	Vert. var.	Hor. var.
3 3-16	2 1-16	2 2-16	2 5-16	1 12-16	2 3-16
3 5-16	3	3	2 12-16	2 8-16	2 9-16
3 13-16	1 11-16	3 8-16	3 4-16	2 7-16	2 8-16
3 15-16	2 7-16	3	3 8-16	3 4-16	2 2-16
4 10-16	2 14-16	4 10-16	4 3-16	2 14-16	3 9-16
18 14-16	12 14-16	16 4-16	16	12 13-16	12 15-16

In the aggregate of fifty shots it will be seen that the Maynard breech-loaders are ahead in the circle of shots $2\frac{1}{16}$ inches; in vertical variation, $\frac{1}{16}$th of an inch; and in horizontal variation, $3\frac{5}{16}$ inches.

I have no expectation that any evidence will affect the mind of the "Rocky Mountain Hunter," who replied to a previous communication of mine relating to breech-loaders, and based his denial of their superiority on the fact that he did'nt believe it; but as mere assertion is worth as much in one case as another, I will express my belief that breech-loaders are superior to muzzle-loaders for the very reason he assigns for the reverse, viz., because no patch is used on the ball.

H. W. S. C.

Danvers, Mass., Aug. 31, 1865.

A Signal Code.

MESSRS. EDITORS:—A correspondent wants a simple, universal signal code, easily understood and convenient for every body to use. Here it is. Simply learn the Morse telegraph alphabet and the thing is done. It has but two letters by which to spell every word in the language. With a red flag for a dot and a white flag for a dash, signals can be made and understood as easily as operators understand the dots and dashes sent over the wire. Perhaps this idea is original and patentable. If it is, it can be made available. Perhaps not otherwise, as people do not appreciate what they can have for nothing.

SOLON ROBINSON.

New York, Sep. 5, 1866.

An Inefficient Boiler.

MESSRS. EDITORS:—In reading in No. 9, current volume, of the SCIENTIFIC AMERICAN, I noticed an article headed "An Inefficient Boiler," and it strikes me that H. M. C. can readily obtain draught enough for his boiler as it is, by simply covering up a part of his grates. We have had a great deal of trouble with a boiler we are now using, through want of sufficient draught. After consulting most of our leading mechanics, it was thought that the square pipe leading from the flues to the smoke-stack was too small. This was changed to a round one twice the capacity of the flues, with the same result. Next, it was concluded the chimney should have twenty feet more, which was done, with like

result. The exhaust was next introduced into the smoke-stack without benefit. In experimenting still further, we one day accidentally discovered the blaze of the fire in the front of the furnace striking down and seemingly coming up in the rear, whereupon we covered one-third of the grates (the rear) with a piece of sheet-iron, and since then have plenty of draught and are obliged to keep the furnace doors closed two-thirds of the time.

JNO. BABILLION.

Detroit, Mich.

The Explosion of Lamps.

MESSRS. EDITORS:—A correspondent of your paper inquires the cause of the explosion of his kerosene lamp. Kerosene lamps are always liable to explode when the tube that holds the wick is not put in right. In soldering it in, the workman usually leaves a small part open forthe purpose of admitting air to fill the space in the lamp caused by the consumption of oil. This should never be done. But the tube should be soldered perfectly tight. The air will pass down by the side of the wick, to supply the space in the lamp from the diminution of the oil. Kerosene will explode as violently as alcohol, or spirits of turpentine, or burning fluid, only it requires a little more heat to do it, that is, to raise it into vapor preparatory to exploding. This I show by experiment in every course of lectures I deliver (I am a lecturer in chemistry) when I come to the topic of "burning-fluid and dangerous lamps." It is a great risk to use a lamp for any of the volatile burning-fluids, with an "air-hole," after the manner of the old sperm lamps. N. D.

Newark, N. J., August 23.

Softening Chilled Iron.

MESSRS. EDITORS:—Heat the iron red hot and expose it for a few minutes to the flame of brimstone. If the iron has a flat surface, the brimstone can be placed upon it, where it will burn itself out, leaving the iron as soft as ordinary cast-iron.

MACHINIST.

New Haven, Ct.

Cold Bleaching Process.

M. Tessié du Mothay and M. Rousseau describe very satisfactory trials which they have made of a cold bleaching process, by means of which all textile materials (whether silk, cotton, linen, flax, wool or any woolly fiber) can be bleached. The agent employed is permanganate of soda, slightly acid, prepared by a new and economical process. With this salt, the extraordinary properties of which have of late years been much studied, a bath is prepared, in which the materials to be bleached are dipped. They are stirred about with a glass rod from time to time, and after about ten minutes they are taken out of the bath, strongly colored of a violet-brown hue by an abundant deposit of oxide of manganese. They are then dipped as quickly as possible in a bath of water, acidulated with sulphurous acid, and again stirred and turned over with a glass rod, and after two or three minutes the materials or thread, originally of yellow or gray color, are already white. These operations are repeated twice more, and the result is a brilliant white, while the fibers are in no way injured. The materials operated upon were cotton fabrics, dirty as they came direct from the loom, as well as skeins of linen thread of a dark slate color, which, by existing processes, would have taken many days to bleach.—*Engineer.*

Fire in a Coal Mine.

For the last three months or so Mr. Blyth, mining engineer, has been employed, on behalf of Mr. Dixon, Govan Colliery, prosecuting a bore in search of ironstone on the estate of Sir William Stirling Maxwell, of Pollok. The exact position where the work is being carried on is in a field at an angle of the road leading to Pollokshaws, by Hagboose farmsteading and Haggs Castle, and about midway between these two places. For the last week it has been known to the workmen that gas or fire-damp had been escaping from the bore, and a few days ago they had to extinguish an inconsiderable jet of it which had been accidentally ignited. On Thursday morning a more serious occurrence of the same nature took place. One of the borers had sat down on a tool chest situated about 40 feet from the bore, and proceeded to light his pipe. No sooner was the match struck than he was enveloped in a sheet of flame, but he was only slightly burnt on the hands and face. The fire was conducted to the fountain-head at the bore, and there it was raging on Thursday night, and should no effectual means be found to put it out it is the opinion of skilled persons that it may burn on for a long period—months, perhaps years. When the fire broke out the workmen endeavored, with stout iron rods, which they used as rammers, to stop up the bore, but so strong was the rush of gas that three or four sturdy men were knocked aside. A cast iron boiler, weighing several hundred weight, was then thrown on the top of the flame, but it was instantly rent and tossed into the air. The boring apparatus, having taken fire, had to be torn down and the rods left in the bore, which is 2¼ inches, and has now attained a depth of 420 feet, and passed through the sandstone strata. There is every confidence that the rods will be recovered uninjured on the fire being got under, and it is only on the gas coming to the surface and into contact with the air that combustion begins. The roaring of the flames, which reach from 20 feet to 30 feet in hight, is very loud, and similar to that produced by the letting-off steam from a high pressure boiler. By a telegram from our Glasgow correspondent we learn that the fire died out yesterday, and that means have been taken to prevent the gas being again ignited. The boring operations will be suspended for a day or two.—*Scotsman.*

American Antiquities.

Between the Colorado river and California range of mountains is a vast desert, which, nevertheless, bears evidence of having once been thickly populated. Humboldt, during his researches on this continent, discovered abundant vestiges of a race more civilized and cultivated than any which occupied the country on its first discovery by Europeans. Recently a party of adventurers ascended the Colorado for a distance of about two hundred miles. They found the country on both banks destitute of vegetation, level, and monotonous. On one of the plains they discovered an object, which, after a tramp of five miles, they reached, and found a pyramid of stone laid in regular courses and rising over one hundred feet from the plain, the top presenting a surface of fifty feet square. Evidently a portion of the top had been dislodged, either by the hands of men or some convulsion of nature. The courses of stone were from eighteen inches to three feet in thickness, the outer courses cut at an angle corresponding to the inclination of the structure. The abrading action of the elements had so worn the joints that the ascent was a work of but little labor. By whom and when this pyramid was built will probably always remain a mystery.

War and a Nation's Debt.

War is the most costly enterprise nations can engage in, and war, in these days, is much more costly than formerly. Not to estimate the waste of property, the expense of material and means to wage war now, compared with that of former systems of warfare, is almost incredible. The cost of a single monitor, or ram, is more than that of the fleet engaged at Salamis. The cost of the equipment of one of our army corps in the late war would have sufficed to put on a war footing the army of Xerxes. When George the III. ascended the throne of England, in 1760, the national debt was one hundred and two millions. When he died in 1820, it was eight hundred and thirty-five millions of pounds. In sixty years it had increased seven hundred and thirty-three millions of pounds, or thirty-five hundred and thirty millions of dollars. Almost all this increase was legitimately a war debt. Every invention and discovery in art and science has tended, directly or indirectly, to make war more costly.

Telegraphic Blunders.

The alphabet employed in the telegraph service, has never been recommended on the score of accuracy or reliability. Many of the signs employed are so nearly alike, that absurd mistakes are of frequent occurrence. Mr. Cyrus W. Field, the great telegrapher, was himself lately made the victim of one of these blunders. The following telegram was received from him:—

ON BOARD STEAMER "GREAT EASTERN,"
Atlantic Ocean, Sept. 4, 1866.

To D. H. Craig, New York.

We have just received telegrams from London saying there is a serious outbreak in *Canada.* Please advise me accurately by cable, via Heart's Content and Valentia, in regard to the same.

CYRUS W. FIELD.

As no news of any Fenian invasion had been received in this city, the foregoing dispatch created no little astonishment until it was explained by another dispatch via London, dated Athens, Greece, stating that an insurrection had broken out in the "province of Candia."

NEW INVENTIONS.

ATTACHING SHOES TO HORSES' FEET.—THOMAS H. INCE, Westminster, London, England.—Patented May 29, 1866.—In this improved mode of attachment, the shoes are fastened to the hoof of the animal by screws, instead of nails, the holes in the shoe forming guides to direct the screws parallel to the walls of the hoof, the heads being countersunk in the fullering of the shoe. We understand that this invention has met great approval in England and Canada, under circumstances very trying to the security of the shoe, and as a matter of safety and symmetry, it is certainly better than risking the puncturing of the quick, and certainly defacing the surface of the hoof.

PIPE WRENCH.—WM. W. WILLS, Janesville, Wis.—Patented May 29, 1866.—This invention consists in pivoting the outer jaw of the wrench to a sleeve, which slides upon the bar, in such a manner that a firmer grip upon the pipe, or other article to be held, can be attained. The arrangement of Mr. Wills's wrench is such that it is easy in its operation, and very effective in its hold.

APPARATUS FOR PROPELLING STEAMSHIPS.—ARTHUR DOYLE, New York City.—This invention relates to an improved apparatus for propelling steamships, and consists in an arrangement of paddles or buckets which always maintain a vertical position in entering the water, moving through, and rising from it. The dipof the buckets is double or treble that of ordinary paddle-wheels, and may be of any desired depth, presenting in their passage through the water a great area of resisting surface.

FRUIT GATHERER.—WARREN H. STONE, Matherton, Mich.—Fruit growers have long desired some more effectual means for gathering their products, and inventors have not entirely disregarded their wants. Mr. Stone patented, on the 7th of August, a device which consists in combining a flexible apron with a frame so constructed that fruit may be gathered from the topmost part of trees, and conducted through the flexible tube, and lodged upon a canvas apron under the tree without bruising the fruit.

RAILROAD SWITCH.—CHARLES J. BAYER, Poughkeepsie, N. Y.—This railroad switch is in a measure self acting, or may be operated by the car wheelsso as to oe brought in proper position when the cars are moving in one direction, the switch requiring to be adjusted by hand when the cars are moving in the opposite direction. Its object is to prevent accidents by a careless management of the switch, by having the latter adjusted with certainty by the car wheels.

CIDER MILL.—HUGH SELLS, Vienna, C. W.—This invention relatesto a cutting and crushing apparatus whereby the apples may be reduced in an expeditious and thorough manner; also to the construction of a receptacle to receive the crushed apples and in which receptacle the juice is expressed from the latter.

CULTIVATOR.—J. H. BARLEY, Longwood, Mo.—This cultivator belongs to that class which is provided with two laterally-moving plows, and it consists of such construction and arrangement of parts that the plows may be readily operated or moved laterally to conform to the sinuosities of the rows of plants, a strong and durable implement obtained and one which may be manufactured at a small expense.

GUARD ATTACHMENT FOR CULTIVATORS.—THOMAS B. MCCONAUGHEY, Newark, Del.—This invention consists in applying to a cultivator a guard so constructed and arranged as to prevent sods, clodsof earth, etc., from being thrown upon the young plants, and obviate the necessity of a person following the cultivator, which is how necessary, in order to uncover the plants covered and crushed down by the ordinary cultivators in use.

PLOW.—GEORGE W. THOMPSON, Ripley, Ohio.—This invention consistsin a novel construction o the mold boards and land side of hill-side plows, and in a novel manner of connecting the former to the latter, whereby the mold boards may be very readily turned and adjusted to either side of the beam, and a strong and durable plow, of the class specified, obtained.

FRUIT PICKER.—CYRUS M. LUNT AND WILBUR F. LUNT, Biddeford, Me.—This invention consists in the combination of a sliding rod having tines upon its end with an apron for conducting the fruit into the basket.

ILLUMINATED LETTERS, SIGNS, ETC.—JAMES HARRISON, New York City.—This invention has for its object to furnish improved illuminaced letters, etc., by means of which the devices may be rendered clearly perceptible at a great distance when viewed at any angle. And it consists of the combination of glass cups with the letters or devices to be shown, and with the background of said letters or devices.

GRINDING MILL.—CORNELIUS BOLLINGER, Harrisburg, Pa. This invention has for its object the ventilating of the mill stones andit consists of a fan blower on the spindle which forces air up the spindles and distributes it between the stones through the hollow driver, and the air escapes up through the top of the case around the stones.

CORN PLANTER.—ALEXANDER LADD, St. Lawrence, N. Y.—This invention is designed more especially to be applied to hoe handles so as to be used in connection with a hoe to admit of the corn being dropped and covered at one operation.