



Reported expressly for the Scientific American, from the Patent Office Records. Patentees will find it for their interest to have their inventions illustrated in the Scientific American, as it has by far a larger circulation than any other journal of its class in America, and is the only source to which the public are accustomed to refer for the latest improvements. No charge is made except for the execution of the engravings, which belong to the patentee after publication.

LIST OF PATENT CLAIMS
Issued from the United States Patent Office.

FOR THE WEEK ENDING JANUARY 1, 1851.

To C. J. Anthony, of Pittsburgh, Pa., for improvement in Daguerreotype Pictures.

I claim the application of transparent or translucent materials, of varying thicknesses and forms, separately or in combination with each other, and the application of substances or materials, more or less opaque, either separately or in combination with transparent or translucent materials, both or either, when such applications and combinations are separately, consecutively, or conjointly employed for the purpose of manipulating the action of light, or chemical substances, substantially in the manner and with similar effects to those described and shown.

To Silas M. Cochran, of Baltimore, Md., for improvements in Car Couplings.

I do not claim the method of coupling railroad cars &c., by means of double coupling irons or jaws, in combination with a sliding bar for disengaging or unlocking said double irons or jaws to relieve the connecting bolt from the draught beam of the leading car, by the deflecting of said leading car from the proper line,

But what I claim is, in combination with the curved arms or ends of the jaws, the turn-slotted bar attached to the casting, having its ends curved in such a manner as to act as levers, and the spring for keeping the slotted bar and jaws in their proper position, the disconnection of the cars being effected by the contact of the curved arms or ends of the turning bar in the draught beam, when the preceding car runs off the track, when either of the curved arms of the jaws will be relieved from the slot of the turning bar and permit its curved end to move outward and open its outer end, and permit the connecting bolt to pass therefrom.

To J. B. Collins, of Reading Pa., for improved Nozzle for Lead Pipe Machines.

I claim the corrugated nozzle, with its mandrel, through which melted lead is pumped, for the purpose of making pipe, as herein set forth.

To W. E. Cornell, of Boston, Mass., for improvement in Planing Machines for dressing the edges of boards.

I claim the method, substantially as described, of communicating motion from the bottom to the top roller, by the two pinions, combined with the wheel having the inner and outer rim of cogs, by means of the joint links, substantially as described and for the purpose specified.

I also claim operating the machinery for carrying the cutter wheel towards or from the line of motion of the plank, by the passage of the plank over and in contact with a spur wheel or wheels, substantially as described, whereby the motion of the cutter wheel for edging tapering planks, will be made to correspond with the motion of the plank itself, as described.

I also claim interposing between the wheel or wheels, actuated by the planks and the carriage of the cutter wheel, a reversing motion, substantially as described, by means of which the machine can be made to act on the plank, from the narrow towards the wide end, or vice versa, or by suspending its operation, edge the plank with parallel sides, as described.

To John Ericsson, of New York, N. Y., for improvement in Water Metres.

I claim connecting the two pistons with

the two cranks of a crank shaft, in the manner substantially as described, so that at the end of each stroke of either of the pistons, it shall remain at rest, while the crank shaft is being impelled by the other piston, so that the valves shall be shipped, whilst the piston is at rest, for the purpose, substantially as described.

I also claim, in an instrument for the purpose, herein specified, determining the range of motion of the pistons, by means of stops connected with the cylinders and the pistons, substantially as described, in combination with the connection of the piston with the crank or cranks, by means of a joint having sufficient play to permit the pistons alternately to remain at rest, while the crank shaft continues to rotate, substantially as described.

I also claim enclosing all the moving parts of an instrument, substantially as above described, in the surrounding casing, through which the water or other fluid passes to be measured, constructed and operating in the manner and for the purpose substantially as described.

To Daniel Fisher, of College Corner, Ohio, for improvement in Churns.

I claim connecting two vertical churns by a horizontal tube at their bottoms, substantially as described (said tube being about ten inches long and about one-fifth of the capacity of one of the vertical cylinders,) in combination with the perforated cutters, operating in the manner and for the purpose herein fully set forth.

To S. H. Gilman, of Cincinnati, Ohio, for method of connecting the slide valve with the rock shaft.

I claim the tubular vent serving the twofold purpose of a guiding rod and a clamp for the ball-joint, at the foot of the valve pitman.

To L. D. Grosvenor, of Harvard, Mass., for improvement in machines for assorting broom corn.

I claim the combination of the endless platform, the roller, and the series of pressure rollers, or any mechanical equivalents therefor, as arranged and made to operate together, substantially in the manner and for the purpose, as described; and in combination therewith, I claim the rotary shears and the weighted roller, or their mechanical equivalents, the whole being applied and made to operate together, essentially as herein specified.

To Abraham Kaufman, of Orrstown, Pa., for improvement in Quilting Frames and Apparatus.

I claim the movable frame, working on the connecting piece containing two slides with wickers, for the purpose of stretching the quilt to any desirable length or breadth, as the case may be, in combination with the slides working in sections, by which the quilt may be enlarged or diminished, and the rollers as set forth.

To John Lamb & C. H. Root, of McDonough, N. Y., for improvement in Spring Carriage Wheels.

We claim the construction of the spokes of flat steel, split or divided, and curved and secured, for the purpose and in the manner herein shown.

To James Manning, of Middletown, Conn., for improvement in Candlesticks.

I claim the combination of the flanch with the circular cap, having its orifice eccentric with its periphery, and a guard operating in the manner and for the purpose as above described.

To Sheldon Northrop, of New Milford, Conn., for improvement in Looms for weaving seamless bags.

I claim the arrangement in one loom, of the two series of cams, substantially as described; one series for weaving the cloth double, and the other single, as herein described, in combination with the shifting the treddle from one series of cams to the other, or the equivalent thereof, substantially as herein described.

To James P. Ross, of Lewisburgh Pa., for improvement in Seed Planters.

I claim, first, the pinion working between fixed and movable racks, in combination with the elevating yoke and the loop on its end, for the purpose of raising the teeth from the ground and simultaneously throwing the feeding apparatus out of gear, substantially as set forth.

Second, I claim the feed gear, as described, in combination with the lever and its adjustable fulcrum, permitting the pinions to be reversed, by which double the number of changes can be made as can be done by the same

number of pinions in the ordinary arrangement.

To Stephen P. Ruggles, of Boston, Mass., for improvement in Printing Presses.

I claim the gauge bar for cards, in combination with the vibrating platen and stop finger, and crank which operates the same, in the manner and for the purpose herein above described.

I also claim the use of a segment of a cylinder, in combination with the stationary form bed, so the rotary inking apparatus may move over the form, and then, after taking ink from the fountain, distribute it on said cylinder, as herein set forth.

I also claim the movable bearers on the side of the form bed, arranged and operated substantially as herein described, so as to be moved outwards when the inking rollers are passing over the form, and drawn inwards when the sheet or tympan is moved up to said form.

I also claim regulating the delivery of the ink by combining with the delivery roller a grooved ratchet wheel and weighted pawl band, operating with the lever stud, cam roller, and stop lever, substantially as herein specified.

I also claim supporting the journals of one of the inking rollers on sliding bearers, so that it may be moved up against the delivering roll, by means of studs on said bearers and cams operating the same as herein set forth.

To Jonathan Russell, of Philadelphia, Pa., for improvement in Machines for turning irregular forms.

I claim the combination and arrangement of the horizontal carriages, G G, working inside of, and moving vertically with the carriage, F, and operating as herein described, for the purpose of making the pattern and rough material pass and repass the tracers and cutting tools, or vice versa, when the same are used in combination with a pattern and rough block, which do not revolve, and are presented to and operated upon by said tracers and cutters, as herein described, and for the purpose set forth.

To J. T. Trotter, of New York, N. Y., for improvement in the manufacture of India Rubber.

I claim the use and employment of zinc, substantially as prepared by the process above described, in combination with india rubber, for the purpose of curing or vulcanizing it, in form and manner as herein set forth, without the use of free sulphur, in any way, in combination with the rubber.

RE-ISSUES.

To Edward Reynolds, of Haddonfield, N. J., for improvement in a machine for bending or setting fellos for the wheels of carriages and wagons. Patent dated July 17, 1835; extended July 11, 1849; re-issued Jan. 1, 1851.

I claim the method, substantially as described, of bending fellos for carriages, by means of a cylinder upon which the fellow is bent, and a friction roller or its equivalent, against which it is bent, substantially as described, when used in combination with a strap for preventing the wood from splitting on its exterior surface, or otherwise.

DESIGNS.

To Wm. C. Davis, of Cincinnati, O., for design for a Cooking Stove.

To Chas. Gilbert & W. G. Hallman, of Philadelphia, Pa., (assignors to Chas Gilbert, of Philadelphia, Pa.), for design for Stove.

Niagara Suspension Bridge.

The Trenton Gazette states that John A. Roebling, Esq., of that place, has been appointed by the Niagara Suspension Bridge Company to enlarge and improve the Suspension Bridge in such a manner as to render it fit and proper for the passage of Railroad cars. Mr. R. will commence the work in the coming spring, and complete it within the year. The undertaking is in connection with the Rochester, Lockport, and Niagara Falls Railroad, the construction of which is to commence without loss of time.

Increase in Price of Scotch Pig Iron.

By the last news from Europe, the price of Scotch pigs had advanced from one to two shillings and sixpence per ton, and in Staffordshire the pig iron makers have established a resolute return to the figures at which they were selling three months ago, being in some instances equivalent to a still more considerable advance.

For the Scientific American.
Mechanical Principles.—No. 2.

In respect to the law of gravity, it is well known that there is a diminution of it as we ascend mountains, and it also diminishes as we descend mines, because the stratum of earth above opposes instead of assisting the attraction of that below. This has been proven by swinging a pendulum at the bottom of some mines. The attractive force, termed gravity, has been shown by a plumb line near mountains. In 1774, Maskelyne noticed a deflection of 6" from the vertical position of the plumb line in the mountain of Schehallian.

Gravity, then, is a universal property common to all matter—every particle in the universe attracting every other particle. The attraction, however, between two bodies, both of moderate size, is too feeble to be observed under common circumstances. But the attraction of ships upon boats is well known, and many bathers have experienced it in their own bodies, when near large vessels, in the water. By careful measurement, its force in the latitude of London is such as to cause a body to fall through a space of nearly 32 2-10 feet in the first second of time, supposing that body to fall in vacuo.

In order to determine the space which a body, falling freely by the action of gravity, would describe in a given time, we must multiply the square of the time in seconds by 16 1-12 (or, as an approximation only, simply by 16); the product will be the space fallen through by the body in feet. To determine the time which a body would occupy in falling from a given height, we must divide the square root of the height in feet by 4; the quotient will be the time occupied in seconds. To determine the velocity which a body, exposed to the action of gravity for a given time, would acquire, multiply the time in seconds by 32 1-6, and the product will be the velocity in feet per second; or to determine the velocity acquired by a body in falling from a given height, multiply the square root of the height in feet by 8 1-24, (or, as an approximation, simply by 8), and the product will be the velocity of the body in feet per second.

The following table, constructed on the same principle as that given above for any force whatever, contains the actual numerical values of the several quantities for a body falling freely by the action of the force of gravity.

Time in seconds of the body's fall- ing.	Velocity acquired by the body in feet per second.	Space in ft. fallen through by the body in the whole time.	Space in ft. fallen through by the body in each second.
1	32 1-6	16 1-12	16 1-12
2	64 1-3	64 1-3	48 1-4
3	96 1-2	144 3-4	80 5-11
4	128 2-3	257 1-3	112 7-12
5	160 5-6	402 1-12	144 3-4
6	193	579	176 11-12
7	225 1-6	788 1-12	209 1-12

What gravitation is we scarcely dare speculate. Some consider it to be magnetism, and there is much plausibility in some of the arguments brought forward to prove this. We know that it is a power higher than the more tangible forces with which we are particularly acquainted; it is a power which spans all space, and its very subtlety proves that there is a power beyond it more subtle still. The law of falling bodies, (with which every mechanic should be well acquainted, or he will find his mind somewhat shackled), was first discovered by Galileo, but it obtained a more complete development in later times, by the machine of Attwood.

At the commencement of the study of the principles of falling bodies, let it be understood that a body begins to fall from a state of rest, and the further it falls its velocity increases uniformly with the increment of the time it occupies in falling, and then there can never be any mistake made, for if the velocity increases with the time a body takes to fall, it will fall through a greater space during the third second of time than during the second or first seconds. If no such law existed, there would be no more power in a fall of water 32 feet high, than one of 2 feet.

MACLAURIN.