IMPROVED METHOD OF STAKING AND IMPROVMENT IN CURING HOPS.

At the last meeting of the Farmers' Club Mr. F. W. Collins, of Morris, Otsego County, New York, gave a very interesting description of the present mode of raising and curing hops, with an account of some important improvements which have recently been made in both processes. We present a summary of his remarks.

PLANTING AND CULTIVATING.

More hops are raised in Otsego county than in any other county in this state or country. The vines are planted in rows eight feet apart both ways. They are propagated by layers; a long vine is laid down, and in the course of the season it throws out roots from each joint, these are cut and planted in the hills. The first season the ground is also planted with corn or potatoes, no crop of hops being expected, though sometimes 200 lbs. are gathered from an acre. The second season each hill is staked with two poles, 20 or 25 feet high, no other crops are planted between the hops, and the ground is kept light and free from weeds by means of a horse cultivator. The second season about two thirds of a crop is obtained, and the third season a full crop.

PICKING.

The principal labor in raising hops is the picking, and this is usually done by women and children. The harvest season commences about the last week in August. The vines are cut off at the surface of the ground ; a strong man, by means of a properly prepared lever, heaves the pole from its hole in the earth, and carries it to a large box that will hold several bushels. Here the girls pick the hops from the vines, and put them into the box. The price paid for picking is from four to five cents per bushel, and a bushel will yield about two lbs. of dried hops. A smart girl will pick 30 bushels a day.

KILN DRYING.

The hops are taken from the field directly to the kilns where they are dried. The kilns are simply wooden buildings. A floor is prepared by laying slats about two inches wide, with spaces between them of the same width and covering them with a carpet of strong cloth, loosely woven so that the air may pass freely through it. The hops are piled on this cloth to the depth of from 12 to 20 inches, and they dry in the course of ten hours. It is found best to have the floor 10 feet or more above the stove and heating pipes below. As the hops immediately over the slats are protected from the drying action of the heat, it is necessary to stir them with a rake when they are partially dried. When the drying is completed the hops are pushed from off the end of the carpet, and drop a few feet upon the cooling floor ; when they are put into bags, and they are then ready for market.

IMPROVED MODE OF STAKING.

Within a few years a new plan of staking has been adopted, and it is working a revolution in the cultivation. In place of having poles 20 or 25 feet high, we set them only eight feet, and connect their tops in both directions by strings of strong twine, along which the vines are trained. The most important effect of this plan is avoiding the necessity of cutting off the vine at the time of picking. When vines are cut so early they bleed profusely, and this bleeding seriously injures and sometimes destroys the root. With the low stakes the strings are loosened at the top, when the vines slide down within the reach of the pickers. The top of the vine dies in the course of the winter, but the root escapes the great damage from bleeding. This increases the crop the next season. By the long pole system a crop was obtained ranging from 700 to 1200 lbs. per acre, but by the new system it is not uncommon to get 1500, and even 2000 lbs. to the acre.

IMPROVED PLAN FOR DRYING.

The value of hops depends upon the proportion of lupulin which they contain. The more they are stirred in the process of drying, the more of this fine dust is shaken out and lost. We now prepare a drying floor by stretching a series of No. 10 wires across the room, and spreading the carpet smoothly upon them. The wires do not intercept the heat, and the hops require no stirring. The carpet is secured to a roller at the delivering end, and when the drying is completed, the roller is slowly turned so as to wind up the carpet upon it, thus drawing the hops quietly along without shaking them in the least. By this plan we get hops of very superior quality.

SIX ACRES OF HOPS DESTROYED BY LIGHTNING.

Solon Robinson inquired if a plan was not patented for substituting wire for poles in training hops. Mr. Collins replied, "Yes, the plan of Mr. Aylesworth. He set large beams, like telegraph posts at the sides of the field and stretched wires across. Pieces of twine were then led down from the wires vertically to the hills. The plan was introduced in a number of fields. It had some advantages and some disadvantages. One difficulty was the liability of electricity to run along the wires. I knew of one field of six acres which was struck by a flash of lightning, and it went over the whole field, completely killing the tops of all the vines."

RECENT AMERICAN PATENTS.

The following are some of the most important improvements for which Letters Patent were issued from the United States Patent Office last week; the claims may be found in the official list:—

Improved Pocket-book.—This invention consists in the application of one or more strips of spring steel to the closing flap of a pocket-book, said strip or strips being secured in the edge or edges of the flap, in such a manner that by its action the pocket-book is kept closed without the aid of the usual clasps, strings, or other fastening, and if a portion of the pocket-book is unfolded or opened, the remaining pockets are still closed by the action of the spring flap, and their contents prevented from dropping out accidentally, and an article is produced of great convenience. It is capable of holding bills or papers of value of any description, and the danger of losing a portion of its contents is considerably lessened. J. Fred. Dubber, of the firm of Dubber & Martin, No. 160 William street, New York, is the inventor.

Adjustable Stake Holder for Railroad Cars.—This invention relates to a new and improved holder for securing stakes to the sides of flat and sideless railroad freight cars. The object of the invention is to obtain a holder for the purpose specified which will admit of the stakes being adjusted or turned down in a horizontal position when required, so as to obviate the necessity of detaching or removing the stakes from the car at any time when an upright position of them is not required, as in loading and unloading a car, etc. By this means the stakes, not requiring to be detached from the car at any time, are not liable to be lost or mislaid, are always ready for use when required, and in case of breakage new ones may be readily applied. A. R. Burdick, of Racine, Wis., is the inventor.

Harness or Gig-saddle Tree.—This invention relates to an improvement in that class of harness or gig-saddle trees which are of iron and provided with wire jockeys. The object of the invention is to do away with nuts and all projections whatever, at the under side of the tree, which would have a tendency to injure or "gall," as it is technically termed, the horse's back, and at the same time have the bearings of the tree so formed or constructed that they will serve the double function of bearings and clamps and afford ample room for the back band and flaps, and admit of the saddle having a chaste and neat appearance. Samuel E. Tompkins, Newark, N. J., is the inventor.

Composition for Lining and Coating Articles of Wood, Stone, &c.—This invention relates to a composition, the principal object of which is to render petroleum barrels or packages perfectly tight, and prevent the loss by leakage, but which can also be used for lining or coating other vessels or articles. This composition is made of glue and other articles mixed therewith in such a manner that the same readily adheres to the wood and is not liable to scale or crack when the barrels are roughly handled, or exposed to the heat of the sun, or when the hoops are driven. It has been applied with perfect success to petroleum barrels so that they can be shipped to any part of the globe without the loss of a particle of their contents. The materials from which this composition is made are cheap, and can therefore be furnished at a small expense. Henry Preuss, 61 Cedar St., N. Y., is the inventor.

Apparatus for packing Tubes and Joints.—This invention consists, in general terms, in a novel method of packing the tubes of oil and other wells, or any other surfaces fixed or movable, by the use of a packing box whose body is made of flexible or elastic material which is made to act as a packing by means of the expansion of its walls. Samuel L. Fox, 924 Chestnut Street Phil., Penn., is the inventor.

Wire Fence.—This invention relates to a wire fence in which each section is constructed of one or two continuous pieces of wire extending over four sets of pulleys, two of which sets have their bearings on the end posts of the section and the other two sets on adjustable posts in the middle, in such a manner that by moving said adjustable posts towards or from each other the tension of the wire is decreased or increased and such tension will thus be readily accommodated to the existing temperature; and furthermore, by using a a continuous strand of wire the liability of the wire to break is materially reduced. The several strands of wires are supported and held parallel by brackets with oblique slots, cast or otherwise rigidly attached to posts which may be loose or fastened down to the ground; before the wires are strained, they can be easily introduced into the bracket, and by moving the movable posts an opportunity is obtained to force the wire apart when a person desires to pass through between them. The bearings of the pulleys are also cast solid with the posts so that the fence can be made cheap and durable. J. W. Norcross of Middletown, Conn., is the inventor.

New Mordant.

A new mordant, for aniline and other dyes, is said to have been discovered. It consists of acetate of aluminum and arsenitate of soda, and the discoverer, M. Shultz, believes that it is destined to replace albumen, gluten, tannin, and other matters employed for the same purpose. He mixes, at the ordinary temperature, four grammes of the aniline violet of commerce, in powder, with a quarter of liter of acetate of alumina, and twenty grammes of arsenitate of soda, thickening it with starch boiled in water—the quantity of starch to be diminished in proportion to the darkness of the color to be fixed. In the case of prints, it is recommended to mix the arsenitate of soda and the acetate of alumina with the coloring matter, and to steam the fabric or yarns over the mixture. For dyeing it is said to be better to treat the tissue, or yarns, in the first place, with a mixture of the two salts, and afterwards to dip them in the color vat in the ordinary way. Salts or compounds of tin, combined with alumina, may be used instead of arsenical acid.

Fast Firing.

At Shoeburyness, the Armstrong and Whitworth Committee fired 100 rounds rapid fire from the Armstrong 12-pounder breech-loader field gun. There was an interval of 10 minutes after the first 50 rounds. The time, as taken by the committee, was —for the first 50, 6 min. 58 sec., and for the second 50, 6 min. 35 sec.; 13 min. 33 sec., in all. Thus the gun was fired throughout the 100 rounds at the rate of $7\frac{1}{2}$ rounds a minute; and for the second 50 rounds at the rate of 8 rounds a minute. *It was supposed on the ground that four shots were often in the air at the same time.* This is by far the most rapid artillery fire on record, and it is more than twice as rapid than ever has been accomplished by any muzzle-loading gun. No water was used, nor any sponging, nor did any hitch of any sort occur. At the 52nd round the lanyard that pulls the friction tubes broke; this caused a delay of 20 seconds.—*London Artizan.*

Edward Everett.

The Hon. Edward Everett, died of apoplexy at his residence in Boston, on the 15th inst. His age was about 71 years. A profound and universal feeling of sadness at the announcement of his demise pervaded all classes of our citizens. The nation loses in Edward Everett not merely a talented citizen, but one distinguished for patriotism, private virtues and liberal views on all that affects the welfare of man. Mr. Everett has been successively a preacher of the gospel, professor of a college, a member of Congress, a Governor of Massachusetts, Minister to England, President of Harvard University, Secretary of State and Senator from Massachusetts; each and all of these several positions he filled with credit to himself and constituents. It is expected that high national honors will be paid to his memory.

New System for Forging Cannon.

Mr. A. Hitchcock's process for forging guns is herewith illustrated and treated on by the inventor.

In all heavy forgings, as in the fabrication of large cannon and shafting, it is well understood by the practical man that no good forging can be done by a hammer that is too light to move the whole mass at every blow. If not, crystallization takes place just when this movement stops. But this theory is of minor consideration in heavy forgings. The prime difficulty being to unite a given quantity of wrought metal into a homogeneous mass. If a faggot be made up of many pieces, each piece must be heated to a certain degree before it can be welded, if no other element is introduced; but this is found impracticable even in shafting of eight inches diameter—to say nothing of forging a shaft or gun from two to five feet in diameter. Without going into details to show how large guns and shafting cannot be forged, I herewith give an illustration of a plan, whereby I can forge any number of tuns of iron or low steel (from one tun to one hundred tuns) into one homogeneous mass.

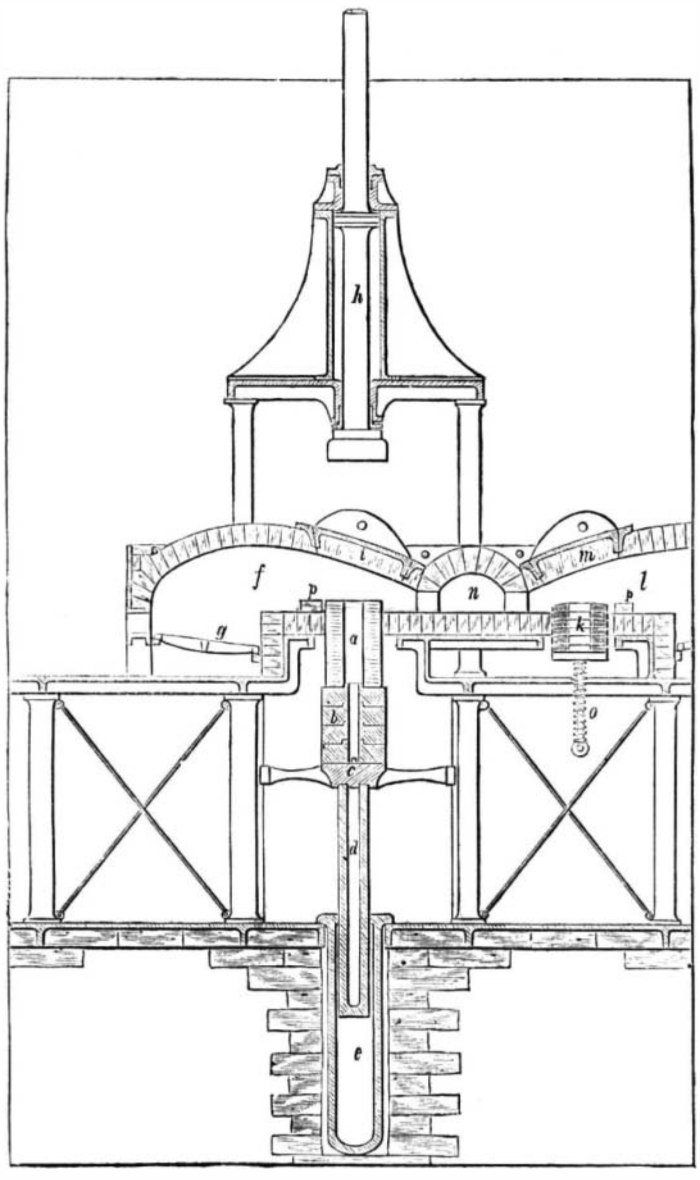
Mr. Alexander L. Holley, author of the latest book published in this country on "Ordnance and Armor," says on the subject:—

"To carry out, in the fabrication of large cannon, the principle of sound welding, Mr. Alonzo Hitchcock, of New York, proposes the system illustrated in Fig. 182. The iron is heated in a reverberatory furnace, to avoid its contact with sulphur and other impurities in coal. The gun is formed of rings of wrought iron or of low steel made without welds. The rings are so formed as to be united first in the center, that the superfluous cinder may be squeezed out. The anvil, *b*, is situated on the piston of a hydrostatic press, *e*, so as to be lowered as the successive rings, *a*, are added. The furnace, *f*, is situated between the anvil and the steam hammer, *h*, and so arranged that the rings project into it from below, and the hammer drops into it from above. The ring to form the muzzle of the gun is laid upon the movable anvil and projected sufficiently into the furnace to allow the flame to raise it to a welding heat. Meanwhile, in another part of the furnace the rings, *k*, are heated to welding in the same time by proportioning the heat, by means of dampers, to the relative bulks of the two parts. Without removing the parts from an atmosphere in which there is very little if any oxygen, they are laid together and instantly welded by a few strokes of the steam hammer. The anvil is then lowered by the thickness of another ring, and the same process is repeated. Although the gun may be of any size, the parts acually united at one operation may be made so light by reducing their thickness that the percussion of the hammer of moderate weight will be adequate. And when the whole operation of upsetting is confined to one joint, exactly the requisite pressure for that joint can be applied; and there is no fear of injuring other parts by setting it up soundly, because the mass of the gun below it is cold and forms a rigid pillar—practically a continuation of the anvil.

"It would appear that all conditions of sound welding may thus be attained if the process can be practically carried out. The objection raised by some iron-workers that the single iron will be burned before the larger mass is heated to welding, is not well founded. Certainly the heat in what are substantially, or may be actually, two different furnaces, can be regulated with the utmost nicety. Besides, the mass is already hot before the ring to be added is put into the flame. Locating an anvil upon water is simply a question of strength of what holds the water. A screw would answer the purpose and would not be liable to disarrangement, since an accurate fit is not important, and the adjustment does not take place at the instant of the blow. Or the screw might be employed simply to elevate and depress the anvil—the force of the blow being received by blocks of varying thickness placed between the anvil and its bed.

"The mechanical difficulties do not appear to be serious, and considerable cost of apparatus is warranted by the certainty of sound work. Mr. Hitchcock's process was intended especially for fabricating guns of low steel, the wings to be made without welds, by being originally cast in form of small thick rings, and then rolled, in a modification of the tin-rolling machine, to a larger diameter and a smaller section. This treatment would develop an endless grain in the rings in the direction of the circumference. Again, very short Armstrong coils could be welded together by Hitchcock's method, thus avoiding the embarrassment of Armstrong's present process."

All that has been said of guns in the above is equally applicable to shafting. For further information on this subject call on or address A. Hitchcock, Nos. 4 and 6 Pine street, New York.



HITCHCOCK'S SYSTEM FOR FORGING CANNON.

New Rock Salt Mine.—It is reported that in the new State of Nevada, beneath a thin covering of refuse saline matter, for a depth of fourteen feet, pure rock salt is found as clear as ice, and "as white as the driven snow." Beneath there is water, which seems to be filtered through it to an unknown depth. The whole of the fourteen feet in thickness does not contain a single streak of any deleterious matter or rubbish, and is ready for quarrying and sending to market. The locality is one hundred miles west of Roese river.

The meaning of the number on spools of thread is the number of hanks to the pound; each hank measures 840 yards.

The Use of Apprenticeships.

M. Benoit-Duportail, a French engineer of eminence recently delivered the following opinions in relation to this matter, before the French Institute of Civil Engineers:—

"Apprenticeship is not special to manual trades, but common to all professions without exception. The young painter and sculptor, who pass several years in the studio of a renowned artist, are serving their apprenticeship. The case is the same with the young architect or engineer, who draw their plans and designs under the eye of another architect or engineer; with the young notary, who enters as seventh or eighth clerk into an office, to learn how to draw up marriage certificates, sale contracts, and inventories after decease; with the majority of merchants who serve their apprenticeship under the name of clerks in some shop or other; and it is the same in all conditions, in art, trade, and the professions in general. There is difference only in the nature of the work done. The means and progress are everywhere and always the same. The young men who follow a diplomatic career are themselves obliged to enter a ministry, prefecture, or the office of an ambassador to serve their apprenticeship. One must enter a study, a studio, an office, and a shop to learn those thousand details and secrets, the inner machinery of each speciality.

"It is in the establishments where is practiced the profession to be embraced, and there only, that professional teaching must be sought—one's apprenticeship passed. No school can replace the workshop, the shops, and the offices. Do not, then, let us seek to create with much trouble schools which would cost dear and be of no use. Let us develop the apprenticeship too much neglected during the last twenty years. Let it be recommended by men who have influence in industry, and we shall be sure of having clever and intelligent workmen, and good and beautiful produce which will rival foreign produce with success. What is in fact wanting is not a sufficient number of workmen to supply the needs of industry, but really clever workmen.

"In the interests of industry, and for the welfare of the apprentices themselves, in view of their future, it were highly advisable that patrons should admit no apprentice but with the warrant of a detailed apprenticeship contract, clearly stipulating the obligations and reciprocal engagements of either party. In these conditions the work-rooms would become what they should be—veritable schools, where the apprentice would receive the professional training necessary to him."

M. Benoit-Duportail considers the proportion which ought to exist between the number of workmen and apprentices. He remarks that the mean duration of a serious apprenticeship being from three to four years, and the period of practicing a profession being generally thirty-five or forty, the proportion should be about ten in one hundred, if there were no modifying causes. But as he finds in all work-rooms a considerable number of drudges, and as some employments—such as those of digger and smith—need no apprenticeship, he changes the relative number to five or six per cent. The proportion might with advantage be larger in the work-rooms commanding the best resources, richest in the means of instruction and practice, and most favorable to the development of young intelligence.

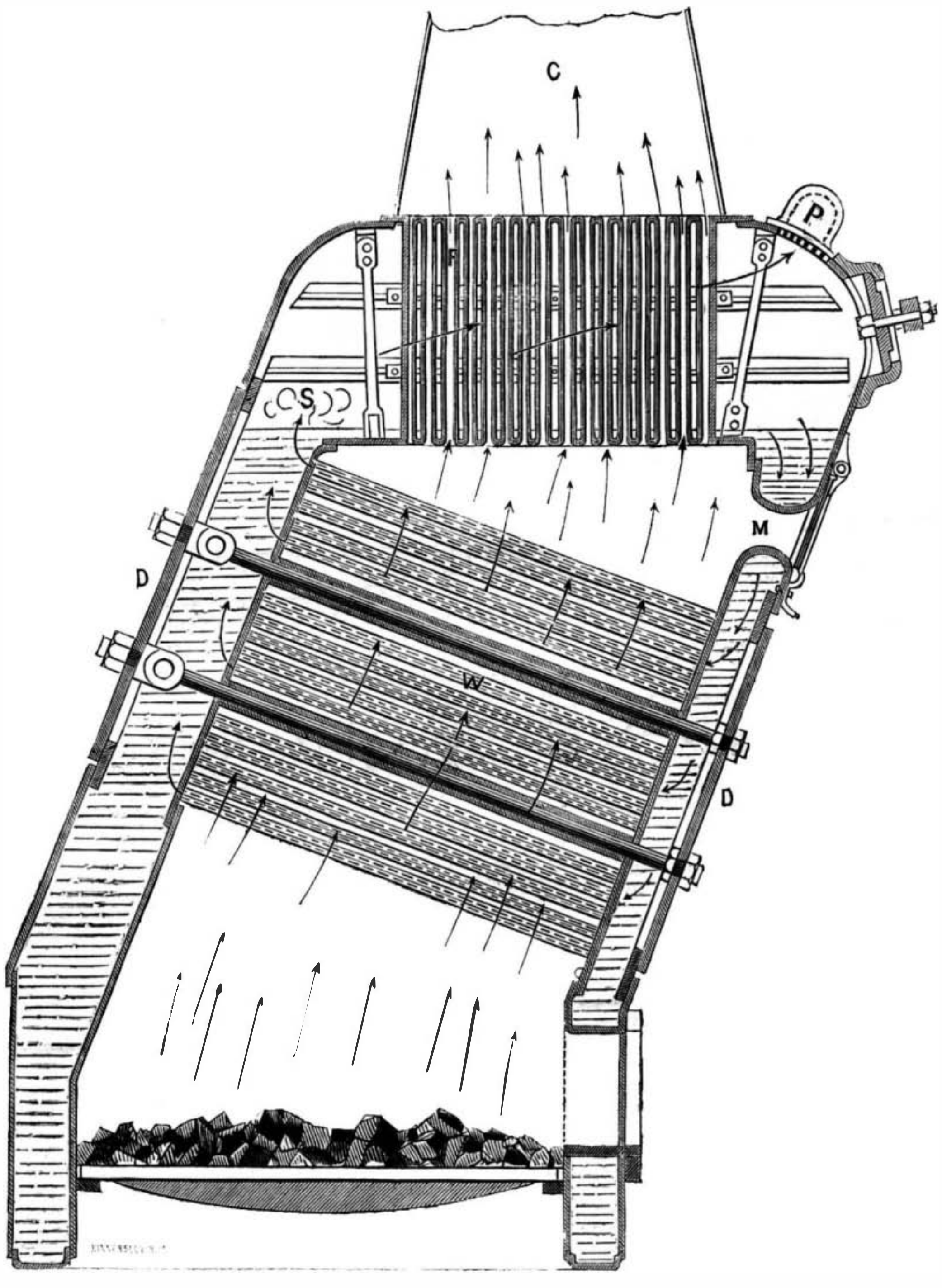
Keep the oil holes of boxes plugged up and the bearings will wear longer.

Improved Steam Boiler.

In order to produce a perfect steam boiler three conditions must be complied with. First, The capacity to burn the largest amount of fuel in the smallest space and time. Second, The most complete absorption by the water of the heat produced; and, third, The delivery from the boiler of the heat thus produced and absorbed, in pure *dry steam*, unmixed with any water held in mechanical suspension by the steam.

The accompanying sketch illustrates a boiler designed to fulfill these conditions. The inclined tubes above the fire are filled with water and connect the opposite water spaces of the boiler, while the vertical tubes are surrounded with water at their lower ends and with steam at their upper ends, the products of combustion passing through them to the chimney after having passed among and outside the inclined tubes below. The inclined tubes are about as long as the grate bars, and have spaces between them one half of their diameter, so that the draft opening is about one-third as large as the grate surface—the same proportion being maintained in the upper tubes; whereas one-eighth of the grate surface, or 16 square inches of opening to 1 square foot of grates—is a very common proportion for good working boilers. The capacity of the boiler to burn coal is therefore very large. When the heat is applied to the lower tubes the water at once begins to ascend through the tubes and up the back water space, and to descend down the front water space, which is unaffected by the heat; and the more rapid is the fire the more rapid will be that circulation. As steam is made, it rises with the water to the surface at S, where it bubbles up, as is usual in boilers charged with water mechanically suspended in it; but before this wet steam can escape from the boiler it is compelled to traverse the cluster of hot tubes which interpose between it and the steam pipe, P. These tubes operate to dry this steam by two methods; first, as a screen or sieve to which the water adheres as it is passed along; and secondly, by giving out the heat that is within them to the wet steam which is sweeping along on their exterior surfaces at right angles to the current of hot gases passing through them. The effect is, that when the steam reaches the pipe, P, it is superheated, and no water escapes with it to the engine. The degree of heat imparted to the steam will be controlled by the hight of the water in the boiler, which may cover any desired amount of the superheating surface, thus converting it into evaporating surface and reducing its superheating power. The water having lost its steam at S, descends through the water front as "*solid water*," and when the aperture at P is opened, no water under it can be drawn up and thrown out, because it is free of steam and is descending in a direction opposite to that in which it must go in order to pass out of the boiler.

One of these boilers, constructed for the *Idaho* steamship, has been in operation at the Morgan Works about a year, and has been subjected to a great variety of tests. It is found that the heat is so perfectly absorbed by the circulating water, that with a coal fire burning at the rate of 16 lbs. of coal an hour, cn a square foot of grates, lead will remain without melting, although the fire is within eight feet, and the draft is straight up through openings one-third as large as the grates. In blowing off steam no water escapes, and the steam is blue and transparent for a considerable distance from the end of the pipe, thus showing that no heat is lost by working water.



DICKERSON'S PATENT BOILER.

As the sketch shows, the boiler is arranged with doors, D D, which may be easily removed, thereby giving access to both ends of the inclined tubes, for cleaning or repairing, while through the man-hole, M, the lower end of the fire tubes may be approached, and in the chimney the upper ends. Thus every part of the boiler, inside and out, is accessible.

This boiler was invented by Edward N. Dickerson, of this city. Patents have been procured in England and France, as well as in this country, and further information in relation to the invention may be obtained by addressing the inventor at 37 Park Row, New York.

SOUND.—The velocity of sound decreases with the temperature. At 10° it is 1106 feet, and at zero it is only 1093 feet per second.

The Mount Cenis Tunnel.

"Galignani" has the following, taken from a highly interesting article by Emile Level, in a late *Revue Contemporaine*, which gives some curious details about the piercing of the tunnel between Modane and Bardoneche. We quote :—

"It is well known that the whole length of the tunnel, when completed, will be 12,220 metres. The machine used for the purpose is M. Sommelier's perforator, set in motion by compressed air. It consists of a piston working horizontally in a cylinder, and carrying a chisel fixed upon it like a bayonet, which at each stroke dashes with violence against the rock to be pierced. Each time the chisel recoils, it turns round in the hole, and as the latter is sunk deeper and deeper, the frame or shield, which carries, not one, but nine perforators, advances in proportion.—While the chisel is doing its work with extraordinary rapidity, a copper tube of small diameter keeps squirting water into the hole, by which means all the rubbish is washed out. Behind the shield there is a tender, which, by aid of a pump set in motion by the compressed air, feeds all these tubes with water. The noise caused by the simultaneous striking of all the chisels against the rock is absolutely deafening, enhanced as it is by the echo of the tunnel.

All at once the noise ceases, the shield recedes behind it, and the surface of the rock is perceived riddled with nine holes, varying in depth between 80 and 90 centimetres. These holes are now charged with cartridges, slow matches, burning at the rate of 60 centimetres per minute, are inserted, and the workmen retire in haste. The explosion seems to shake the mountain to its base. When all is over the ground is found covered with fragments of rock, and an advance equal to the depth of the holes has been obtained. On the Bardoneche side this year the advance per month has been 50 metres; on the Modane side it has not exceeded 38 metres per month, owing to the greater hardness of the rock on that side. There still remains a length of about 8250 metres to be got through. When completed the tunnel will have required the piercing of 1,220,000 holes, 550,000 kilogrammes of gunpowder, 1,550,000 metres of slow match; and the number of bayonets rendered unserviceable will amount to 2,450,000.

Long Beards.

Hall's Journal of Health and the SCIENTIFIC AMERICAN, in their several spheres the most popular papers issued in this country, are advocating long beards. These journals seem to think that a thorough coating of hair adds beauty to "the human face divine." Whether that is to settle the question for the future for us poor male bipeds remains to be seen. For one, we intend to resist manfully before we surrender—at least we mean before *our mouth is closed* like a backwoodsman's bear-skin powder pouch, to enter our solemn protest.

Do these reformers expect us to believe that a man appears best when his face is so disguised that one would as soon hunt for a mouth at the back side of his head as the front? For one we can't see it. What are we coming to? We have no suitable implements with which to feed ourselves in the event of this fashion becoming "the law of the land." But, hold! Yes, the thought has just occurred to us—we saw in the SCIENTIFIC AMERICAN a wood cut representing a spoon for this very purpose. The "bowl" and handle are formed in the ordinary fashion, and a strap of the same material passes over the top forming a sort of funnel. We could name several objections to this new invention, but we have a plan of our own much to be preferred to the patent *hair* spoon—and for one, when "worse comes to worse," we mean to adopt it—and as we do not intend to apply for a patent, all others are at liberty to make the most of our suggestions. These implements, like most improvements, are "cheap, simple and not liable to get out of repair," and now, presuming that the reader is fully prepared for the announcement, we say—for the more solid, nutrimental aliments the patent Sausage Stuffer is just the thing—and for those who indulge in whisky, lager, coffee, tea, buttermilk, &c., the instrument most resembling, but not technically styled, a squirt gun, would seem perfectly adapted. What say you, Messrs. *Hall* and *Munn?*

[We copy the above from the Tunkhannock, Pa., *Republican*. We think the suggestion a good one. Let it be tried by all means.—EDS.

Blockade Runners Captured in 1864.

We have a copy of the Report of the Secretary of the Navy for the year 1864, which contains among other things a list of the vessels captured in attempting to elude the blockade in 1864. The total number caught or destroyed is eighty-eight. Of these seventy-eight were captured by merchant built steamers employed on blockade duty by the navy, leaving *only ten* captured by naval vessels proper. Of these ten two were caught in a sound or inlet where there was no escape, one by the *Sassacus*, and one by the *Sonoma*. Two others were taken, one by the *Kanawha* and others, and one by the *Matabassets* and others; but how many and what vessels were "the others" is not stated. One was caught by the *Minnesota*, a frigate of the old navy, and one by the *Pequot*, built by Mr. Wright not on the navy plans. Four out of the eighty-eight were caught by the new navy in the open sea and when the vessels were unaided in the capture; and only six in the open sea whether with or without aid.

We look in vain for the *Eutaw* and other fast naval vessels; their names do not appear; although when the *Eutaw* went into the blockade we were told that she would be heard from. What is the reason of this undeniable fact? Is it true that our naval vessels lack speed? What other explanation can be given?

Rag Boiler Explosion.

Wednesday, Dec. 21st, a boiler used for steeping rags exploded in a large paper mill in Troy, N. Y. The explosion was so violent that it blew down and destroyed a large brick building filled with machinery, breaking timbers a foot square into splinters, and doing damage to the amount of at least $40,000.

As rags are steeped under a pressure of 60 lbs. or more to the square inch, the explosion is no stranger than the explosion of any steam engine boiler. It doubtless resulted from imperfect construction or careless management. A small part of the $40,000 loss would have paid for a good boiler and would have hired a competent man to take care of it.

Big Oil Stories.

Oil wells have done big things in their day. The Phillips well has flowed two thousand barrels per day; Empire well three thousand; Sherman well fifteen hundred; Noble well fifteen hundred; Caldwell well eight hundred; Maple Shade one thousand; Jersey well five hundred; Coquette well fifteen hundred; Reed well one thousand."

We copy the above from an exchange, and would like to believe that the statements are all true; but our courage fails us just at the point of believing.

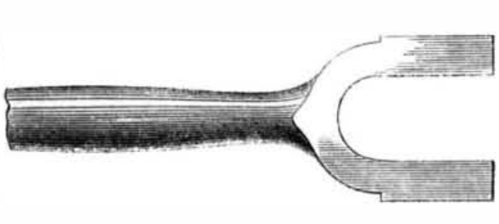
TURNING TOOLS.

PART FOURTH.

With a roughing tool and a finishing tool any one can turn out good work with a little experience, and observation will supply from day to day much more instruction than we could impart in a page of this journal. In complicated work, or in places where ordinary tools cannot be used, it may be of some benefit to our readers to bear in mind what follows.

The forked end of a connecting rod is a difficult thing to turn nicely. It is not troublesome to rough-hew it, to make plunges at it with a round-nosed tool, to make chatters in it, or leave it in such a state that it will take a finisher three or four days to file it up. But to turn the various corners neatly, to leave the edges sharp, and the outline without ridges, is a nice piece of work, and on no other job can the turner show his ability better.

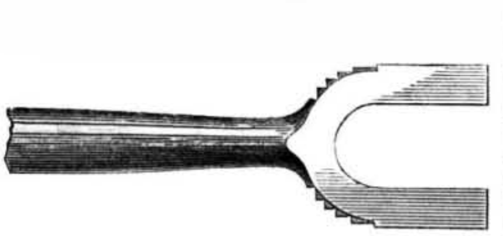
This is the piece of work spoken of, and although it is quite simple in its appearance, it is very trouble-



some. It is flat on the face toward the reader, and unless the finishing and roughing tools are set at the proper angles, and well secured, they catch under the advancing edge and break off or jump in. Every mechanic knows what mortification it is to have a tool act thus; for when the surface has been finely finished elsewhere one unlucky mischance by catching may spoil the whole.

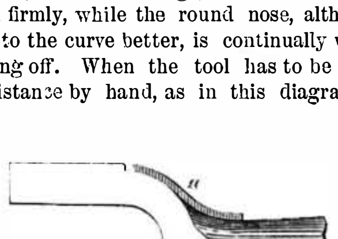
As the rod comes from the forge it is rough, and in heavy rods for marine engines, such as we now speak of, especially so. If it is troublesome to turn the rod it is bad to forge it, and the blacksmiths generally leave an abundance of metal.

After the rod is laid out with the curves expressed on the drawing, and properly centered, the turner takes a square-nosed tool and runs in nearly to the lines all round, as in this diagram.



This roughs out to the outline neat and clean, and develops the shape perfectly. It is handier than any other method, because the workman knows exactly what he is doing. Instead of skipping about, taking off a lump here and a chip there, he goes steadily on to the end, and never makes one turn of the feed-screw handle without some advancement.

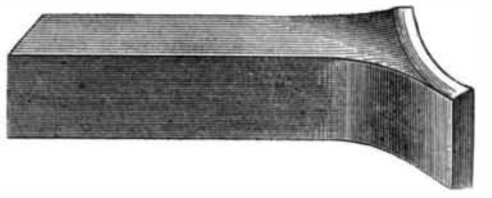
A square-nosed tool is better than any other for this purpose, because the edge, or corner, takes hold fairly and firmly, while the round nose, although it conforms to the curve better, is continually working or crowding off. When the tool has to be worked down a distance by hand, as in this diagram, it is



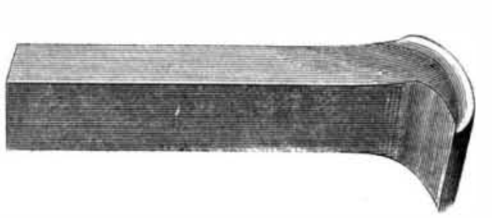
better to put in an ordinary roughing tool, with the feed in, and start at *a*, and cut it right down at once to the center punch marks denoting the outlines. In this way the lathe does much more work, for no man can feed as regularly and steadily, or as effectively, as the lathe itself can.

When the outline is once developed, and the ridges cut off by a bent side tool, the outline of the curves will present a surface consisting of a series of smooth-faced angles without a rough cut, a "dig," or a chatter upon them. After this it is an easy thing to cut off the tops of these angles, and make one fair and beautiful sweep of the whole outline. The surface will shine as bright as the face of a mirror, and be as true as a pair of dividers can lay it out. We know this because we have tried it.

The final finish can be well given by a tool con-



structed as shown in Fig 22, and the reverse curve as in this cut (Fig. 23). It must be borne in mind



that these tools have but little cut, or rake below, for the circle they cut on is very large and short, circumferentially, and a raking edge will jump in, while one too straight will push off. The linear length of the tool, or distance along the line of cut, should not be great, for the liability to spring is very greatly increased thereby. From two to three inches, and even less, ought to be sufficient for rods of ordinary marine beam engines.

Correspondence.

A Well-expressed Compliment.

MESSRS. EDITORS:—Inclosed find $3 for the SCIENTIFIC AMERICAN for one year, commencing January, 1865. A journal that combines so much that is artistic and beautiful with so much that is valuable and instructive I wish every success. I appreciate harmony in every thing, and I love to associate external beauty with richness of soul.

Hoping that prosperity may ever be your portion, I am, yours very truly, WM. H STEVENS.

Fredonia, Dec. 18, 1864.

Influence of Colored Light on Sorghum Molasses.

MESSRS. EDITORS:—I take the following extracts from my memoranda:

Four cylindrical glass tubes, each of $1\frac{1}{2}$ ounce capacity, and respectively of blue, red, green and yellow color, were filled three-fourths full with sorghum molasses, of a clear wine color, closed with cork stoppers, and exposed to the rays of the sun. After two months' exposure, the appearance was as follows:—The molasses in the red tube was covered with a moldy scum; that in the yellow tube had a flaky sediment; the molasses in the blue glass tub kept perfectly clear, and the peculiar taste of the sorghum was considerably diminished; the molasses in the green glass tube was similar to that in the blue, but not quite so perfect. The cork stoppers were removed; the scum in the yellow and sediment in the red tubes were also removed; the four tubes afterward covered with paper, to prevent the dust from falling into them, and exposed for two months longer to atmosphere and sun. A moldy scum appeared again in the yellow tube, a sediment in the red, while those of blue and green color remained clear as before. This experiment shows that molasses will keep best under the influence of blue color. The sorghum molasses contains a good portion of gum, also likely pectin.

The process of Prof. Goessling's patent, spoken of in Vol. XI., No. 25, consists, as I understand, mainly of a method adopted by Robert Philips, of Germany, published in No. 9, *Oeconomical News*, for the year 1843; also in Vol. I of Dr. Ludwig Gall's practical