## ENGINEERING INVENTIONS.

A pump has been patented by Mr. Nathan Hemenway, of Napa City, Cal. It is intended more especially for raising water from deep wells and mines, and provides for arranging together several pumping cylinders of twenty-five or thirty feet length each, the lower one supplying the one next above, and each cylinder thus becoming a water reservoir.

A spark arrester has been patented by Mr. Abraham O. Frick, of Waynesborough, Pa. The cone of the smoke stack has an inside sleeve arranged concentrically around its upper end, and above this is a deflector cheaply made of two pieces of sheet iron, which performs the double function of deflector and receptacle for escaping sparks, being itself very light and simple.

An improved car coupling has been patented by Mr. Thomas C. Jones, of Willows, Cal. The drawhead has a U-shaped drawbar connected with the drawrod, with which is a coupling hook held down by a spring and a bow and yoke. With the coupling hook is a lifting bar, a lever with a keeper and catch bar, and an upright bar and its keeper, so the cars can be uncoupled from the side of the track or the top of the car.

An improved car brake has been patented by Mr. Josiah Harding, of Autofagasta, Chili. A screw staff is connected to the elbow lever by a swiveled bearing, the lever being connected by its long and short arms to the front and rear brakes of the car, the shaft by which the lever is made to work the brakes forming one of the brake bars, and the devices employed being almost identical for any form of car, so the hangers, screws, and other parts may be interchangeable.

An electric railway signal forms the subject of a patent issued to Messrs. James C. Upham, of North Sydney, and John P. Rogers, of Elmsdale, Nova Scotia, Canada. The road bed is provided with electric conductors connected together to form blocks of any suitable length in addition to the rails, which are arranged as continuous conductors, and the engines are provided with batteries, electric signaling apparatus, and circuit closing devices.

## MECHANICAL INVENTIONS.

A machine for drawing bars has been patented by Mr. John S. Griffin, of Cleveland, O. The machine is intended for drawing iron and steel bars for heavy shafting in one continuous operation, the bars being cut the proper length, their ends heated to allow the thickest part to be drawn clear through the dies, when the operation is performed automatically.

Clothing for pulleys forms the subject of a patent issued to Mr. Gilman Jaquith, of Maysville, Ky. This invention provides for increasing the friction on the driving surface of the pulley, and making a better bite or hold for the band, and for this purpose a thread is first made on the pulley surface, then the surface is treated with a composition coating, after which strong thread is wound on, and then another composition coating added.

## AGRICULTURAL INVENTIONS.

A combination plow has been patented by by Mr. Jeff. D. Pace, of Arcadia, La. In combination with a plow shoe and standard is a brace plate, flush with the straight side of the shoe, some distance below its upper edge, and receiving an angled plow plate, so the plow may be readily converted from a scooter into a mould board or turning plow.

A grain sacker has been patented by Mr. Richard H. Purnell, of Rosedale, Miss. This invention provides that, when cotton seed is thrown into the machine in its usual lumpy and mixed condition, they will be separated, the seed deposited in a sack, weighed and held to be sewed, the machine being also adapted to separate shelled corn from the cobs, and to sack and weigh the former and other grain.

A roller attachment to grain drills has been patented by Messrs. James M. Wishart and William F. Buzick, of Topeka, Kansas. This covers such improved arrangement of roller attachments to grain drills as will give a better action, and be more substantial and durable than those now in use, the weight of the frame being equally distributed on the rollers, while the rollers are free to assume any position the irregularities of the surface may require.

## MISCELLANEOUS INVENTIONS.

A sofa bedstead has been patented by Mr. Joseph McGrath, of Newton, Kansas. This invention covers a new and improved hinge for hinging the removable seat or top of a sofa bed, lounge, extensible chair, or other like piece of furniture, to the seat frame.

A driving cuff and wristlet has been patented by Mr. Byron E. Northrup, of Broadalbin, N. Y. In combination with a gantlet or cuff is a flexible wristlet with an elastic webbing, the wristlet being made of kid or other suitable leather or of woven or knit fabric.

A gate operating apparatus has been patented by Mr. Henry Ziegler, of North Lima, O. This is a device for opening and closing gates without dismounting from a carriage, by pulling a rope at either side stretched along the side of the roadway from the post whereon the gate is hinged.

A napkin ring and holder has been patented by Mr. Gus A. Bahn, of Austin, Texas. It consists of a yoke-shaped piece of metal with a hinged section connecting the two ends, and serving as a ring, in combination with a clasp for holding the napkin, if desired, at the throat.

A cigar stand has been patented by Mr. Charles N. Swift, of New York city. This invention covers an upper and a lower plate, suitably held apart, perforated for the reception of cigars, and made adjustable for cigars of different lengths, so it will hold the cigars without danger of breaking the wrappers.

An adding machine has been patented by Mr. Albert K. Barmore, of Benton, Texas. The invention covers a special construction and combination of parts in a machine, of which the wheel is actuated by the operator to advance at each movement as many teeth as there are units added by that movement.

A shot case has been patented by Mr. Quincy A. Ellis, of Gatesville, Texas. The case is tapering, and so hung upon a rod that its spout will be upward, but this is fitted with a device which enables a definite quantity of shot to be withdrawn, on tipping it down, without weighing, for the convenience of retailers.

A machine for extracting and cleaning the fibers of plants has been patented by Mr. Philip Cohn, of New Laredo, Tamaulipas, Mexico. Dull edged knives are arranged spirally upon a roller, fitted to revolve at a high speed, whereby the outside of the plants is broken and scraped, and the soft parts or meat of the inside is also scraped off.

A machine for scraping and cleaning intestines has been patented by Mr. Andrew M. Woods, of Shiloh, S. C. A rotating drawing roller is fitted with a suitable clamping device for grasping an end of the entrails, and a contiguous die plate, through the apertures of which the entrails are drawn by the revolution of the roller.

A combined automatic floor and safety clutch for elevators has been patented by Mr. Thomas H. Wood, of Philadelphia, Pa. This invention provides for a safety floor for elevator shafts, which is opened and closed automatically as the car rises and falls, with which is combined a safety clutch to hold the car whenever the cable breaks or gives way.

An apparatus for revivifying bone black has been patented by Mr. Edward P. Eastwick, of New York city. This invention seeks to effect a further saving in fuel than is possible by present methods, so the heat given off from the bone black coolers is utilized and also the heat contained in the heated air that has been passed through the bone black in the drier.

An extensible latch has been patented by Messrs. Brommie Copeland and Frank Wright, of Salem, N. Y. An extensible latch bolt, with a block swiveled on a screw, and connected by the latter to a piece provided with a screw threaded aperture, affords means by which the bolt can be adjusted to extend or project a greater or less distance from the edge of the lock casing.

A striking mechanism for eight day clocks has been patented by Mr. Edward A. Muller, of Louisville, Ky. This invention covers special details in the construction of the alarm mechanism, whereby the quarter, half, and three-quarter hours are struck on a gong and the full hours on a spiral spring, thus making different sounds; the clock also has a second hand and an alarm.

A whip holder has been patented by Mr. St. George J. Boswell, of Quebec, Canada. The socket is fastened to one end of lazy tongs, the opposite end of which is secured to the vehicle and connected with devices for extending the lazy tongs, so the whip can be brought within easy reach of the hand when required, or the holder will be out of the way when not in use.

Watering apparatus for hot houses forms the subject of a patent issued to Mr. Warren H. Howe, of Marlborough, Mass. This invention covers a system of distributing perforated pipes suitably suspended in the house, connected with an elevated supply tank or pump, and with suitable regulating cocks, whereby the moisture and temperature of the air may be readily regulated.

A wire stretcher has been patented by Messrs. William H. and Jeremiah W. Bliss, of Hamilton, Mo. The invention covers a reel support, brake, and guides, to attach to a wagon box to be driven along the line of fence posts, for delivering wires to be attached to the posts and for stretching them, the reels being readily taken out when desired, and the wire being wound thereon with facility.

A refrigerating counter for bar rooms has been patented by Mr. Charles E. Crockett, of Waupun, Wis. This invention combines with a refrigerating counter an ice box of two or more sections, with hollow walls, each section having a horizontally projecting work board. One section also has pigeon holes for bottles, spices, sugar, etc., and an air forcing apparatus is provided for to force air around the hollow walls.

A cockle separator has been patented by Mr. James M. King, of Rochester, Minn. There is a connected series of inclined screens, having detents in combination with a series of transversely arranged guttered bars, within which the detents are located; there are also imperforate smooth-faced plates secured to the lower or forward sides of the detents, in combination with the guttered bars.

A fire escape ladder has been patented by Mr. Arnold M. Downing, of Oneida, N. Y. It consists of a folding ladder formed of a series of linked rods united at every second joint by a transverse rod or rung, forming a ladder which can be folded very compactly, so that a ladder a hundred feet long can be contained in a box eighteen inches long, eight inches wide, and four inches deep.

A tree protector has been patented by Mr. Franklin R. Hogeboom, of Brooklyn, N. Y. This invention covers an incircling trough, made in semicircular sections, to hold kerosene or other insect destroying fluid, which may be readily attached to the tree at a distance from the ground; flexible flaps are provided, to conform the protector to the size or irregularities of the tree, which is thus made secure against the ravages of caterpillars and other insects.

An ironing machine has been patented by Messrs. Henry Podger, of Bromley, County of Kent, and William H. Davey, of Highgate, Middlesex County, England. It is specially adapted for ironing shirt fronts, collars, etc., and consists mainly in the combination, with a vertically adjustable and horizontally moving table, of a longitudinally reciprocating iron; there is also a gas heated iron, double faced and reversible, so that one face is being heated while the other is used.

A dental engine attachment has been patented by Mr. Jesse W. Norwood, of Greenville, S. C. The invention covers the peculiar construction and arrangement of a pneumatic pump and the means for regulating its stroke, as well as means for supporting it and throwing it into and out of gear, to better adapt such engines for using the pneumatic plugger. A dental plugger has likewise been patented by the same patentee, in which the mallet operates as a piston in the hollow handle, and a sheath takes the frictional wear which would otherwise rapidly reduce the soft metal, the holder of which is adapted to form an air tight joint with the chamber of the handle.

## Business and Personal.

*The Charge for Insertion under this head is One Dollar a line for each insertion; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in next issue.*



## Special.

### JUDGE KELLEY'S VIEWS.

The Hon. William D. Kelley, of Philadelphia, has long been known for his fearless advocacy of the right, and his uncompromising opposition to the wrong. Since 1860 he has been a member of the House of Representatives of the United States. He has always been known as a man of positive counsels, a powerful speaker, an earnest debater, an able thinker, and an unwearying worker.

Judge Kelley has been so long and so prominently before the American people, that his sentiments on any important subject are valued, even by those who do not agree politically with him. He is emphatically a man of the people. Elevated to the Judgeship many years ago, he proved to be a man of such unswerving integrity, such earnestness of purpose, and such depth of conscientious conviction, that he was for a long term of years retained on the judicial bench; and on his desiring to retire to the comparative seclusion of an extensive law practice, was told by the people that he must serve them in Congress. For twenty-three consecutive years his Congressional service has been rendered with singular fidelity and purity. His utterances are well known to come from his inmost heart, and his opinions to be the result of the most mature deliberation. The judgment of such a man carries with it immense weight, and his views, whether on public affairs or private interests, are entitled to the respect and esteem of all thoughtful persons.

Judge Kelley's power of resistance to obstacles which would have put an ordinary man in his grave has long been the subject of comment, not only among his friends, but by the public generally. Such was his physical condition ten years ago, that it was feared that the next Congressional session would be his last.

For many years the Judge had been afflicted with the most obstinate catarrh, which defied all the old fashioned remedies, and which would have entirely laid on the shelf a less indomitable man than himself. His life became almost a burden to him, and he was nearly at death's door. To-day, although at an age when most men begin to show signs of wearing out, he is hearty and vigorous, and as ready and as able to perform his arduous Congressional duties as he was twenty years ago.

An account of Judge Kelley's remarkable case, as given by himself, will be of interest to all who are suffering with Catarrh, and who are wondering what they shall do to get rid of this horrible disease. One of our editors recently spent a morning with Judge Kelley at that gentleman's home, in West Philadelphia. To him the Judge communicated the history of his illness and recovery, substantially as follows:

"I had, as a hereditary victim t Catarrh, suffered for years. I was subject to violent paroxysms of coughing. Straining for relief had produced abrasion of the membranes and daily effusion of blood from my throat. For four years I passed a portion of each Congressional vacation in the Rocky Mountains or on the Pacific coast. While there, I found relief; but on my return to tidewater, the disease appeared with apparently renewed vigor. My breathing power diminished, so that in the early summer of 1873 it was little more than a panting for breath. About two years before this my attention had been called to Compound Oxygen Gas as then administered by Dr. Starkey. A friend who had great faith in its efficacy advised me to try it. On reading Dr. Starkey's advertisement I threw the little book aside, and declined to resort to the treatment, on the ground that it was a quack medicine which proposed to cure everything, and was consequently without adaptation to any particular disease. I grew worse, and in the summer my breathing was so short that a cough, a sneeze, or a sigh produced such acute pain at the base of the left lung, that I felt it necessary to close up my affairs, as I did not believe I could last for sixty days. Nor do I now believe I would have lasted for that time, had I not found a potent curative agent.

"I had lost none of my prejudice against the gas, as a medicine; but in very desperation, seeing that it could not make me any worse than I was, and as medical treatment had utterly failed to meet my case, I concluded to try it. After a thorough examination, Dr Starkey, to whom I was then a stranger, said: 'Sir, I have no medicine for either form of your disease (alluding to the Catarrh and the bleeding at the throat), but if you will give me time I will cure you.' My response was a natural one: 'You are frank in saying you have no medicine for either form of my disease, and yet you propose to cure me. By what agency will you work this miracle?' 'The Oxygen Gas,' said he, 'is not a medicine. It has none of the characteristics of medicine compounded of drugs. These create a requirement for continual increase of quantity to be taken; and, if long persisted in, produce some form of disease. But the gas produces no appetite for itself. It passes by inhalation into the blood, and purifies and invigorates it. The system is thus enabled to throw off effete matter. You will find by experience, if you try the treatment, that it will not increase the rapidity of the action of your pulse; though the beating thereof will be stronger under its influence.'

"This explanation removed my objections, and I could see how such an agent could operate beneficially in cases of widely different symptoms and character.

"Dr. Starkey said that the cells of my left lung were congested with catarrhal mucus, and that he believed the gas would at once address itself to the removal of the deposits, and the restoration of my full breathing power.

"I entered on the use of the treatment, and at the end of three weeks, with an improved appetite, with the ability to sleep several consecutive hours, with a measurable relief of the pain in the lung, and with Dr. Starkey's consent, I made the tour of the lakes from Erie to Duluth, in company with my venerable friend Henry C. Carey. Returning, we visited friends in St. Paul, Chicago, and Pittsburg.

"Notwithstanding the intense heat, I remained in Philadelphia during the summer, and inhaled the gas daily, with the happiest effect. Before Congress assembled in December, my lung had been relieved of much of its nauseous deposit, and I was able to breathe without pain.

"Without detaining you with detail, I may say that in the progress of my recovery I had occasional hemorrhages, which always preceded a palpable step in the progress of recovery; so that I came to regard these unwelcome visitors as part of the remedial action of nature, assisted by Compound Oxygen Gas.

"I am now more than ten years older than I was when I first tested the treatment. I have had no perceptible effusion of blood for more than six years. I breathe as deeply as I did at any period of my young manhood, and my natural carriage is so erect as to elicit frequent comment.

"I have regarded my case as a very extraordinary one, and yet I have had under observation one which I regard

as more remarkable than my own. That of a young lady, who had been paralyzed by fright or contusion when her horses ran away and her carriage was destroyed; and to whose father Dr. Starkey, after examining the case, said she was beyond the reach of human agency. I know her now as a happy wife and mother, restored to most excellent health.

"You may judge of my restoration to health by the contrast between the results of some of my recent Congressional debates, compared with what they were in 1874. In that year when I spoke in the House in favor of the grant by the Government to the Centennial Exhibition, I was so prostrated by the exertion, that my dear friend, the late Col. John W. Forney, left the gallery, in which he had been sitting, in order to come to the door of the hall to assist in relieving me when I should fall. I found, on quitting the floor, that there had been a general fear that in my zeal I was passing beyond the bounds of prudence.

"But on the fifth of May, 1882, when submitting an argument in favor of a Tariff Commission, I held the floor for nearly three hours, though parts of the debate might be characterized as a wrangle between myself and others; and as I did not obtain the floor until the afternoon, I surrendered it, because the close of the day had come, when members' appetites told them that dinner was on the table. The evening was passed in my rooms, with a high degree of sociability, in which a number of young ladies and gentlemen from my district, who happened to be in the House during my speech, participated.

"On a recent occasion I addressed five thousand people in the Philadelphia Academy of Music, without feeling any exhaustion. I have a hearty appetite, and am able to take abundant exercise. I sleep well, and have a far better color in my cheeks than I had ten years ago.

"You ask if I still continue the treatment. Whenever I am in Philadelphia, and feel a fresh cold, or suffer from the nervous exhaustion which follows excessive labor, I go to the office of Drs. Starkey & Palen, and resort to the treatment, and am never without the 'home treatment' in Washington. I have the highest confidence not only in the treatment itself, but in Drs. Starkey & Palen as gentlemen of skill, integrity, and good judgment."

To learn all about COMPOUND OXYGEN, write to Drs. Starkey & Palen, 1109 Girard Street, Philadelphia, for pamphlet setting forth full particulars.

## NEW BOOKS AND PUBLICATIONS.

THE AIR WE BREATHE, AND VENTILATION. By Henry A. Mott, Jr., Ph.D., E.M. John Wiley & Sons, New York.

In this book are briefly presented some elementary truths, with a practical dissertation on ventilation by the aspirating system, or that which undertakes to withdraw the foul air, leaving the fresh air to take care of itself.

THE AMERICAN FLOUR MILL AND MILL FURNISHER'S DIRECTORY. E. Harrison Cawker, Milwaukee, Wis.

It is said a Washington Solon was recently "posed" on the question as to what manufacturing industry represented the most money in the United States, when his interrogator "enlightened" him by saying it was the milling industry. Now, the products of flouring and grist mills, by the census of 1880, were $505,185,000, representing, of course, more than the manufactures of any other industry, but the materials which these mills ground up cost them $441,500,000, which go to the credit of our agricultural production. The millers, however, do a big business; there are over 24,000 establishments, employing a capital of $177,000,000 and some 60,000 hands. To make a good directory of this great business is no small job, but this is what Mr. Cawker, of the *United States Miller*, Milwaukee, has attempted. There are over 25,000 flouring mills in the United States and Canada noted, and the book indicates in many instances the kinds of flour made, the capacity of the mills, the power used, etc. The book is evidently the result of great labor and studious attention to details.

## Notes & Queries

### HINTS TO CORRESPONDENTS.

No attention will be paid to communications unless accompanied with the full name and address of the writer.

Names and addresses of correspondents will not be given to inquirers.

We renew our request that correspondents, in referring to former answers or articles, will be kind enough to name the date of the paper and the page, or the number of the question.

Correspondents whose inquiries do not appear after a reasonable time should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them.

Persons desiring special information which is purely of a personal character, and not of general interest, should remit from $1 to $5, according to the subject, as we cannot be expected to spend time and labor to obtain such information without remuneration.

Any numbers of the SCIENTIFIC AMERICAN SUPPLEMENT referred to in these columns may be had at the office. Price 10 cents each.

Correspondents sending samples of minerals, etc., for examination, should be careful to distinctly mark or label their specimens so as to avoid error in their identification.

(1) A. B. W. writes: I have tried several kinds of rubber cement for soling and patching rubber boots and shoes, but they have not given satisfaction, the patches and soles coming off in a week or ten days' wear. Please inform me how to make a cement that will do this work satisfactorily? A. The ordinary rubber cement which is so much used by fine shoemakers is made by dissolving a quantity of gutta-percha in chloroform or carbon disulphide until the solution has the consistency of honey. Thin down the parts to be cemented, then spread a small quantity of the cement well over the parts to be joined. Warm the parts over a flame or fire for half a minute, bring the surfaces to be united together, and hammer well or clamp firmly. The cement dries in a few minutes.

(2) C. E. W. asks: 1. Is compressed air machinery very expensive? A. Pumps for compressing air that are in the market are large and expensive, and made to run by steam pump—and engine attached. 2. Can it be used to advantage in connection with a wind engine? A. A pump for a wind mill to work as a compressor has not yet been utilized that we know of, although there has been a great deal written and published upon that subject of late. 3. Could an amateur with a good screw cutting foot lathe and a reasonable degree of inventive genius produce a satisfactory machine for said purpose? A. An amateur could make a more or less perfect compressor according to his ability. 3. Will you be kind enough to give working drawings and description of a cheap compressor and receiver, together with a pneumatic engine? A. We could not give you designs or drawings suitable for your wants. A compression pump is nothing more in design than the ordinary suction pump with order of the valves reversed. The pneumatic engine for running by compressed air is not essentially different from a steam engine.

(3) M. O. K. asks for a formula for making marine glue for putting canvas on to a small boat. One that can be applied to the wood and, after it has set the canvas ironed on with a hot flat iron? A. In SUPPLEMENT, No. 158, are given a number of formulas for glues, including marine glue. The following may also be found suitable: 3 to 4 parts India rubber, dissolve in coal tar benzine, add to the thickish fluid 65 parts powdered seedlac. This glue must be heated to about 248° Fahr. before applying.

(4) C. W. H. asks for a receipt for making a paste that will keep paper labels on tin boxes? A. Use a dilute solution (1 to 20) of white gelatine or isinglass, or Starch paste with which a little Venice turpentine has been incorporated while it was warm.

(5) H. L. O. asks: How cold would this earth become if all heat was removed, both artificial and natural? A. The earth's surface would rapidly cool down to the temperature of space, if removed from the influence of the sun. We do not know how cold space is by any experiments or observations.

(6) S. M. asks for formula for making a good quality of baking powder?

A. Powdered cream tartar.....30 oz.
Sodium bicarbonate.....15 "
Flour.....5 "

All well dried; mix thoroughly, and keep dry.

(7) C. W. S. asks: What is the salt solution—salt dissolved in the nitrate of silver? Will this process do to strip the tin from tin cans, etc.? A. Salt solution is ordinary salt dissolved in water. This solution precipitates the silver as chloride, which when fused with borax reappears in its metallic form. This process is not applicable to the separation of tin from tin cans.

(8) J. A. T. writes: In silver plating on steel and Britannia metal I found that the silver does not adhere firmly, but peels off when burnished. Can you tell me how to prevent it, or how those two metals are prepared before they are plated? A. Thoroughly clean the articles. Put on the first coating with a strong battery and strong solution (striking solution).

(9) J. S. McD. asks for a liquid that will not freeze, that can be used safely without injury to packing in hydraulic cylinders? A. Try alcohol, or water with a small percentage of glycerine added.

(10) H. B. C. asks why, if the positive pole of a sulphate of copper battery be connected with the negative pole of a bichromate of potash battery, or *vice versa*, little or no current flows between the remaining poles? A. It is simply because the current from one battery nearly or quite counteracts that from the other battery.

(11) J. W. B.—The following is given by certain authorities as the composition of Hostetter's bitters:

Calamus root.....2 pounds.
Orange peel.....2 "
Peruvian bark.....2 "
Gentian root.....2 "
Colombo root.....2 "
Rhubarb.....8 ounces.
Cinnamon.....4 "
Cloves.....2 "
Diluted alcohol.....4 gallons.
Water.....2 "
Sugar.....2 pounds.

(12) W. J. J. asks what makes the water crack and bang in steam pipes, especially in pipes for heating houses, stores, etc., when the steam is turned on? A. It is generally attributed to the condensation of the steam in the pipe. Sometimes a water hammer is produced by the current of steam driving the water before it.

(13) G. B. F. asks: What, if any, other transparent hard stone than a diamond crystallizes in dodecahedron form in which all of the natural facets are convex? Weight of stone I refer to is 128 grains, has no shade of color, is symmetrical in form, clear as a drop of spring water, so hard that emery will not scratch it, specific gravity a little over 3½. I pronounce it a diamond, having seen many rough diamonds, and this is the most perfect in its crystalline form which I have ever seen. What would be its probable value at present rates, if the stone is such as I have described? A. From the description, the nearest mineral that it would resemble besides the diamond is the white topaz. The hardness of the latter is but 8, while the diamond is 10, and the corundum gems, such as ruby, sapphire (the same composition as emery), are 9. Its value as a diamond cannot be estimated unless examined. In England, a diamond weighing 1 carat (3·2 grains troy) and of the purest water is worth, when cut and polished, £12. From this as a starting point, the price increases with the square of the weight multiplied by 0·12.

(14) N. J. S. writes: Can you recommend any application that will render the pine floor of a hemp twine mill imperfectly combustible? Covering with sheet iron is not practicable, "fireproof" paint will wear off, and salt solutions cause too much dampness. A. Nothing will readily penetrate a pine floor to a sufficient distance to be of any service. Better give the floor a coating of asbestos fireproof paint, and renew it from time to time in the worn places.

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