

**DOBBIN'S IMPROVED HARROW.**

The advantages claimed for the improved harrow illustrated in the accompanying engravings are as follows: It is easily portable, and need not be placed upon a wagon to transport it to and from the field; the construction of the teeth enables work to be done equally well at the sides as at the middle; the parts being hinged, the harrow can be folded into small space; the teeth are especially adapted to sod ground, and work well whether the soil be rough or smooth; by removing two or three teeth for each row, three rows of corn can be cultivated at once, and this can be carried on until the plants are several inches high.

The frame is made in two sections, each consisting of five parallel crossbars with transverse pieces, as shown in Fig. 1. The sections are hinged by the long bolt, A, passing through the overlapping ends of the bars. The ends of the transverse bars, B, are rounded to adapt them to serve as runners when the harrow is turned over to enable it to be drawn from place to place. The teeth are separately shown in Fig. 2, and are made wedge-shaped so that they will cut sods, etc., clear themselves of rubbish, pass through the ground easily, and enter it to greater depth. The shanks of these teeth are passed through holes in the bars and secured by nuts. Projections, C, on said shanks prevent the teeth from turning. To the front and rear bars are attached hooks, so that the harrow may be drawn with the inclined or the straight edges of the teeth forward, as may be desired. By means of the hook, D, the draught may be applied to the lower section when the two sections are folded together.

Patented through the Scientific American Patent Agency, January 22, 1878. For further information address the inventor, Mr. Melvin M. Dobbin, Box 216, Aurora, Ill.

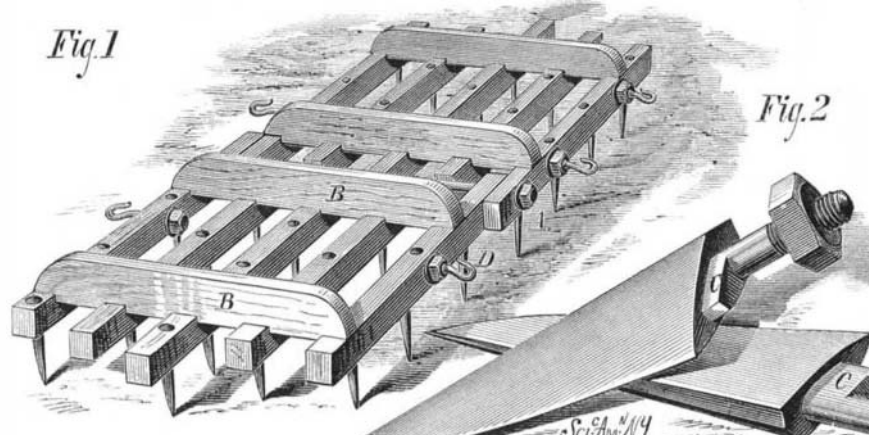
**Fish Hatching by Steam Power.**

At the meeting of the American Fish Culturists' Association, recently, Professor Milner gave an account of the process of hatching shad eggs by machinery, in operation at Havre de Grace, Md., where over eight million shad were hatched last year. The eggs to be hatched are placed in sheet iron cylinders, with wire netting bottoms, and half submerged in the river. The cylinders are suspended from the short arms of levers, and given a slow up and down movement by means of shafting carrying eccentrics acting on the long arms of the levers; the whole set in motion by a ten horse power steam engine. The engine and other machinery are carried by a large scow, anchored in the stream. The fish

so hatched proved hardy, bearing transportation well, even as far as California.

**Dangerous Kerosene.**

At an inquest in Jersey city, a few days ago, in the case of a woman killed by the explosion of a kerosene lamp, Professor Cornwall of Princeton College testified that he examined five samples of oil that had caused explosions in different parts of the State, and all gave off inflammable vapor below 100° Fah. One sample took fire itself at 85°, one at 99°, one at 105°, one at 106°, and one at 111°, the last being better than the standard adopted by the Produce Exchange. The flashing test he believed to be the only safe



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guide, his observations showing that oil standing a fire test of 110° will not stand a flashing test of 100°. Any oil flashing below 100° is dangerous.

Out of fourteen oils tested in one small town only four withstood this test. The oil causing the accident in question fell 16° below the lowest safe test. It is the naphtha or benzine left in the oil by refiners or put in by retail dealers that does the mischief. At the present price of kerosene in barrels the difference in cost is less than one cent a gallon between a safe oil standing 100° flashing test and an average oil of 110° fire test, even if the naphtha removed in refining were thrown away. A retail dealer can add ten per cent of benzine to kerosene having a reasonably safe flashing point without making the oil worse than the average oil that Professor Cornwall has tested. More than half the explosions he has met with have taken place when the lamp was burning quietly.

**Spontaneous Explosion of Toughened Glass.**

In the *Bohemia*, Professor Ricard, of Trchewan, tells the following tale:

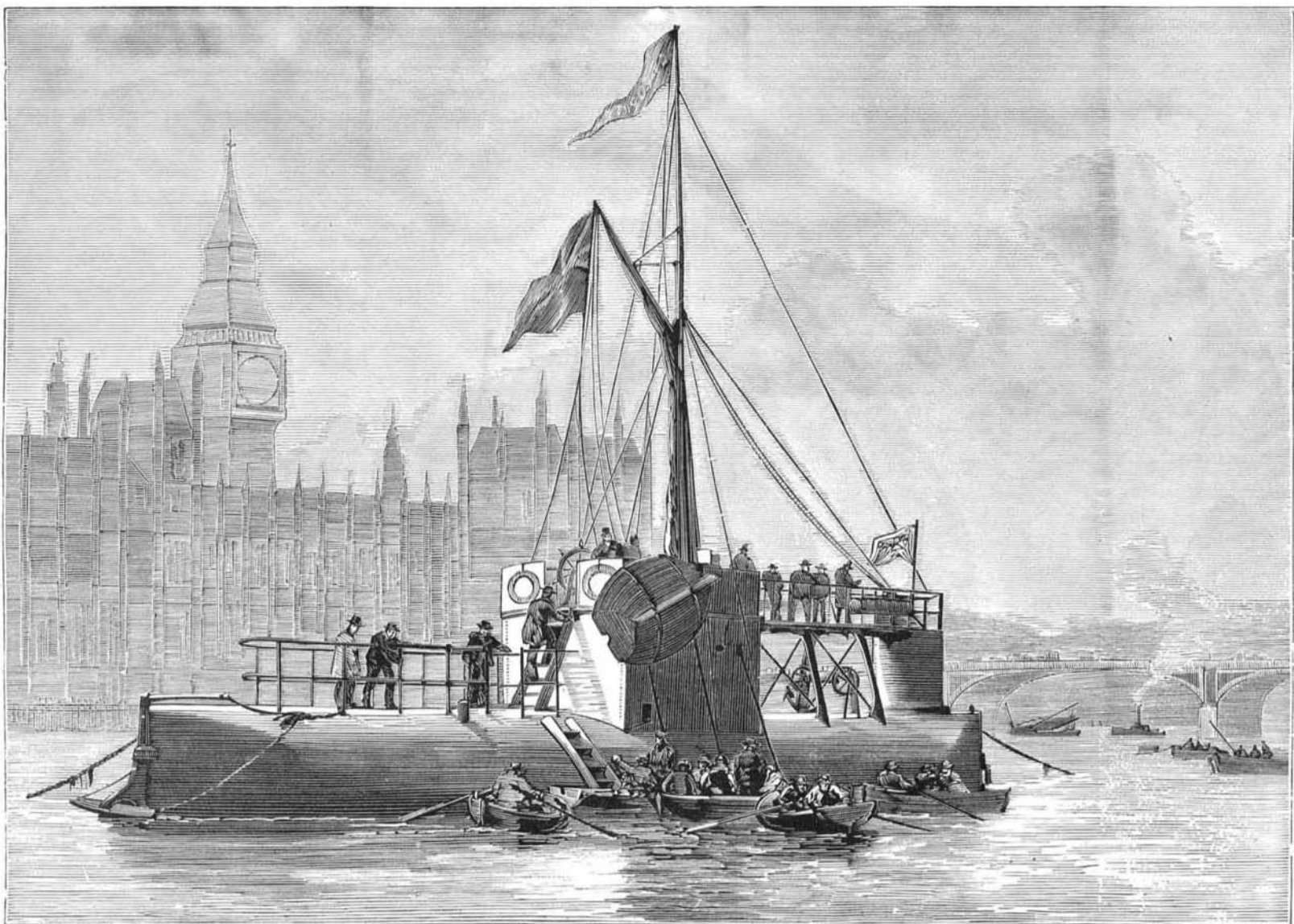
"A child's drinking glass was bought one day, at Saaz, for about seventy kreutzers, and for six months it sustained its character of unbreakable glass. But about nine o'clock one evening in the sixth month it was used in drinking *cau sucrée*, and was then placed, with a silver spoon in it, upon a large oaken table. Suddenly I heard from my room a violent explosion like a pistol shot, and a metallic sound. I ran in, and saw the whole floor strewn with needles and splinters of glass scattered thinly and widely—and not only upon the floor, but the bed, the table, the washstand, the carpet, and the clothes hung up were covered with these shreds. I looked everywhere for the cause of this explosion, and at last remarked that the child's drinking cup was gone. The empty glass had exploded—without apparent cause, without the approach of a light, and having a spoon in it—with such extraordinary force that the whole household was frightened. I relate this story, therefore, not only for the information of chemists and natural philosophers, but also of those families who believe that in this so-called unbreakable glass they possess remarkable and unspoilable playthings or useful household goods, to show them that when such an explosion occurs it may cause not only fright but mischief."

To the foregoing the editor of the *Polytechnischen Notizblatt*s adds that such explosions of toughened glass, often without any apparent cause, have been pretty frequent of late, and appear to be on the increase—a circumstance likely to prevent people from using toughened glass until

the cause of this evil property has been discovered and removed by a change in the process of manufacture. The explosion is, doubtless, caused by some change in the extreme tension of the fibers of the toughened glass, and it is probable that if the tension were removed the glass would no longer be tough.

**CLEOPATRA'S NEEDLE.**

The Egyptian obelisk, whose stormy voyage from Egypt to England we have already chronicled, has at length safely reached the Thames and will shortly be erected in London. The history of this stone is an eventful one. It was originally hewn out of the rose-colored syenitic granite in the quarries of Syene, and transported to Heliopolis, where, with a sister shaft, it stood before the door of the Temple of the Setting Sun. In the days of Cleopatra, the monument resumed its travels and was brought to the temple of Cæsar at



**THE CYLINDER SHIP CLEOPATRA.**

Alexandria. For nearly twenty centuries one of the two columns has remained standing. The other one, which is the subject of the present article, at some period not known fell down, and thus it has remained half buried in the sand until recently exhumed.

The obelisk was originally raised by an Egyptian monarch in order to record his victories over Asia and Ethiopia. The central line of hieroglyphics (all four sides are shown in the annexed engraving) contains the name and titles of the monarch, and records that the stone was erected to the god Ra, or the rising sun, and to Tum, or the setting sun, on the occasion of the Festival of Thirty Years at On or Heliopolis. It is probably one of the obelisks for which Thothmes appointed a daily offering of bread and beer, as if it were a statue or living being to be ever worshiped. The inscription states that it was capped with gold, but of course that portion has long since been stripped from it. The idea of removing this obelisk to England as a memorial of the departure of the French from Egypt was entertained at the beginning of the present century. Subscriptions were started for the purpose, and the work of removal was undertaken, but it was finally decided to abandon the attempt. In 1819 Mehemet Ali presented the stone to the British Government. Various examinations were made of it *in situ*, but nothing was done towards its removal. Finally, Mr. John Dixon, an English contractor, undertook the task; the money necessary was subscribed by private enterprise, and, as our readers are aware, the great shaft was built into a vessel and launched. The voyage to England was successfully achieved until the stormy Bay of Biscay was reached, when, during a heavy gale off Cape Finisterre, the towing vessel was obliged to abandon the obelisk craft to its fate. That fate, however, was not a descent to the sea bottom; for after drifting about for a day or two, the wandering monument was encountered and brought safely into a Spanish port by a merchant steamer. From this point it was towed to England, and the vessel in which it is inclosed now lies, as represented in our engraving, on page 199, on the smooth water of the Thames.

#### Music for the Insane.

The power of music to calm madness has been popularly recognized, at least since David was called to harp before Saul. Just what its real value may be, however, as minister to the mind diseased, remains undetermined. Introduced as an incidental or occasional influence, music has been no stranger in our asylums for the insane; but we do not know that any systematic and repeated experiments, to discover its sanitary effect in such disorders, were ever undertaken until those were begun in our public institutions on Ward's and Blackwell's islands, at the instigation of Mr. Pattison, the pianist.

The fifth of these experiments was made a short time ago in the Women's Asylum on Blackwell's Island. At first the patients—selected cases—were submitted to the influence of music singly; afterward a general musical entertainment was given to several hundred patients in a large hall; and, finally, the hall was cleared for dancing, and a large number of the patients enjoyed an old-fashioned "break down" for half an hour. The music was both vocal and instrumental, and the effect in the main was highly satisfactory. There can be no doubt that music influences more or less powerfully almost every grade of patients, the particular effect, in any case, depending on the nature of the music and the type of the disease.

The experiments were watched by a number of physicians and other experts, whose conclusions were that, in the main, suitable music temporarily tranquilizes the violent, soothes the nervous, and makes the stolidly melancholic cheerful and chatty; and it was thought not at all improbable that these beneficial effects might be made permanent by continuous treatment adapted to the individual cases. The intention now is to repeat these entertainments as frequently as possible during the year. They will certainly make agreeable breaks in the wretched life of the inmates of our public asylums, and afford them momentary enjoyment, even if they prove to have no lasting sanitary effect.

#### Homeopathic Insurance.

The mortality experience of the Homeopathic Mutual Life Insurance Company of New York, in the nine and a half years from July 18, 1868, to December 31, 1877, shows as follows: Policies issued to homeopaths, 7,927—deaths, 84; policies issued to non-homeopaths, 2,258—deaths, 66. This presents a homeopathic death rate of 1.060 per cent, against an allopathic death rate of 2.923—the latter being thus 175 per cent higher than the former. Data as meager as these, and without being accompanied with expression of associated conditions, are, of course, no basis for a conclusive opinion; but, so far as the data reach, they assert 2½ allopathic deaths to 1 homeopathic, under presumed equal conditions of ailment. To all of which the old-school physician will answer, *Credat Judæus Apella, non ego*; and in support of the denial of the non-Hahnemannian, in one respect,

#### New Mechanical Inventions.

Mr. R. M. Lamson, of Vevay, Ind., has invented a new Pitman Connection, which consists of a bushing fitted to a square aperture (in the knife head of a mowing machine, or in corresponding parts of other machinery), and bored to receive a cylindrical thimble, which is fitted to the square shank of the pitman.

An improved Squeezing Machine, for the use of bleachers, dyers, calico printers, etc., has been patented by Mr. William Birch, of Salford, England. The materials employed for the rollers of such machines are generally of wood, rubber, or similar material, and wear out rapidly. The inventor makes the rollers of metal, and to compensate for the absence of the flexibility possessed by the materials commonly used, contracts both the fabric to be squeezed and the face of the rollers into the narrowest possible limits, the rollers thus taking the form of disks,

and the layer of material becoming correspondingly thicker. To confine the latter, one of the rollers is provided with flanges which overlap the other roller.

Mr. Joseph Metais, of Chippewa Falls, Wis., has invented an improved Washing Machine, in which the new feature covered by patent is the mode of regulating the discharge from the machine. At the bottom of the suds box is an aperture in which fits a plug carried by an arm beneath the box. This arm is attached to a shaft, and the latter is operated by a lever which extends upward at the side of the machine. A spring catch locks this lever securely in place.

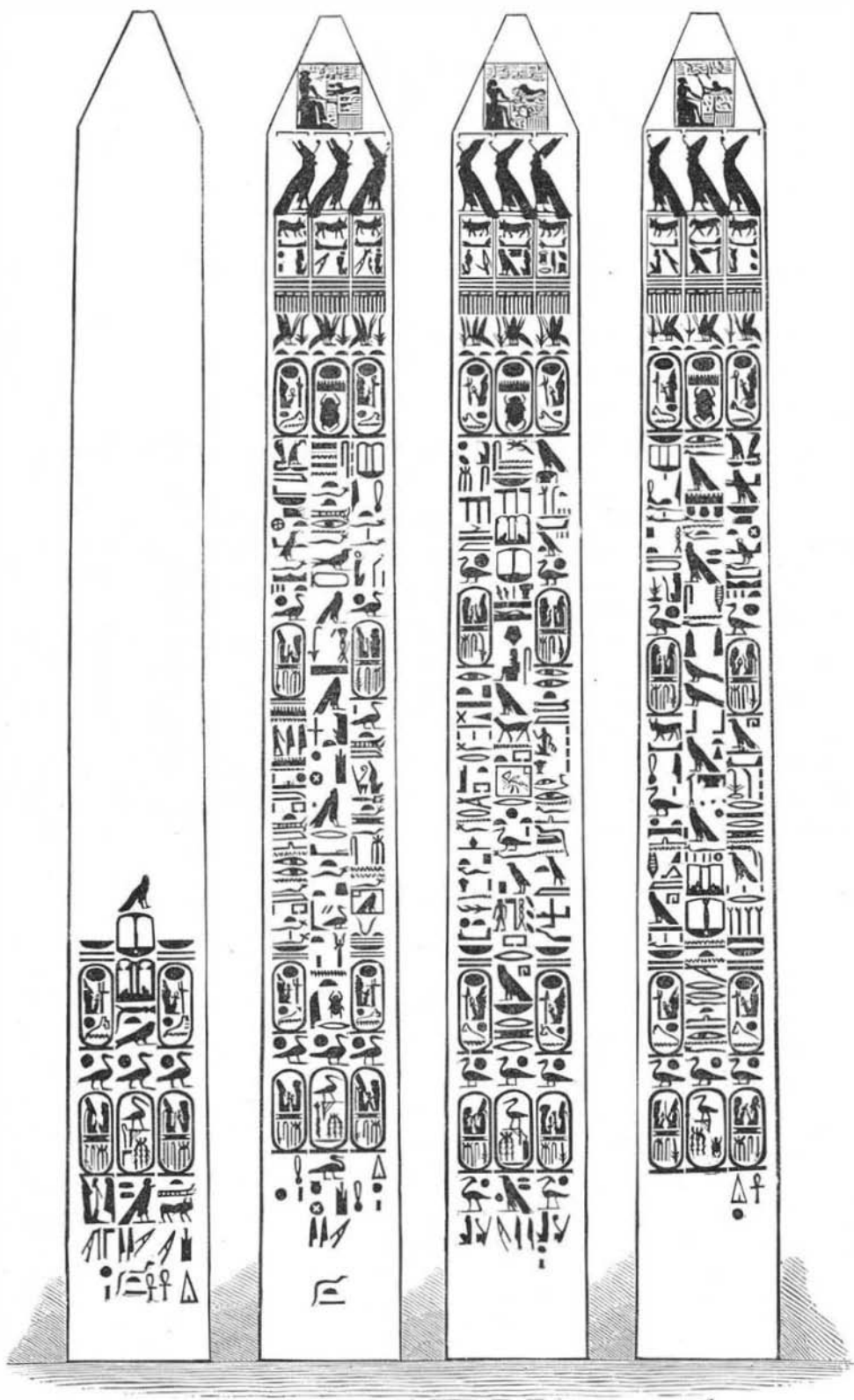
The object of an invention patented by Mr. F. C. Frost, of Anoka, Minn., is to furnish an improved device for changing the speed of the Feed for Circular Saw Mills, even during full run when desired, and to obviate the necessity of stopping to shift belts on different pulleys. Friction rollers of different sizes, mounted in a sliding frame, are so arranged that one or the other of these friction rollers may be thrown in and out of gear with the friction wheel of the feed shaft, by means of a hand lever.

In a new Washing Machine, invented by Mr. C. H. Horne, of Berwick, Maine, the improvement consists in combining with a vibrating dasher two hinged vibrating boards located at the ends of the tub and connected by a rod let into a groove in one side of the tub. The object is to cause the fabrics to turn over after each blow given to them by the dasher, thus causing them to present new surfaces at each stroke. This is effected by the vibrating boards added.

Mr. E. J. Northrup, of Warren, Pa., has invented a Casing Head for Oil Wells, which is so constructed as to prevent overflow of the oil and thus enable the operation of boring to be continued after oil has been reached. The drill is worked by a cable, which slides through a packing ring in the head. When oil is reached it is prevented from escaping around the cable by the packing ring, and is conveyed away by pipes screwed into the head below the packing. When the well is not flowing the packing ring is loosened and the cable moves freely through it. The various parts of the head are arranged in an original manner and with a view to a complete saving of oil, the adjustment of the packing being effected by screwing up or down a sleeve in the upper part of the head.

An improved Lubricator, invented by Mr. G. H. Flower, of Chicago, Ill., has an upright stand pipe which receives steam from the steam pipe, and an oil-conducting pipe which leads through the reservoir partly into the steam pipe. Connected with the reservoir, by the conducting pipe, is an indicator, consisting of a glass tube contained by a suitable support. The glass tube contains water, but its position is lower than the column of oil in the conducting pipe, so that the pressure of the water is overbalanced by it; and the oil, as it escapes in drops from the nozzle of the conducting pipe, may be seen rising through the water to the valve.

Mr. S. B. Elzey, of Hope, Ark., has invented an improved Pump, having two cylinders connected by a single passage, in which there are two suction valves and one discharge valve, which is common to both cylinders. There is also an



HIEROGLYPHICS OF CLEOPATRA'S NEEDLE.

is the fact that many life offices, limiting themselves to any particular school of medical treatment, will show about as many different death records as they themselves number. It is, however, creditable to the faith and intelligence of the followers of the great innovator that they seek a measurement of experience and court the testimony of statistics. Any sufficient comparison must, however, be made upon the basis of like numbers of persons of even ages afflicted with like diseases. It is a comparison and a decision which life insurance will one day make.—*American Exchange and Review*.

EXPLOSIVE DUST.—A correspondent of *Nature* writes: "There have been three explosions of malt dust in our mill within four years, not due to any carelessness in allowing a flame to approach the impalpable dust, but ignited by a spark from a piece of flint passing through the steel rollers, or from excessive friction in some part of the wood fittings. Such explosions are not uncommon."

arrangement of levers for opening the suction valves, to permit the water contained in the cylinder and discharge pipe to escape, so as to prevent freezing and stagnation in the pump.

**IMPROVED TRICYCLE.**

The tricycle is a machine that is likely to meet with a ready reception from those who desire to avoid the risks of a bicycle, and also from ladies who would wish to share in healthy out-of-door exercise. The specimen we now illustrate is that built by Messrs. Singer & Co., of Coventry, England, and has several special features of value. In the arrangement of the wheels, the driving wheel is central with the weight, and the two forward carrying wheels are equally spaced on either side of the rider. Where a side driving wheel is used, the weight cannot be employed with advantage, and the other side carrying wheel acts rather as a drag upon the tricycle.

The frame, light but strong, is formed by a fork in front, carrying the pivots and forks for the two forward wheels. After uniting, it arches over the main driving wheel, where it carries the fork for that wheel, which fork is also stayed to the main fore carriage fork. The seat may be either a saddle or a cushioned seat, shifted at will by unscrewing bolts and nuts in the end of the bent spring. The other end of the bent spring is attached to a vertical spindle passing through a socket in the forward forging. The height of the spindle may be adjusted by a set screw, so that the seat or saddle may be fixed to suit the rider's convenience in each case, so as to give the freest and most comfortable play to the legs. The position is arranged for the saddle, to resemble, as far as possible, that of a bicycle rider. The driving gear is given by two treadles on the end of two levers, which are made into bell cranks by a stayed arm at right angles to the treadle arms. These bell cranks give an effective pull upon the cranks of the main driving wheel. A splash board is fixed to the main rib passing round the main driving wheel, so as to protect the rider. The steering gear is a powerful and effective arrangement on the two forward wheels; the spindles are carried up through the sockets, and fitted with handles at the upper ends. The two forks of the two leading wheels have arms riveted to them, and these are connected by a rod, so that the pair of wheels must turn together and may be moved by either handle. A powerful foot brake is added to press upon the tire of the back wheel.

The special advantages of this tricycle may be summed up as follows: (1.) Safety; the position of the rider is exactly between the three wheels, and therefore in the most stable position to resist overturn. (2.) Direct action; that is, the driving is centrally with the position of the rider, and also centrally with the driven wheel. (3.) Power; the arrangement of levers is most effective for mechanical advantage. (4.) Efficient steering gear. (5.) Adjustable seat for any size of rider. (6.) A good powerful foot brake upon the large wheel. (7.) The alternative use of either a cushioned seat or saddle, for a lady or gentleman. This is certainly a formidable list of advantages, but they are confirmed by the construction of the machine, which, at the same time, is light and elegant. —Iron.

**SEA BEANS.**

Quite an important industry has lately sprung up in Florida in the preparation and mounting, as watch charms, sleeve buttons, ear drops, etc., what are commonly known as Florida sea beans. At St. Augustine the United States Government has a sea bean factory, where a large number of Indian prisoners are employed polishing these pretty and curious products—of the sea, it is popularly supposed.

"I can get no clew to their origin," said an intelligent Florida tourist the other day. "They are said to come from the sea. Do they grow there?" Another gentleman, who had been connected with a popular winter resort in Nassau, was quite positive that they were a marine product. The encyclopedias are silent with regard to them. Tourists and tourists' books, guide books, and similar sources of information fail to explain their origin. They are for sale in all the fancy stores and notion shops, and at all the street corners by curbstone dealers in cheap jewelry. Everybody knows what they are; but all that is popularly known about their origin is that they are picked up along the Florida beaches after storms, and that large quantities of them are brought from the Bahamas, where they are likewise washed up from the sea.

On splitting one open it was at once apparent that it could not have grown in the sea; no marine plant bears dicotyledonous seeds. It was clearly a bean of some sort, and if they did not grow along the beaches where or near where they are picked up, they must have grown elsewhere, and possibly may have been floated by the Gulf Stream from the South. Thither we sought for them; and to save other inquirers the labor of identifying them we will say that after much research we were able to trace them to their native soil.

They are well known in the West Indies, where they are variously called from their appearance ox eyes and ass's eyes. The earliest description of them and the tree which bears them appears in the second volume of the "Natural History of Jamaica," by Hans Sloane. The tree was found by him

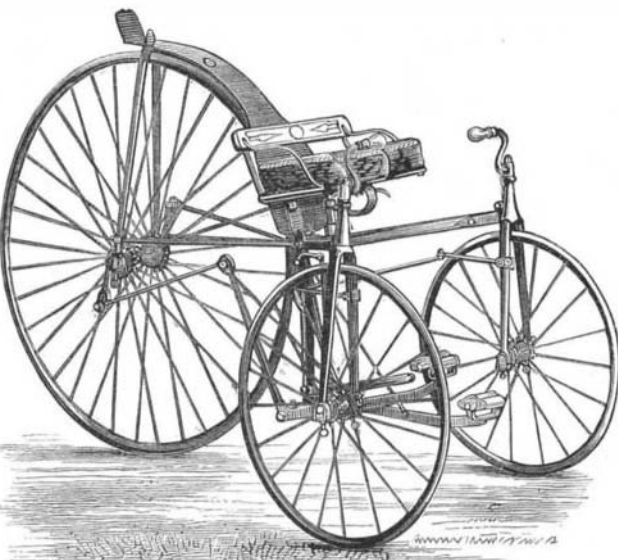
abundantly on low ground "by the river's side under the town and on the Red Hills very plentifully." His description of the tree, which he calls *Cytissus arboreus*, is quaint enough: "This tree has several trunks, each as big as one's leg, rising together, covered with smooth cinnamon colored bark, straight, eight or nine feet high, the branches rising upright, all round about beset with leaves coming out at an inch's interval, three always together, all taking their origin at the end of an inch-long, green, common footstalk," and so on to the end without a stop.

There appear to be several allied trees bearing the different beans sold under the common name. Linnæus describes the ox eye tree as *Dolichos urens*. De Candolle's name is *Mucena urens*. In his splendid "Flora des Antilles," De Tussè figures life size and beautifully colored the stem, leaf, flower, and fruit pod of the tree which yields the larger and handsomer beans, and describes the tree as *Negretia urens*. In many parts of the West Indies the superstitious carry ox eyes in their pockets, as like classes here carry buck eyes or horse chestnuts, and for the same purpose.

**New Inventions.**

An improved Picket Pin, which the inventor, Mr. P. J. Tweed, of Blair, Neb., claims cannot be pulled from the ground, and around which the tedder rope cannot be wound or twisted, has recently been patented. A corkscrew shank gives a firm bearing in the ground, and the rope is swiveled to a washer in a hollow head having a central aperture in its top.

Mr. M. H. Smith, of Ithaca, N. Y., has invented an improved Device for Attaching Harness to the Shafts of horse trucks, buggies, and other vehicles drawn by one horse, the



IMPROVED TRICYCLE.

operation being accomplished by simply dropping the thills. The apparatus consists of a flanged and spring cushioned socket plate, which is pivoted to a plate clamped to the shaft, and carried, by the lowering of the shaft, over a recessed button on a side plate of the harness, so that a spring catch on the socket plate locks to the button of the side plate.

An improved Temporary Binder, or file for magazines, letters, papers, etc., has been patented by Mr. H. E. Thompson, Jr., of Pittsfield, Mass. To the back is secured a semi-tubular plate having semi-circular end plates. The edges of the long plate are bent over to form tubes, one of which serves as a hinge for two needle arms, and the other is intended as a receptacle for the binding rod when the file is full. The binding rod is adjustable in tubes formed upon the inner side of the end plates. This file may be made right-handed, so that the paper last filed may appear first, or left-handed, so that the papers follow each other in the order of filing.

A new Carpet Fastening, invented by Mr. Warren Aldrich, of Lowell, Mass., consists of a toothed strip, which is guided vertically below the mop board of a room or along the risers of stairs, and raised or lowered by suitable lever mechanism, so as to release or take hold of the carpet.

In an improved Side Bar Wagon, invented by Mr. D. F. Cooper, of New York city, the essential features are two parallel rubber-cushioned springs, which extend from the side bars to blocks on the under side of the body, to which each spring is fastened at two points, being cushioned at the intermediate points.

Mr. E. B. Beer, of Sussex, Canada, has made certain improvements in Targets, which consist, first, in attaching the target rigidly to a lever pivoted to a fixed frame in such a manner that it may be operated to swing the target out of its normal position, to enable it to be conveniently patched; and secondly, in constructing the supporting frame and lever arms or standards of beveled or tapering pieces, so that they may oppose as small a surface to the balls as possible.

An improvement in Wagon Gear and Brakes has been made by Mr. J. J. Pennington, of Henryville, Tenn. This invention is designed to furnish an arrangement by which wheels of equal size may be used, following each other in the same track, and the brakes be automatically applied to the hind wheels, or all the wheels, on descending ground.

A Book Rack for Church Pews has been invented by Mr. A. R. Sherman, of Natick, R. I. It is so constructed as to hold the books pressed shut, and at the same time allow them to be readily put into or taken out of the rack.

Mr. Albert Gemünder, of Columbus, O., has invented an Organ Pipe provided at the side and above its mouth with one or more openings, and having a corresponding valve or valves, arranged to be operated by suitable mechanism, so that one or a series of tones differing from the natural tone or pitch of the pipe may be produced at the option of the performer.

Mr. C. N. Buzzell, of Monroe, Me., has improved upon common Oven Shelves by pivoting them, making the free ends arc-shaped, and extending the latter as an arm, which serves as a partial support for dishes too large to be supported by the shelf alone. When the oven opens only on one side a single shelf is used; and when it has two doors two shelves are employed, swinging in opposite directions.

In a Ruling Pen, invented by Mr. J. C. Moss, of New York city, a graduated index is added, so that the blades of the pen may be quickly set to correspond with the width of any line which it is desired to rule.

In a new Car Coupling, the draw head has horizontal side slots, with end recesses or seats for the pivots of an adjustable guide frame, so as to extend the coupling link beyond the mouth of the draw head or withdraw it. This is an improvement upon a former patent issued to Mr. D. R. Halter, of Lee's Cross Roads, Pa.

An improved Rain Gauge has been patented by Messrs. Lawrence Dunne and E. T. Richmond, of Morgantown, W. Va. The object is to provide a gauge which will automatically fill and discharge, and will continuously and accurately record, both at the instrument and at a distant point if desired, the amount of rain fall. This gauge has two cylinders containing floats, which are connected by chains running over a chain wheel controlling a spring-actuated train of gearing that operates the supply and discharge valves of the cylinders, and also controls electrical recording apparatus. There is also a device for warming the apparatus, for melting snow or hail.

Mr. C. D. Hyde, of Pitcher, N. Y., has invented an improved Folding Chair, formed by the combination of two pairs of legs, pivoted side bars, seat and back, in such manner that the back may be turned down upon the seat, so that the chair may be slipped beneath a table, or all the pivoted parts may be folded together compactly.

Mr. M. J. Duffee, of Mobile, Ala., has invented an improved Envelope, which he claims cannot be opened after it is once sealed, and be reclosed and sealed again, without being torn or so much injured as to exhibit evidence of such opening. This is effected by subdividing the flaps into a number of overlapping and underlapping parts, which interlock.

A Self-tamping Oil Well Torpedo has been invented by Mr. G. S. Vaughn, of Franklin, Pa. It consists of a cylindrical shell, the upper portion of which is made of an outer and inner cylinder, and filled with plaster of Paris, sand, or other tamping material. A small central tube passes through the shell, and extends downward into the lower part, or torpedo proper, which contains nitro-glycerin. At the bottom of the central tube is an anvil, and side perforations admit the nitro-glycerin. A weighted drop rod having percussion caps at both ends is attached by a ferrule, is guided in the central tube, and explodes the shell by being dropped down upon the anvil.

A Life Boat, lately patented by Mr. G. F. Sievern, of Brooklyn, N. Y., is designed especially for use in a high surf. A double cone buoy, pivoted at one end to the bottom of the boat, projects forward, so as to take the water first and cause the boat to ride easily, and also to divide the wave and prevent breakers from falling on the body of the boat. The buoy is supported by a boom and braced laterally by stays.

Mr. J. M. Lasater, of Manchester, Tenn., has made an improvement in Hames and Sectional Rocking Collars, relating to the construction and arrangement of the parts by which the bearing pads are attached to the hames.

Messrs. J. D. Fahnestock and L. A. Powell, of Aurora, Ill., have patented a process of forming a Dental Plate and Teeth in one homogeneous piece of porcelain, by first taking a pattern of plate and teeth directly from the mouth, and from this forming a sectional mould; then packing this mould with plastic porcelain and subjecting it to pressure, the product being finished in the usual manner.

Mr. T. J. Connell, of Merrimac, Mass., has invented an improved Paint Brush Bridle, composed of sections pivoted at the lower end and held at the upper end by a cup ferrule. The lower end of the bridle is contracted and flattened into an elliptical shape. To the ferrule is attached a long clasp tube, which receives the handle.

A Safety Window-Cleaning Chair has been invented by Mrs. Henry Dormitzer, of New York city. It may be temporarily attached to any window, furnishes a secure support, and may be compactly folded when not in use. It consists of a combination of a platform, folding guards, and supports, suitably arranged.

THE Bethell system of preserving railway ties by creosoting, used in England, is said to increase the life of the ties to 20 or 30 years.