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

JNO. BABILLION.

Detroit, Mich.

The Explosion of Lamps.

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

Newark, N. J., August 23.

Softening Chilled Iron.

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

MACHINIST.

New Haven, Ct.

Cold Bleaching Process.

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

Fire in a Coal Mine.

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

American Antiquities.

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

War and a Nation's Debt.

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

Telegraphic Blunders.

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

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

To D. H. Craig, New York.

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

CYRUS W. FIELD.

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

NEW INVENTIONS.

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

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

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

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

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

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

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

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

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

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

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

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

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

SPRING BED BOTTOM.—E. R. RISON, Kinmundy, Ill.—This invention furnishes an improved spring bed bottom, simple in construction, strong, and not liable to break or get out of order.

HORSE RAKE.—E. R. HALL, Ilion, N. Y.—This invention relates to that class of horse rakes in which wooden teeth are employed. It consists in a novel manner of hanging and arranging the rake so as to put it under the complete control of the driver, and render it capable of being raised and lowered, and turned in order to discharge its load with the greatest facility.

WHIFFLETREE.—GEO. WATT, Richmond, Va.—This improvement consists in making the double and single trees of rods so fashioned by the bending of one or more portions as to have an elasticity when power is applied to the ends and the middle loop held fast.

BURNING FLUID.—JOHN JANN, New Windsor, Md.—This invention consists of a composition of benzine 33 galons, sweet oil halfa pint, and oil of vitriol 2 quarts.

DEVICE FOR LIFTING FLOUR AND OTHER BARRELS.—LUCIUS H. GOFF, St. Albans, Vt.—This invention relates to a novel and useful implement to be used for the lifting of flour and other barrels, whereby it can be accomplished with great convenience and in a most ready and comparatively easy manner.

CAR COUPLING.—GEORGE W. WILSON, Abingdon, Ill.—This is a simple, self-acting device for coupling railroad cars quickly and safely, consisting of an arrangment of cams and levers connected with the bumpers, which release themselves if a car is thrown off the track.

KINDLING MATERIAL.—C. A. ROSE, Columbus, Ga.—This invention consists in preparing a new kindling material by compressing into portable blocks the leaves of the southern pines, which are rich in resin and make a very inflammable and convenient kindling stuff, which can be afforded for less than wood, and opens up a new field of profitable industry hitherto neglected.

CULTIVATOR.—ADDISON F. STILWELL, Fayette, Iowa.—This invention consists in a novel manner of arranging the front plows of the devise, whereby the plows may be adjusted to perform different kinds of work as required.

CONSTRUCTION OF JOINTED MOLDS.—M. B. STAFFORD, New York City.—This is an improvement in jointed molds for brick, peat, soap and other machines for compressing and molding various substances. The object is to obtain a mold of the kind specified which will open freely and close tightly in such a manner as to leave no mark, impression or ridge in the article molded.

GATE.—B. S. HEALY, Cohocton, N. Y.—This invention is designed to furnish a simple, cheap, and convenient manner of hanging a gate.

SAFEGUARD FOR RAILROAD CROSSINGS.—ASA HILL, Providence, R. I.—This improvement in safeguards or barriers for railroad crossings, is to prevent accidents which frequently occur by imprudent attempts to cross the track in front of a passing train. It is simple in construction, capable of being put up at a very moderate expense, and operated or manipulated with the greatest facility.

CATAMENIAL SACK.—JOSEPH C. BENZINGER, Catonsville, Md.—The object of this invention is to produce a catamenial sack which will tend to maintain the person of the patient in a cleanly condition, and will prevent chafing.

WEEDING HOE.—W. J. WELLS, Sidney, Ohio.—This invention consists in a novel construction of a weeding hoe, whereby many important advantages are obtained.

CORN PLANTER.—BARNABUS CLARK, Mackinaw, Ill.—This machine is for planting corn in hills or check rows without any previous furrowing of the ground. Its object is to obtain a simple device for the purpose, and one whose parts will be under the complete control of the driver or operator, and be capable of being rendered operative and inoperative, when desired, with the greatest facility.

ROCK-DRILLING MACHINE.—GEORGE F. UNDERHILL, Brooklyn, N. Y.—This invention consists principally in a novel arrangement of parts for operating the drill of the machine.

HOLDING DRIVING REINS.—MILTON WHIPPLE, Medina, N. Y.—This invention consists in a device composed of a vibrating spring attached to a bed plate, between which spring and plate the reins may be readily inserted, and thereby held and prevented from getting under the horse's feet or otherwise entangled while the driver temporarily leaves the carriage.

MACHINE FOR BORING AND TENONING.—JAMES LEFEBER, Cambridge City, Iowa.—This invention consists in a combined boring and tenoning machine, adapted especially for the manufacture of wheels of carriages and other vehicles. It is also calculated for finishing or completing the wheel thereon, so that it need not be removed until it is finished. The fellies can be doweled thereon by placing a dowelling table on the machine.

CLOTHES DRIER.—J. C. CONNOR, Dover, N. H.—This clothes drier is light, simple in construction, cheap, and occupies little space either when folded or when open; and which at the same time is strong, affords a large amount of drying surface, and allows a free circulation of air among the suspended clothes.

ATTACHING KNIVES TO THEIR HANDLES.—WILLIAM CLAYTON, Bristol, Conn.—This invention consists in passing the tang of the blade through the handle of the knife and securing it at the rear end of the handle by a nut, which screws on a screw thread cut on the end of the said tang, by which means the knife is made strong and firm; and it possesses the quality of being fastened without the use of cement or rivets, and produces a neat and comely-appearing article of cutlery.

EARTH SCRAPER.—NELSON PECK, Jay, N. Y.—This is an improved scraper for moving earth from one place to another in making and repairing roads, and for other purposes.

FENCE.—GEORGE S. CARLISLE, Columbus City, Iowa.—This invention consists in attaching braces to each other and to the ends of the adjacent panels of fence, for the purpose of firmly sustaining the fence, and at the same time enabling said fence to be readily removed and again set up in any desired situation.

SAFETY WHIFFLETREE.—W. A. HARRALL, Washington, Ind.—This invention has for its object to furnish an improved whiffletree, by means of which the horse may be released from the carriage whenever he becomes so unmanageable as to render it advisable.

MACHINE FOR BORING WELLS, ETC.—COLIN MATHER, Manchester, Eng.—This invention relates to a machine for boring wells or other holes in the ground, in which a flat drill rope or band is used, in contradistinction to the ordinary round rope and metal rods, the drill being arranged in such a manner that it makes a part of a revolution after each blow. The drill rope extends over a pulley which is secured to the top end of a piston rod, to which a rising and falling motion is imparted by the action of steam on a piston fitted into a suitable cylinder.

DRILL FOR BORING WELLS, ETC.—COLIN MATHER, Manchester, Eng.—This is a drill the cutting part of which is composed of a series of flaring cutters or chisels, secured in a suitable head in such a manner that a hole of considerable diameter can be bored, and that the cutter can be readily kept in order, each of the chisels being made so that it can be removed independent of the others, and sharpened or replaced by a new one at short notice, and with little loss of time or expense.

PORTABLE RAILROAD.—JOHN W. PETELER, Sheppach, Bavaria.—The object of this invention is a portable railroad, which can be readily transported from one place to another, and easily put down or taken up, and which can be used with great advantage for passing over marsh land, for building roads, or for engineering or building operations in general.

LOOM.—ISAAC N. HODSON, Mount Pleasant, Iowa.—This invention consists in the arrangement of a grooved roller, to which an oscillating motion is imparted by the action of a suitable toe or tappet attached to the lay or batten, and which are provided with double, triple or multifarious cranks intended to impart the required rising and falling motion to the heddle frames, in such a manner that two or more heddle frames can be operated by the motion of the batten, and the construction of the loom is materially simplified.

CHURN.—JACOB H. MENDENHALL, Cerro Gordo, Ind.—This invention has for its object to furnish an improved churn, easily and conveniently operated, and which will do its work quickly and thoroughly.

WAGON OR CARRIAGE GEARING.—J. R. MCALISTER, Richville, N. Y.—In this invention the reach-pole is dispensed with, and the wagon body is connected with the front and rear axletrees by means of four or more trace rods, in a novel and peculiar manner, whereby strength, durability, lightness, and cheapness are secured, and the pitching, either backward or forward, of the wagon-body is entirely prevented.

TELEGRAPH INSTRUMENT.—ALONZO CHASE, Syracuse, N. Y.—The object of this invention is to enable persons who are not skilled in or acquainted with the system of telegraphing to signal any message over the wires of a line of telegraph.

BAG HOLDER.—GILBERT E. CORBIN, St. John's, Mich.—The object of this invention is to produce a bag holder that will be susceptible of adjustment to any of the varying sizes of the bags.

ORGAN REED.—A. M. BRUSH, Clayton, N. Y.—This invention consists in the use of silver in the manufacture of organ and other similar reeds, whether alone, or mixed, or alloyed with other metals.

COMBINED TOILET STAND AND MIRROR.—W. H. HUGHES and H. L. LENT, Peekskill, N. Y.—This invention consists in combining with a toilet stand a mirror, in such a manner that its height from the top of the stand can be adjusted to suit the wishes of the person who is using it, and according as may be deemed necessary.

DIES FOR HEADING BOLTS.—JOHN W. SIBBET, Cincinnati, Ohio.—The object of this invention is to furnish dies for heading bolts of any size or length, having heads of any desired shape, and square or round necks; and it consists of improved dies formed in parts, and in the combination with the said dies of headers for forming the heads.

CLOTHES-WASHING MACHINE.—M. J. LOWRENTZ, Leavenworth, Kansas.—This invention is for washing clothes, and consists in a novel construction and arrangement of parts, whereby clothes may be thoroughly cleaned without injury and with but a moderate expenditure of power.

SCHOOL DESK AND SEAT.—GEORGE MUNGER, New York City.—This invention relates to a school desk and seat, which is constructed of a number of pieces joined together by dovetails or flat tongues and grooves, so that the desk or settee can be readily taken apart and packed in a comparatively small compass, and when it is to be used it can be put up by any person of ordinary mechanical skill without much loss of time.

HYDROCARBON VAPOR MACHINE.—JAMES F. SPENCE, Williamsburgh, N. Y.—This invention relates to a hydrocarbon vapor apparatus, in which two air wheels are used, working in one and the same case, and operating in combination with said case in such a manner that a steady light is produced without the aid of a gas receiver. The supply oil vessel is provided with a jacket to receive steam or hot air, in such a manner that the oil is heated before it is admitted to the machine, and the formation of the illuminating mixture is considerably facilitated. The hot air is generated in a chamber attached to the machine, and heated by a burner supplied with gas from the machine. The quantity of oil contained in the machine is regulated automatically by a float, carrying a stop valve, which closes the mouth of the feed-pipes as soon as the liquid in the machine has reached the desired hight.

SAND PUMP.—COLIN MATHER, Manchester, England.—This sand or shell pump is provided with a cylindrical barrel similar to that of an ordinary pump, and provided at its lower end with a valve or clack opening upward, somewhat similar to that in ordinary pumps, but instead of being fastened to the cylinder, its seating is in an annular frame, which is drawn up against the end of the cylinder by a rod passing up to a wrought iron guide or bridge at the top, where it is finally secured by a cotter or key.

HOOP-SHAVING MACHINE.—J. G. MORGAN, Colton, N. Y.—This invention has for its object to furnish an improved machine, by means of which hoops may be shaved conveniently, quickly, and accurately.

ELECTRIC BATON.—R. G. PIKE, New York City.—This invention relates to a contrivance for lighting gas by electricity, which may be considered in two parts, viz: the electric baton and the deflector, the former being the generator of the electric spark, and the latter the means to bring said spark properly in contact with the gas.

APPARATUS FOR RECEIVING, DISCHARGING, AND TRANSFERRING FREIGHT, ETC.—NEWTON A. PATTERSON, Kingston, Tenn.—The object of this invention is to furnish an improved apparatus for receiving and discharging freight from railroad cars and vessels, and for transferring it from one place to another, whether it be about the depot, about the wharf, or in any other place.

BED CHAIR.—E. HAMBUJER, Detroit, Mich.—This invention consists of an improved bed chair formed by combining the back seat, cushion, and legs with each other and with the frame of the chair, in such a way as to furnish an easy chair, which may be readily converted into a comfortable bed.

NECK TIE.—JAMES K. P. PINE, Troy, N. Y.—This invention relates to a substitute for the ordinary neck ties, and consists in making them of paper, card-board, or other similar materials and ornamenting them with any suitable design, in imitation of the ordinary neck ties, etc.

FENCE.—CHARLES LEE, Winchester, Ohio.—This invention has for its object to furnish an improved fence, light, strong, and durable, and which may be easily and quickly put up and taken down, and consists principally in the cast-iron flanged loops in combination with the posts and boards of the fence.

Notes and Queries

Watchmaker, of Mass.—The superior finish of the steel work in English watches is simply the result of patient labor. Oil stone dust, crocus, rouge, Vienna lime, etc., are the materials used, applied by means of block tin, glass plate, or boxwood. They finish by hand and we by machinery.

L. G., of Pa.—Lathes built by the best makers always have a belt guard at the rear of the small pulley of the cone. If your counter-shaft is in line with your head arbor, and you use both hands in shifting the belt, there is no necessity of tearing the belt in the gear. The destruction of belts you speak of is simply the result of culpable carelessness. We have used lathes for many years without injury to the belts.

E. H. S., of Ohio.—Galvanizing, probably to suit your purpose, can be effected by cleaning the iron with acid, sulphuric or hydrochloric, and water, and plunging it in a bath of melted zinc. The deposition of the zinc by means of the galvanic battery is more effectual, but more costly and troublesome.

J. D. S., of——.—Gun barrels are blued by heating in a charcoal fire. Packing them in boxes with sand before going into the fire insures a more even color.

A. M. S., of N. Y.—We know of no way to blue iron or steel without heating except by a lacquer.

L. M., of Mass.—Nine-ninths is a unit and not a fraction. Written 9-9 it may be technically considered fractional, but is so only in form. One hundred is no more a fraction when expressed thus: 99 9-9 than when expressed as 100.

J. H. F., of N. Y.—There is no particular reason except that of convenience in placing a beam engine of a steamboat fore or aft the shaft. It will work equally well in either position.

Mechanic, of Ohio.—Send to Henry Carey Baird, 406 Walnut street, Philadelphia, and he will furnish you what you need for the study of draughting.

H. C., of Mass.—There are conflicting statements as to the shortest trips to Europe by steamers and sailing vessels. We cannot afford the time to study and decide the question you ask.

E. H. L., of Mo.—Bleaching powder is not manufactured in the United States, and the manufacture is profitable only where extensive alkali works are in operation. The oxide of manganese is not mined in this country. One of the most valuable mines of chrome iron in the world is found in the State of Maryland.

W. A. K., of Ohio.—An alloy of zinc and iron can be made by any one of the methods used for making brass, substituting the iron for the copper. But as the melting point of the iron is higher than that of the copper, the difficulties will be greater. We are not aware that such an alloy is used in any of the arts.

D. P., of Ohio.—Silicate of soda has the same properties as silicate of potash, and a solution of it is an article of commerce under the name of liquid quartz. You can buy a small quantity cheaper than you can make it.

N. D., of N. J.—The highest authorities in chemistry have adopted the changes in the nomenclature, and use such expressions as sulphate of sodium, carbonate of calcium, etc. The school books are not the best sources for the latest progress of science.

SPECIAL NOTICES.

John R. Moffit, of Chelsea, Mass., formerly of Piqua, Ohio, having petitioned for the extension of a patent granted to him on the 30th day of November, 1838, for an improvement in grain separators, and reissued on the 17th day of May, 1859, in three divisions—A B and C, numbered respectively 715, 716, and 717—this petition being for the extension of the reissue, B, numbered 716, it is ordered that the said petition be heard on Monday, the 12th day of November next.