

## THE SONG OF STEAM.

[The following fine poem, which *Blackwood's Magazine* has pronounced to be the best lyric of the century, is by George W. Cutter, of Covington, Ky.]

Harness me down with your iron bands,  
Be sure of your curb and rein,  
For I scorn the strength of your puny hands  
As a tempest scorns a chain.  
How I laughed as I lay concealed from sight  
For many a countless hour,  
At the childish boasts of human might,  
And the pride of human power:

When I saw an army upon the land,  
A navy upon the seas,  
Creeping along, a snail-like band,  
Or waiting a wayward breeze:  
When I saw the peasant reel  
With the toil that he faintly bore,  
As he turned at the tardy wheel,  
Or toiled at the weary car!

When I measured the panting courser's speed,  
The flight of the carrier dove,  
As they bore a law, a king decreed,  
Or the lines of impatient love,  
I could but think how the world would feel  
As these were outstripped afar,  
When I should be bound to the rushing keel,  
Or chained to the flying car.

Ha! ha! ha! they found me at last,  
They invited me forth at length,  
And I rushed to my throne with a thunder blast,  
And laughed in my iron strength.  
Oh! then ye saw a wondrous change  
On the earth and ocean wide,  
Where now my fiery armies range,  
Nor wait for wind nor tide.

Hurrah! hurrah! the waters o'er,  
The mountains steep decline;  
Time—space—have yielded to my power—  
The world! the world is mine!  
The rivers the sun hath earliest blest,  
Or those where his beams decline,  
The giant streams of the queenly West,  
Or the Orient floods divine.

The ocean pales wherever I sweep  
To hear my strength rejoice,  
And monsters of the briny deep  
Cower trembling at my voice.  
I carry the wealth and ore of earth,  
The thought of God-like mind;  
The wind lags after my going forth,  
The lightning is left behind.

In the darksome depths of the fathomless mine,  
My tireless arms doth play,  
Where the rocks ne'er saw the sun's decline  
Or the dawn of the glorious day;  
I bring earth's glittering jewels up  
From the hidden caves below,  
And I make the fountain's granite cup  
With a crystal gush o'erflow.

I blow the bellows, I forge the steel,  
In all the shops of trade;  
I hammer the ore and turn the wheel  
Where my arms of strength are made;  
I manage the furnace, the mill, the mint,  
I carry, I spin, I weave,  
And all my doings I put in print  
On every Saturday eve.

I've no muscles to weary, no breath to decay,  
No bones to be laid on the shelf,  
And soon I intend you may go and play,  
While I manage the world myself.  
But harness me down with your iron bands,  
Be sure of your curb and rein,  
For I scorn the strength of your puny hands  
As the tempest scorns the chain.

Great Eastern Railway Company's New Station,  
London.

The terminus of the Great Eastern Railway Company at Liverpool street, if not partaking altogether of the palatial, will be unmistakably a great improvement upon many of the London termini, and will be one of the largest; the area comprised within the retaining walls—this being a low level station—is more than ten acres in extent, and is some 2,000 feet in its entire length. The general character of the design is gothic, broadly treated in the several elevations.

The area occupied by the various lines of platform is covered by a roof in four spans, the two central ones being 109 feet each, and the side spans 46 feet and 44 feet. The whole width covered in is 314 feet.

The roof trusses are principally comprised of wrought iron with ornamental details of cast iron, and the effect is extremely pleasing. The columns are double in the center, and have also to act as down pipes for the conveyance of water from the roof. The covering is chiefly glass, with a small proportion of boarding and slates. The length of the roof over the main line on the east side is 730 feet, and that over the local platforms 450 feet long and 76 feet above platform level. The platforms are arranged so that the advantages of the end-on system, as at Charing Cross, as well as those of the sidelong, as at King's Cross, are retained. The main line platforms are 1,000 feet long and 32 feet in width, while the local platforms are 550 feet in length, and vary in width from 10 feet to 21 feet. Lamp rooms are provided below the platform, connected with each by a subway and hydraulic lift.

The arrangements for traversing carriages across and along the main line, and the whole of the turntables, eleven in number, are worked by hydraulic power.

Communication is also obtained with the Metropolitan system by a junction with the railways, besides subways from the platforms under Liverpool street for passengers. The whole of the signaling and multifarious working of the points is connected at Primrose street, into one box, which

contains more than 100 levers for the purpose of interlocking and other arrangements.

The whole of the works have been designed by Mr. Edward Wilson, C. E., the company's engineer, and executed by the well known firm of Messrs. Lucas Brothers.—*The Engineer*.

## THE IRISH-AMERICAN RIFLE CONTEST.

The international contest, between the American team of six of our best known crack shots and an equal number of skilled Irish riflemen, has resulted in a victory for the Americans, gained by 38 points. Three ranges, respectively of 800, 900, and 1,000 yards, were fired over, fifteen shots at each distance being allowed to each competitor. The targets were six feet in height by twelve feet in breadth, and were divided off, with a center six by six feet, inside of which a bull's eye three feet square was painted. A shot, by striking the bull's eye, counted four, on the center, three, and, if hitting outside the latter, two. From this it will be seen that sixty was the highest aggregate possible for any set of fifteen shots, one hundred and eighty for any competitor's entire score of forty-five shots, and one thousand and eighty for the shots of the whole team. Out of the last mentioned total, the Americans made 967, and the Irish 929. The annexed diagrams show the best shooting at each range.

Fig. 1 was made by Mr. Pollock, of the Irish team, at 800 yards, and counted 59, every shot, with one exception, striking the bull's eye. Fig. 2 is Colonel Bodine's (American team) target, which also counted 59. Fig. 3 is Mr. James Wilson's (Irish team) target, which indicates 55.

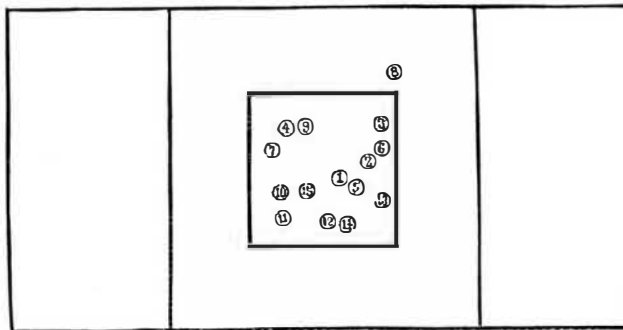


FIG. 1.—4—4—4—4—4—4—4—3—4—4—4—4—4—4—4—59.

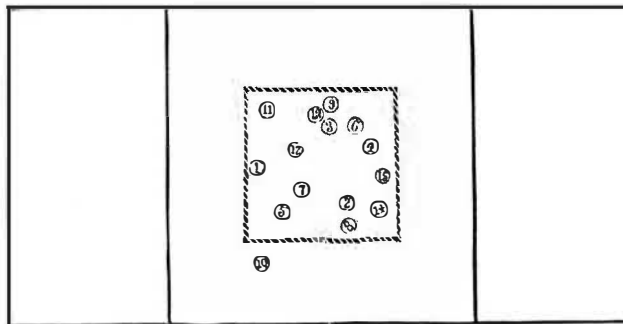


FIG. 2.—4—4—4—4—4—4—4—4—4—4—4—4—4—4—4—59.

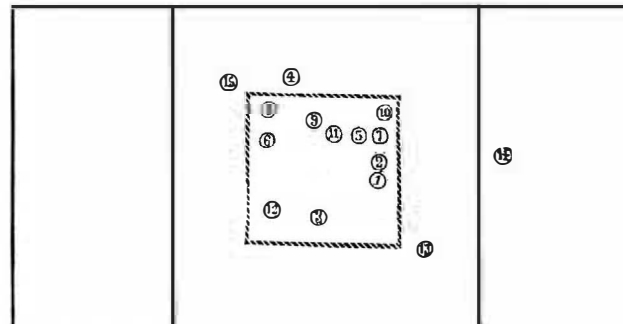


FIG. 3.—4—4—4—3—4—4—4—4—4—4—4—4—4—3—2—3—55.

It is difficult to appreciate fully the magnificent marksmanship which these scores prove, especially with regard to the long ranges, at which the Americans gained largely. One thousand yards is equal to about eleven avenue blocks in this city, including the widths of the streets; and hitting a three-foot square target at that distance amounts to about the same as (if the buildings were out of the way) standing at Trinity church and sending a ball into a window of the SCIENTIFIC AMERICAN office. The bull's eye would appear of about the same size as a dot half an inch square held at a distance of some three yards from the eye.

## To Kalsomine a Wall.

Buy the best bleached glue if the walls are to be white or some light tint (if dark, it is immaterial, so the glue is clean), and use it in the proportion of a quarter of a pound of glue to eight pounds of whiting. Soak the glue over night; in the morning pour off the water, as the glue simply swells while soaking. Add fresh water, put it in a tin pail, and set that in a kettle of boiling water. When dissolved, stir into it the whiting, adding enough water to make it, after mixing, of the same consistence as common whitewash. It may be tinted to any color desired, and is applied with a white-wash brush. If the color is rubbed smooth in a little water first, and then mixed with the wash, it will be more even. If the walls have been previously whitewashed, scrape away all that will come off, and wash with a solution of white vitriol, two ounces in a pail of water. The vitriol will be decomposed, forming zinc white, and plaster of Paris, to which the kalsomining easily adheres. It is important to dissolve the glue in a hot water bath; for if scorched by too

great heat, its tenacity is impaired or destroyed. Whiting is simply chalk freed from impurities, and reduced to a fine powder, and, is also known under the names of Paris and Spanish white, though the latter is really a white earth found in Spain.

There is a great difference in whitewash brushes; and the beauty of the work, as well as the ease of performing it, depends very much on a good brush, making it well worth while to pay the difference between a good one and a cheap one. For the inexperienced, it is more difficult to lay on tints evenly than pure white.

For those who have not had experience in using or dissolving glue, it is well to say that the dry glue should be spread in a broad flat basin, like a shallow milk pan, and cold water enough poured on it to fairly cover it; then let it lie over night, or for a day, when, if the water be not all absorbed in the swelling glue, the excess should be poured off, when fresh water will be added, in which you boil the glue, to be mixed with whiting.—D. S. C., in the *Maryland Farmer*.

## Centennial Notes.

A definite project for a huge hotel, to accommodate five thousand of the people who will flock to Philadelphia during the Centennial, has been agreed upon. A number of citizens have taken steps to erect a gigantic wooden building, ten stories in height and containing a thousand double-bedded rooms. It is proposed to complete the work in five months, an undertaking, the magnitude of which will be realized when it is considered that there will be thirty miles of wall to plaster. The structure will be about four times as large in capacity as the Continental Hotel in Philadelphia.

A correspondent, Mr. John L. Geissler, of West Chester, Pa., writes us that he has invented a remarkable clock, which, with a single pair of hands, indicates simultaneously, on one dial ten feet in diameter, the time not only of the place where located, but of the principal cities of the world. He has offered to place the clock on the wall of the Centennial structure for \$500, this being the actual cost of its construction; and he says such a timepiece would doubtless meet with much approbation from foreign visitors, as it would enable them to learn their home time to a fraction of a minute. While it probably might be of interest for the average Briton to note the fact that 2 in the afternoon at Philadelphia corresponds to about the hour at which he would begin his daily onslaught on underdone joints and Bass' ale, we fear that the Italians, who count up to twenty-four o'clock and mark their dials accordingly, and the Chinese, the hands of whose timepieces travel backwards, would not gain much useful information from Mr. Geissler's huge clock. However, the idea is a good one, because the Centennial should certainly have a timepiece connected electrically with clocks in all the principal cities in the United States, so that, at 12 o'clock Centennial time on the momentous 4th of July, the entire country might join in unanimous celebration. Mr. Geissler offers a curious clock for a small cost, and the Centennial authorities would perhaps do well in adopting his suggestion.

It is proposed by the managers of the Centennial to appoint an electrician who shall have the supervision and direction of the electrical department. This is a very important and responsible position, and should be filled by no person save one whose talents and qualifications are of the highest order.

We notice that the *Telegrapher* suggests the name of Mr. David Brooks, in which nomination we heartily concur. Mr. Brooks has had valuable experience in the foreign expositions, is a thorough expert in all matters electrical, and enjoys a wide acquaintance among the electricians and telegraphic engineers of Europe. We trust that the Centennial managers will see the wisdom of appointing Mr. Brooks.

## Recent American and Foreign Patents.

## Improved Spring Bed Bottom.

Joseph Fowler, New York city.—Springs are attached to the bedstead and to the cross bars by means of the contracted coils of springs, which allow a rivet to take hold of the coils and draw the spring downward. The head of a rivet rests on the lower contracted coil of the spring. The bed is suspended on the springs in this manner, and the bolts or rivets form a substantial connection. The device improves another invention, patented to same inventor January 28, 1875.

## Improved Shirt.

John C. Dunham, Buffalo, N. Y.—This invention consist of a shirt front detached from the body, except at the top and for a certain distance downward, sufficiently to keep it in place, by which the front is preserved smoother and neater. The invention also consists of the upper end of the front narrowed by rounding the corners to diminish the breadth of the connection with the yoke, by which wrinkling of the front is prevented when the arms are raised.

## Improved Toy Gun.

William H. Martin, Mobile, Ala.—This invention consists of a longitudinal slotted barrel, with ball or arrow propelling slide piece working freely therein by means of springs attached to a cushioned collar at the muzzle of the barrel. The hook or arrow shaped rear part of the slide is locked by spring jaws, and released by a trigger and slide piece.

## Improved Sliding Gate.

John P. McMurray, Oregon, Mo.—The gate rests outside of the gate post, so that it may be readily moved longitudinally about one half its length, and then it may be swung round on a bracket to open the full gateway. It also can be moved on the rolls longitudinally, and may be elevated to swing clear of snow in the winter season.

**Improved Fastening for Hats.**

Clinton R. Blackwood, New York city.—This spring fastener is made in one piece, and in the form of a bow, the curve of the bow being perforated and fastened to the inside of the hat with thread, leaving the ends to hang down, so as to bear upon the back part of the head.

**Improved Water Wheel.**

Oliver J. Bollinger, York, Pa.—Secondary guides are arranged in the outer ends of the water passages to divide them into two channels narrower than the throat, so that any objects floating in the water, too large for passing through the throats, will be arrested at the outside of the case, where they can be easily reached for removal. The gates are placed at or near the inner end and narrowest part of the chutes, by which they are subject to the least pressure on account of the smallest area being opposed to the water, so that they offer the least resistance to the moving of them in opening and closing. The gates are attached to a ring, which has radial arms and a hub surrounding the shaft, to strengthen it against lateral strains; and it is connected by the rods which incline toward the shaft with the running block on the shaft, and other mechanism for opening and closing.

**Improved Combined Table and Desk.**

Thomas W. Moore, Plainfield, N. J.—This invention consists of a table having a suitable inclosed space with pigeon holes, etc., under the top. The top is made of two parts, and hinged at the point where the slope of the desk begins. One side of the frame is lower than the other side, and the ends are sloped from it up to the point where the top is hinged. On this low part a piece is hinged to swing up on the top and hold the table top level when a table is required, and close the space beneath. The table top has a piece at each end, which overlaps the end of the frame, and keeps the space under the top closed when it is adjusted for a table.

**Improved Bottle Stopper.**

Gustave J. Crikelair, Green Bay, Wis.—There is a band around the neck of the bottle, which carries a little clevis. This clevis is pivoted to the band, so that it may work up and down, and a bent lever is attached to the jaws of the clevis by the fulcrum pin. This lever curves up over the top of the bottle, and is attached to the stopper, which last has a flange around it, which incloses a packing. A spring is fastened to the lever, the upper end of which bears with a constant pressure against a lug, which is fastened between the jaws of the clevis. When a person takes hold of the bottle, he bears with his thumb on the lower end of the lever, which action raises the stopper, and allows the contents to flow out when the bottle is tipped. A hook is attached to an eye on the under side of the lever, and hooks under the clevis to hold the stopper down.

**Improved Child's Carriage.**

F. Herman Jury, New York city.—The rim of the wheel is shaped so that, while it widens out at the top to the edges, the bottom will be sufficiently thick to afford the requisite thickness for firmly holding the spokes which screw into it. The hub is cast with an inner annular chamber, to dispense with unnecessary metal, and the ends, which are contracted to the size of the box, are screw-threaded, and the box is screwed in, making a tight hub. The axles are short pieces of round metal screwed in to the ends of a hollow middle tubular portion, to make the middle portions stronger for a given quantity of metal by increasing the size. The body is jointed to fold together; and by a spring top for holding up the top, and the braces arranged inside, the top can be raised and lowered easily by the person inside.

**Improved Car Coupling.**

Benjamin S. Kearney, Franklinton, N. C.—This invention relates to an improved automatic car coupling, that may be readily used for cars of different heights; and it consists of a drawhead with tapering mouth, vertically sliding front socket or gate, and governing rear piece, that couple and control, by suitable levers, the link with ball-shaped heads.

**Improved Potato and Seed Planter.**

William H. Whitman, Seranton, Pa.—In the slot of a pitman are placed springs, which rest against a crank, and the effect of which is to cause the pitman to stand still for a little time at the end of each movement. The other end of the pitman is pivoted to a frame, which slides upon a block, in which is formed a hole of sufficient size to receive enough seed for a hill, and which is placed directly beneath the hopper. Plates are so arranged that as the frame moves forward one plate will uncover the upper end of the pocket to allow the seed to drop into said pocket. As the frame moves to the rearward, the plate will cover the upper end of said pocket, and another plate will uncover its lower end, allowing the seed to drop to the ground. The plate is made with a short edge, so that, when the machine is used for planting potatoes, it may cut off a piece of potato large enough for a hill. In the case of large potatoes, they will be cut more than once, and small potatoes will not be cut at all. When the machine is used for planting seeds, the upper plate serves simply as a cut-off. The hopper is made in three parts, so that the two upper parts may rock upon each other, and upon the stationary lower part to keep the seed from clogging by the advance of the machine.

**Improved Cultivator.**

Albert Dart, Rockville, Conn.—A rear wheel gages the cut of two front mold boards. Adjustable bars carry the two rear mold boards. These bars are spread apart by a cam operated by means of a lever. A horizontal guide bar passes through the beam and through the bars, and supports the bars and mold boards as they are spread or expanded by the cams or forced inward by the pressure of the earth thereon. The wheel is supported by the spring, which is attached to the under side of the beam.

**Improved Mirror.**

Allen Huber, Berlin, Can.—This consists in covering the back of the mirror with varnish or waterproof material, and with a coat of gypsum, plaster of Paris, or equivalent material. The advantages claimed are that the mirror plate and frame will be strengthened, the silver will be protected from injury, and the wooden back board or other back and the wedging of the plate will be dispensed with.

**Improved Pneumatic Dispatch Apparatus.**

Olney B. Dowd, New York city.—Two pipes join the local stations with the central station, with a circuit of the impelling fluid, preferably compressed hydrogen gas, passing out through one and back through the other, and worked by pressure in a reservoir at the central station. It is designed to make the apparatus useful for hotels, offices, and private houses by a special circuit to each, the outgoing pipe being connected with one of the contrivances for stopping the carrier, so as to discharge into it, and the other connected, so as to allow of the return of the fluid, and having the apparatus for introducing the carrier to be returned to the central office.

**Improved Variable Exhaust.**

William F. Leseur and Charles Michel, College Point, N. Y.—The invention consists in supporting a cone plug upon a vertical screw stem arranged to project up through the mouth of the exhaust pipe of a locomotive engine. The chief advantage of this arrangement is economy of space and unobstructed passage for escape of steam, it having been the practice heretofore to support and adjust the plugs of exhaust nozzles by means of rods arranged exteriorly thereof.

**Improved Farm Fence.**

David L. Hoffman and Parker M. Shoemate, Aullville, Mo.—This consists in making the fence in sections, so that each panel may be separated into two longitudinal parts.

**Improved Row Gage for Plows.**

William Edwin Stanley, Montezuma, Ga.—This is a row gage attachment to plows for marking off rows to guide the plowman straight. A socket for receiving the end of the marking rod is mounted on a support which revolves to shift it from side to side as the plow reverses. Said support has a hollow axle, through which a cord, having a weight attached to it, extends to the end of the socket next to said support, and is secured thereto to return the marker to the normal position after it escapes from obstructions, causing it to swing back on a pivot, as a means of preventing it from breaking. The revolving support for the socket is supported on standards, some of which are attached so as to form guides to keep the suspended weight from swinging about.

**Improved Station for Submarine Telegraphs.**

Robert F. Bradley, Moffettsville, S. C.—This invention relates to an improved system of telegraph stations in mid-ocean, by which messages can be sent from any point of the ocean, along the line of the cable, to the terminal points, and vice versa, so that communication with vessels and passengers during the voyage may be established. The invention consists of a hollow sectional column with a base plate attached by ball and socket joint, which column is lowered into the water and anchored rigidly to the ground. The branch cable is coupled to the main cable, and carried along the column to the surface of the water, to be there placed in connection with the instruments on board of the vessels.

**Improved Letter and Picture Block.**

Daniel Birmell, Greenville, N. J.—This invention consists of a different shaped end point or projection to each letter block, so that no letter block will correspond to any other, in combination with picture blocks, having notches corresponding to the letters of the name of the picture, to aid the child in selecting the letters for naming the picture and identifying them therewith.

**Improved Life Preserver.**

Adolph Traub, New York city.—This life preserver is constructed of a front and rear part, connected together by straps or suspenders, supported by the shoulders, having movable wings or fins attached thereto, the whole being made double or bag-like and filled with roasted cork.

**Improved Transom for Doors.**

John Berndt, Denver, Col. Ter.—This invention relates to certain improvements in transoms for doors; and it consists in a transom sash that is made to slide into a casing above by means of a branched cord moving over pulleys, one of the branches of which cord is attached to the sash for the purpose of raising it, and the other attached to a suspended detent or locking bar which prevents the raising of the sash except by the cord upon the inside of the house, the cord being fastened below by a self-closing cam lever, and so arranged at its branched ends as to raise the sash and lift the locking bar at the same time.

**Improved Hay and Cotton Press.**

John L. De Witt, Gardner, Ill.—The invention relates to means whereby the operators on a hay or cotton press may be enabled to work more continuously and with a greater result within a given time. It consists in making the same piece, grooved on both sides, act successively as a follower and platen, and in holding the platen by a hand-operated slide so that it may be pushed out with the tied and pressed bale.

**Improved Clothes Wringer.**

Leander Becker, York, Pa.—This invention relates to certain improvements in wringers; and it consists in the combination with the body of a washing machine, and the adjustable bearings of one of the wringer rolls of a lever, and an adjustable vertical rod attached to said bearings, so that the weight of the washer is made to supply the pressure for the wringer rolls, the said pressure being regulated at will.

**Improved Washing Machine.**

Leander Becker, York, Pa.—This invention relates to certain improvements in washing machines; and it consists in two levers pivoted to the outer casing and having notched extensions and pendant segments. To the top of the levers is pivoted an arc-shaped set of rubbers, which are attached at the bottom by a connecting rod with a double crank upon the main shaft. Suspended in the notches of the lever extensions and segments is another adjustable and detachable set of rubbers which correspond to the first in construction, and between which and the first set the clothes are contained.

**Improved Paper Machine.**

Chas. L. Crum, Winchester, Va.—The object of this invention is to better adapt the Fourdrinier paper machine to making heavy paper or boards out of straw, wood, or other materials; and it consists in the combination with the ordinary belt of wire cloth which carries the pulp, of a second upper endless belt of wire cloth passing around rollers, and an upper suction box resting upon the upper surface of the second belt and just above the web formed from the pulp.

**Improved Bale Tie.**

H. K. Du Bose and E. W. Charles, Jr., Camden, S. C.—The invention has particular reference to flexible ties by which hay, cotton, and analogous substances are held in a compressed state. It consists in a tongueless buckle and a fastener having two cross slots cut obliquely toward each other.

**Improved Spring Seat for Horse Rakes, etc.**

Amos W. Coates, Alliance, O.—The object of this invention is to adapt the supporting spring of a chair seat in a horse rake, harvester, or other analogous implement to the different weights of different drivers, and, while preserving its elasticity, render the said spring strong enough to support a heavy driver without bearing down and removing the driver from the most convenient position for operating his hand levers. It consists in the combination with the ordinary inclined band spring, of an auxiliary spring attached to the base frame and connected with the main spring near the seat by means of a stud which is rigidly fixed to the main spring, the said auxiliary spring being slotted at its connection with the stud, so that it does not act at all until the main spring is borne down sufficiently low to cause its stud to rest in the lower part of the slot.

**Improved Coffee Pot.**

Sumner P. Webber, Charlotte, Mich.—This invention consists of a coffee pot with a cylindrical coarse strainer that is fitted securely into an annular finer strainer, arranged below the spout at the inside of the pot, the detachable strainer being supported at some distance at the bottom of the pot and retained by springs at the top, a bail serving to lift it out of the pot.

**Improved Steering Propeller.**

Wilhelm F. Zoehle, Brooklyn, N. Y.—This invention consists in the employment of a propelling screw that is driven by hand power applied to actuating lever rods, which rods are pivoted to sliding and guided pieces, transmitting the power alternately, by intermediate gear wheels, to the shaft of the screw. The screw is secured to a supporting frame sliding in vertical direction for yielding to obstructions, and is also employed for steering the boat by connecting the screw frame, by a governing arm and wheel, ropes, and pulleys, with the steering wheel of the boat.

**Improved Water Wheel.**

Isaac Mallery, Dryden, N. Y.—This wheel has two sets of buckets, arranged one above the other, and a chute curb, having two tiers of chutes. The revolving gate is provided with a series of openings. The water may be admitted to only the lower tier of buckets in the wheel through two or four openings; or by moving the gate farther, two or four chute openings are uncovered for the upper tier of buckets, so that water may be admitted through two, four, six, or eight openings, successively, according to the amount of power required.

**Improved Farm Gate.**

Wellington H. Pratt, Prattville, Mich.—Devices are provided in connection with this gate, whereby it is supported without sagging. It may be raised from a horizontal position, and swung round over a moderate depth of snow without obstruction, and, when opened, will remain in any position in which it may be placed.

**Improved Berry Cup.**

Dewitt W. Kniffin, Marlborough, N. Y.—This is a berry cup made of wood veneering, having a bottom of two thicknesses fastened together with the grain of the wood at right angles, one part having tenons which pass through slots and hold the bottom to the body.

**Improved Lathe Rest.**

James E. F. Leland, Baltimore, Md.—This invention relates to lathes for turning irregular forms, and consists of a spring rest for supporting the article being turned. The spring is given a certain amount of tension to force the rest forward toward the article, while the rest will adjust itself to the irregularities.

**Improved Motor.**

Jacob G. Peterson, Morganton, N. C.—By this device, a power is applied to one shaft by two springs separately wound when the same could not be used with one spring on account of the difficulty in winding it up.

**Improved Corn Sheller.**

Frelinghuysen H. Hunter, Heltonville, Ind.—This corn sheller has a ribbed surface, over which the ears are drawn by hand to free them of the kernels. The invention relates to a chaff box, which is formed of a sheet metal plate applied beneath the ribs of bars of the sheller.

**Improved Felly Plate.**

James Y. Sitton, Due West, S. C.—The feature of this invention consists in vertical ears or flanges formed on the sides of the clip, and extending up to embrace the sides of the tyre, thus holding the same in proper position on the felly.

**Improved Stone-Extracting Tool.**

Nathan R. Cheadle, Delta, Ohio.—This is a method of removing stones in well-boring by first cutting under them, and then dislodging them with a drop.

**Improved Fence Post.**

Eugene Powell, Delaware, Ohio.—This consists of a post with braced stool seated in the ground, in connection with an additional stool attached at right angles thereto, in the direction of the fence, for increasing the base surface of the post.

**Improved Fly Net.**

Luther B. Lee and George W. Lee, Ridgewood, N. Y.—The object of this invention is to prevent the ends of the cross bars from untwisting, and at the same time to give to said ends a neat appearance. The cross bars are made of cord, and are quilted or stitched through the longitudinal bars a sufficient number of times to prevent the said cross bars from slipping through the said longitudinal bars. The end parts of the cross bars are stitched upon a sewing machine for a few inches.

**Improved Printers' Galley.**

Henry H. McWilliams, Sacramento, Cal.—On the bed plate is a raised bar. The same hollow bar is turned in the same manner across the end of the plate. On the inner edge of a slotted movable plate is a square hollow bar, made by turning over the edge, so that this square bar and the triangular bar on the other plate are of the same height, and form a channel in which the type are contained and held. This bar is moved on the plate and the channel increased or diminished in width by means of slides and eccentrics and levers. By means of these eccentrics the movable plate is moved up, and the bar is made to compress the type.

**Apparatus for Carbureting and Purifying Gas and Air.**

Leander E. Fish, Washington, D. C.—This invention relates to certain improvements in apparatus for carbureting and purifying air and gases. It consists of a vessel having on the bottom thereof a detachable tank for containing oil for carbureting. Communicating with said tank is a pipe for introducing the oil, a gage pipe for regulating the amount of the same, and a perforated inlet pipe through which the air or gas is forced into the oil. Just above the oil tank is a detachable cover with distributing openings for the carbureted gas in its upward passage, and above said cover are located purifying pans with bottoms of perforated sheet metal or wire gauze. The top of the outer vessel is provided with an annular trough of water in which the detachable cover is located with a water-sealed connection, the said cover being provided with a pressure regulator and an outlet pipe for the gas.

**Improved Ventilation of Railway Tunnels, etc.**

Joseph Dixon, New York city.—This improvement is more particularly designed for underground railways, tunnels, etc., in cities where openings to the external air cannot be had without interference with the surface traffic of the street, or without purchasing adjoining lands and using the same for ventilating shafts. It is proposed to divide the tunnels into sections of a mile, to place midway of these sections a suitable fan blower, connected by suction pipes, extending right and left into the tunnel, and to place partitions, by means of pivoted doors, across the tunnel on either side of said suction pipes, said partitions occupying the entire space crosswise of the tunnel; pending the arrival of a train, said partitions to remain closed. The doors may be opened by an approaching train, and closed again immediately after the train has passed, by the train itself operating suitable mechanism placed alongside the track. By thus dividing the tunnel into sections, and placing the ventilating apparatus midway outside the tunnel, the fan withdraws the foul air from, say, half a mile of tunnel on the left hand side, and at the same time, and by the same operation, it also acts in like manner on the length of tunnel on the right hand side, and discharges the foul air from both sections through a pipe of suitable size on the opposite side of the fan to the surface of the earth, and thence up a suitable height above the surface by an ornamental hollow column.

**Improved Steam Engine for Rock Drills.**

James Brandon, New York city.—Grooves in the steam chest are so arranged in connection with the grooves in the valve piston that, when the slide valve is just over the steam ports, the small piston will have passed so far that the communication between the groove in the steam chest and the groove in the valve piston will be just closed at the same time the groove of the steam chest passage will be just opening. The steam passing will have full pressure until the piston closes the passage by its own movement. Consequently the valve piston will still have the expansion of the steam to carry it over.