

piston 105 inches in diameter by 12 feet stroke, and upon a recent engineers' trial-trip, achieved the remarkable speed of 420 feet, or $17\frac{1}{2}$ double strokes per minute. We have no doubt that the engine will be able to add materially to this speed, as the machinery was entirely new, it being merely an experimental trip. This is not an isolated case, by any means. The *City of Buffalo*, formerly a passenger steamer upon Lake Erie, now dismantled for the want of trade, had an engine with a cylinder of 76 inches diameter and 12 feet stroke, which drove paddle-wheels 34 feet in diameter, whose floats had 31 inches face, were 11 feet long, and had from 36 to 40 inches dip— $19\frac{1}{2}$ revolutions, or 39 single strokes per minute. By a severe exercise of mathematical knowledge, we ascertain this to be a piston speed of 468 feet per minute. We remember these facts and figures very well, as at that time we were pretty much occupied in looking after the engine aforesaid. The beam weighed nearly sixteen tons, and was stopped and started thirty-nine times in a minute, working with great ease and certainty. The beam of a beam engine appears to some to be an insuperable obstacle to the general adoption of the class of engines to which it belongs; and its weight, momentum, velocity, &c., are charged heavily to its demerit. These theories, we fancy, are disturbed by the actual facts in the case, which are, that the beam is so poised and balanced on its center that the supposed shock of changing its line of motion is utterly neutralized; and as for the weight—that is supported by the framing, and is no more against the power exerted by the piston than the smoke stack. A beam weighing fifteen tons, or eighteen tons, can be moved through any portion of its arc of vibration, by the strength of a man; providing, of course, that the binders of the pillow blocks are not screwed up, and that the journals set fairly on the brass. The above cited cases of the speed of beam-engine pistons are all distanced by the extraordinary performance of the *C. Vanderbilt*, a Sound steamer, in her race, June, 1847. This engine is of 65 inches cylinder and 12 feet stroke, and on the occasion mentioned, attained to 540 feet, or $22\frac{1}{2}$ double strokes per minute. It is not at all uncommon or extraordinary to obtain a piston speed in beam engines, of 400 feet per minute, in this country; but the performance of the *Golden City*, we think, is the best on record, considering the size of the cylinder.

Since writing the above, we have ascertained that all the facts just mentioned are below the mark. The *Mississippi*, a large paddle steamer, having an 81 inch cylinder and 12 feet stroke, has made 24 revolutions per minute, the wheels having 36 inches dip, and attaining a piston speed of 576 feet per minute. The *Metropolis*, a large Sound steamer, having a cylinder of 105 inches diameter and 12 feet stroke, has made 20 revolutions per minute, and we think a higher number. The working beam on the *Mississippi* weighs fourteen tons; that on the *Metropolis* about sixteen tons. The engine of the *New World*—a side-wheel steamer 420 feet long, on the Hudson river, having a 76 inch cylinder, and fifteen feet stroke, has made twenty revolutions per minute, or forty single strokes. The *Richard Stockton*, however, has outstripped the whole fleet, and, we think, attained the highest piston speed for an engine of this class ever made in the world. We do not know the exact dimensions of the cylinder, but have been told it is between 50 and 60 inches, with ten feet stroke. The *Stockton* has feathering wheels, and makes 32 revolutions, or 64 single strokes, per minute; and has done this duty for years, having been built by Robert L. Stevens for the express object of testing the speed at which a piston could safely travel. This is the highest speed within our knowledge ever attained by a piston in an engine of similar size; if any other instances come to mind we shall place them on record. It would be difficult to point out any other class of marine engine of the same size as that in the *Golden City*, which could achieve $17\frac{1}{2}$ turns a minute, and keep it up as a regular duty. The standard of 250 feet per minute will have to be changed, and made to suit modern pistons, as the engines themselves stubbornly refuse to be controlled by any such snail-like movement.

The English papers state that all the winners at the later rifle matches were blue-eyed men.

PORTABLE ENGINES.

It is astonishing how mankind in general, and farmers in particular, obstinately adhere to the traditions and usages of the past. We allude at this particular time to the substitution of machinery for hand labor. While agricultural implements of all kinds are having a fair trial, we think it not amiss to say a word here in favor of the power that drives these machines—that much-abused animal the horse. We have assumed, broadly, that in most instances the horse furnishes the motive power. This assertion is, we believe, the fact in the case; and it is a state of things which might be changed for the better by the adoption of the steam engine. A machine of this class can be had for about the same price that a pair of first-rate horses will cost; with the advantage that it has, stored up within its brass and iron muscles, the force of three teams; and that it never tires, as flesh and blood does. Not only is this true, but the cost of keeping a pair of horses and that of running a steam engine of two horse power, is not to be compared for an instant. For it must be recollected that the engine will do the work in half the time required by an animal: that it consumes only when actually at work; and is not "eating its own head off" when the earth produces nothing, and man rests from the labor of the summer.

It is our opinion that in every instance where a stationary power can be employed, steam will be found preferable to any other that is used for farming purposes. With the same degree of intelligence that will keep a pair of horses from being ruined, or injured in body and health, the steam engine can be run and kept in order; and as the latter can be wheeled from place to place, there are but few localities where it could not be advantageously introduced. In rocky and hilly countries, in new land—where stumps spread out their roots, and neither use the ground themselves, nor permit the farmer to do so—the steam engine, aided by the proper tools, would soon subdue these intractable obstacles, and clear the way for the seed that comes after.

We think it would be a profitable speculation for some enterprising farmer to introduce a portable engine to his neighborhood, and let it out to his neighbors at a nominal price, so that its practical advantages would be manifested to the most prejudiced person. We are not so enthusiastic as some on this subject; we do not foresee the time when every farmer shall have his portable engine, just as certainly as they all have churns; for such a state of things would be unadvisable. But we do think that for all the rough work about a farm (and of this there is plenty) steam power would be much more efficient and economical than any other in use; and we hope to see sufficient enterprise manifested to enable us to chronicle the advent of many more engines than there are at present on the large farms about the country.

PERPETUAL MOTION.

The *Boston Journal* publishes a letter from a correspondent at Newport, Vt., who describes a "perpetual motion" machine, on exhibition at that place, and states that it is attracting great attention. Mr. Leach, of Vermont, claims to be the inventor. The writer says:—

"It is a simple wheel, runs on gudgeons, and is independent of any outside spring, weight, or power, as a propeller. On the same axle on which the metal wheel is fixed, is a band wheel, on which a band runs over a small pulley that drives a small circular saw. Set it on a table and remove the brake, and it will start itself and run with great velocity, driving the saw. It is the simplest thing in the world, though I cannot intelligibly describe it; but it is at once understood by the beholder. It will not, nay cannot, stop without a brake, as it is so fixed by means of balls and arms, that the descending side of the wheel is perpetually further from the center of motion than the opposite ascending. The most incredulous beholder here is at once convinced, on seeing it, that a wheel can be made its own motive power. The model runs on and runs ever. It is a small wheel, ten inches in diameter, with ounce balls attached to movable arms. Whether an increase in the dimensions of the wheel will increase its power in proportion, remains to be tried; but one thing is certain, it will make

Mr. Leach, who is poor, a wealthy man. It is no cheat, no humbug, no Yankee trick, but a stubborn and fixed fact; and ere long the world will be convinced that the principle of perpetual motion ever existed, and has now been discovered by a Green Mountain boy."

It is evident from the above that the fools are not all dead yet. When the laws of nature are so far reversed that water will flow up-hill, instead of down—when men can lift themselves by pulling upon the seats of their pantaloons—then, and not till then, will wheels manufacture their own motive power.

The above device is a cheat and a humbug. In principle it is the same as the "perpetual motion" of Willis, exhibited in this city about seven years ago, of which an engraving may be found on page 201, Vol. XI. (old series), *SCIENTIFIC AMERICAN*. A concealed bellows was the motor in that case, we believe. Several contrivances on the same plan were subsequently exhibited at Barnum's Museum. This Vermont show is probably one of them. Many people have been gulled by these perpetual motions; but we never knew that any of the "gay deceivers" who manage them, have made fortunes. It is to be hoped not, at any rate.

PRIZE EXHIBITION OF FARM ENGINES.

For several years past, much attention has been directed, in England, to improved steam engines for farmers; and an exhibition of such motors was lately held by the Royal Agricultural Society, at Worcester. On this occasion the engines were divided into two classes, namely, fixed and portable. Seven of the first order, none of which were to exceed 10-horse power, competed for prizes. Their power was tested with a friction brake, and a certain quantity of coal was weighed out to each. The amount of coal consumed per horse-power ranged from 4.88 lbs. to 15.32 lbs. per hour. The one which consumed the least coal gained the first prize of £15 (\$75).

No less than nineteen portable engines competed for prizes. They ranged from 4 to 12 horse-power, and were divided into three sections, according to their size. The consumption of coal, per horse-power, ranged from 3.59 lbs. to 13.28 lbs. per hour; and the prize, of £10, was awarded to the one which consumed the least fuel. In all the trials, the small engines consumed a proportionally greater amount of fuel than the large ones. The price of each engine was given in to the prize committee. The one which gained the first prize was valued at £230 (about \$115 per horse-power). The price of the smallest was £85 (a 4-horse power.) The boilers of all were of the tubular character, and each engine was so constructed, according to the conditions of trial, that it could be easily taken apart, and its valves and pistons inspected. The judges of these trials were, D. K. Clarke, C. E., inspector of machinery in the International Exhibition, and author of a work on railway machinery, G. V. Gooch, C. E., J. Stewart and J. Easton, railway engineers.

APPLICATIONS FOR THE EXTENSION OF PATENTS.

The following persons have applied to the Commissioner of Patents for the extension of their patents for a term of seven years:—

Method of fitting the Heaving Socket and Head of Windlasses.—Charles Perley, of New York city, obtained a patent on the 13th of November, 1849, for a method of fitting the heaving socket and head of windlasses. The said Charles Perley now prays for the extension of the patent.

Binder Pulleys for Belts and Brakes.—Mertoun C. Bryant, of Lowell, Mass., obtained a patent on the 13th of November, 1849, for an improvement in binder pulleys for belts and brakes. Caroline Bryant, executrix, of Lowell, Mass., now prays for the extension of the patent.

The testimony on the above applications will be closed on the 12th day of October next; depositions and other papers relied upon as testimony, must be filed in the Office on or before the morning of that day.

Looms for Weaving Figured Fabrics.—Moses Marshall, of Lowell, Mass., obtained a patent on the 11th of December, 1849, for a loom for weaving figured fabrics, and now prays for the extension of his patent. The testimony will be closed on the 9th of Novem-

ber next; depositions and other papers relied upon as testimony, must be filed in the Office on or before the morning of that day.

RECENT AMERICAN PATENTS.

The following are some of the most important improvements for which Letters Patent were issued from the United States Patent Office last week. The claims may be found in the official list:—

Machine for Rolling the Seams of Boots and Shoes.—In the manufacture of boots and shoes, particularly of leather or morocco, it is essential, in order to produce good work, to rub the seams well down on the inner side. Up to the present time this operation has been performed entirely by hand, with great exertion and loss of time. The object of this invention is to perform the operation of rubbing down or rolling the seams, by machinery capable of being driven by other than human power, and the invention consists in the arrangement of a roller arm connected by suitable mechanism with a rotary shaft, and working on a curved or straight bed, which supports the material to be rolled, in such a manner that by imparting to the shaft a continuous rotary motion, the roller assumes a reciprocating rectilinear motion, traveling repeatedly over the seam on the bed; the bed is adjustable, to conform to the shape of different seams, and the pressure is increased or decreased by a simple arrangement of springs. John C. White, of Auburn, N. Y., is the inventor of this machine.

Device for turning Crank Pins.—The object of this invention is to obtain a simple and portable device, so constructed and arranged that it may be readily applied to the driving wheels of locomotives, and in such relation with their crank pins as to admit of the latter being turned and made true, without detaching the pins from the wheels or removing the wheels from the locomotive. Socrates S. Cheney and Danforth Cheney, of Galesburg, Ill., are the inventors of this device.

Paddle wheel.—This invention relates to paddle-wheels with series of narrow buckets of a parabolic or curvilinear shape. The principal objection to such paddle-wheels as heretofore constructed, has been, that though in the highest degree effective, when rotating in a direction to act upon the water with the convex faces of their buckets to propel the vessel ahead, they fail to operate as well as is desirable when rotating in the opposite direction, and hence cannot be very successfully used in backing the vessel. The reason for this has been that the buckets, in entering and passing through the water, have divided it and pushed it aside, instead of taking hold of it and acting with a direct pressure. The principal object of this invention is to make the wheel more effective in backing; and to this end it consists in dividing the wheel in a plane perpendicular to its axis by means of a partition ring, thus making the buckets of the form of semi-parabolas, and so setting the said buckets between the said partition ring and two outer rings of a depth equal to the depth of a series of buckets, that the buckets on one side of the partition alternate with those on the other side of the partition, by which means not only is the above mentioned result accomplished, but the wheel is made stronger, and produces less vibration of the vessel when propelling in a forward direction. Addison C. Fletcher, of New York city, is the inventor of this improvement.

Car Brake.—This invention relates to a new and improved railroad car brake, of that class designed to be operated simultaneously on a train of cars, by the engineer or his attendant. The invention consists in the employment of wedges connected by chains or ropes to a shaft, which extends the whole length of the train; the wedges being fitted between drums on the axles of the trucks or the wheels thereof, and inclined plates attached to the trucks, all arranged so as to operate very effectively. Isaac N. Pyle, of Decatur, Ind., is the inventor of this improvement.

Back Numbers and Volumes of the Scientific American
 VOLUMES I., II., III., IV., V., VII. AND VIII. (NEW SERIES) complete (bound) may be had at this office, and from periodical dealers. Price, bound, \$2.25 per volume, by mail, \$3.—which includes postage. Every mechanic, inventor or artisan in the United States should have a complete set of this publication for reference. Subscribers should not fail to preserve their numbers for binding. VOL. VI. is out of print and cannot be supplied.



ISSUED FROM THE UNITED STATES PATENT OFFICE

FOR THE WEEK ENDING AUGUST 11, 1863.

Reported Officially for the Scientific American.

* * * Pamphlets containing the Patent Laws and full particulars of the mode of applying for Letters Patent, specifying size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

39,455.—Breech-loading Fire-arm.—John S. Adams, Taunton, Mass.:

I claim, first, The pivoting of the breech within the frame by means of the rings, b b, or their equivalents, having combined with them the springs, c c, and the false trunnions, f f, the whole applied and operating substantially as herein set forth.

Second, The packing-piece, k, combined with the movable breech by means of the taper screws, m, m, substantially as and for the purpose herein set forth.

Third, So constructing and applying the sight, E, that it constitutes a rammer to operate in combination with a movable chambered breech, substantially as and for the purpose herein specified.

39,456.—Refrigerating Apparatus.—J. L. Alberger, Buffalo, N. Y.:

I claim an apparatus constructed substantially as herein described for cooling the air of a closed apartment, by causing it to circulate naturally or unforced through the apartment, and through and in contact with pipes or plates which are artificially cooled by an evaporating fluid and a forced current of air, in the manner substantially as and for the purpose described.

39,457.—Universal Chuck.—Manoah Alden, Philadelphia, Pa.:

I claim, first, The combination of the plate, C, and its spiral teeth, with the screw spindle, D, when both are applied to the case, A, of the lathe, in the manner arranged to operate the jaws, a a, substantially in the manner herein described.

Second, The combination of the jaws, a, a, pins, d, and plate, C, with its curved slots, the whole being constructed and arranged within the case substantially as described.

39,458.—Steam Engine.—John Baird, New York City:

I claim, first, In combination with a piston and a cylinder, a stationary rod or rods passing through the piston, and operating substantially as specified, the combination being substantially such as described.

Second, I claim a bush or sliding block and appropriate packing in combination with a piston, a stationary rod and a cylinder, the whole acting substantially as described.

Third, I claim in combination a cylinder, a piston, and a stationary rod operating in combination as described, where the latter is likewise combined with the cylinder covers or heads as described, whereby the rod performs the double duty of sustaining the piston and the cylinder heads, substantially as set forth.

39,459.—Dish-heater.—William Brand, Burlington, Iowa:

I claim, first, The combination of chambers, G B, with a stove or stoves, A, and steam-pipes, h, h, and domes, g, g, the whole constructed and operating substantially as and for the purposes described.

Second, In combination with the horizontal chambers or box herein described, the adjustable standards or legs, k, k, for the purpose of keeping the water pan level as set forth.

Third, The arrangement of stoves, A, beneath a shallow horizontal box constructed with the dish-holding plate, C, water chamber, G, smoke chamber, B, and a direct steam and smoke escape flue, b, substantially as described.

39,460.—Ambulance.—Clarissa Britain, Saint Joseph, Mich.:

I claim, first, The removable slotted posts, B, in combination with the transverse bars or rails, G G', springs, H, holding-down bars, J, J, and wagon body, A, all arranged and operating substantially as and for the purposes described.

Second, Suspending the stretchers, E E, upon poles, c, c, arranged and supported upon springs substantially in the manner herein described.

39,461.—Fastening for Studs or Buttons.—Laura M. Bronson, New York City. Ante-dated Dec. 31, 1862:

I claim the ring or S-shaped wire of metal with the cross bar and counter eye as shown, and for the purposes set forth as specified.

39,462.—Invalid Back-rest.—William Felix Brown, New Bedford, Mass.:

I claim my improved invalid back-rests as made of a cushioned frame, D, a series of helical springs, F, F, an auxiliary frame, E, a covering of cloth or rattan, b, and the two frames, A B (hinged together and provided with a latching apparatus), arranged in manner and so as to operate as specified.

39,463.—Grain Binder.—W. W. Burson, Atkinson, Ill.:

I claim, first, The combination of the wire-lever, A, and double grooved supports, B B, overhanging the gavel, constructed and operating substantially as described.

Second, The combination of the slide, D, cam-rod, I, and lever, A, acting substantially as described and for the purpose set forth.

Third, The combination of the spring-rod, x, and coil spring, Y, with lever, A, and slide, D, acting as set forth.

Fourth, The combination of the spring pliers, b, slide, D, and twisting claws, e, substantially as described.

Fifth, The combination of the ratchet rods, L L', ratchet pulley, M, springs, O O', and lever, A, acting substantially as described, and for the purpose set forth.

Sixth, The combination of the spool, G, wire-covering belt, H, and bar, Q, substantially as set forth.

Seventh, The combination of the crank, P, spring, U, rod, m, drop catch, W, and wheel, T, acting substantially as described.

Eighth, The combination of the rollers, a, a, and rollers, b, acting substantially as described and for the purpose set forth.

39,464.—Grain Fork.—H. M. & W. W. Burson, Atkinson, Ill. Ante-dated July 3, 1863:

We claim, first, Attaching to a grain fork, the clasp, C, for the purpose set forth.

Second, The combination of the handle, A, fork, B, clasp, C, and pitman, D, acting substantially as described and for the purpose set forth.

39,465.—Lathe for turning Locomotive Crank Pins.—S. S. & Danforth Cheney, Galesburg, Ill.:

We claim the plates, A D, in connection with the revolving tool or cutter frame composed of the ring, t, disk, r, and rods, s, and provided with a sliding combination of the hook, a, c, a, d, and rollers, b, acting through the medium of the screw, v, star-wheel, w, and pin, w, all arranged to operate substantially as and for the purpose herein set forth.

39,466.—Grain Dryer.—M. C. Cogswell & A. G. Williams, Buffalo, N. Y.:

We claim a device or opening made at the side of the case, in such a manner that it will open upwardly and prevent the grain from passing out, and at the same time increase the pressure and effectiveness of the air within; and also allow the evaporation, dust, air, &c., to escape, substantially as set forth.

We also claim the jacket B (with or without its lid, b'), in combination with the case, A, for the purposes and substantially as described.

39,467.—Cane Mill.—D. M. Cook, Mansfield, Ohio:

I claim, first, The matching circular wedges arranged on and constituting the splintering and expressing surfaces of a roller-cane mill, substantially as and for the purposes set forth.

Second, A roller-cane mill constructed to operate upon the cane with the one series of interlocking rolls, in the manner set forth.

Third, Splintering cane, expressing the juice therefrom, driving the ungeared rolls and relieving the journals of the rolls, by means of circular wedges, as set forth.

39,468.—Fastening for Skates.—C. T. Day, Newark, N. J. I claim operating or adjusting the bars, D, which have the jaws, d, at their ends through the medium of the circular plates, E, arranged so as to turn on pivots, g, and provided with eccentric slots, f, into which pendent pins, e, at the inner ends of the bars, D, are fitted, substantially as and for the purpose set forth.

I further claim holding the plates, E, and consequently the jaws, d, in proper position by means of the pendent screws, j, attached to the plates, C, and passing through concentric slots, l, in the plates and having thumb nuts, F, fitted on them substantially as described.

[This invention relates to an improved fastening for securing the skate to the boot or shoe, and of that class which are composed of jaws for clamping or grasping the sole and heel of the boot or shoe. The invention consists in an improved means for operating the clamps or jaws, whereby the same may be readily adjusted so as to grasp the sole and heel of the boot or shoe firmly and also readily detached or moved therefrom, and firmly held in position when grasping the sole and heel.]

39,469.—Let-off Mechanism for Looms.—George Draper, Milford, Mass.:

I claim a combination consisting not only of the escapement detent lever, k, its wheel, l, and the apparatus as described for depressing or operating such detent lever, but of a stopping mechanism (viz., the lever, G, and its connecting rod, I), to be operated by the lay, or while the lay may be beaten up, the whole being arranged substantially as and for the purpose specified.

39,470.—Construction of Sheet Metal Tanks.—Alfred Edwards, Chicago, Ill. Ante-dated May 18, 1863:

I claim not only the construction of a receptacle with a double bottom, by means of cutting and bending two pieces of the material, &c., in the manner as set forth and described, but also by means of cutting and bending any number of pieces according to the size and shape of the receptacle; the pieces in all cases to be laid crosswise on each other, so as to form a bottom of two or more thicknesses.

39,471.—Lighting Street Lamps.—Hosea Elliot, New York City:

I claim the arrangement of the tilting lamp, A, in combination with the case, C, self-closing door, d, pole, B, and thumb-piece, D, all constructed and operating in the manner and for the purpose substantially as shown and described.

[This invention consists in the arrangement of an adjustable lamp attached to a rod or pole which is provided with a thumb-piece and with a case enclosing the lamp in such a manner, that by depressing the thumb-piece the lamp is tilted and the door of the case enclosing the lamp is thrown open, allowing the flame of said adjustable lamp to come in contact with the burner of a street lamp, and obviating the necessity of climbing up on a ladder in order to light a street lamp, or other lamps or lights which cannot be reached from the ground.]

39,472.—Treating Night Soil for Agricultural Purposes.—R. B. Fitts, Philadelphia, Pa. Ante-dated Dec. 19, 1862:

I claim the process herein described and specified, for the purposes set forth.

39,473.—Paddle Wheel.—Addison C. Fletcher, New York City:

I claim the construction of a paddle wheel with alternating narrow semi-parabolic or curvilinear buckets, D E F, arranged in series as described and rings, C C', outside of and between the said buckets, the whole combined and arranged substantially as herein described.

39,474.—Welt-guide for Sewing Machines.—Hannibal Folsom, Milford, Mass.:

I claim in combination with the gage, B, the welt-guide, C, made with the bearing surfaces, a b c, and with a spring, g, or its equivalent for keeping the welt in lateral position, and for creating tension upon it as set forth.

39,475.—Potato Digger.—E. T. Ford, Stillwater, N. Y. Antedated Oct. 28, 1862:

I claim, first, The combination and arrangement of the two rotating wheels, one armed with teeth, a a a, the other with scraper blades, K K, separately or combined, the frame, C C, and the divider, D, all constructed and operating substantially as and for the purpose above described.

Second, And in combination with the above, I claim the arrangement of the woker, G, plow, F F, flange, S, lever, H, gage bar, I, double flange, Y, and driving wheels, A A, as and for the purpose above described.

39,476.—Mounting Artificial Teeth.—John C. Fuller, Chicago, Ill.:

I claim, first, Constructing a platina or other metallic base plate for the teeth and gums with grooves and hooks, or other suitable attachments in the trough of this plate, substantially as described.

Second, The combination of continuous porcelain gum, a, having the teeth, b, affixed therein substantially as described, with a vulcanized rubber base substantially as and for the purposes herein described.

39,477.—Spur for Horsemen's use.—Thomas Garrick, Providence, R. I.:

I claim the improved spur for horsemen's use described, consisting of a spur with a screw shank, D, and a compressing and supporting clamp, B, provided with the spur points, a a, or their equivalents substantially as and for the purposes specified.

39,478.—Dumping Wagon.—R. W. Green, Bradford, Pa.:

I claim the box or body of the dumper, constructed with circular sides, J J, and hinged sections, M M, in combination with the pivoted frames, K K, all arranged and operating substantially as and for the purposes specified.

39,479.—Breech-loading Fire-arm.—Henry Gross,iffin, Ohio:

I claim, first, As an auxiliary device to a breech-loading fire-arm operating substantially as described, the pivoted guide, E, working in the slot, D, and maintaining during its up and down movement in the path of a circle a close relation between its forward end and the breech end of the gun barrel, substantially as and for the purpose set forth.

Second, Connecting the plug-carrier, F, to the guide, E, substantially as described.

Third, The construction of the slot, D, with its face, a, concentric with the axis, a', of the guide, E, in combination with the auxiliary device, E, and breech-piece, F c, substantially as and for the purpose described.

Fourth, A breech piece, F, with plug, c, on its front end, made so as to receive an eccentric within it and to wholly encircle the same, and also to admit a wedge segment, J, in rear of it, and likewise to admit a guide, E, above it, all substantially as and for the purpose set forth.

Fifth, The combination of the guide, E, sliding segment, F, and eccentric, G, substantially as described.

Sixth, The combination of the lever, H, segment, J, eccentric, G, breech piece, F c, space-closing device, E, and peculiarly formed slot, D, substantially as and for the purpose set forth.

39,480.—Manufacture of Water Gas.—W. H. Gwynne, White Plains, N. Y.:

I claim passing steam super-heated or otherwise through melted metal or ores, for the purposes described and shown.

39,481.—Filling Molds with Vulcanizable Gums.—Joseph Charles Howells, Washington, D. C.:

I claim the introduction of vulcanizable gums into molds or flasks by injection, substantially as set forth and by the apparatus herein described or its equivalent.