

PUMPING STEAM ENGINES.—Robert Allison, Port Carbon, Pa.—This invention relates to a new and improved method of operating the valve of a steam engine when the same is used for pumping water from mines and other purposes.

WATER REGULATOR FOR STEAM BOILERS.—R. J. Jordan, Elkhart, Ind.—This invention relates to a new and improved method of regulating the quantity of water which is discharged into a steam boiler by the force pump.

WASHING MACHINE.—J. H. Quackenbush, East Saginaw, Mich.—The object of this invention is to provide a simple and effective machine for cleansing linen and other articles of domestic use, and it consists in subjecting the article to be washed to both a squeezing and a rubbing process at the same time, by means of corrugated rollers.

STEAM ENGINE.—Joseph McConnell, Iowa City, Iowa.—This invention relates to a new and improved valve motion in the steam engine, the principal novelty consists in opening and closing the ports of the engine cylinder by operating two cylinder valves at each end of the engine cylinder (one within the other), the inner valve being a cut off valve.

DOOR HOLDER.—Wm. A. Messler, Eureka, Ill.—This invention relates to an improved method of holding doors open, and consists of a spring latch attached to the wall against which the door opens, the door latch slipping into the latch.

MACHINE FOR FINISHING SEWING THREAD OR YARN.—Samuel Barbour, Belfast, Ireland.—This invention relates to an improvement in machinery for finishing sewing thread and yarn, by which a high polish is put upon the surface and the thread is made very smooth and level.

DISH AND VEGETABLE WASHER.—J. N. Paddock, Oswego, N. Y.—This invention relates to an article of domestic utility, and consists in a contrivance for rapidly and effectually washing and drying a number of plates and dishes or for washing vegetables.

CAN.—Andrew D. Armstrong, Pittsburgh, Pa.—This invention relates to an improvement in cans, and is specially serviceable for cans used to contain white lead and similar substances. It consists in providing a second or internal rim to the can, making the lid sit perfectly tight.

MARKET BOX.—Frederick Gearing, Pittsburgh, Pa.—This invention relates to a new and useful improvement in the construction of boxes for market gardeners. The invention consists in constructing the boxes in such a manner that they may be readily taken apart and put together, whereby the boxes, when their contents are sold or disposed of, may be taken apart and packed in a very small compass and empty boxes, therefore, transported at a very small expense.

COMBINED FILTER AND COOLER.—H. W. Fisher, Philadelphia, Pa.—This invention consists in combining a water filter and a cooler in such a manner that a very portable device is obtained for household purposes and one which will operate perfectly with but a moderate consumption of ice.

SPRING FOR VEHICLES.—W. H. English, Macon, Ga.—This invention has for its object the obtaining of a spring for vehicles which will be light or composed of a small weight of metal and still be strong and durable and far less expensive to manufacture than the ordinary springs in use.

CORN PLOW.—M. C. Buffington, La Harpe, Ill.—This invention relates to a new and improved corn plow or cultivator and consists in a novel construction of the same, whereby the draft pole is elevated above the corn so as to prevent the same being broken down and injured and a draft obtained which will admit of the draft pole being balanced so as to avoid any undue pressure on the necks of the draft animals, while the plows are rendered capable of adjustment as circumstances may require.

MODE OF CREATING DRAFT IN STEAM BOILER FURNACES.—William H. Squires, New York City. This invention consists in introducing into the lower part of the smoke stack, or into the chamber with which the lower part of the smoke stack communicates, a conical chamber into the lower part of which a steam tube communicating with the boiler is inserted. The steam tube is provided with a stop cock and all arranged in such a manner that steam may be allowed to pass from the boiler into the lower part of the smoke stack and create the necessary draft.

HAND SEEDER.—Thomas Bradley, Preble, N. Y.—The object of this invention is to furnish a cheap and convenient hand seeder or planter adapted to seeds of different kinds and to be connected with a hoe to be operated by hand to discharge the seeds.

CULTIVATOR.—Henry W. Ostrom, Grand Rapids, Mich.—This invention relates to a new and improved cultivator or harrow and consists in attaching a series of ordinary cultivator teeth to the ends of a set of slats or bars which are hung upon a frame in such a manner that the teeth can rise and fall to adapt themselves to the inequalities of the surface of the ground.

HAND SPINNING MACHINE.—John Blackwood and Theodore C. Wilson, Cincinnati, Ohio.—This invention relates to a new and useful improvement in the construction of hand spinning machines for wool and other fiber and consists in the arrangement of mechanism for operating with a crank upon two or more spindles set in the arc of a circle with one pulley band which dispenses with intermediate tightening pulleys, and in connection therewith a reciprocating feed carriage. The advantages of these improvements are cheapness in the construction of the machine, simplicity of the machinery which performs good work without liability to get out of order, while it is easily managed and requires but little power to operate it.

TUNING ATTACHMENT FOR GUITARS, BANJOS, AND SIMILAR STRING INSTRUMENTS.—H. Seehausen, Memphis, Tenn.—The object of this invention is to obtain a very simple means whereby the strings of a guitar, banjo, or other similar string instrument may, after being used, be relaxed with greater facility than hitherto, and, when required for use, be more readily tightened and tuned.

CULTIVATOR.—John Schröder, Kickapoo, Ill.—This invention relates to a new device for regulating the draft of horses, and for equalizing the same; also for making the plow beams flexible, so that they can be turned in every direction.

CHUCK.—Wm. T. Cole, New York City.—This invention relates to a new self-acting chuck, which is so arranged that it will be set the tighter the more pressure is applied to the article held by it, so that the strain is in exact proportion to the work to be done. As soon as the work stops, the chuck relaxes its hold, but resumes it again, as the work is recommenced.

MACHINE FOR RENOVATING AND CLEANING FEATHERS.—Ossian C. Monroe, Poultaey, Vt.—This invention relates to a new machine for cleaning feathers, which is so arranged that the feathers can be easily cleaned by the application of steam, without receiving any of the products of condensation, and can be dried, when cleaned, by the nearer walls of the vessel in which they are held.

WAGON SPRING.—C. P. Hawley, Mosherville, N. Y.—This invention relates to a new manner of arranging the springs on all sorts of vehicles, sofas, railroad cars, and for other purposes, and consists in having two frames made of wood or other suitable material, hinged to lugs projecting from the underside of the wagon box or other article.

MACHINE FOR TAPERING LEATHER.—Wm. Mannheim, New York City.—This invention relates to a machine in which the edges of leather straps can be beveled or tapered, and also the ends of the same, but in which, when desired, the leather can also be scraped or shaved, so as to be reduced in thickness to an equal degree throughout.

WATER WHEEL.—Legrand D. Wynkoop.—Owasso, Mich.—This improvement consists in a modification of the upper part of the wheel, whereby a case for the same is dispensed with, and the wheels simplified and rendered more efficient and desirable than hitherto.

COMBINED GAGE, PRESSER, HEMMER, ETC., FOR SEWING MACHINES.—Joseph P. White, Savannah, Ga.—This invention relates to a new attachment for sewing machines, by which the cloth is held down, gaged, tucked or hemmed and if desired marked for further tucks.

FIRE ESCAPE BLINDER FOR HORSES AND CATTLE.—Smith Ferris, New York City.—This invention consists in the use of a cap which when laid on the horse's head, covers his eyes, and thus permits that he be led out of danger in case of fire. This cap is so arranged, that it can be placed at once on the animal's head, and be fastened thereto by means of hooks and straps.

FASTENING BUTTONS ON GARMENTS.—Ezra J. Warner, Newark, N. J.—The object of this invention is to fasten buttons to garments with tubular shanks or eyelets, at a single operation, and it consists in a press provided with an adjustable die through which passes a spring slide bar for holding the tubular shank upon the die, to be pressed thereon, and thus fasten the button on a garment, and which also holds a piercing needle for making a hole in the cloth to receive the tubular shank.

HARROW TEETH.—F. R. Willson, Columbus, O.—This invention relates to an improvement in the construction of harrow teeth, and consists in a tooth with two cultivator rings, placed one ahead of the other, made of a single steel plate, of a lozenge form, by splitting the plate partly across, and turning out the split parts in opposite directions, right and left, leaving the upper side of the plate solid, to be fastened to the harrow frame by screw bolts, which may be secured to top of the plate with a cast iron head upon it, or in any other suitable manner.

FAGOT FOR BEAMS.—Wyatt W. Miller, Safe Harbor, Pa.—This invention relates to a new manner of forming piles or fagots for large double flange beams for buildings, bridges, and other structures, and consists in composing the whole of a fagot of flat plates; and connecting the same by means of bolts, so that the fagot when thus made will represent as nearly as possible the shape of the finished beam.

PUMP.—Gilbert M. Cole, Folsom City, Cal.—This invention relates to a new double-acting pump, which is provided with double pistons, sliding in a cylinder, the valves being arranged stationary in the cylinders between the pistons, and the suction and discharge pipes being arranged on the sides of the cylinder in such a manner that the water or other liquid to be pumped enters the cylinder between the valves, and, passing in a straight, or nearly straight line, through the cylinder, is discharged.

BOTTLE.—H. S. Carley, Cambridgeport, Mass.—This invention relates to a new manner of arranging the necks of bottles containing soda-water or any other liquid charged with carbonic acid, with a view of retaining the cork or stopper, so that the same cannot be lost or mislaid, although the bottle can be opened or closed at will.

MANNER OF RETAINING HAT BODIES ON BLOCKS.—Jas B. Brown, Middletown, N. J.—This invention relates to a hat block, which is so made and arranged that the inconvenience of hooking or otherwise securing the hat body to the same may be overcome.

RAILROAD CAR BRAKE.—Walter S. Shotwell, Paterson, N. J.—This invention relates to a new and improved railroad car brake of that class which are operated or applied by the movement of the car after the engineer cuts off the steam. The object of the invention is to obtain a car brake of the class specified which will be simple in construction, capable of being adapted or applied to the ordinary hand brakes now in use and still admit of the brakes of each car being applied by hand whenever it is necessary to detach a car from a train and switch it off from the main track.

COTTON BALE TIE OR HOOP LOCK.—James W. Traman, Macon, Ga.—This invention relates to a new and improved tie or lock for connecting together and securing the ends of metallic hoops for cotton bales. The invention consists in constructing the tie or lock of a single piece of wire or rod bent or swaged in the form of a quadrangle or square, the ends of which, composing one side of the square, extend entirely across the whole width of the device, said ends being disconnected but forming a side composed of the thicknesses of the wire, whereby a tie or lock is obtained which may be very readily applied to the hoops, and which will form a very strong and secure fastening.

FODDER CUTTER.—D. A. Smith, Pomeroy, Ohio.—This invention relates to a new and improved fodder cutter of that class which have the cutters or knives attached to a wheel which serves the office of a fly as well as that of a cutter wheel. The invention consists in a novel construction and arrangement of the parts, whereby a very superior machine of the kind specified is obtained.

GRINDING MILL.—Jabez Burns, New York City.—The object of this invention is to construct a mill for grinding coffee and other substances, whereby the same will be granulated and not ground to dust or pulverized as is done by the mills now in general use, and whereby the article to be ground is moved by centripetal and not by centrifugal force, and is gradually crushed or broken to small lumps, so that for the actual grinding process but little power and surfaces are required.

Answers to Correspondents.

CORRESPONDENTS who expect to receive answers to their letters must, in all cases, sign their names. We have a right to know those who seek information from us. Besides, as sometimes happens, we may prefer to address the correspondent by mail. SPECIAL NOTE.—This column is designed for the general interest and instruction of our readers, not for gratuitous replies to questions of a purely business or personal nature. We will publish such inquiries, however, when paid for as advertisements at 50 cents a line, under the head of "Business and Personal."

All reference to back numbers should be by volume and page.

H. W. P., of Vt., asks if coal tar applied to the outside of wooden water logs will preserve them from decay. Probably nothing so cheap and effectual can be found. Kyanizing the wood might be better, but it would cost much more. The coal tar will be found to be a sufficient protection.

S. W. H., of C. E.—We do not understand the processes of preparing calf skins beyond what is generally known. As to the oils used for "scenting" the skin we never heard of that process. For "stuffing" the skin menhaden and other fish oils, neats-foot oil, and tallow are used.

G. W. P., of Mass.—Many of the old pictures were painted on "panels" of wood. Some of the most valuable of paintings were on wood. In time the wood, unless carefully preserved, becomes worm eaten or decayed threatening the destruction of the picture. These are "restored" by being transferred to a canvas backing. The process is an interesting one. The painting is secured, face down, to a table, and the wood gradually planed and scraped away until all its substance is removed, leaving only the paint attached to the table. Then this is cemented to a canvas and the picture is restored. Of course, it is a work of time-demanding patience and great skill. It is unsafe for a novice in the art to attempt it.

J. B. B., of Mass.—We know nothing of the locomotive performance you speak of. It may be possible to run 150 miles in 90 minutes. Whether the engine and tender could carry water and fuel enough would depend on their construction, the load, the grade of the road, direction of the wind, etc. The quick express trains of England do run nearly 60 miles per hour including stoppages. During the past summer a train made a run on the Hudson River Railroad of 10 miles at the rate of 73 miles in 60 minutes, carrying the board of directors.

A. P., of N. Y.—The mineral you inclose as found in quartz rock is an ore of copper containing carbonate and sulphide of copper.

J. W. R., of Mich.—The word "amorphous" as applied to phosphorus, or indeed, any other substance, means simply shapeless or without regular proportions.

J. D., of Mass.—We cannot tell you of any special book teaching the art of "putting up machinery, hanging shatters, etc." The best teacher we know is experience combined with observation, common sense, and good judgment, and the instruments to be used are the plumb, level, square, and measuring rule. With these we never failed to hang shafting or locate machines properly. You can no more learn to hang shafting from books than you can learn how to draw a file.

E. V. R., of Mich., asks how many kinds of geographical projections there are as applied to map making, who were their inventors, and what is the principle of laying out parallels of latitude and meridians of longitude. These questions are all answered in any good treatise on geography. Get "Davies' Navigation" or "Bowditch's Navigator." The various kinds of projections may be considered under the heads authographic, stereographic, gnomonic, globular, and the development, for definitions of which terms we refer you as above.

F. S., of N. Y., desires to know if a young man who has been through a course on naval architecture by private instruction would be debarred from practice for this reason, and if there is in New York city a college for such studies. We reply that the first element of success is merit or talent. In this country it does not matter whether one's knowledge was acquired through private instruction or whether he gained it by a regular course in some educational institution. If you are competent you can be successful. We know of no institution where naval architecture is taught. This is learned in the engineer's office and the ship yard.

E. B. H., of Vt., says he put up a pair of mill stones in North Carolina which were grinding well the first of July last, but since that the lower end of the spindle and step heads, both being composed of hardened and polished steel and running in oil. Our correspondent has probably committed a very common error. Where great weight combined with rotation comes upon a comparatively small surface the two rubbing surfaces should be of different materials. No amount of hardness or polish will prevent wear under other circumstances. If the end of the spindle is steel the step should be of much softer material. Even cast iron is better than steel for the step, and Babbitt metal or hard wood with the end of the grain presented would be better still. Oil is of no use as a lubricant unless it is permitted to get between the bearing surfaces. Probably the spindle bearing is too small for the weight to be sustained. Much could be written on the subject of the relative areas of bearing surfaces for journals.

C. E. S., of Md., wants a cement for uniting brass or steel to paper or pasteboard. Try shellac.

G. S., of Miss., asks if india-rubber will make good inking rollers and wants the proportions and method of combination of the constituents. In reply we can only say that the attempt has been repeatedly made to construct a good inking roller of india rubber, but without success. Printers prefer the roller composed of molasses and glue to those of any other materials. Glycerin and glue in proper proportions make a good roller, but it falls in such wet weather as we have had this last summer.

W. P. B., of Pa.—Glass for lenses, after being ground to shape, is polished successively by emery, rottenstone, pumice stone, and the oxide of iron known as rouge.

W. T., of Conn.—If there is any new method of electro-plating of German silver or Britannia metal different from that ordinarily used on other metals, we are not aware of it. The usual process can be learned from treatises on this subject.

E. J., of N. Y.—The velocipede mentioned in our Notes of the Paris Exposition is very novel but simple in its construction. We have made arrangements for drawings of it to publish in a few weeks.

J. W. M., of Mo.—The regulations of the Metropolitan Fire Department of this city do not allow the steam fire engines to carry more than 80 pounds of steam, but this limit is often passed, the pressure frequently running as high as 140 or even 160 pounds. We are informed that the boilers of every Amoskeag engine built is tested to 200 pounds steam pressure.

W. R. S., of Ind.—When it is 9 A. M. in New York it is 9 P. M. of the same day at the Antipodes.

F. M. P., of O.—The explanations of the fact of the refraction of light are theoretical and therefore unsatisfactory. . . . The spark produced by the striking of flint and steel results from the conversion of ordinary mechanical force into heat.

J. A. S., of Pa., suggests that the electricity of belts is sometimes the occasion of the accidents in factories when the dresses of women become entangled in the machinery. According to his theory the skirt of the dress is drawn to the belt by the electrical attraction.

R. F., of Conn., describes a basswood tree growing with considerable vigor from a stump and roots which are apparently dead. If the stump and roots were really dead the case would probably be unprecedented.

R. V., of Mass.—Plumbago was formerly, but improperly called carburet of iron. When pure it contains no iron, and the iron which often is associated with it, is never in chemical combination with the carbon.

C. B. T., of Texas.—The first clause of section 5th, of the Act of 1842, provides that a person shall not affix upon a thing not patented by him the name of another who has obtained a patent upon the same thing, without the consent of such patentee; the second clause, that a person shall not affix the word "patent," or "letters patent," or "patentee," or any word or words of like import with intent of imitating a patentee's device on an unpatented article, or in other words, on an article not covered by any patent whatever, for the purpose of deceiving the public.

Business and Personal.

The charge for insertion under this head is 50 cents a line.

Iron Manufacturers and Capitalists—Examine the Model Rolls at the American Institute. Patent for sale. P. Bright, Philadelphia.

For Sale—A small Metal-working Shop—Tools in good order. Also, two patents. Terms easy. Address G. Strong, care H. N. Meyers, 218 Fulton street, New York. 14 & 15

J. C. J., of Estillville, Scott county, Va., desires the address of parties who make a business of boring wells.

Bolt-Heading Machines Wanted. Address National Iron Co., Danville, Montour county, Pa.

Wanted, for a foreign correspondent, a first-class Rice Hulling and a Rice Polishing Machine. Address Munn & Co., 37 Park Row sending full description, price, and weight.

Black Walnut Lumber, first-class, green or dry, can be furnished by D. Auld, Jr., Iberia, Ohio. Write to him.

Railroad Companies wishing a Good Snow Plow and other track-obstruction removers, are recommended to address or consult Mr. Sheridan, whose advertisement is to be found in another column.

NEW PUBLICATIONS.

THE BROADWAY for October. The second number of this new monthly has made its appearance. It is full of original illustrations, and bears evidence of success. Published at 418 Broome street, N. Y. Price 25 cents a number.

THE NEW DOMINION for October. This is another new literary monthly, published by John Dougall & Son, Montreal, Canada. The first number (October) is very creditable in execution, contains 64 pages, and is sold at the low price of 10 cents a copy.

HERALD OF HEALTH for October. This is an old magazine and always good. It is devoted to physical culture, and its teachings are of incalculable value in the household. Miller, Wood & Co., publishers, 13 Laight street, N. Y. Terms \$2 per annum, 20 cents per single copy.

EXTENSION NOTICE.

L. Otto P. Meyer, of Newtown, Conn., having petitioned for the extension of a patent granted to him the 20th day of December, 1853, for an improvement in processes for vulcanizing caoutchouc compounds, for seven years from the expiration of said patent, which takes place on the 20th day of December, 1867, it is ordered that the said petition be heard at the Patent Office on Monday, the 2d day of December next.

**Device for Marking and Furrowing Land for Corn.**

The inventor of this device claims that it does its work easier and more effectually than others; that it does not harden the soil, and thus hinder the germination of the seed; that it can be driven within a few feet of the fence, and be easily turned; and that it is cheap, being manufactured at a cost so low as to bring it within the reach of all.

As seen, it is in form very like a boy's sled, the runners being three and a half or four feet apart, according to the width of the rows. The runners are shod with iron, two inches wide, by one thick. At the rear of these runners, on the outside, is attached a mold board, or share of cast iron, for making the furrows. Pivoted to the center of the front cross-piece of the sled is an arm, projecting from the side of the sled, and carrying a bar and pointed marker for determining the line of the furrow next to be formed. The depth of this mark may be controlled by the driver's foot. His seat is so arranged that, by sitting further forward or back, he may, by thus elevating or depressing the back end of the sled, regulate the depth of the furrows plowed by the shares. Farmers will readily understand the operation of this implement without further description.

It was patented February 13, 1866, by Joseph Plumb, who may be addressed relative thereto at Flemington, N. J.

**Discoveries in Palestine.**

The secretary of the Palestine Exploration Fund writes to the *London Times*:-

"When the committee of the Palestine Exploration Fund sent out their second exploring party to the Holy Land in January last, under the charge of Lieutenant Charles Warren, Royal Engineers, they gave him a general instruction to make Jerusalem his headquarters, and to excavate, and investigate about the city as much as possible, especially in the sacred enclosure of the Haram esh-Sherif. The result is that outside the walls of the enclosure he has made a discovery, which is almost, if not quite, as important as any that has ever been made in or about Jerusalem, and which cannot fail to be the fruitful parent of many more. He has found that the south wall of the Haram, which rears its venerable face to a height of eighty feet above the soil, descends to no less a depth than fifty-three feet below it—the solid rock of Mount Moriah, on which it is founded, being covered with that immense thickness of debris. Thus this wall must originally have stood at a height of one hundred and thirty feet above its foundations, fully justifying the expressions of Josephus, who says concerning it that 'if any one looked down from the top of the battlements into the valley he would be giddy, while the sight could not reach to such an immense depth.'"

"The foundation and unworn masonry of the buried portion may be expected to disclose many a secret affecting these venerable walls, secrets which Lieutenant Warren is now diligently occupied in revealing. But this is not all. He found two other things. He found first, that the eastern wall was prolonged beyond the southern face, and continues in the general direction of Siloam, with all the solidity and antiquity, which characterize its known portions. How far it continues, or what are its exact direction and extent, I expect to hear shortly from Lieutenant Warren. He found, secondly, that below the debris a second south wall exists twenty feet distant from the known one, and of slighter workmanship. How far this wall goes, what its purpose may have been, its relations to the 'triple gateway' and the staircase which M. de Saulcy believed that he had discovered to descend from the triple gateway, how this discovery may affect the piers of the arches below the southeast corner of the enclosure, are questions which I await further information to be able to answer.

"Our operations are threefold:

"1. Exploration—On which I have only to add that we have already materials for almost an entire, complete, and accurate map of the country and photographs of more than three hundred spots and objects, large numbers of which have never before been taken.

"2. Geology—for this our desire is to send out a party, under the charge of Mr. Prestwich, F. G. S., the eminent geologist, who has most kindly offered his services.

"3. Botany and Zoology—for which in like manner we hope to avail ourselves of the services of the Rev. H. B. Tristram, well tried and well known already in the same field, and anxious like an old hunter, to be off on his final chase."

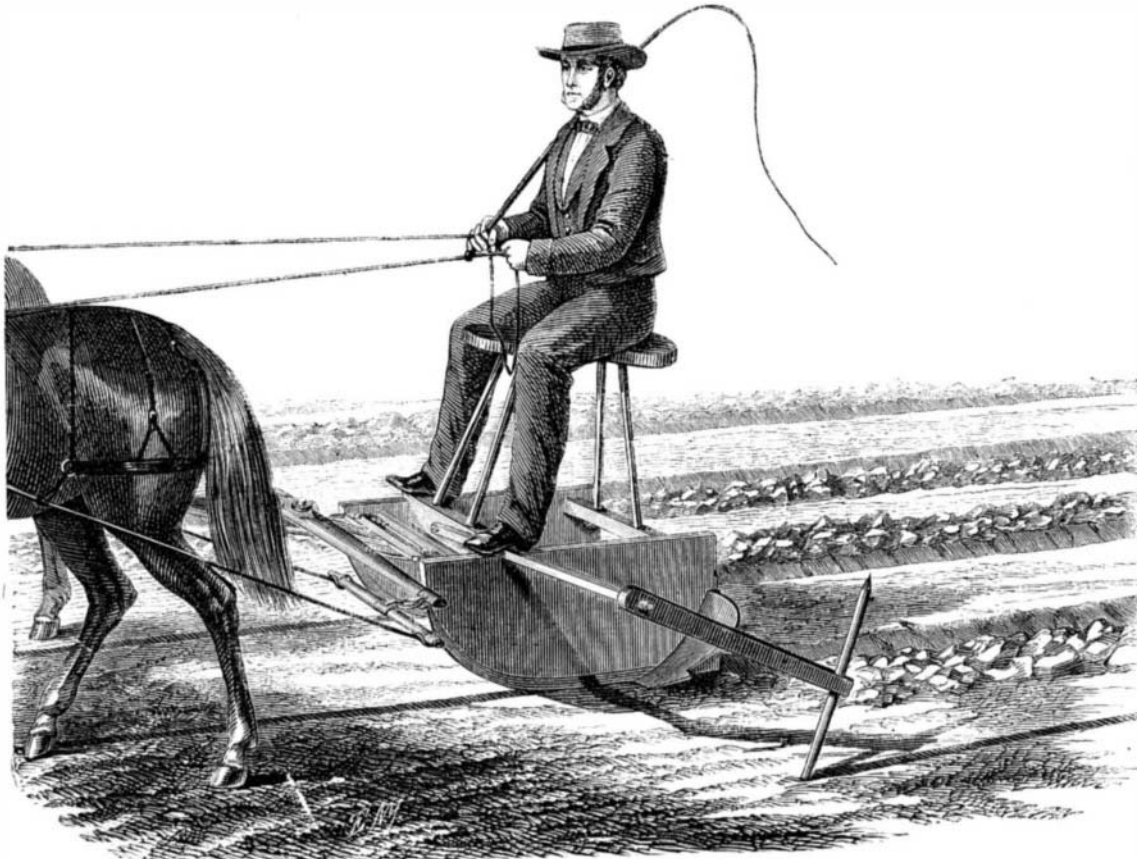
**Condition of the Oil Regions.**

A correspondent of the *Boston Transcript* thus describes the oil operations in Pennsylvania:-

"At Petroleum Center about one well in six is in operation. From the high hill west of the town you can see half a dozen villages and more than two thousand wells, some new, but many more utterly abandoned. On the top of this hill there is a fine flowing well which yields fifty barrels in a day—the only flowing well in all the region. The pumping wells

yield from eight to thirty barrels in the day. A well that yields less than eight barrels will not pay for the working, even at the present advanced prices. The business has now passed entirely out of the hands of speculators, and is conducted in an orderly way, by 'solid' and intelligent men, and with improved methods.

"A very intelligent owner of some of the wells explained and illustrated to me all the process of getting the oil—from the first experiment with the auger to the final refining of the crude product; the boring through the various strata, the sand pumps, the seed bag, the casing, the rods which clear out the tube, the gas furnaces—the whole very interesting, but which it would be impossible to explain in the limits of

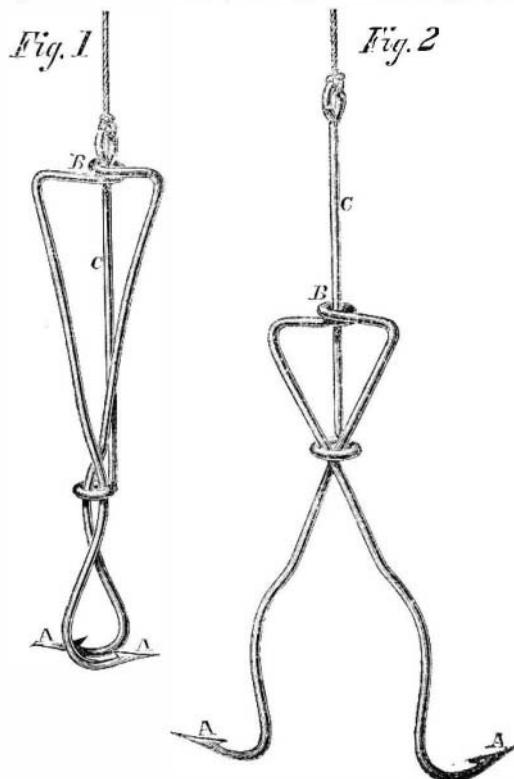
**PLUMB'S PATENT FURROWING SLED.**

a letter. Hardly any wood is consumed now for fuel. Some of the furnaces are fed by the escaping gas, but more by benzine, of which an ordinary engine furnace burns about a barrel in twenty-four hours. The sparks from a chimney would be dangerous in so explosive an atmosphere. Smoking is strictly prohibited in the neighborhood of the wells. But, as it is, fires are very frequent—hardly a week passes without them.

"The present high price of the oil is stimulating new enterprises, and the owners of wells are encouraged. You see the derricks rising on the tops of the hills, more than three hundred feet above the level of the railway. The gas is carried up the slopes in pipes for half a mile to make fuel for boring these new wells. Not one in three will strike oil at all, and not half of those who strike it will get it in profitable quantity. But the production is still very large, never, on the whole, greater than now. It is said that the famous Noble well, which has now done its work, yielded, before it expired, not less than four hundred and fifty thousand barrels of oil. It was sold for half a million of dollars."

**KIDDER'S EUREKA TRAP FISH HOOK.**

"Fisherman's luck" is merely a synonym for "just no luck at all." It is bad enough to have a provoking nibble,



with no earnest and honest bite, but to have your bait taken repeatedly, and not secure your fish, requires some philosophy to bear with equanimity. The design of the hook rep-

resented in the accompanying engraving is to save the angler from these vexations, by surely securing the fish which has temerity enough to receive the barbs of this hook.

Fig. 1 shows the hook set or closed, and Fig. 2 the same sprung or open. The hook is a steel wire, the ends formed into points and barbs, A, and the center of the wire bent into an eye, B. Near the points the two arms of the wire are bowed outward, and, when sprung, as in Fig. 1, they cross or overlap. In this position they are held by a ring-clasp, C, to the upper end of which the line is attached. It is evident that a slight pull on the points, A, will slide the hook through the clasp, and allow its two sides to spring apart; of course, if the barbs are in the fish's mouth, this action will transfix the game, and hold it securely. It can be set instantly, by pushing down the clasp, and in the same manner it can be easily removed from the mouth of the fish. Its operation is readily comprehended from the foregoing.

Patented through the SCIENTIFIC AMERICAN Patent Agency, by Daniel Kidder, who may be addressed for the sale of the right at Franklin, N. H.

**American Guns and English Armor.**

If I have hitherto refrained from exposing the hollowess of the ground of self-gratulation in which some of our artillerymen have been indulging, in consequence of the alleged failure of the American 15-inch gun to pierce an 8-inch plate although that plate had previously been pierced by some of our guns not of the largest size, it is because I expected that some communications from America would deal with the question in a more authoritative manner than any English spectator could do. I send you herewith an extract from the *New York Army and Navy Journal*, of the 10th inst., which perhaps you may

think it useful to lay before your readers, and meanwhile permit me to express my conviction that the theories so precipitately adopted with reference to the supposed inability of the 15-inch gun to pierce 8-inch plates are wholly erroneous, and must be abandoned by all who wish to preserve any reputation for a sound acquaintance with such subjects. The so-called American Mammoth powder is not the powder used in the American navy, and why was not the common 60-lbs. charge of American navy powder employed? The powder used in the American navy is somewhat stronger than the English powder, and as much as 100 lbs. of Mammoth powder has been burnt in the 15-inch gun without damaging the gun at all. Why then were such small charges of powder used in the English experiments, and why were not chilled shot tried? One would almost imagine that the main purpose of the experimentalists was self-deception. Let chilled shot be used in the 15-inch gun with heavy charges of good powder, and it will be found that the shot will be projected with ease through a target representing the side of the strongest ironclad we have, whether built or building.—VINDICATOR in *Engineering*.

[We should add, however, that "mammoth-grain" powder has lately been adopted in the navy for the 15-inch and 20-inch guns. It is thought by some ordnance officers that the service charge will, before long, be increased enough to give 1600 feet velocity to the 15-inch shot.

We have published several articles intended to show that the trials of the American 15-inch gun at Shoeburyness were inadequate to prove its power, and we have before us now a letter from one of our ordnance officers which sustains the assertion of *Vindicator*. Our authority says: "We never now use in the 15-inch gun less than 100 lbs. mammoth powder. We get with that charge over 1,500 feet velocity." Comment is unnecessary. Since writing the above, a cable telegram informs us that, with 100 lbs. of powder, the 15-inch shot passed entirely through the 8-inch target.—EDS. SCI. AM.]

**ERRORS IN SCIENTIFIC JOURNALS.**

We notice in *Engineering* of September 13 a set of valuable tables on steamship performance. Referring to the steamship *La Plata*—mate to Cunard's *Arabia*—in three tables we find her length put down as 284 feet; we may be wrong, but we supposed she was some 100 feet longer than this.

Again, the weight of each of her wheels is set down at 37.5 tons each. Is this correct, and, if not, how many more mistakes are there in these tables?

We allude to this because we have been annoyed to find errors, owing to negligent reading of proof, in the late editions of Mr. Bourne's books.

SAND PAPER.—We notice in the *Fair* a variety of samples of sand paper of a superior quality, made by Jones & Cromwell, of Brooklyn, N. Y. The grain is very uniform, sharp, and the paper tenacious. We understand that these makers are using new and peculiar mechanism, which improves the production and facilitates the manufacture.