Correspondence

Constructing Wagon Wheels.

Messrs. Editors :—On page 280, current volume Scientific American, your correspondent, O. N. C., asks for the best mode of constructing wagon wheels and applying them to their spindles.

Ease of draft, strength and durability are the points to be considered. To accomplish these objects certain rules are indispensable. To understand these rules and their application we must examine closely the operation of a wheel on its axle. On a pulley or wheel in ordinary machinery, the propelling power or resisting force is applied to its rim or periphery. Not so with a wagon wheel, hence a different rule must be applied. The power of locomotion to a wagon wheel is applied just so far from its center as the periphery of the spindle comes in contact with the wheel. Hence the theory supported by so many intelligent wagon makers (which we leave for others to discuss) that "a wheel on a large spindle runs lighter than on a small one."

The lightness of draft can only be effected by doing away with all avoidable friction, and the mode of applying the power. Strength is obtained by a proper construction of the wheel and its proper position on its axle. To accomplish these objects the weight of the load to be supported must be equally distributed on each end of the hub; the face of the spoke must stand perpendicular, or at right angles with the base of the axle; and accordingly at right angles with the boxing or internal surface of the hub. Here lies the foundation of the taper of the spindle and the "dish" of the wheel. By applying the following rule it will be seen that one is entirely dependent upon the other :—Thus, a wheel 4 feet high with a hub 14 inches long, the butt box 4 inches and the point boxes 2 inches in diameter. Lay off this size on a draft board, draw a line through its center longitudinally; then draw another at right angles with the internal surface of the hub or boxing to the hight of the wheel. This line shows the face of the spoke perpendicular, or at right angles with the axles' base (which must in all cases be straight); draw another line at right angles with the line through the center of the spindle to the point of the spoke line. The distance these two lines radiate at the center of the spindle will be the proper dish of the wheels for this taper of spindle. But if the wheels be made and the amount of dish fixed, it becomes necessary to give the spindle the proper amount of taper to suit the wheel. To ascertain this, take the horizontal spindle line, the perpendicular spoke line (at right angles), the size and position of the butt box; then mark the dish of the wheel at the center and draw a line at this point across the spindle to the point of the spoke line. A line at right angles with this dish line to the center of the butt box gives the center of the spindle, thus ascertaining the exact size needed for point box to maintain the proper bearing of the axle on the internal surface of the hub.

Another important point, commonly called "gather," is the inward inclination of the front of the wheels to prevent them from running out against the nut or linch-pin when the wagon is moved forward. The difference between the motion of a wagon wheel and that of a pulley can be seen by placing a wagon with tapered spindles on a smooth floor. Move the wagon forward by applying the power to the rim of the wheel, as is the case in machinery, and it will be seen that the wheel inclines to run in or against the hurder or butt of the spindle. Remove the application of power from the rim to the center, as is done when the wagon is drawn by the axle, and the tendency is to run off or out against the nut. This result shows that some change is necessary in the construction of the spindle. To prevent this difficulty ascertain the difference between the size of the butt and point box, take one-third of this off the front and two-thirds off the back of the spindle. This will always give the wheels the proper amount of gather and is applicable to all sizes. Let the taper be half the size of the box as is customary on wooden spindles, or one-eighth of an inch, as is usual with small iron spindles.

These calculations are based on the supposition that roads are all level, while breakage of wheel or spindle mostly occurs on sideling ground, the load bearing outward at the axle and the rim is forced inward at the bottom. To give the wheel strength to resist this side strain it is best to use a long hub, and set the spokes forward and back or zig-zag as much as possible; thus obtaining a wider base at the point where the greatest strength is required. A long hub is also less liable to break the axle.

I have endeavored to describe all the lines necessary without a drawing, which makes the rule seem longer and more complex than when viewed on the draft board, and necessarily occupies more of your valuable space than is desirable. The subject being of great importance, and very improperly understood by many of your readers who are interested, I have endeavored to make it easily known.

J. R. Gates.

Louisville, Ky., Oct. 30, 1862.

Experiments with Petroleum as Fuel.

Messrs. Editors :—In reading the Scientific American, No. 18 (this volume), I find that Prof. Seely, in the report of the Polytechnic Association, describes an apparatus he tried for burning crude petroleum. Allow me to give my experience on the same subject. Two years ago, I had constructed a furnace of tin, built in the same shape as that used for all horizontal boilers, and over this I put a tin boiler. The bottom of the furnace was made in the shape of a box with the upper part of it perforated by a number of small holes. This box was to contain the oil to feed the fire, and I fed it gradually through a pipe leading from a tin can full of oil to the bottom or box of the furnace. The supply was regulated by a cock. Over the perforated part of the furnace box, I put sawdust and then let the oil into the furnace box, and it passed through the small holes in the top of the box and saturated the sawdust. I then lighted the fire, but soon found that the fire did not receive a sufficient quantity of air to burn without smoking. An opening which I had left in front of the furnace for the supply of air was found insufficient. My next experiment was then to get made a tin cup with two false bottoms, each forming a box. I then had a number of short brass tubes inserted into the cup, running through the top box, one end opening into the lower box and the other into the cup. The top box contained a small quantity of oil fed to it from a can, as in my former experiment. The bottom box was to be an air box; and I had a pipe inserted into it through which I forced a current of air in order to supply the fire through the short brass pipes. As before, I spread sawdust over the small holes in the top box and let the oil into the top box and applied a match. After a short period I began to blow a supply of air to the fire through the lower box and brass pipes, and I obtained a steady fire and as free from smoke as I could expect from such an imperfect apparatus. I placed the boiler of a small steam engine over the cup and in a very short space of time raised sufficient steam to work a small engine. Very soon the pressure of steam increased to such a degree that steam began to blow off freely through the safety valve.

As I stated before, these experiments I tried two years ago, and my last experiment is very similar to that of Prof. Seely. C. Colne.

Washington, Nov. 3, 1862.

An Ancient Iron-Clad Battery.

Messrs. Editors :—I notice in the last issue of your interesting publication an article devoted to surmises as to the originator of iron-plated towers. Your correspondent ascribes it to a person living in 1848; but he is entirely mistaken. For this idea we are indebted to the ancients. Demetrius, son of Antigonus, King of Macedon, laid siege to the city of Rhodes. He experienced a very obstinate defence and all the arts of ancient warfare were directed against the place. A tower was raised, and it is described by an ancient historian as "a monstrous machine the base of which was seventy-five feet wide on each side; it was composed of square beams riveted together with iron bolts and carried up to the hight of nine stories; to render it proof against fire, three sides of it were coated with plates of iron." Strenuous attempts were made by the Rhodians to burn or take this tower, but they were unsuccessful in destroying it. Demetrius, however, fearing that the persistent efforts of the besieged would eventually effect the destruction of a machine on which he had wasted so much time and treasure, removed the tower from close proximity to the walls. The citizens soon after capitulated, and Demetrius made them a present of all the machines with which he had operated against their city. The Rhodians sold those machines for $330,000, which sum was applied toward building the famous "Colossus of Rhodes." The siege took place B. C. 303. E.

Utica, Nov. 10, 1862.

Soldering Tinware.

Messrs. Editors :—You will confer a favor on me by informing me of the address (through the Scientific American or otherwise) of a manufacturer of lamp burners. I mean the small, round tube kind.

I have just found that the material of which star candles are made is a very excellent substitute for resin in soldering tinware. It might oblige my loyal brother tinners to be informed how they can be independent of the rebellious owners of the Southern pines.

I have no news yet of my application for a patent on a fruit-can machine. Is it a "red tape" regulation that my neighbor should have his patent in six weeks, and that I should not hear from mine in twice that time? S. Hunt.

Danville, Ind., Nov. 5, 1862.

[Your substitute for solder may answer a very good purpose, but we should think it more expensive than resin even at the present high price of the latter.

We expect a decision on your fruit-can machine every day. Your neighbor's application for a patent was examined and ordered to issue by another examiner than the one before whom your case comes.

Manufacturers of lamp burners will please to send their address to Mr. S. Hunt as above.—Eds.

The Tax Upon Castings.

Messrs. Editors :—Your article on "Taxation of Castings," in issue of November 1st, must be incorrect, as there is a decision by the Commissioner of Internal Revenue, published in the New York *Tribune* Oct. 21, 1862, in which he states as follows :—

First, All castings which are so well and generally known as to have a commercial value, must be taxed as manufactures when sold and removed from the manufactory.

Second, Other castings made upon speculation of a machinist, but which are not known to the trade as manufactures in themselves, and are designed for articles subject to taxation in an advanced state, are exempt, not being manufactures in the contemplation of the law. It may be difficult to draw the line; the assessor's or assistant-assessor's best judgment will be required. As, for example, car wheels belong to the first class.

This decision needs explanation. In what sense is the word "speculation" used? Please give us the law if you can find it out. C. Van Brunt.

Fishkill Landing, N. Y., Oct. 28, 1862.

[The above decision and the remarks of our correspondent afford proof that the article in the Scientific American referred to, is *not* incorrect. He has justly remarked that this decision "needs explanation."—Eds.]

Trial Trip of the Steamer "Union."

The splendid new screw-steamer *Union*, designed for the trade between New York and Havana, Cuba, made her trial trip on the 10th inst. She is of fine model, 210 feet in length, 34 feet beam and 17 feet depth of hold. The *Union* was built at Mystic, Conn., by Mallory & Son, for Messrs. Hargous & Co., and her machinery at the Delameter Iron Works, this city. Her engines have cylinders 36 inches diameter, and a stroke of the same length. The screw is 13 feet diameter, with a pitch of 18 feet. The propeller made 66 revolutions per minute on the trip.

Fall of a Bakery.—The wall of a new building in process of erection for the bakery of Hecker & Brothers, on the corner of Rutger and Monroe streets, in this city, fell with a terrible crash on the evening of the 10th inst., and buried a tenement-house in the rear, killing one person instantly and wounding two others. It has been asserted that the walls were too feeble to suppport the immense weight of ovens erected upon some of the floors.

Diseases and Treatment of Fowls.

In M. Jacques' work on "Poultry" he says: "A barbarous custom, as ridiculous as it is abominable, consists in tearing off the horny tip of the tongue in order to cure the malady called the pip, and which is only canker or *apthe*. This substance is as natural to the tongue as the nail is to the finger. I have seen people take a sick hen, examine the interior of the beak, then seeing it was suffering from canker or *apthe*, take a pin and tear off the end of the unhappy patient's tongue. As a precautionary measure all the birds in the yard were examined. As they a l had the horny tip, it was settled all were about to suffer from canker, and then all hands set to work to mutilate the entire poultry-yard. The wound it causes is long in healing, and somtimes incurable. One of the most dangerous maladies, because in time, and almost imperceptibly, it will invade a whole yard, young and old, is a disease I will call the 'white.' It is a sort of itch, evidently caused by invisible vegetations, which appear first on the feet, on the combs, on the wattles, on the cheeks and on the deaf-ears, in the form of small flour-covered patches. These patches extend and thicken till they stop the ear, form crusts on the face, make holes in the legs, raise up the scales and cause them to fall and at last invade the whole animal. As soon as the appearance of white is ascertained, a remedy is at hand which is a certain specific. It is merely sulphur ointment, the receipt for which is powdered or flowers of sulphur and lard or hog's fat in equal quantities. These two substances thoroughly kneaded together for a long time will form a very thick ointment, which should be abundantly applied. If the white is of old date and very floury, a cutting instrument should be used and the parts scraped with it to the quick, even in the most difficult places; the ointment should be abundantly applied, and renewed every third day till a cure is effected.

"The ointment should be applied wherever it is necessary, care being taken to raise the feathers in layers, so that the animal shall not be greased all over. To conclude with a general rule, every fowl sick of any malady should, if a cure is desired, be put by itself, and fed with refreshing food such as millet, dough made of barley flour, grass and very clean water complete the treatment. As fast as the birds are cured they are let out to regain strength and vigor in those places where there is the greatest amount of vegetation."

Restlessness at Night.

Sleeplessness in many cases is caused by nervous affections. Intense activity of the brain, over-exertion, grief and other mental distractions also exeran influence over the body which prevents the nerves and muscles from relaxing sufficiently to produce that perfect quiescence of all its members necessary to healthful slumber. Various remedies have been proposed for it. The late Washington Irving was in the habit of getting up when afflicted with this malady, and either shaving himself or else slowly pacing up and down his room until nature was overtaxed and demanded rest. Artificial remedies, such as drugs, generally react upon the system, and much injury results from their employment. We have found a most efficacious cure in our own case to be the application of cold water to the body; beginning at the small of the back and continuing to bathe it and the legs until a healthful glow and reaction is produced. In winter or summer this plan is decidedly agreeable and has the merit of simplicity at least. The blood which was sluggish in its circulation is stimulated naturally, and no relaxation is perceptible, as is the case with stimulants or narcotics of any kind. People of nervous temperaments know what intense suffering results from the want of sleep; and physicians and philosophers are also cognizant of the losses the world has sustained through bodily weakness and debility in great men, no matter what their profession may be. Any remedy therefore, that promises immunity from this disease will be truly an acquisition to the world at large.

THE gunny bag of our commerce is woven from the fiber of a plant grown in India, called *goni*. The cultivation of the plant gives employment to hundreds of thousands of the natives. An English company for its cultivation is established in Calcutta, with a capital of £800,000.

The Sea Serpent Caught at Last.

It will be remembered that the Cape colonists, although profiting perhaps more largely than any of our foreign possessions by their connection with the mother country, magnanimously refused to vote a shilling to the sending over contributions or commissioners to the Great Exhibition. A private individual, Mr. Ghislin, of Hatton-garden, has endeavored to some extent to make upfor this want of colonial liberality. Mr. Ghislin's contributions are all contained in two small cases, but they are not without interest, the more especially as one of them professes to solve the mystery (so long a *pièce de resistance* with the American newspapers) of the great sea serpent. Mr. Ghislin asserts that the monster that has frightened mariners both young and ancient is nothing but a species of sea-weed, which, when forced to the surface in oceanic commotions, floats about in masses sometimes a thousand feet long, and, to a nautical imagination, presents the appearance of the sea monster which from the days of Bishop Pont-Oppidan down to the present has been the subject of so many marvelous descriptions. Mr. Ghislin, nothing daunted by the traditions, has boldly seized the leviathan, brought him to land, and, having squeezed him into a substance called "laminite," has turned him into excellent handles for knives and razors, and put him to various other purposes to which gutta-percha, india-rubber and, more commonly, German staghorn have been hitherto employed. As the supply is inexhaustible, this laminite may turn out to be a very valuable contribution to the material of industrial art.—*Daily News.*

Sorghum Sirup Manufacture.

We learn from the *Prairie Farmer* that thirty barrels of sorghum sirup are now daily manufactured at Loda, about 100 miles south of Chicago. Two sets of 30-inch rollers are used for crushing the cane, and they crush at the rate of 24 acres of stalks in 24 hours. The juice runs from the crushing mills through strainers into a tank, from which it is forced by a pumpto the top of the building and from thence it passes down into clarifiers, which are heated with steam. About 400 gallons of juice are received at once into a clarifier, and some lime water is mixed with it to prevent it from becoming acidulized. The scum is taken off frequently while the juice is kept in a heated condition, and when it becomes clear it is drawn off into another tank, allowed to settle for a short space of time, then run into evaporating pans, and concentrated to 36° Baume. After this it is drawn off into iron coolers and subsequently put into barrels, for transportation. About 40 persons are employed in the establishment in two gangs for day and night work. It requires over 20 teams daily to draw the cane from the field to the manufactory. All this juice is sent to be refined in Chicago. Some cane yields far more juice than others; the yield is stated to vary from 80 to 200 gallons per acre.

Discovery of a Great Copper Boulder.

We learn from the *Mining Gazette* (Houghton, Mich.) that a great mass of copper has lately been discovered on the Mesnard section in that district. Little of the mass was above the surface when discovered, and that little was so covered by moss and small underbrush as to hardly attract attention. Upon being uncovered, and the soil removed from around its sides, traces of Indian workings were found--pieces of charcoal, and half a dozen stone hammers were taken out; and the eastern end of the mass shows plainly that a portion has been broken off. The average dimensions are—length 15 feet 7 inches; width, 3 feet 7 inches (it is full five feet in one place); thickness, 1 foot 6 inches; giving 87.135 cubic feet. All these measurements are rather under than over the average, One measurement gave 120 cubic feet, but we consider the first figures the most reliable. They would give the weight of the mass as 23 tuns, 1,924 lbs. There is but little vein rock attached to the block. Two pieces, one from each end, have been cut off the mass. Where it is cut through, the mass is pure copper and very compact. The two pieces have been taken to the smelting works and weighed 5¼ tuns.

THE Government has advertised for two thousand head-boards for graves. They are to be of black walnut, clear of knots, four feet long and ten inches wide.

The Walled Lake.

A wonderful walled lake is situated in the central part of Wright county, Iowa. The shape of the lake is oval. It is about two miles in length and one in width in the widest part, comprising an area of some 2,000 acres. The wall inclosing this area is over six miles in length, and is built or composed of stones varying in size from boulders of two tuns weight down to small pebbles, and is intermixed with earth. The top of the wall is uniform in hight above the water in all parts, which makes its hight to vary on the land side according to the unevenness of the country, from two to twelve feet in hight. In the highest part the wall measures from ten to twelve feet thick at the base, and from four to six at the top, inclining each way, outward and inward. There is no outlet, but the lake frequently rises and flows over the top of the wall. The lake at the deepest part is about ten feet in depth, and abounds with large and fine fish, such as pike, pickerel, bass, perch, &c. The water is clear as crystal, and there is no bubbling or agitation to indicate any large springs or feeders. Wild fowl of all kinds are plenty upon its bosom. At the north end are two small groves of about ten acres each, no timber being near. It has the appearance of having been walled up by human hands, and looks like a huge fortress, yet there are no rocks in that vicinity for miles around. There are no visible signs of the lake being the result of volcanic action, the bed being perfectly smooth and the border of regular form. The lake is seventeen miles from Boon river on the west, eight miles from Iowa on the east, and about one hundred miles from Cedar Rapids. It is one of the greatest wonders of the West; so says an exchange paper.

How to Make Potato Starch.

It is not generally known, as it should be, that starch made from the common potato furnishes an excellent substitute for arrow-root, as a wholesome nutritious food for infants. It also makes a good cheap pudding for the table, if cooked like sago, and as it has not the medicinal properties of arrow-root, it is much to be preferred as an article of daily food, except for children who are subject to diarrhœa or summer complaint. The process of making the starch is simple and the time required so short as to put it into the power of every one having the means at hand. Wash any quantity of potatoes perfectly clean, and grate them into a tub half full of clean cold water; stir it up well; let it settle, and then pour off the foul water; put the grased potato into a fine wire or coarse hair seive; plunge it into another tub full of clean cold water, and wash the starch through the meshes of the sieve and throw the residue away; or wash it again if any starch remain in the pumice; let it settle again, and repeat this process until the water comes off clear; scrape from the top any remains of the pumice; then take the starch out and put it on dishes to dry, and it will be fit for use immediately. When wanted for use, mix as much as may be needed in cold water, and stir it into boiling milk, or water if preferred, and it requires no further cooking. It also makes a stiff and beautiful starch for clearing thin muslins or laces, and is much less troublesome to manage than that made of wheat.—*American Agriculturist.*

To Prevent Accidental Drowning.

Any human being who will have the presence of mind to clasp the hands behind the back, and turn the face toward the zenith, may float at ease and in perfect safety in tolerably still water—aye, and sleep there, no matter how long. If, not knowing how to swim, you would escape drowning when you find yourself in deep water, you have only to consider yourself an empty pitcher—let your mouth and nose, not the top of your heavy head, be the highest part of you, and you are safe. But thrust up one of your bony hands and down you go; turning up the handle tips over the pitcher.

VARNISH AND WHITEWASH.—A very free flowing black varnish is made with one pint of Canada balsam, four of bitumen (Judea), and four of chloroform. A thick wash composed of lime, some salt, a little molasses and some fine sand, applied to shingle roofs, render them nearly fire-proof and are more durable than others not so covered.

Improved Projectile Lathe.

We reproduce from our foreign files an invention by Mr. Joseph Whitworth, of England, of a lathe for turning projectiles for rifled guns. It turns both ends of the shot or bolt at the same time, and prepares the base for any material that is intended to be put upon it; performing in short, all the operations that are requisite to finish the projectile without removing it from the lathe.

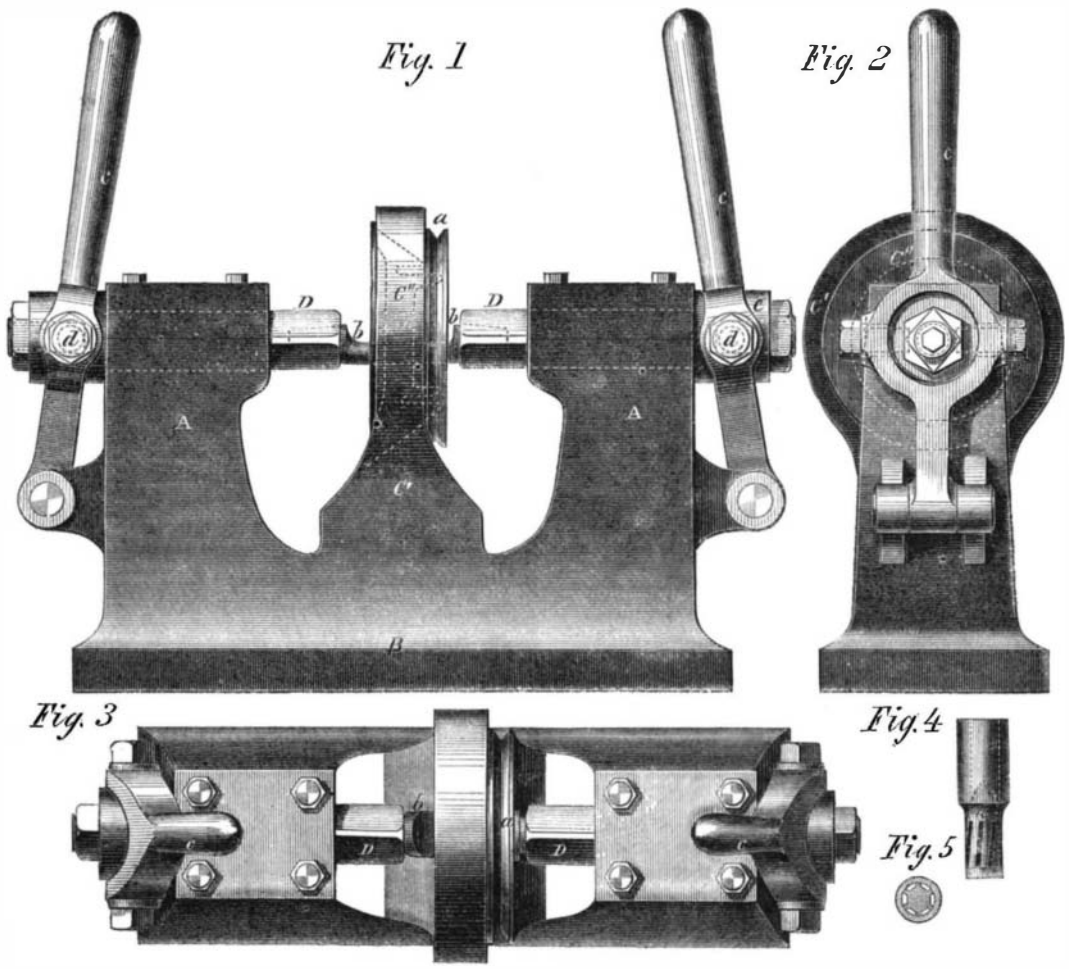
The following description will render the engraving intelligible :—A A are two tail stocks which are cast upon the frame, B; the standard, C^1, is cast on the bed, and has a chuck or die, C^2, which revolves in it by means of a belt running over the pulley, *a*. D D are two sliding spindles which have tools *b b*, of a particular shape, that are designed expressly for their work, fastened in them. These tools are brought up to, or drawn from, the shell or projectile by means of the handles, *c c*, which extend upward. The handles have pins, *d*, inserted in them, which work between two adjustable collars, *e*; through them the length or distance to which the spindles project is limited and the work accurately gaged each time.

The lathe is intended more expressly for many-sided projectiles,—such as are used in some rifled guns; but by making the die or chuck in two parts, cylindrical or indeed shot of any form, may be turned; the die being afterward tightened up by any mechanical device usually employed for that purpose.

Fig. 2 is an end view of the invention in which C^1 is the standard, and C^2 the chuck. The other parts may be easily comprehended.—Fig. 3 is a plan of the lathe and shows the pulley, *a*, spindles and tools, *b*, much the same as in the side elevation.

Figs. 4 and 5 are illustrations of a tool employed for lubricating the shot. It consists merely of a piece of iron bored out and rifled internally in a manner corresponding to the gun for which the projectile is intended. The shot is then put in the case and pushed down to the bottom of the bore opposite the apertures, *a*. These are cut entirely through the instrument so that when it is dipped into any lubricator the substance will flow through the holes and surround the bolt or shot with a coating of the material employed for the purpose. On being pushed out by the way it entered it is found perfectly lubricated.

The lathe seems well adapted to its object, and we think such a tool might be advantageously employed in the manufacture of some of our own projectiles.



WHITWORTH'S LATHE FOR TURNING PROJECTILES.

THE SAFETY VALVE.

To the boiler belong certain fixtures, the steam gage, the gage cocks, the stop and safety valves. Other instruments are appended, but these constitute the principal ones. Each and all of these fixtures require care and attention, the safety valve at least as much as any of them; it is the brass and iron brain of the boiler, and to it belongs some functions, which, when they are fulfilled, give moral support to the engineer, by assuring him that should he by any possibility overlook some portion of his duty, and accumulate an undue pressure, it will act the part of a faithful sentinel, and hiss an ominous warning of approaching danger. Considering its importance then, one would suppose that great attention would be given to it, but too often, we are sorry to say, it is not only improperly constructed, but suffered to stick fast in its seat, the stem of it to corrode in the bonnet, and the condition of its joints and their attachment to the lever, left in such a state as to utterly nullify the object for which it is intended. We have seen safety valves that had glands and packing boxes, and some which had their several parts as rigidly fitted as if they were intended for fixtures. This is all wrong; a boiler to be considered safe must have the valve which insures that condition properly proportioned and attached; to comply with the first requisite, it must be of sufficient area to relieve the boiler suddenly if required, and to conform to the other qualities specified, the joints should be free, the lever properly hung and weighted, and the mechanism in all its features so arranged as to answer the purpose for which it was intended. It is then what its name implies, a safety valve. Too often, in our accounts of boiler explosions, we read that the safety valve was inoperative and had the appearance of having been a long time unused. A slight pull on the lever will tell if it be in working condition, not merely when the steam is up, but when the boiler is cold; in the former case the pressure blows it off its seat, and a personal inspection will be more reliable.

Valves that suffer steam to escape, are the same as a leak in the employer's pocket; they permit just as much money to dribble out as it took to produce the feathery puff resolving itself into the air, while those which are inoperative and useless, soon make the criminal neglect manifest which has suffered them to become so, by spreading disaster and ruin around.

THE NEW ATLANTIC TELEGRAPH.

The project of laying a new Atlantic telegraph cable is now being seriously discussed. Messrs. Glass & Elliott, of London, propose to construct the cable and subscribe £25,000 ($125,000) to the capital of the company. Great improvements have been made in the construction of submarine cables since the one was laid in the Atlantic, a few years since. At the late meeting of the Scientific Association held at Cambridge, Dr. E. Esselbach read a paper on this subject, in which he stated that the insulation of the cables between Malta and Alexandria was 2,000 times better than was that of the Atlantic cable. The Malta and Alexandria line consists of three sections of 230, 500 and 600 miles in length, and they have been working for a year. In view of these facts, we may expect the construction and laying of a new Atlantic cable at no very distant day.

A Novel Trap for Killing Rats.

The premises of a good many farmers are infested with rats, and we are often asked for modes of destruction. A resident of Brooklyn is vexed with an increasing family of rats that seem to grow fat on arsenic and rat-exterminators. He does'nt like rats, and refers his case to the New York *Sunday Times*. That journal recommends a trap made as follows :

"Take a mackerel barrel, for instance, and fill it to about one-third of its hight with water, and place a log endwise in the water, so that one end of it will just remain above the surface.—Make the head of the barrel a little too small to fit, and suspend it by two pins to the inside of the top of the barrel, so that it will hang as if on a pivot and easily tip by touching either side. On this head, thus suspended, secure a piece of savory meat. The first rat that scents it will, to get the meat, leap upon the barrel head. The head will tip, or tilt, precipitate him into the water and resume its position. The rat in the water will swim to the log, get on the end of it, and squeal vociferously. His cries will bring other rats, all of whom will fight for the only dry spot in it, namely, the end of the log. As only one rat can hold it, the victor will drown all the rest, and can, in the morning, be drowned himself. We have seen twenty rats caught in one night by such a trick."

We tried this barrel trap for several successive nights, but never caught a rat.

Naval Preparations.

There is unusual activity in all the ship-yards of the country, fitting out vessels-of-war intended for operations against rebellion. In the last six weeks thirty gunboats have been fitted out in the Boston, New York, and Philadelphia navy yards, carrying 221 guns, and all the vessels are steamers. At Portsmouth and Washington the work has been equally as rapid and extensive. The destination of these vessels is purposely withheld. In the West the movements are quite as extensive, and a land and naval expedition, under General McClernand and Admiral Porter, is to be a very formidable enterprise, the object of which is to open the Mississippi, so that a single obstruction shall not remain. Colonel Ellett's ram fleet is to have a prominent position in the flotilla. The boats composing it have been thoroughly overhauled and put in condition for a winter's campaign. They can be used as rams in an action with the enemy's boats, and can perform valuable service in conveying transports through dangerous portions of the river. They are armed with boat howitzers and 12-pound guns. The *Switzerland* will be the flag-boat of the ram fleet. She has been completely casemated in every part, and will be able to do excellent service should opportunity offer.